



**An assessment of collaborative networks as a  
means of competitiveness:  
A case study in the Automotive Sector**

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## ABSTRACT

This is a theoretical research report that advocates the achievement of competitiveness in formulating strategies of co-operation with industry participants through the establishment of collaborative networks. A collaborative network is reviewed from a theoretical perspective to add insight into the subject as a mechanism for firms to achieve competitiveness and sustainability. The theory of collaborative networks is explored further in identifying the interdependent components of collaborative networks to better understand their establishment and management. The literature on government policy is also examined from an industry competitiveness perspective, with particular emphasis on the influence of government policy in ensuring successful collaborative networks that achieve industry competitiveness.

By using a single case design in the South African Automotive Sector, the interdependent components are linked to the organisational design of the collaborative network. The research was exploratory in developing and extending the theory into an integrated model in assessing the competitiveness of the automotive industry.

The research found that the ability to participate in a collaborative network is a strategic resource that firms need to acquire. The research confirmed the establishment and development of the network structure, strategy, dynamics and culture as the enabling platform for successful collaboration with in a network. The research found that the governance structures within the collaborative network are critical in establishing the balance between competition and co-operation and in evolving relationships into partnerships that define the collaborative network as a strategic organisation. The research also found collaborative networks are unique manifestations that achieve efficiencies beyond economic benefit for the participants of the network to the achievement of socio-economic benefit for the industry in the form of entrepreneurship development, job creation and skills transfer.

## KEYWORDS

Industry collaboration

Government policy intervention

Components of collaborative network

Industry competitiveness

## LIST OF ACRONYMS

AIDC – Automotive Industry Development Centre

APDP – Automotive Production and Development Program

BEE – Black economic empowerment

DTI – Department of Trade and Industry

Ford – Ford Motor Company of South Africa

IPAP – Industrial Policy Action Plan

IRRC – Import Duty Rebate Credit Certificates

KZN – Kwazulu-Natal

MCEP – Manufacturing Competitiveness Enhancement Programme

MIDP – Motor Industry Development Plan

Naamsa – National Association of Automobile Manufacturers of South Africa

OEM – Original Equipment Manufacturer

PAA – Productive Asset Allowance

R & D – Research and Development

SCM agreement – World Trade Organisations Agreement on Subsidies and Countervailing Measures

SPF – Sector Partnership Fund

SVI – Small Vehicle Incentive

Tier 1 supplier – Producer of Component Parts and Accessories

## DECLARATION

I declare that this research project is my own. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

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Date: 7 November 2012

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## DEDICATION

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# CHAPTER 1 - BACKGROUND TO THE STUDY

## 1.1 Introduction

This research report reviews the theory of collaborative networks by assessing a case study in the Automotive Sector. The purpose is to add insight to the subject and in particular to the components of the collaborative network for the achievement of industry competitiveness. The relevance, purpose and significance of collaborative networks arising from an increasing competitive global market place will be explored as firms participate in collaborative networks to realise individual and collective efficiencies. The research problem will be defined to explore the components of the collaborative network as an integrated model linked to the design of the collaborative network as a means of industry competitiveness. While certain outcomes from the literature review are expected, the findings from the case study will be analysed and discussed to provide greater insight. The research serves to establish the value significance it purports and the delimitations of the research investigation are elucidated.

## 1.2 Rationale for the Research

As a consequence of globalisation and the opportunities arising from information technology advancements independent firms across the value chain are motivated to join collaborative networks for purposes of pooling resources and creating collective efficiencies for business survival and the achievement of common goals (Thorgren, Ortqvist, & Wincent, 2009). Collaborative networks are becoming common place and have received significant attention in recently circulated management and academic publications as the recognised strategy to be adopted by firms in seeking sustainability (Johnson, 2007; Romero, Galeano & Molina, 2010, Srivastava & Singh, 2010 and Shuman & Twombly, 2010).

Collaborative networks however occur in a large variety of manifestations including virtual supply organisations, virtual enterprises, dynamic supply chains, professional associations, industry clusters, etc. In establishing a reference model for collaborative networks, Camarinha-Matos & Afsarmanesh, (2008) have described collaborative networks as the intentional co-operation of heterogeneous firms in the pursuit of a common goal in the shared belief that the collective efficiencies arising from the goal

would not be achieved if any of the firms were to attempt these processes individually outside the collaborative network (Camarinha-Matos & Afsarmanesh, 2005).

To create successful collaborative networks it is necessary for firms to participate in networks that have the appropriate organisational design that facilitates the capitalisation of strengths and the achievement of complementary skills and capabilities. The organisational design of collaborative networks is defined by the network structure, the network strategy, the network dynamics and the network culture. The organisational design of collaborative networks facilitates the creation of new and unique value propositions resulting in competitiveness for industry.

### **1.3 Context of the Research**

The research project was conducted along the following parameters:

The research was conducted in the Republic of South Africa during 2012. The research was conducted in the Automotive Sector of the economy, considered to be the second largest industry and the largest manufacturing sector. The Automotive Industry has over the last 15 years been the largest recipient of government policy incentives as a means of strengthening the outward focus of the industry. The Automotive Industry is globally characterised by the development of long term relationships with supply chain partners for the development and supply of components and services.

The success of the South African Automotive Industry is thus influenced by government policy and collaborative networks between various industry players. Government combines the supply chain of various industry players for greater efficiencies, cost savings and competitiveness. This dynamic has created an industry-wide collaborative dynamic that is unprecedented on a global scale.

The research was conducted based on a case study of a model of industry collaboration, called “the Ford project”. This project was developed in collaboration between industry participants and the Automotive Industrial Development Council (AIDC), the geographical government agency mandated to support and stimulate the Automotive Industry in Gauteng.

## **1.4 Purpose and Objectives of the Study**

The purpose of the research is to assess whether collaborative networks are a means of sustaining competitiveness for industries. Competitiveness for the industry is achieved by surpassing the individual capabilities of firms by combining the skills, capabilities and resources of firms to achieve efficiencies for the collaborative network, whilst encouraging each firm within the collaborative network to focus on its core competencies (Shuman & Twombly, 2010). Collaborative networks encourage innovation, create new opportunities from the exchange of ideas and practices and create new synergies for growth.

Empirical evidence of the importance of collaborative networks towards the achievement of competitiveness is provided in the theoretical frameworks (resource based view, network theory and alliance theory) and the various case studies that report the benefits arising from collaborative networks (Johnson, 2007; Tambunan, 2009; Huggins, 2010; Srivastava & Singh, 2010 and Shuman & Twombly, 2010; Chetty & Stangl, 2010). There is little empirical evidence in the collaborative network literature on the organisational design, i.e. the network structure, the network strategy, the network dynamics and the network culture, as a fully integrated model that creates industry competitiveness. It is for this reason that the components of collaborative networks need further exploration.

## **1.5 Problem Statement**

The problem statement is explored through a case study of a collaborative network model in the South African Automotive Sector, known as the Ford project. Whilst the project had been aimed at the achievement of cost efficiencies in the development and supply of components, it had also been aimed at job creation, entrepreneurship development and skills and knowledge transfer through collaboration across industry participants. The investigation seeks to develop and extend the theory on the components of collaboration as an integrated model of the competitiveness by finding meaning and purpose from the structure, strategy, dynamics and culture of the Ford project.

## **1.6 Significance of the Study**

The study serves to fill the gap that currently exists in the academic literature as it seeks to provide a greater understanding to firms in making the strategic choice to participate in collaborative networks as a means of achieving competitiveness for the industry. The study will provide guidance to managers of the requirements to establish the appropriate organisational design as defined by the network structure, the network, strategy, the network dynamics and the network culture in facilitating the capitalisation of individual firm strengths and the achievement of complementary skills and capabilities.

## **1.7 Research Outcomes**

The following research outcomes of this research study are listed below:

- An understanding of the components of collaborative networks linked to the design of the collaborative network as a means of achieving industry competitiveness.
- The acquisition of sufficient data that facilitates a comprehensive description of the characteristics, antecedents and consequences of the components of the Ford project within the context as a collaborative network model.
- An understanding of the barrier factors or success indicators of the Ford project as a means of enhancing the competitiveness of the South African Automotive Sector.
- The acquisition of sufficient data which will result in the ability to make insightful recommendations to the composition and range of the components of collaborative networks relevant to the Automotive Industry in South Africa.

## **1.8 Delimitations and Limitations of the Study**

- The study is limited in specifically focussing on the Automotive Industry in South Africa.
- The study is limited in focus to the participants of the Ford project that is the subject of the case study due to the uniqueness of the collaborative network model.

- The data that was collected is quantitative in nature in the form of in-depth interviews as explored and analysed by the researcher and other data in other forms was not collected for verification purposes.
- The data that was collected from the case study is therefore only conclusive with regard to the case study and the results of the data cannot be generalised.
- The qualitative nature of the data results in the distinct risk of self-bias and subjectivity on the part of the researcher. The risk of the researcher's self-bias was noted at the inception of the research process and every attempt was made to minimise the impact thereof.
- As the data was collected by means of in-depth interviews, this could have resulted in the interviewees focusing on their preferred areas of discussion, and the interviewer had therefore been alert of this risk and where relevant had redirected the discussion to the research topic.
- The views and opinions expressed in the in-depth interviews have no further meaning of application other than that of the interviewee's view or opinion. For this reason further testing and research would be required to substantiate the reliability of the view of opinions expressed.

The findings of the research must be interpreted by taking cognisance of the limitations that were highlighted in the preceding paragraphs.

## 1.9 Layout of this Report

The layout of this report follows the framework of the chapters set out below:

**Chapter 1** introduces the research topic and provides context to the research. The main research problem is to assess collaborative networks as a means of sustaining competitiveness for industry.

**Chapter 2** is a review of the existing literature on collaborative networks. The literature on collaborative networks is reviewed from the three theoretical frameworks. The literature on collaborative networks is further reviewed from the components necessary for collaboration in terms of the network strategy, structure, dynamics and culture. The literature on competitiveness, and in particular Porter's Diamond Model of Competitiveness, is aligned to the components of the collaborative network as influenced by government policy. Government policy establishes collaborative networks as a means of achieving industry competitiveness. Arising from the influence of



government policy and the characteristics of the automotive industries towards co-operation and collaboration with supply chain partners, the literature reviews the South African Automotive Industry and its development as the leading and largest manufacturing sector in the South African economy.

**Chapter 3** consists of the research questions, with a focus on the components of the collaborative network as a means of achieving competitiveness for the Automotive Industry.

**Chapter 4** presents the research paradigm in general and specifically discusses the use of the case study method in research. Special attention is paid to the appropriateness of the case study as a selected research methodology as well as its limitations.

**Chapter 5** presents the results of the in-depth interviews with participants of the Ford project.

**Chapter 6** reflects the interpretation of the research as explored and analysed in terms of its practical application to the theory and in particular the components of the collaborative network. The analysis of the results acts as the nexus between the research results and the research objective.

**Chapter 7** concludes the research and facilitates communication of certain recommendations and suggestions for further research.

## **1.10 Summary**

The research report develops and extends the theory of collaborative networks as an integrated model on the components of collaborative networks in assessing industry competitiveness. The research report provides an understanding of the characteristics, antecedents and consequence of the components of the collaborative network linked to the design of the collaborative network model as a strategy. The research report provides insight into strategic positioning for participation in a collaborative network environment. The environment enables the establishment of the components of network design that lead to industry competitiveness.

## CHAPTER 2 - LITERATURE REVIEW

### 2.1 Introduction

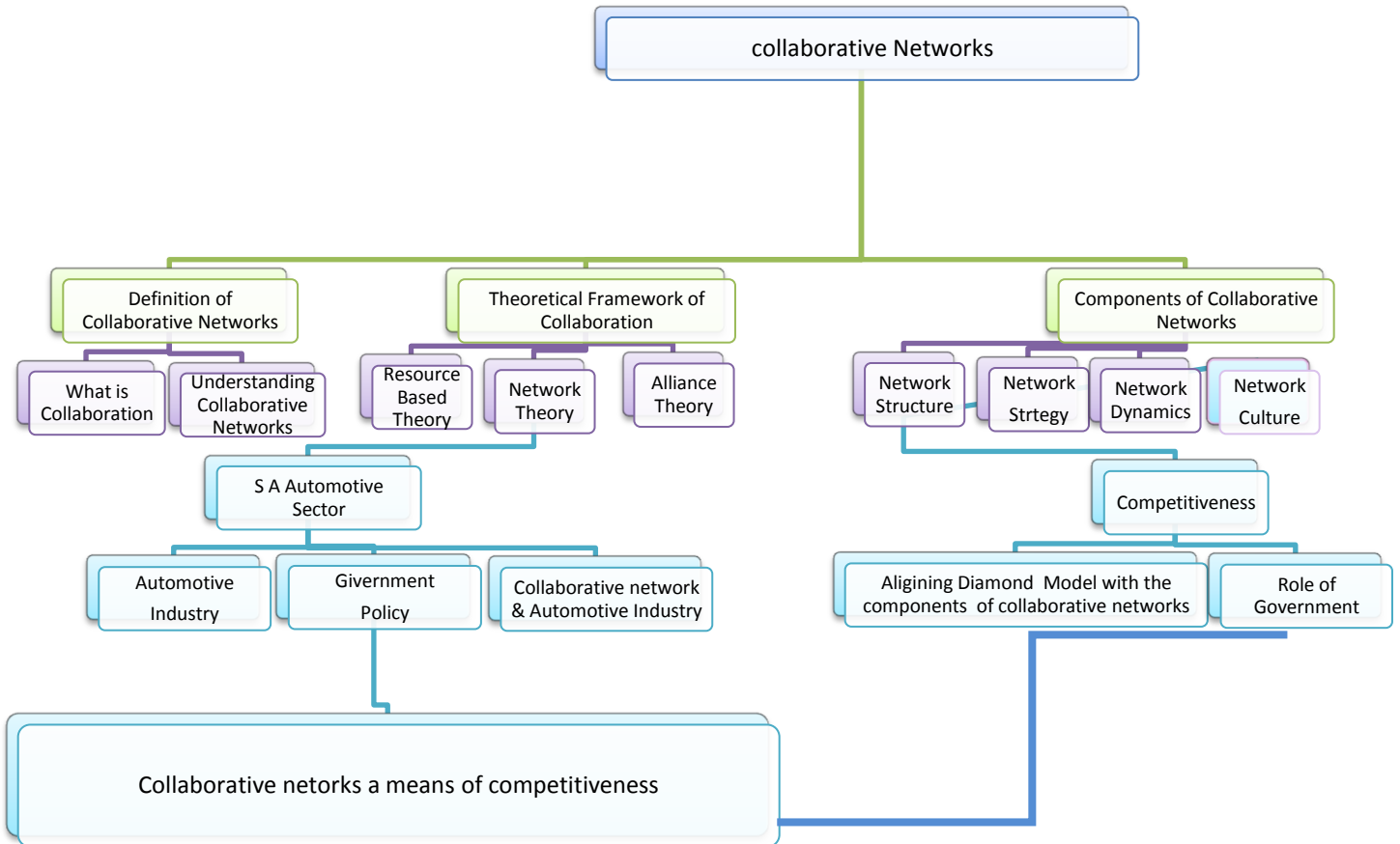
Over the last decade there has been a reduction of political barriers, a surge in the concept of globalisation and unprecedented advancement of technological developments. Firms have witnessed many challenges in their business environment in attempting to ensure competitiveness and sustainability. With the development of the enabling role of information communication technology (ICT) firms have acquired the ability to source supplies from and conduct business in remote corners of the world (Black, 2009). In this challenging global market place it has become necessary for firms to participate in dynamic networks comprising of chains of interconnected industry players to ensure continued survival, growth and competitiveness.

Within the business environment various forms of collaborative networks have evolved that facilitate firms to leverage competitiveness in the industry whilst dealing with market dynamism and hypercompetitive global environments (Abreu, Macedo, & Camarinha-Matos, 2009). Collaboration among independent firms has become a necessary mechanism for the creation of collective efficiencies that ensures the survival and continuity of the business (Romero, Galeano, & Molina, 2009). Collective efficiencies are created by developing and managing relationships among industry players through government policy and industry initiatives. The collaborative networks provide the platforms that facilitate the capitalisation of individual firms' strengths, the sharing of risk and resources, and the joining of complementary skills and capabilities to improve the firm's performance regarding cost reduction and improvements in quality levels (Srivastava & Singh, 2010).

The main theory regarding collaborative networks as well as the literature reviewed on the subject is discussed in this research study in order to provide context and insight into the research problem. The theoretical basis of collaborative networks adds insight into the subject. It will be further explored from a strategic perspective, focussing on the four interdependent components of collaborative networks, namely the network strategy, structure, dynamics and culture. (Shuman & Twombly, 2010) The theory on industry competitiveness, and in particular Porter's Diamond Model, will be aligned to the integrated components of collaborative networks. The Automotive Industry of South Africa is discussed to ascertain the pivotal role that government policy has as a

promoter of collaboration for industry competitiveness. The ambit of the literature review in this chapter can be summarised as follows:

**Figure 1: Ambit of literature review**



## 2.2 Definition of Collaborative Networks

It has been stated by Professor Peter Drucker in an interview with James Daly, editor of Business 2.0 magazine that “firms need to embrace the power of openness and innovation in processes and business models, firms need to collaborate to innovate and grow, this is the new way for business to pursue opportunities while managing the risk that come with globalisation.” (Shuman & Twombly, 2010, p. 1). The ability of firms to achieve competitive advantage is a result of the ability of firms to create and sustain collaborative networks (Bretherton & Chaston, 2005). Collaborative networks can be defined as “alliances constituted by a variety of entities (e.g. organisations and people) that are largely autonomous, geographically distributed, and heterogeneous in terms of their operating environment, culture, social capital and goals, but that collaborate to

better achieve common or compatible goals, and whose interactions are supported by a computer Network.” (Camarinha-Matos & Afsarmanesh, 2008, p. 2464). Collaborative Networks are therefore intentional co-operation premised on the shared belief that together the network members can achieve goals or participate in competitive business opportunities that would not be possible or have a higher cost if attempted by the firms individually.

### **2.2.1            *What is Collaboration?***

Collaboration literally means working-together (Bititci, Martinez, Albores, & Parung, 2004). The term collaboration, together with other terms like partnerships and alliances, are synonymous in describing individuals or organisations working together towards a common goal. Collaboration is discussed in Beckett (2005) and Thorgren, Ortqvist and Wincent (2009) as a process for firms to follow in situations where working alone is not sufficient in achieving desired ends. Collaboration is a strategic process whereby firms exchange information, alter activities, share resources and enhance each other’s capacity for mutual benefit and a common purpose by sharing risk, responsibilities and rewards (Bititci, Martinez, Albores, & Parung, 2004).

Scholars advocating collaboration consider inter-firm networks a strategic resource for innovation and competitiveness (Beckett 2005, Tambunan 2009 and Huggins 2010). Research in the area of collaboration has demonstrated the existence of various complex inter-firm networks in terms of process, business models and ways of working together in a web of continuous exchange relationships (Camarinha-Matos & Afsarmanesh 2005 and Johnson 2007). The collaborative networks are an important aspect of innovation and competitiveness that manifest in strategic alliances that are explicit lasting agreements between firms who combine their resources and skills at various stages of the value chain and who exchange and share skills and information to obtain, build or maintain durable competitive positions (Huggins, 2010). Successful collaboration occurs when the collaborative network develops mechanisms, structures and processes that bridge organisational differences and achieves five levels of integration, namely strategic, operational, tactical, interpersonal and cultural (Bretherton & Chaston, 2005).

Recently many various forms of collaborative networks have emerged (Camarinha-Matos & Afsarmanesh, 2005). Collaborative networks could take the form of virtual organisations, virtual enterprises, dynamic supply chains, strategic alliances or

clusters. Collaborative networks are dynamic processes and complex system that consists of many facets to address the different needs of the participants and it is therefore possible for firms to participate in multiple collaborative networks on a concurrent basis (Shuman & Twombly, 2010). Notwithstanding the different forms of collaborative networks, a common theme uniting these manifestations of collaboration is the existence of a stable and durable relationship between autonomous firms engaged in business networks, involving interdependencies between actors, resources and activities for a common purpose (Johnson, 2007). The collaborative network harness opportunities and create new value for those within the network.

Collaborative networks as a science has benefited from the contributions of multiple disciplines like computer science, computer engineering, communications and networking, management, economy, social sciences, law and ethics (Camarinha-Matos & Afsarmanesh, 2008). As much has been said about the importance of collaboration for sustainability and competitiveness (Becket 2005, Johnson 2007 and Huggins 2010), it has become necessary to understand collaborative networks and how to nurture the relationships arising from collaborative networks.

### **2.2.2            *Understanding Collaborative Networks***

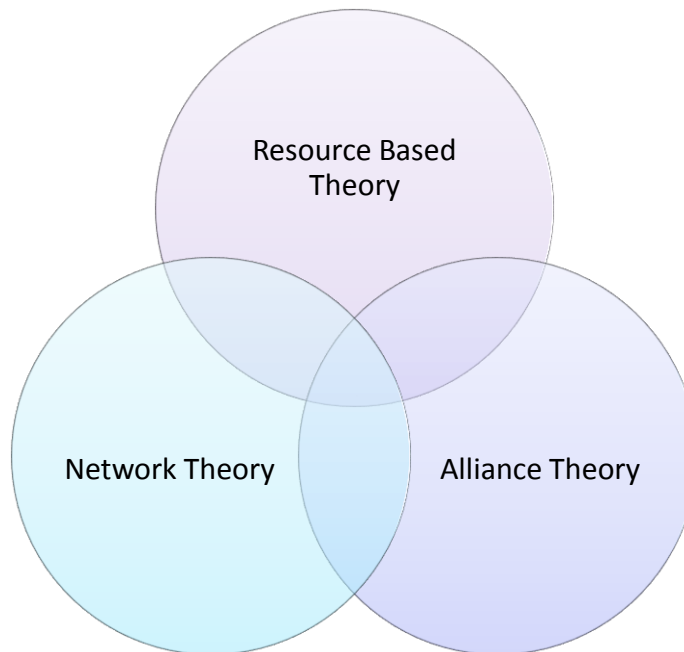
Within the collaborative network, firms work together to realise the collective and individual objectives of the network organiser, the member firms and the customers. Collaborative networks are designed to move beyond the simplistic ideas of working together, to create strategic alliances through cooperation and the development of relationships that convey the complementary skills of the firms and extend each stakeholder's core expertise (Chetty & Stangl, 2010). Firms use collaborative networks to gain access to resources, to improve their strategic positions, to control transaction costs, to expand their customer base locally and internationally, to acquire new skills and to successfully manage rapid technology changes (Tambunan, 2009). Collaborative networks facilitate value creation in terms of cost reductions accompanied by improvements in quality and enhanced product design (Srivastava & Singh, 2010). In the aeronautical industry, the electronics industry and the Automotive Industry there is an established practice of collaboration between production centres and manufacturing networks that facilitate efficiency in responding to market demands that result in obtaining a competitive advantage for the industry (Monroy & Art, 2010).

The capacity to collaborate should become a core competency for the firm and should include the capacity to sustain a variety of collaborative networks (Bretherton & Chaston, 2005). The collaborative network should be a dynamic structure with a shared understanding of the business rationale required for the alliance. Furthermore, the components within the network should be able to relate to each other legally and operationally as the purpose and context of the network evolves (Shuman & Twombly, 2010). The collaborative network should have organised processes and business models to leverage combined resources for competitive advantage. The collaborative network should be structured to optimise the strength of all that contribute to the network and thus to benefit, connect, and enhance competitiveness of all stakeholder within the network (Beckett, 2005).

### **2.3 Theoretical Framework**

Collaborative networks are recognised as a powerful tool for firms of all sizes. Some industries such as the aeronautical industry, the electronics industry and the Automotive Industry have commenced with the adoption of new business models of innovative ecosystems built around shared goals that improve cost structures, increased speed to market and built interdependencies in such a way that no single firm owns the value chain (Monroy & Art, 2010). Three theoretical frameworks support the importance of collaborative networks as a means of sustaining competitive advantage, namely the resource based theory, the network theory and the alliance theory. While these three theoretical frameworks may differ in terms of how firms compete and formulate strategy for competitiveness, the benefits of collaboration and the need for collaborative networks as a strategic choice for firms are common.

**Figure 2 Theoretical Framework of Collaborative Networks**



### **2.3.1 Resource Based Theory**

The resource based view was popularised by Hamel and Prahalad in their book “Competing for the Future” (1994). According to Peteraf (1993) the basic principles upon which the resource based view has been built on stem from the work of Penrose (1959), Lippman and Rumelt (1982), Teece (1980 & 1982), Nelson and White (1982), Rumelt (1984 & 1987), Wernerfelt (1984), Barney (1986& 1991), Conner (1991) and Mahoney and Pandian (1992). The major contribution of the resource based view is that it explains the differences in firm profitability arising not from industry conditions but from the firm’s specific resource endowment; firms attain competitive advantage through the optimal use of their own specialised resources (Peteraf, 1993). The resource based theory advocates that by utilising resources firms can realise above average returns and achieve competitive advantage.

The resource based view maintains that the resources and capabilities of a firm form the basis of competitive advantage if they are characterised by heterogeneous distribution among industry participants, have imperfect mobility and are protected from competition (Bretherton & Chaston, 2005). From a firm’s strategic perspective, resource theory concerns itself with the internal accumulation of assets and the utilisation of resources that are unique to the firm. As the firm’s resources are central

in formulating and implementing strategy, firms need to adopt strategies that their resources can support (Peteraf, 1993).

The resource based view advocates the ability of firms to accumulate, develop and deploy assets and capabilities for value creating strategies (Huggins, 2010). Firms achieve competitive advantage by combining resources and capabilities successfully with other firms, including the transferability of such capabilities to a collaborative network to ensure returns from such alliances (Shuman & Twombly, 2010).

In supporting the science of collaborative networks, the resource based view concerns itself both with the utilisation of current resources and with the development and augmentation of resources through alliances for the purpose of enhancing strengths and ameliorating weaknesses aligned with Porter's (1990) research regarding competitive advantage (Bretherton & Chaston, 2005). Porter's research advocates the full exploitation of the firm's resources whilst at the same time developing sustainable competitive advantage through the external acquisition of the necessary complementary resources and capabilities from other firms (Varadarajan & Cunningham, 1995). Collaborative networks carry the strategic complementary skills, resources and capabilities of firms to create an enabling network that achieves competitive advantage by product differentiation and/or cost efficiencies and superior performance that could not have been achieved by each firm individually (Huggins, 2010).

Each firm within the network remains autonomous and continues to concentrate on the specific part of the value chain related to its core-competencies to maximise its contribution to the network (Varadarajan & Cunningham, 1995). The ability to collaborate must become a core competency for the individual firms as a means of developing the necessary skills, capabilities and resources to sustain a wide variety of strategic partnerships and networks (Romero, Galeano, & Molina, 2009). The resource based view further propounds that collaborative networks perform a critical function in accessing resources and capabilities not owned in sufficient measure by one firm in the network.

Collaborative networks achieve competitive advantage for firms in two ways. First networks offer the co-ordination and scale associated with large firms. Second, the networks present flexibility, creativity and lower overheads to smaller firms (Varadarajan & Cunningham, 1995). Through collaborative networks large firms seek access to the innovative and entrepreneurial potential of small firms and small firms



usually seek a strong technology base to continue research and development and/or market access (Bretherton & Chaston, 2005). Collaborative networks stimulate collective learning, the exchange of ideas and collective appropriation of skills and capabilities; to improve product quality and movement to more profitable market segments thereby sustaining competitive advantage for the firms involved (Tambunan, 2009 and Huggins, 2010).

Firms are encouraged by the resources based view to create and sustain collaboration because of the range and scale of benefits available to the network and its members. Collaborative networks provide access to new and improved resources, technological skills and systems necessary to position a firm to achieve business goals. Other advantages of collaborative networks may include expedited entry into foreign markets, achieving economies of scale, bulk purchase inputs, optimal utilisation of technology, amortisation of product and service cost, risk sharing, access to capabilities such as managerial skills and functional knowledge (Bretherton & Chaston, 2005).

However, the resource based view purports some minimum proportion of core resources and capabilities that has to be possessed by the firm to participate in collaborative networks. The resource based view is thus a limitation for firms that do not have core resources and capabilities to offer the network. In these circumstances the network theory and alliance theory support the importance of collaborative networks as a means of creating competitive advantage, particularly for small and medium sized firms that suffer from a structural lack of resources or who do not have resources to offer the network.

### **2.3.2 Network Theory**

Network theory is broadly classified into social or business networks. Social networks involve those that are developed from personal relationships, whereas business networks are those that evolve from some form of repeated economic exchange (Vasilchenko & Morrish, 2011). Sydow and Windeler (2003) define networks as collaborative arrangements established via interactions between actors embedded in a social context. From a firm's perspective the value of the network goes beyond the benefits on an individual level during the exchange to something more meaningful and lucrative and provides incentive for the firm to become a network member and to be actively involved in the network activities (Jorgensen & Ulhoi, 2010). Network theory advocates the establishment of relationships on a formal contractual or informal basis

with strategically chosen partners that contribute in their own way to the success of the network.

Through the effective use of networks, firms are able to overcome barriers such as relative small company size, lack of internal resources and distance from international markets, thereby allowing firms within a network to innovate through collaboration and to execute their dealings on a global stage (Jorgensen & Ulhoi, 2010). For small sized firms networks are instrumental for increased industry presence and effectiveness, improved communication and cooperation and higher quality standards (De Klerk & Kroon, 2007). Slotte, Kock and Coviello (2010) advocated that networks substantially improve the ability of small companies to quickly explore and exploit opportunities, thus improving their competitiveness and their likelihood of survival (Vasilchenko & Morrish, 2011).

There are many differences that separate small and medium sized firms from large firms. Among the various differences are the limited resources and lack of specialist knowledge and expertise possessed by small and medium firms. The lack of structural resources consequentially limits the impact that small and medium firms have on the markets. Networking has been shown to alleviate these limitations, offering a platform of resource and capability development (Huggins, 2010; Tambunan, 2007; Mohannak, 2007 and Mesquita & Lazzarini, 2008). Small and medium sized firms utilise networks as a source of information in marketing decision making, product development and gathering information about target markets (Jorgensen & Ulhoi, 2010).

Beyond utilising networks as a source of information and to aid marketing activities, networks are also established by teaching and learning, for information sharing and development activities (Jamsa, Tahtinen, Ryan, & Pallari, 2011). Network learning, sharing and development activities provide the entrepreneurial opportunity for small and medium size firms and also ensures the economic viability of the network (Huggins, 2010). Networks create competitive advantage for small and medium sized firms where the relationships and the exchange of information lead to the creation of economic value in the form of improved product quality, upgraded technology and access to more profitable market segments (Jamsa, Tahtinen, Ryan, & Pallari, 2011).

The leveraging of inter-firm networks is considered a strategic resource for firms (Bretherton & Chaston, 2005). Inter-firm networks are a form of knowledge alliances concerning formalised collaboration that allow access to the knowledge held by other actors in the network thereby facilitating industry innovation (Huggins, 2010). Inter-firm

networks facilitate the pooling of the participating firm's resources and knowledge exchanges. Inter-firm networks enhance each firm's own innovation activities through the creation of new products, production processes and organisational methods, resulting in increasing market activity (Thorgren & Ortqvist, 2009). The advantages derived by firms that collaborate focus the importance of developing network resources as an enabling mechanism.

Network resources develop when firms collaborate to achieve economies of scale and scope in research and development, develop technological standards and improve their ability to outmatch a stronger competitor (Jorgensen & Ulhoi, 2010). Network participation facilitates increased technological diversity, reduces the risk and uncertainty associated with technological developments, facilitates speed in the development of new products and achieves economies of scale for the network (Gnyawali & Park, 2009). Co-operation through the orchestration of the network relationships, the leveraging of network resources and information possessed by others enables the firms within the network to pursue and sustain competitiveness (Huggins, 2010).

As networks develop in an informal context, the relationships within the network are accompanied by unsystematic behaviour with no established rules of engagement (Westerlund & Rajala, 2010). The communications among network participants are generally less frequent and on a need-to-know basis thus limiting the interactions and the opportunities in leveraging combined resources. The informal relationships and the lack of communications pose a problem for firms within the network that seek distinct competitive advantage from the interactions or when there is a lack of relationship transparency (Jorgensen & Ulhoi, 2010). Ineffective management of the network results in network knowledge and competencies flowing freely out of the network rather than productivity flowing into it (Westerlund & Rajala, 2010). Also, as firms become increasingly familiar with each other's resources, negative network effects may emerge locking firms into low value and unproductive networks, thereby stifling the creation of new knowledge, resources and innovation (Huggins, 2010).

Notwithstanding the criticisms of network theory as a less effective means of collaboration, network theory has received significant attention in existing internationalisation and international entrepreneurship literature (Vasilchenko & Morrish, 2011). While network attempts to support collaborative networks, particularly the benefits of such networks to small and medium size firms, research by Vasilchenko & Morrish (2011) has shown that when opportunities are more refined, resources and

knowledge are further developed and new types of problems call for more formal strategies. The firms within the network will evolve to form more formal and calculative business networks in the form of alliances. The alliance theory is advancement to the resource based view and is more strategically focussed to ensure long term collaboration for those stakeholders within the network.

### **2.3.3 Alliance Theory**

The evolution of the network relationship into alliances is dependent upon whether or not the network actors seek to establish deeper relationships with stakeholders within the existing network. (Huggins, 2010) Networks become strategic alliances when network participants exploit the resources of their existing network to leverage competitive advantage. Alliance theory combines the constructs of the resource based view with the ability to pool resources and abilities across the value chain, where each network participant concentrates on parts of the value chain related to core competencies to maximise their contribution, thus achieving positional advantage either as a result of distinctive capabilities and/or superior resources (Bretherton & Chaston, 2005).

The propensity to enter into strategic alliances is generally dependent on market, firm and customer characteristics that compel firms to seek the creation of value propositions by re-arranging and re-synthesising existing processes and resources to leverage critical capabilities. (Varadarajan & Cunningham, 1995) Eisenhardt and Schoonhoven (1996) found that alliances are more likely to be formed when both firms are in need of resources or when they share valuable resources (Bretherton & Chaston, 2005). Strategic alliances are the result of resource integration among firms, when companies develop mechanisms, structures, processes and skills for bridging organisational and interpersonal differences and achieving real value for the alliance (Huggins, 2010). Alliances are a means of contribution to the achievement of a future competitive position or enhanced operational efficiencies (Mitsuhashi & Greve Insead, 2009). Alliances are established from a capability and competency based perspective, when firms collaborate to develop and realise business opportunities (Ghisi, da Silveira, Kristensen, Hingley, & Lindgreen, 2008). Alliances are strategies that are put in place to overcome resource allocation problems that each individual firm would have difficulty solving. Alliance firms combine individual resources and competencies to obtain unique resource positions or enhance operational efficiencies to generate a sustainable competitive advantage (Mitsuhashi & Greve Insead, 2009).

The alliance usually takes the form of a formalised arrangement like a joint venture or a specifically designed arrangement resulting in a long term relationship that realises the firm's mutual importance to each other (Ghisi, da Silveira, Kristensen, Hingley, & Lindgreen, 2008). Alliances allow firms to properly co-ordinate their joint activities in addressing their individual lack of resources and capabilities. Relational co-ordination of sequential activities ensures manufacturing productivity and increases product innovation through knowledge sharing and improved sourcing of collective resources (Mesquita & Lazzarini, 2008).

Alliances perform a critical role for interdependent and non-integrated firms that work together to ensure access to resources and achieve the competencies necessary to survive and succeed. Alliances support the fragility and lack of structural resources that small and medium sized firms endure by providing access to markets, understanding customer needs, providing access to competitive information and creating first mover advantages in the identification of market gaps (Ghisi, da Silveira, Kristensen, Hingley, & Lindgreen, 2008). Alliances enable firms to serve the same production or service delivery capacity with fewer resources and to obtain greater capacity than they would be able to serve solely with their own resources (Mitsubishi & Greve Insead, 2009). The collective efficiencies born out of alliances in the articulation and creation of distinct inter-firm resources and competencies allow firms to develop competitive advantage and access to global markets (Mesquita & Lazzarini, 2008).

Notwithstanding the difference in formulation of firms' strategies arising from the three theoretical frameworks discussed, the importance and resultant benefits of collaborative networks across the theoretical frameworks are common. From any one or more of the theoretical perspectives, collaborative networks are advocated as a means of sustaining competitive advantage for firms seeking market share in a global economy with unpredictable market conditions. Understanding the intricacies of a particular collaborative network and its adoption and implementation as a strategic choice necessitates an in-depth understanding into what it means to collaborate. To collaborate firms are required to embrace new business processes, new business models and ways of working together with other firms to harness opportunity.

To effectively collaborate necessitates an understanding of the collaborative organisation, the design of the new business model of working together as defined by the core components of the collaboration model. Understanding the collaborative organisation requires a focus on the components that determine the interactions among the autonomous entities, the roles of entities, the value system of the

collaborative network and the emerging collective behaviour of the network participants (Shuman & Twombly, 2010).

## 2.4 Components of Collaborative Networks

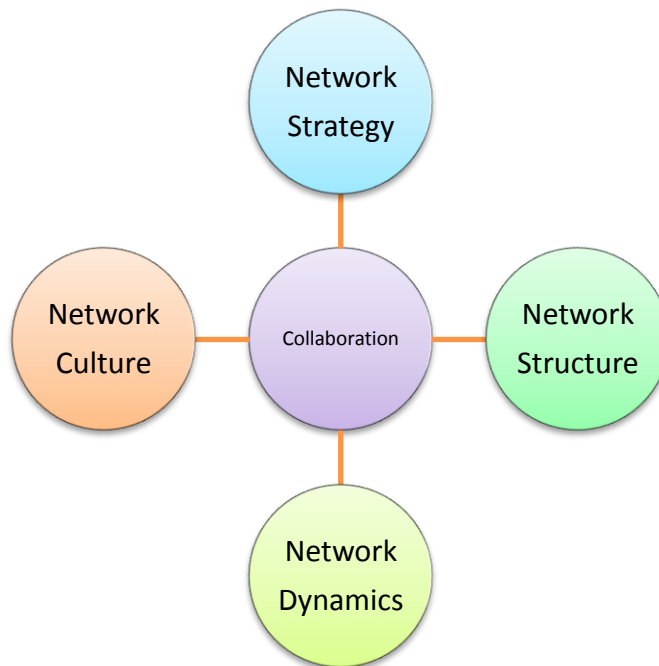
Collaborative networks are not universal in form and the different characteristics of collaboration within each type of collaborative network define the collaborative enterprise as a distinct mode of organisation (Camarinha-Matos & Afsarmanesh, 2005). Dependent on the organisational design, firms may organise themselves into one or more types of collaborative networks, i.e. supply chain, extended or virtual enterprise or cluster. The organisational design that firms in a collaborative network share ensure that certain activities and resources are present in order to complement and enhance one another's capacity for mutual benefit and thereby create a common purpose by sharing risk, responsibilities and rewards (Bititci, Martinez, Albores, & Parung, 2004).

Upon understanding the importance of collaborative networks for competitiveness and sustainability and in seeking to reap the benefits of collaboration, firms rush into collaborative networks without understanding that the success or failure of the collaborative network hinges on the ability of people to collaborate. Whilst there is much literature on the importance and benefits of collaborative networks, there are empirical studies that have shown that collaborative networks have also failed (Abreu, Macedo, & Camarinha-Matos, 2009).

To create successful collaborative networks, a study of the organisational design is required (Shuman & Twombly, 2010). To study collaborative networks is to “focus on the structure, behaviour and evolving dynamics of networks of autonomous entities that collaborate to better achieve common or compatible goals” (Camarinha-Matos & Afsarmanesh, 2005, p. 440).

The key to collaborative networks is an understanding of the components necessary for collaboration regarding the network strategy, network structure, network dynamics and network culture. While the composition of each of the components within the network may vary, the components are essential in the creation, management and on-going maintenance of collaborative networks. The network strategy, network structure, network dynamic and network culture defines the ambit of the collaborative network, as depicted in the diagram below.

**Figure 3 Components of Collaborative Network**



#### **2.4.1 Collaborative Network Strategy**

Within the collaborative network, the firms recognise that they are autonomous and independent in terms of management and operations but they are also interdependent in the pursuit of a common goal. In pursuing the common goal the firms realise that no single firm is able to act in isolation and that the firms must work together to achieve the benefits arising from collaboration (Mohannak, 2007). The firms therefore within the network process work in bringing together the complementary skills of partner firms to enable the network unit to achieve collective efficiencies and competitiveness (Bretherton & Chaston, 2005). The collaborative network strategy is the unique interaction of firms in co-operating or establishing strategic alliances. The network firms pool their resources, capabilities and skills at various stages and refocus them into collective action to achieve collective efficiencies (Mohannak, 2007). Collective efficiencies enable firms trapped in low profit/low innovation environments to develop product/service specialisation and differentiation within a network environment (Davies, 2001). The collaborative network strategy leads to a positional advantage of either differentiation or cost-benefits that result in sustainable competitiveness and superior performance for each of the network firms that cannot be achieved by either of the firms acting individually (Bretherton & Chaston, 2005).

Research and case studies on collaboration, co-operation and inter-firm relationships/ networks/ alliances (collectively labelled 'collaborative networks') (Westerlund & Rajala, 2010; Huggins, 2010; Jorgensen & Ulthoi, 2010; Chetty & Stangl, 2010; Johnsen, 2007; Bretherton & Chaston, 2005 & Beckett, 2005) confirm that the establishment of collaborative networks are essential for the development of firms' competencies and capabilities in ensuring the firm's competitiveness and sustainability. Collaboration provides participants to the network who are able to access to new and improved resources, technical skills and systems necessary to place the firm in a position of expedited entry to foreign markets, to establish economies of scale, provide amortisation of product and service cost, encourage risk sharing and enhance individual capabilities such as managerial skills and functional knowledge (Bretherton & Chaston, 2005; Huggins, 2010 & Chetty & Stangl, 2010).

Through collaborative networks firms establish a strategy of longer term relationship building for the development of the firm's competencies, such that network participation has significant implications for the firm's innovativeness and competitiveness (Westerlund & Rajala, 2010). In adopting a strategy of collaboration firms gain the ability to position themselves in the trade-off between market-related transaction costs and high costs related to internal development of industry knowledge (Mohannak, 2007). Firms enhance their product co-innovation through explorative learning orientation (Westerlund & Rajala, 2010); firms become innovative as they absorb new technologies, develop joint projects and share human and material resources (Jorgensen & Ulhoi, 2010).

Pittaway et al. (2004) in reviewing 174 studies linking innovation and network behaviour of firms identified six innovation benefits that firms received from their networks:

1. Risk sharing;
2. access to new markets and technologies;
3. commercialisation speed;
4. accumulation of complementary assets;
5. protection of property rights; and
6. the role networks play as avenues to external knowledge.

These benefits confirmed that the process of innovation for small and medium sized firms relies on firms adopting an organisational structure and establishing ways of



working to acquire knowledge and other resources from the collaborative networks (Chetty & Stangl, 2010).

By defining the organisation and ways of doing business through collaboration, firms establish an environment of learning and social interaction. The collaborative environment promotes innovation and entrepreneurial activities such that firms within the network access opportunities to become increasingly entrepreneurial and continuously innovative by exploring new markets (Jorgensen & Ulhoi, 2010). As a consequence of the ability to collaborate, firms develop long term business relationships with distributors, suppliers, competitors and government. Collaborative networks encourage firms to re-engineer their operations and productions, to integrate themselves into networks and to adopt a culture of knowledge and information sharing that leads to collective efficiencies (Davies, 2001).

#### **2.4.2 Collaborative Network Structure**

The collaborative network consists of relationships among a set of actors (the participants) linked by some method (an organisational system) through which the firms and people that are members of the network come together and manage themselves towards the achievement of the common purpose (Shuman & Twombly, 2010). The collaborative network is structured as an orchestration over the activities of the actors, identifying roles for the actors with governance rules defining the boundaries between the actors *per se* and the actor and the network (Vasilchenko & Morrish, 2011). Collaborative networks allow firms to be organised towards the achievement of a common goal, that is replacing traditional markets and integrated hierarchical organisations (Westerlund & Rajala, 2010); creating a climate of business linkages that are formulated towards a culture of mutual trust and co-operation towards the achievement of innovation and growth (Davies, 2001).

Firms may organise themselves into both internal and external networks, namely internal relations and networks that are connected to the dynamic networks of external businesses through parallel and flexible linkages with a shared set of collective outcomes (de Klerk & Kroon, 2008). Firms may organise themselves into networks on an industry level with firms in the same sector which perform complementary activities (vertical collaboration), and/or on a sector level with competitors performing similar activities to improve their economies of scale (horizontal collaboration) and/or on its own level of connections arising within the business (social networks) (Davies, 2001).

Within these different levels of collaboration, different relationships exist and these may range from arm's length relationships with no co-operation and low levels of trust and commitments, to strategic alliances and partnerships with high levels of co-operation, trust and commitment (Shuman & Twombly, 2010).

Most networks are structured by an entity that takes a leadership role, a network organiser who establishes the governance structure for what firms can and cannot do within the network. The network organiser also selects the participants within the network in terms of established criteria for participation guided by the activities of the network. The network organiser acts as the co-ordinator of the firms and their resources in achieving the desired collaboration. As representative of the collaborative network, the network organiser must represent the interest of all network members, must develop a common vision of success and present a holistic view of the relationships in the network. As team leader, the network organiser must develop the collaborative capability and capacity of the network through shared learning, proactively developing skills and appropriate behaviour (Shuman & Twombly, 2010).

The collaborative network structure is the organising mechanism through which the network participants converge and govern themselves. While each network participant will have its own unique reason for participation, the critical success factor for network participation is the balance between co-operation and competition. The network organiser establishes a clear indication of the boundaries of interaction of the network firms and an agreed level of quality in terms of output and governance structures (Shuman & Twombly, 2010). The governance system must consist of both structural and behavioural components (Beckett, 2005). The structural components must include management structures, defined roles and responsibilities and decision making authority. The behavioural components must include communication protocols, conflict resolutions and process protocols (Camarinha-Matos & Afsarmanesh, 2008).

Jarillo (1998) argued that successfully structured collaborative networks result in the formation of strategic alliances; relationships that enable firms to innovate and to gain or sustain competitiveness through increased co-ordination of their activities (Johnson, 2007). Strategic alliances normally develop from long term stable relationships formed by firms in the same industry and by firms across industries that perform strategically chosen divergent operations along value chains (Srivastava & Singh, 2010). Alliances are important for small and medium sized enterprises who in general have limited capital, human resources, information and technology (Tambunan, 2009). The structure of firms in alliance result in the sharing of power, resources, expertise,

knowledge or technology to create mutually beneficial outcomes that meets the needs of all parties involved (Mitsubishi & Greve Insead, 2009).

The alliance is often led by a focal firm and comprises of representatives of all firms. The focal firm encompasses a range of support activities and these include among others, identifying and attracting other firms into the network, acting as a champion on behalf of the group of firms, sustaining network relationships by managing conflicts, or developing collective strategies for the positioning of firms within the network (Johnson, 2007). The focal firm acts as the structuring agent, co-ordinator, advisor, information broker, relationship broker or innovation sponsor (Shuman & Twombly, 2010). The focal firm thus influences the dynamics and relationships in the alliance. The focal firm is normally the manufacturer or the firm with the most influence in the network or in some instances a government body.

In developing countries where the presence of small and medium size firms constitute a hindrance to exploiting market opportunities, achieving economies of scale and internalising many of the functions that favour sustainability (Lorentzen, Robbins, & Barnes, 2005), collaborative networks in the form of strategic alliances or clustering are frequently favoured as strategies to make for enhanced competitiveness (Davies, 2001). Clusters are created by macro-economic measures and government policy making as a means of stimulating the industry and increasing business competency for participating firms through mechanisms established which promote an environment for business, stimulating inter-firm co-operation, information sharing, advisory services, technology training and research and development (Beckett, 2005).

Governments foster the development of clusters within industries in terms of facilitation and resource allocation, co-ordinating cluster-related activities and acting as the manager of the cluster process (Brunetto & Farr-Wharton, 2007). As the network organiser and co-ordinator of collaborative activities, government invests considerable resources in the establishment, management and governance of industry clusters (Cowan & Jonard, 2009). Industrial clusters are a geographic concentration of interconnected firms and institutions in a particular industry, who agree to collaborate.

The cluster is a network of vertical and horizontal relationships that engage in an array of domestic linkages that stimulate learning and innovation and value chain linkages that provide just in time lean production and movement through the supply chain among synergistic interdependent firms (Waite & Williams, 2009). Inter-firm linkages between large and small firms result in collective efficiencies and the promotion of

small and medium sized business development (Davies, 2001). Firms within a cluster depend on the personal relationships, face to face communications and networks of individuals and institutions that interact (Beckett, 2005). Formal and informal organising mechanisms and cultural norms often play a role in the functioning and development of clusters, however it is the collaborative culture that builds the cohesive relationships between competing firms that lead to co-operative behaviour among firms (Waite & Williams, 2009).

In ascertaining the collaborative intensity of firms within a network, firms need to determine the following:

1. the degree of fit between the collective resources and the outcome/ activities of the network,
2. the co-operation ability and willingness of the firms within the network, and
3. the entrepreneurial capability of the network to create competitive advantage or create new business opportunity.

The intensity of the collaboration necessary is dependent on the nature of the resource leverage sought. The more firms can co-operate effectively within the network and utilise the network resources efficiently, the more firms gain from the collaborative network (Srivastava & Singh, 2010). The success of the collaborative network is based on the relationship of the network participants and not on the ownership of resources (Shuman & Twombly, 2010).

Collaborative networks are therefore organisational structures that have definite distinguishing factors in terms of relationships of co-operation and strategic alliance (Camarinha-Matos & Afsarmanesh, 2005). Collaborative networks should therefore be treated in the same way as one would treat any other business relationship. Furthermore, the management of the network would need to be developed and improved constantly (Bititci, Martinez, Albores, & Parung, 2004).

### **2.4.3 Collaborative Network Dynamics**

Collaborative networks are dyadic relationships between multiple actors, formed for various reasons that may take on different forms depending on how firms make sense of their environments, their identities and shared meaning in terms of which concerted action can take place. The network's members may therefore co-ordinate and relate their resources toward joint action either in terms of horizontal collaboration, vertical

collaboration, value delivery networks, strategic alliances or clusters (Valkokari & Helander, 2007). The dynamics of each collaborative network is unique as determined by the complexity and interdependencies of the network participants and the management of process and practice towards the achievement of the common goal.

In seeking to understand the dynamics of various collaborative networks, Camarinha-Matos and Afsarmanesh (2005) categorised the many definitions, formal theories and modelling tools of collaborative networks into certain manifestations of collaborative networks as discussed in this research report.

Horizontal collaboration occurs between firms that are independent and non-integrated, who occupy the same position in the value chain and co-operate to access resources and competencies from the network (Camarinha-Matos & Afsarmanesh, 2008). Horizontal collaboration supports the fragility and lack of resources that accompany small and medium sized firms by providing access and control of the market, supplying competitor information and identifying market gaps (Ghisi, da Silveira, Kristensen, Hingley, & Lindgreen, 2008). Firms co-operate to realise economies of scale beyond the reach of the individual firm, bulk purchased inputs, optimal scale in the use of machinery and pool together their production capacities to satisfy large scale orders (Tambunan, 2009). Horizontal collaborative networks facilitate workforce training and development, provide market power for firms and lead to higher performance, shared goals, reduced cost, exchange experience and thereafter achieve results that positively impacts on competition (Ghisi, da Silveira, Kristensen, Hingley, & Lindgreen, 2008).

Vertical collaboration occurs where firms co-operate along the value chain to improve on both product and process innovation for purposes of responding to clients' needs more quickly, to capture new markets, to achieve productivity gains and to achieve cost reductions that indirectly affect market position (Chetty & Stangl, 2010). Vertical collaboration may take the form where firms in the network relate their activities to each other in a sequential fashion, where one firm's input is another firm's output. This type of interdependence occurs among firms in a supply chain, where the performance of a particular activity (e.g. assembly) depends heavily on the performance of upstream stages (e.g. production of components) (Mesquita & Lazzarini, 2008). Firms attain manufacturing productivity through vertically co-ordinating their sequential activities and jointly developing competencies to manage their supply chain, in this way facilitating cost based competitiveness.

Some networks are goal-orientated, where intense collaboration towards a common goal is practiced among their partners (called virtual organisations), while other networks are long-term strategic alliances of co-operation and interdependence (called virtual breeding environments) (Camarinha-Matos & Afsarmanesh, 2008). Virtual organisations represent “a temporary alliance of organisations that come together to share skills or core competencies and resources to better respond to an identified collaborative opportunity and then dissolve when their goal has been achieved” (Mitsuhashi & Greve Insead, 2009, p. 979). Virtual breeding environments represent “an association or pool of firms and their related supporting institutions, adhering to a base long term cooperation agreement, and adoption of common operating principles and infrastructures with the aim of offering the conditions and environment for rapid and fluid configuration of collaborative networks, when opportunities arise” (Romero, Galeano, & Molina, 2009, p. 4692). Virtual breeding environments take the form of alliances or clusters.

Klapwijk (1997) argued that clusters are important for the improvement of developing industries as clusters facilitate higher productivity through the active involvement of industry firms in the innovation of products and production processes (Tambunan, 2009). Clusters offer unique opportunities for firms to engage in a wide array of domestic linkages between users and producers and between the knowledge producing sector and the goods and service producing sectors of the economy to collaborate and create increased value through learning and innovation (Waite & Williams, 2009). Clusters give rise to a collective learning process, where ideas are exchanged and developed and knowledge is shared among firms in an attempt to improve product quality, upgrade technology and migrate to more profitable market segments (Tambunan, 2009).

A cluster consists of many networks which are linked together through vertical and horizontal relationships. In a vertical dimension there is clustering of synergistic interdependent firms (suppliers, main producers and users) in a value chain of a certain product, where the focal firm dominates the cluster whilst the other firms are more often involved in a co-operative arrangement as suppliers (Waite & Williams, 2009). In a horizontal dimension there is clustering of same sector firms who co-operate and combine complementary resources to achieve accelerated innovation, reduced transaction cost and greater access to markets (Waite & Williams, 2009).

Value delivery networks consist of firms that that are involved through upstream and downstream linkages in the different processes and activities that produce value in the

form of products and services in the hands of the consumer (Srivastava & Singh, 2010). A value delivery network consists of the firm, suppliers and distributors who partner with each other to improve the performance of the entire system. A value delivery network is a co-ordinated process where the firm shares information, resources and responsibilities to jointly plan, implement and evaluate a programme of activities to achieve a common or compatible goal (Romero, Galeano, & Molina, 2009). Value delivery networks are collaborative networks that result in cost reduction and improvement in the quality and functional value of the offering (Srivastava & Singh, 2010).

A growing trend in collaboration is the establishment of global manufacturing virtual networks, a new type of vertical and horizontal collaboration among production centres and manufacturing firms who may also be competitors. Global manufacturing virtual networks allow independent, outlying firms to focus on their core competencies whilst participating in the joint design and simulation of the various components in a manufacturing process (Monroy & Art, 2010). This type of collaboration ensures that the main company does not need to maintain internal manufacturing resources to cope with unpredictable variations in demand and responds to market demands more efficiently. Global manufacturing virtual networks result in (1) the internationalisation of the manufacturing process such that the manufacturing process is no longer considered a single production centre, (2) the supply and value chain is based on the relations with the various components of the virtual network and designed specifically with regard to a client or product and (3) the network relationship is based on managing and sharing the resources available in the network (Monroy & Art, 2010).

Due to the typology and dynamics of the network, some common patterns can be observed in the various manifestations, as all collaborative networks display networks of autonomous entities located in different positions, who are driven by common goals to be achieved by collaboration and who interact with each other based on agreed upon principals and governance structures (Camarinha-Matos & Afsarmanesh, 2005). It is also clear that collaborative networks are important for firms to develop the resources and competencies necessary to facilitate competitiveness. The success of the collaborative network is dependent on strategy, structure and dynamics as well as the relationships within the network. The achievement of a level of maturity in co-operating to overcome the many barriers of working with suppliers, distributors, competitors, government and various other stakeholders in establishing a level of commitment to the collaborative network results in a complex system of

interdependence that leads to competitiveness for the firms within the collaborative network.

#### **2.4.4 Collaborative Network Culture**

To achieve alignment to the unifying purpose, the value proposition, the structure and the strategy of the collaborative network, the firms within the network must develop mechanisms, structures, processes and skills for bridging interpersonal differences and achieving real value from the collaborative network (Bretherton & Chaston, 2005). The network should seek to achieve integration in terms of strategic fit, strategic direction and shared values (Beckett, 2005). Governance principals, including the management structures, the roles and responsibilities, the communication protocols and the decision making within the network must be agreed to by the firms (Shuman & Twombly, 2010). In addition, transparency and accountability principals must be established to create an environment that is conducive to effective collaboration (Bititci, Martinez, Albores, & Parung, 2004).

Participation in collaborative networks is associated with risks that are either relational risks and/or performance risks. Relational risks refer to the probability that the relationship itself will break down while performance risk centres on the probability of not achieving the intended strategic goals even when the relationships are sound (Bretherton & Chaston, 2005). In terms of the flow of knowledge, without effective knowledge management, knowledge may flow more freely out of the network than in to it. As firms within the network become increasingly aware of each other's' knowledge negative network effects may emerge, thereby locking firms into low value and unproductive networks, stifling the creation of new knowledge and innovation (Huggins, 2010).

In overcoming these risks, the existence of social capital has been identified as a vital mechanism to bring organisations together (Mohannak, 2007). The term social capital is defined as “those features of social organisation, such as trust, norms and networks that can improve the efficiency of society by facilitating co-ordinated actions” (Waite & Williams, 2009, p. 501). Social capital in the form of collective goal orientation and shared trust is seen as the facilitator of successful collective action. Successful collective action arises from a sense of collectivist culture through interactive processes based on trust, willingness to share and mutual beneficial exchanges over time



(Mohannak, 2007). Successful collaborative networks are characterised by the existence of shared norms and values and high levels of trust (Waite & Williams, 2009).

Trust is a crucial dimension of social capital within the individual firms, but also an important element in effective collaboration and critical to the success of collaborative networks (Waite & Williams, 2009). Trust might be based on the competencies of the firms in terms of good will and long-term open commitments or trust can be contractually based on an agreement (de Klerk & Kroon, 2008). Trust has been recognised as a moderator of social behaviour by reducing opportunistic behaviour and creating joint norms of reciprocity among members of a group or organisation (Jorgensen & Ulhoi, 2010). To support the building of trust within a network there must be communication between the partners; communication that is personalised and intimate, frequent and complete (Beckett, 2005).

The presence of trust generates a willingness to overcome organisational differences, to work through difficulties and encourage openness in exchanging ideas and information (Mohannak, 2007). High degrees of trust have been shown to enhance collaboration which subsequently allows for greater openness in knowledge exchange and successful exploitation of entrepreneurial opportunities (Brunetto & Farr-Wharton, 2007). As organisations have full confidence in each other and the network, there is less time required to monitor for potential defective behaviour and thus more time can be invested in the pursuit of common goals (Jorgensen & Ulhoi, 2010).

When trust does evolve there is emphasis on the welfare of the network. As a consequence a culture of co-operation permeates and trust becomes the basis of reciprocal benefit for firms within the collaborative network (Waite & Williams, 2009). Collaborative culture based on trust, co-operation and shared goals plays a role in the effective functioning and development of networks and binds firms into value adding relationships (Bititci, Martinez, Albores, & Parung, 2004). Collaborative culture comprises of all the firm's belief, knowledge, attitudes and customs towards a supportive and positive behaviour to enhance the network capabilities and the willingness to adapt for developing competitive advantage (Romero, Galeano, & Molina, 2009).

The manifestations of collaborative networks are many; each collaborative network is unique in terms of its strategy, structure, dynamics, and culture. Each collaborative arrangement is dependent on the shared meaning and purpose within the collaborative network as defined by the ambit of the interdependent components of collaboration.

Each collaborative network is a fit for purpose organisation designed to meet the common goals, with the agility to change as the purpose and context evolves.

## 2.5 Competitiveness of Collaborative Networks

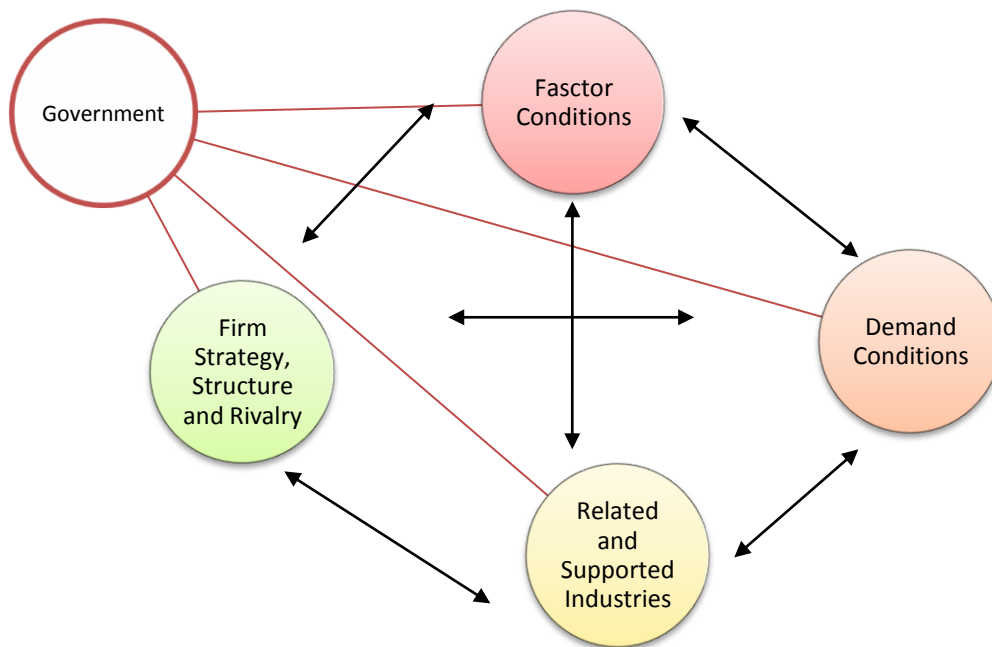
A universal definition for competitiveness does not exist. As a result competitiveness can be defined in multiple ways depending on the values that are important to organisations (Feurer & Chaharbaghi, 1994). Krugman (1994) referred to a very simplistic definition of competitiveness as the ability of the unit of analysis to sell its products profitably, however he argued against the use of the simplistic analysis when considering industry competitiveness and implied that the measurement of industry competitiveness was varied and should consider the environment of possible influencing factors, such as growth or decline in productivity, and government policies (Krugman, 1994). Porter asserted that industries within nations compete and defines competitiveness in terms of the capacity of the industry to innovate, improve and thus maintain a sustainable competitive advantage (Davies, 2001).

Porter developed the “Diamond Model” of national advantage in 1990. The Diamond Model assesses the industry dynamics that improve a firm’s performance externally based on its potential to create sources of advantage by examining four conditions which together influence the success of a nation’s firms and which four factors are also influenced by government policies (Porter, 1990). The interaction between the four conditions relate to factor conditions in terms of the nation’s access to resources, demand conditions in terms of the evolving needs of customers, related and support industries that facilitate industry competitiveness and the structure of the industry in terms of firm strategy, structure and rivalry (Davies, 2001). The Diamond Model originates from Porter’s research on competitive advantage, which indicates the effectiveness of clustering, a manifestation of a collaborative network in enabling an industry’s resources to be fully exploited. It would appear that Porter’s Diamond Model is fitting of alignment to the interdependent components of collaborative networks in analysing collaborative networks as a means of competitiveness for the Automotive Industry in South Africa.

### 2.5.1 *Aligning the Diamond Model with the Components of Collaborative Networks*

Porter concluded that due to various national characteristics, nations cannot succeed in all industries and thus it is important to identify and develop their internationally competitive industries. Nations are most likely to succeed in industries or industry segments where the Diamond Model determinant conditions are most favourable (Porter, 1990). The four major competitiveness determinants are summarised below and their theoretical relationship is shown in Figure 1.

**Figure 4 Porters Diamond of National Competitiveness**



(Modified from Porter, 1990, p77)

The Diamond Model is a mutually reinforcing system in which all the determinants are contingent on each other. The determinants interact with each other and the role of any one of the determinant conditions cannot be viewed in isolation (Porter, 1990, p. 99).

Similarly the success of the collaborative network is dependent upon the interdependent components of the collaborative network in terms of the network strategy, the network structure, the network dynamic and the network culture. The collaborative arrangement is dependent on the shared meaning and purpose within the

collaborative network as defined by the ambit of the interdependent components of collaboration.

#### *2.5.1.1 Factor Conditions*

Factor conditions relate to resources as primary inputs. The basic factors of production are a necessary condition to compete in an industry, which include:

- Human resources: the quality and quantity of skilled labour, the cost of personnel and the labour skill variety.
- Physical resources: “the abundance, quality, accessibility, and the cost of the nation’s land, water, mineral, or timber deposits, hydroelectric power sources, fishing grounds, and other physical traits” (Porter, 1990, p. 74).
- Knowledge resources: the market, scientific and technical knowledge residing in a nation’s research institutions that support industry.
- Capital resources: the availability and cost of capital to finance firms. Capital resources can be affected by the rate of savings and national capital market structure.
- Infrastructure: the availability and quality of infrastructure, including communication systems, transportation systems, geographic location and the stability of financial institution, health care and so forth (Porter, 1990).

Porter concludes that for “an industry to support competitive advantage, the factor inputs must be highly specialised to the industry needs” (Porter, 1990, p. 78).

The factor condition for collaborative networks is the ability of autonomous entities to organise and bring together the strategic complementary skills and resources of firms (Huggins, 2010) as a means of developing competitive advantage. The competitive advantage is the ability to access resources and capabilities not owned in sufficient measure by any one of the network participants (Varadarajan & Cunningham 1995), for purposes of achieving industry innovation and effectiveness and improved economic value in the form of improved product quality and production process resulting in increased market activity (Jorgensen & Ulhoi, 2010 and Thorgren, Ortqvist and Wincent, 2009).

#### *2.5.1.2 Demand Conditions*

Demand conditions refer to differing consumer preferences or demand conditions for the industry’s product or services. Consumer demand drives innovation. The

development of new products which shape the rate and character of improvements by firms leads to enhanced industry competitiveness. Porter discussed demand conditions through three general attributes:

- The nature and composition of buyers' needs: the home demand determines how firms perceive, interpret and respond to buyers' needs. Buyers' needs pressurise firms to innovate faster and achieve more sophisticated competitive advantage.
- The size and growth rate of home demand: the size of the market can be considered to be strength as it leads to economies of scale and may force firms to export where there is limited local demand for the product or service.
- The transferability of domestic demand into foreign markets.

Porter concluded that "having sophisticated and demanding local customers or customers with unusual intense needs for specialised varieties also in demand elsewhere leads to dynamic firms that continuously innovate and are a stimulus for investment" (Porter, 1990, p. 99).

The demand condition for collaborative networks is the consumer and the need of the firm to respond to market conditions more effectively. The collaborative network addresses demand conditions by facilitating the development of relationships between firms in the same industry and across different industries to co-ordinate individual firm performance across the value chain in meeting customer's needs (Srivastava & Singh, 2010). In collaborating to meet customers' needs firms leverage off the strengths of the combined resources and capabilities of the collaborative network and gain expertise and knowledge that achieve economies of scale, market opportunities and the internalisation of the functions that favour industry competitiveness and sustainability (Lorentzen, Robbins, & Barnes, 2005).

### *2.5.1.3 Related and Supporting Industries*

Related and supporting industries include parts and service suppliers and distributors in the supply chain. The presence of related and supporting industries creates advantages in downstream industries in several ways:

- Provide "efficient, early, rapid and preferential access" to basic inputs and production needs (Porter, 1990, p. 101);
- The ability to exchange upstream information and transfer technology between supporting industries, including close co-operation with regard to demand

forecasting, detailed supplier requirements and scheduling that provide for just in time, lean production and kanban systems prevalent in Japanese industries (Davies, 2001);

- The establishment of close working relationships between suppliers and industry in establishing new methods of production and applying new technology thereby providing easy access to information, new ideas and insight and to supplier innovations.

Porter concluded that having a competitive home supplier industry facilitates “proximity of managerial and technical personnel, along with cultural similarity, tends to facilitate free and open information flow and transaction costs are reduced” (Porter, 1990, p. 103).

To achieve competitive advantage, related and supportive industries engage in networks on industry level with firms in the same sector grouping resources and skills and performing complementary activities at various stages in the value chain. The collaborative networks lead to improve both product and process innovation for purposes of answering clients’ needs (demand conditions) at a faster rate to achieve productivity gains and to achieve cost reductions that indirectly affect market position (Chetty & Stangl, 2010). This leads to positional advantage for the firms that result in sustainable competitive advantage and superior performance that could not be achieved by either firm individually in meeting demand conditions (Srivastava & Singh, 2010).

#### *2.5.1.4 Firm Strategy, Structure and Rivalry*

Firm strategy, structure and rivalry is discussed by Porter in reference to how firms are created, managed and how they operate given the domestic demand conditions, factor conditions and supporting industry situations. Domestic rivalry is encouraged as an impetus to competitiveness as it creates pressure for firms to be innovative, to improve productivity and inevitably to improve firm competitiveness in the industry (Davies, 2001). Porter concluded that fierce domestic rivalry “force firms to innovate in ways that upgrade the competitive advantages of nation’s firms to seek higher-order and more sustainable sources of competitive advantage in finding proprietary technologies, reaping better economies of scale and creating international marketing networks in order to grow.” (Porter, 1990, p. 120)

The firm strategy structure and rivalry in collaborative networks is a balance between collaboration and competition. The boundaries of collaboration must be defined and agreed in terms of the governance structures, to result in a culture of trust among network participants. The network participants, whilst recognising their autonomy and independence, must also recognise their interdependence as participants in the pursuit of collective efficiencies. As a consequence the firms in a network are able to work together to achieve the benefits arising from collaboration (Mohannak, 2007).

### **2.5.2            *The Influencing Role of Government Policy***

Government policies play an important role in achieving economic and political stability. Government policy can influence each of the core components of the collaborative network either positively or negatively, very much the same as government policy can influence the conditions of the Diamond Model. As Porter (1990) explained, government policy can affect factor conditions by imposing subsidiary policies, capital market regulations and educational policies. Governments also influence domestic demand conditions by establishing product standards or regulations that direct customer needs (Porter, 1990). Competition laws, tax policy and other regulatory statutes affect both supporting industries and firm structures and strategies. Likewise government policies can be influenced by the determinants of the Diamond Model. Government must therefore be viewed as an influence on the competitiveness of industries (Porter, 1990).

The World Bank (2004) promotes the role of government as a facilitator of industry competitiveness, because governments traditionally are institution builders in creating efficient incentive structures to remove systemic and market inefficiencies (Morris, Robbins, & Barnes, 2012). Government policies are a necessary catalyst in the relentless improvement and innovation in old industries and aid in building capacity to successfully compete in new industries (Porter, 1990). Government policies create collaborative mechanisms, forums of dialogue and supply supporting structures and incentives aimed at fostering industrial competitiveness. Government interventions have a distinct role to play in promoting an environment of business, stipulating inter-firm co-operation, industry collaboration, providing information and advisory services, training, research and development and technology innovation to facilitate and solidify competitiveness for the country (Morris, Robbins, & Barnes, 2012).

### **2.5.3            *Competitiveness of Collaborative Networks***

In collaborative networks firms are not in rivalry and competition with each other but rather align their respective strategies and structures to a common purpose or goal. In collaborating with each other towards the common benefit or goal, firms move beyond individual thinking to sharing knowledge and information and collaborating on product development and processes in an attempt to achieve benefit for all within the network (Camarinha-Matos & Afsarmanesh, 2008). Inter-firm collaboration thus facilitates sharing that enhances resource capabilities, thereby creating an enabling environment that satisfies customer needs through product differentiation, superior quality and cost benefits. Collaborative networks facilitate the development of related and supporting industries by fostering a culture of collective learning and collective appropriation of skills and capabilities to achieve innovation and growth. Collaborative networks achieve competitiveness for the industry (Johnson, 2007; Romero, Galeano & Molina, 2010; Srivastava & Singh, 2010 and Shuman & Twombly, 2010).

Government policy is critical in establishing the correct environment for industry competitiveness. Government policy is instrumental in encouraging collaboration among industry participants and is necessary in influencing the industry's competitiveness (Morris, Robbins, & Barnes, 2012).

## **2.6    *The South African Automotive Sector***

The Manufacturing sector is important to the South African economy as it contributes over 20% of the national gross domestic product (GDP); over half of all exports and is the second largest employer in the economy (Media Club South Africa, 2012). The Automotive Industry is the leading and largest manufacturing sector in the domestic economy and is a significant earner of foreign currency. Not only is the Automotive Industry important within the larger manufacturing sector of South Africa, it is also a significant creator of permanent jobs and attracts large sums of long term Foreign Direct Investment (South Africa Info, 2012).

### **2.6.1            *The South African Automotive Industry***

The South African Automotive Sector is relatively insignificant compared to total global automotive production, comprising only 0.7% of global vehicle output of 73 million units in 2007 (Naamsa, 2007). Despite the insignificance on a global level, the Automotive



Sector is of national importance to the South African economy because it contributes 7.5% of the country's GDP and employed around thirty six thousand people in 2007 (Barnes & Morris, 2008). South Africa currently exports vehicles to over 70 countries, mainly Japan (about 29% of the value of total exports), Australia (20%), the United Kingdom (12%) and the United States of America (11%). The complement of South Africa's Africa export destinations include Algeria, Zimbabwe and Nigeria, to name but a few (South Africa's Automotive Industry, 2012).

All the major vehicle manufacturers such as BMW, Ford, Volkswagen, Daimler Chrysler and Toyota have production plants in South Africa. Also, South Africa has plants for eight of the world's top 10 automotive component manufacturers and three of the four largest tyre manufacturers have operations in South Africa (Media Club South Africa, 2012). The Automotive Industry supplies both international and local markets and is largely located in the Eastern Cape and Gauteng provinces (South Africa's Automotive Industry, 2012). These multinational organisations are placed to take advantage of low component production cost coupled with access to new markets as a result of friendly trade agreements with the European Union and the South African Development Community's free trade area (Media Club South Africa, 2012). During the period between 2000 and 2006 the industry's investment in production and export infrastructure amounted to R6.2 billion, whilst expecting the capital investment for 2008 to be around R4 billion (South Africa's Automotive Industry, 2012). Most of the industry's investments have been in the form of Foreign Direct Investment from parent companies of local car manufacturers' expanding local operations to improve production capacity, export facilities and supporting infrastructure (South Africa's Automotive Industry, 2012).

Barnes and Morris (2008) divided the Automotive Industry into three broad sectors. The first group is the original equipment manufacturer (OEM) or vehicle assemblers, the companies that manufacture and assemble the vehicles and related products that are purchased and used by the end consumer. The second group is the automotive component manufacturers (the tier 1 and tier 2 suppliers) that produce automotive component parts and accessories that are used in manufacturing the vehicles through established manufacturing channels. The third group is the independent aftermarket segment, companies that sell their products, automotive accessories and services through independent retailers and repair shops (Barnes & Morris, 2008).

Globally the motor industry is characterised by the formation of deep and longer term relationships with few suppliers. Industry participants within the motor industry have a

high degree of co-operation in the areas of design and development, quality and cost containment. The OEM's have moved towards modular production where tier 1 and 2 suppliers supply them with complete segments rather than individual components (Liker & Choi, December 2004). In contrast to the traditional approach of an OEM having a number of suppliers of a particular component and playing the one off against the other, the OEM's now only have a minimum number of large multinational tier 1 suppliers that develop and supply critical components and services to the OEM.

The tier 1 suppliers in turn transfers sourcing responsibilities for chemicals and material supplies to a large group of tier 2 and 3 suppliers for the production of the particular panels that address the OEM's needs (Barnes & Morris, 2008) The tier 1 suppliers have now become system integrators with well-developed customer capabilities rather than simply being the component manufacturer (Liker & Choi, December 2004). The net result for the Automotive Industry is reduced fixed overheads for the OEM's but increased overheads and the need for scale economies at component manufacturers (Barnes & Morris, 2008). The collaboration by the OEM with its supply chain partners create an opportunity for small scale firms (tier 2 suppliers) often trapped in low profit or low innovation to develop through specialisation and differentiation by establishing business linkages with tier 1 suppliers, thereby creating the potential for better business capability and industry competitiveness (Davies, 2001).

### **2.6.2 Government Policy in the Automotive Industry**

Prior to 1980 the South African Automotive Industry developed under high levels of protection, which included high tariffs and a series of local content programs (Black, 2009). Initially, the policies were aimed at protecting the local vehicle market from imported vehicles and components by substituting imported products (Barnes & Morris, 2008). Under this protection regime considerable diversified development took place. However, the industry was afflicted by the ailment of high cost production structures exacerbated by the manufacture and assembly of vehicles in low volume, forcing the industry to produce at levels below the minimum efficient scale (Black, 2009). By the 1980s the high protection of the industry had resulted in an Automotive Industry that was inefficient and highly inwardly orientated in an international environment that was strongly supportive of trade liberalisation (Lorentzen, Robbins, & Barnes, 2005).

In the mid-1980s the South African Automotive Industry underwent a significant shift from import substituting industrialisation to trade liberalisation and a change from tariff

protection to integration into the global economy. This change necessitated a need for the South African Automotive Industry to become competitive at world class levels or risk the loss of support of the OEM's located in South Africa who could now source components internationally (Morris, Robbins, & Barnes, 2012).

#### 2.6.2.1 *The Motor Industry Development Programme (MIDP)*

The government in 1985, through the Motor Industry Development Programme (MIDP), sought to rectify the imbalance created by a protected inward looking industry. The MIDP removed all local content provisions, reduced tariffs and introduced import export complementation and changed the Automotive Industry's focus from import protectionism to export competitiveness (Barnes & Morris, March 2008). The MIDP was created by the government to nurture and develop the Automotive Sector and as a consequence the MIDP offered a range of incentives to OEM's incentivising exports of either locally assembled vehicles or locally manufactured components.

Among the incentives was the programme of Import Duty Rebate Credit Certificates (IRCC) which was aligned with the goal of promoting exports offset against allowing OEM's to bring fuller ranges of vehicles from plants around the world for sale in South Africa at a reduced duty level (Barnes & Morris, 2008). Other incentives included the Small Vehicle Incentive (SVI) that was intended to encourage manufacturers to build affordable vehicles for the local market, and a Productive Asset Allowance (PAA) that encouraged the productive use of the OEM's or Tier 1's assets. The objectives behind the MIDP was to secure the investment commitment of the major OEM's with an existing manufacturing presence in South Africa, to encourage domestic based OEM's to reduce the range of models produced domestically and to earn import credits by expanding exports of the reduced range of models with sufficient local content (Lorentzen, Robbins, & Barnes, 2005). The following are indicative facts of the success of the MIDP in contributing positively to the Automotive Industry:

- *“The growth in production volumes from 389000 units in 1995 to 532545 units in 2001”* (Quoted from South African Trade Minister Rob Davis) (news, 2012).
- Combined exports of completely built-up vehicles and components grew from R 2245 million in 1994 to R 55103 million in 2006, which translated into a compounded growth rate of 26% for the first 11 years of the MIDP (Naamsa, 2007).
- The value of exported automotive products increased from 4% in 1995 to 32% in 2007 (South Africa Info, 2012).

Although the MIDP has been successful in developing exports volumes and has opened the South African Automotive Industry to global opportunities in competing for high volume global supply of selected vehicle models and components, the MIDP will end in 2012. A new program, the Automotive Production and Development Programme (APDP) will take effect in 2013, shifting the focus from an export orientation to one focussing on high volume local production (AIDC, 2010). The APDP is essentially a reworking of the MIDP to align the incentive model with the World Trade Organisations agreement on subsidies and countervailing measures (the SCM agreement) under the 1994 General Agreement on Tariffs and Trade, with improvements allowing the inclusion of component companies to have direct access to investment incentives. The new focus under the APDP is to provide assistance to the component manufacturers for the tier 2 and 3 suppliers to provide cost competitive components to the OEM's and international markets via exports. The APDP design has evolved from an export based incentive to a local manufacturing incentive, whether the products are exported or consumed locally (AIDC, 2010).

The key objectives of the APDP are not materially different from the MIDP in that the following objectives are still in place:

- Improve the international competitiveness of the South African Automotive Industry.
- Continue to encourage growth through exports and improve the industry's current trade imbalance.
- Stabilise and potentially increase employment levels.
- Encourage the rationalisation of platforms to achieve economies of scale in assembly.
- Encourage further capital investment into South Africa.

(Warrington, 2012)

The vigour of government policy in the Automotive Industry is indicative of the importance of the Automotive Industry as a main growth sector for the South African economy. The South African government understands that the competitiveness of the Automotive Sector is inextricably linked to economic empowerment, job creation and employment (Davies, 2001). The South African government realised that to stimulate and attract investment in the industry certain levels of support is required from government in the form of other policy incentives and funding schemes, apart from the MIDP and APDP. As a consequence, other policy directions and funding schemes

implemented by government that include the Automotive Sector are IPAP2 (Industrial Policy Action Plan) and MCEP (Manufacturing Competitiveness Enhancement Programme) which provide economic support to small businesses, boost local production, improve export assistance and create direct and indirect jobs (South Africa's Automotive Industry, 2012).

### **2.6.3 Collaborative Networks and the Automotive Sector**

In addition to the policy incentives and funding schemes, the South African government through the Department of Trade and Industry (DTI) facilitates and encourages national-level clusters to assist firms in becoming more competitive (Morris, Robbins, & Barnes, 2012). The DTI plays a critical role in facilitating intra and inter firm processes to encourage the strategic exchange of information between shareholders and to enable greater collaboration along the supply chain (Barnes & Morris, 2008). The DTI's approach is based on Porter's (1990) approach that emphasises the importance of exogenous factors that are essential to a firm's ability to compete and the importance of collaborative inter-firm processes. These processes provide success regarding training, supply chain co-operation and knowledge sharing (Barnes, Kaplinsky, & Morris, 2004).

The DTI incentivised sector stakeholders to construct a collective agenda around matters of competitiveness through the Sector Partnership Fund (SPF) that provides matching grant funding on a 65/35% basis for co-operative activities between firms (Morris, Robbins, & Barnes, 2012). The SPF is used by the Automotive Sector to arrange regionally based continuous improvement learning networks focused on operational performance to ensure that the participating firms are of world class manufacturing standards (Barnes & Morris, 2008). These learning networks facilitate development of world class manufacturing capability in conjunction with the use of a bench marking model of key competitive drivers and critical success factors of lean manufacturing (Morris, Bessant, & Barnes, 2006).

An example in the Automotive Sector of a regionally based learning network is the Kwazulu-Natal (KZN) Automotive Benchmarking Club, established by an OEM and 11 component manufacturers that is supported and facilitated by the University of Natal (Morris, Bessant, & Barnes, 2006). The learning network is designed to help firms learn how to improve their operational performance, share knowledge through experiences and firm visits and benchmarking the operational performance of each firm

against other member firms as well as international competitors (Morris, Robbins, & Barnes, 2012). The network is based on firms that desire improvement and operational performance enhancement in order to make them more internationally competitive (Barnes & Morris, 2008).

As a consequence of the success of the KZN network in establishing the development of world class manufacturing capability by means of a benchmarking model of crucial competitiveness drivers, two further regional networks were established, first in the Eastern Cape and later in Gauteng (Morris, Bessant, & Barnes, 2006). These two regional networks were modelled around the KZN template, resulting in a network comprising 60 firms linked by a common service provider and sharing generic resources in terms of continuous improvement and operational performance enhancement (Barnes & Morris, March 2008). The knowledge sharing across regions and the inter-exchange amongst member firms in the various networks resulted in the amalgamating of the regional networks into a private sector driven national cluster, the South African Automotive Benchmarking Club, consisting of 73 member firms in 2007. (Morris, Robbins, & Barnes, 2012)

While the impact of the national cluster has been significant in increasing the national capability of firms across the sector, the success of the DTI's direct association with industry participants is muted as the growth of learning is predominantly still in the tier 1 suppliers and has not yet diffused widely up the value chain (Morris, Robbins, & Barnes, 2012). The reality of the Automotive Industry is that tier 1 and 2 suppliers need to achieve operational competitiveness and conformance to certain quality standards and performance targets to meet the OEM requirements for industry competitiveness (Barnes & Morris, 2008). The Automotive Industry still needs to achieve full manufacturing capabilities to ensure its long term position within the global automotive value chain (Barnes, Kaplinsky, & Morris, 2004). The challenge for the Automotive Industry is thus one of aggressively increasing local content, as well as acquiring technology and improving the level of competitiveness and quality at firm level, failing which the OEM would source components globally (Barnes & Morris, 2008).

The limits of horizontal co-operation in the form of shared learning, whilst significant in the improvement of operational performance of certain firms, lacks impact in terms of inter-firm alignment. Therefore, it is indicative that some form of vertical co-operation is required whereby tier 1 suppliers provide assistance to tier 2 and 3 suppliers for purposes of establishing wider sector development and industry competitiveness

(Morris, Bessant, & Barnes, 2006). The growth potential of the Automotive Industry lies in expanding the economic contribution of all firms in the industry through the creation of linkages and partnerships that enhance the participation rate of tier 2 supplier. It is in this context that the potential of utility of inter-firm collaboration emerges. It is suggested that the creation of horizontal networks across firms within the industry will, through collaboration, reduce input cost, increase productive capacity and enhance the overall competitiveness of the sector. Furthermore vertical networks between large and small firms will result in collective efficiencies (Davies, 2001).

This research will seek to establish whether inter-firm co-operation and collaborative networks will lead to promoting tier 1 and 2 manufacturing capabilities and operational competencies that would develop and enhance the competitiveness of the Automotive Sector as a whole.

## **2.7 Summary**

Chapter 2 has dealt with the theory and literature that is available and relevant to the study of collaborative networks. Due to great advancements in information communications technology, the global market place for firms has become more interconnected and competitive than ever before. Collaborative networks although varied in manifestations can be understood as the specialised and developed relationships among firms governed by a system of interaction that complement and extend the firms core competencies (Shuman & Twombly, 2010). Collaborative networks are therefore the collection of components that are interdependent to realise the collective and individual objectives of the network participants (Camarinha-Matos & Afsarmanesh, 2008; Shuman). The theoretical frameworks that support collaborative networks as a means of achieving competitiveness have been discussed and include the resource based view, the network theory and the alliance theory. Each theory advocates collaborative networks as a means for firms to increase their market share in a global economy. Each type of collaborative network is unique in its design, including those found within the South African Automotive Industry. Various stakeholders ensure the success or failure of a collaborative network, and more often than not the government, as a participant or promoter of collaborative networks, greatly influences the collaborative network process and the potential of the collaborative network to achieve industry competitiveness. (Morris, Robbins, & Barnes, 2012) However, the organisational design of the collaborative network creates a platform for all stakeholders/participants of the network to work together, to share information and

knowledge, developed new competencies and capabilities and succeed in achieving a common goal. The platform of co-operation is a management system that stems from a balance of power rather than to become overly competitive with each other.

The South African Automotive Industry has been privy to various forms of industry-centred participation from the mid-1980s. As a consequence, the Automotive Industry has grown and provides 7.5% of the country's GDP and employed around thirty six thousand people in 2007. (Barnes & Morris, 2008) . Government policy in the form of the MIDP, and now the APDP, has been pivotal in re-energising the industry in an increasing global environment that is highly competitive. Through the APDP the government seeks to focus on creating more synergy between industry players while increasing the local production volumes. Economic empowerment and job creation are at the forefront of the APDP so that the industry is not only competitive globally, but relevant locally. (South Africa's Automotive Industry, 2012)

The South Africa government and various industry participants in the Automotive Sector have realised that acquiring technology, achieving operational efficiencies and enhancing product quality will attract more assemblers and their supply chains to the Automotive Industry. By working together in collaborative networks these efficiencies can be achieved effectively rather than trying to achieve them individually. The inter-firm collaboration of structured networks is studied in order to understand whether these collaborative networks do, indeed, enhance and develop collective efficiencies for the Automotive Industry of South Africa to achieve industry competitiveness.



## CHAPTER 3 - RESEARCH QUESTIONS

A research question considers the logical relationship between concepts (Dul & Hak, 2008). The relationship dynamics may be influenced by factors beyond the concepts under consideration. Collaborative networks are purported as the solution for business sustainability. However, collaborative networks exist in diverse manifestations as defined by the collaborative network structure, strategy, dynamics and culture. Collaborative networks as a strategic choice promises collective efficiencies that improve individual firm's performance and thereby enhance competitiveness for the industry.

This research study seeks to ascertain whether collaborative networks are a means of developing and enhancing competitiveness in South African industries. This research study will investigate a project driven government agency (the Automotive Industry Development Centre – "AIDC"). As evident from the review on the Automotive Sector in Chapter 2, there exist pockets of collaboration within the industry, and between the industry and government. The subject of study is appropriate as the AIDC has been specifically mandated to positively impact on and escalate the global competitiveness of the Automotive Industry (AIDC corporate profile, 2011).

This research study investigates a particularly unique collaborative network known as the Ford project that is under the administration of the AIDC. The success of the collaborative network is dependent on the shared meaning and purpose within the collaborative network as defined by the interdependent components of the collaborative network in terms of the network strategy, the network structure, the network dynamic and the network culture. Industry competitiveness is defined by the components of collaborative networks where collaboration among industry participants is the adopted strategy of achieving collective efficiencies and firm sustainability.

In investigating the Ford Project the literature reviewed leads to the following questions:

1. What is the adopted strategy of the collaborative network?
2. What is the established structure of the collaborative network?
3. What are the dynamics of the collaborative network?
4. What is the culture of the collaborative network?
5. Has the collaborative network achieved competitiveness for the industry?

## CHAPTER 4 - PROPOSED RESEARCH METHODOLOGY AND DESIGN

### 4.1 Aim of Study

There is no fully developed integrated model on the components of collaborative networks linked to the design of a collaborative network model as a means of industry competitiveness. For this reason the investigation of the Ford project is exploratory and seeks to develop and extend the theory available regarding the components of collaborative networks. The views of the participants involved in the Ford project have been explored and analysed in terms of the practical application to the theory on the components of the collaborative network. The shared meaning and purpose of the Ford project had been explored and analysed to ascertain the competitiveness of the South African Automotive Industry arising from the collaborative network.

The AIDC, as a government agency in the Automotive Sector has a specific purpose of establishing a viable South African Automotive Industry through collaboration between government and the industry. An analysis of the Ford project is therefore appropriate in ascertaining whether the collaborative effort of the Ford project had resulted in maintaining and improving the competitiveness of the Automotive Sector.

This study explored the dynamics of collaborative networks as a means of competitiveness through the views of participants to the Ford project. A single case design, established on the principals of collaboration for purposes of continuous growth, sustainable job creation and skills development, was assessed and analysed. Information and opinion from the experiences of four industry experts and four individual firms that had participated in such networks created a rich dialogue including evidence of the successes or failures of the collaboration (Yin, 2003). The case study evidence provided the shared meaning and purpose of the collaborative network in exploring the components of the collaborative network in ascertaining the competitiveness of the South African Automotive Industry arising from collaborative networks.

Research into the Automotive Industry and specifically the role of the AIDC and the Ford project is important for two reasons. First, prior to the 1980s the government of South Africa had actively supported the Automotive Industry through the formulation and development of policies. The establishment of the AIDC as an agent to facilitate

the competitiveness of the Automotive Industry is an extension of government's policy of intervention in the Automotive Industry, marking the importance of the Automotive Industry for sustainable economic growth. The government policy initiatives in the Automotive Sector have been designed to focus on improving the scale of investments, the composition of trade and the development of the supply chain (Black, 2009). After the 1980s the government policy initiatives had favoured a strategy of collaboration and co-operative competition through strategic cluster aligning, rather than marketing-welfare (Davies, 2001).

Second, research relating to the development of the South African Automotive Industry has been limited in scope because of the role inter-organisational links play in supporting the learning and capability development process of firms; i.e. the study by Morris, Bessant and Barnes (2006) had shown the interactive nature of firm's co-operation in solidifying learning networks (Morris, Bessant, & Barnes, 2006). In South Africa investigating vertical and horizontal networking as a means of delivering benefit to the Automotive Industry had been identified as a development that required further study (Barnes & Morris, March 2008). A need to investigate the detailed mechanisms of how to organise and foster such collaboration was identified (Beckett, 2005). A need has therefore been established to investigate the components of collaboration that would achieve industrial competitiveness (Morris, Bessant, & Barnes, 2006).

## **4.2 Method**

An exploratory approach to the research problem was followed. Collaborative networks as a strategic choice for firms in various industries is a relatively new concept. The Automotive Industry globally is characterised by the formation of deep and longer term supplier relationships and a high degree of co-operation in the areas of design and development, quality and cost containment. This research was intended to provide insight and extend the theory of collaborative networks rather than test theory. Given this exploratory aim, a qualitative case study method had been adopted. The advantage of using the qualitative research method is that it provides greater depth of understanding about "complex interactions and relationships, tacit processes and often hidden beliefs and value systems" (Brunetto & Farr-Wharton, 2007, p. 371).

It was decided to select the "single case with embedded units of analysis" design as the most appropriate for this research project (Yin, 2003). According to Yin (2003), case studies are an appropriate and often preferred approach to qualitative research

when the boundaries between the object of study and content are not obviously evident, when the investigator does not have control over the events and when the objective of the research is the understanding of a phenomenon within some real life context, as in this research. The quintessential aspect of case studies is that they strives towards a holistic understanding of the system of actions, where the set of interrelated activities engaged in by the actors can be used to outline important dynamic dimensions of strategy development (Waite & Williams, 2009). Case studies provide a deeper insight; in the case of this research a deeper insight into the strategy, structure, dynamics and culture of the collaborative network was required.

The specific focus of the study is the Ford project administered by the Automotive Industrial Development Council (AIDC) based in Gauteng. The AIDC is the architect and administrator of projects engaged in between the Automotive Sector and government. The AIDC had been established by the Gauteng Government to facilitate the Automotive Sector in technical project implementation and service delivery in supply chain development, supplier development, skills development and training and facilitating employment (AIDC corporate profile, 2011). The aims of the AIDC are firstly to develop the Gauteng and the South African Automotive Industry's global competitiveness; secondly to support government automotive-related objectives; and thirdly to contribute to government and industry's goal of continuous growth and sustainable job creation (Urban-Econ Development Economists, March 2012).

Johnston, Leach and Liu (1999), argued that the selection of a single case is at times justifiable; instances where single-case studies are acceptable that were cited included rarity, uniqueness and significance (Johnston, Leach, & Liu, 1999). The AIDC is unique in its purpose as a government agency to facilitate industry competitiveness. Furthermore, networking and collaborative networks with industry participants play an important role in fulfilling the AIDC's aims and facilitates government and industry's strategic initiatives. The AIDC is the preferred provider of strategic solutions and government projects to the South African Automotive Industry (Urban-Econ Development Economists, March 2012). The initiatives of the AIDC are innovative in that there is no similar agency that supports other South African industries in the same way.

The unit of analysis is therefore the AIDC analysed and assessed through the evidence of three experts employed by the AIDC, one expert consultant and representatives of four randomly selected focal firms involved in the Ford project. The interviews were face to face and were facilitated by the AIDC. The persons interviewed had been

purposefully chosen based on their knowledge and direct involvement in the collaborative network. While Table 1 provides the interviewees names and profiles of their firms/organisations for purposes of credibility to the study, the transcripts of the interviews are confidential. Ensuring confidentiality of the transcripts was necessary to obtain unbiased and informative responses from interviewees.

**Table 1 Interviewees and their profiles**

| <b>Name</b>        | <b>Representative Organisation</b>            | <b>Designation in Representative Organisation</b>                                    | <b>Designation in Collaborative Network</b>  |
|--------------------|---|--|--|
| Deneshan Moodley   | Automotive Industry Development Centre (AIDC) | Executive responsible for Industry Development                                       | Agent / Facilitator  |
| Neeraj Kessery     | Automotive Industry Development Centre (AIDC) | Manager Supply Chain Management  | Representative participant to the Ford Project   |
| Nkumbuzi Ben Mazwi | Automotive Industry Development Centre (AIDC) | Manager Supplier Development Department  | Expert supply chain collaboration  |
| Trevor Kock        | Independent consultant                        | Previous vice president of manufacture and supply at Ford Motor Company South Africa | Project manager and implementer of Ford project as representative of OEM                       |
| Vivek Avasthi      | MSSL Global RSA                               | Head of business operation   | Indian global tier 1 supplier in the Ford project attached to 2 incubatees in the Ford project |
| Jorge Santa        | Sodecia                                       | Manager Business Operations SA   | Portuguese global tier 1 supplier in the Ford project attached to Incubatee Jamsco             |
| Hayley Eager       | Jamsco Pty Ltd                                | Business Owner in incubation   | Incubatee in the Ford project attached to tier 1 supplier Sodecia                              |
| Caiphus Mokoledi   | Rusticana 172 Pty Ltd                         | Business owner in incubation   | Incubatee in the Ford project attached to tier 1 logistics company Schneleker                  |

Prior to the final preparation for data collection, a pilot case study had been conducted with 2 specialists, employed as consultants in the Automotive Sector. As a consequence of the pilot study there were several amendments to refining the data collection plan regarding the content of the data and the procedures to be followed

(Yin, 2003). The pilot case study assisted in clarifying relevant lines of questions and established certain substantive questions relevant to the actual inquiry. The pilot case study was used to improve the conceptualisation of the interview guide. The pilot case study was conducted prior to the in-depth interviews for the case study, and in similar circumstances, in terms of interview time, recording of information and procedures to be followed. The pilot case study was instrumental in refining the ambit of the inquiry, receiving valuable teaching lessons and it had rectified errors and oversights related to research design and field procedure (Yin, 2003).

### **4.3 Data Collection**

Yin (2003) proposed that a study protocol be used in data collection for case study research. The study protocol includes all of the questions that would be used in the case study investigations. These questions do not constitute a survey or interview, but have to be answered in order to address all the issues that were raised by the research questions (Dul & Hak, 2008).

The mode of inquiry selected to execute the research was close interaction in the form of in-depth interviews. In-depth interviews have been found to be an effective method of data collecting from experts in the field and participants within the network with knowledge as the research interest lies in real life experiences encountered and the problems and challenges regarding collaborative networks that had to be resolved (Jamsa, Tahtinen, Ryan, & Pallari, 2011). In-depth interviews are directed by a set of substantive questions reflecting the actual line of inquiry (Yin, 2003). The questions consisted of open ended questions that allowed for the necessary elaboration of the topic in its context, yet the questions were specific to define the range of the inquiry (Jorgensen & Ulhoi, 2010).

The principal criterion for participation in the interview was the knowledge and experience arising out of participation in the Ford project or expertise in the industry and the establishment of collaborative networks. All interviews had been guided by a tested and refined interview guide. A copy of the interview guideline is included as annexure “A” to this research report. The open ended questions allowed the interviewer the flexibility of obtaining clarity and elaboration on specific aspects of the interview (Jorgensen & Ulhoi, 2010) while allowing the participant to speak at length about their opinions, to include aspects omitted from the interview guide and to lead the discussion. The interview guide was designed and the interviews were conducted to

gain insight into the research questions without being leading or suggestive to the participants.

Prior to the commencement of the in-depth interviews, all the interviewees were provided with a letter which described the casework and consent to the participants' voluntary participation in the interview. Copies of all such letters are included as annexure "B" to this research report. The purpose and intent of the interview was explained and confidentiality with regard to the content of the interview was assured. Each interview was completed between 60 and 90 minutes.

All interviews were conducted on a one-to-one basis, within an enclosed environment in order to ensure the privacy of the interviewee. Interviews were conducted at the place of business of the respective interviewees. Extensive hand written notes were taken and checked soon after the interview was completed. The interviews had also been audio taped were then transcribed. The interviewee was asked for permission by the researcher for use of a digital voice recorder prior to the use thereof. The notes and transcription from the tapes were then cross-checked for accuracy. Both the hand written notes and the transcripts were used during the analysis stage of the research.

An interview log was created and this documented the time, date and place of each interview. A copy of the interview log is attached as annexure "C" to this research report.

Observations were used to complement the data that was gathered during the interview process. The use of observation can complement the interview process in attaining a greater understanding of the case; however the relevance of observations must be limited to an enhanced understanding of the data (Dul & Hak, 2008).

Secondary data consisting of public written documents such as published reports and presentations from the internet, archival data provided by the AIDC and publicly available information from websites and press releases had been sourced and compiled for purposes of understanding the data. The secondary data was used to improve overall understanding of the AIDC and other network participants. Prior to each in-depth interview a search had been conducted for historical information and press releases on each participant as well as industry associated websites for purposes of validation and substantiation during the interview. Johnston et al (1999) had cited a number of weaknesses of documentary evidence, these include the fact that these documents may be difficult to source and that these documents would have

to be scrutinised for objectivity. Among the strengths that had been cited by Johnston et al (1999) were the fact that these documents were drafted independently from any research which would have resulted in greater objectivity, the fact that these documents could be obtained inconspicuously, that these documents could be precise and consistent and that these documents could be obtained over an extended period of time.

#### **4.4 Data Analysis**

Johnston et al (1999) had recommended that case research data should be analysed in such a way to determine whether the evidence is “internally valid, supportive of...the hypothesis... and conclusive” (Johnston, Leach, & Liu, 1999, p. 208). Internal validity refers to the casual relationship between the variables and the results in terms of pattern matching and theory triangulation (Dul & Hak, 2008). Pattern matching is achieved by comparing the results obtained from the data with results obtained from other studies or results by means of forecasting (Johnston, Leach, & Liu, 1999). Theory triangulation is a principal that allows the researcher to verify the findings by adopting several perspectives (Stake, 1995). Stake (1995) described the use of categorical aggregation and direct interpretation as methods to analyse data from case research. Yin (2003) proposed that the following techniques for the analysis of the data can be employed: “pattern matching, linking data to propositions, explanation building, time series analysis, logic models and cross-case synthesis” (Yin, 2003, p. 78) Stake (1995) advised that time should be spent on direct interpretation of the data as the intention of case research is to understand the case and that the search for repetition and patterns was characteristic of both categorical aggregation and direct interpretation (Stake, 1995).

Miles and Huberman (1994) suggested data reduction and coding in order to reduce and organise the mass of data to a manageable level. (Waite & Williams, 2009). A system of manual coding had been followed for this research study.

Prior to analysis for purposes of data extraction, the data was cleaned and edited and each interview was summarised. The data was analysed by making use of an open coding analysis and by identifying the main themes within each interview. The analysis consisted of content analysis, pattern matching and explanation building (Yin, 2003). Cross-participant analysis was used to highlight similarities and differences between responses by reviewing the data. The final stage of analysis included the building of



conceptual/theoretical coherence by making comparisons with the literature that was reviewed and presented in Chapter 2 (Waite & Williams, 2009).

As this study was exploratory and concerned with analysing and interpreting the network strategy, structure, dynamics and culture of the Ford project established and developed as a manifestation of collaborative networks, a level of explanation building (Yin, 2003) had been required in drawing conclusions and making confirmations guided by the literature review on collaborative networks (Waite & Williams, 2009). The data collection and data analysis had been deliberate and was completed with the necessary deliberation and caution. Furthermore, the data collection had been subject to limitations that are discussed below.

## **4.5 Limitations**

The greatest criticism of case study research is the lack of its susceptibility to generalisation (Yin, 2003; Dal and Hak, 2008 and Stake, 1995). It is acknowledged that the criticism is valid; however the objective of case research is not to establish general policy but rather the understanding of the problem at a simplistic level (Dul & Hak, 2008). Dul and Hak (2008) proposed the use of replication studies as a means of enhancing the generalisability of case study research.

The in-depth interviews required a great deal of time regarding question preparation, travelling to participants' offices for the interviews, preparing the interview room and ensuring that the participants were comfortable enough to be open and honest with their views and opinions about the collaborative network model of the Ford project. Extra time had also been required to implement the interview process, to transcribe the information and to verify and confirm the information against written notes. Furthermore, time was taken to clean and organise the data into themes prior to interpretation and analysis. If time is not correctly managed and allocated to the respective task, it can become a definite limitation.

The size of the sample can become a limitation to the extent that sufficient participants failed to agree to participate. The researcher had scheduled to interview a second regional organisation in the Automotive Sector involved in a collaborative model of a different kind, only to have the interviews with the administrator of the collaborative network and six of the network participants cancelled a day before the researcher was scheduled to travel to Durban and interview them. As a consequence, this research

study that was initially designed to be a two case study approach had become limited to a case study of one organisation.

This case study is limited to one geographical province, namely Gauteng, as the AIDC's mandate is limited to strategic initiatives and projects in Gauteng. The study does not include the Eastern Cape Province which has the largest share of the Automotive Industry in terms of production volume. (Media Club South Africa, 2012)

The possibility of response bias and interpretation bias had to be consciously limited as the researcher (also the interviewer) could have subconsciously influenced the responses. A critical level of training of the interviewer (pilot study) as a preliminary exercise had been conducted to adequately prepare the interviewer to extract as much information as possible (Yin, 2003). Concerns about the personal involvement and/or subjectivity of the researcher is a valid point and therefore every effort to avoid self-bias was used and this was further supported by the use of triangulation as recommended by Stake (1995). However the effects of self-bias should not be ignored.

The possibility of post-coding errors also had to be guarded against. Post-coding errors is a data capturing error/problem specific to in-depth interviews. Not only can there be a problem of differences in interpretation where more than one post coder is working with the data, but the post-coding schemata needs to meet the criterion of mutual exclusiveness to avoid any overlap in classification categories (Yin, 2003).

The study had been limited to the Gauteng Automotive Industry within the South African manufacturing sector and the findings and conclusion of this research is limited to the experience and knowledge of those industry experts and individual firms involved with the AIDC in the Ford project. The results of the study cannot therefore be of general application to other projects of the AIDC or to other regions within the Automotive Sector or to other industries within the manufacturing sector in South Africa.

## **4.6 Summary**

The empirical data which had been collected was analysed according to the methods discussed in this chapter to develop the necessary insight in answering the research questions raised in Chapter 3. While a single case design is not ideal, it is the preferred method of discovery insight into the structure, strategy, dynamics and culture of the Ford Project model as a means of achieving industry competitiveness through

collaborative networks. Notwithstanding the assessment of eight interviewees, the necessary insight had been obtained as half the participants are industry experts with detailed knowledge that had provided a holistic perspective balanced by network participants that had provided insight limited to their respective positioning within the Ford Project.

## CHAPTER 5 - RESULTS

### 5.1 Introduction

This chapter presents the results emanating from the case study analysis of the Ford project. The information retrieved from the interviews of the participants in relation to the Ford project will be presented. This information is vital to the shared meaning and purpose relevant to understanding the range of the interdependent components of collaboration. The interdependent components are further analysed in terms of the relationship dynamics of the collaborative network in order to arrive at a conclusion on the competitiveness of the South African Automotive Sector.

This research was intended to advance the insight and understanding of collaborative networks rather than to test theory. Given this exploratory aim, a qualitative case study method was adopted. The advantage of using the qualitative research method is that it provides greater depth of understanding about “complex interactions and relationships, tacit processes and often hidden beliefs and value systems” (Brunetto & Farr-Wharton, 2007, p. 371). It was decided to select the “single case with embedded units of analysis” design as the most appropriate for this research project (Yin, 2003). According to Yin (2003), case studies are an appropriate and often preferred approach to qualitative research, when the boundaries between object of study and content are not obviously evident, when the investigator does not have control over the events and when the objective of the research is the understanding of a phenomenon within some real life context, as in this research study.

In arriving at a greater understanding and insight regarding the interrelated components of collaborative networks, the Ford project as a manifestation of a collaborative network model was selected. The views and opinions of the multi-network actors that vary in size, positioning and importance within the Automotive Industry were analysed and interpreted. The content analysis is therefore a holistic understanding of the findings of the case study, as presented by the various network participants who are directly involved in the Ford project.

The findings of the Ford project are presented in context relevant and limited to collaborative networks. The findings are firstly presented from the perspective of the AIDC as administrator of the collaborative network and then from the perspective of the OEM, the tier 1 supplier and incubatee as participants in the collaborative network.

The views of each of the interviewees are thereafter combined for consideration of the findings holistically. It is the intention of the researcher in this chapter to address the research questions by presenting the information gathered as conveyed and not to interpret the findings or draw conclusions. This chapter therefore predominantly includes the interviewees' views and thoughts and some of the researcher's reflections for purposes of insight.

The results of the case analysis are presented without any formal analysis. The formal analysis and interpretation of the information gathered in light of the research questions posed in Chapter 3 will be presented in Chapter 6 of this research report.

## **5.2 Content Analysis**

The interviews were transcribed and analysed in order to identify major themes and these themes were subsequently clustered around the research questions. As the data was collected from in-depth interviews, there existed plenty of information that was not directly relevant to the research questions proposed in Chapter 3, but from which a more holistic perspective to the research questions can be inferred. Secondary data such as internal reports, presentations and archival data served to confirm certain findings that were not explicitly clear.

It should be noted that due to the different interest and roles of the interviewees in the collaborative network, the responses to the questions were varied, dependent upon the level of involvement and participation of the participant in the specific element under question. As a consequence, participants elaborated and placed emphasis on those aspects of the collaborative network that were more pertinent to the interviewee. Nevertheless the lack of conformance of the participants in the detail still allowed for the information shared being verifiable against at least one or two other participants' viewpoints. Furthermore, as the questions proposed to the interviewees were open-ended there is very little frequency in themes and consistency in the content, although there is commonality and alignment that can be inferred by considering all information received in regard to the collaborative network.

## **5.3 Case Study Description and Content Findings**

The case study that was selected is the Ford project. While the Ford project may be administered by the AIDC, the AIDC as facilitator was instrumental in bringing together

the requirements of the Automotive Industry and championed the realisation of the collaborative network. The case study provides insight into a particular manifestation of a collaborative network model as a means of ensuring competitiveness for the Automotive Industry. The theory and literature on collaborative networks suggest that a successful collaborative network design, as defined by the unique relationship and range of the interdependent components of collaborative network, positively influences the determinants necessary to achieve industry competitiveness. The issues that attracted the investigation are therefore:

1. What is the adopted strategy of the collaborative network?
2. What is the established structure of the collaborative network?
3. What are the dynamics of the collaborative network?
4. What is the culture of the collaborative network?
5. Has the collaborative network achieved competitiveness for the industry?

### **5.3.1            *The Need for the Ford Project***

The Ford project was launched in February 2011, as a combined initiative of the Ford Motor Company of South Africa (Ford) and the Gauteng Provincial Government through the government agency AIDC. The Ford project is the partnership between Ford, tier 1 suppliers and AIDC to nurture black owned component suppliers through an incubation centre to participate in the value chain of Ford's assembly plant in Silverton, Pretoria. The aim of the Ford project is to overcome the logistics cost of importing components into South Africa for assembly by increasing local content supply by providing incubation to newly established South African companies to overcome barriers to entry in the automotive components industry.

The Automotive Industry in South Africa historically has been driven by the OEMs who determine the scale and scope of the automotive manufacturing activity. *"The way the Automotive Industry was structured, the design, the sourcing, everything happens before the plant where they are going to assemble the product is selected"* (as quoted by the Consultant who was interviewed). By means of license agreements, the OEM creates dependency relationships for the tier 1 suppliers in the sourcing of the components required. As a consequence, the tier 1 supplier becomes a global supplier that operates its own global value chains fed by tier 2 and 3 suppliers based either locally or globally. The barriers of entry to the Automotive Industry are high, particularly at the tier 1 supplier level with OEM's demanding high technical standards throughout

the value chain, from the various stages of component manufacturing to assembly. This arrangement perpetuates the dependencies and challenges suppliers across the value chain without too much room for new entrants to the Automotive Industry.

Arising from globalisation, market segmentation and the need to meet the orders of different customers through flexible production capabilities, the OEMs' requirements now stem from trends driving greater complexity in regard to the supply chain that supports their manufacture. OEMs have developed a greater reliance on contractors for the development and supply of critical components and services. OEMs have had to transfer the responsibility for the design of and development of the components to the tier 1 supplier who manages the value chain. OEMs have moved towards modular production where component manufacturers supply them with complete modules rather than individual components. The culture in the Automotive Sector has evolved towards collaboration, which has the added benefit of achieving price cuts in product development cost and lessening design lead time. As a consequence, the OEM is now an assembler. As stated by the Consultant *“our biggest enemy is the plants outside of South Africa, we had to fight Thailand, South America and everyone to get business here.”*

*“We recognised 15 years ago that this (South African) Automotive Industry is not competitive. Without the APDP, we wouldn't have had an industry in South Africa” (as quoted by the Consultant who was interviewed)* To increase the local content of vehicles, the competence of the South African supply base needs to be increased to create a large supplier base that become a part of the value chain. Therefore, to increase the competitiveness of the South African Automotive Industry, there needs to be a focus on localising as many automotive components as possible.

The key driver for the industry is the OEM, and for an OEM to be competitive across brands there is a need to achieve volume and to produce the product at a lower cost than any of the other competitors, As a result the AIDC explained that *“the OEM needs the government programs and support to win the business.”* The Government programs and support are required to place the Automotive Industry in an advantageous position relative to other automotive industries in other countries. The South African Automotive Sector identified that competitive advantage through the development of local sourcing with less reliance on imports is imperative. The OEM believes that through collaboration with local suppliers and with a focus on productivity, improvements to the economies of scale and scope across the value chain can be

achieved, thus reducing the cost of doing business in South Africa with growth in local volumes.

From a factor condition and related and supporting industries perspective there is little reason for the South African Automotive Industry to achieve competitiveness. Historically South Africa has suffered the stigma of low productivity and poor quality standards. However the South African Automotive Industry is a key sector of the economic landscape in being the largest manufacturing industry in South Africa only *“because of the support we got from government from the different policy initiatives, if it wasn’t for what they (government) have given us...we would not have the T6 Range” (As quoted by the Consultant that was interviewed).* Thus the Ford project is an initiative to develop the factor conditions and the related and supporting industries in the South African Automotive Industry by stimulating the establishment of black owned small and medium sized businesses in an industry that largely consists of multinational companies. The initiative serves to create jobs and develop economic activity in addition to increasing local content manufacturing and thus reducing overall production cost to the Automotive Industry.

### **5.3.2            *The Role of the AIDC***

The AIDC sees its role as a facilitator, “we bring industry together” by joint participation in projects and initiatives that support the Automotive Sector from a delivery point of view. The AIDC arose from a workshop between industry participants who identified a vacuum in terms of a government agency who could assist the Automotive Industry in achieving operational efficiencies and industry growth. The AIDC is focussed on enhancing competitiveness for the South African Automotive Industry in implementing initiatives that stimulate the industry.

The purpose and objectives of the AIDC are:

*“That constant disjoint between what government wants and what industry wants. Government ultimately want growth, jobs, economic development and more investment. Government does not want retrenchments; it wants the economy to thrive. Private companies and OEM’s on the other hand only want profit, are not too concerned about employment and do not have any socio economic interest in the country because their primary focus is profit. Now the role of the AIDC is to understand the needs of both parties and to ensure that both work together in a harmonious way, but it cannot be done without an intermediate like the AIDC. The AIDC’s focus area, its*



*projects and programs offerings are designed in a way that it hits the sweet spot of parties, government as well as private sector without compromising each other ensuring it is a win-win situation.” (Deneshan Moodley – Executive responsible for industry development, AIDC)*

Prior to Ford tendering for the T6 Range, the Ford plant in Silverton Pretoria assembled five models comprising a total volume of 50000 units per year. As a consequence of these models becoming terminable it had become necessary for the Ford plant to tender for the T6 Range, competing with sister plants across the world. As it transpired the Ford South African plant was not the cheapest. *“The situation for Ford was critical, it was either the Ford plant would be successful in winning the tender to assemble the T6 range, or they risk the closing of the Ford plant and the loss of jobs”* (As quoted by the Consultant that was interviewed).

The AIDC was approached by Ford for assistance in receiving the tender for the T6 range and undertook an economic impact assessment. Assuming the tender for the T6 was lost and the Ford plant shut down, there would be a *“R60 billion revenue loss to the Gauteng province, 60 000 job losses including downstream jobs”*. The AIDC, in designing an intervention to prevent the closure of the Ford plant, resolved with Ford on a program that facilitates the three main mandates of the AIDC, namely job creation, entrepreneurship development and skills development. Arising from the R105 million contributions to Ford in establishing the supplier incubation centre, Ford implemented a three billion Rand investment programme for the manufacture of the T6 Range, resulting in the plant being transformed from a low volume multi vehicle plant to a high volume, single model production facility with a yearly capacity to produce 110 000 vehicles.

### **5.3.3 The Ford Incubation Centre**

The 7200 m<sup>2</sup> Ford incubation centre was constructed adjacent to the Ford plant on vacant land donated by the Ford Company of South Africa. The Incubation serves to develop small black businesses by providing skills training and development for the production and professional support and development opportunities for the incubatees. The rationale for establishing the incubation centre was the following:

- The Automotive Industry, unlike other industries, is most stringent in terms of quality, cost and delivery expectations and therefore lacks transformation due to lack of BEE entrepreneurs and the high barriers to entry into the industry.

Unlike other industrial sectors the Automotive Industry does not have an empowerment charter and “*in the past 20 years of the South African automotive history there has been only 2 BEE companies in existence.*” (As quoted by the Consultant that was interviewed) The objective of the incubation facility is to deliver support to BEE entrepreneurship in the industry in doing business and in this way to facilitate local component manufacturing and assembly. .

- The Ford project entailed starting up and mentoring five BEE businesses with the aim of making them self-sustainable through the partnering with tier 1 supplier to receive skills transfer and development over a five year period. The incubatees were selected from candidates with entrepreneurial characteristics in the Automotive Industry.
- The tier 1 suppliers are multinational companies that have established manufacturing plants in South Africa at the request of the OEMs: “*we follow the customer, the OEM says we want you in South Africa, so our chairman say OK, no choice we have to go to South Africa*” (As quoted by Tier 1 supplier M who was interviewed). In seeking to reduce the cost of components and in developing the local content of components, Ford had partnered an incubatee with a tier 1 supplier who has the capability, the design and the research and development. The tier 1 suppliers were enticed by “*allocating to the tier 1 supplier a percentage of component supply to the OEM needs*” in exchange for skills transfer and enterprise development to the incubatee. The AIDC saw this as a “*win-win*” situation for all. The incubation model is perceived by all as sensible: “*the OEM gets what he wants, the government gets what they want and we maintain control over what we supply to the incubatees*” (As quoted by the Tier 1 supplier M who was interviewed).
- By virtue of being established at the Ford incubation centre, the incubatees are placed in close proximity to the OEM to support the tier 1 supplier by receiving sub components that can be packaged in large volumes that the incubatee assembles together for delivery to the plant. The benefits to the tier 1 suppliers are the saving of logistic costs in receiving complete components to the plant and reducing the damages arising from transportation. “*For a tier 1 supplier located in Port Elizabeth, his cost saving alone on supplying sub-components to the plant as opposed to building it up in Port Elizabeth and sending it over here is R200000 per month. Once you start speaking these numbers then the impact is huge*” (As quoted by Neeraj Kessery—Manager Supply Chain Management, AIDC).

- The incubatees are subsidised by the AIDC in receiving subsidised rentals, the procurement of required assets, professional marketing, mentoring and skills transfer and development. The incubation is designed to deliver support during the start phase of the business whilst participating in the value chain in ensuring that the OEM receives delivery of the necessary quality and quantity of components. .
- The incubatees receive skills training and development. In terms of business training there is a formal program that teaches the incubatees business skills in a class room environment, so that they may learn *“How to do a business plan, read a financial statement, and manage operations and those sorts of soft business skills”* (As quoted by a member of the AIDC who was interviewed). In terms of the technical training, the incubatee is taught the quality management system with regard to the component and the complexities of the component including change management in design: *“We (AIDC) teach lean methodology and implementing in the production process to ensure work in progress is minimised and to enable stock holding to support the production volume of the OEM”* (As quoted by Neeraj Kessery—Manager Supply Chain Management, AIDC). The tier 1 supplier teaches the incubatee to *“understand broadcast systems, sequence of life and how to manage the work force to be flexible to work one or many shifts and to handle all those kind of things that are part of the automotive business”* (As quoted by Tier 1 supplier M who was interviewed).
- The incubatees and OEM benefits in that the *“supplier is physically located at the incubatees’ site.”* As the incubatee becomes a part of the manufacturing supply chain to the OEM, the tier 1 supply seconds its employees to the incubation facility to ensure that the desired output in terms of quality and quantity is achieved from the incubatee. *“Ultimately the tier 1 supplier is taking the risk by putting the product in someone else’s hands, whilst the tier 1 supplier carries the warranty, the Ford project possess a lot of risk for the tier 1 supplier and Ford the OEM should the incubate fail to deliver”* (As quoted by the Tier 2 supplier S who was interviewed). The tier 1 supplier sees the incubatee as an extension of its own business, a process along the value chain: *“so I become a partner with them (incubatee) and I am responsible for quality, cost and delivery”* (As quoted by Tier 1 supplier M who was interviewed).
- The OEM benefits from the incubation model by developing BEE component manufacturers and assemblers in ensuring local content supply at the cost to

government without a risk to quality, cost and delivery to the components supplier which still remains with the tier 1 supplier. In the long term the OEM benefits from a larger supplier base of competence, a South African supplier base that is empowered and skilled as international standards require, thereby ensuring a cost benefit to the customer and the automotive industry.

- The incubation model has been designed on a parenting approach rather than on a coaching approach *per* conventional incubation principals. The incubatee is engaged in a relationship of dependency with the tier 1 supplier who:
  1. is the sole supplier of components;
  2. is the owner of the robotic equipment; and
  3. raises the invoices to the OEM for components supplied such that the incubatee is merely an extension of the tier 1 supplier's business.

The incubatee portion / entitlement are paid by the tier 1 supplier to the AIDC. The AIDC, in turn, offsets the expenses of the incubatees' business expenses including salaries and manages the financial affairs of the incubate company.

The Ford project, through collaboration between industry and government, has interposed the incubatee along the supply value chain between the OEM and Tier 1 supplier, as a means of overcoming the barriers of entry for BEE participation in the Automotive Industry and in establishing local content supply and the creation of a larger South African supplier base. The incubation facilitates the development of skill and competencies and the sharing of knowledge for innovation and growth at no risk to the delivery requirements of the OEM. The incubatee receives support in terms of skills and competency training in a live, real environment to equip the incubatee to become sustainable in continue business in the Automotive Sector post incubation.

#### **5.4 Responses from the In-Depth Interviews**

The paragraphs below seek to analyse the responses from the interviewees as categories in terms of their designation and role in the collaborative network known as the Ford project.

#### 5.4.1 **The OEM (Ford Motor Company South Africa)**

While it is the AIDC who is the network administrator as a structuring agent and relationship broker, it is the OEM that is the focal firm of the collaborative network. The OEM is the network participant with the most influence in the collaborative network and is instrumental in attracting other firms into the network and developing strategies for positioning firms in the supply chain. *“It can only be the OEM because they are the ones who bring the business. Therefore the OEM needs to make sure that government is receptive and that’s where you get the likes of the AIDC involved.”* (As quoted by the Consultant that was interviewed) The AIDC acts as the champion of the network aligning the various network participants’ interest towards the shared strategy.

The OEM believes it is necessary to safeguard the South African Automotive Industry, by virtue of its prominence as the second most important industry in South Africa, in partnering with government to achieve BEE entrepreneurship, skills training, and developing the supplier based by the localisation of components. *“We asked ourselves how do we get the skills, how do we get people developed, how do we get the supply base to run, how do we get the supply chain developed, because unfortunately South Africa is not in the right place, the markets are miles away”* (As quoted by the Consultant who was interviewed). The OEM places reliance on government’s policy of intervention to achieve competitiveness for the Automotive Industry.

The OEM believes it necessary to develop the South African Automotive Industry through collaboration across the value chain, including collaboration with other OEMs in order to achieve volume and economies of scale. *“We at Ford sat down to see how we could work with other OEM’s in setting up common purchasing directives, cross pollinate, share information and to get economies of scale. The whole idea with collaboration is to get South Africa globally competitive”* (As quoted by the Consultant who was interviewed). A culture of collaboration in the Automotive Sector facilitates the reliance of the OEM on tier 1 and tier 2 suppliers for the development and supply of critical components and services at reduced production costs.

The OEM expressed the following view with regard to the strategy and structure of the Ford project: *“The only way to grow the business for the future, as we saw it was to find a way to get collaboration going between the tier 1 supplier who has the capability, know how, design, the R & D and everything, and get them, tie them up with a BEE partner”* (As quoted by the Consultant who was interviewed). The OEM believes that it is necessary to focus on “downstream” businesses involving BEE companies as tier 3

suppliers require investment in the form of skills development and training, and only then new technologies and production equipment. Developing the BEE company's competencies and capabilities into a tier 1 supplier to offer sustainable business and to develop the volumes to become the sole source of supply to the OEM's locally, promises significantly higher returns on products. Collaboration across the value chain creates competitiveness in all aspects of business (quality, supply, reliability and price).

The OEM expressed the following view with regard to the strategy and dynamics of the Ford project: The intention of the OEM in establishing the Ford incubation centre has been clear with the tier 1 suppliers in respect of the expectations of skills development and transfer. The OEM entered into very specific contracts with the tier 1 suppliers involved in the Ford project. The contracts set out specific quantity orders against the transfer of technical skills and abilities to the incubatees over a fixed term period. The strategy was to build the assemblies of the components adjacent to the plant, thereby offsetting logistics cost, which does not add value to the car. Notwithstanding the transfer of assembly of the components to the incubatees, the tier 1 suppliers continued to remain responsible for quality, cost and delivery: *"We compelled 2 of the biggest global suppliers of Ford to adopt incubates and share a segment of their business with the incubatee and it is running like a dream. In so doing we are ensuring the entry of BEE entrepreneurship in the South African Automotive Industry and thereby ensuring growth in terms of jobs and economic activity"* (As quoted by the Consultant who was interviewed).

The OEM views the Ford project as a means of overcoming the large barriers of entry to the Automotive Sector by small sized businesses. Through incubation that facilitates skills transfer and development, the OEM seeks to ensure that the incubatees develop to become tier 2 suppliers to the tier 1 suppliers post incubation. The Ford incubation project *"is facilitating a relationship dynamic, in a sense that they are conversant with each other now, becoming dependant on each other in ensuring supply so that it is an easy dealing in the future"* (As quoted by the Consultant who was interviewed).

The OEM is of the view that competitiveness in the Automotive Industry is achieved when a large supplier base of competence is established, when *"100% of the components are made in South Africa."* To achieve the increase in the competence of South African component manufactures and assemblers, the OEM observes that continued government policy support and investment in the Automotive Industry is required to reduce the cost of doing business in South Africa, to increase local content volumes and to reduce overall production cost. The OEM requires that within the

structures of government there is support for industry collaboration. The OEM is clear that in terms of current strategy, it sees the largest opportunity as collaboration for growth.

#### **5.4.2           The Tier 1 Supplier**

Two multinational tier 1 suppliers were interviewed.

The first tier 1 supplier is a family owned Indian global tier 1 supplier that operates in 35 countries and has 124 manufacturing plants around the world (known as “tier 1 supplier M”). The second tier 1 supplier interviewed is a family owned Portuguese global tier 1 supplier that has a turnover of above 500 million Euros per annum and that operates in 10 countries around the world, supplying the global Automotive Industry with three kinds of products (known as :tier 1 supplier S”).

Tier 1 supplier M’s global business model is a joint venture collaborative model. Tier 1 supplier M was itself a product of incubation under the auspices of the Indian government and has over the last 24 years established itself as a global conglomerate in the automotive manufacturing sector. The tier 1 supplier M have globally entered in more than 20 collaborative joint ventures by *“meeting companies that have the technology, partnering with them in acquiring the technology and tools from collaborators, while providing local management, local marketing, support and local manufacturing”* (As quoted by tier 1 Supplier M who was interviewed). Therefore the requirement by the OEM of the tier 1 supplier M to participate in the Ford project is not an unfamiliar request however the *“paraphernalia which came with this incubation centre”* was new and foreign. Ford asked tier 1 supplier M *“to partner”* with 2 separate incubatees, which they did, *“partly for customer comfort in being close to the OEM, to be right under his (OEM) nose”* (As quoted by tier 1 Supplier M who was interviewed). The tier 1 supplier is very customer focused and is unequivocal in its approach of following the customer.

The tier 1 supplier M believes that overall, the Ford incubation centre model makes sense. In terms of the incubation model the Tier 1 supplier outsources to and partners with the incubatee by transferring skills and competencies whilst continually being responsible to the OEM for quality, cost and delivery. For this reason the tier 1 supplier M believes that control and influence of the incubatee lies with the tier 1 supplier and this control satisfies the tier 1 to participate in the Ford project and take the risk of the incubatee’s performance in fulfilling the OEM’s requirements.

Tier 1 supplier S was requested by Ford to enter the country and assist with a problem concerning the delivery and quality that was being experienced in South Africa. Being a worldwide supplier to the Ford group, the tier 1 supplier S *“at the request of Ford came here”* because of its *“global strategy to support the OEM and its relationship with the OEM as an important client”*. The situation inherited by the tier 1 supplier S of an attached incubatee is novel to them: *“While there are several places where the government imposes obligation with regard to training and things like that, the obligation to outsource is not part of our (the tier 1 supplier S) normal business.”* The tier 1 supplier S indicated that until now the experience with the incubatee has been very good. The tier 1 supplier S recognised that within a collaborative network the people are important, and the sharing of experiences and development will be valuable for both the incubatees and tier 1 suppliers. The tier 1 supplier S views the Ford incubation project as a necessary mechanism for doing business in South Africa, *“so the training and all these programs are very important in this moment to sustain the South African Automotive Industry and to get more OEM’s to come here”* (South Africa) (As quoted by the tier 1 Supplier S who was interviewed).

Tier 1 supplier S understands the strategy of the Ford project *“that all the training for the incubatees is driven by the AIDC, except for the technical things related to the components.”* The tier 1 supplier S understands that the objective of the Ford incubation centre is to provide quality components to Ford and the other objective is to develop local content supply through training the incubatees to sustainably conduct business in the Automotive Sector. *“So I think this is a good program to develop BEE entrepreneurship, Skills transfer and growth for the Industry”* (As quoted by the tier 1 Supplier S who was interviewed).

The tier 1 supplier M believes that the success of the incubation model is based on the dynamics of finding the correct tier 1 suppliers who are willing and are not scared of sharing knowledge and technology with the incubatees. The tier 1 suppliers should not be afraid that the knowledge and technology shared will the incubatee or other industry participant will result in such party competing or cannibalising them. Both the tier 1 suppliers M and S agree that the level of skills and knowledge transferred to the incubates is limited to a certain segment of their business skills; *“we have protected ourselves, in the sense that we have not taught them how to mould, how to paint, we are only teaching them how to assemble a supply line and manage a work force”* (As quoted by the tier 1 Supplier S who was interviewed). So while there is collaboration the collaboration is limited to specific activities.



Tier 1 supplier M believes that the government support to BEE entrepreneurs is necessary in the form of grant funding and to implement initiatives like the Ford incubation centre to have a multiplier effect and desired impact on the representativeness of the Automotive Industry. While the idea of incubation as a means of support to new businesses in the industry is novel, currently its impact on the industry is too small, with only *“five entrepreneurs in five years’ time”* are being qualified from the Ford project. While this may be a start in collaboration towards competitiveness, it does not achieve critical transformation or necessary growth for the industry. The Ford project model would effectively produce only one entrepreneur each year for the South African Automotive Industry. While the Ford project is a workable program that enhances skills development it is not influential in terms of its impact towards industry competitiveness.

From a network culture perspective, the tier 1 supplier S as a global firm believes in the need to adapt to the culture of the host country whilst having some of the basics of its own culture that is proven to establish for everyone *“a good environment, a good ambient and a good friendship in work”*. The tier 1 supplier S was seconded by Ford to replace a local tier 1 supplier who failed to deliver as a participant of the collaborative network. The terms of participation in the collaborative network are less relevant to the tier 1 supplier S in fulfilling its deliverables to the OEM.

From a network dynamics perspective, the tier 1 supplier S has a competent team of five persons based in South Africa to support and “mentor” the incubatee to deliver the quality and other technical aspects that will protect Ford against loss on the production line. The tier 1 supplier M has appointed two employees permanently at the incubation centre to monitor quality, quantity and delivery. While the tier 1 supplier M may be *“actually out of pocket in both my companies, I am out of pocket in supporting the incubatees”*, the tier 1 supplier M believes in initiatives like the Ford project as a means of positively influencing the growth of the South African Automotive Sector, such that it intends to participate in the Nissan incubation centre in 2013. However the tier 1 supplier S believes that more can be achieved in terms of government policy and initiatives; *“somewhere this has to make an impact, either the government has to provide more funds or the volumes need to be increased”* to achieve the desired level of growth in increasing the supplier base of competence and competitiveness for the Automotive Industry.

The tier 1 supplier S believes the incubation centre to be a *“win-win”* for all in the collaborative network. Everyone wins. The tier 1 suppliers obtain facilities near to the

OEM's plant through the incubatees, for the OEM the logistic costs are decreased resulting in a cost saving that can be passed on to the end customer, for the country it is valuable as it creates supplier competencies, ensures skilled people and creates jobs and it is worthwhile for the incubatees who attain competencies and capabilities arising from the support and structure of incubation. Incubation provides optimal opportunities in terms of training, learning skills in a practical way without the risk of failure, arising from relationships established by the incubatees with the tier 1 supplier.

The tier 1 supplier M believes that collaboration makes all the sense in the world and it is the way forward globally; however at the time of inception the Ford project, the model and processes of the incubation project was unclear to both Ford and the AIDC. However as the model has been implemented and time has progressed valuable lessons have been learned and the Ford project has produced benefits through the results of the processes that have been followed thus far. The Tier 1 supplier expressed concern with the exit strategy for the incubatees and whether that strategy would ensure the incubatees' sustainability as tier 2 suppliers: *"My worry is what is the exit path for the incubates, what are they going to do after five years with no equipment and sufficient money to set themselves up?"*

### **5.4.3            *The Incubatee***

Two incubatees participating in the Ford project were interviewed.

The first incubatee is the owner of a company called Jamesco, a female from the previously disadvantaged Coloured race group, with no experience in production but with some knowledge of the motor industry from a services perspective. The incubatee was attached to a tier 1 supplier that produces assembled dash panels on the T6 Range. The first incubatee is known as "incubatee 1".

The second incubatee is the owner of a company called Rusticana 172, a male from the previously disadvantaged Black race group; a mechanical engineer with experience in the Automotive Industry on various levels. The incubatee was attached to a logistics tier 1 that is responsible for ensuring the correct sequencing of components to the assembly line. The second incubatee is known as "incubatee 2".

The initial experiences of incubatee 1 and incubatee 2 both reflect a common trend of a tier 1 supplier that is unwilling to share skills transfer or knowledge with the incubatee: *"I found I was marginalized and treated with a lot of contempt, it was basically done on*

*the premise that you do this, but there was no process in place, there was no proper methods” (As quoted by Incubatee 1 who was interviewed).*

*“I think from the beginning the idea of collaboration was accepted however the whole project plan to be implemented and the milestones to be achieved were absent, and as consequence there was no communication and understanding as to my fit in the process. The tier 1 showed no interest in me and I was uncertain as to what function in the logistic chain I was to function” (As quoted by Incubatee 2 who was interviewed).*

While both incubatee 1 and incubatee 2 commenced their journeys in uncertainty regarding their role and responsibilities within the collaborative network towards the achievement of the common goal, incubatee 1 was successful in engaging the AIDC and the OEM in the difficulties experienced with the tier1 supplier in failing to supply the correct quality and supply of components. The effect of the tier 1 supplier’s failure in performing in accordance with the structure and strategy of the collaborative network resulted in the OEM substituting the local tier 1 supplier with a global tier 1 supplier who specifically set up operations in South Africa at the request of Ford.

Incubatee 2 was successful in arranging a meeting between the logistic tier 1, AIDC and himself that resolved in an understanding to enter into a service level agreement, however such agreement had not transpired and nor had any follow up meeting occurred. Incubatee 2 maintained that the OEM had no contact or relationship with incubatee 2 and was unaware of the difficulties experienced because there has been no disruption in sequencing to the assembly line, in addition to the logistics tier 1 provider been physically present in the plant. The AIDC, too, has been unable to follow up and obtain clarity regarding the role of incubatee 2 in the logistics supply chain, the plan of development and the transfer of skills: *“At this moment I am limited in my participation in the incubation and exposure for purposes of transformation” (As quoted by Incubatee 2 who was interviewed).*

Regarding the issue of competition, the incubatee 2 was seen as a competitor to the tier 1, and incubatee 2 believes that he is being prevented from providing the service as the tier 1 historically has and continues to supply the service to the plant. Furthermore, the incubatee 2 is of the opinion that the tier 1 is unwillingly to share know-how and impart skills to the incubatee 2. The tier 1 supplier had reluctantly been forced to participate in the collaborative network and to outsource segments of its duties to the incubatee because of the relationship between Ford and the AIDC.

Conversely, incubatee 1 does not view herself as being in competition with her tier 1 supplier. Incubatee 1 sees herself as an extension to a global supplier of components for whom she assembles a unit. Incubatee 1 sees herself in a relationship of dependency with her tier 1 supplier who is the sole supplier of components to her business and with whom she has an obligation to deliver *“quality parts at the right time and in the right quantities to Ford”*.

Incubatee 1 believes that the AIDC plays an important role in the collaborative arrangement between the OEM, the tier 1 supplier’s, the incubatees and herself. Incubatee 1 sees the AIDC as a co-ordinator of the firms within the network in achieving the desired collaboration. The AIDC regulates the balance of power between the different actors in the network: *“The common goal is to support Ford, we work together to support Ford”* (As quoted by Incubatee 1 who was interviewed). Incubatee 1 expressed confidence and trust in both the AIDC and her tier 1 supplier as they have shown her to be parties of integrity. Incubatee 1 believes that the AIDC is instrumental as an agent in bringing the correct industry participants together and in ensuring that plans are made and enforced correctly such that it benefits the industry.

Incubatee 1 understands the importance of the focal firm, the OEM in the Ford project: *“It is important for us to deliver the best, because obviously Ford is a global company and can get any company from around the world to make components that can be shipped to them, it’s not like they are totally dependent on us”*. Incubatee 1 is also well versed with the penalties that Ford can impose for defective quality and supply. Incubatee 1 understands the pivotal role played by her company and her tier 1 supplier in meeting Ford’s expectations (the common goal). Incubatee 1 expressed a need to maintain productive relationships with Ford and also articulated the need to establish for her company a name associated with quality.

Incubatee 1 is very positive in respect of her analysis of her relationship with her tier 1 supplier. She finds that the tier 1 supplier brings international standards and international knowledge to their interactions and possesses the intellectual capacity related to the design and functionality of the components: *“It’s an excellent way of moving forward”*. While the tier 1 is demanding in terms of delivery, to supply the best to customer, the tier 1 is concerned with the welfare of its employees and safety. The relationship between incubatee and tier 1 supplier is a partnership to support Ford. The incubatee 1 finds that her relationship with the tier 1 supplier is continuously evolving to attain completeness; *“it’s like a marriage, something that you have to work at, you have to be open and transparent, it’s just like a marriage”*.

Incubatee 1's business has prospered under the direction of tier 1 supplier S to include the export of components to Argentina. Incubatee 1 believes that without the support of the AIDC and the tier 1 supplier she would not have been successful in pursuing business in the Automotive Industry. Had it not been for the involvement of government and the AIDC in establishing BEE entrepreneurship in the Automotive Industry she believes that *"not anyone would take the time, resources, the energy, the effort and all those things to do all this sharing of knowledge and skills transfer. It's a lot of work, time and it's a good project"*. The knowledge and learning that she has acquired and the support from her tier 1 supplier and the AIDC makes her believe that "yes" she can succeed in establishing herself and achieving sustainability in the industry.

#### **5.4.4           The Agency (AIDC)**

The AIDC sees itself as the facilitator and co-ordinator of the collaborative network, responsible for the success of the Ford project. In implementing the Ford Project, the AIDC has committed to Ford that it would ensure that the components are supplied in the correct quality and sequence. The AIDC has committed to the tier 1 suppliers that it would ensure the liability of the tier 1 supplier to the OEM in terms of the quality and quantity of the component post involvement of the incubatee in the value chain in ensuring delivery performance.

The AIDC sees its role as agent from a logistic and supply chain perspective in making the Automotive Industry more competitive. While the AIDC does not force the industry to collaborate, the AIDC understands what the industry needs and therefore creates awareness and understanding among industry participants of the AIDC offerings which includes, among others, supply and skills development through collaboration or other means. The AIDC serves as a platform that brings industry together to facilitate industry needs.

*"I don't know if we are a network by definition, but in terms of the ultimate goal of facilitating industry needs and increasing BEE presence in the Automotive Industry, we can be considered as a network in terms of ourselves"* (As quoted by Neeraj Kessery—Manager Supply Chain Management, AIDC). The AIDC considers itself a unique agency that utilises government resources with the support and commitment of industry participants to ensure interventions that benefit the industry. The AIDC considers the Ford project and the Ford incubation centre a flagship project that analyses the socio-

economic needs of the Automotive Industry in creating jobs and facilitating BEE entrepreneurship.

The network structure of the Automotive Industry is hierarchical. The OEM dictates the industry. Without the OEM driving the collaborative efforts in consolidating the supply chain to reduce cost and increase productivity improvements, the industry will not develop the necessary levels of supplier base competence and consequential competitiveness. As a consequence of the OEM being completely production driven there is a need for the OEM to share and transfer knowledge to the supply chain to optimally meet the OEM's needs cost effectively. For industry to perform optimally it is necessary for the government to understand industry's needs, to create initiatives and efficiencies that adhere to the request of the OEMs (incentive policies, skills development and supply development) and to prevent the OEMs from shutting down.

While the OEMs have a network culture among themselves and with tier 1 suppliers in ensuring constant quality supply and cost efficiencies, the culture is not replicated with other industry participants downstream unless some sort of collaborative project is embarked upon. As a consequence of the government's ability to influence factors affecting the Automotive Industry, a network culture exists in terms of the government supporting OEMs and their supply base.

From a network dynamic perspective, in the Ford project the OEM does not have a direct relationship with the incubatees. As a specific pre-condition to the Ford incubation model, Ford is not obliged to communicate or deal with the incubatees in fulfilling the common goal. Should there be a problem with regard to the quality or supply of a component, the issue is escalated to the AIDC, who rectifies and establishes policies of quality and delivery through the services of a quality manager employed and positioned by the AIDC at the incubation centre.

At the inception of the Ford project the relationship dynamics between the tier 1 suppliers and the incubatees was different to the one that has since evolved. *"At the beginning it was almost a grudge purchase because they were forced into this relationship by their customer (OEM), but now they are more on a partnership where they have good discussions around concerns and have established good relationships toward satisfying the customer"* (As quoted by the Consultant who was interviewed). The tier 1 suppliers have realised the profitability point of being located on the customers' door step through their presence in the incubation centre. The tier 1 suppliers obtain the advantages of the logistic savings, although they may be incurring

additional cost in being present at the incubation centre, but these costs are subsidised by the AIDC.

The tier 1 suppliers do not see the incubatees as a threat to their business because of the small size of the incubatees' businesses and because the incubatee is focussed on manufacture and assembly and not component design. The intellectual property of the component is vested with the tier 1 supplier who understands how the components work, the tolerance level and the intricacies thereof because they are the design owners of the component. The impact that the tier 1 suppliers have on the incubatees is teaching the incubatees to become automotive business entrepreneurs. *"It's understanding how to run a business in a profitable way making sure your production does not stop, making sure the product is of high quality, making sure the product is there on time. These are the key things that the South African Automotive Industry lacks for transformation"* (As quoted by Neeraj Kessery—Manager Supply Chain Management, AIDC).

The challenges experienced by the AIDC in establishing the Ford project can be listed as follows:

- The South African tier 1 suppliers are not as open minded as the international tier 1 suppliers who see the value in sharing knowledge and skill transfer and the resultant supplier based competencies that develop from attaching an incubatee to the tier 1 supplier. The AIDC believes that there needs to be a change in the mind-set of the South African tier 1 suppliers in taking responsibility to develop the Automotive Industry.
- The size of the incubation centre is too small and its function is limited to assembly. The facilitation of five incubatees over a period of five years does not have the impact of critical mass to make it sustainable. However the incubation centre is proof that socio-economic benefits of entrepreneurship and job creation can be achieved.
- Government policy initiative and support in terms of funded incentive schemes designed at reducing logistic costs and stimulating exports is necessary as the market is currently too small to have high local domestic consumption. Exporting components and assembled vehicles will ensure critical mass for the industry: *"The burning issue for the industry is logistics cost" therefore the need to build localisation programs that facilitates local component manufacturing*". *"We need to reduce the incoming logistics cost as much as possible and source locally"* (As quoted by the Consultant that was interviewed).

- In terms of learning lessons from implementing the Ford project, the AIDC has realised many, from the process of the selection of the incubatees to the advanced involvement and participation of the tier 1 suppliers in the selection, for the incubatee to complete business related training which is segregated from the technical training related to the component. Furthermore, prior to the incubatee being located at the incubation centre and being plugged into the supply chain, the incubatee must acquire knowledge and skill training at the tier 1 supplier for a fixed period of time.

It is envisaged by the AIDC that once these incubatees graduate from incubation, an established relationship with the tier 1 supplier would have been formed. The best perceived outcome is that perhaps the tier 1 supplier will outsource some work based on previous experience or reputation and in this way continue to support the BEE business to result in growth and sustainability as a tier 2 supplier: *“Once they graduate out of incubation we will assist them in terms of support and mentorship, we will always be a part of their business to ensure they succeed”* (As quoted by one of the member of the AIDC).

## 5.5 Responding to Research Questions

The paragraphs below seek to present the views of the interviewees regarding the research questions raised in Chapter 3.

1. What is the adopted strategy of the collaborative network?
2. What is the established structure of the collaborative network?
3. What are the dynamics of the collaborative network?
4. What is the culture of the collaborative network?
5. Has the collaborative network achieve competitiveness for the industry?

The views will be presented in a table format as per the interviewees' designation within the Ford Project.



**Table 2 What is the adopted strategy of the collaborative network?**

| Designation              | View   |
|--------------------------|--|
| <b>OEM (Ford)</b>        | <ul style="list-style-type: none"> <li>• The OEM analysed methods of initiating collaboration between the tier 1 suppliers and the BEE entrepreneurs in establishing a larger bases of suppliers and foresee the incubatees becoming possible tier 2 and 3 suppliers.</li> <li>• The commitment to the Ford incubation centre from the tier 1 suppliers was obtained by guaranteeing certain volumes of component supply and business growth for the tier 1 supplier in exchange for partnering with the entrepreneur in transferring skills, knowledge and technology.</li> <li>• The idea was to reduce the cost of the components in reducing logistics costs by moving small parts in large volumes to be assembled by the entrepreneurs beside the plant.</li> </ul>  |
| <b>Tier 1 supplier M</b> | <ul style="list-style-type: none"> <li>• The model of business followed by tier 1 supplier M is a joint venture collaborative model, in combining companies that have the technology and know-how with local manufacturing, local management and local marketing.</li> <li>• Tier 1 supplier M was asked by the OEM to participate in the Ford project. The tier 1 supplier looked at its participation in the Ford project from a customer comfort perspective in that they would be close to the OEM, in being able to deliver to the OEM from the incubation centre, even though the incubation model was not very clear to them in respect of what they were required to do.</li> <li>• The Ford model only works if the entrepreneur has the right attitude and some basic level of skills that can be nurtured and developed in a structured way. So far the entrepreneurs under their guidance have done well and seem to have learned the business.</li> </ul> |
| <b>Tier 1 supplier S</b> | <ul style="list-style-type: none"> <li>• The global tier 1 supplier was requested by Ford to come to South Africa. The level of involvement of the tier 1 supplier in South Africa is limited to its activities in the Ford incubation centre.</li> <li>• Although their business in South Africa is small, the tier 1 supplier is keen to support Ford in alignment with its global strategy to support the OEM.</li> <li>• The incubation centre is a unique situation for the tier 1 supplier, who perceives it as a form of outsourcing. The tier 1 supplier business does not involve outsourcing, so this is a new experience.</li> <li>• The tier 1 supplier understands that the establishment of BEE entrepreneurship and the transfer of skills should have a positive effect in establishing a larger base of local components and local suppliers equipped in terms of productivity and quality.</li> </ul>  |

|                            |   |
|----------------------------|---|
| <p><b>Incubatee 1</b></p>  | <ul style="list-style-type: none"> <li>• The tier 1 supplier has been very strategic and supportive in transferring skill. The tier 1 supplier's focus and objective is to support Ford and the supplier has been instrumental in terms of teaching and training the incubatee to meet Ford's demands.</li> <li>• The common goal of the participants in the network is to support Ford. The tier 1 supplier and incubatees work together as a team to support the OEM.</li> <li>• Ford is very demanding and the partnership of incubatee and tier 1 supplier must support Ford in providing the correct quality and quantity to the assembly line. The risk of Ford replacing the supplier with alternative suppliers is high where the supplier has failed to deliver to Ford in accordance with its needs.</li> </ul>   |
| <p><b>Incubatee 2</b></p>  | <ul style="list-style-type: none"> <li>• The tier 1 supplier, while it may have agreed to be a part of the Ford project, failed to implement the project plan and the milestones of delivery in achieving the objectives of the Ford project.</li> </ul>  |
| <p><b>Agent (AIDC)</b></p> | <ul style="list-style-type: none"> <li>• The Automotive Industry is designed to support the OEM. The supplier base needs to be competent and needs to be in close proximity to the OEM to ensure cost savings in production that would ultimately benefit the consumer.</li> <li>• The AIDC does not force the industry participants to collaborate although they may meet monthly to discuss industry related issues. The AIDC creates awareness and understanding about what the AIDC can do to assist companies in achieving competencies, skills and economies of scale.</li> <li>• The ultimate goal is to establish a larger base of local suppliers by increasing the BEE entrepreneurship presence in the Automotive Sector through collaborative networks that facilitates support to small business in transferring skills, knowledge and competencies to the incubatee entrepreneurs.</li> </ul> |

**Table 3 What is the established structure of the collaborative network?**

| Designation              | View   |
|--------------------------|--|
| <b>OEM (Ford)</b>        | <ul style="list-style-type: none"> <li>• While the reasons for collaboration in the industry is to meet the OEM needs, the Ford project was designed to also include the socio-economic needs of the South African government in creating BEE entrepreneurship and the Automotive Industry in developing the supplier base in the Automotive sector.</li> <li>• Direct collaboration occurred between the tier 1 supplier, the OEM and the AIDC in setting up the Ford project.</li> <li>• The network is formally structured in terms of contracts that establish the deliverables between the tier 1 supplier and incubatees and formal undertakings by AIDC to the tier 1 suppliers and the OEM in respect of the incubatees' performance.</li> <li>• The network is hierarchical with the OEM dictating the service levels to the parties.</li> </ul>  |
| <b>Tier 1 supplier M</b> | <ul style="list-style-type: none"> <li>• As the OEM still imposed the quality, delivery and cost expectation on the tier 1 supplier, notwithstanding the outsourcing of certain aspects of assembly of the component to the incubatee, the tier 1 supplier became a partner with the incubatee in satisfying the customer's needs.</li> <li>• The incubatees are managed by the tier 1 supplier in terms of the technological requirements and deliverables of the component and are managed by the AIDC in terms of the accumulation of business skills and acumen.</li> <li>• The tier 1 supplier is happy to pass certain skills and knowledge to the incubatees. The tier 1 supplier is not afraid that the incubatee would become a competitor because the sharing is limited to assembly and managing a workforce. The tier 1 supplier has still reserved for itself the knowhow related to moulding, painting and making components. The intellectual property with regard to the component design and functionality resides with the tier 1 supplier.</li> </ul> |
| <b>Tier 1 supplier S</b> | <ul style="list-style-type: none"> <li>• The experience in the incubation centre has resulted in benefits. The tier 1 supplier understands the need to develop the local supplier base and the importance of skills transfer and entrepreneurship development in supply chain management.</li> <li>• The tier 1 supplier does not have a clear vision with regard its' participation in the incubation centre. For now it is focussed on taking over from the local tier 1 supplier and to effectively organise the two areas the incubatee is responsible for. Only once this is complete will further growth of the incubatee into other areas of experience be discussed.</li> <li>• The tier 1 supplier does not have a problem with transferring skills and does not see the incubatee as a competitor. The incubatee is not taught everything of the tier 1 supplier business and the knowledge of the tier 1 supplier is unique to it.</li> </ul>   |
| <b>Incubatee 1</b>       | <ul style="list-style-type: none"> <li>• The tier 1 supplier's support is critical to the incubatee as the tier 1 supplier possesses the knowledge related to the component and provides the components for the assembly line. Only through the tier 1 supplier's commitment and co-operation to the incubatee can</li> </ul>  |

|                     |  |
|---------------------|--|
|                     | <p>the assembly of the component run smoothly and effectively</p> <ul style="list-style-type: none"> <li>• There is a relationship of dependency with the tier 1 supplier, who not only is the sole supplier of the component, but who also has to transfer the necessary skills and knowledge to equip and empower the incubatee to perform according to the needs of the OEM.</li> </ul>   |
| <b>Incubatee 2</b>  | <ul style="list-style-type: none"> <li>• While the tier 1 supplier and the incubatee had agreed to enter into a service level agreement for purposes of determining the incubatee's role and responsibility and while the terms had been agreed verbally, the contract has failed to be materialised by the tier 1 supplier.</li> <li>• The AIDC tried to assist the incubatee in receiving the commitment from the tier 1 supplier, however this to has not been successful. This confirms that the AIDC has no influence over the tier 1 supplier and it is the OEM who can compel the tier 1 supplier to align and perform in terms of the collaborative structure and strategy.</li> </ul>   |
| <b>Agent (AIDC)</b> | <ul style="list-style-type: none"> <li>• The AIDC was structured to fill the vacuum in the industry as an agent who would support the sector from a delivery point of view. The Ford project was structured to support the supply chain, supplier development, skills development and BEE entrepreneurship in the industry.</li> <li>• The AIDC's role is to understand the disjoint between industry needs and government's socio-economic goals and to design initiatives where the two work harmoniously together in benefiting industry.</li> <li>• The Ford project was structured to select five entrepreneurs to be attached to tier 1 suppliers that would be exposed to skills transfer and competencies to deliver to the OEM local components by means of being a part of a live production manufacturing system that feeds the OEM assembly line.</li> </ul> |

**Table 4 What are the dynamics of the collaborative network?**

| Designation              | View   |
|--------------------------|--|
| <b>OEM (Ford)</b>        | <ul style="list-style-type: none"> <li>• The OEM requires the technological skills and competence of the tier 1 supplier in terms of the component design and supply and the OEM requires government support in the form of policy initiatives and funding incentives to procure business for the assembly plant.</li> <li>• The OEMs and tier 1 supplier companies meet on a regular basis with government to find solutions to industry needs.</li> </ul>  |
| <b>Tier 1 supplier M</b> | <ul style="list-style-type: none"> <li>• The incubatee has learned from the tier 1 supplier the business of assembly, broadcast systems, sequence of life and the management of people.</li> <li>• The benefit of training the incubatee would lead to job creation and meeting the expectations of government in terms of establishing BEE entrepreneurship and skills transfer. However, the tier 1 supplier is concerned with the sustainability of the incubatee's business post incubation.</li> <li>• The tier 1 supplier believes that the incubation centre has not equipped the entrepreneurs for post incubation (5 years later); the incubatee would not have made enough money to procure own premises and equipment. Presently in supporting the incubatee the tier 1 supplier is making a loss because the volumes are small and not critical. Going forward, the tier 1 supplier believes government would need to create some special initiatives for the incubatees' sustainability.</li> </ul>   |
| <b>Tier 1 supplier S</b> | <ul style="list-style-type: none"> <li>• Suppliers with the lack of skill has been identified by the tier 1 supplier as the greatest obstacle to productivity; therefore the tier 1 supplier believes the government programs are important in growing the supplier base and local volumes thereby sustaining the Automotive Industry. .</li> <li>• The supplier believes that government needs to create the correct incentives to attract more OEMs to establish production plants in South Africa.</li> <li>• The incubatees need to have the correct attitude in wanting to acquire the transfer of skills and knowledge. The tier 1 supplier provides support to the incubatee in terms of mentorship and handholding. Thereafter the incubatee will be in a position to receive outsourced work, i.e. putting the right structures in place to ensure that the incubatee benefits from the relationship in terms of a continuous flow of work.</li> <li>• The tier 1 supplier is a participant in the collaborative network to support and develop the incubatee's business, to share its experiences and information while pursuing the continued supply of parts and quality to Ford.</li> </ul> |

|                            |   |
|----------------------------|---|
| <p><b>Incubatee 1</b></p>  | <ul style="list-style-type: none"> <li>• The AIDC provides the business training and support and the tier 1 supplier provides the technical training and knowledge and skills transfer related to the component.</li> <li>• There is a direct relationship between the incubatee and the tier 1 supplier and between the tier 1 supplier and the OEM.</li> <li>• The tier 1 supplier brings to the collaborative network the intellectual property, the international knowledge and standards. Providing a platform from which the incubatee is equipped to learn and move forward to becoming a tier 2 supplier.</li> <li>• The balance of power resides with the OEM who dictates good quality parts at the right time and in the right quantities. The suppliers within the supply chain are in a dependency relationship with the OEM, who has the ability to lower the quality rating status of the supplier where there is defect in delivery and quality.</li> </ul> |
| <p><b>Incubatee 2</b></p>  | <ul style="list-style-type: none"> <li>• The behaviour of the tier 1 supplier in failing to engage with the incubatee in terms of defining the incubatee's scope and failing to transfer to him the necessary skills and competencies, seems to indicate that the tier 1 supplier is threatened by the incubatee and may consider the incubatee a competitor and for this reason fails to support the incubatee.</li> </ul>   |
| <p><b>Agent (AIDC)</b></p> | <ul style="list-style-type: none"> <li>• The AIDC plays an important role in collaborating with the various parties and brings them all together towards the common goal of satisfying the OEM in terms of supply, quality and cost.</li> <li>• The network is hierarchical with the OEM dictating its needs to suppliers in the industry. The tier 1 supplier is there to support the OEM and fulfil its needs. If either the OEM or the tier 1 supplier is not present then there is no network or industry.</li> </ul>   |

**Table 5 What is the culture of the collaborative network?**

| Designation              | View  |
|--------------------------|---|
| <b>OEM (Ford)</b>        | <ul style="list-style-type: none"> <li>• A collectivist culture of collaboration exists between various OEMs in setting up purchasing directives and global sourcing.</li> <li>• A collectivist culture exists between the OEM and the government in establishing the correct policy incentives for purposes of achieving cost efficiencies in maintaining industry sustainability.</li> <li>• A collectivist culture does not exist with the incubatee, who the OEM chooses not to deal with in terms of supply defects; but merely sees the incubatees as an extension of the tier 1 supplier's business.</li> <li>• A collectivist culture exists between the OEM and tier 1 supplier, to whom the OEM depends on for the development and supply of critical components and services. The OEM works closely with the tier 1 supplier in the design of the component prior to the launch of the car.</li> </ul>   |
| <b>Tier 1 supplier M</b> | <ul style="list-style-type: none"> <li>• There exists a strong culture of working together between the tier 1 supplier and the incubatee, who learns and takes direction from the tier 1 supplier in meeting Ford's needs.</li> <li>• Whilst initially the Tier 1 supplier took the incubatee under its wing because it had to, the relationship arising from the interaction has evolved into a partnership, encompassing a certain level of trust in fulfilling the customer's needs.</li> </ul>  |
| <b>Tier 1 supplier S</b> | <ul style="list-style-type: none"> <li>• The tier 1 supplier believes the network culture is driven by the AIDC and that the tier 1 suppliers need to make effort and combine their own rules and management with the objective of the AIDC.</li> <li>• While the tier 1 supplier is mindful of the cultural differences; it believes there are certain principles that need to be implemented that provide a good working environment.</li> <li>• The tier 1 supplier believes the support from AIDC is instrumental in providing the tier 1 supplier with immediate information on the industry and its dynamics. Being a part of the Ford project provides some sort of support that the tier 1 supplier would not have received if it came into the industry independently.</li> <li>• The tier 1 supplier believes its participation in the development of the incubatees would in turn result in its participation in the South African motor industry.</li> <li>• The tier 1 supply believes that the participating parties of the Ford project trust each other. Trust is maintained by being honest and by resolving disagreements.</li> </ul> |

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|----------------------------|---|
| <p><b>Incubatee 1</b></p>  | <ul style="list-style-type: none"> <li>• The incubatee has trust and confidence in both the AIDC and the tier 1 supplier, arising from the integrity both of them had displayed to the incubatee.</li> <li>• Post incubation, the incubatee believes good relationships with the tier 1 supplier and the AIDC will be sustained on trust and reputation that had developed while in incubation.</li> <li>• The AIDC has created a culture of industry participants coming together to find solutions for industry problems.</li> </ul>  |
| <p><b>Incubatee 2</b></p>  | <ul style="list-style-type: none"> <li>• Due to the lack of the tier 1 commitment to the incubatee, the incubatee has limited exposure in the Ford incubation facility and believes that a culture of collaboration does not exist. The AIDC as facilitator is not equipped to exert influence over the tier 1 supplier and looks to the OEM to exert influence over the tier 1 supplier.</li> <li>• The incubatee is subject to a relationship of dependency to the tier 1 supplier, OEM and AIDC.</li> </ul>  |
| <p><b>Agent (AIDC)</b></p> | <ul style="list-style-type: none"> <li>• The South African Automotive Industry does engage in collaboration initiatives between OEM firm in order to achieve logistic and production cost savings and the participants do collaborate across the value chain with various other players in the industry to achieve economies of scale and other cost savings.</li> <li>• While collaboration does occur at an operational level between OEM and suppliers to meet the OEM needs, the barrier to industry competitiveness is the high input cost. To overcome the cost of importing components the local manufacturing content must be increased. Increasing local content is only possible to the extent that the supplier base has competence in terms of the knowledge and skills to provide quality supply to the OEM.</li> <li>• The Automotive Industry does not have a collectivist culture. It is necessary to change the culture to one that is collaborative. To ensure this change, the industry participants must endure a mind-set change and engage each other in initiatives aimed at collaboration that would achieve competitiveness for the industry.</li> </ul> |



**Table 6 Has the collaborative network achieved competitiveness for the industry?**

| Designation              | View  |
|--------------------------|---|
| <b>OEM (Ford)</b>        | <ul style="list-style-type: none"> <li>• The Ford project has found a way for skills transfer, people development and BEE entrepreneurship in the Automotive Industry to develop supplier competencies without a risk to quality, cost and delivery to the OEM.</li> <li>• The Ford project provides, through collaboration, the ability to develop and progress the entrepreneur to become a tier 1 supplier and to achieve sustainable development in achieving 100% supplier base in South Africa.</li> <li>• The Ford project has succeeded in knowledge and skills transfer on the shop floor, as proven by two of the largest suppliers at the incubation centre.</li> <li>• Initiatives like the Ford project on a larger scale will over time lead to establishing local component manufacturing and assembly and as a consequence competitiveness for the Automotive Industry.</li> </ul>  |
| <b>Tier 1 supplier M</b> | <ul style="list-style-type: none"> <li>• While the Ford project is a good initiative, it has to be larger, faster and have a better multiplier effect. Currently it is producing five entrepreneurs in five years. The government needs to invest more in replicating initiatives like the Ford project and in providing the entrepreneur with funding, facilities and machines to produce locally.</li> <li>• The tier 1 supplier needs to support small businesses in sharing volumes with across the value chain. The tier 1 supplier needs to work with smaller firms to establish the competencies to deliver the quality and quantity of components that will support the OEM.</li> <li>• The government needs to talk to industry and investigate ways of growing local volumes, reducing logistic cost and achieving cost economies.</li> <li>• The various initiatives are a means of achieving competitiveness for the Automotive Industry.</li> </ul>  |
| <b>Tier 1 supplier S</b> | <ul style="list-style-type: none"> <li>• The tier 1 supplier believes the Ford project to be a win-win initiative for all. The tier 1 supplier procures facilities that are near the OEM in partnering with the incubatee. . The OEM enjoys decreased logistics cost and cost savings. The country benefits in increasing the supplier base and the establishment of local manufacturing and assembly thereby creating jobs and enhanced economic activity. The incubatee benefits in acquiring necessary training and practical experience to become a part of the value chain without the risk of failure.</li> <li>• The tier 1 supplier sees the Ford project as team work and collaboration. Each of the parties in the team works toward a common goal, the AIDC guarantees that the incubatee has the correct support from the tier 1 supplier and the tier 1 supplier protects the OEM as the customer who pays wages for everyone.</li> <li>• The Ford project is a means of achieving competitiveness for the Automotive Industry.</li> </ul> |

|                            |  |
|----------------------------|--|
| <p><b>Incubatee 1</b></p>  | <ul style="list-style-type: none"> <li>• The Ford project provided an opportunity for entrepreneurs to overcome the barriers of entry to the Automotive Industry. Under normal circumstances the incubatee would not have entered the automotive business or would have been unable to become a successful entrepreneur without the support programs and initiatives of the government.</li> <li>• The role of the government and the support of the AIDC in the Ford project have ensured collaboration among industry participants in establishing skills development, increasing local content manufacture and assembly, increasing the competence of the supplier base in trying to ensure competitiveness for the industry.</li> <li>• For the incubatee to remain relevant in the industry post incubation it would be necessary for the incubatee to belong to a network of people within the same industry for purposes of sharing knowledge, technology, competencies, skills and production methods.</li> <li>• The incubatee advocates collaborative networks as a means of achieving competitiveness.</li> </ul>   |
| <p><b>Incubatee 2</b></p>  | <ul style="list-style-type: none"> <li>• While the incubatee may believe in the Ford project as a way of moving forward in terms of achieving transformation for the industry, creating jobs and entrepreneurship, the incubatee's experience in the incubation centre has been disappointing in terms of neglect and non-interest from the tier 1 supplier and a network facilitator with very little influence.</li> </ul>   |
| <p><b>Agent (AIDC)</b></p> | <ul style="list-style-type: none"> <li>• The AIDC considered the Ford project the step in the right direction in terms of transforming the industry for BEE entrepreneurship, developing the supplier base capabilities through skills transfer and increasing local component manufacture and as a consequence industry growth notwithstanding the many lessons that have been learned from the Ford project. The Ford project will be tweaked to consider the many lessons learned and replicated by Nissan in the establishment of the Nissan incubation in 2013 that is twice the size of the Ford project in terms of impact. and is also to be replicated in the aerospace industry.</li> <li>• The Ford project is still in the process of completion and will be a success if BEE entrepreneurship and growth for the industry has been achieved in terms of the reducing the cost of doing business in South Africa as a consequence of local component manufacture and the development of local competencies. The Ford project will be successful once the incubatees are accomplished, sustainable automotive business entrepreneurs that have product knowledge and technical skill in the Automotive Sector and who can run an automotive business successfully.</li> </ul> |

## 5.6 Conclusion

The preceding sections have sought to reflect, categorise and analyse the data on the Ford project that was obtained from the interviewees during the case study investigation. The findings on the Ford Project were presented to provide insight to the

collaborative networks in the Automotive Industry in answering the research questions proposed in Chapter 3.

Chapter 6 evaluates the analysis and findings of the Ford project against the literature review that was presented in Chapter 2 in establishing the integrated model on the components of collaborative networks linked to the design of the Ford project as a means of industry competitiveness. It would subsequently be possible to confirm the extent to which the Ford project as a manifestation of collaborative network design supports or contradicts the literature review.

## CHAPTER 6 - DISCUSSION OF RESULTS

### 6.1 Introduction

In this chapter, the results from Chapter 5 of this report are analysed and discussed in terms of the research objectives that were defined in Chapter 1, Section 1.4. The research study sought to ascertain whether collaborative networks are a means of developing and enhancing competitiveness in South African Industry, by investigating and analysing the Ford project against the theory and literature review of collaborative networks. In discussing the results the focus, from a literature perspective, is limited to the research questions that were developed in Chapter 3 of the report, namely:

1. What is the adopted strategy of the collaborative network?
2. What is the established structure of the collaborative network?
3. What are the dynamics of the collaborative network?
4. What is the culture of the collaborative network?
5. Has the collaborative network achieve competitiveness for the industry?

### 6.2 Evaluation of Findings

The paragraphs that follow discuss the research findings in detail. The research was conducted on a unique collaborative network in the Automotive Industry, known as the Ford project. The Ford project is a unique government and private sector initiative in the automotive supply value chain that provides positional advantage and cost benefits to industry and socio-economic benefits in the form of skills development, job creation and BEE entrepreneurship development. As a consequence of the Ford project the industry was prevented from incurring a 60 billion Rand revenue loss and the loss of 60 000 jobs. The Ford plant was transformed into to a high volume production facility in terms of a three billion Rand investment program. Notwithstanding the completion of the Ford project, which is in the second year of its five year development plan, the Nissan project based on the same model of the Ford project is scheduled to be implemented at twice the scale in 2013.

### **6.2.1            *What is the adopted strategy of the collaborative network?***

The three theoretical frameworks of collaborative networks (resource based view, network theory and alliance theory) contend that firms, as an integral part of their strategy, must through interactions with other firms establish strategic alliances and network relationships that enhance their capabilities and achieve collective efficiencies (Bretherton & Chaston, 2005; Mohannak, 2007, Chetty & Stangl, 2010 and Davies 2001). Through collaborative networks firms within industry combine their skills and competencies to create an enabling environment that provides resource capabilities, operational efficiencies and cost benefits that generate a sustainable competitive advantage (Huggins, 2010). The leveraging of collaborative networks is a strategic resource for achieving industry competitiveness (Thorgren, Ortqvist, & Wincent, 2009).

All of the participants of the Ford project understood that the collaborative network was established to achieve the OEM's delivery needs in ensuring that the correct sequencing of quality and quantity components are delivered to the assembly plant. The Ford project had been necessitated by the need to maintain South Africa's position as an automotive assembler arising from the intense competition in the global Automotive Sector. In seeking to find a solution that would meet the OEM's need to overcome logistics cost of importing components into South Africa for assembly, the South African government was motivated by the need to develop local supply by developing BEE entrepreneurship, skills transfer and job creation. As a consequence the needs of both government and the industry had been satisfied in establishing a larger supplier base and the localisation of components thus reducing overall production cost and making South Africa attractive for the OEM.

The strategic benefits of the Ford project are as follows:

- The Ford project, established through the incubation centre, has resulted in the location of the supplier base in close proximity to the plant. The close proximity of component supply has resulted in the offset of logistics costs, in shipping the components for assembly in large volumes and free of damage, thus reducing overall production cost. The savings logistics cost and the establishment of local component manufacturing and assembly in assigning the tier 1 supplier with an incubatee in the incubation centre had resulted in a winning tender by the Ford Motor Company of South Africa to assemble the T6 Range. .
- The needs of the South African government to develop and grow the Automotive Sector through skills transfer and the development of BEE

entrepreneurship has facilitated the tier 1 supplier in establishing local component manufacturing and assembly and in gaining enhanced volumes of component supply. This has resulted in a relationship of mutual dependency between the OEM and the tier 1 supplier, in ensuring critical supply of components. The government's need to develop the BEE entrepreneurship has resulted in the breakdown of the barriers to entry into the Automotive Sector for small scale businesses (incubatees) who now have access into the Automotive Sector and relationships with tier 1 suppliers who possess skills and competencies that the incubatee would not normally have access to. As a consequence of the Ford incubation centre, the supply value chain has grown to include the incubatee, the supplier base competencies have been enhanced and the competitiveness of the industry over time will be enhanced because of the increase in local component manufacturing and assembly and the transfer of skills and competencies from tier 1 supplier to the incubatee.

- The Ford incubation project has facilitated the establishment of BEE entrepreneurship in the Automotive Sector by transferring skills, knowledge and competencies to the incubatees in addition to saving and creating new forms of employment downstream. The socio-economic benefits arising out of the project has added to the competitiveness of the industry.
- The tier 1 suppliers are global suppliers who understand the needs of the OEMs and who have business models that “*support the customer*”, in ensuring the OEM is satisfied with the development and supply of components and services. As a consequence of the inclusion of the tier 1 suppliers in the collaborative network, the South African Automotive Industry benefits in establishing competencies arising from the international experience and practice of the tier 1 suppliers in maintaining high standards or delivery and quality.

The strategic benefits of the Ford project have produced collective efficiencies to the network participants of the Ford project that have resulted in superior performance for the network and competitiveness for the industry (Bretherton & Chaston, 2005). The Ford project is hierarchical in composition with the OEM as the focal firm and the strategy motivator in ensuring cost savings. The Ford project however is administered by the AIDC in defining the governance structure and ensuring socio-economic benefits for the industry. The Ford project addresses the lack of individual resources and capabilities and is formalised to develop and realise business opportunities jointly (Mitsubishi & Greve Insead, 2009).

Initially the tier 1 suppliers expressed reluctance to participate in the Ford project for fear of competition from the incubatees and were motivated to commit to the collaborative network by incentives of enhanced volumes of the component supply. The tier 1 suppliers now have established close relationships of working together with the incubatee, except in one incubatee's instance, to enable themselves as a unit to achieve the efficiencies required by the OEM (Mohannak, 2007). As a consequence of the establishment of the close working relationship, the incubatees have enhanced their competencies and capabilities through explorative learning and the transfer of skills and competencies and have become a part of the value chain (Westerlund & Rajala, 2010).

Despite the tier 1 suppliers being uncertain at inception of the idea regarding what the Ford project was meant to deliver, the tier 1 suppliers had faith in the collaborative effort by virtue of previous experiences of collaboration. The tier 1 supplier was committed to the OEM as the customer and therefore agreed to transfer skills and share knowledge with the incubatees. The tier 1 suppliers' relationship with the incubatees have been nurtured to evolve into partnerships of dependency and have established processes in collaboration with the incubatees in ensuring quality and supply to the OEM (Chetty & Stangl, 2010).

At the inception of the Ford project, the AIDC and the OEM were transparent regarding the strategy of the collaborative network in identifying the roles and the governance rules (Vasilchenko & Morrish, 2011). The tier 1 supplier and incubatees had subscribed to the strategy of the Ford project with very little information, however as the interactions evolved into relationships of collective efficiencies, the tier 1 supplier and the incubatees now share relationships with high levels of trust, co-operation and commitment integral to the success of the Ford project (Shuman & Twombly, 2010).

The incubatees have very little or no influence over the other network participants. The experience of incubatee 2 reflects his powerlessness as a network participant in compelling his tier 1 supplier to perform and fulfil its responsibilities as a network participant. The incubatee 2 believes that while his allocated tier 1 supplier may have an understanding of the strategy of the Ford project, it has failed to implement the project plan. Incubatee 2 further has no influence over the OEM in resolving the difficulties with his tier 1. The experience of incubatee 2 confirms the literature's view that the collaborative network for small and medium sized firms is only as effective as the willingness of larger firms to create networks of learning, sharing and development activities that provide entrepreneurial opportunity for small firms (Huggins, 2010). The

experiences of incubatee 1 confirm that collaborative networks create economic value for the small firms where the ability to acquire knowledge and other resources from the collaborative network is established (Chetty & Stangl, 2010).

The strategy of the Ford project is clear in having established the respective roles and responsibilities of the network participants in delivering collective efficiencies that enhance the competitiveness of the industry.

### **6.2.2            *What is the established structure of the collaborative network?***

The structure of the collaborative network is determined by the different levels of relationship dynamics and how those dynamics are managed (De Klerk & Kroon, 2007). The network participants, while committed to the achievement of collective efficiencies for the collaborative network, do not participate equally in the collaborative network. The tier 1 supplier is not an equal participant in the network relationship and abides by the “wants” of the OEM. However the tier 1 supplier is an integral part of the network and benefits from the efficiencies created. The incubatee is powerless in the network relationship with no influence over any of the network participants yet the incubatee is a recipient of benefits created by the collaborative network. The Ford project confirms the literature’s view that collaborative networks, notwithstanding the dynamics in structure, are creating a climate of business linkages, toward a culture of co-operation in achievement of a common goal (Davies, 2001).

The structure of the Ford project had been determined by the needs of the government in creating a sustainable Automotive Industry through skills development, job creation and entrepreneurship development and the needs of the OEM in achieving logistics and other cost efficiencies. The structure of the Ford project is further supported by various government policy initiatives that seek to ensure the sustainability of the Automotive Industry. The vision of the project is the uninterrupted delivery of quality supply at low cost to the OEM whilst achieving efficiencies for the tier 1 supplier in partnering with the incubatee and being based at the incubation centre and skills transfer and competency development for the incubatees in enhancing local component manufacture and supply.

The Ford project is organised by the OEM who determined the selection of the participating tier 1 suppliers and influences the selection of the incubatees. The balance of power resides with the OEM who dictates performance levels in terms of quality, quantity and delivery. The tier 1 supplier and incubatee are in a dependency



relationship with the OEM who has the ability to replace a participant in the project should there be failure in delivery to the OEM.

The AIDC as the administrator of the Ford project represents the interest of all project participants and facilitates the common goal (Shuman & Twombly, 2010). The AIDC as a government agency is mandated to consolidate the interest of various industry participants and to support the industry from a delivery perspective. The AIDC is the focal participant of the Ford Project and acts as the orchestrator of the activities of the network participants, identifying roles with governance rules (Vasilchenko & Morrish, 2011). The AIDC acts as the co-ordinator, information broker and relationship broker in achieving the desired outcome, however the AIDC has no authority over the tier 1 supplier to compel adherence to the governance structures. Notwithstanding the lack of enforcement ability, the AIDC is a necessary participant to sustain the network relationships as confirmed by the literature (Shuman & Twombly, 2010).

The Ford project is formally organised by the AIDC in terms of specific roles and duties for the project participants and the formally managed contracts establishing the deliverables of the project participants to each other and towards the project. The formal organisation of the relationships facilitates the co-operative behaviour among the project participants and defines the boundaries between the project participants *per se* and the project participant and the collaborative network (Vasilchenko & Morrish, 2011).

The incubatee is placed in a relationship of dependency with the tier 1 supplier who not only supplies the components for assembly but also trains and equips the incubatee in acquiring the necessary skills and knowledge transfer to ensure a continuous supply of quality components to the OEM. As a consequence of this dependency relationship the incubatee is placed in an alliance with the tier 1 supplier to perform strategically chosen divergent operations along the same value chain (Johnson, 2007). A hope has been expressed that this alliance would survive the Ford project for the Incubatee to be either incorporated into the tier 1 supplier's business or continue to be maintained as a strategic partner in the value chain.

To the extent that the tier 1 supplier is unwilling and does not commit to the development of the incubatee, the alliance will not materialise and the collaborative network will be defective in that some of the collective efficiencies will not be achieved (De Klerk & Kroon, 2007). As evident from the experiences of the incubatee 2, the role of the AIDC as administrator of the network alone is not sufficient to compel the tier 1

supplier to commit to the incubatee (Shuman & Twombly, 2010). It is only with the involvement of the OEM, who is not only the network organiser in terms of established criteria for participation but who is also critically dependent on an efficient collaborative network, that the tier 1 supplier can be induced by the OEM to perform or be replaced by another tier 1 supplier who is able to commit towards the achievement of the collective efficiencies, as evidenced by the experience of incubatee 1 (Johnsen, 2007).

Of critical importance to any collaborative network is the balance between co-operation and competition and the establishment of boundaries in respect of knowledge sharing and competency development (De Klerk & Kroon, 2007). The Ford project has clearly established boundaries in terms of sharing, support and productivity output. The incubatees are managed by the tier 1 suppliers in terms of the technological requirements and deliverables of the component and for this purpose the tier 1 supplier is willing to share its knowledge and skills limited to the area of component assembly. The incubatees are managed by the AIDC to acquire the business skills and competences to run a business. However, the incubatees' knowledge is limited to assembly and managing a workforce. However, the industry still benefits from an increase in the supplier base competence necessary to achieve the localisation of component manufacture and assembly.

Arising from the lack of competitive behaviour in the collaborative network, the tier 1 supplier is happy to share the skills and knowledge relevant to the incubatee and is not concerned with the issue of competition, even though the long term vision of the AIDC and the OEM is to develop the incubatees into tier 1 or 2 suppliers for purposes of a larger local supplier base and the localisation of components. The tier 1 supplier sees the relationship with the incubatee as a strategic partnership for that part of the business which is not the tier 1 supplier's primary business. The tier 1 supplier sees the incubatee as performing strategically chosen divergent operations along the value chain that enhances competitiveness for the tier 1 supplier business through increased co-ordination of their respective businesses (Johnson, 2007).

The Ford Project structure is fairly simplistic and aimed towards the achievement of the strategy. The tier 1 supplier and the incubatee have no influence over the structure of the network, yet both the tier 1 supplier and incubatee benefit from the structure of the network. The Ford project allows the network participants to achieve mutual beneficial outcomes that meet the needs of all the network participants.

### **6.2.3            *What are the dynamics of the collaborative network?***

In terms of manifestation as a collaborative network, the Ford project can be described as a virtual organisation where the project participants have come together to share skills and competencies to respond to an identified opportunity (Camarinha-Matos & Afsarmanesh, 2008). The Ford project can also be described as vertical collaboration where the participants co-operate along the value chain in relating their activities to each other in a sequential fashion to facilitate cost based competitiveness (Chetty & Stangl, 2010). The Ford project can also be described as a cluster that facilitates the collective learning processes for the participants, where knowledge and skills are shared to improve productivity and achieve cost benefits (Tambunan, 2009).

In terms of understanding the dynamics of the Ford project in the manifestation as a collaborative network, the Ford project does not meet any specific definition as discussed in the review of the available literature, and straddles across three variations of collaborative networks. In allocating the Ford project a classification it would manifest as virtual collaboration along the value chain arising from the vertical co-ordination of sequential activities that result in the transfer of skills and competencies, productivity gains and cost reductions.

The dynamics of the Ford project are determined by how the participants made sense of their environment, their shared meaning in taking concerted action and the ways in which they have structured and managed themselves towards the attainment of the collective efficiencies (Valkokari & Helander, 2007). While the AIDC has played a vital role in establishing the governance structures and co-ordinating the various project participants to collaborate towards the achievement of collective efficiencies in the form of cost benefits, job creation, skills transfer and entrepreneurship development in the Automotive Industry, it is the industry participants themselves arising from their interactions with each other, that defined the dynamics of the Ford project.

The incubatees are seen by the tier 1 supplier as partners in outsourcing, that are dependent on the transfer of skills and competencies from the tier 1 supplier, for purposes of achieving the uninterrupted supply, quality and quantity to the OEM. To be accepted as a partner to the tier 1 supplier and to be included in the supply value chain to meet the OEM needs, the incubatee has to have the right attitude to learn and take direction from the tier 1 supplier. This relationship dynamic is developed while the incubatee is a party to the value chain and establishes a working relationship with a willing tier 1 supplier that provides support and training to achieve the desired level of

skills and competency transfer. This result in a relationship of dependency between the incubatee and the tier 1 supplier, who supplies the components and provides the necessary knowledge and standards that would ensure the participation of the incubatee in the value chain and the long term sustainability of the incubatee post incubation (Mesquita & Lazzarini, 2008).

The tier 1 supplier is forced unwillingly into a relationship with the incubatee by the OEM. The tier 1 supplier is completely customer focused and would obey the OEM and participate in the project without fully understanding the idea or the goal in terms of the relationship with the incubatee. Notwithstanding the tier 1 supplier has outsourced the assembly of the component to the incubatee, while the tier 1 supplier continues to provide the necessary assurances to the OEM in respect of supply, quality and delivery. The tier 1 agrees to this relationship of dominance with the OEM to ensure certain volume orders and its sustainability. An unwilling tier 1 supplier in a collaborative network carries the risk of dissolving the relationship, which is seen as a temporary alliance, when the goal has been achieved (Romero, Galeano, & Molina, 2009). This kind of network dynamic is damaging to the development of industries and offers the conditions and environment for rapid and fluid configuration of collaborative networks when opportunities arise in achieving collective efficiencies (Tambunan, 2009).

The AIDC acts as the facilitator of the project and establishes the governance structures that ensure the network participants perform their respective roles and responsibilities to each other and to the collaborative network (Shuman & Twombly, 2010). The experience of incubatee 2 suggests that without the direct intervention of the OEM, the AIDC does not have any power or influence over the tier 1 supplier. The AIDC's influence is limited to the incubatee whilst in incubation in managing the incubatee's business, providing share services and business development training. Post incubation, without further incentive and involvement from the AIDC, the incubatees would vacate the incubation centre and need to procure premises and equipment to have continued participation in the value chain. This is a concern with regard to the sustainability of the Ford project notwithstanding the relationship dynamics that have formed between the incubatee and the tier 1 supplier. The incubatee as a small business would only be included in a collaborative network going forward to the extent that the participating firms can see the degree of fit between the resources the small firm can bring and the achievement of the desired outcome (Srivastava & Singh, 2010).

The OEM has no direct involvement in the Ford project. The OEM has a direct relationship with the tier 1 supplier in ensuring the critical supply of components and services. The OEM has a friendly relationship with the AIDC and meets with the AIDC on an *ad hoc* basis to communicate industry needs and incentive requirements. The OEM has no relationship with the incubatee, although it supports the Ford project as a means of developing the localisation of components, the establishment of a larger supplier base through BEE entrepreneurship and sees the Ford incubation centre as means of establishing the incubatees as potential tier 2 or 3 suppliers to the industry. While in incubation the incubatees are seen as an extension to the tier 1 supplier, who continues to provide the warranties in respect of the supply of components and services. These dynamics results in the incubatee never becoming a participant in the OEM's value chain unless the incubatee has been incorporated into the tier 1 suppliers business as a downstream supplier or source of raw materials (Monroy & Art, 2010).

The dynamics of the Ford project, although evident in terms of the defined roles and responsibilities of the network participants, is further defined by the various relationships of the participants, *inter se*. Without an understanding of the various vertical and horizontal relationships within the collaborative network it would be difficult to ascertain the dynamics of the collaborative network. The dynamics of collaborative networks would very dependent on how the network participants interact in arriving at a shared meaning in the way collective action is taken in the pursuit of the common goal (Valkokari & Helander, 2007).

#### **6.2.4            *What is the culture of the collaborative network?***

The culture of the collaborative network is determined by the structures and processes developed to bridge interpersonal differences to achieve the network participants' integration into the network in terms of strategic fit, strategic direction and shared values (Bretherton & Chaston, 2005; Beckett, 2005 and Shuman & Twombly, 2010). The culture of the Ford project is understood through the dynamics of the various relationships within the project as discussed in 6.2.3 above and the views of the project participants as articulated in table 5 in Chapter 5.

The dynamics of the tier 1 suppliers' relationships with the incubatee is that of a parent and child and involves high levels of trust and commitment to each other in fulfilling the needs of the OEM. The tier 1 supplier and the incubatees are not equals in terms of size, corporate identity and importance in the value chain, however in working closely

with each other in satisfying the OEM needs, a relationship of trust has evolved. This trust has generated willingness by the incubatee to learn and take direction from the tier 1 supplier. The tier 1 supplier in turn perceives the correct attitude from the incubatee and continues to work with the incubatee in transferring knowledge, skills and competencies in establishing a partnership in the supply value chain to fulfil the OEM's needs (Mohannak, 2007).

The reasons for the willingness by the tier 1 supplier to establish a relationship with the incubatee, is the tier 1 supplier is very customer focussed and would oblige the needs of the OEM, including a partnership with an incubatee who requires skills and competencies transfer. The tier 1 supplier's culture of satisfying the customer facilitates the collaborative activity of the tier 1 supplier in the sharing of skills, knowledge and experience with incubatees.

The competitive nature of the Automotive Industry and the establishment of global manufacturing virtual networks in the Automotive Industry have resulted in the tier 1 supplier's business model of a joint venture capital model, that encourages collaboration with industry participants across the value chain and with the OEM to acquire technology and other resources (Monroy & Art, 2010). Therefore, for the tier 1 supplier, collaborative networks is not a new design of strategy, in the instance of the Ford project the method of implementation is unique as a hybrid between incubation, clustering and outsourcing (Camarinha-Matos & Afsarmanesh, 2008).

As facilitator of the project, the AIDC is the driver of the collaborative culture, ensuring that the participants in the network commit to each other and deliver in achieving the objectives of the project (Waite & Williams, 2009). The AIDC bridges the gap between the tier 1 supplier and the incubatee and facilitates the OEM in establishing the correct incentives for cost efficiencies. A view has been expressed that the AIDC is critical to the establishment of a collaborative culture across the network in the way that it aligns the various parties' interests and brings them together in achieving collective efficiencies, notwithstanding that it has no authority over the tier 1 supplier to compel performance toward collective efficiencies.

The AIDC believes that while the Ford project may have a collectivist culture, the Automotive Industry on the contrary lacks such a culture as the industry participants are narrow minded in terms of collaboration. The South African tier 1 suppliers are not willing to participate in programs like the Ford project and it is only the international tier 1 suppliers that are willing to be engaged in collaboration to achieve efficiencies for the

industry that would result in competitiveness for the industry. The Ford project is evident of the participation of international tier 1 suppliers in establishing a collaborative network that would benefit the Automotive Industry. The established culture of the Ford project is working together to achieve *“the common goal; the common goal is to support Ford; we work together to support Ford”* (Deneshan Moodley – Executive responsible for industry development, AIDC)).

### **6.2.5            *Has the collaborative network achieved competitiveness for the industry?***

In ascertaining whether the Ford project has achieved competitiveness for the industry 2 views emerge:

The positive view asserts that

1. The Ford project has found a mechanism to transfer skills, create jobs and entrepreneurship in the industry without the risk to the OEM in facilitating such developments.
2. The collaborative efforts of the participants have resulted in efficiencies for the OEM. The OEM as a consequence has increased production volumes and has expanded its market.
3. The Ford project has proved highly successful in seeking to attain sustainable development for the industry, in creating a larger supplier base, in establishing localisation of components and in transforming the industry to have BEE entrepreneurship development.
4. The Ford project appeases all parties involved, in benefitting the industry as a whole. The Tier 1 suppliers establish themselves in the incubation centre adjacent to the plant to achieve logistic cost savings. By partnering with the Tier 1 supplier, the incubatees receive knowledge and skills transfer to allow them to cross the barriers of entry into the Automotive Industry. The OEM enjoys decreased overall production cost in having the manufacture and assembly of components and the tier 1 suppliers adjacent to the plant in the incubation centre and the AIDC benefits in achieving socio economic benefits in terms of job creation, skills transfer and BEE entrepreneurship development and in ensuring a sustainable automotive industry.

The critical view:

1. The Ford project is too small in size to ensure critical impact to competitiveness for the industry. To have the critical impact the project needs to be larger, faster and have a multiplier effect and not be limited to five entrepreneurs that would be developed in five years.
2. The tier 1 suppliers should share volumes with the incubatees and share skills development across the value chain and not limit the sharing to assembly only.
3. The AIDC should have influence and power over the tier 1 suppliers assigned to the project, to ensure that the collective efficiencies are realised for all participants of the collaborative network.
4. There is concern for the sustainability of the incubatees post incubation. The AIDC has failed to consider the means and methods of continuing the incubatees business to continue to be a part of the supply chain, to create value as a small business and to ensure continued sustainability.

Notwithstanding the critical views, the AIDC considers the Ford project to be *“the step in the right direction”* towards the achievement of transformation and growth in the industry. The Ford project model is considered to make an impact on the industry, and is poised to be replicated in the aerospace industry. The Ford project is currently under re-design from the lessons learned to be implemented with Nissan in 2013 on twice the scale and size of the Ford project.

### **6.3 Conclusion**

The Ford project as a manifestation of a collaborative network has developed the theory on the components of the collaborative network as an integrated model linked to the design of a collaborative model as a means of achieving industry competitiveness. While the shared meaning and purpose of each collaborative network will vary according to the factors influencing the components of collaborative networks, the success of the collaborative network as a means of attaining competitiveness is ascertainable through the analysis of the collaborative network strategy, structure, dynamics and culture.



## CHAPTER 7 - CONCLUSION

### 7.1 Key Findings from Research

The Ford project reveals a contradiction in terms in conforming to the literature on collaborative networks. While the Ford project manifests itself as a hybrid between an industry cluster, a value delivery system and an outsourcing model, it can also be seen as a temporary alliance of participants within a network that are dependent on each other across the value chain. These dependencies may or may not result in sustainable relationships between the participants *per se* and lead to competitiveness for the network. The Ford project has demonstrated that within certain industries like the automotive industry, collaborative networks is not a new way of doing business but an established practice of ingrained, long term relationships with suppliers in sourcing components and services.

Collaborative networks are a strategic resource that firms need to acquire to remain sustainable. Firms must understand how to collaborate and conduct themselves within a network environment with other industry participants. The manifestations of collaborative networks vary and firms may engage in multiple collaboration models, therefore the organisational design of the collaborative networks in terms of the network strategy, structure, dynamics and culture must be understood and adhered to, in order to dictate the firm's successful participation in the collaborative networks for industry competitiveness.

The rationale for establishing a collaborative network may include multiple outcomes and the purpose for participating in a collaborative network may be unique to the individual participant. For a successful collaborative network that satisfies the common goal and individual firm aspirations there needs to be a fit between the strategy of the network and what the network participants bring to the network in terms of resources and mind set (Mohannak, 2007). The mind-set of the participants needs to overcome the hierarchy and rankings within the network, to focus on the synergies that each participant brings to the network in achieving the collective efficiencies.

The relationship dynamics within the collaborative network must establish the balance between competition and co-operation in focusing on the complementary roles and interdependencies within the network structure. At first the relationships will be established in terms of the formal organisations and rules of governance recognised to

regulate the workings of the collaborative networks. The close working relationship and the development of trust arising from the commitment and integrity displayed towards the collaborative network will result in the evolution of the relationships into partnerships. Inasmuch, there will be an extension of the collaboration into a single strategic unit thus achieving long term sustainability for the collaborative network.

In establishing collaborative networks, the rules of governance and the positioning and influence of the network administrator is critical in establishing the correct culture for the network. The governance rules must reflect the respective roles and responsibilities of the network participants, communication protocols and a system to manage the joint and individual work of the collaboration. Closely aligned to the governance rules must be a system of accountability. Personal and organisational accountability contributes to the creation of trust and transparency for the network participants to effectively co-operate, communicate and leverage the network resources in achieving the common goal (Shuman & Twombly, 2010).

The positioning and influence of the network administrator must create a “win-win” situation for all the network participants. The network administrator must maintain a balance of power that neutralises the dominance of a network participant arising from hierarchy or dependency. The network administrator must effectively resolve conflict and be held accountable as well as hold others accountable, including the imposition of sanctions to rectify inappropriate behaviour. The absence of effective governance and accountability undermines the collaborative network dynamics and the success of the collaborative network in achieving the collective efficiencies.

The case study has demonstrated the critical role played by the South African government in establishing and developing collaborative networks as a means of breaking the barriers of entry to the automotive industry. In establishing entrepreneurship opportunities for disenfranchised previously disadvantage persons and for skills development and job creation, the government has valiantly attempted to create a competitive sustainable industry. While the government has executed many policy initiatives to establish and develop collaborative networks, there are still many obstacles to the development of competitive South African industries. These obstacles are listed as follows:

- The collaborative network participation is limited to international industry players who are willing to share resources and skills for industry development.

- The South African companies are reluctant to participate in collaborative networks, for fear of competition and loss of dominance in the industry. It has been suggested that unless the South African industries transcend their fears, collaborative networks cannot become an effective strategy in achieving industry competitiveness.
- Despite the adoption of the Nissan project within a short time frame of the Ford Project, the scale of impact and development time required does not achieve the critical mass to positively influence competitiveness for the industry. Collaborative networks are a long term strategy to the achievement of industry competitiveness.
- The collaborative networks do not give priority to the development of small and medium sized business to impact upon the industry from the bottom up. Therefore the system prevents economic development at the bottom of the pyramid, a place where the greatest potential to generate employment opportunities and skills development exists.

## **7.2 Research Limitations**

The following are some of the limitations of the research:

- The sample size was small and limited to only certain of the network participants. The validity of the results may need to be proved through further study involving all participants.
- The collaborative network is in year two of its five year development period. Furthermore, the strategy for the exit from incubation requires consideration and development. It is therefore too early to pronounce judgement on the collaborative network's impact on the competitiveness of the automotive industry, even though there are signs of individual growth among the incubatees.

## **7.3 Recommendations Based on Findings**

Arising from globalisation and the changing dynamics across industries in conducting business, the traditional models of competitiveness strategy are being challenged and the role of stakeholders is being reprioritised. For South African industries to achieve competitiveness, strategies that favour linkages and partnerships between businesses that reduce input cost, enhance entrepreneurship development and promote and

implement skills transfer, need to be encouraged. The collaborative networks in its various manifestations must be motivated to create the necessary synergies and opportunities for small firms to develop through specialisation and differentiation to become an essential participant in the supply chain.

The collaborative networks must encompass strong leadership that steers the network towards technology improvements and product development. The South African government, through its various agencies, must continue to lend support to the industry in conducting research, initiating incentives and developing policies that encourage collaborative innovation and development.

Industry participants must transcend their fears and understand the importance of firm's interactions in a collaborative network in determining the industry benefits and economic outcomes. Firms must find the balance between co-operation and competition in a collaborative network by placing value on the advantages of co-operation and by placing faith in the governance structures and trusting relationships established in the collaborative networks. A model of effective communication must be adopted that creates an environment of transparency and accountability for the network to achieve its objectives.

Increasing inter firm co-operation through collaborative networks remains the best option for South African industries in creating horizontal linkages across small firms and vertical linkages between large and small firms for increased productivity capacity, innovation creation, skills transfer and entrepreneurship development. This collaboration will result in the development of a larger supplier base of competence and the localisation of component manufacture and assembly, thus achieving overall competitiveness of the industry.

#### **7.4 Area for Future Research**

Based on the research study, further areas for research were identified. During the research process there were unanswered areas and topics that were found to be of interest and further investigation under the discipline of collaborative networks as a strategic choice for firms.

- The findings in this report could be extended to the analysis of other network features, such as the collaborative network's communications systems, conflict

resolution and accountability and transparency needs that may be affected by the different strategy positions over time.

- The value alignment system of the collaborative network can be further investigated. The ability to develop a compatible and core value system within the collaborative network that can be assessed or measured by established tools or frames of reference. The development of methodologies to measure the value system alignment among firms in a collaborative network environment requires further research.
- The characteristics of the different types of collaborative networks within a particular industry can be studied in determining the value creation and management from a network participant perspective and from an industry perspective. The establishment of a reference model that measure the value creation in terms of the return on collective efficiencies from an economic and social perspective.
- Presently there are no tested benchmark models of collaborative networks that establish the successful operations of collaborative networks through strategic design and management. A more holistic perspective is required that considers the life cycle of the collaborative network, from creation, operations, evolution and metamorphosis or dissolution.
- The external dimensions of the collaborative network influences must be studied in order to gain a better understanding of the collaborative network as an organisation. The interactions between the collaborative network and various stakeholder groups from an external dimension perspective may consist of:
  1. The market dimensions and interactions with customers that seek to establish commitments, that include marketing and branding; and the interaction with competitors in terms of market strategy, market positioning and policies;
  2. The support dimensions in regard to services and goods provided by firms and organisations outside of the collaborative network, including issues related to certification services, insurance requirements and training, etc.
  3. The constituency dimensions of interactions with potential new members of the collaborative network, dealing with issues like the sustainability of the collaborative network as the relationships evolve and attraction factors that build a sense of community.

As the number of collaborative network organisations form and emerge across various industries, the empirical knowledge of, and the science of, collaborative networks

would need to expand. While this research explored the collaborative network components in assessing industry competitiveness, a number of different manifestations of collaborative networks are available and need further exploration both in research and further empirical evidence.

## **7.5 Conclusion**

The case study has assisted in developing an integrated model on the components of collaborative networks that affect the design of a collaborative network, such as the network strategy, structure, dynamics and culture as well as considering the interdependence and influence of the components. Collaborative networks have already gained recognition in certain industries as a very important strategic model for the survival of firms facing socio-economic challenges. As collaborative networks become more common among various industries, their future growth potential is large as they are more efficient at meeting customer needs and achieving cost efficiencies. This integrated model presented in this research may assist companies to strategically position themselves for participation in a network environment and to establish network strategy, structures, dynamics and culture that would ensure successful collaborative network design. However the integrated model of the components of the collaborative model is limited to the case study in its particular manifestation and further investigations on additional case studies within the automotive industry or extensive analysis of other industrial sectors where collaborative networks are gaining prominence is necessitated both to complete and to confirm the findings of this research report in the future.

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## APPENDIX A - INTERVIEW GUIDELINES

**Inquiry 1** – Investigate the collaborative strategy to identify the following:

What did the entities aim to gain or benefit;

How would the entities approach such strategy;

How to share information;

What should ideal landscape look like;

Lessons learned.

### **Therefore Questions:**

1. What were the entity's reason / motivation to engage in collaboration?
2. To the extent that there were different reasons for collaboration among the participants, how were these different reasons/ motivations reconcile?
3. How were firms integrated into the network?
4. Were any of the entities business processes or models re-engineered or altered for purposes of participation?
5. What was the commonality of purpose and how as it arrived at?
6. What was the process of determining the strategy?
7. What was the strategy?
8. How was the strategy executed?
9. Who was/were the driver/s that ensured that the agreed strategy was mapped out, followed and executed to arrive at the anticipated deliverables of the network?
10. What were the deliverables of the network and were they achieved?
11. What were the efficiencies achieved from collaboration?
12. Was the strategy effective or were there some unidentified gaps?

13. In hindsight how could the strategy have been different and why?

**Inquiry 2** – Investigate the network structure to identify the following:

Leadership;

Communication channels;

Rules of engagement;

Lessons learned.

**Therefore Questions:**

1. How did the participants communicate with each other?
2. How frequent and what were the forms of communications?
3. Were the participants actively managed, by whom and in what capacity?
4. Were any of the participants given any specific roles and by whom?
5. Were there any rules of engagement?
6. How were the rules of engagement established and by whom?
7. Was there monitoring of the participants contributions, activities within and outside the network and the rules of engagement?
8. Was the network organised in terms of some sort of hierarchy?
9. What were the linkages between the various participants of the network?
10. Was there a network organiser and what role did it play?
11. How was the balance between competition and co-operation between participants managed?
12. What were the boundaries of the network, how were they determined and how were they enforced?
13. How were the expectations of participants managed?

14. What were the co-operative abilities and willingness among participants?
15. How were deliverables and outputs of participants managed to ensure quality and consistency?
16. How was the network formed and the relationships within the network managed?
17. Were the network capabilities conducive to creating opportunities and industry competitiveness?
18. In hindsight how could the network structure have been different and why?

**Inquiry 3** – Investigate the collaborative dynamics to identify the following:

Open discussions and information sharing;

Characteristics of meetings;

Frequency of meetings/communications;

Difficulties experienced;

Lessons learned.

**Therefore Questions:**

1. Who were the various participants within the network?
2. What was the strategic importance of each of the participants to the networks?
3. Describe the various collaborative activities?
4. Were any joint competencies developed and leveraged?
5. Were there any complexities in ensuring efficiencies of collaboration?
6. Were there any barriers that had to be overcome, what were they and how were they overcome?
7. Describe the level of commitment and maturity of the participants in ensuring efficiencies and outcomes of collaboration?

8. In hindsight could the dynamics of the networks and the level of collaboration been any different?

**Inquiry 4** – Investigate the collaborative culture to identify the following:

Long term / short term relationships;

Spontaneous or forced relationships;

Tensions and uncertainties;

Trust.

**Therefore Questions:**

1. Was there reluctance or hesitation by the entity in participating in the network?
2. Was there any risk associated to participation?
3. If there were risk, how were they managed?
4. How was consensus of decisions arrived at?
5. Was there collective goal orientation?
6. Was there any protocols related to communications between participants, disagreements and conflict, grievances, roles and responsibilities and relationship management?
7. Were the relationships formalised by way of agreement followed by documentation?
8. What role did trust play in the relationships?
9. Did a collectivist (for the benefit of one and all) culture exists among the participants, if yes how was it developed?
10. Were there any shared norms and values among participants, if yes how were they arrived at?
11. Was there any opportunistic behaviour by a participant and how was that dealt with?
12. Described the communications between participants in terms of frequency, level of intimacy and outside of the network?



13. Did a culture of co-operation come to exist?

14. Did participation in the collaborative network create value or enhanced value in terms of benefits to the participant and in terms of creating competitiveness for the participant and industry?

## APPENDIX B - CONSENT LETTERS

Attach herewith the letters of consent from the participants interviewed for the research project.

- B1 - Deneshan Moodley
- B2 - Neeraj Kessery
- B3 - Nkumbuzi Ben Mazwi
- B4 - Trevor Kock
- B5 - Vivek Avasthi
- B6 - Jorge Santa
- B7 - Hayley Eager
- B8 - Caiphus Mokoledi

(The consent letters exist in hard copy)

## Consent to Interview

Somayyia A. Seedat

MBA student from the University of Pretoria

I am conducting research on collaborative networks as a means of developing competitiveness in South African. The focus of investigation is in the automotive industry.

Our interview is expected to last 90 minutes and will assist tremendously in understanding the impact of dynamics networks that constitute of autonomous entities that collaborate to achieve competitiveness.

Kindly note:

1. that your participation is voluntary with the right to withdraw from the interview at any time;
2. the interview although recorded and transcribed will be kept confidential;
3. the interview will be conducted for the sole purposes of informing the investigation; and
4. this consent provides me with your permission to use the information shared for the purpose of the MBA research and a journal article publication.

Thanking you kindly, your assistance is much appreciated.

**Researcher: Somayyia A.Seedat**


**Email: [somayyiaa@idc.co.za](mailto:somayyiaa@idc.co.za)  
iri@telkomsa.net**

**Phone Number: 082 336 1970/ 011 269 3496**

**Research Supervisor: Dechlan Pillay**

**Email: [dechlanp@ndmc.gov.za](mailto:dechlanp@ndmc.gov.za)**

**Phone Number: 083 5642556**

Signature of participant: 

Date: 14/08/2012

Signature of Researcher: 

Date: 14/08/2012

## Consent to Interview

Somayyia A. Seedat

MBA student from the University of Pretoria

I am conducting research on collaborative networks as a means of developing competitiveness in South African. The focus of investigation is two case studies in the automotive industry.

Our interview is expected to last 90 minutes and will assist tremendously in understanding the strategy, structure, culture and evolving dynamics of networks of autonomous entities that collaborate to achieve competitiveness.

Kindly note:

1. that your participation is voluntary with the right to withdraw from the interview at any time;
2. the interview although recorded and transcribed will be kept confidential;
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**Phone Number: 083 5642556**

Signature of participant: \_\_\_\_\_

Date: \_\_\_\_\_

Signature of Researcher: \_\_\_\_\_

Date: \_\_\_\_\_

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**Research Supervisor: Dechlan Pillay**

**Email: [dechlanp@ndmc.gov.za](mailto:dechlanp@ndmc.gov.za)**

**Phone Number: 083 5642556**

Signature of participant: Nkumbuzi Ben-Mazwi

Date: 20/09/2012

Signature of Researcher: [Signature]

Date: 20/09/2012

### Consent to Interview

Somayyia A. Seedat

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**Phone Number: 082 336 1970/ 011 269 3496**

**Phone Number: 083 5642556**

Signature of participant: TREVOR NOËL KOK 

Date: SEPT 20 2012

Signature of Researcher: 

Date: 20/09/2012

## Consent to Interview

Somayyia A. Seedat

MBA student from the University of Pretoria

I am conducting research on collaborative networks as a means of developing competitiveness in South African. The focus of investigation is in the automotive industry.

Our interview is expected to last 90 minutes and will assist tremendously in understanding the impact of dynamics networks that constitute of autonomous entities that collaborate to achieve competitiveness.

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**Email: [dechlanp@ndmc.gov.za](mailto:dechlanp@ndmc.gov.za)**

**Phone Number: 083 5642556**

Signature of participant: \_\_\_\_\_

Date: 14 AUG. 2012

Signature of Researcher: \_\_\_\_\_

Date: \_\_\_\_\_

14/8/2012

## Consent to Interview

Somayyia A. Seedat

MBA student from the University of Pretoria

I am conducting research on collaborative networks as a means of developing competitiveness in South African. The focus of investigation is in the automotive industry.

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**Research Supervisor: Dechlan Pillay**

**Email: [dechlanp@ndmc.gov.za](mailto:dechlanp@ndmc.gov.za)**

**Phone Number: 083 5642556**

Signature of participant: Jorge Santos Sodecia

Date: 13/8/12

Signature of Researcher: 

Date: 13/8/12



## Consent to Interview

Somayyia A. Seedat

MBA student from the University of Pretoria

I am conducting research on collaborative networks as a means of developing competitiveness in South African. The focus of investigation is in the automotive industry.

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**Email: [dechlanp@ndmc.gov.za](mailto:dechlanp@ndmc.gov.za)**

**Phone Number: 083 5642556**

Signature of participant: \_\_\_\_\_ 

Date: 13 August 2012

Signature of Researcher: \_\_\_\_\_ 

Date: 13/08/12.

Consent to Interview

Logistics

Somayyia A. Seedat

MBA student from the University of Pretoria

I am conducting research on collaborative networks as a means of developing competitiveness in South African. The focus of investigation is in the automotive industry.

Our interview is expected to last 90 minutes and will assist tremendously in understanding the impact of dynamics networks that constitute of autonomous entities that collaborate to achieve competitiveness.

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Phone Number: 082 336 1970/ 011 269 3496

Phone Number: 083 5642556

Signature of participant:  \_\_\_\_\_

Date: 13/08/2012

Signature of Researcher:  \_\_\_\_\_

Date: 13/08/2012

## APPENDIX C - INTERVIEW LOG

| NAME               | DATE              | TIME                                     | PLACE                                      |
|--------------------|-------------------|--|--|
| Deneshan Moodley   | 14 August 2012    | 2:00 PM<br>(Duration 1 hour 30 minutes)  | Automotive Supplier Park, Rosslyn Pretoria |
| Neeraj Kessery     | 8 August 2012     | 11:00 AM<br>(Duration 1 hour 30 minutes) | Ford Incubation Centre, Silverton Pretoria |
| Nkumbuzi Ben Mazwi | 20 September 2012 | 3:00 pm<br>(Duration 1 hour 20 minutes)  | Automotive Supplier Park, Rosslyn Pretoria |
| Trevor Kock        | 20 September 2012 | 11:00 AM<br>(Duration 1 hour 15 minutes) | Automotive Supplier Park, Rosslyn Pretoria |
| Vivek Avasthi      | 14 August 2012    | 10:00 AM<br>(Duration 1 hour 10 minutes) | Automotive Supplier Park, Rosslyn Pretoria |
| Jorge Santa        | 13 August 2012    | 11:00 AM<br>(Duration 1 hour 15 minutes) | Ford Incubation Centre, Silverton Pretoria |
| Hayley Eager       | 13 August 2012    | 9:00 AM<br>(Duration 1 hour 30 minutes)  | Ford Incubation Centre, Silverton Pretoria |
| Caiphus Mokoledi   | 13 August 2012    | 2:00 PM<br>(Duration 1 hour 20 minutes)  | Ford Incubation Centre, Silverton Pretoria |