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Knowledge Acquisition by SMEs in Weak Client-Firm Exchange Relationships

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DECLARATION

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgment has been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

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ABSTRACT

This thesis examines the role that non-collaborative, weak exchange relationships might play in the acquisition of knowledge by small and medium-sized enterprises (SMEs). An important source of knowledge for a firm lies in its network of relationships. There has been considerable research conducted on knowledge transfer and acquisition through linkages, such as strategic alliances and similar-type, close collaborations with other businesses. However, many SMEs are less likely to be involved in collaborative, close interfirm relationships because of their relatively small market share, short industry time and uncertainty associated with the firm's future. Consequently, much of the research on interfirm relationships has overlooked SMEs. Many SME linkages are the non-collaborative, arm's-length type that many researchers argue play very little or no role in knowledge transfer and acquisition. However, research has found that inter-firm relationships that are not close and less collaborative are a source of new external knowledge.

This doctoral study researches the value of weak, arm's-length client ties to the SME in terms of the knowledge they could impart to the firm. The extent to which this acquired knowledge leads to knowledge-related outcomes, such as new product and market development, increased operating efficiency and innovative performance, are also examined. Factors posited to lead to knowledge acquisition in these weak exchange ties include the SME owner's efforts at building more long-term relationships and efforts at signalling the SME's reputation and legitimacy. Also posited to lead to knowledge acquisition is the trust of the arm's-length client. The study also examines factors posited to contribute to the knowledge-based outcomes derived from the knowledge acquisition. The factors include absorptive capacity and exchange partner similarity and are hypothesized to moderate the relationship between knowledge acquisition and knowledge outcomes. Other moderating factors include the size and age of the client firm and the growth intentions of the SME owner.

To conduct this research, a cross-section of Western Australian SMEs was surveyed through the WA Small Business Benchmark Survey undertaken by Curtin's School

of Management. A paper-based version of the survey was administered to a Dan & Bradstreet database of 10,000 small and medium-sized enterprises. Additionally, an on-line version of the survey was also sent to SMEs via a range of small business associations across Western Australia. Low response rates are common in SME research and this study is no exception. Just over 400 businesses responded to the survey, of which 298 respondents completed the survey questions pertaining to the thesis study.

A model explaining the interrelationships of factors and paths leading to knowledge acquisition and knowledge outcomes was analysed. Exploratory and confirmatory analyses of the data were carried out and structural equation analysis examined the fit of the model to the data. Based on the results, the measure of the relationship strength of the client-firm tie could not be verified. However, it was found that trust of the client in exchange relationships led to knowledge acquisition but reputation signalling and relationship initiation seemed more related to marketing efforts and did not contribute significantly to knowledge acquisition. Knowledge acquisition was significantly associated with knowledge-based outcomes and absorptive capacity, as well as exchange partner similarity, which partly moderated the extent to which knowledge based outcomes were derived from acquired knowledge. The growth intentions of the SME owner could not be verified as a moderator and the size of the client firm was not found to have a moderating effect. The findings are tempered by the small sample size and the low response rate so generalising these findings to the broader WA SME population would be inappropriate. However, the study did reveal the relative importance of absorptive capacity and exchange partner similarity in the conversion of acquired knowledge to knowledge-based outcomes. These findings encourage further research and more analyses to verify the role of absorptive capacity and exchange partner similarity in client-firm exchange relationships.

Keywords: Knowledge acquisition, knowledge outcomes, SMEs, weak exchange relationships, arm's-length ties, absorptive capacity, exchange partner similarity, structural equation analysis.

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1. INTRODUCTION

1.1 Introduction to Research Study

This study aims to identify the extent to which small and medium-sized enterprises (SMEs) acquire knowledge from weak client-firm exchange relationships and the importance of these ties to the knowledge of the firm. Many factors are thought to contribute to knowledge transfer and acquisition in interfirm relationships. This research will examine a number of these factors and their potential role in knowledge transfer and acquisition as well as factors that facilitate knowledge based outcomes for the SME. Weak exchange relationships are thought to be typically adversarial and influenced by price related considerations. Consequently, research on knowledge transfer and acquisition has focussed on closer collaborative type linkages such as strategic alliances and joint ventures. One of the primary objectives for such collaboration is the sharing of resources and knowledge.

SMEs are considered resource poor and, as such, do not have much to bring to the "collaboration table". Hence, the focus of current research on larger firm knowledge transfer through collaboration has largely overlooked the SME scenario. Since many SMEs have weak exchange relationships with their clients, the premise of this study examines these linkages as a potential source of knowledge for the entrepreneur. A cross-section of Western Australian SME firms was surveyed to examine the role of these weak client-firm exchange relationships in knowledge acquisition and subsequent knowledge based outcomes These outcomes include the development of new products, new markets, improved operation efficiency and innovation.

1.2 Background

1.2.1 Knowledge Resources

The focus on knowledge and the interest on how it is acquired stems from the knowledge based view (KBV) of the firm proposed by Grant (1996). The KBV is an extension of the resource based view (RBV) which emphasizes the notion that resources owned or controlled by a firm are capable of providing sustainable competitive advantage when they are difficult to imitate and cannot be readily substituted (Peteraf 1993). According to the KBV, knowledge is seen as a critical

resource since it is assumed that knowledge is the most productive resource of the firm in terms of contribution to value (Grant 1996).

Much of the focus on the RBV and KBV has been internally focussed, that is, within the firm. Gulati, Nohria and Zaheer (2000) point out that an important source for the creation of inimitable value-generating resources lies in a firm's network of relationships. This is of particular interest to research on SMEs since these firms, because of their liabilities of smallness, need to gain access to external resources and knowledge that cannot be produced internally (Hite & Hesterly 2001). Since knowledge is regarded as the main resource upon which competitive advantage is founded, its transfer and acquisition is of strategic importance for firm competition and for the survival of the SME (Albino, Garavelli & Schiuma 1999). Similarly, Thorpe *et al* (2005) argue that the importance of knowledge based resources relative to other resources is particularly high for SMEs. Since SMEs lack size and financial scope, they lack market power and consequently rely more heavily on what the entrepreneur or business owner knows (Thorpe *et al* 2005, Wiklund & Shepherd 2003, Yli-Renko, Autio & Sapienza 2001).

Knowledge can take many forms and a wide variety of definitions are used to explain knowledge. Grant (1996), for instance, describes knowledge as broadly encompassing information, technology, know-how and skills. Knowledge is frequently separated into two forms, tacit and explicit. Tacit knowledge is described as experientially formed, difficult to codify, replicate and transmit while explicit knowledge can be codified, replicated and transmitted more easily (Chrisman & McMullan 2004, Thorpe *et al* 2005, Hansen 1999, Davila, Epstein & Shelton 2006). Using a restaurant as an example of the two forms of knowledge, tacit knowledge would include the cooking skills of the chef, appreciation of ingredients that complement certain dishes and knowledge of dishes that are cost-effective, yet also sell well. An example of explicit knowledge would be a simple recipe or the operating instructions of a cash register.

It is worth noting Chrisman and McMullan (2004) argue that the combination of tacit and explicit knowledge is contextual, experiential and is hard to codify, replicate and transmit. So while explicit knowledge on its own might be a reasonably accessible

commodity, combined with tacit knowledge, the combination has the properties of value, rarity, inimitability and non-substitutability (Chrisman & McMullan 2004). Knowledge can also be referred to as "business knowledge" defined as multifunctional, external knowledge of the product, market, technology, organisational and financing facets (Segelod & Jordan 2004, Thorpe *et al* 2005, Yli-Renko, Autio & Sapienza 2001). Organising knowledge refers to knowledge of structures and systems (Yli-Renko, Autio & Sapienza 2001). Albino, Garavelli and Schiuma (1999) claim that knowledge is formed through information although knowledge is not simply an aggregate of information. Instead, knowledge should be regarded as a set of information which is associated with a meaning by the individual. Therefore knowledge is not simply information, it is information attached to a meaning (Albino, Garavelli & Schiuma 1999). For this particular study, knowledge is defined as business knowledge formed by information and knowledge containing tacit and explicit elements and to which the individual attaches a meaning. In other words, the individual, in this case the SME owner, recognises the meaning of knowledge and, as an extension, acquires new external knowledge.

The process of knowledge transfer and acquisition has been linked to a number of factors. These factors include trust (Uzzi 1997, Albino, Garavelli & Schiuma 1999, Dodgson 1993, Aldrich & Martinez 2003, Galvin 2004, Levin & Cross 2004, Mouzas, Henneberg & Naudé 2007, Lui 2009), social capital (Yli-Renko, Autio & Sapienza 2001, Aldrich & Martinez 2003, Lesser 2000, Nahapiet & Ghoshal 1998, Smith & Lohrke 2008), absorptive capacity (Cohen & Levinthal 1990, Liao, Welsch & Stoica 2003, Lane & Lubatkin 1998, Albino, Garavelli & Schiuma 1999, Jansen, Van den Bosch & Volberda 2005), personal networks of the SME owner (Dubini & Aldrich 1991, Hoang & Antoncic 2003, Lipparini & Sobrero 1994), and knowledge sharing routines (Yli-Renko, Autio & Sapienza 2001, Heide & Miner 1992, Kotabe, Martin & Domoto 2003). In summary, it would appear the process of knowledge transfer and acquisition contains relational aspects (e.g. trust and social capital) and the ability to absorb new knowledge (e.g. absorptive capacity and knowledge sharing routines).

1.2.2 Weak Client-firm Exchange Relationships

Due to the SMEs' lack of resources, relatively short industry time, lack of market share and low legitimacy within an industry, it is less likely to establish formal links such as strategic alliances and similar formal collaborations with other businesses (Burgers, Hill & Kim 1993, Stuart 2000, Hite & Hesterly 2001, Fischer & Reuber 2004, Fischer & Reuber 2007, Reuber & Fischer 2005). Research literature identifies these formal linkages as an important avenue for knowledge transfer and acquisition (e.g. Grant & Baden Fuller 2002; Inkpen 2002, Sarkar, Echambadi & Harrison 2001, Stuart 2000). It would appear, therefore, that SMEs that are not viable alliance partners are required to access knowledge from other sources, including the arm's-length relationships and market exchanges they have with their clients.

Arm's-length relationships are regarded as lacking social closeness to, and familiarity with, the client. The relationship is purely transactional and there are no embedded ties between a firm and its customer (Uzzi 1997, Uzzi & Lancaster 2003). These relationships are also referred to as market exchange relationships, weak client-firm exchange ties, market ties or weak ties (Gulati & Singh 1998, Larson 1992, Uzzi 1997, Uzzi & Lancaster 2003, Pillai & Sharma 2003, Hansen 1999, McFadyen & Cannella 2004). Small and medium-sized firms are likely to develop these ties with their client firms since it is doubtful an SME business would immediately commence trading with a close, embedded tie. Indeed, Larson (1992) found that dyadic interfirm relationships between entrepreneurial firms and an exchange partner began as an arm's-length relation in which no transactions had occurred. However, as the firm continued to grow and remain in the industry, some of these ties take on more formal arrangements (Hite & Hesterly 2001). Dyer and Singh (1998) argue that arm's-length relationships are considered incapable of generating mutual benefits to the exchange partners since there is nothing distinctive about the exchange relationship. In fact, since weak, arm's length market relationships form a central focus within this thesis, it is useful to review Dyer and Singh's (1998) specific explanation of an arm's-length market relationship in their study of the relational view and sources of interorganisational competitive advantage. They argue arm's-length market relationships are characterized by 1) non-specific asset investments; 2) minimal information exchange where prices form the main

basis of relevant information to buyers and sellers; 3) low levels of interdependence where two firms only have a sales-to-purchasing interface and do not jointly create new products through multifunctional interfaces; and 4) low transaction costs and minimal investment in governance mechanisms (Dyer & Singh 1998, p. 661). Dyer and Singh (1998) also argue that under these conditions, firms are able to switch partners with little penalty since other sellers offer similar products.

There is relatively little research on small and medium-sized firm knowledge access through weak client-firm exchange relationships. This may be due to the adversarial reputation of these arm's-length linkages, which are regarded as being primarily driven by price-taking considerations and self-interest. Larson (1992) identified that these types of relationships account for the more typical supplier and customer relationship. However, arm's-length ties allow a firm to access information in a market even if the information is readily or publicly available (Uzzi 1999). Research has demonstrated that even if public information is available through freely accessible sources, people typically gather this information from their arm's-length ties (Uzzi & Lancaster 2003, Matusik 2002). This publicly available information and knowledge is unlikely to be a source of competitive advantage since it is not unique or proprietary to any one firm. A firm could potentially be at a competitive disadvantage if it opted not to apply this knowledge. Further, the combination of public knowledge with existing private knowledge unique to the firm may stimulate new knowledge creation (Matusik 2002). SMEs, especially young firms, are unlikely to have access to all the information in a market or industry, even if it were freely available.

1.3   Problem Situation

SMEs are less likely to be involved in close, collaborative type relationships than their well-resourced, larger counterparts. If close, interfirm linkages such as strategic alliances and joint ventures are valuable sources of knowledge for firms, then SMEs are not capable of acquiring knowledge from such relationships. Larson (1992) claims that the overwhelming majority of entrepreneurial firms' relations are adversarial supplier and customer arm's-length relationships (Fuller & Lewis 2002). Could such relationships be a source of knowledge for SMEs? Should these

relationships be dismissed as potential sources of knowledge because they tend to be price-driven and adversarial in nature? To put these questions into context, it would be useful to look at some examples of knowledge acquisition in such a scenario.

A small private laboratory providing occupational health and safety (OH&S) air monitoring services regularly tests the levels of exhaust fumes and noxious gases in public car parks to assess the exposure of parking attendants to airborne contaminants. The laboratory is approached by a mining company seeking the monitoring of fumes and gases emitted by fuel (e.g. diesel) powered machinery used in confined spaces such as underground mining operations. The laboratory, unaware of the potential for the emission of airborne contaminants in such operations, nevertheless, monitors the emissions levels and provides a report to the mining company. The mining company chooses not to use the laboratory again, perhaps because they now know how to do it themselves or they find the emissions levels are low enough as to not merit repeat monitoring.

Since there has been no close working relationship developed here, this transaction would qualify as a weak client-firm exchange or arm's-length relationship. Yet the laboratory has discovered a potential source of new business in a market sector they previously were not involved with from this one-off transaction. Recognising that underground mining operations are frequently carried out by other mining companies, the laboratory now approaches and informs potential customers in the sector of their capability in monitoring underground exhaust fumes and gases. From a one-off, arm's-length transaction, the firm has entered a new market sector in which there is the potential for the provision of additional OH&S services. In this example, the client from the mining company passed on business knowledge about an OH&S problem in the mining industry to the private laboratory. In turn, the laboratory acquired this knowledge and recognised its value by pursuing possible opportunities in a new market.

Another scenario involves a food wholesaler who makes a one-off sale of one of its products to a small supermarket chain but receives no further orders. The owner of the wholesaling business contacts the procurement manager of the supermarket chain to receive feedback and find out if there were any problems with the consignment.

The procurement manager advises the wholesale business owner the product did not sell well because of its packaging and provides suggestions on what improvements could be made to increase future sales. While no further orders are forthcoming from the supermarket chain, the food wholesaler, nevertheless, makes the changes and finds a regular buyer in another retailer. The product packaging knowledge passed on to the food wholesaler, has led to further sales for the business.

These scenarios, while putting this study into context, lead to further questions. To what extent do one-off, weak client-firm exchange relationships result in knowledge acquisition resulting in the expansion of services to a new market sector or the development of new products or services? This is a question which the present study will explore.

1.4   Research Objectives

The research question of this study can be defined as:

Do weak client-firm arm's-length ties contribute to the knowledge acquired by SMEs and, if so, how important are these ties for the development of new products, new markets, innovation and improved operational efficiency?

- The study aims to investigate arm's-length linkages as a source of knowledge for SMEs and the importance of weak client-firm arm's-length ties to these firms.
- The study also aims to examine some of the factors that help contribute to the knowledge transfer and acquisition that might occur through these ties. For instance, trust was discussed earlier as a factor thought to contribute to knowledge transfer and acquisition in interfirm relationships (Uzzi 1997, Albino, Garavelli & Schiuma 1999, Dodgson 1993, Aldrich & Martinez 2003, Galvin 2004, Levin & Cross 2004, Mouzas, Henneberg & Naudé 2007, Lui 2009).
- The study will also look at other relational factors such as goodwill initiation, legitimacy and reputation signalling efforts. These factors were considered as complementing the role of trust or acting as substitutes for trust (Larson 1992, Lambe, Spekman & Hunt 2000, Anderson & Weitz 1992, Stuart 2000, Rindova

et al 2005, Reuber & Fischer 2005, Fischer & Reuber 2007, Mishra 1998, Anania & Nistico 2004).

- The identification of mediating and/or moderating factors that might contribute to the extent of knowledge transfer and knowledge related outcomes is also one of the objectives of this study. For instance, it was highlighted earlier that the ability to absorb new knowledge is a factor in knowledge acquisition (Cohen & Levinthal 1990, Liao, Welsch & Stoica 2003, Lane & Lubatkin 1998, Albino, Garavelli & Schiuma 1999, Jansen, Van den Bosch & Volberda 2005);

- The study also aims to investigate the contribution of knowledge acquired through weak client-firm exchange relationships to the development of knowledge related outcomes. Knowledge related outcomes include new products, new markets, innovation and internal change (Cooper & Kleinschmidt 1987, Hauschildt 1992, Shan, Walker & Kogut 1994, Deeds & Hill 1996, Beecham & Cordey-Hayes 1998, Stock, Greis & Fischer 2001, Yli-Renko, Autio & Sapienza 2001, Zahay, Griffin & Fredericks 2004, Hoegl & Schulze 2005).

- The study also aims to contribute to research on interfirm relationships and knowledge acquisition and the role of knowledge to the performance and growth of the SME.

Figure 1.1 shows the basic research model and the relationships of the study's objectives. The model will undergo further development as hypotheses and the relationship of potential contributory factors to knowledge acquisition and related outcomes develop through the literature review.

Figure 1.1   Basic Research Model Under Investigation
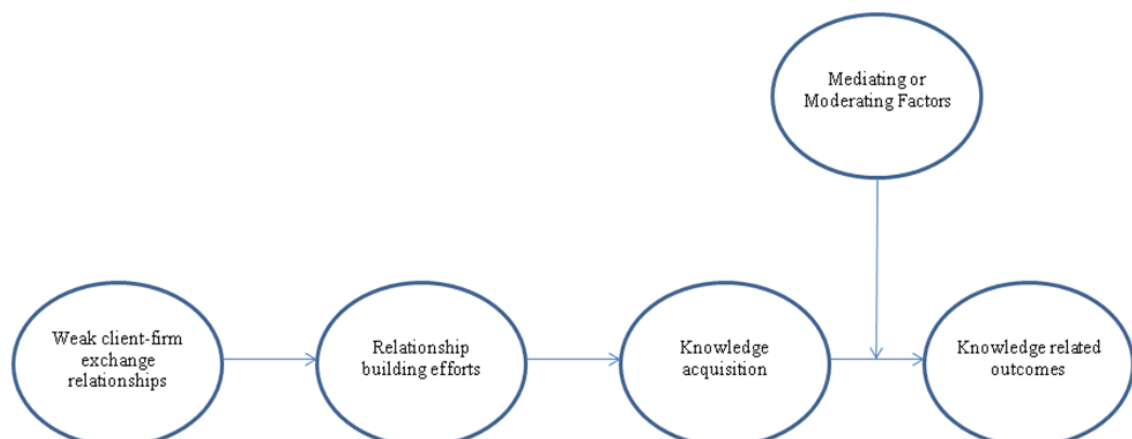
1.5   Potential Contribution to Research

It was mentioned earlier that little research has been conducted on the value of arm's-length client-firm exchange relationships and knowledge acquisition. While there is a considerable body of research that has investigated knowledge transfer and acquisition in more collaborative and cooperative interfirm relationships (eg Grant & Baden Fuller 2002, Inkpen 2002, Sarkar Echembadi & Harrison 2001, Stuart 2000, Johnson, Sohi & Grewal 2004), the role on the less collaborative section of the interfirm relationship spectrum has been largely overlooked. Perhaps the perception that weak client-firm exchange relationships are adversarial in nature and driven by price-taking considerations explains why these firm linkages are not regarded as valuable sources of knowledge. Yet the majority of SME client-firm exchanges are considered arm's-length (Larson 1992), so the potential contribution this research will make is finding that these types of firm interactions are a valuable knowledge resource to SMEs. Further, the identification of potential factors that contribute to this knowledge acquisition may provide SME owners with relational strategies that maximise the chances of gaining new knowledge.

Acquired knowledge is not simply converted to new products, new markets or improved innovative performance. It needs to be absorbed by the firm and combined internally with existing knowledge and organisational routines before it can be converted into knowledge related outputs (Albino, Garavelli & Schiuma 1999, Kotabe, Martin & Domoto 2003). The study makes a potential contribution to research on interfirm relationships, knowledge acquisition and SMEs by examining factors that might contribute to the conversion of acquired knowledge to knowledge related outputs or outcomes. The findings may provide SME owners a greater understanding of the organisational routines and processes needed for the knowledge conversion and transformation process. The study might also provide SME owners some insight into which exchange partners offer the greatest opportunities for knowledge transfer and acquisition.

Firm growth is often regarded as a measure of SME performance and success (Baum, Locke & Smith 2001, Davidsson, Steffens & Fitzsimmons 2009, Wiklund & Shepherd 2003). Saarenketo *et al* (2009) argue firm growth is not possible without

constantly re-developing knowledge based resources. This study looks to contribute to research on SME growth and performance by investigating the potential of weak arm's-length clients as a source of new knowledge inputs. These inputs might contribute to the re-development of a firm's knowledge base which ultimately results in firm growth. In looking at SME growth and performance from knowledge resources, this study also looks to contribute to the study on intersection between entrepreneurial actions with those of strategic management.

1.6   Dissertation Structure

Chapter 2 provides a review of the relevant literature, examining first the theoretical background of the study followed by a review of interfirm relationships, why firms form relationships and where weak arm's-length client exchanges fit in the spectrum of relationships. A review of the literature in terms of relationship building efforts and more specifically, relationship building with clients from an SME perspective will also be reviewed. The linkage between knowledge acquisition and knowledge related outcomes will also be examined in the literature. The literature review will also focus on identifying potential factors that facilitate the conversion of knowledge to knowledge based outcomes.

Chapter 3 provides a summary of the hypotheses developed from the literature review and chapter 4 outlines the research methodology used in the study including theoretical paradigms that inform the selection of a particular research design. The development of the survey instrument and the determination of an appropriate sampling frame will also be discussed. A brief discussion on the findings of the semi-structured interviews used to inform the development of the survey (Bryman & Bell 2003) will also be discussed. A review of the use of reflective versus formative constructs in quantitative research concludes chapter 4.

The results of the data analyses are presented in chapters 5, 6 and 7. Descriptive statistics of the sample respondents are provided in chapter 5. Since the study contained some new items developed for this research program, an exploratory analysis of constructs and appropriate factor loadings are discussed in chapter 5. The subsequent confirmatory factor analyses of items and associated measurement

models are presented in chapter 6. The structural equation analyses including the presentation of moderation models are included in chapter 7.

Chapter 8 provides the main discussion of the thesis including the summaries of the confirmation or otherwise of the study's hypotheses. The significance of the research findings and their implications are also discussed. Practical suggestions to SME owners are also provided. Chapter 9 discusses the limitations of the study, directions for future research and thesis conclusion.

2. LITERATURE REVIEW

2.1   Introduction

The purpose of the literature review is to develop a comprehensive understanding of previous research studies, work and theoretical developments in fields relevant to knowledge acquisition in arm's-length relationships. The review will help avoid overlooking variables that have in the past been found to inform or have an impact on the research topic (Sekaran 2000). The process may involve covering many research fields and areas of study that could contribute to a more comprehensive appreciation of the problem (Jackson 2009). This literature review was structured to identify the theoretical areas and previous lines of research which inform the "problem" of knowledge acquisition in arm's-length client relationships.

The literature review initially examines the theoretical underpinning that would help provide the background to the problem and then build on the extant literature to help develop an argument of how knowledge acquisition in arm's-length relationships occur and to identify the outcomes of this knowledge. The sections that follow will then look at the nature of interorganisational relationships and some of their dimensions, such as trust and relationship duration, to identify where arm's-length relationships sit within this context. The interorganisational relationships will also be looked at within the context of knowledge transfer in a dyadic business relationship. Further on in the literature review, an overview of factors that might facilitate the conversion of transferred and acquired knowledge to specific knowledge outcomes will also be examined.

2.2   Theoretical Considerations - Resource Based View of the Firm

2.2.1 Introduction

The theoretical premise of this doctoral study is underpinned by the resource-based view of the firm. This view posits resources owned or controlled by a firm are capable of providing sustainable competitive advantage when they are difficult to imitate and cannot be readily substituted (Peteraf 1993, Barney 1991). The development of the resource-based view (RBV) has been influenced significantly by industrial organisation economics particularly regarding the theory of the firm

(Conner 1991, Silverman 2002). This warrants a brief review of the economic theory that led to the development of the RBV.

2.2.2   The Development of the Resource Based View

Neoclassical economic theory highlights the ability of markets to allocate resources efficiently to produce desired goods yet leaves very little explanation as to why firms exist (Silverman 2002, Madhok 2002). According to pure neoclassical economics, firms do not need to exist. However, due to imperfect and asymmetric information, transaction costs, ill-defined property rights and other series of factors, market failure occurs (Mahoney & Pandian 1992). As a consequence, firms do exist because they are better than the markets at allocating resources. Much of this argument came from Coase who in 1937 asked "if markets are so effective, why then do firms even exist?" (Silverman 2002, Madhok 2002). The result of these arguments and explanations as to why firms exist led to various economic theorists' analysis of organisations and markets.

One of the most widely known theories that emerged from this analysis was the concept of transaction cost economics in the mid 1970's (Williamson 1999, Rumelt, Schendel & Teece 1991, Silverman 2002). Transaction cost economics (TCE) provides a framework that explores the boundaries of both markets and business firms as arrangements for conducting business activity (Williamson 1999, Rumelt, Schendel & Teece 1991). TCE has two behavioural assumptions, bounded rationality and opportunism. Transaction costs arise through the combination of these two conditions. Bounded rationality arises from the scarcity or cost of information and the limited capacity to process information (Nooteboom 1992a, 1992b, Chiles & McMackin 1996). If unbounded rationality did exist, all possible contingencies could be foreseen, even those arising from opportunism, and would be included in a contract before any exchange (Nooteboom 1992a, 1992b). In the case where no opportunism existed, contracts could be left incomplete in the trust that unforeseen contingencies would be dealt with cooperatively and to mutual benefit (Nooteboom 1992a, 1992b). In either of these cases, transactions costs would be low but since bounded rationality and opportunism do exist, there will be transaction costs (Nooteboom 1992a, 1992b).

TCE provides an economic or an efficiency based argument as to whether firms undertake activities internally or externally. In other words, the framework helps determine whether transactions will be performed within firms, in intermediate structures (such as interfirm linkages) or in the market (Williamson 1999, Oliver 1990). TCE's contribution lies in its ability to predict the governance structure (within firms or hierarchy; hybrid or intermediate structures; or market) as a function of the attributes of the transaction (Williamson 1999, Chiles & McMackin 1996). To explain this more clearly, Chiles and McMackin (1996) provide the example of an automobile manufacturer building a new assembly plant. The manufacturer must decide whether to purchase the parts it needs in the marketplace (market), to manufacture them within the firm (hierarchy) or to enter an intermediate structure such as a relationship with suppliers (hybrid-intermediate structure) (Chiles & McMackin 1996). The auto manufacturer will select the governance structure that minimizes the firm's transaction costs.

Unfortunately, many firms particularly SMEs do not have an option as to whether or not they undertake certain activities within the boundaries of the firm or with an external party. Rather, they must undertake an activity with an external party because they simply do not have the resources. Therefore a firm's reasons for undertaking an external activity might not be to minimise transaction costs but to access resources. This argument indicates a relational aspect of business activity not captured by the TCE (Liebeskind 1996, Eisenhardt & Schoonhoven 1996). Indeed, Liebeskind (1996) argues TCE is an unsatisfactory theoretical framework for explaining the relationship between organisation and competitive advantage. In contrast to the TCE, the resource dependency theory (RDT) assumes exchange is affected by more complex social factors than simply transaction costs and focuses on the social aspect of the organisation's relations (Fink *et al* 2006). The central proposition of the RDT is that organisational survival is dependent on the ability to procure critical resources from the external environment (Casciaro & Piskorski 2005). According to the RDT, firms manage their dependencies in the face of uncertainty. As the environment becomes more uncertain and dependencies increase, firms will seek closer relationships to improve information exchange, commitment, legitimacy and exchange stability (Fink *et al* 2006).

The RDT provides the explanation as to why some firms have to go to the market for various resources and capabilities. The RDT's apparent focus therefore is on the acquisition of resources necessary for survival but not on how the firm actually performs. While firms must access resources for their survival, superior performance on the part of these firms is determined according to what resources they can access and from whom. In essence the quality of these resources determines the superior performance of the firm. The resource-based view (RBV) of the firm provides the theoretical lens to investigate the role of a firm's resources, superior performance and competitive advantage (Grant 1991, Barney 1991). Interestingly, in reviewing the TCE and RBV theories, Madhok (2002) claims the two theories ask different questions respectively, why firms exist and why they differ. Accordingly, their domain is different too: the search for governance structure and the search for competitive advantage, respectively (Madhok 2002). This observation supports Liebeskind's (1996) earlier statement regarding the dissatisfaction associated with the TCE and the relationship between firm and competitive advantage.

The resource-based view of the firm developed as a reaction to the industrial organisation economic viewpoint that firm performance is dictated by the structure of the industry within which it operates (Mowery, Oxley & Silverman 1998, Wernerfelt 1984). Since the RBV develops the notion that a firm's competitive advantage is defined by a bundle of unique resources and relationships, it provides a balance vis-à-vis the environmental models of strategy (Das & Teng 2000). The idea of viewing firms as a broader set of resources was introduced by Penrose in her treatise on the "Theory of the Growth of the Firm" in 1959 (Penrose 1959, Wernerfelt 1984, Mowery, Oxley & Silverman 1998, Foss & Ishikawa 2007). Penrose (1959) made the key observation that it is the heterogeneity of a firm's resources that gives each firm its unique character. The resource-based view, however, took a while to catch on and it was not until the early 1990's when support for the theory gathered momentum (Peteraf 1993, Barney 1991, Barney, Wright & Ketchen 2001, Foss & Ishikawa 2007).

2.2.3   *What is the Resource-Based Theory of the Firm?*

The resource-based view (often referred to as the resource-based theory) argues that a business firm can be best described as a collection of "sticky" and difficult to

imitate resources and capabilities (Mowery, Oxley & Silverman 1998). These resources may be physical, such as product designs and production techniques, or intangible, such as specific market understanding or the information and knowledge the firm controls (Barney, Wright & Ketchen 2001, Mowery, Oxley & Silverman 1998). How these unique and idiosyncratic organisational resources and capabilities are deployed can result in sustained superior performance (Rouse & Daellenbach 1999).

It is interesting to note that the resource-based view is also referred to as the resource-based theory. This suggests that there is some conjecture surrounding whether or not the RBV can be considered a theory. Certainly, the RBV is not without its critics, some of whom argue that it is tautological, goes around in circles, and lacks a tight definition and explanatory power (Priem & Butler 2001, Levitas & Ndofor 2006, Newbert 2007, Wills-Johnson 2008). Levitas and Ndofor (2006) for instance, argue that the RBV does not have generalizability as that can only occur after valid operationalised constructs are developed across different contexts, industries and samples.

Priem and Butler (2001) also argue that considerable conceptual work remained before the RBV could meet the requirements of a theoretical structure. Priem and Butler (2001) pointed out that conceptual definitions and interrelationships require further development and re-evaluation against the requirements of theory. The continued development and re-evaluation will provide greater clarity and understanding which will ultimately lead to a testable RBV, meeting the requirements of theoretical structure (Priem & Butler 2001). Perhaps critical evaluation is a process any potential school of thought needs to go through before it is fully accepted as a theory and the RBV is still in its early stages of development.

However, despite the criticisms of the RBV, there is widespread support for the paradigm, and researchers continuously advocate methods and new research directions to provide a stronger empirical basis for the RBV. For instance, Lockett, Thompson and Morgenstern (2009) argued more scholarly effort should be invested in trying to understand resource functionality and how this related to the potential product/service market space a firm competes in. Lado *et al* (2006) argued that

despite the paradoxes that plague the RBV, they reflect scientific anomalies that should be tolerated as long as this theoretical perspective continued producing interesting insights. A paradoxical perspective was seen as a positive influence, invigorating scholarship and understanding to continue the theoretical development of the RBV (Lado *et al* 2006).

Recall earlier, the RBV was found to provide a more complete view of the role of resources and competitive advantage compared to the resource dependency theory (RDT). However, the RDT was able to explain why firms look at forming alliances to acquire resources critical for their survival (Casciaro & Piskorski 2005, Fink *et al* 2006). One of the limitations of the RBV is that it fails to look at the competitive advantage of interconnected firms and therefore why firms might seek certain alliance partners over others (Lavie 2006). The focus of the traditional RBV is on the firm's internal resources and how they confer competitive advantage to a firm (Barney 1991, Eisenhardt & Schoonhaven 1996). Key to this is the heterogeneity of the firm's resources. This heterogeneity increases the inimitability and immobility of a firm's resources, two of the key tenets of the RBV (Barney 1991). Therefore, this heterogeneity leads to the development of valuable resources that are owned and controlled by the firm that are also non-tradable and imperfectly mobile.

The traditional RBV however, does not address the competitive advantage of interconnected firms (Lavie 2006). The RBV's focus on resources that are owned or controlled by the firm undermines the essential contribution of the resources of alliance partners (Lavie 2006). Lavie (2006) argues the RBV advocates fail to acknowledge the direct sharing of resources and indirect transferability of benefits associated with these resources that occur via interfirm linkages and connections. Accordingly, Lavie (2006) provides an extended RBV that also considers the competitive advantage a firm derives from interorganisational networks and alliance partners. In contrast to the traditional RBV, Lavie's (2006) extension argues that firms form alliances with new partners which offer added value or synergies. In other words, in addition to their own internal resources, firms seek alliances and linkages with other firms in search of opportunities for value creation and appropriation. This suggests firms ally to acquire resources that add to the heterogeneity of resources under their own ownership or control.

The RBV of the firm is presently considered the most influential framework for understanding strategic management (Barney, Wright & Ketchen 2001, Rugman & Verbeke 2002, Galbreath 2005). Indeed, Foss (2005) highlighted that there is no edition of Strategic Management Journal without at least one article applying the analytical framework of the RBV. The contribution of the RBV to strategic management is its ability to join research strands in economics, industrial organisation and organisation science (Rugman & Verbeke 2002). Even more broadly, the RBV of the firm has also made in-roads in other academic areas including entrepreneurship, human resource management, marketing and international business (Barney, Wright & Ketchen 2001). Of particular interest for this doctoral study is the link between the RBV and entrepreneurship since the areas of study associated with the thesis bridge both the fields of strategic management and entrepreneurship. This is reinforced by the intended sampling frame for this study which consists of small and medium-sized, growth oriented enterprises based in Western Australia. Much entrepreneurship research involves the collection of primary data from business founders or small business owners (Chandler & Lyon 2001). The findings of this study are also likely to be of benefit to researchers in the entrepreneurship area.

Sandberg (1992) argues the strategic management paradigm has much to add to the study of entrepreneurship and vice versa. Indeed, the overlap of entrepreneurship and strategic management was focused on in a special issue of Strategic Management Journal in 2001 (Hitt *et al* 2001). The study of the entrepreneur and entrepreneurship in economics came into prominence in the 1930's with the seminal works of the Austrian economist, Joseph Schumpeter. Schumpeter (1934, 1949) saw the entrepreneur as an agent of change who carried out new combinations and entrepreneurship as consisting of doing things that are not generally done in the ordinary course of business. The "intersection" between entrepreneurship and strategic management has been an ongoing focus for a growing number of researchers in both fields (e.g. Alvarez 2003, Ireland *et al* 2001, Hitt *et al* 2001, Foss *et al* 2008). Ireland *et al* (2001) stated that the integration of entrepreneurial actions with strategic management actions facilitates a firm's wealth creating efforts. Independently, these actions contribute to firm growth and success but, when integrated, these actions create a synergy, enhancing the value of their outcomes

(Ireland *et al* 2001). Ireland, Hitt and Sirmon (2001) went further by coining the term "strategic entrepreneurship" which is described as involving simultaneous opportunity-seeking and advantage-seeking behaviours that result in superior firm performance. Not surprisingly, the overlap of the two fields meant entrepreneurship did not escape the application of the RBV within its discipline.

Indeed, Casson (2003, p. 235) claimed "much of the literature on resource-based theory can be interpreted as a restatement of propositions in the theory of entrepreneurship, with the word "resource" substituted for "entrepreneur". Casson's words might explain why the application of the RBV to entrepreneurship has also gathered momentum of late (e.g. Alvarez & Busenitz 2001, Zahra, Hayton & Salvato 2004, Powers & McDougall 2005, Davidsson, Steffens & Fitzsimmons 2009). Yli-Renko, Autio and Sapienza (2001, p. 588) claimed "strategy and entrepreneurship researchers share an interest in resource acquisition, sharing and exploitation for the purpose of value creation". Alvarez and Busenitz (2001) highlighted the link between resources and entrepreneurship by stating that entrepreneurship generally involved the founder's ability to recognise opportunity and to acquire resources needed to exploit the opportunity. Additionally, the organisational ability to recombine homogeneous inputs into heterogenous outputs was also seen to be a resource (Alvarez & Busenitz 2001). Hadjimanolis (2000) argued that the RBV was particularly relevant for SMEs since one of the main problems these firms face in innovation is the relative lack of resources and the need to obtain them through collaboration with other firms or organisations.

2.2.4 Knowledge-Based View as an Extension of the RBV

The RBV postulates that resources are capable of providing sustainable competitive advantage when they are difficult to imitate and not readily substitutable (Peteraf 1993). Knowledge-based resources are regarded as particularly important for providing this sustainable competitive advantage because they are inherently difficult to imitate, socially complex, facilitate sustainable differentiation and improve performance (Wiklund & Shepherd 2003, Alavi & Leidner 2001). Kogut and Zander (1992, p. 384) viewed the central competitive advantage of what firms know how to do as the ability to create and transfer knowledge efficiently within an organisational context. Knowledge and the capability to create and utilize knowledge are

considered the most critical elements of a firm's sustainable competitive advantage (Nonaka & Toyama 2003, Grant 1996).

Grant (1996) proposed a knowledge-based theory of the firm to identify circumstances where collaboration between firms is superior to either market or hierarchical governance when utilizing and integrating specialized knowledge efficiently. This knowledge-based theory of the firm was seen as an extension of the RBV and became known as the knowledge-based view (KBV) of the firm (Yli-Renko, Autio & Sapienza 2001). Grant (1997) believed that the KBV would have a profound change in management thinking since the scientific management revolution in the early 20th century. One of the areas where he viewed KBV had a pertinent application to management practice was in the area of interorganisational relationships, especially because firms had limited scope to achieve congruence between the firm's product domain and its knowledge domain (Grant 1997). Through interorganisational relationships, a firm is able to utilize its knowledge resources more effectively and access knowledge resources of external firms (Grant 1997).

Nickerson and Zenger (2004) viewed a firm's knowledge as advancing by identifying a problem and then finding a new solution, by absorbing existing knowledge external to the firm, or by developing new knowledge. Their advancement on the KBV was to look at the boundary choice of the search for knowledge (internal vs external) and alternative approaches to organizing the search for knowledge or solutions, depending on how valuable this knowledge was and how its appropriation should be protected. Although not directly connected to the KBV, the area of organisational learning initially studied by March (1991) and Cyert and March (1992) draws parallels with the KBV in its analysis of how an organisation acquires knowledge and exploits it to the firm's advantage. Knowledge as a key resource is accumulated in firms through organisational learning not only from their employees but also through interaction with their environments (March 1991, Cyert & March 1992, Sinkula 1994).

Since knowledge is seen as a critical resource, it is worth reviewing what the assumptions at the heart of the knowledge-based view (KBV) are. Firstly,

knowledge is the most productive resource of the firm in terms of contribution to value; secondly, knowledge is acquired by individuals, but owing to the cognitive and time limitations of human beings, individuals must specialize in their acquisition of knowledge; thirdly, an increased depth of knowledge can normally only be attained through sacrificing breadth of knowledge; and fourthly, production, or the creation of value through the transformation of inputs into outputs, typically requires the application of numerous different types of specialized knowledge (Grant 1996). Thus, the KBV calls for strategies that will create value in knowledge and lead to its effective exploitation to produce outputs based upon unique competencies (Carlisle 2002).

Knowledge tends to be broken down into tacit and explicit knowledge. Tacit knowledge is defined as knowledge that can only be acquired through experience, is difficult to articulate and replicate. Explicit knowledge is readily available and easy to communicate (Hansen 1999, Chrisman & McMullan 2004, Davila, Epstein & Shelton 2006, Polanyi 1967). Rouse and Daellenbach (1999) argue that the systematic methods for obtaining readily available knowledge and information are accessible to all competitors and new techniques diffuse rapidly. Accordingly, most competitors are likely to react quickly to actions, resources and competencies discernible from secondary sources (e.g. trade journals and annual reports) and these could not form the basis of sustainable advantage. However, the dismissal of secondary, explicit information as not contributing to a firm's sustainable competitive advantage appears to be short-sighted. It assumes all firms have access to this information and that all firms can equally combine the information into their heterogeneous assets and resources (Chrisman & McMullan 2004). Indeed, Chrisman and McMullan (2004) argued that the combination of tacit and explicit knowledge is contextual, experiential and is hard to codify, replicate and transmit. Accordingly, it possesses the properties of value, rarity, inimitability and non-substitutability necessary for sustainable competitive advantage. Alavi and Leidner (2001) point out that while tacit knowledge is frequently assumed to be more valuable than explicit knowledge, this is "tantamount to equating an inability to articulate knowledge with its worth" (p. 111). However, the debate about whether tacit or explicit knowledge is more valuable is not the point; the two should not be

considered as dichotomous states of knowledge, but as mutually dependent which reinforces qualities of knowledge (Alavi & Leidner 2001).

Research on the KBV has been the focus of many articles in the strategic management area. In fact, a 1996 special issue of Strategic Management Journal focused solely on the KBV (Liebeskind 1996). And furthermore, as in the case of the RBV and strategic management and its extension to entrepreneurship, the KBV has also found its way into the domain of entrepreneurship. Indeed, Thorpe *et al* (2005) claim much of the literature on the use of knowledge in SMEs adopts the RBV of the firm. The importance of knowledge-based resources relative to other resources is particularly high for SMEs (Thorpe *et al* 2005, Yli-Renko, Autio & Sapienza 2001). Since SMEs lack size and financial scope, they have little market power and consequently rely more heavily on what the entrepreneur or business owner knows (Thorpe *et al* 2005, Wiklund & Shepherd 2003).

Examples of SME and entrepreneurship research using the KBV as the theoretical lens include Yli-Renko, Autio and Sapienza's (2001) examination of knowledge transfer and acquisition in dyadic client-entrepreneurial firm relationships from the KBV perspective; Chrisman and McMullan's (2004) study on the value of outsider assistance knowledge to the survival of entrepreneurial ventures; and Saarenketo *et al'*s (2009) use of the KBV as the theoretical basis of their paper, in which they proposed that firm growth cannot be sustained without the dynamic re-developing of knowledge-based resources and capabilities.

The RBV and KBV theoretical frameworks are both of interest to this study which proposes that small and medium-sized firms can acquire valuable knowledge from exchange arm's-length clients. This knowledge is considered a valuable resource since it is posited to lead to knowledge outcomes, such as new product development, new market development and internal change of the firm. It is important to note here, however, that while the RBV and KBV provide the theoretical framework for this study, the research does not include direct measures of the firms' resources and therefore it is not a test or contribution to resource-based theory or knowledge-based theory (Davidsson, Steffens & Fitzsimmons 2009). The following section will

examine interorganisational relationships in greater detail, in particular, their role in the exchange and acquisition of resources.

2.3   Interfirm Relationships

2.3.1   Introduction

The focus of this thesis is the study of weak, arm's-length client-firm exchange relationships of SMEs and the contribution they make to knowledge acquired by business owners. An understanding of interfirm relationships and why weak arm's-length exchange relationships are of interest to SMEs is therefore necessary. To investigate this further, the following section reviews literature on why firms form relationships, the types of relationships SMEs are most likely to form, and the factors that lead to the creation of weak, arm's-length exchange linkages. The role of relationships in knowledge and information transfer and the contribution arm's-length relationships make to the process of knowledge and information acquisition will also be discussed.

2.3.2   Why Firms Form Relationships

Early studies on interfirm relationships tended to focus on resource scarcity as a major reason why firms seek to form linkages with other firms (Levine & White 1961, Schermerhorn 1975, Van de Ven 1976, Whetten & Leung 1979, Van de Ven & Walker 1984, Galaskiewicz 1985). Levine and White (1961) examined health and social welfare agencies and found that because of resource scarcity an organisation limited itself to particular functions. However, Levine and White (1961) identified that these functions required the establishment of relationships with other organisations within the health system to carry them out. Schermerhorn's (1975) review of literature on motivators influencing interorganisational cooperation highlighted that "organisations will seek out or be receptive to interorganisational cooperation when faced with situations of resource scarcity or performance distress" (p. 848). Whetten and Leung (1979) studied interfirm relationships in New York work force training agencies and identified that organisations established linkages because of the perception that they enhanced organisational performance, including the increased control of available resources.

Van de Ven and Walker (1984) conducted a longitudinal study of dyadic relationships between child care and health organisations in Texas. Since the child care agencies were not-for-profit organisations and the agencies were lacking the resources needed to plan and operate their child care programs, the child care organisations recognised they needed the support of other organisations to survive. Van de Ven and Walker (1984) found that interfirm relationships between the child care and health organisations developed as a response to a perceived need for resources. They proposed that firms had agents, or entrepreneurs, with the specific function of marshalling resources and forging ad hoc relationships needed to enable other firms to pursue firm goals and objectives (Van de Ven & Walker 1984).

Galaskiewicz's (1985) literature review on interorganisational relations found that in addition to resource scarcity and the procurement and allocation of resources, other reasons to form interfirm linkages included political advocacy, or the formation of relationships to develop political interest groups and organisational legitimacy. The objectives of organisations that formed relationships to develop political interest groups typically included gaining monetary favours from government, managing environmental turbulence created by governmental threats to the achievement of organisational goals and resisting governmental efforts to intrude into the management autonomy of organisations (Galaskiewicz 1985, Baysinger 1984).

The arena of organisational legitimacy examined interorganisational relationships from the perspective of legitimising a firm to the public, licensing boards and funding agents (Galaskiewicz 1985). Strategies aimed at achieving and developing legitimacy included having the organisation identify with cultural symbols and legitimate power figures in the environment, or obtaining endorsements from the power figures themselves. Another strategy included the contribution of cash to charitable institutions in the hope that this demonstrated the goodwill of the donor and to "win over" certain elements in the environment (Galaskiewicz 1985). At the time of Galaskiewicz's (1985) literature review, the study of organisational attempts to achieve legitimacy was in its infancy, however, more recent studies in this area are reviewed later in this section. It was clear by the mid-eighties that the study of interorganisational relations was a burgeoning field of research and authors were identifying new reasons for the formation of interfirm linkages.

Oliver (1990) attempted to integrate the previous literature on interorganisational relationships and proposed six critical contingencies or causes (Cooper & Gardner 1993) of relationship formation: necessity, asymmetry, reciprocity, efficiency, stability and legitimacy. These contingencies accounted for previous research findings in the field and explained the reasons why firms chose to enter relationships with each other. In the case of necessity, for instance, mandates from higher authorities, such as a government or industry body, may provide the impetus for the formation of interfirm linkages that otherwise might not have occurred voluntarily. Governmental mandates might lead firms to form the political advocacy groups proposed by Galaskiewicz (1985), particularly if the mandates threatened the independence of private organisations and impacted on their ability to achieve organisational goals.

The contingency of asymmetry refers to interfirm linkages prompted by the potential to exercise control over another organisation or its resources. For instance, resource scarcity may prompt an organisation to attempt to exert power over organisations that possess the required scarce resources (Oliver 1990). On the other hand, according to the reciprocity perspective, interfirm linkages are formed to pursue common or mutually beneficial goals (Oliver 1990). Goes and Park (1997) studied interorganisational linkages between 400 Californian hospitals and identified that reciprocal resource exchange among organisations resulted in service innovation. As reciprocity expanded, innovative processes in member firms were enhanced (Goes & Park 1997).

Efficiency arises from the firm's internal need to improve the cost/benefit ratio (Cooper & Gardner 1993). This framework predicts that transaction cost economisation determines whether transactions will be performed within firms, in intermediate structures (such as through interfirm linkages) or in the market (Oliver 1990). This perspective helped explain the motivation of firms to outsource activities performed within the firm or to establish vertical alliances with firms in adjacent or different stages of the value chain. The contingency of stability reflected attempts to adapt to or to reduce environmental uncertainty and prompt organisations to establish and manage linkages in order to achieve stability, predictability and dependability in their relations with others (Cooper & Gardner 1993, Oliver 1990,

Galaskiewicz 1985). Gulati and Gargiulo (1999), and Beckman, Haunschild and Phillips (2004) proposed that organisations create ties to manage uncertain environments and to satisfy resource needs and, consequently, they enter into ties with other organisations that possessed or controlled the necessary resources and capabilities that would help them cope with the environmental constraints. In an earlier study, Dollinger and Golden (1992) argued that firms operating in unstable, dynamic and unpredictable industry environments are motivated to couple themselves tightly with organisations that control critical resources. This was especially the case with small and medium-sized firms since they typically do not have the market power to control these resources (Dollinger & Golden 1992).

The final contingency explaining why firms form linkages and relationships with other firms is that of legitimacy discussed earlier in Galaskiewicz's (1985) study. The establishment of interfirm relationships for purposes of increasing legitimacy can originate from an organisation's motives to demonstrate or improve its reputation, image and status in the marketplace or industry (Oliver 1990). For instance, Stuart (2000) argued that prestigious organisations are desirable associates because their strategic activities are focal points that attract the attention of external resource holders. Accordingly, potential customers and employees, the financial community, as well as the media and trade press are likely to notice the initiatives of the affiliates of well-regarded firms. As a result, a firm's reputation and its ability to mobilize resources are likely to improve when it establishes a linkage with a high-prestige partner firm (Stuart 2000).

The role that legitimacy plays in interfirm relationships particularly from a small firm perspective has been the focus of a number of studies (Singh, Tucker & House 1986, Venkataraman *et al* 1990, Stuart, Hoang & Hybels 1999, Reuber & Fischer 2005, Fischer & Reuber 2007). Small and medium-sized firms, particularly young ones lack working relationships with customers and suppliers, lack collateral for engaging in transactions and are unable to compete effectively with established organisations. Consequently, small firms lack legitimacy, a legacy derived from what researchers refer to as the liabilities of smallness and, in the case of young firms, newness (Singh, Tucker & House 1986, Venkataraman *et al* 1990, Stuart, Hoang & Hybels 1999).

Oliver (1990) proposed that the contingencies of interfirm relationship formation could overlap. In other words, if a firm formed a reciprocal arrangement of resource exchange with another firm, the two firms could also reduce the environmental uncertainty associated with scarce resources. Indeed, Goes and Park's (1997) analysis of reciprocal exchanges between hospitals found that in turbulent industry periods, institutional links were strong predictors of innovation, indicating that firms join forces to overcome uncertainty and negotiate more stability through reciprocity. In this particular case, the firms formed a relationship from a reciprocity and stability perspective.

Interfirm relationships are particularly important for SMEs. Larger firms, due to their larger internal resources, have a greater capacity to develop internally or buy or acquire strategic resources, whereas, for a small and medium-sized firm, forming a relationship may be the only viable option (Sarkar, Echambadi & Harrison 2001). Many of Oliver's (1990) contingencies of interfirm relationship formation apply to small and medium-sized businesses. SMEs are likely to face environmental uncertainty particularly at the early life stages of the business and, therefore, the need to establish ties with existing firms is greatest at this stage (Hite & Hesterly 2001). The environmental uncertainty is due to a number of factors, including the lack of clients, lack of industry/market experience and the lack of visibility of the SME (Hite & Hesterly 2001, Stuart 2000, Fischer & Reuber 2004). Accessing market information and new clients through the early linkages established by the firm is likely to reduce the environmental uncertainty faced by the firm and to create stability.

Furthermore, when a new or young firm lacks legitimacy and credible commitments such as tangible physical assets, some firms use a transaction with an established partner as a source of legitimacy (Venkataraman *et al* 1990). For instance, a firm with a large market share is likely to be of particular interest to the SME. Not only does having the large firm as a client provide some degree of legitimacy to the SME, it also provides linkages with other players within the industry. As the large firm is likely to be a "repository" of market knowledge such as market developments, new trends, and new technologies (Alvarez & Barney 2001, Stuart 2000), the transfer of some of this information to the SME might prove invaluable.

2.3.3 Types of Relationships

There are many terms used to describe various interfirm relationships including equity and non-equity joint ventures, strategic alliances and cooperative agreements. The criteria used to distinguish one type of relationship from another also vary. A popular way to differentiate relationship types is to rank them according to a scale. For example, researchers (eg Nohria & Garcia-Pont 1991, Contractor & Lorange 2002, Hausman 2001) have investigated the strength and intensity of relationships in terms of commitment, organisational interdependence and relationship longevity. Nohria and Garcia-Pont (1991) for instance, analysed strategic groups and strategic blocks in the global car manufacturing industry and ranked interorganisational linkages according to resource commitments, interorganisational interdependence and the ease with which the linkages could be dissolved. Nohria and Garcia-Pont (1991) ranked mergers and acquisitions as the linkages with the highest intensity and they ranked distribution agreements as lowest in intensity (Nohria & Garcia-Pont 1991).

Contractor and Lorange (2002) referred to interfirm cooperation as any interfirm linkage that fell between the extremes of discrete, short-term arm's-length contracts and the complete merger of two or more organisations. These interfirm linkages consisted of relational contracts such as turnkey or training arrangements and medium term contractual relationships, including licensing arrangements, long-term supply chain relationships and equity joint ventures. Contractor and Lorange (2002), similar to Nohria and Garcia-Pont (1991), used a classification scale and ranked alliance types in terms of the expected longevity of the alliance, the typical size and the consequence (importance), and the mutual commitment between partners. Figure 2.1 demonstrates Contractor and Lorange's (2002) alliance typology.

Hausman (2001) did not examine relationship types in the same manner that Nohria and Garcia-Pont (1991) and Contractor and Lorange (2002) examined them, although she did utilise a similar ranking scale to rate the relationships in her study. Hausman (2001) examined relationships between hospital purchasing agents and their major medical/surgical material suppliers and ranked the strength of the relationship according to interfirm-trust, commitment to the relationship and shared norms of relationism (flexibility, mutuality and solidarity). Hausman (2001) found that firms

that encouraged stronger relationships with partners achieved the benefits of satisfaction with supply partners and performance improvements.

Figure 2.1   Types of Alliances

One Time, Short Arms-Length Contracts	"Relational" Contracts (e.g. Turnkey or Training)	Medium term Contractual Relationship (eg Licensing)	Medium to Long term Supply Chain Relationship	Equity Joint Venture	Complete Merger or Acquisition or Greenfield Subsidiary

Shorter/Smaller

Expected Longevity of Alliance
Typical Size and Consequence

Longer/Higher
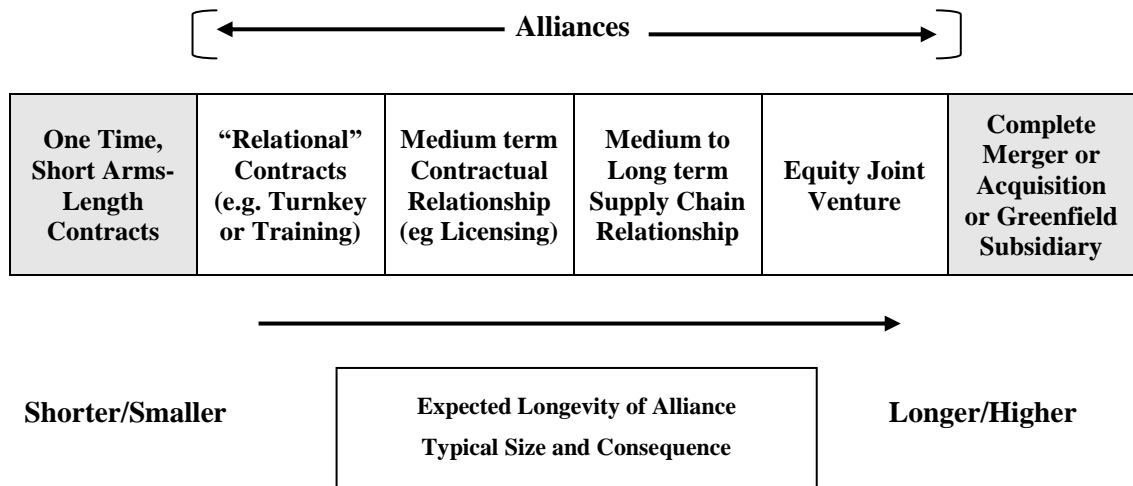
(Source: Contractor and Lorange 2002, 487)

Researchers have also ranked interfirm linkages according to the governance hierarchy associated with the relationship (Gulati & Singh 1998, Larson 1992). Gulati and Singh (1998), for instance, investigated interfirm relationships in the biopharmaceutical (biotechnology and pharmaceutical firms), new materials (ceramics, polymers, composites, and metals) and automotive (assemblers and suppliers) industry sectors from the perspective of governance control hierarchy. Similar to Nohria and Garcia-Pont (1991) and Contractor and Lorange (2002), Gulati and Singh (1998) examined interfirm linkages, such as joint venture arrangements, minority alliances, and contractual alliances.

At the hierarchical end of the spectrum were joint ventures that occurred when partners created a separate entity, each partner owning a portion of the equity (Gulati & Singh 1998). Minority alliances, on the other hand, included partnerships in which firms worked together without creating a new entity. Instead, one partner, or a set of partners, took a minority equity position in the other (or others). Such alliances introduced a weaker form of control hierarchy where the investing partner typically joined the board of directors of the partner receiving the investment. Finally, the third category of alliances, contractual alliances, did not involve sharing of equity nor did they entail the creation of new organisational entities. Lacking

shared ownership or administrative structure, contractual alliances resembled arm's-length market exchanges. The partners jointly coordinated ongoing activities and negotiated new decisions (Gulati & Singh 1998). According to Gulati and Singh (1998), contractual alliances included unidirectional agreements such as licensing and distribution agreements and bidirectional agreements such as joint contracts and technology exchange agreements.

The previous examples of relationship types focused on specific linkages such as arm's-length contractual arrangements, equity joint ventures and mergers, and acquisitions. These types of relationships were ranked according to factors that included the duration of the relationship, the level of mutual commitment by the exchange partners, the strength of the relationship, the consequences or importance of the relationship, and governance hierarchy. Though the classification of a relationship as a strategic alliance, joint venture, contractual agreement or arm's-length exchange appears to be a popular form of linkage identification, there are other dimensions used to classify interfirm linkages. Granovetter (1985), for instance, differentiated relationships according to a dichotomous, weak and strong tie perspective. Uzzi (1996, 1997) similarly examined relationships according to the degree of the embeddedness (closeness) of the social tie. Hansen (1999) drew on Granovetter's research to identify the role of strong and weak ties in a network study of 120 new-product development projects within a large electronics company and found that both strong ties and weak ties were important contributors to new product development. Uzzi (1996, 1997) classified relationships into an exchange continuum where, at one end of the spectrum, were arm's-length ties and at the other extreme, embedded ties.

The concepts of weak and strong ties, arm's-length ties and embedded ties draw parallels with the study of social networks, particularly the field of structural holes and open networks. An open network exists when a firm links well with groups of disconnected partners spanning "structural holes" between them (Burt 1997a, Burt 1997b, Shipilov & Li 2008). Structural holes theory contends that a firm whose network of ties contains many structural holes is more likely to have access to diverse sources of information about business opportunities (Shipilov & Li 2008, Ahuja 2000b). On the other hand, structural hole theory sees close, cohesive ties as a

source of rigidity, hindering the coordination of organisational tasks (Gargiula & Benassi 2000). In summary, it could be argued that a firm with many weak ties or arm's-length ties is also seen as spanning many structural holes. In turn, firms with many weak ties are also capable of accessing more information about business opportunities than firms with closer, more cohesive ties.

Lambe, Spekman and Hunt (2000), in their study of shorter term interfirm linkages, rated relationships as a continuum between extremes of transactional exchange and relational exchange where one time, discrete arm's-length exchanges are at the transactional exchange end and enduring exchanges are on the relational exchange end. The authors identified that relational exchanges differed from transactional exchanges in terms of the level of trust, cooperation and commitment. In other words, the higher the levels of trust and commitment in an exchange relationship, the more the relationship took on attributes of a relational exchange (Lambe, Spekman & Hunt 2000). Pillai and Sharma (2003) identified further attributes of relationalism that distinguished these types of exchanges to those of transactional exchanges including high solidarity, mutuality and flexibility. Figure 2.2 demonstrates Lambe, Spekman and Hunt's (2000) exchange continuum.

Figure 2.2   The Exchange Continuum and Interimistic Relational Exchange

Transactional Exchange		Relational Exchange	
Discrete Exchange	Repeated Transactions	Interimistic Exchange	Enduring Exchange
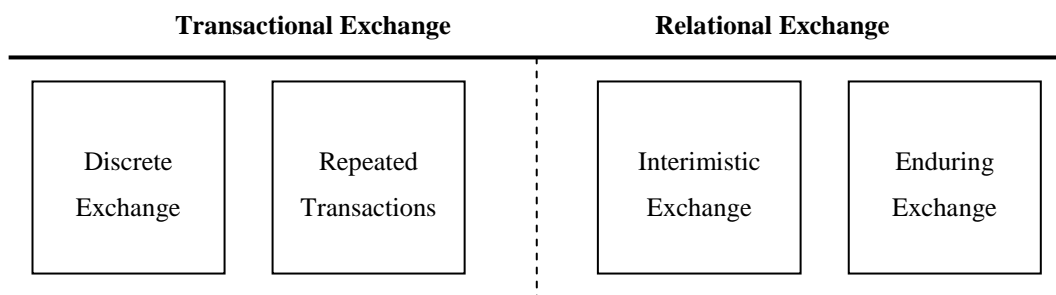
(Source: Lambe, Spekman and Hunt 2000, p. 215)

Even though the preceding discussion examined interfirm relationships in different contexts and identified various dimensions used to distinguish relationship types, the notion of a continuum scale of relationships is evident. Indeed, Hausman (2001) argued that rather than a dichotomy between discrete, one-off transactions and relationships, there existed a continuum of business interactions containing more or less relational character, a view supported by other studies (Pillai & Sharma 2003,

Dyer & Singh 1998, Lambe, Spekman & Hunt 2000). Relationships could be classified according to relationship intensity (Nohria & Garcia-Pont 1991); relationship strength (Hausman 2001); mutual commitment, consequence and longevity (Contractor & Lorange 2002); governance control hierarchy (Gulati & Singh 1998, Larson 1992); weak and strong ties (Granovetter 1985, Hansen 1999); and embedded ties (Uzzi 1996, 1997).

It is evident from the previous discussion that researchers regard arm's-length relationships as one of the extremes of a relationship continuum despite the use of different dimensions to rate or distinguish these linkage types. Uzzi and Lancaster (2003) categorised arm's-length ties as relationships that lacked social closeness to, and familiarity with the client. The type of relationships described in these ties were cool, impersonal and motivated by profit and self interest, where actors would regularly switch to new buyers and sellers to take advantage of new entrants or avoid dependence (Uzzi 1996, 1997). Relationship parameters in arm's-length ties are driven essentially by price-related data (Uzzi 1997, Cooper & Gardner 1993, Larson 1992). Neither party in an arm's-length relationship explicitly expects future transactions although it is likely the supplier hopes for further sales, even though there are typically many buyers and sellers in the marketplace (Cooper & Gardner 1993). The buyer does not need to consider interorganisational ties beyond the transactional level of interaction and the relationship is considered as an adversarial one (Pillai & Sharma 2003, Larson 1992).

Arm's-length relationships are also referred to as market exchange relationships (Larson 1992, Gulati & Singh 1998, Bensaou 1999, Ring & Van de Ven 1992), transactional exchange relationships (Pillai & Sharma 2003), market ties (Uzzi 1997, Uzzi & Lancaster 2003) and weak ties (Hite & Hesterly 2001, Beckman, Haunschild & Phillips 2004, Hansen 1999). Market exchange or market based relationships are simply characterized as discrete contracts that are relatively short-term, bargaining relationships between highly autonomous buyers and sellers designed to facilitate an efficient exchange of property rights (Ring & Van de Ven 1992). Bensaou (1999) in the context of the automobile manufacturing industry, described market exchange relationships as those involving firms which can turn to the marketplace and shift to another business partner at low cost and minimal damage. These market exchange

relationships, from an economics perspective, are regarded as efficient and capable of minimising costs as firms are pitted against one another and the buyer is in a position to obtain a product or service at the best price. The concept is associated with Williamson's transaction cost economics where economic exchange is considered to take place either through market exchange or, if this is regarded as inefficient and costs are sufficiently high, then transactions are absorbed within the firm (Larson 1992). These are similar to arm's-length relationships because they are discrete and there is no guarantee of repeated transactions.

Transactional exchange relationships are described by Pillai and Sharma (2003) as contrasting with relational transactions and accordingly did not comprise trust, commitment and information exchange. Pillai and Sharma (2003) related to transactional exchange relationships as arm's-length exchanges lacking flexibility and solidarity, key relational norms and behaviour. Similarly, Uzzi (1997) argued that market ties conformed closely to the concept of arm's-length relationships as stated in economic literature. These relationships were seen to lack reciprocity between exchange partners and interactions were not repeated. Uzzi's (1996, 1997) research respondents referred to these interactions as "one shot deals", "a deal in which costs are everything," and lacking in social content. Similarly, Dyer and Singh's (1998) overview of arm's-length relationships reflect a lack of asset investments by parties in such relationships and minimal information exchange with prices as the primary source of information between sellers and buyers. Additionally, arm's-length relationships are also characterized by low levels of interdependence and low transaction costs with minimal investment in governance mechanisms (Dyer & Singh 1998).

Beckman, Haunschild and Phillips (2004) argued that when firms make a new relationship, on average, they are less intimate, involve less emotional intensity, and have less reciprocity than stronger ties. Hence, these ties are regarded as weak ties. Firm-specific uncertainty creates the need for the unique information that comes from new, relatively weak ties with new partners (Beckman, Haunschild & Phillips 2004, Hite & Hesterly 2001). These weak ties are also similar to arm's-length relationships because they appear to have the same relational intensity or, rather, the lack of it. Hansen's (1999) research on weak ties and the role they play in

knowledge transfer and acquisition similarly identified a lack of relational intensity between partners. Hansen (1999) argued that relationships between "weak tie" partners are likely to be less reciprocal and, even if they were, the relationship is likely to require less help from partners than would be required in a strong tie. This is similar to Dyer and Singh's (1998) observation of arm's-length relationships characterized as having low levels of interdependence.

Table 2.1 provides a summary overview of the similarities and overlaps of characteristics of interfirm linkages that appear to fit the context of weak client-firm exchange relationships, such as arm's-length, weak-tie, market-tie and market-exchange relationships. A review of the table will help identify common characteristics which will be used to describe these relationships to small and medium-sized firms in the data collection phase of the research.

Common aspects of weak client-firm relationships observed from reviewing table 2.1 include their description as arm's-length, lacking closeness and familiarity to the client, 'one-off' (e.g 'one-shot deal') transactions with no expectation of future transactions. These relationships are also regarded as adversarial and tend to be driven by price-related considerations. To provide a simplified definition to business owners during the data collection phase, weak-client firm exchange relationships were explained as arm's-length, less regular or irregular, non-close, involving 'one-off' clients' from whom future transactions are not necessarily expected.

Table 2.1   Overview of Weak Client-Firm Exchange Relationships and Relational Characteristics

Author	Relationship Term	Relational Characteristics
Uzzi (1997, 1998)	Arm's-length tie	Cool, impersonal and motivated by profit and self-interest, where actors would regularly switch to new buyers and sellers. Lacking reciprocity and social content. Referred to as "one shot deals" and a deal where "costs are everything".
Uzzi & Lancaster (2003)	Arm's-length tie (used interchangeably with market tie)	A relationship lacking social closeness to and familiarity with the client
Cooper & Gardner (1993)	Arm's-length relationship	Neither party in the relationship expects further transactions. Driven by price-related data
Pillai & Sharma (2003)	Arm's-length exchanges (used interchangeably with transactional exchange relationships)	A relationship lacking trust, flexibility and solidarity. Lacking relational norms and behaviour. Regarded as adversarial.
Dyer & Singh (1998)	Arm's-length relationships	Minimal information exchange, lacking asset investments by parties in such relationships. Prices form primary source of information. Low levels of interdependence and low transaction costs with minimal governance mechanisms.
Beckman, Haunschild & Phillips (2004), Hansen (1999)	Weak tie	Less intimate, less emotional intensity and have less reciprocity than stronger ties. Lacking in relational intensity.
Bensaou (1999)	Market exchange relationship	Relationships involving firms that shift to other business partners at low cost and minimal damage
Larson (1992)	Arm's length market exchange	Price-based adversarial linkages featuring low levels of cooperation, integration and trust.

2.3.4   What Factor's Lead to Arm's-Length Relationships and Linkages?

It is argued that arm's-length market linkages are incapable of generating any relational benefits since there is nothing distinctive about the exchange relationship permitting the partners to generate profits over and above what other seller-buyer combinations can generate (Dyer & Singh 1998). Why then do arm's-length relationships still prevail in commercial settings?

One of the factors that drive arm's-length linkages is the customer's concern for the cost of, for instance, components and raw material. Firms deal with this concern in a market-based relationship by continuously seeking lower prices and creating "price pressure" to suppliers by using the threat of competition (Vesalainen 2002). This traditional view of supplier management advocated a minimum dependence on suppliers and maximum bargaining power (Dyer, Cho & Chu 1998, Bensaou 1999). If the customer is not happy with the product supplied by the firm, there is no obligation by the customer to continue its association with the firm providing the inputs. Under these conditions, there is an assumption that it is easy for the firm to switch trading partners with little penalty because other sellers offer virtually identical products (Dyer & Singh 1998).

Earlier studies (Schermerhorn 1975, Van de Ven 1976, Van de Ven & Walker 1984) argued that a firm that became involved in an interorganisational relationship lost some of its freedom to act autonomously and that it needed to invest scarce resources and energy to develop a relationship with another organisation when the potential returns on this investment were often unclear. Venkataraman *et al*'s (1990) study of small educational software companies and their large corporate sponsor and client, demonstrated the perils of relying on, and developing, a close working relationship with one large client. In a number of these cases, the SME's commitment of scarce resources to the relationship prevented it from developing further products and markets, ultimately leading to the firm's demise when the corporate sponsor "pulled the pin" on the relationship (Venkataraman *et al* 1990). The dangers of developing close working relationships which eventually disband with a small number of clients and the few resources the small and medium-sized firm has under its control, are further factors that propagate the development of arm's-length linkages.

On a similar note, the potential of a partner firm to act opportunistically or inappropriately is another factor that drives the creation of arm's-length linkages. For instance, Alvarez and Barney (2001) highlighted a case involving an alliance between a biotechnology firm and a large partner. Over time, the large partner firm gained access to the technology developed through the alliance and successfully commercialized it while the entrepreneurial biotechnology firm went bankrupt. The opportunistic use of power by an exchange partner (Yli-Renko, Sapienza & Hay

2001, Baiman & Rajan 2002, Alvarez & Barney 2001) is a risk firms, particularly small ones, often encounter. This risk is minimised if firms develop arm's-length relationships with their exchange partners.

Hite and Hesterly (2001) proposed that young emerging firms moving into early growth need a range of resources to support this growth. They argued that embedded network ties were less likely to provide the range of services to facilitate the growth and that, as a result, the emerging firm would seek arm's-length ties that had the potential to provide the necessary resources no longer available from the embedded ties. This evolution of ties leads to the development of arm's-length relationships which eventually may themselves evolve into embedded ties (Hite & Hesterly 2001, Hite 2005).

2.3.5   *Vertical versus Horizontal Relationships*

Overall, the focus of the preceding discussion on arm's-length relationships has been supplier/customer relationships. These are examples of vertical relationships that involve different stages of the industry value chain (King, Covin & Hegarty 2003, Contractor & Lorange 2002, Harrigan 1988, Hagerdoorn 1993). SMEs supplying inputs to larger firms within an industry is an example of a vertical linkage. Horizontal relationships on the other hand, refer to relationships between competitors (Harrigan 1988, Rindfleisch & Moorman 2001, Hagerdoorn 1993). An example of a horizontal alliance is two computer software companies forming an alliance to develop a new operating system (King, Covin & Hegarty 2003). Motives for developing horizontal alliances were explored by Burgers, Hill and Kim (1993). The authors argued that horizontal alliances are established to deal with two types of environmental uncertainty, demand and competitive uncertainty. Demand uncertainty motivates competitors to enter alliances with each other in order to gain access to the capabilities required to cope with the uncertainty. Competitive uncertainty moves firms to enter into alliances with each other in order to reduce that uncertainty by reducing competition (Burgers, Hill & Kim 1993).

Interestingly, the challenges facing managers in horizontal alliances appear to be different than the challenges facing their counterparts in vertical alliances. For instance, managers seeking to develop new products through alliances with

competing firms face the dual challenge of cooperating with firms that can provide relatively little complementary knowledge and are reluctant to share their knowledge. It appears, therefore, that horizontally related firms have difficulty balancing the tension between cooperation and competition (Rindfleisch & Moorman 2001).

SMEs are less likely to establish horizontal alliances from a competitive uncertainty perspective, as they are unlikely to have the market power to reduce competition by establishing an alliance with a major competitor (Burgers, Hill & Kim 1993). Additionally, SMEs that have not been in industry very long are unlikely to have developed the capabilities that would attract potential horizontal alliance partners to it. In their assessment of young firms and the signalling of reputation through their customers, Reuber and Fischer (2005) argued that in comparison with relationships with other types of exchange partners, customer affiliations tend to be more numerous, less discretionary and subject to less prior assessment. Therefore, they observed that to compare across competitive contexts, it is useful to examine the exchange partners that most, if not all, young firms have - customers (Reuber & Fischer 2005). For these reasons, this study will also focus on the exchange relationships SMEs have with their customers.

2.3.6 The Role of Interfirm Relationships in Information and Knowledge Acquisition

The preceding discussion highlighted that interorganisational relationships form for a variety of reasons. One key reason is to help an organisation access resources that are outside the control of a firm. Since resources, both tangible and intangible, are factors regarded as largely determining a firm's success (Galbreath 2005, Barney 1991), acquiring or controlling these resources is essential for a firm to compete in an industry or marketplace. Tangible resources include financial assets and physical assets. Intangible resources include a firm's assets and skills. Intangible resources regarded as assets include intellectual property assets, organisational assets and reputational assets. Intangible assets regarded as skills include capabilities or what firms do (Galbreath 2005).

Knowledge, assumed to be the most productive resource of the firm in terms of contribution to value, is regarded as a critical resource (Grant 1996). Indeed Grant

(1996) helped to create a focus on knowledge and the interest on how firms develop and acquire knowledge through his proposal of a knowledge-based theory of the firm, better known as the knowledge based view (KBV). The KBV is an extension of the resources based view (RBV) of the firm forwarding the notion that resources owned or controlled by a firm are capable of providing sustainable competitive advantage when they are difficult to imitate and cannot be readily substituted (Barney 1991, Peteraf 1993). Knowledge-based resources have distinctive properties that help create and sustain competitive advantage (King & Zeithaml 2003). For instance, knowledge resources are inherently difficult to imitate and are not depleted with use (King & Zeithaml 2003, Wiklund & Shepherd 2003, McEvily & Chakravarthy 2002).

Much of the focus on the RBV and KBV has been internally focussed; that is, resources and knowledge created within the firm (Gulati, Nohria & Zaheer 2000). Gulati, Nohria and Zaheer (2000) pointed out that an important source for the creation of inimitable value-generating resources lies in a firm's networks of relationships. This is of particular interest in entrepreneurship and research on SMEs since these firms, because of their liabilities of smallness, need to gain access to external resources and knowledge that cannot be produced internally (Hite & Hesterly 2001, Yli-Renko, Autio & Sapienza 2001). Since knowledge is regarded as such a critical resource upon which competitive advantage is founded, its transfer and acquisition are of strategic importance for firm competition, organisational success and for the survival of the small and medium-sized firm (King & Zeithaml 2003, Albino, Garavelli & Schiuma 1999).

There has been considerable research conducted on knowledge transfer and acquisition through linkages such as strategic alliances, joint ventures and similar type collaborations with other businesses (eg Grant & Baden Fuller 2002, Inkpen 2002, Sarkar Echembadi & Harrison 2001, Stuart 2000, Johnson, Sohi & Grewal 2004). However, most of this research has overlooked SMEs. These firms are unlikely to be involved in the more collaborative, close interfirm relationships because of their relatively small market share and the relatively short time the firm has been in the industry, in addition to the uncertainty associated with the firm's future (Hite & Hesterly 2001, Burgers, Hill & Kim 1993, Venkataraman *et al* 1990).

It would appear that as the SME firm becomes more established in an industry and has established a network of arm's-length ties, that some of these ties might take on more formal arrangements as the firm continues to grow and remain in the industry (Larson 1992, Hite & Hesterly 2001). Despite this, Larson (1992) identified that the overwhelming majority of entrepreneurial firms' relations were adversarial supplier and customer arm's-length relationships (Fuller & Lewis 2002) and that dyadic interfirm relationships between entrepreneurial firms and exchange partners generally began this way.

The features that define close and more formal interfirm relationships, such as commitment, firm interdependence, governance structure and social closeness do not apply to arm's-length relationships. Not surprisingly, there has been a lack of research conducted on these types of relationships and the types of benefits, if any, that can be derived from these types of linkages. Yet, the vast majority of small and medium-sized firm relations are arm's-length in nature (Larson 1992). The role of arm's-length relationships in information and knowledge transfer and acquisition from a small and medium-sized firm perspective needs to be investigated further.

A number of authors argue that businesses are incapable of accessing information and knowledge through arm's-length relationships. For instance, Baiman and Rajan (2002) described arm's-length relationships as those where no information is exchanged. Goes and Park (1997) argued that organisations cannot depend on market mechanisms for the information needed for innovation since transaction difficulties make it hard for firms to recognise and obtain necessary information from transaction partners.

Despite the lack of research on the benefits derived from arm's-length relationships, it is possible that SMEs can gain some benefits from these relationships. There is some empirical evidence, for instance, that arm's-length ties are important sources of knowledge. Galvin's (1999, 2004) analysis of the global bicycle industry found that 30% of externally stimulated innovations occurred through knowledge gained from arm's-length relationships and 66% of the innovations saw knowledge transferred via mechanisms that did not rely on close, collaborative arrangements. And even though there appears to be a consensus that arm's-length relationships do not have any

relational aspects, Macneil (cited in Lambe, Spekman & Hunt 2000) identified that some elements of a "relationship" underlie all transactions since they require an effective means of communication, a system of order and a mechanism for the enforcement of promises.

In summary, the majority of SME relationships are vertical, supplier/buyer arm's-length relationships that are, overall, non-collaborative in nature. Nevertheless, these relationships are likely to bring legitimacy and stability to the SME. There is empirical evidence that these arm's-length relationships can be of benefit to SMEs from a knowledge transfer and acquisition perspective, hence the following hypothesis is proposed:

> **Hypothesis 1:**
> SMEs are more reliant on market exchanges and arm's-length relationships for their knowledge and information needs than formal arrangements such as strategic alliances and joint ventures.

2.4 Trust

2.4.1 Introduction

The previous section investigated arm's length relationships and their potential role in knowledge transfer and acquisition. The role of trust associated with these types of relationships also requires investigation. Traditionally, due to the adversarial nature, and discrete and "one-off" nature of arm's-length ties, trust has been seen to be non-existent, or, at the very least, considered weak in such relationships (Galvin 2004, Uzzi 1996, 1997, Larson 1992). However, the role that trust plays in interfirm relationships has been extensively researched and strong arguments have been developed which highlight the importance of trust as a mediator or facilitator of relationship commitment, success, strength and longevity (Morgan & Hunt 1994, Hausman 2001, Sappanen, Blomqvist & Sundqvist 2005, Lui 2009). This section reviews the role of trust in relationships, particularly from a knowledge transfer and acquisition perspective, and seeks to identify if trust exists or proxies for trust can still exist in arm's-length relationships and its (their) importance for knowledge transfer and acquisition. A number of hypotheses are put forward to evaluate the role of trust in arm's-length linkages.

2.4.2 Trust in Interfirm Relationships

A considerable body of research examines the role of trust in interfirm relationships (eg Gulati 1995, Johnston *et al* 2004, Larson 1992, Lorenzoni & Lipparini 1999, McAllister 1995, Barney & Hansen 1994, Zaheer, McEvily & Perrone 1998, Alvarez & Barney 2001, Goel & Karri 2006, Karri & Goel 2008). Similarly, knowledge transfer and acquisition through the trust developed from these relationships have also been the focus of a number of studies (eg Uzzi 1996, 1997, 1999, Uzzi & Lancaster 2003, Grant 1996, Yli-Renko, Autio & Sapienza 2001, Galvin 2004, Adler 2001, Aldrich & Martinez 2003, Levin & Cross 2004). These studies will be examined in greater depth at a later stage, however, before proceeding further, the concept of trust needs to be defined. A "one size fits all" definition for trust, does not exist which is probably because the generation of trust (its sources and mechanisms) and its targets (the objects with whom one invests one's trust) are diverse and numerous (Adler 2001). A definition popular among some authors defines trust as one exchange partner's confidence that the other party will not exploit its vulnerabilities (Sabel 1993, Dyer & Chu 2000, Ring & Van de Ven 1992, Barney & Hansen 1994, Moorman, Deshpandé & Zaltman 1993, Smith & Lohrke 2008). Similarly, Morgan and Hunt (1994) conceptualised trust as one party's confidence in an exchange partner's reliability and integrity.

While one may trust an exchange partner not to exploit his or her vulnerabilities and to demonstrate integrity and reliability, it is important to recognise that trust does not guarantee the behaviour of another. In other words, it reflects an uncertain anticipation of the future behaviour of the one who is trusted. One exchange partner's willingness to trust another is therefore a risk which allows for the possibility of betrayal. Risk and the possibility of betrayal are key features of trust (Zaheer, McEvily & Perrone 1998, Ring & Van de Ven 1994, Das & Teng 1998, Lane & Bachman 1996, Moorman, Deshpandé & Zaltman 1993, Arino, de la Torre & Ring 2001). Indeed, Das and Teng (1998) highlighted that only in risky situations is trust a relevant factor.

2.4.3 Forms of Trust

Trust arises through the activities and processes that take place between exchange partners (Johnston *et al* 2004). For instance, trust would be expected to emerge

where the "trustworthy" party in an exchange relationship made good faith efforts to behave according to previous commitments, made adjustments when market conditions changed in ways perceived as "fair" by the exchange partner, and did not take excessive advantage of an exchange partner even when the opportunity was available (Dyer & Chu 2000). Sources of trust include familiarity through repeated transactions (Adler 2001, Ring & Van de Ven 1992), the exchange partners' interests, where costs and benefits of exploiting each partner's vulnerability are assessed (Adler 2001, Lane & Bachman 1996, Galvin 2004), and common values and norms between exchange partners which create predictability and trustworthiness (Adler 2001). Due to the different processes and activities that lead to trust and the different sources of trust, alternative types of trust can exist in diverse economic exchanges (Barney & Hansen 1994).

These different forms of trust include cognition-based trust and affect based trust (McAllister 1995); dispositional and relational trust (Zaheer, McEvily & Perrone 1998); weak-form trust, semi-strong form trust and strong-form trust (Barney & Hansen 1994); process-based trust, characteristic-based trust and institutional-based trust (Zaheer & Venkatraman 1995, Lane & Bachman 1996, Lui 2009); and reflective trust and traditionalistic "blind" trust (Adler 2001). McAllister (1995), in his research on cross-functional dyadic relationships between managers and professionals, proposed that interpersonal trust consists of cognition-based-trust and affect-based trust. Cognition-based trust is formed when one has assessed another individual as trustworthy based on what is known about the peer and what one deems to be indicators of trustworthiness. Such indicators might include the peer's reputation for dependability and reliability (McAllister 1995, Galvin 2004). Affect-based trust exists when emotional ties link individuals and where there is genuine care and concern for the welfare of partners. McAllister (1995) found that for working relationships among managers, the development of affect-based trust initially needs some level of cognition-based trust. However, while cognition and affect-based trust may be causally connected, each form of trust operates in a unique manner.

Zaheer, McEvily and Perrone (1998) highlighted that while interpersonal trust relates to the trust placed by an individual in one firm in her individual opposite member in

another firm, interorganisational trust is the extent of trust placed in the partner organisation by the members of a focal organisation. In other words, interpersonal trust is not the same as organisational trust and they refer to the two forms of trust as dispositional and relational trust respectively. Dispositional trust is an individual trait reflecting an expectation of the trustworthiness of others while relational forms of trust relate specifically to the counterpart in an exchange dyad and is based on experience and interaction with the exchange partner (Zaheer, McEvily & Perrone 1998).

Barney and Hansen (1994), using the definition of trust as one exchange partner's confidence that the other party will not exploit its vulnerabilities, proposed that there were three types of trust associated with exchange relationships, weak-form trust, semi-strong form trust and strong-form trust. Weak-form trust emerged in an exchange relationship where there were few opportunities for opportunistic behaviour by one of the exchange partners and it was unlikely that exchange partners would exploit each other's vulnerabilities. Weak-form trust is likely to exist in highly competitive commodity markets where it is relatively easy for exchange partners to evaluate the quality of the goods and services they are receiving and where there are large numbers of equally qualified buyers and sellers (Barney & Hansen 1994).

Where governance devices were in place, to prevent opportunistic behaviour, exchange parties would have the mutual confidence that their vulnerabilities would not be exploited because it would not be in the interests of either of the exchange parties. Barney and Hansen (1994) referred to trust under these circumstances as semi-strong-form trust and this is regarded as the form of trust which arises most often in economic exchanges. So, in semi-strong form trust, despite exchange vulnerabilities, and because of the significant social and economic costs imposed by governance mechanisms on the opportunistic behaviour of exchange partners, trust is possible. If existing social forms of governance could not ensure semi-strong form trust, then more costly legalistic contractual forms of governance would exist (Barney & Hansen 1994).

Barney and Hansen (1994) proposed that strong-form trust emerged in the face of significant exchange vulnerabilities, independent of whether or not social and economic governance mechanisms existed, because opportunistic behaviour would violate the values, principles and standards of behaviours internalised by exchange parties. Strong-form trust does not emerge from the structure of an exchange but rather from the values and principles that partners bring to an exchange (Barney & Hansen 1994). In this regard, Barney and Hansen's strong-form trust could be regarded as similar to McAllister's (1995) affect-based trust.

Both Lane and Bachman (1996) and Zaheer and Venkatraman (1995) refer to Zucker's (1986) three forms of trust: process-based trust, characteristic-based trust and institutional-based trust. Process-based trust refers to trust formed from past and expected future exchanges with the expectation that the trustee will continue behaving just as he or she has always done (Zaheer & Venkatraman 1995, Lane & Bachman 1996). In this regard, process-based trust is similar to McAllister's cognition-based trust and Zaheer, McEvily and Perrone's (1998) relational trust. Characteristic-based trust forms within a group on the basis of factors such as ethnicity, religion and common family background (Lane & Bachman 1996, Zaheer & Venkatraman 1995), circumstances that could lead to McAllister's (1995) affect-based trust and Barney and Hansen's (1994) strong-form trust. Finally, institutional-based trust arises from embedded social practices (Zaheer & Venkatraman 1995). Zaheer and Venkatraman (1995) pointed out that these forms of trust are "calculative" to a certain extent since each depends on sanctions for its existence. For instance, maintenance of characteristic-based trust is dependent on the sanctions imposed by members of an ethnic group, process-based trust relies on the expectations of future exchange, and institutional-based trust is contingent on legal or other sanctions to enforce trusting behaviour (Zaheer & Venkatraman 1995).

Adler (2001), in distinguishing between two forms of trust, reflective and traditionalistic blind-form trust, highlighted that trust has evolved from a traditional type of trust where loyalty was elevated over other bases, to a modern form of trust that ranks integrity and competence more highly. Reflective trust differs from forms that are more traditional in that the modern form is less blind and tradition-bound and less calculative as assumed by economics. While norms have a central role in

reflective trust, the norms do not derive their legitimacy from affective sources, such as tradition and charisma, nor from their calculative, purposeful utility. Rather, modern reflective trust derives from open communication and dialogue among peers (Adler 2001, Felin & Hesterly 2007).

2.4.4   Trust and Weak Client-Firm Exchange Relationships

Uzzi (1996, 1997), in his ethnographic study of social structure and competition in inter-firm networks in the New York fashion industry, found that trust developed when extra effort was voluntarily given and reciprocated by firms within the network. These efforts often referred to as "favours", included giving an exchange partner preferred treatment in a job queue or offering overtime on a last minute rush-job. No formal devices were used to enforce reciprocation (e.g. contracts, fines, penalty rates) and there was no extra money earned because of the effort. Uzzi (1997) found that these freely given efforts or exchanges occurred only in embedded, close tie linkages and argued that these voluntary and mutually beneficial exchanges were unlikely in arm's-length relationships.

Trust takes time to develop. The development of trust is an iterative process whereby repeated interaction between exchange partners may lead to the partners trusting each other to perform certain tasks and act in the best interests of the relationship. Over time, as relational partners perform in acceptable ways, trust in the partner naturally increases (Hausman 2001, Baxter & Matear 2004). This would indicate that most interorganisational relationships among strangers emerge incrementally and begin with small, informal deals that have little reliance on trust (Ring & Van de Ven 1994). The length of time partners spend in a relationship is an investment made by the exchange partners which ultimately enhances trust (Pillai & Sharma 2003, Fink *et al* 2006). Ring and Van de Ven (1992) stated that the reliance on trust by organisations can be expected to emerge between exchange partners through the successful completion of past transactions. The more frequently exchange partners successfully transacted, the more likely they will bring higher levels of trust to subsequent transactions (Ring & Van de Ven 1992). Larson's (1992) research on network dyads in entrepreneurial settings identified that trust in a dyad of exchange partners evolved over a period ranging from six months to a year and a half.

However, a small and medium-sized firm might not have been in industry long enough to have been able to forge a trusting relationship with an exchange partner. This is particularly the case for a young firm. Time in a relationship does not ensure relationship-building interactions but it does limit the number of interactions that can occur (Lambe, Spekman & Hunt 2000). Therefore, lack of time in a relationship impacts negatively on the evolution of relational attributes such as trust and commitment, and relationship-specific norms such as reciprocity (Lambe, Spekman & Hunt 2000, Levinthal & Fichman 1988, Fichman & Levinthal 1991, Newman, Lings & Lee 2005). But even small and medium-sized firms that have operated for periods in excess of Larson's (1992) 6-month to 18-month trust formation timeframe might have problems forming trusting relationships. For instance, small firms are likely to lack resources to commit to more than one or two close relationships and, in many industries, they lack the tangible physical assets they could use as collateral to attract valuable resources and customers (Venkataraman *et al* 1990, Dollinger & Golden 1992, Contractor & Lorange 2002).

Bruderl and Schussler (1990), in the context of survival and mortality of West German business organisations, identified that the liabilities of newness that young firms faced were not necessarily associated with being young and new but, rather, being small. The liabilities of smallness include relatively small market share and relatively short industry time (compared with much of their larger firm counterparts) and consequently a lack of legitimacy (Hite & Hesterly 2001, Burgers, Hill & Kim 1993, Venkataraman *et al* 1990, Stuart, Hoang & Hybels 1999, Reuber & Fischer 2005, Fischer & Reuber 2007). These liabilities prevented small and medium-sized firms from developing longer-term relationships with partner firms and were reasons put forward in an earlier section for the tendency of SMEs to form and rely on arm's-length linkages with exchange partners.

Nevertheless, arm's-length relationships involve discrete transactions with no certainty of further exchanges (Cooper & Gardner 2003, Uzzi 1997) and the relationships involve low levels of relation-specific investments and low levels of trust (Dyer, Cho & Chu 1998), or no trust at all (Galvin 2004, Uzzi 1997, Larson 1992). The literature seems to reflect an overall view that there is no or very little trust in arm's-length relationships. This trust however seems to be a measure of the

relationship in a dyadic business exchange. It looks at trust from the perspective of two exchange partners and assumes partner one does not trust partner two very much, and vice versa, because they are arm's length partners. However, what if the trust relationship between the two parties was one way? What if the owner of the small and medium-sized firm trusted their exchange partner and not vice versa? Why wouldn't they establish trust? After all, if a client buys and pays for the product and/or service of a firm then the transaction can be assumed to be successful. If the client then imparts some of his or her business knowledge to the owner of the small and medium-sized firm, it is unlikely the owner would treat this knowledge with suspicion and distrust.

This line of thinking leads to another question, which is the consideration of whether entrepreneurs trust easily. Interestingly, Goel and Karri (2006), in their article on entrepreneurs and over-trust argued that in the early stages of their business venture, entrepreneurs decide the extent to which they place confidence in others. In this context, trust has to emerge quickly to help the creation and development of the business venture (Goel & Karri 2006, Karri & Goel 2008). Goel and Karri (2006, p. 479) argued that "some people can trust in contexts where others may urge caution and seek cautionary safeguards". The concept relevant in this doctoral study is the entrepreneur's arm's-length relationship. While the overall view is that the levels of trust in arm's-length relationships are low, Goel and Karri's (2006) view goes against the flow and suggests an entrepreneur can trust even in the context of an arm's-length exchange relationship. Accordingly, the following hypothesis is proposed:

Hypothesis 2
Small and medium-sized firms' owner's trust of their arm's-length client is positively related to knowledge acquisition.

Another question to examine is whether trust is considered an important ingredient for knowledge transfer and acquisition to occur in an exchange relationship, and, if so, how can SMEs acquire knowledge and information through arm's-length linkages? If trust is so important, then, at the very least, SMEs need to demonstrate that they are worthy of trust to their exchange partner in order for this to take place.

It is therefore worth examining if there are any strategies that SMEs can undertake to appear worthy of trust to their arm's-length exchange partners.

Lambe, Spekman and Hunt (2000), in their analysis of short-term (interimistic) relational exchanges, identified three alternatives or proxies that could substitute for trust formed through long-term relational exchanges: 1) pledges, 2) a reputation for fair dealing, and 3) prior extra-exchange relationship interactions. Anderson and Weitz (1992) also examined pledges and reputation for fairness in their study of distribution channel members and relationship commitment, a factor seen to contribute to the development of trust between exchange partners (Morgan & Hunt 1994). The contexts of short-term relational exchanges investigated by Lambe, Spekman and Hunt (2000) and Anderson and Weitz's (1992) study of distribution channel members are different to that of arm's-length exchange relationships but worth examining as they contribute to the theory being reviewed in this section.

Anderson and Weitz (1992) examined dyadic relationships between 378 pairs of manufacturers and industrial distributors. They identified pledges as specific actions, beyond simple declarations of commitments or promises, by manufacturers and distributors that demonstrated good faith and bounded the partners to the relationship. When a partner made a pledge to the other party in a relationship it "weakened" its own position by reducing alternative sources it could use to perform another business-related function (Anderson & Weitz 1992). Such relationship specific-investments contributed to trust formation because they signalled that the exchange partner making the investments acted in good faith and had benevolent intentions in the relationship (Lambe, Spekman & Hunt 2000, Mouzas, Henneberg & Naudé 2007).

Entrepreneurs and owners of small and medium-sized firms are likely to recognise the importance of such relationship-building investments, particularly in the early stages of the firm's life, since the customers with whom they form arm's-length linkages are likely to provide the firm with much needed legitimacy, cash flow and reputation (Hite & Hesterly 2001). Entrepreneurs and SME owners might perceive an ongoing relationship with a client firm was so important that it warranted maximum efforts at maintaining it. In other words, the entrepreneur or SME owner

believes the relationship is worth working on to ensure it endured indefinitely (Morgan & Hunt 1994). This might be the case even if the relationship were arm's-length. Larson (1992), in her study of network dyads in entrepreneurial settings, identified that in each of the interfirm ties she examined, one side had the tendency to be the initiator of efforts aimed at engaging in a more cooperative relationship with an exchange partner. One of her study's respondents, a manager in an entrepreneurial firm, claimed that his firm initiated the cooperative efforts with the client, stating "…we initiate the step of going the extra distance for them" (Larson 1992, p. 89).

Larson (1992) did not identify which of the exchange partner firms in the exchange dyad was more likely to undertake the initiator role. However, goodwill and relationship building are likely to be initiated through the efforts of the SME firm in the arm's-length linkages it has formed with its customers. To demonstrate the firm's *bona fide* intentions to prospective exchange partners, SME firm owners are likely to make "voluntary efforts" without the certainty of reciprocation. These efforts might involve taking the client to lunch or working extra shifts, free of charge, to fulfil the client's last minute order. It is a risk SME firm owners take in order to develop closer exchange relationships or at least appear to be a viable exchange partner worthy of more exchange transactions. These efforts may also include the transfer of knowledge from the SME firm to the client. Such transfer might include details of the technology or production technique used by the SME firm or the customers the SME deals with to help it appear to be legitimate to the client. Such extra efforts appear to fit the description of pledges provided by Lambe, Spekman and Hunt (2000) and Anderson and Weitz (1992) and would help the SME firm appear committed to the relationship (Morgan & Hunt 1994).

It is unlikely that the goodwill building efforts of the SME firm will turn an arm's-length tie into a close, embedded one immediately. However, the efforts of the SME firm to develop the relationship may result in some reciprocation by the client firm whereby knowledge is transferred to the SME. Certainly, Larson (1992) identified that if one side of an exchange partners' dyad extended itself in a special effort to deliver on a promise or pledge, the other side responded in kind at the next opportunity. Both exchange partners perceived the results as beneficial (even if

gains were small) and a cycle of reciprocity and mutual gain had begun (Larson 1992). Accordingly, the following hypothesis is proposed:

Hypothesis 3
The small and medium-sized firm's effort at instigating greater goodwill and relationship-building investments is positively related to knowledge acquisition from their arm's-length client

The second alternative that could substitute for trust is a firm's ability to signal its reputation. Mishra (1998) observed that suppliers' needed to display their reputation in asymmetric marketing relationships where the client needed to see signals of the suppliers promise to deliver a quality product or service. In other words, where potential customers did not have enough information to trust an exchange partner, the partner's ability to display their reputation might substitute for trust or obviate the need for trust in the first place. One of the avenues for displaying reputation Mishra (1998) looked at was the demonstration of certification, e.g. quality accreditation, training and qualifications of staff and membership of professional associations. This type of trust substitute is prevalent in the food industry where knowledge asymmetry exists between potential customers and suppliers (Anania & Nistico 2004).

If a small or medium-sized firm prominently displays its certificates of quality accreditation and membership of professional associations, for instance, the arm's length client might look at this certification as a display of the reputation of the firm. The display of the firm's reputation might act as a substitute for trust and allow for knowledge transfer and acquisition in an arm's length exchange. Accordingly the following hypothesis is proposed:

Hypothesis 4
The small and medium sized firm's reputation signalling, in the form of certification, is positively related to knowledge acquisition from the arm's-length client

The third alternative that could substitute for trust was a reputation for fair dealing. An exchange partner's reputation for fair dealing (fairness) provided not only an important signal that the partner could be trusted but that it would also do anything

necessary to make the relationship work because their reputations were on the line (Lambe, Spekman & Hunt 2000, Mouzas, Henneberg & Naudé 2007). This signal of reputation would be particularly important for an entrepreneur's or SME owner's business survival. By making sacrifices and demonstrating concern in other long-term relationships, exchange partners would develop a reputation for operating effectively and fairly in a relationship (Anderson & Weitz 1992). Further, it is possible that an SME firm that did not have a long-term relationship with other exchange partners, might still be able to signal a reputation for fairness simply by having an exchange relationship, albeit an arm's-length one, with another firm that has a prominent and well-established reputation for fairness.

Linking up with another firm might not just provide a reputation for fairness to the SME but also some degree of legitimacy (Stuart 2000, Rindova *et al* 2005). Venkataraman *et al* (1990) described the strategy of appearing legitimate, through the transactions a firm had with a legitimate external partner to attract exchanges with other firms, as leveraging. Venkataraman *et al* (1990) did not define explicitly what a legitimate business was but such a business could be one that was prominent in the marketplace, eg via market share or organisational size. For instance, Stuart (2000) highlighted that since firms knew less of young firms, compared to their larger and older firm counterparts, potential clients would be more confident of the quality of an SME firm's product or service offering and more likely to transact with a young or small firm after a prominent exchange partner had implicitly endorsed it.

Stuart, Hoang and Hybels (1999) claimed prominent associates increased the reputation of young companies more than "run-of the mill" partners because the signal of reliability and trustworthiness implicit in exchange relationships is most widely disseminated when a new venture's or new firm's associates are particularly well-known and are also regarded as reputable. This reputation also provided the small and medium-sized firm with some degree of legitimacy in the marketplace and would act as a potential substitute for trust without the need for time and a long-term, close exchange relationship.

Podolny (1994), in his research on investment banking relationships, proposed that when quality of a potential exchange partner's service or product offering is

unknown or uncertain and cannot be directly observed, an increasing amount of ties to higher-status actors might enhance the esteem that is accorded to a particular organisational actor and the evaluation of the organisation's offering for exchange. This coincides with Venkataraman *et al'*s (1990) concept of leveraging. Podolny (1994) considered that in the absence of prior experiences with a potential exchange partner, the actor assesses the status of a potential exchange partner based on the network of relations it has with other firms. Podolny (1993) posited that for a producer of a given level of quality, additional status is most likely to translate into increased revenue. In light of this, it is possible that a firm is more likely to acquire knowledge from exchange partners in arm's-length ties because of a prominent, well-known large exchange partner than their counterparts with no such linkages. Accordingly, the following hypothesis is proposed:

Hypothesis 5
The more prominent and reputable are a small and medium-sized firm's exchange partners, the more knowledge it will acquire from its arm's-length's exchange partners.

2.4.5   *Problems Associated with Close Trusting Relationships*

As highlighted earlier, trust appears to be an important element of interfirm relationships. However, arm's-length linkages, because of their adversarial reputation are considered to be devoid of trust (Galvin 1994, Uzzi 1997, Larson 1992). The previous discussion identified plausible substitutes for trust in arm's-length linkages but is trust so important for an interfirm relationship and consequently, for knowledge transfer and acquisition?

Yli-Renko, Autio and Sapienza's (2001) research on young businesses and key customer firms found that relationship quality was negatively associated with knowledge acquisition. An explanation they put forward for this was that as trust reaches a very high level, there might be an expectation that information will be provided when needed so that the incentive to acquire external knowledge is actually reduced (Yli-Renko, Autio & Sapienza 2001). Hitt *et al* (2001) argued that high trust in an exchange relationship produced a willingness to depend on the partner rather than to learn and exploit the partner's capabilities. The development of a very trusting relationship had the potential to stifle economic outcomes for the exchange

partners as social aspects of the relationship override business considerations. There is a potential that exchange partners were more concerned in cultivating the social aspects of the relationship to the detriment of the business aspects of the relationship (Uzzi 1997, Jeffries & Reed 2000). Consequently, business information and knowledge that could benefit both exchange partners is not transferred. Jeffries and Reed (2000) referred to this negative outcome of trusting relationships as the "dark side of trust". Additionally, the owners of small and medium-sized firms might be less willing to question the information they have received from a person they trust than an exchange partner with whom they do not have close ties (Larson 1992).

Uzzi and Lancaster (2003) claimed that when time and other resources were limited, the effort that went into creating a close tie actually constrained an exchange partner's ability to invest in other ties. This reduced the exchange partner's ability to access knowledge outside the dyadic tie. If the small and medium-sized firm relied too heavily on an exchange partner for its knowledge and information source, there is the danger that the exchange partner's close linkage with other firms within the business network could actually reduce access to new information and opportunities available outside the network (Uzzi 1996). Uzzi (1997) refers to this problem as the "paradox of embeddedness".

Going back to the previous question - how much trust is required for knowledge transfer and acquisition - it appears that while trust appears to be necessary to initiate a closer exchange relationship, a very close relationship can actually limit the amount of knowledge a small and medium-sized firm can acquire. The number of close, embedded ties a firm has with client firms is likely to impact on the firm's ability to access knowledge.

Hypothesis 6
The fewer the number of arm's-length ties a firm has with client firms, the less the amount of knowledge it will acquire.

2.5   Linkage Duration

2.5.1   Introduction

In the previous section, repeated arm's-length transactions with the same exchange partner were hypothesized as positively contributing to the amount of knowledge transferred to the small and medium-sized firm. This was examined independent of the duration of the arm's-length linkage. However, it would be reasonable to expect that the chances of repeated arm's-length ties increase as the relationship endures the test of time. It was also claimed in the earlier section that a relationship becomes more trusting over time. As the duration of the arm's-length relationship continues, it is likely that opportunities for communication and face-to-face interaction become more available which, in turn, may provide more opportunities for knowledge acquisition by the small firm (Larson 1992, Uzzi 1997, Uzzi & Lancaster 2003, Levin & Cross 2004, Heide & Miner 1992). The following section will review the role of time and linkage duration in arm's length relationships and how they might contribute to knowledge transfer and acquisition between exchange partners.

2.5.2   Relationship Longevity and Development of Exchange Routines

The age of a relationship might influence knowledge exchange in two opposite ways. First, a new business relationship means the possibility to gain new and/or different knowledge through the new counterpart. On the other hand, a linkage of greater duration may lead to the development of trust necessary for deeper learning to take place (Hakansson, Havila & Pedersen 1999). An exchange relationship between two arm's length partners is likely to evolve if the relationship involves repeated transactions and long-term duration. Over time, this evolution might include the development of familiar routines and communication patterns that facilitate exchanges between the two partners (Kotabe, Martin & Domoto 2003, Dyer & Singh 1998).   Certainly, as firms sustain their relationship, they develop relational procedures that facilitate communication, relationship persistence and ultimately knowledge transfer (Kotabe, Martin & Domoto 2003, Heide & Miner 1992, Levinthal & Fichman 1988, Kogut & Zander 1992, Pillai & Sharma 2003).

A small firm providing products or services to an arm's length exchange partner, for instance, might allocate a person to look after the exchange partner's requests or

needs if the partner makes repeated exchanges. Over time, human specialization increases as exchange partners develop experience in joint problem-solving and planning (Claro, Hagelaar & Omta 2003, Dyer & Singh 1998). Human specialization allows exchange partners to communicate more efficiently and effectively, thereby reducing communication errors and enhancing quality (Dyer & Singh 1998). Long-term business interaction captures the willingness of exchange partners to develop a long-term orientation through the integration of activities and outcomes expected to benefit both exchange partners over a series of transactions (Claro, Hagelaar & Omta 2003).

Because of the development of relationship-specific routines and expertise peculiar to the needs of the firms, the firms might see these as investments that make longer-standing relationships less vulnerable to threats to their persistence (Levinthal & Fichman 1988). As the amount of relationship-specific routines or assets, as identified by Levinthal and Fichman (1988), increase over time, the benefit of persisting with the relationships also increases. The relationship-specific routines and expertise are assets that include communication patterns, knowledge of the peculiarities of a firm's accounting system, understanding of the client's product markets and even special-purpose written procedures (Levinthal & Fichman 1988, Kotabe, Martin & Domoto 2003).

Relation-specific assets might also include a dedicated supplier salesperson who learns the systems, procedures and idiosyncrasies of a buyer. In fact, Dyer and Singh (1998) identified three different types of relationship-specific assets, site specificity, physical asset specificity and human asset specificity. Site specificity refers to situations whereby successive production stages are located close to one another. Physical asset specificity refers to transaction-specific capital investments (such as customised machinery) that tailor processes to particular exchange partners. Finally, human asset specificity refers to transaction specific know-how accumulated by exchange partners through enduring relationships (eg dedicated supplier engineers who learn systems and procedures that are idiosyncratic to the buyer) (Dyer & Singh 1998). It is important to recognise that due to the level of specialization, it is possible that these relation-specific assets are not transferable to another exchange relationship (Claro, Hagelaar & Omta 2003).

Trust appears to be an important factor arising from and contributing to long-term relationships between firms. Over time, an arm's-length relationship may develop into a closer, embedded linkage. Under these circumstances, the development of trust may occur (Larson 1992, Uzzi 1997). Pillai and Sharma (2003) claimed trust and commitment between buyers and sellers developed over time. The length of time represented an investment both parties made in the relationship. Over time, buyers and sellers invest in relational assets that enhance their relation orientation and, through repeated exchanges, the outcomes of previous business episodes provide a framework for future exchanges (Pillai & Sharma 2003). Claro, Hagelaar and Omita (2003) support this by claiming that suppliers who interact with the same buyer for a long period are likely to be oriented towards the gains and benefits established through continuity which creates expectation for future interaction. Ganesan (1994) argued that transaction-specific assets were not enough to develop a long-term relationship and actions that fostered a trusting climate were necessary. Ganesan (1994) found that retailers and vendors who perceived idiosyncratic investments by their channel partners believed their partners to be trustworthy.

Long-term relationships provide benefits to the exchange partners. Ganesan (1994), for instance, argued that vendors with long-term relationships can achieve a competitive advantage by obtaining information on best-selling products and competitive activity and better cooperative advertising. Knowledge transfer also appears to be one of the benefits of a long-term relationship. Kogut and Zander (1992) stated that long-term relationships embed future transactions within a learned and shared code similar to the concept of relation-specific assets. This learned and shared code is likely to facilitate knowledge transfer between exchange partners. Kotabe, Martin and Domoto (2003) studied the link duration of buyer-supplier relationships in the Japanese and US automotive industries and found that firms with longer-established relationships were better able to share their technology and harness their partner's. Also referring to the relationship-specific routines as assets, Kotabe, Martin and Domoto (2003) identified that the longer buyer-supplier links endured, the more the relationship-specific assets between the two parties stood to make pair-wise knowledge transfer efficient relative to other partner sets.

2.5.3 *The Role of Trust in Long-term Relationships*

Earlier, it was postulated that trust is considered an important factor in long-term relationships, yet, arm's-length relationships are characterised by low levels of trust (Galvin 1994, Uzzi 1997, Larson 1992). If trust is indeed an important element of a long-term relationship one needs to ask whether arm's length relationships are capable of enduring. If an arm's-length relationship does endure is it because trust has become a feature of the linkage and hence not a "true" arm's length relationship anymore? It is worth noting that Kotabe, Martin and Domoto (2003) reviewed a number of studies which revealed that the empirical evidence in support of the development of trust over time in interfirm relationships is, at best, weak. Further, Heide and Miner (1992) highlighted that the familiarity developed over time between two firms should not be confused with trust.

Johnston *et al* (2004) also contended that despite much discussion and focus on the need for trust in buyer-supplier linkages, there is little empirical evidence demonstrating that trust has any impact on the performance of inter-organisational activities. Kumar, Bohling and Ladda (2003) indicated that repeat buying and a long-term duration of a relationship need not indicate a close, relational type linkage. For instance, a buyer might repeatedly purchase from a supplier because of high-switching costs. For example, procedural switching costs such as cost of learning, set-up, evaluation and time. It is possible that a customer buys from a firm for a long time and still does not have a close attachment or a desire to develop a closer relational linkage with a firm (Kumar, Bohling & Ladda 2003). Dyer and Chu's (2000) investigation on determinants of trust in supplier-automaker relationships found that US suppliers claimed that the length of a relationship did not have a bearing on trust. Instead, Dyer and Chu (2000) found that some suppliers suggested that the longer they had worked with a particular automaker, the more time they had to learn that the automaker was not to be trusted.

The discussion therefore indicates that arm's length relationships may endure and pass the test of time. While the development of relationship-specific routines may lead to trust in a relationship, such routines should not be confused with trust. It is possible that arm's-length relationships might endure and still be characterised by low levels of trust and hence remain effectively an arm's-length relationship. It is

likely that the development of relationship specific assets is driven by an expectation of future transactions between exchange partners. The development of routines, efficient and effective communication processes and the creation of relation specific assets over time are likely to result in knowledge transfer to the small and medium-sized firm and hence the following hypothesis is proposed:

Hypothesis 7
Knowledge acquisition is positively related to the duration of an arm's-length tie between a small and medium-sized firm and a client firm.

2.6   Size and Age of Client Firm

2.6.1   Introduction

In earlier sections, it was argued that large and/or reputable firms confer a degree of legitimacy to small and medium-sized firms, particularly small ones that have not been in an industry very long (Baum, Calabrese & Silverman 2000, Stuart 2000). A large firm client acts as an endorsement of the small and medium-sized firm which demonstrates to other firms in the market that the SME is a legitimate exchange partner (Stuart 2000). Indeed, small firms are often eager to cooperate with larger, established companies because of name recognition and reputation spillover effects (King, Covin & Hegarty 2003). In addition to the advantages of legitimacy for the small firm, large firm clients are also likely to be of benefit to small firms because of their industry and market experience developed via their industry time and/or because of sophisticated market research efforts that are normally beyond the resources of the small firm (Alvarez & Barney 2001). The following section will examine the relationship between small firm and large firm clients and the benefits a small firm can derive from a knowledge transfer and acquisition perspective.

2.6.2   Benefits of Large Firm Clients – A Knowledge Acquisition Perspective

A large firm is likely to have established product and service development routines as well as distribution, manufacturing and marketing resources that are of value for the small and medium-sized firm. Large strategic partners are likely to be more valuable to SMEs than smaller associates because they have access to extensive distribution channels and long-standing customer relations (Stuart 2000, Alvarez & Barney 2001, Sarkar, Echambadi & Harrison 2001). For instance, a small firm may

be able to commercialise its technology through the distribution and marketing resources of a larger firm (Alvarez & Barney 2001). Interactions between a small and medium-sized firm and a large client may result in some knowledge spillover to both firms, however, because of the SME's lack of resources, market power and industry experience (Beaver 2002), a small firm is likely to benefit more from the large firm's knowledge base. For instance, spillover of a large firm's market knowledge (even minor) to a small firm might prove invaluable, particularly if the small firm has little industry experience. Supporting this view is Sarkar, Echambadi and Harrison's (2001) research study on the effect of alliance proactiveness on firm market performance on 182 technology firms. Their research found that alliances contributed more to the overall performance of small firms than they did for large ones.

When a firm has a large partner, the revenue potential of the association is likely to be significant because the partner is tied into large revenue streams. Partnerships with well-connected and well-endowed firms offer greater rewards than do linkages with business associates that lack resources (Stuart 2000, Rindova *et al* 2005). It is evident, therefore, that a relationship between a small firm and a large firm client can improve the economic prospects of a small firm (Alvarez & Barney 2001, King, Covin & Hegarty 2003, Thorpe *et al* 2005). It is also evident that large firms have valuable knowledge resources derived from industry experience, marketing and manufacturing processes and long standing customer relations to name a few. The larger the firm, the more significant its knowledge base is likely to be and, therefore, of greater value to the small firm. The large firm's knowledge base is of value to a small business especially if it helps the small firm convert acquired knowledge to knowledge related outcomes, hence the following hypothesis is proposed:

> **Hypothesis 8A**
> The size of the client firm moderates the knowledge acquisition/knowledge outcomes relationship

Baum, Calabrese and Silverman (2000) agued that firms that have not been in an industry for a long time lack the influential endorsement derived from stable exchange relationships with important external constituents and the perceptions of quality and reliability that years of experience in providing particular products of

services conferred on more established businesses. This implies that firms that have been in an industry for a relatively longer period than SMEs are also likely to be valuable sources of knowledge because of their experience. While a firm might have been able to grow into a large one because of its time in an industry, not all firms that have been in an industry for a long term are considered large. Therefore, it is worth examining whether or not a small and medium-sized firm might benefit from knowledge spillover from a firm that has been in an industry for relatively longer period. Beaver's (2002) research on the knowledge spillover effect from the large firm to the small firm might help the small firm make sense of the knowledge it had acquired. For instance, a small firm might become aware of an important technology through a large arm's-length client. However, the SME might only understand the application of the technology and how useful it might be through the knowledge spillover of a large firm already familiar with the technology. Accordingly, the following hypothesis is proposed:

Hypothesis 8B
The age of the client firm positively moderates the knowledge acquisition/knowledge outcomes relationship.

2.7 Absorptive Capacity – Firms' Knowledge Bases and Common Values

2.7.1 Introduction

The previous sections centred primarily on the relational aspects and arm's length interactions of SMEs and their client firms. Discussions included the role of trust, the duration of the relationship and the size and age of the client firms. However, the internal capabilities of the SME that enable it to recognise valuable information or knowledge and utilise it to the SME's advantage requires examination. Indeed, researchers have highlighted that though the understanding of the mechanisms of external knowledge sourcing has grown in recent years, the firm characteristics that facilitate the exploitation of knowledge accessed via these mechanisms remain largely unknown (Chen 2004, Almeida, Dokko & Rosenkopf 2003, Tsai 2000).

A small and medium-sized firm is unlikely to acquire knowledge and information if it is not capable of understanding the knowledge and information in the first place. It

must have some basic knowledge base if it is to understand and then apply knowledge and information from external sources such as arm's-length relations. Cohen and Levinthal (1990) coined the term "absorptive capacity" which refers to the ability of firms, through their prior related knowledge, to recognise valuable new information or knowledge, and its assimilation and application (or exploitation) for commercial gain. It is an ability regarded as a critical factor in developing an organisation's knowledge base. High absorptive capacity not only enables an individual, group or organisation to exploit new external information, but also to predict more accurately the nature of future technological advances (Cohen & Levinthal 1990).

Earlier, the area of organisational learning (March 1991, Cyert & March 1992) and its connection to the KBV was discussed. There are concepts within organizational learning that overlap with aspects of absorptive capacity. Organizational learning considers the process by which knowledge is acquired and accumulated in organisations and the process of exploring new knowledge and exploiting the new knowledge acquired (March 1991, Cyert & March 1992). The exploring of new knowledge and its exploitation however can cause a dynamic tension between both processes (Levinthal & March 1993). This tension might lead SMEs to select one process over another. For instance, Levinthal and March (1993) argue that implementation of new ideas that fail inevitably lead a firm to search for new ideas. This leads to further exploration for new ideas with exploitation of learning potentially being overlooked, a situation referred to as learning myopia (Levinthal & March 1993). If one extends this learning myopia to the concept of absorptive capacity, a firm might spend much of its time acquiring valuable new knowledge and information but little on actually exploiting the new knowledge. On the other hand, firms focusing on the exploitation of acquired knowledge may achieve short term profits but may be susceptible to environmental changes (Jansen, Van den Bosch & Volberda 2005). The following section will examine the role of absorptive capacity and the conditions that help facilitate its development and how it is likely to impact on the amount of knowledge acquired by the small and medium-sized firm.

2.7.2 *Absorptive Capacity and the Small and Medium-Sized Firm*

A firm that has a well-developed knowledge base in a particular field has a high absorptive capacity and is ready to act on any new information or ideas developed in the field. On the other hand, a firm that has little or no knowledge of a particular field will be unable to evaluate and act on new information important to their products or markets. Such a firm is unlikely to recognise that valuable information or new ideas have been developed (Deeds 2001). Access to external knowledge is possible only on the condition that there has been a previously generated knowledge mass within the firm that enables it to understand, evaluate and use what the external environment has to offer (Nieto & Quevedo 2005).

Absorptive capacity is particularly important for SMEs. Shane (2000) argued that entrepreneurs will discover only those opportunities related to their knowledge base and that they discover opportunities through recognition of the value of new information that they happen to receive through other means. Prior knowledge can be developed through roles that include experience as a supplier, user, and manufacturer and education or other dimensions such as production processes inputs and user needs (Shane 2000). Prior information and knowledge influences the entrepreneur's ability to understand, extrapolate, interpret and finally apply new information in ways that those who do not possess the prior information cannot replicate (Shane 2000). Unique entrepreneurial thinking and experience with earlier ventures appear to provide a corridor of additional entrepreneurial pursuits. Greater amounts of an entrepreneurial firm's specific experience and learning contribute to the entrepreneurial firm's overall absorptive capacity and, in turn, increase the possible opportunities available to the firm (Alvarez & Busenitz 2001). Shane (2000) proposed that prior knowledge and information on markets, how to serve markets and customer problems enabled the entrepreneur to identify opportunities that led to new markets, how to better serve a market and how new products and services would solve customer problems respectively.

The founder of a firm often possesses much of the technical and managerial knowledge which form the tangible and intangible assets of the firm. An entrepreneur's expanding knowledge base and absorptive capacity becomes an entrepreneurial firm's competitive advantage (Alvarez & Busenitz 2001). Liao,

Welsch and Stoica's (2003) study of growth-oriented small and medium-sized enterprises found the organisational responsiveness to external environmental changes of growth-oriented firms increased when they had well-developed capabilities in external knowledge acquisition and intrafirm knowledge dissemination.

The following diagram helps summarise the role of prior knowledge in opportunity recognition and the exploitation of newly acquired knowledge and information.

Figure 2.3   Entrepreneurial Use of Prior Knowledge and Information and Exploitation of New Information and Knowledge

(Adapted from Shane 2000, p. 453)
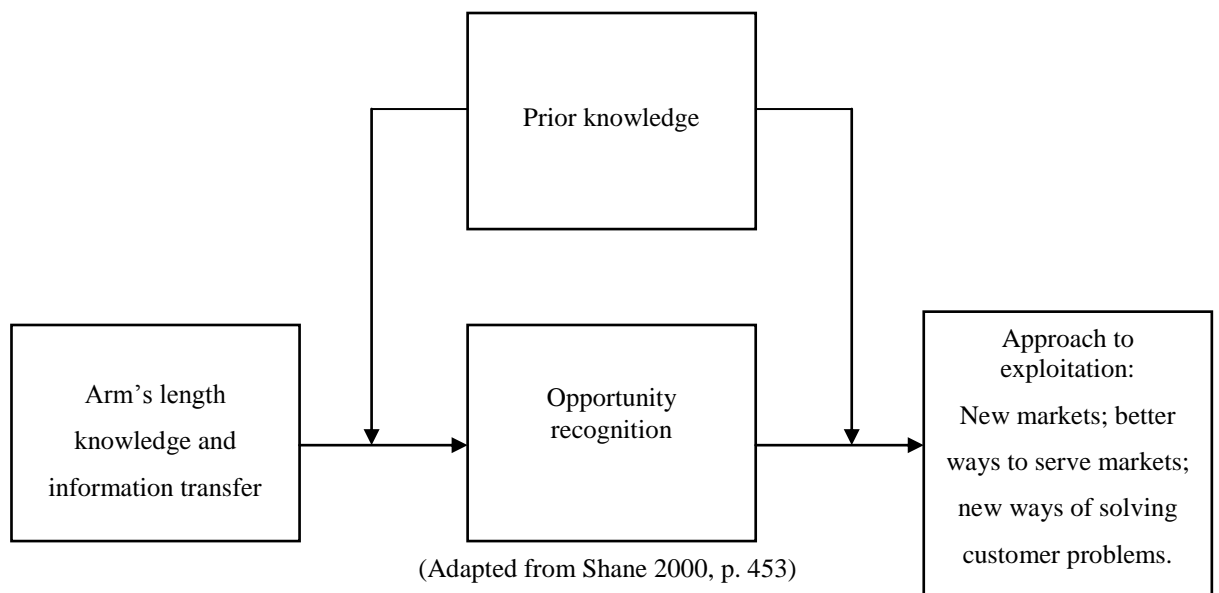
Zahra and George (2002) considered absorptive capacity to be composed of two major components: potential absorptive capacity and realized absorptive capacity. They identified potential capacity as comprising knowledge acquisition and assimilation capabilities and realised capacity as knowledge transformation and exploitation (Zahra & George 2002). The outcomes from the "approach to exploitation" shown in Figure 2.3 are associated with the realised absorptive capacity put forward by Zahra and George (2002). Again, there are overlaps evident with absorptive capacity and March's (1991) area of organizational learning. For instance, organizational learning's concept of exploration fits rather well with potential absorptive capacity (knowledge acquisition and assimilation), while the

concept of exploitation overlaps with realised absorptive capacity (knowledge transformation and exploitation) (Jansen, Van den Bosch & Volberda 2005, Jansen, Van den Bosch & Volberda 2006).

While the concept of absorptive capacity makes intuitive sense, the operationalisation and measurement of its key concepts remained one of its biggest challenges. Indeed, Jansen, Van den Bosch and Volberda (2005, p. 999) argue that despite the growing interest in absorptive capacity, few studies "have captured the richness and multidimensionality of the concept". Jansen, Van den Bosch and Volberda (2005) developed a 21-item scale to test empirically a four factor model of absorptive capacity and identified a well fitting model which confirmed the posited dimensions. It seems from this preceding discussion that absorptive capacity has a key role to play in helping the SME owner not only acquire knowledge but also assimilate it and transform it. Without absorptive capacity, an SME owner might be able to acquire knowledge but they will do very little with it or rather they might not know what to do with it. It seems absorptive capacity facilitates the conversion of acquired knowledge to ends that are valuable and are of benefit to the organisation. Accordingly, the following hypothesis is proposed:

Hypothesis 9
A firm's absorptive capacity positively moderates the knowledge acquisition/knowledge outcomes relationship

Lane, Koka and Pathak's (2006) review of over a decade of absorptive capacity research, identify the concept as having the potential to be a major construct in organizational studies. The operationalisation of concepts and dimensions associated with absorptive capacity therefore, is a positive outcome for the measurement of the construct. However, absorptive capacity is a theoretical concept and recent observations indicate that the construct has become "reified" and taken for granted as a given phenomenon (Lane, Koka & Pathak 2006). The underlying assumption, that absorptive capacity and its associated dimensions occur as a result of organisational processes and routines facilitating each of the construct's dimensional forces, needs to be acknowledged (Lane, Koka & Pathak 2006). Keeping in mind the limiting assumptions associated with theoretical constructs, such as absorptive capacity,

makes for better development of theory and the potential to inform managerial practice (Zahra & Newey 2009).

2.7.3 *Absorptive Capacity and the Similarity of the Firm's Knowledge Base*

Despite a firm's absorptive capacity, a firm needs to develop means that permit the absorption of external knowledge (Almeida, Dokko & Rosenkopf 2003). Lane and Lubatkin (1998, p. 461) viewed absorptive capacity as a learning-dyad level construct, relative absorptive capacity, and they argued a firm's ability to learn from another firm is dependent on the similarity of both firms' (a) knowledge bases; (b) organisational structures and compensation policies; and (c) the proportion of organisational problems shared by the firms.

The similarity of two firms' knowledge bases is likely to facilitate knowledge transfer because unless the recipient of the information already shares the same knowledge base as the transmitter, knowledge transmission is likely to be impossible or, at least, too costly to take place (Shane 2000, Cohen & Levinthal 1990). The similarity of the knowledge bases contributes to absorptive capacity since new knowledge in a familiar area is generally easier to acquire than knowledge in an unfamiliar area. Dyer and Singh (1998) and Kale, Singh and Perlmutter (2000) claim the ability of a receiver of knowledge to "unpackage" and assimilate it is dependent on the extent to which the firm has overlapping knowledge bases with the source. Further, unrelated knowledge will be difficult to acquire and may be of limited value because there is no common language for understanding the knowledge (Inkpen 1998).

Lane and Lubatkin argued, "understanding the relevant basic knowledge permits the student firm to understand the assumptions that shape the teacher's knowledge and thereby be in a better position to evaluate the importance of the new knowledge for its own operations" (1998, p. 464). Firms that operate in the same or similar industries are likely to share similar knowledge bases. For instance, a firm that specialises in providing recruitment services to firms in the mining and resources industry sector is likely to be more aware of the human resource needs of firms within that sector than more general recruitment firms. Therefore, following on from this, firms that share common knowledge bases are more likely to benefit from their

relationship in terms of knowledge transfer. It is assumed that while knowledge transfer is influenced positively by the similarity of two firms' knowledge bases, student firms have the greatest potential to learn from teachers with different specialised knowledge (Lane & Lubatkin 1998). Based on the preceding argument, the following hypothesis is proposed:

> **Hypothesis 10A**
> The alignment of the knowledge bases of a small and medium-sized firm and a client firm positively moderates the knowledge acquisition/knowledge outcomes relationship

2.7.4 *Absorptive Capacity and Firms' Common Goals and Values*

Lane and Lubatkin (1998) in reconceptualising absorptive capacity also proposed that a firm's ability to value, assimilate and apply new knowledge from a teacher firm was also dependent on the similarity between the student firm and the teacher firm's compensation practices and organisational structures. The inference made here is that the similarity of two firms' compensation policies serves as a proxy for the similarity of the knowledge-processing systems and norms (Lane & Lubatkin 1998). If firms have similar knowledge-processing systems and norms then the second dimension of absorptive capacity, the ability to assimilate new external knowledge, will be facilitated by the common systems (Lane & Lubatkin 1998, Darr & Kurtzberg 2000, Lavie & Rosenkopf 2006, Widding 2005).

Lane and Lubatkin (1998) also proposed that knowledge transfer and assimilation is facilitated by common organisational problems. Firms operating in the same industries are likely to be affected by the same problems that confront the industry. For instance, using the mining and resources recruitment firm, legislative changes that affect mining companies might also influence the recruitment needs of these firms. The recruitment firm, faced with the changed legislative requirements, is likely to accommodate its mining clients by modifying the recruitment processes to ensure that legal and legislative measures are adhered to.

Along similar lines, Tsai (2000) argues that strategic relatedness in units within an organisation would facilitate linkage formation and facilitate resource and knowledge transfer. Tsai's (2000) analysis of intraorganisational linkages of business units

within a food-manufacturing multinational found that units that were strategically related established linkages that facilitated resource and knowledge transfer. In this case, common strategic goals contributed to the units' ability to exchange knowledge within the multinational firm. While Tsai's (2000) research focuses on intraorganisational linkages, it would be reasonable to expect two independent firms that shared common goals and were in a dyadic interorganisational link would also be likely to exchange knowledge and resources. Darr and Kurtzberg (2000) assert the more one business has in common with another firm, particularly in relation to problems they face and decisions they make, the more likely the lessons and experience of one will be of use to the other. Like Tsai's (2000) term of strategic relatedness, Darr and Kurtzberg (2000) refer to these common problems, experiences and business choices as strategic similarity. In their research on businesses within a pizza store franchise chain, Darr and Kurtzberg (2000) found strategic similarity facilitated knowledge transfer even across stores not owned by the same franchisee.

Cummings and Teng (2003) argue that "norm distance" or the extent to which two knowledge exchange parties have similar organisational culture and value systems is an important consideration when determining the facility of knowledge exchange between the two parties. Differences in work values and organisational cultures can significantly impair knowledge transfers (Cummings & Teng 2003).

Inkpen (1998) argued that differing organisational cultures impact negatively on the ability of firms to exchange knowledge and the firm's learning effectiveness. Organisational cultures that are related and where values and norms are shared between two firms in a dyadic interfirm linkage, are also likely to contribute positively to the amount of knowledge assimilated by the partner firms in the linkage. Galunic and Rodan (1998) propose that sharing the same "world-view" will tend to strengthen ties and build a sense of identify with similar others. Social norms between partner firms, particularly norms of cooperation, can establish a strong foundation for the creation of knowledge exchange. Such norms may open up access to parties for the exchange of knowledge and ensure the motivation to engage in such an exchange (Nahapiet & Ghoshal 1998).

Similarly, Ahuja (2000a) argues that extensive relations between exchange partners could foster shared behavioural norms and explicit interorganisational knowledge-sharing routines. Yli-Renko, Autio and Sapienza (2001) claim, "the quality of a relationship between a young firm and its key customer is reflected in the extent to which the two parties develop common goals, norms and reciprocal expectations regarding the goodwill trustworthiness of the exchange partner" (p. 591). Shared expectations and goals also promoted the creation of compatible systems and cultures in dyads and allowed firms to invest more effort into knowledge assimilation and exploitation (Yli-Renko, Autio & Sapienza 2001). Chen (2004) contends that organisational incompatibilities present obstacles to the smooth absorption of knowledge from exchange partners. Inherent procedural, structural and cultural differences between organisations block successful cooperation and, if partners were unwilling to make concessions, misunderstandings would prevent knowledge absorption (Chen 2004).

Evidence of the role played by common goals, norms and values on absorption capacity comes from the car manufacturing industry. For instance, MacDuffe and Helper (1997) analysed the relationships between Honda America and its suppliers. Honda structured the learning process with its suppliers so that knowledge was easier to absorb by selecting suppliers that adhered to the organisation's goals of "BP- Best Practice, Best Process and Best Performance". Organisations highly motivated to learn, willing to make their operations completely accessible and willing to commit to the "no layoff" policy that Honda saw as crucial to BP success were selected (MacDuffe & Helper 1997). MacDuffe and Helper (1997) reason that a firm's ability to absorb knowledge is greatest when the new knowledge and the firm's prior related knowledge are close to the core of the firm's identity consisting of its goals and values, common language and common frameworks for action (Kogut & Zander 1996).

Similarly, Dyer and Nobeoka (2000) reviewed the supplier relationships of car manufacturer Toyota, and found that common norms and goals contributed positively to knowledge transfer. Toyota worked at establishing a network of suppliers that identified with each other and had commonality of purpose. The common norms of the firms within the supplier network facilitated information exchange between

network member companies and Toyota (Dyer & Nobeoka 2000). If an SME "identifies" with a well-established organisation through common goals, norms, values and language, then knowledge is likely to be absorbed more readily from the exchange partner. Based on the preceding argument, firms that share common goals, values and norms are likely to share a common understanding and language that opens the possibility of knowledge transfer between two firms in an exchange relationship. This common language and understanding is likely to highlight the value of acquired knowledge to the SME and assimilate it more readily. Accordingly, the following hypothesis is proposed:

> **Hypothesis 10B**
> The alignment of the common goals and norms of an SME firm with those of the arm's-length client moderates the knowledge acquisition/knowledge outcomes relationship

2.8   Growth of the SME

2.8.1   Introduction

The previous section identified some factors that could facilitate the conversion of acquired knowledge to knowledge outcomes. In a similar vein, a firm owner's willingness to develop a business might also facilitate the conversion of acquired knowledge to knowledge outcomes. There are many SME owners or entrepreneurs who wish to expand their business with the expectation of creating jobs as an outcome (Frederick, Kuratko & Hodgetts 2006). The owners of these firms might not only recognise the value of the knowledge they acquired from a client firm, their willingness to foster the development and expansion of their business might encourage them to convert the acquired knowledge to knowledge-related outcomes.

2.8.2   Knowledge and the Growth of the Firm

The growth of the a firm is frequently used as a performance measure since entrepreneurship researchers frequently use growth as an indicator of success (Baum, Locke & Smith 2001, Davidsson, Steffens & Fitzsimmons 2009, Wiklund & Shepherd 2003). However, there are clear indications that many SME owners deliberately refrain from pursuing and exploiting opportunities to grow their firms (Wiklund, Davidsson & Delmar 2003). These reasons include concern for employee well-being and the loss of the positive small business atmosphere that engenders

comradeship, involvement and job satisfaction. Furthermore, the effect of growth on the owner's ability to maintain the control of the firm's operations and the ability to survive crises, such as, an economic downturn and loss of earnings, are also concerns that affect the SME owner's willingness to develop and expand their business (Wiklund, Davidsson & Delmar 2003).

The reasons why not all business owners are keen to expand their business may be simply due to lifestyle choices. Many owners are referred to as "lifestylers" and expect no, or limited, medium-term growth potential for their business (Frederick, Kuratko & Hodgetts 2006, Trott 2008). These considerations present barriers to the growth of the SME. Under these circumstances, a business owner who has acquired knowledge is unlikely to be interested in converting it to knowledge-related outcomes, particularly if these outcomes are likely to result in the growth of the firm.

If an SME wishes to expand the business, it is unlikely it will be able to do so without additional resources. Therefore the RBV offers a theoretical lens to help explain why small and medium-sized firms need to acquire resources to achieve firm growth (Hite & Hesterly 2001, Chrisman & McMullan 2000, Chrisman & McMullan 2004). Indeed, it was Penrose's (Penrose 1959, Newbert 2007) argument that a firm's growth, both internally and externally, is due to the manner in which its resources are deployed. Since Grant (1996) identified knowledge as the most critical resource of the firm, the role of knowledge to the growth of the firm requires further examination.

Saarenketo *et al* (2009) and Davidsson, Steffens and Fitzsimmons (2009) claim that firm growth cannot be sustained without the re-development of knowledge-based resources and capabilities. In their analysis of Finnish SMEs, Saarenketo et al (2009) determined that knowledge-based resources made it possible for firms to seek growth through product diversification or development of new products or concentrating on new customer segments or markets. The acquisition of new knowledge-based resources may contribute to the re-development of knowledge-based resources which, in turn, facilitate firm growth. For instance, re-developed knowledge resources might lead to new product innovations. Indeed, Trott (2008) argued that innovative companies were those whose objectives were to expand their business.

Consider an SME's acquisition of new market knowledge through a weak client-firm exchange relationship. This market knowledge might have identified new ways to serve the market which, in turn, lead to the development of solutions to customer problems and effective strategies to introduce new products and services (Shane 2000, Wiklund & Shepherd 2003). This is likely to result in the expansion of the SME, although, this expansion is still contingent on the growth mindset of the entrepreneur. It was mentioned earlier that many SME owners perceive the growth of their firm has potential negative consequences. Therefore, unless the SME owner is willing to expand their business, a discussion on the connection between acquired knowledge and firm growth is pointless. This suggests that the willingness to expand on the part of the SME owner acts as a moderator between knowledge acquisition and knowledge outcomes. In other words, the more SME owners wish to expand their business, the more likely they will convert knowledge to knowledge related outcomes.

Therefore, it was posited that SME owners seeking growth would be able to do this through the exploitation of their knowledge resources into knowledge outcomes. Since the business growth scale was based on an overall orientation towards growth, it was posited that the growth construct would act as a moderator. Therefore, the following hypothesis is proposed:

Hypothesis 11
The SME owner's willingness to grow his or her business moderates the knowledge acquisition/knowledge outcomes relationship

2.9 Knowledge Acquisition Outcomes

2.9.1 Introduction

Knowledge is developed through the way people categorize, code, process and impute meaning to their experiences. It emerges from the interplay of social, situational, cultural and institutional factors. Knowledge is built by numerous decisions and selective incorporations of previous ideas, beliefs and images (Arce & Long 1992). Knowledge is also highly context specific and may be defined differently by diverse people or groups (Verschoor 1992). For instance, in the research literature, knowledge has been addressed in the context of strategic alliances

and relationships as organisation/firm-specific, industry-specific and market-specific knowledge as well as collaborating and resource integration knowledge (Simonin 1999a, 1999b). Transfer of knowledge is defined as dyadic exchanges of knowledge between a source and a recipient (Szulanski 1996, Minbaeva *et al* 2003). It is a dynamic process involving a number of stages including acquisition, communication, application and assimilation (Gilbert & Cordey-Hayes 1996). The following section will examine knowledge, its different forms and its value as a resource for a small and medium-sized firm from the point of view of beneficial and profitable outcomes to the firm.

2.9.2 *Tacit Knowledge and Explicit Knowledge*

The focus on knowledge and the interest on how it is acquired stems from the knowledge-based view (KBV) of the firm first proposed by Grant (1996). The KBV extends the resource-based view (RBV) which emphasizes the notion that resources owned or controlled by a firm are capable of providing sustainable competitive advantage when they are difficult to imitate and cannot be readily substituted (Peteraf 1993). According to the KBV, knowledge is seen as a critical resource since it is assumed that knowledge is the most productive resource of the firm in terms of contribution to value (Grant 1996). Knowledge has been identified as the key resource that managers need to appreciate and understand if they are to create sustainable competitive advantages (Inkpen 1998).

Much of the focus on the RBV and KBV has been internally focussed, that is, within the firm. Gulati, Nohria and Zaheer (2000) point out that an important source for the creation of inimitable value-generating resources lies in a firm's network of relationships. This is of particular interest in entrepreneurship and research on small and medium-sized firms since these firms, because of their liabilities of smallness, need to gain access to external resources and knowledge that cannot be produced internally (Hite & Hesterly 2001). Since knowledge is regarded as the main resource upon which competitive advantage is founded, its transfer is of strategic importance for firm competition and for the survival of the small and medium-sized firm (Albino, Garavelli & Schiuma 1999).

Much of the literature on interorganisational knowledge transfer has focused on tacit knowledge as opposed to explicit knowledge. The view of most researchers is that tacit knowledge is more valuable from the creation of competitive advantage compared to explicit knowledge because it is much harder to copy and acquire. Polanyi (1967) summarizes tacit knowledge elegantly by stating 'we can know more than we can tell' (p. 4). Tacit knowledge essentially is personal, context-specific and hard to formalize and communicate while explicit knowledge is transmitted in formal, systematic language (Chen 2004, Polanyi 1967). Alvarez and Busenitz (2001) argued that explicit knowledge is publicly available and easily transferred. Once it is known, it is easily imitated and it becomes incapable of generating benefits for the original knowledge producer. Tacit knowledge by definition cannot be articulated and therefore cannot be transferred at arm's-length (Grant 1996, Alvarez & Busenitz 2001). Given this general perception, it appears that arm's length relationships are only capable of transferring explicit knowledge.

Researchers assume that tacit knowledge is more important than explicit knowledge. The argument here is that explicit knowledge is freely available and if this freely available knowledge were valuable, all firms would use this information to their advantage (Alvarez 2003). Neoclassical economists assume that public knowledge about opportunities means that all opportunities must be equally obvious to everyone. However, Alavi & Leidner (2001) argue tacit and explicit knowledge are not dichotomous states and one need not be considered better than the other since they are mutually dependent.

Prior information whether developed from work experience, education, or other means influence the entrepreneurs ability to comprehend, extrapolate, interpret and apply new information in ways that others who do not possess the prior information cannot replicate (Shane 2000). Therefore, even if information about a technological change is disseminated broadly, i.e. explicitly – particularly if it is disclosed in a patent, presented at a scientific conference or made available through publication to to the general community, only some subset of the population will possess prior information that will trigger the discovery of a particular entrepreneurial opportunity (Shane 2000). Cohen and Levinthal (1994) support this view by arguing that in contrast to economists' common characterization of technological knowledge in the

public domain as a freely accessible public good, a growing literature indicates that to use such knowledge, a firm must typically acquire complementary internal expertise to create what is referred to as absorptive capacity. Therefore, to ignore the potential benefits of explicit knowledge is ignoring the potential opportunities an entrepreneur might derive through the acquisition, assimilation and exploitation of the information. Indeed, Matusik (2002) argued that a firm could be at a competitive advantage if it opted not to apply publicly available information and knowledge. Further, the combination of public knowledge with existing private knowledge unique to the firm may stimulate new knowledge creation (Matusik 2002).

2.9.3   Knowledge Transfer Outcomes – Innovation and Product Development

One of the main purposes of this thesis is to examine whether or not knowledge acquired through arm's-length relationships results in outcomes that benefit the SME. Essentially, the study aims to find out if SMEs are capable of "exploiting" this knowledge to achieve beneficial and profitable outcomes. The acquisition of knowledge by the SME is likely to result in the development of outcomes that it would not be able to do otherwise (Hite & Hesterly 2001). The outcomes indicate the successful exploitation of the external knowledge acquired by the SME (Yli-Renko, Autio & Sapienza 2001, Zahra & George 2002). As discussed in the section on absorptive capacity, Zahra and George (2002) referred to this exploitation as realised absorptive capacity, which reflects the firm's capacity to leverage the knowledge that has been absorbed. They argued that realised absorptive capacity involves transforming and exploiting the assimilated knowledge by incorporating them into the firm's operations, resulting in improved firm performance (Zahra & George 2002). The linkage of organisational learning to SMEs is provided by Slater and Narver (1995) where they propose entrepreneurial values influence organisational learning and revive businesses through the development of new products, reformulation of existing ones, creation of new manufacturing methods or discovery of new managerial processes.

It is worth considering at this point the role of the owner/entrepreneur of a small and medium-sized firm in the innovation process since he/she is the focal point of this research. Lipparini and Sobrero (1994) argued that entrepreneurs, who exploit basic experiences, seek new combinations among the various inter-firm ties and rely upon

such linkages as an avenue for transferring and combining their organisationally embedded learning capabilities. Further, by recognising the entrepreneur's ability to generate new knowledge by combining internal and external knowledge, one may be able to achieve a greater understanding of an SME's innovative capabilities (Lipparini & Sobrero 1994).

One of the outcomes of the exploitation of acquired knowledge, new product development and innovation is a popular area of study for researchers interested in enterprise development and growth (Cooper & Kleinschmidt 1987, Hauschildt 1992, Shan, Walker & Kogut 1994, Deeds & Hill 1996, Beecham & Cordey-Hayes 1998, Stock, Greis & Fischer 2001, Yli-Renko, Autio & Sapienza 2001, Zahay, Griffin & Fredericks 2004, Hoegl & Schulze 2005). New product development and innovation is considered vital for the survival, growth, prosperity and continuous improvement of enterprises (Cooper & Kleinschmidt 1987, Liu, Chen & Tsai 2005).

Many researchers view the role of knowledge as pivotal in new product development and innovation. Hauschildt (1992) stated innovation processes are information processes whereby knowledge is acquired, processed and transferred. Innovation involves change processes, knowledge development and knowledge integration for generating new combinations, new products, new processes or new services (Johannessen, Olsen & Olaisen 1999, Calantone, Cavusgil & Zhao 2002). Stock, Greis and Fischer (2001) argued that the development of a firm's new products which outperformed those of its competitors profited from the acquisition and use of external information. This is especially the case since increasing costs and the complexity of new product development are making it difficult for entrepreneurial ventures to contain the assets needed for successful innovation within their boundaries, forcing them to look to outside the firm to access required resources (Deeds & Hill 1998). Spencer (2003) argued that innovative firms might attain higher innovative performance if they shared knowledge with other innovative firms, rather than keeping the knowledge secret. Caloghirou, Kastelli and Tsakanikas (2004) viewed the capability of a firm to absorb external knowledge and information as one of the key components in the process of their transformation into new knowledge and its conversion into new value.

Sarkar, Echambadi and Harrison (2001) argued that changing market profiles, customer needs and preferences create a premium for the ability of firms to look beyond internal resources and access complementary external resources from other firms. Such behaviour is likely to enhance a firm's market orientation and in changing markets increases its ability to develop product and service combinations that satisfy emerging customer needs and segments (Sarkar, Echambadi & Harrison 2001). Their research found that alliances helped entrepreneurial firm's market performance in terms of market share, sales growth, market development, and product development.

Deeds and Hill (1996) researched entrepreneurial firms in the biotechnology industry and found that firms that allied with other biotechnology and pharmaceutical firms benefited from an increased rate of new product development. They attributed this finding to the ability of entrepreneurial firms to access complementary know-how from their partners (Deeds & Hill 1996). Yli-Renko, Autio and Sapienza (2001) found young technology-based firms that acquired greater market and technological knowledge through their key customer relationships actually produced a greater number of new products than their counterparts. They proposed that knowledge acquisition increased product development by: 1) enhancing the breadth and depth of relation-specific knowledge available to the firm and increasing the potential for new innovative combinations; 2) enhancing the speed of product development through reduced development cycles; and 3) increasing the willingness of entrepreneurial firms to develop new products for their key customers (Yli-Renko, Autio & Sapienza 2001, p. 593).

The acquisition of external information acquired from clients is a highly ranked source of innovation information (Beecham & Cordey-Hayes 1998, Segelod & Jordan 2004, Amara & Landry 2005). Von Hippel (1977, 1978) researched the role of customers in the innovation process and found that in a number of industries (semiconductor and electronics subassembly process equipment and scientific instruments), most of the innovative products were invented, prototyped, and used in the field by innovative customers before equipment or instrument manufacturing firms offered them commercially. The "needs information" customers passed onto manufacturing firms was the key to the successful manufacturing of the first-to-

market product innovations (von Hippel 1977). Amara and Landry (2005) argued that customers, or users, influenced the development or improvement of products by providing complementary knowledge, establishing user requirements, providing information on new or evolving needs and enhancing the likelihood that the innovation would be adopted by other firms in the same user community. The preceding discussion suggests the following hypothesis:

Hypothesis 12A
Knowledge acquisition from arm's-length exchange clients will be positively related to product development and innovation.

2.9.4   *Knowledge Transfer Outcomes – New Market Development*

The previous discussion centred on the role of knowledge acquisition in new product development and innovation. Another outcome a small and medium-sized firm might achieve through knowledge acquisition is the expansion of their business into new markets. In this case, products and services used in one particular market may have uses in other markets. This would be of benefit to a small and medium-sized firm since it reduces the firm's reliance on a particular industry and potentially increases the number of clients for the firm. Small and medium-sized firms may enter new markets as a form of survival when their core markets are declining or when the market niche within which they operate is not large enough to sustain them (Sandvig & Coakley 1998, Carter & Ram 2003, Carter, Tagg & Dimitratos 2004). Alternatively, SMEs might use new market entry as a mechanism for achieving growth (Carter & Ram 2003).

For instance, a firm providing technological services to construction firms might find, through knowledge and information acquisition from one of its exchange partners, that its services might also be of use to mining firms. On the other hand, an arm's-length client might be a mining firm. The small and medium-sized business owner may find out more information on how its product or services are used by the mining firm in order to obtain more knowledge about the industry. The knowledge acquired through this interaction might lead to the expansion of the SME to the new industry. Danneels (2002) supported this by highlighting that entry into potential new markets requires the exploration of new customers and an understanding of the

needs of customers within those markets. For example, when a firm attempts to leverage its technology by applying it to additional markets it must build customer-based competences or resources (e.g. knowledge of customer needs and requirements) to serve those additional markets (Danneels 2002). The expansion into new markets is a form of market diversification akin to Ansoff's (1958) market development proposal whereby firms attempt to adapt their present product line to new markets.

Some researchers have examined the role of knowledge acquisition and new market development. For instance, Sarkar, Echambadi and Harrison (2001) proposed a proactive alliance strategy would benefit the entrepreneurial firm by helping it to acquire external resources that would facilitate its entry into new markets and segments. Soh (2003) found new market opportunities were identified through knowledge and information transfer in networking alliances. Research conducted by Lynn and Reinsch (1990) on diversification patterns of 91 owner managed small firms found that in 41% of the diversifications, the owner manager learned about the business opportunity from another person. Given this finding, it would be reasonable to expect that a potential source of knowledge and information relating to diversification opportunities would be an arm's-length exchange partner, hence the following hypothesis is forwarded:

Hypothesis 12B
Knowledge acquisition from arm's-length ties will be positively related to new market development.

2.9.5   *Knowledge Transfer Outcomes – Internal Change of the Firm*

Another outcome that an SME may be able to achieve through knowledge acquisition from an arm's-length exchange partner is internal change. In this case, knowledge acquired from an exchange partner is posited to contribute to positive changes to the internal workings of the SME such that the firm's performance is improved. This internal change might include improved operational procedures and performance, increased profits as well as reduced sales costs (Gilbert & Cordey-Hayes 1996, Yli-Renko, Autio & Sapienza 2001, Burkink 2002, Johnston *et al* 2004). For instance, Yli-Renko, Autio and Sapienza (2001) found that knowledge acquisition significantly contributed to the sales cost efficiency of young

entrepreneurial technology firms. In other words, the costs that were associated with the sale of the entrepreneurial firm's products were decreased. Factors that could contribute to these reduced sales costs could include improved distribution arrangements, more efficient production processes and more streamlined administration procedures, such as improved product order handling and lead time. Yli-Renko, Autio and Sapienza (2001) argued that knowledge acquisition in the key customer relationship might improve the efficiency of the young firm's operations as a whole.

Burkink (2002) examined interrelationships between wholesalers and retailers arguing that there was a direct relationship between knowledge transfer and the firm receiving the knowledge. His analysis found that interfirm knowledge transfer was related to improved retailer performance measured in terms of gross and net profit per store area and share of available market (Burkink 2002). Kotabe, Martin and Domoto (2003) found that knowledge exchange between suppliers and car manufacturers in the US and Japan resulted in improved supplier performance, measured as improvements in product design, process design, product quality and lead time over a two to three year time frame.

Similarly, Hartley and Choi (1996) found that General Motors (US) completed supplier development projects with more than 2,000 suppliers that resulted in average supplier productivity improvements of more than 50%, lead time reductions of up to 75% and inventory reductions averaging 70% during their one-week workshops. Further, they also found that Honda of America's Best Practices team, on one particular project, reduced a supplier's costs by more than $200,000 per year by changing the layout of a welding process (Hartley & Choi 1996). Again, the type of collaboration involved in these outcomes is not specified, however, it is likely that even SMEs in arm's-length relationships may benefit from knowledge acquisition from exchange partner firms through process improvement and reduced costs. Accordingly, the following hypothesis is proposed:

Hypothesis 12C
Knowledge acquisition from arm's-length ties will be positively related to internal change of the firm.

2.10   Conceptual Model

The preceding literature review leads to the formulation of a conceptual model that summarises the discussion diagrammatically. This is shown in the next chapter in figure 3.1.   The hypotheses presented in the review are shown in table form according to the various themes examined in the review. This is presented in table 3.1 in the following chapter.

3.   HYPOTHESES

3.1   Introduction

The hypotheses presented in the previous chapter are provided in this chapter in summary form and they are broken down according to their inter-relationships and causalities. One of the steps in determining the research methodology in the next chapter is identifying the relationships the hypotheses have with each other. This, in turn will help identify variables that will help test the hypotheses. This requires breaking down the hypotheses that are related to independent variables and dependent variables. This will be discussed in greater depth in the next chapter but for the time-being, independent variables are defined as measurements that influence the dependent variable and the dependent variables are influenced by one or more independent variables (Collis & Hussey 2009).

3.2   Review of Hypotheses

This study proposes that weak client-firm exchange relationships are sources of knowledge to SMEs. Since the literature review identified that there were very little relational aspects in these types of relationships (Uzzi 1996, 1997, 1999, Pillai & Sharma 2003), it was hypothesized that SMEs need to develop relationship building efforts for interaction to occur with the client firm. These interactions, in turn, lead to knowledge acquisition. Acquired knowledge is then hypothesized to be converted to knowledge related outcomes. It is further hypothesized that the conversion of acquired knowledge to knowledge outcomes is influenced by such factors as: absorptive capacity; exchange partner similarity; the SME owner's willingness to grow their business; and the size and age of the client firm. These hypotheses build a complex model that contains not only independent and dependent variables, but also variables that have both independent and dependent qualities (Hair et al 2006, Collis & Hussey 2009). The model is shown in figure 3.1. A summary of the hypotheses is presented in table 3.1. To clarify the hypotheses and their role in the complex model, they have been broken up into their different causal relationships.

3.2.1 Hypotheses Relating to Weak Client-Firm Exchange Relationships

The starting point for this study is weak client-firm exchange relationships. Variables that will be used to measure these relationships will therefore need to be developed. The hypotheses that relate to the initial stages of the model are hypotheses 1, 6, and 7 since they relate to arm's-length relationships otherwise known in this study as weak client-firm exchange relationships. Since they are not influenced by other variables in the study, these will be associated with independent variables.

3.2.2 Hypotheses Relating to Relationship Building Efforts – Trust and Trust Substitutes

The relationship building efforts are hypothesized to act as a mediator between the weak client-firm relationships and knowledge acquisition. As shown in figure 3.1, arm's-length relationships cause SMEs to build these relationships further. While arm's-length relationships are viewed as having no relational aspects, Macneil (cited in Lambe, Spekman & Hunt 2000) identified "relationship" elements underlie all forms of transactions. The efforts to build these relationships further hypothesized to involve trust and the demonstration of the SME's legitimacy, reputation, goodwill (Larson 1992, Lambe, Spekman & Hunt 2000, Anderson & Weitz 1992, Stuart 2000, Rindova *et al* 2005, Reuber & Fischer 2005, Fischer & Reuber 2007, Mishra 1998, Anania & Nistico 2004).

Arm's-length relationships are posited to drive relationship building efforts but in turn these efforts are posited to also drive knowledge acquisition. Accordingly, there are elements of these interrelationships that indicate the variables that will be used to test the hypotheses will be both independent and dependent. Hypotheses 2, 3, 4 and 5 relate to relationship building efforts – trust and trust substitutes.

Table 3.1   Hypotheses Developed from the Literature Review

Themes	Hypotheses
Arm's-Length Relationships or Weak Client-Firm Exchange Relationships	**Hypothesis 1** Small and medium sized firms are more reliant on market exchanges and arm's-length relationships for their knowledge and information needs than formal arrangements such as strategic alliances and joint ventures. **Hypothesis 6** The fewer the number of arm's-length ties a firm has with client firms, the less the amount of knowledge it will acquire. **Hypothesis 7** Knowledge transfer is positively related to the duration of an arm's-length tie between a small and medium-sized firm and a client firm.
Trust and Trust Substitutes	**Hypothesis 2** Small and medium-sized firms' owner's trust of their arm's length client is positively related to knowledge acquisition. **Hypothesis 3** The small and medium-sized firm's effort at instigating greater goodwill and relationship building investments is positively related to knowledge acquisition from their arm's length client. **Hypothesis 4** The small and medium-sized firm's reputation signalling, in the form of certification, is positively related to knowledge acquisition from the arm's-length client. **Hypothesis 5** The more prominent and reputable are an SME's exchange partners, the more knowledge it will acquire from its arm's-length's exchange partners.
Size and Age of the Client Firm	**Hypothesis 8A** The size of the client firm moderates the knowledge acquisition/knowledge outcomes relationship. **Hypothesis 8B** The age of the client firm positively moderates the knowledge acquisition/knowledge outcomes relationship.
Absorptive Capacity and Exchange Partner Similarity	**Hypothesis 9** A firm's absorptive capacity moderates the knowledge acquisition/knowledge outcomes relationship. **Hypothesis 10A** The alignment of the knowledge bases of a small and medium-sized firm and a client firm moderates the knowledge acquisition/knowledge outcomes relationship. **Hypothesis 10B** The alignment of the common goals and norms of an SME firm with those of the arm's length client

	moderates the knowledge acquisition/knowledge outcomes relationship.
Business Growth	**Hypothesis 11** The SME owner's willingness to grow his or her business moderates the knowledge acquisition/knowledge outcomes relationship.
Knowledge Outcomes	**Hypothesis 12A** Knowledge acquisition through arm's length exchange clients will be positively related to product development and innovation. **Hypothesis 12B** Knowledge acquisition through arm's length ties will be positively related to new market development. **Hypothesis 12C** Knowledge acquisition through arm's length ties will be positively related to internal change of the firm.

3.2.3   Size and Age of Client Firm

The size and age of the client firm were considered to impact on the ability of the SME to convert acquired knowledge to knowledge outcomes. This is a result of potential spillover effects (Alvarez & Barney 2001, Stuart 2000) that lead the SME owner to realise the value and meaning of acquired knowledge and consequently its conversion to knowledge related outcomes. Since this hypothesis indicates that the size and age of the client firm affects the extent to which knowledge acquisition is converted to knowledge outcomes, the variables that will be used to test the hypothesis will have a mediator and/or moderator effect (Baron & Kenny 1986, Sauer & Dick 1993, James & Brett 1984). The hypotheses 8A and 8B relate to size and age of the client firm.

3.2.4   Absorptive Capacity and Exchange Partner Similarity

It is very unlikely acquired knowledge can be converted to knowledge-related outcomes unless it undergoes a conversion or transformation process. This process is largely driven by internal organisational routines and the ability to recognise the value of acquired knowledge. An important cog in the knowledge conversion process is absorptive capacity. Absorptive capacity is a term used to describe a firm's ability to recognise valuable new information or knowledge and assimilate and apply it for commercial gain (Cohen & Levinthal 1990, Zahra & George 2002, Liao, Welsch & Stoica 2003, Jansen, Van den Bosch & Volberda 2005).

A related concept examined in this study is exchange partner similarity. This concept is related to the common knowledge bases, norms, goals and values a firm shares with another organisation (Lane & Lubatkin 1998, Darr & Kurtzberg 2000, Lavie & Rosenkopf 2006, Widding 2005). Both the concepts of absorptive capacity and exchange partner similarity are hypothesized as affecting the extent to which acquired knowledge is converted to knowledge related outcomes. In other words, as in the case of size and age of the client firm, these concepts also have a mediator and/or moderator effects and consequently will have mediating/moderating variables associated with them (Baron & Kenny 1986, Sauer & Dick 1993, James & Brett 1984). Hypothesis 9 relates to the concept of absorptive capacity and hypotheses 10A and 10B relate to the concept of exchange partner similarity.

3.2.5   Business Growth

The study posits that the willingness of an SME's owner to grow his or her firm will impact on the extent to which acquired knowledge will be converted or transformed into knowledge related outcomes. Since knowledge is regarded as an important resource for the growth of a firm (Davidsson, Steffens & Fitzsimmons 2009, Wiklund & Shepherd 2003, Saarenketo *et al* 2009) its acquisition is vital for owners who wish to expand their businesses. However, not all SME owners wish to expand their business because of the negative problems associated with growth and the impact growth will have on the lifestyle of the business owner (Wiklund & Shepherd 2003, Frederick, Kuratko & Hodgetts 2006). Therefore, the SME owner's willingness to grow his or her business is posited as having a mediator/moderator effect on the extent to which acquired knowledge will be transformed to knowledge related outcomes. Hypotheses 8A and 8B relate to the concepts of the size and age of the client firm.

3.2.6   Knowledge Outcomes

As a result of the literature review it was posited that acquired knowledge can be converted to knowledge related outcomes (Yli-Renko, Autio & Sapienza 2001). Since these outcomes form the last part of the path shown in figure 3.1, knowledge outcomes constitute the dependent variables in this study. In other words, the concept of knowledge-related outcomes is influenced by independent variables in the model, namely knowledge acquisition. These knowledge related outcomes derived

from acquired knowledge include new product and market development, innovation and internal change of the firm or improved efficiency (Yli-Renko, Autio & Sapienza 2001).

3.3   Hypothesized Model

Figure 3.1 includes a number of contributory factors considered to impact on the different constructs that lead to knowledge acquisition and, in turn, knowledge related outcomes. The constructs of absorptive capacity, exchange partner similarity, business growth and size and age of client firm are included post knowledge acquisition and are shown as hypothesized moderators (in blue). It is possible that these moderators have a mediational role associated with them since moderator effects are not always clear-cut (Baron & Kenny 1986, Sauer & Dick 1993, James & Brett 1984). Note the arrows that point outwards from the central concepts of weak arm's-length relationships (weak A/L) and relationship building efforts to other related concepts, such as, relationship strength, relationship duration, relationship trust and reputation signalling. These arrows point outwards to demonstrate the reflective rather than the formative (Hair et al 2006, Tabachnick & Fidell 2007). This will be discussed later in the next chapter, Methodology.

Figure 3.1   Conceptual and Operational Model of Knowledge Acquisition in Weak Client-Firm Exchange Relationships
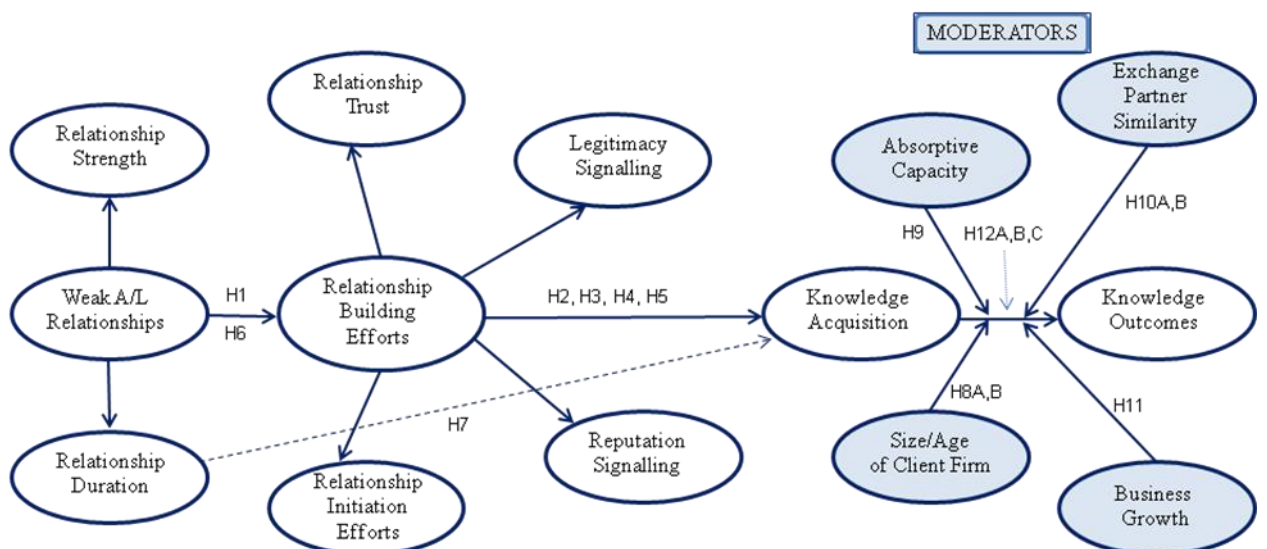
4.   METHODOLOGY

4.1   Introduction

The following section details the methodology that will used in this doctoral study. The chapter, first, will review philosophical paradigms that impact on the selection of an appropriate research methodology. An analysis of the chosen methodology will then be examined in terms of research design, data collection and analysis.

4.2   Research Philosophy

The purpose of conducting research is to develop knowledge in a particular field (Saunders, Lewis & Thornhill 2009). While the purpose of research seems relatively straight-forward, there are some fundamental concepts that underpin the way research is conducted. In many ways, the selection of a research methodology requires a philosophical framework that guides how research will be undertaken (Collis & Hussey 2009). This framework, in turn, is greatly influenced by how one views the world (Saunders, Lewis & Thornhill 2009). There are a range of terms used to help one deduce or evaluate how one's world is viewed. These terms include positivism and interpretivism, objectivism and subjectivism or constructionism, deduction and induction (Bryman & Bell 2003, Collis & Hussey 2009, Baker 2003). These terms will be investigated shortly after reviewing different philosophical issues that impinge on the conduct of business research (Bryman & Bell 2003).

4.2.1   Philosophical Considerations

There are philosophical considerations that help clarify the approach one takes in conducting research. These include epistemology, ontology and axiology. Epistemology is concerned with what represents acceptable or valid knowledge in a field of study (Collis & Hussey 2009, Saunders, Lewis & Thornhill 2009). A central view in epistemology is whether the social world can and should be studied according to the principles that govern the study of the natural sciences. The opposing epistemological view is that the study of the social sciences – people and their institutions – is different from the natural sciences (Bryman & Bell 2003). Ontology relates to the nature of reality and the question of whether social entities can and should be viewed as objective entities that have an external reality to actors

or whether they should be regarded as social constructions created from the perceptions and consequent actions of social actors (Bryman & Bell 2003, Saunders, Lewis & Thornhill 2009).

Axiology is a branch of philosophy that studies the role of values and making judgements when selecting a course of action (Collis & Hussey 2009, Saunders, Lewis & Thornhill 2009). When a choice is made between two research topics, the selection of one over the other is a reflection of one's values as to which of the topics was more important (Saunders, Lewis & Thornhill 2009). Epistemological, ontological and axiological considerations have a significant impact on the selection of an appropriate research methodology.

The terms positivism and interpretivism were mentioned earlier. Positivism is influenced by the belief that reality is independent of the individual and the goal is the discovery of theories based on observation and experimentation otherwise known as empirical research (Collis & Hussey 2009). Researchers, undertaking a study under a positivist paradigm, focus on theories to explain or predict social phenomena (Collis & Hussey 2009). Positivism is also associated with a deductive process of research where the researcher examines what is known about a particular area of study as well as the theoretical considerations applicable to the study. From this examination, the researcher deduces hypotheses that are subjected to empirical testing (Bryman & Bell 2003, Saunders, Lewis & Thornhill 2009).

On the other hand, interpretivists believe social reality is not objective but rather subjective since it is shaped by one's perceptions (Bryman & Bell 2003). Since it is impossible to separate what exists in the social world and what is in the researcher's mind, the interpretivist interacts with that being researched. Interpretivism consequently focuses on exploring complex social phenomena with the ultimate aim of gaining some interpretive understanding (Collis & Hussey 2009). Just as deduction is associated primarily with positivism, induction is associated primarily with interpretivism. Rather than derive hypotheses from a theoretical framework that are subsequently empirically tested, the interpretivist analyses data collected via observation and interviews to formulate a theory (Saunders, Lewis & Thornhill 2009). Since theory is the outcome of inductive research, the process of induction

involves drawing generalizable inferences from observations made (Bryman & Bell 2003).

Recall earlier, ontology was said to relate to the nature of reality and whether or not social entities could be viewed as having an external reality to social actors (Bryman & Bell 2003, Saunders, Lewis & Thornhill 2009). Objectivism is an ontological position asserting that social phenomena and their meanings exist independently of social actors (Bryman & Bell 2003). In objectivism, an organisation is a tangible object with rules and regulations and procedures for completing things. When thinking in these terms, one views an organisation as having a reality external to the individuals who inhabit it (Bryman & Bell 2003). Positivists believe social reality is objective and external to the researchers, therefore objectivism reflects a positivistic viewpoint (Collis & Hussey 2009).

Subjectivism, also known as constructionism, offers an alternative ontological viewpoint which asserts that social phenomena and their meanings are always achieved by social actors (Bryman & Bell 2003). This follows the interpretivist philosophy that it is necessary to explore the subjective meanings motivating the actions of social actors if the researcher is to understand these actions. Social constructionism views reality as being socially constructed (Saunders, Lewis & Thornhill 2009). A clear distinction between objectivist-subjectivist thinking is provided in the example by Saunders, Lewis and Thornhill (2009) which is drawn from a management theory perspective. According to these authors, objectivists treat organisational culture as a variable that the organisation can control. Therefore, the culture of an organisation, in the eyes of the objectivist, can be changed and manipulated to achieve a state which is desired by management (Saunders, Lewis & Thornhill 2009). The subjectivist would regard that this approach is too simplistic and that it is through a complex array of phenomena, such as social interactions, and factors, such as the layout of the office, which creates the culture of an organization (Saunders, Lewis & Thornhill 2009).

The preceding discussion provided a clearer understanding of the concepts and terminology used to help understand how one's world is viewed. To sum up, a positivist researcher adopts an objective frame of mind, considers reality as

independent of the individual and pursues primarily a deductive process using existing theories and knowledge to study social phenomena. The interpretivist researcher on the other hand argues that social reality is shaped by one's perceptions, adopts a subjective lens when conducting research and follows an inductive approach to formulate theory. Having developed a clearer understanding of the positivist and interpretivist debate, it is necessary to examine the relationship of the respective viewpoints on epistemology, ontology and axiology.

Epistemology was defined earlier as being concerned with what represents acceptable or valid knowledge (Saunders, Lewis & Thornhill 2009). Positivists believe that only observable and measurable phenomena can be validly considered as knowledge. By contrast, the interpretivists try to reduce the distance between the researcher and the subject of their study. Interpretivist researchers may be involved in various forms of participative enquiry (Collis & Hussey 2009). As previously discussed, ontology is concerned with the nature of reality (Bryman & Bell 2003, Saunders, Lewis & Thornhill 2009). Positivists view social reality as objective and external to the researcher and therefore argue that there is only one reality. On the other hand, interpretivists believe in a subjective social reality that is socially constructed. As far as the interpretivist is concerned, each person has his or her own sense of reality which leads to the conclusion that there are multiple realities (Collis & Hussey 2009).

Earlier, axiology was said to be a philosophical approach that studies the role of values and judgements (Saunders, Lewis & Thornhill 2009). Positivists believe the research process is value-free and they are therefore independent from what they are investigating. Positivists regard the phenomena they are studying as objects and while they are interested in the interrelationships of the objects, the objects existed before the positivist was interested in them (Collis & Hussey 2009). By contrast, interpretivists regard researchers as having values even if not explicitly stated. These values help determine what has been identified as factual and what interpretations can be drawn from the facts (Collis & Hussey 2009). Table 4.1 provides a summary of the basic assumptions of the main philosophical paradigms and their relationship with the corresponding positivist and interpretivist viewpoints.

Table 4.1   Assumptions of the Main Philosophical Paradigms

Philosophical Assumption	Positivism	Interpretivism
Epistemological assumption (what constitutes valid knowledge)	Researcher is independent of that being researched	Researcher interacts with that being researched
Ontological assumption (the nature of reality)	Reality is objective and singular, separate from the researcher	Reality is subjective and multiple, as seen by the participants
Axiological assumption (the roles of values)	Research is value-free and unbiased	Researcher acknowledges that research is value-laden and biases are present

(Source: Adapted from Creswell cited in Collis and Hussey 2009, p. 58)

4.2.2   Impact of Positivism and Interpretivism on Research Methodology

Now that the positivist and interpretivist viewpoints and their relationship with various philosophical paradigms and how they affect research have been examined, what is the connection of this research philosophy to methodology? Bryman and Bell (2003) argue that philosophical paradigms and associated positivist and interpretivist viewpoints lead essentially to two "distinctive clusters of research strategy:" quantitative and qualitative research (p. 25). Bryman and Bell (2003) view quantitative study as a deductive approach to theory and research, incorporating the principles of the natural sciences and of positivism. Quantitative research embodies a social reality as an external objective reality (Bryman & Bell 2003).

In contrast, qualitative research tends to emphasize words rather than quantification in data collection and analysis. A qualitative study primarily pursues an inductive approach where the aim is to generate theories (Bryman & Bell 2003). Qualitative research rejects the principles of the natural sciences in preference for an emphasis on how individuals interpret their social world. Qualitative research also views social reality as a constant changing and emergent property constructed by the individual (Bryman & Bell 2003). While it might be an oversimplification to reach this conclusion, it would seem that, overall, quantitative research primarily reflects a positivist viewpoint, while qualitative research follows an interpretivist mindset.

The selection of a positivist, deductive approach over an interpretivist, inductive one seems almost an absolute decision. In other words, it is either one approach or the

other and, indeed, it was this line of thinking that created a virtual "chasm" between quantitative and qualitative researchers. The debates regarding which approach was better, led to an "us and them" mentality. This view has been mellowing of late and research methodology reflecting a mixed approach is becoming more prevalent. Bryman (2006) conducted a meta-analysis of more than 200 social science articles reporting mixed methodologies research. From this research it was found that the quantitative side involved structured interviews and questionnaire research within a cross-sectional design (Bryman 2006). One of the reasons to undertake mixed research techniques in this way is to use qualitative data to help explain relationships between quantitative variables (Bryman 2006, Saunders, Lewis & Thornhill 2009). This growing utilisation of the mixed method approach demonstrates an acceptance of the benefits of both a deductive and inductive approach in research and the realisation that even quantitative research cannot be entirely deductive and that qualitative research cannot be entirely inductive (Bryman & Bell 2003).

4.3   Research Methodology

The previous section discussed the philosophical paradigms that influence the research approach one takes to conduct a study in a particular field. The selection of one approach over the other would be influenced by the individual's view of the world, their own experience and what they are most comfortable with. Therefore, the researcher brings their own perspective, as well as conceptual and ideological thinking when analysing a problem (Baker 2003). If an individual has a preferred research approach over another, why then examine in detail alternative philosophical research paradigms in the first place? One reason is to be able to make a more informed decision regarding an appropriate research design and the type and quantity of evidence that needs to be gathered to answer the initial research question (Saunders, Lewis & Thornhill 2009). Furthermore, understanding the alternative paradigms will help establish appropriate research strategies and to make methodological choices that will work for the researcher. Understanding the different research traditions also helps the researcher adapt research design to cater for potential constraints such as limited access to data or lack of prior knowledge on a subject area (Saunders, Lewis & Thornhill 2009). It is also important to consider dominant paradigms in a research area for pragmatic reasons. For instance a

particular paradigm might be more acceptable to one's research supervisor, examiners or editors of journals in which the researcher hopes to publish (Collis & Hussey 2009).

An appropriate starting point in the selection of a research design is to reflect on the initial research question (Saunders, Lewis & Thornhill 2009). Recall, the focus of the doctoral study is to investigate the extent to which weak client-firm exchange relationships are a useful source of knowledge to small and medium-sized enterprises. The key word in the previous question is *extent* since it relates to quantity. Questions that are inherently quantitative in nature are best answered by quantitative investigations (Davidsson 2004). In examining this, a number of factors were proposed to facilitate knowledge acquisition and their conversion to knowledge-based outcomes. This suggests causal relationships where one particular variable leads to a particular outcome.

Such relationships can be measured either through qualitative or quantitative research. However, when there are a number of causal relationships and variables interacting in ways where they can be both independent and dependent in a proposed model, qualitative research is limited in its ability to investigate such relationships (Tharenou, Donohue & Cooper 2007). Quantitative research methods provide the more sophisticated analytical techniques to investigate such phenomena (Hair *et al* 2006). Based on this brief overview of the research question and the selection of an appropriate technique, it appears a quantitative, deductive approach would be best suited to the study. Nevertheless, before reaching this conclusion, an examination of research methodologies used in both fields, particularly in relation to the theories that underpin the study is still required.

This doctoral study focuses on concepts that are prevalent in the field of strategic management and entrepreneurship. Earlier, in the literature review it was maintained that theoretical concepts in the field of strategic management "intersect" with the field of entrepreneurship (Hitt *et al* 2001). Indeed, Brush *et al* (2003) refer to the strategy field as entrepreneurship's closest neighbour and observe that knowledge created in one field can offer insights for knowledge development in the other. The relevance of entrepreneurship to strategy, and vice versa, is because, like strategy,

entrepreneurship is multidisciplinary and applications-oriented and considers multiple levels of analysis (Brush *et al* 2003).

It was mentioned earlier that a positivist, deductive research methodology uses pre-existing theory and knowledge in order to develop relevant hypotheses for empirical testing. If the theory is yet to be developed, a more appropriate approach would follow an interpretivist, inductive methodology where theory is formulated. This was the initial path of strategic management research where the original research studies involved normative, inductive, case-based studies of single firms or industries (Hoskisson *et al* 1999). The original goals of strategic management researchers were to identify and develop "best practices" useful to managers. Their intended audience was managers and students aspiring to become managers (Hoskisson *et al* 1999). This approach, however, impeded advancement of the field since case-based study could not be generalised. Consequently, researchers in other fields did not look favourably upon research emanating from strategic management (Hoskisson *et al* 1999).

The area of industrial organisation economics and its relevance to firm performance and strategy provided the impetus in the 1980's for empirical testing of theory in strategic management. Empirical research in strategic management ultimately helped build research credibility to the discipline (Hoskisson *et al* 1999). However, Hoskisson *et al* (1999) claim that the pendulum appears to be swinging back toward more qualitative research in strategic management particularly because of the need for theory building in relation to the resource based view (RBV) of the firm. More recently, interest on the RBV of the firm has continued its dramatic increase with 100 articles relating to this perspective being published each year (Rouse & Daellenbach 2002). Despite, Hoskisson's observations towards more qualitative research in relation to the RBV of the firm, most of the articles identified by Rouse and Daellenbach (2002) were based on quantitative studies. Perhaps this continued focus on the empirical testing of the RBV is driven by the fact that theories must survive attempts at empirical falsification before they can be regarded as "true" (Newbert 2007). The continued, quantitative focus of research involving the RBV might be associated with attempts to verify the theory's central tenets (Newbert 2007).

Methodology is also becoming an increasingly salient issue in entrepreneurship research. As this field develops, researchers are moving away from simple investigations to more sophisticated, complex research designs providing more opportunity for the development of interesting and useful theory (Chandler & Lyon 2001). For instance, Chandler and Lyon's (2001) review of 416 peer-reviewed articles appearing in the mainstream entrepreneurship literature over a ten-year period, found that the research tended toward more multivariate statistics with increasing emphasis on reliability and validity over the period[1]. This reflects an increasing trend toward quantitative entrepreneurship research. Further, there appears to be some concern among entrepreneurship specialists that qualitative instead of quantitative research may lead to entrepreneurship becoming a fragmented discipline (Ucbasaran, Westhead & Wright 2001).

Shook *et al* (2004) note the growing use of sophisticated quantitative research techniques, such as structural equation modeling (SEM), in strategic management research. They highlight that prior to 1995, only five studies that used SEM were published in Strategic Management Journal while 27 such studies were published between 1998 and 2002 (Shook *et al* 2004). In entrepreneurship journals, the uptake of research derived from multivariate analyses is slower, with Chandler and Lyon (2001) and Brush *et al* (2003) claiming the use of such analyses in published entrepreneurship articles as relatively low. However, Brush *et al* (2003) claim quantitative techniques such as structural equation modeling hold promise for understanding entrepreneurial aspects such as entrepreneurial creation and opportunity recognition.

Overall, it appears the research literature in both the fields of strategic management and entrepreneurship predominantly focuses on the empirical testing of theory and the development of hypotheses that are investigated using quantitative methods. The development of more sophisticated multivariate analytical techniques helped fuel the continuation of this research approach. The literature indicated that there is a need for more qualitative research to build theory in the RBV, in strategic management

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[1] Chandler and Lyon's (2001) review examined articles appearing in: 1) Entrepreneurship Theory and Practice; 2) the Journal of Business Venturing; 3) The Strategic Management Journal; 4) the Academy of Management Journal; 5) the Academy of Management Review, 6) Organisational Science, 7) Management Science, 8) Journal of Management, and 9) Administrative Science.

and in entrepreneurship. However, from a pragmatic point of view, it would seem the chances of publishing work derived from qualitative research are fewer than works derived from quantitative analyses. The potential to fragment further the field of entrepreneurship through more qualitative research (Ucbasaran, Westhead & Wright 2001) might explain the preference for quantitative research in the entrepreneurship literature.

Synthesizing the previous elements of this discussion, the doctoral study proposes to answer a question inherently quantitative in nature; the *extent* to which weak client-firm exchange relationships are a source of knowledge to SMEs. Such a question, examining *"extent"* is best answered using quantitative methodologies (Davidsson 2004). The research also proposes to examine causal relationships and variables interacting in ways where they can both be independent and dependent. A quantitative research design provides more sophisticated techniques to study such phenomena. As stated earlier, Brush et al (2003) argue quantitative techniques such as structural equation modeling hold promise for understanding entrepreneurial aspects. Therefore, if one were to select a paradigm based on the prevailing literature relevant to the fields of this doctoral study, the positivist, quantitative approach would seem more appropriate.

4.3.1 *Quantitative Research Design*

Collis and Hussey (2009) identify the first step in the collection of data for quantitative research is to identify the variables that will be used in the study. These variables are derived from theory or a set of theories to provide the theoretical framework and, are capable of being measured. The variables are associated with the hypotheses that have been constructed in light of the theoretical framework. The measurement of these variables then provides the empirical evidence which allows the testing of the relevant hypotheses (Collis & Hussey 2009). Since this study proposes a causality effect between relationship building efforts and knowledge acquisition, and knowledge acquisition and knowledge related outcomes, a key step is the determination of independent and dependent variables. Independent variables influence the value of the dependent variable while the dependent variable is influenced by one or more independent variables (Collis & Hussey 2009). In this study for instance, relationship building efforts are regarded as independent variables

that influence knowledge acquisition. Knowledge acquisition also influences knowledge related outcomes so the concept has functions as an independent and dependent concept.

The method used to collect the data was a self-completion survey questionnaire (Collis & Hussey 2009, Saunders, Lewis & Thornhill 2009). Since the study followed primarily a quantitative research methodology, previously validated scales were used in the research study where possible (Tharenou, Donohue & Cooper 2007). However, in some cases there were no available scales or instruments available to measure concepts proposed in the study. Accordingly, parts of the collection instrument contained items from the research literature that were modified or were developed for the purpose of the study (Veloutsou 2007). Where items were developed and not obtained from previously empirically tested scales, they were based on theoretical concepts and definitions identified in the review of the literature. This is considered a deductive approach to item and scale development since the items were based on previously identified theoretical concepts which had not been operationalised (Hinkin 1995).

To clarify concepts, develop and refine survey items and ensure the intended respondents would understand terms used for the study, semi-structured interviews were held with five owner-managers of small to medium-sized businesses in the Perth metropolitan area. This qualitative approach is frequently used for the design of survey questions, particularly for self-completion questionnaires (Bryman & Bell 2003). Therefore, while the fundamental underpinning of this research study is a positivist, quantitative one, some qualitative research was undertaken in order to help develop the main instrument used for the research and to ensure respondents would understand concepts. As mentioned earlier, the use of mixed-methods techniques are becoming more acceptable social research (Bryman 2006). The questions used in these semi-structured interviews are provided in appendix 2.

Since the research instrument, a questionnaire survey, was intended for the owners of small to medium-sized businesses, the five respondents in the interviews were deemed representative of the prospective respondents in the questionnaire. According to the Australian Bureau of Statistics industry codings (2006), the

industries represented by the interviewees belonged to the manufacturing, retail and professional, scientific and services sectors. The age of the businesses ranged from 2.5 years to 21 years. The number of staff employed by these firms ranged from seven to thirty employees. The interviews were recorded with the permission of the interviewee and later transcribed. Data were analysed manually and NVivo analysis was used to help codify and retrieve key data. Table 4.2 provides a breakdown of the businesses interviewed. A summary of the findings of the qualitative research is provided in appendix 3 (Geneste 2008).

Table 4.2   Qualitative Study – Five Owner/Managers of Small to Medium-sized Enterprises

No.	Description	Age (yrs)	Employees (No.)
1	Supplier of parts to resource companies	20	7
2	Confectionery producer	15	8
3	Engineering – automation systems	21	10
4	Engineering – robotics and automation systems	2.5	10
5	Engineering and manufacture	9	30

The level of reporting on the entrepreneur/small business owner appears to be an accepted method of data collection as 67% of the empirical studies in Chandler and Lyon's (2001) review had respondents who were business founders or small business owners. However, a drawback of this approach is that when measures of two or more variables are collected from the same respondents, common method variance may occur; a problem which often accompanies "self reported" data. To test for common variance, a factor analytic technique, Harman's single factor test, will be used. This method assumes that if common variance were present, one general factor would account for the majority of covariance in the variables used (Podsakoff & Organ 1986, Yli-Renko, Autio & Sapienza 2001).

Part B of the questionnaire consisted entirely of closed-interval measurement scale questions using a seven-point Likert-scale throughout (Cavana, Delahaye & Sekaran 2001). The questionnaire also contained positively and negatively worded questions, the purpose of which was to help prevent the respondent from answering mechanically at one end of the scale. If indeed this did occur, the use of such

questions would help detect these biases (Cavana, Delahaye & Sekaran 2001). However, one of the disadvantages of including negatively worded questions is that they tend to load less heavily on their intended constructs in comparison to the positively worded questions (Hinkin 1995). Most questions did not exceed 20 words in length, which is widely accepted by researchers as the maximum accepted length for a question. However, this limit was exceeded where questions needed to be expressed more clearly or interestingly (Cavan, Delahaye & Sekaran 2001).

The sampling frame (Collis & Hussey 2009) for this research was small and medium-sized enterprises in Western Australia. The Australian Bureau of Statistics (2006) defines a small business as having less than 20 employees and medium sized firms as having between 20 and 199 employees. Given that approximately 96% of all privately owned businesses are characterised as small, the vast majority of businesses within the sampling frame would be considered in this category. The survey was designed to collect data from the owners of small and medium-sized businesses across Western Australia. The main part of the study aimed to identify performance and success-related benchmarks for businesses operating in certain industry groups and geographical areas within Western Australia. Small business associations were approached to ask business owners to complete the survey.

Thirty business associations were recruited to invite business owners to complete the survey. Associations included small business centres funded by the Small Business Development Corporation and industry groups such as the WA retailers association and the Curtin University alumni, specifically graduates that were operating their own businesses. It was thought that businesses that had linkages with the business associations would be more motivated to complete the survey. Additionally, a list of Western Australian small businesses that had applied for credit was purchased from Dun and Bradstreet. This list consisted of 10,000 Small and Medium-sized Enterprises (SME) considered representative of the SME profile across WA. The questionnaires and surveys, where possible, were developed in accordance with Dillman, Smyth and Christian's (2009) tailored design method for internet, mail and mixed-mode surveys.

4.3.2   Pilot Study

The complete questionnaire survey comprising of both Parts A and B contained 154 items, 62 of which made up Part B. The questions consisted of 7-point Likert-type scales. The survey was pilot tested on small businesses accessed through the business incubators at the Coastal Business Enterprise and the Stirling Small Business Centres in Fremantle and Stirling respectively, two areas within the Perth metropolitan area. In total, 20 surveys were returned, which were too few to conduct pre-survey statistical tests, including factor analysis. As there were tight deadlines set to meet the funding requirements of the research study's sponsor, it was not possible to collect more pilot surveys. Businesses that had completed the survey were approached to verify, as a minimum, the face validity of the measures used, to ensure they reflected the content of concepts in question (Bryman & Bell 2003) and that the items were clear and unambiguous. Overall, the feedback indicated that the questions were clear and when asked if the business owner understood the concept of an arm's-length client, the owner's view demonstrated an understanding of the term.

Some business owners were concerned about disclosing financial information for Part A of the survey and this is a frequently found reservation in surveys conducted on small business owners (Brouthers & Nakos 2004). Another concern business owners raised was the length of the questionnaire. The WASBB survey was the vehicle to which Part B attached and therefore the questionnaire was relatively longer than other questionnaires (Dillman, Smyth & Christian 2009). Based on the feedback, minor modifications to the wording of questions in the survey were made.

4.3.3   Mail Out and Online Questionnaires

Although there is some evidence indicating that efforts to improve response rates are often unproductive (Dennis 2003), pre-contacting or pre-notification of respondents by mail or telephone or second mailing appear to be effective in increasing response rates (Forsgren 1989, Newby, Watson & Woodliff 2003). Accordingly, a mail-out of A5-sized postcards was sent to the names of businesses accessed through the Dun and Bradstreet database to forewarn the respondents of the arrival of the questionnaire. Additionally, the small business associations posted generic email messages to the businesses within their contact lists, pre-warning them of the upcoming survey and the details of the web link where they would be able to access

the on-line questionnaire. As a means of increasing response rates, incentives were also provided to businesses to complete the questionnaire. These incentives included a $3,500 marketing assistance package provided by Australia Post, a $500 training discount voucher to Curtin's Centre for Entrepreneurship Growth Program and 5 x $100 different incentive prizes for respondents completing Part B of the survey. The use of incentives is a common method used to increase response rates (Yu & Cooper 1983, Dillman, Smyth & Christian 2009). In April 2008, the main mail-out of questionnaires to the Dun and Bradstreet list commenced. The online version of the questionnaire was made available to SMEs through email contact lists of the business associations initially approached for the study.

4.4   Quantitative Research Methodology

The actual study relevant to this thesis formed the second part, or Part B, of the WA Small Business Benchmark Survey. The author was invited to join the research project in order to collect the necessary data. However, the intent of the first part of the research was to investigate small and medium-sized enterprises across Western Australia to identify some key success benchmarks specific to different industries and locations across the state. The purpose of these were to develop snapshot reports emphasizing the results across key indicators and to provide an overview of the better performing firms in different industry sectors and geographical locations relative to the overall norm of other firms within the same sector or geographical locations. Out of a total of 31 snapshot reports, 15 were prepared by the author.

Collected data from Part B of the WA Small Business Benchmarks Survey were analysed using quantitative techniques. The data were first examined using SPSS for examination of missing data and outliers. Exploratory factor analyses were conducted on the data before undergoing analyses using Structural Equation Modeling. Because of the advantages of structural equation modeling over other multivariate analytical methodologies, this method was selected as the analytical software program for the data analyses and particularly, for testing the hypotheses. There are essentially two types of structural equation modeling programs, covariance-based SEM and component-based SEM. A more detailed discussion of the merits of one over the other will be provided in the results and analysis section.

However, since the program chosen for this study was covariance-based SEM it is important to cover a discussion on the type of constructs that are used for this specific methodology.

The use of structural equation modeling in this doctoral study necessitates the use of reflective measures that are indicators of a particular construct. This is in contrast to formative measures. Most management studies use measures that are reflective in nature (Echambadi, Campbell & Agarwal 2006). In other words, the latent variable (construct) is reflected in the measures being used (Echambadi, Campbell & Agarwal 2006). For example, items on a Likert scale measure of satisfaction would reflect the respondents' underlying level of satisfaction (Rouse & Corbitt 2008). Hair *et al* (2006) provide a good example to explain further the concept of a reflective construct. They use the medical symptoms of shortness of breath, tiring easily, wheezing, and reduced lung functions as indicators of latent factor emphysema (Hair *et al* 2006). Hair *et al* (2006, p. 787) argue the symptoms do not cause the disease, rather, the disease causes the symptoms. If one considers the symptoms provided here, all are very much interrelated. Increased shortness of breath is likely to be interrelated with increased wheezing and becoming tired more easily.

Formative indicators on the other hand, are measures that cause the change in a latent variable (Echambadi, Campbell & Agarwal 2006). A formative construct is caused by a series of items which don't have to be interrelated (Rouse & Corbitt 2008, Echambadi, Campbell & Agarwal 2006). To explain further the concept of formative measures, the Hair *et al* (2006) emphysema analogy is useful again. They argued that a formative emphysema factor might specify indicators such as cigarette consumption, exposure to chemicals and environmental contaminants, and chronic lung infections (Hair *et al* 2006). These indicators would form rather than reflect the probability of an individual having emphysema (Hair *et al* 2006, p. 787). Despite the distinction discussed here, researchers commonly mistake formative indicators for reflective latent variables (Chin 1998). The measures or items used in the study were sourced from literature, or were developed from the theory, with the underlying assumption that they were reflective of the construct. That is, they were reflective constructs.

5. RESULTS AND ANALYSIS – DESCRIPTIVE STATISTICS AND EXPLORATORY ANALYSIS

This chapter presents the results of the main study, including general descriptive statistics of the survey respondents, an analysis of the response rates, non-response bias and the findings of the exploratory analysis of the constructs and factors of the proposed model. The following section will review the results of the confirmatory factor analysis and finally, the last section of the results section will look at the results of the structural equation modeling.

5.1 General Characteristics of Respondents

In April 2008, the mail-out of 10,000 questionnaires to the Dun and Bradstreet list commenced. The deadline set for the return of the surveys was 30 June 2008. A total of 164 surveys were received which gave a rather poor response rate of approximately 1.7%. Respondents had completed 159 part B sections (the part of the WASBB survey relevant to this study) from the 164 surveys received. The 1.7% response rate falls on the low end of Alpar and Spitzer's (1989) review of 50 studies where practising entrepreneurs were sampled via a mail survey. The authors found response rates ranged from 3% to 80% with a medium rate of 33%. As previously mentioned, efforts were made to contact the businesses via a postcard before the arrival of the questionnaire to improve response rates; however, this seems to have been ineffective in increasing survey responses. Unfortunately, the Australian small business sector has a notorious reputation for low survey response rates, typically fewer than 10% (Walker & Brown 2004).

The response rate is also affected by questions that require the respondent to volunteer potentially sensitive information, for instance, financial data such as turnover and net income (Brouthers & Nakos 2004) which was the case in the survey. Moreover, the survey consisted of 154 questions, 62 of which were of particular interest for this study, which may have been considered lengthy. Long questionnaires are believed to exacerbate the non-response problem (Lambert & Harrington 1990). However, other studies claim questionnaire length has little effect on response rates (Heberlein & Baumgartner 1978, Yu & Cooper 1983).

The online version of the questionnaire was administered to small and medium-sized enterprises through the email contact list of the business associations initially approached to complete the study. Accordingly, the response rate of the online version was difficult to gauge as this depended on the currency and accuracy of the email addresses of the businesses affiliated with the different business associations recruited for the study. Further, due to privacy requirements, access to the email addresses was not available for the study. Without knowing the number of businesses that would have received the email prompts to complete the questionnaire, it was not possible to ascertain a response rate. Email addresses for distribution of incentive prizes were only obtained from the respondent. In total, 226 online surveys were completed, however, in this case, only 139 (62%) of the respondents had completed Part B of the survey. This lower response rate is likely due to the different web links associated with the different parts of the survey. That is, if the respondent had completed Part A, in order to continue to Part B, the respondent needed to open another web address to access it. It is probable drop out occurred once Part A had been completed.

5.2 Data Screening

The data were examined for outliers, normality, skewness and kurtosis via SPSS (Field 2005, Coakes, Steed & Price 2008). There were 298 respondents that met the requirements of being in business for at least 12 months and an employee range of 0 (where the owner is the sole worker in the business) to 199 to fit in the small and medium-sized enterprise size categories. A number of outliers were identified and subsequently the data of four respondents were removed for inconsistency of results (e.g. Likert scale scores repeatedly provided from extreme ends of the scale, 1 or 7, for questions that were measuring similar items). This reduced the data set from 298 to 294 valid respondents. Tests for normality revealed sufficient kurtosis and skewness to indicate some non-normal distribution of the data, although visual examination of the Q-Q plot revealed relatively low deviation of the points from a straight line (Coakes, Steed & Price 2008). It is a relatively common practice to go by the Q-Q plot inspection as a way of confirming normality (Coakes, Steed & Price 2008).

However, despite the low deviation from normality demonstrated by the Q-Q plot for this study's data set, the data were treated as non-normal based on the overall conventions of the research literature (Hair *et al* 2006, Tabachnick & Fidell 2007, Coakes, Steed & Price 2008). Deviation from normality means that statistical analysis of the data would be non-parametric in nature (Hair *et al* 2006, Field 2005). However, the statistical analyses carried out on the data were relatively robust to non-normality, including factor analysis (Hair *et al* 2006, Coakes, Steed & Price 2008). Indeed, the more important consideration in factor analysis is that some underlying structure does exist in the set of selected variables. Further, the EQS program used for the structural equation modeling later in this section has robust methods for analysis of non-normally distributed data.

5.3   Non Response Bias

The relatively low response rate indicates many business owners chose not to respond to the survey. This raises the question of whether this sample is significant enough to represent small and medium-sized enterprises in Western Australia and the possibility that the entire sample of small and medium-sized enterprises would have responded differently (Bryman & Bell 2003, Armstrong & Overton 1977). One way to examine the possibility of non-response bias is to compare early survey respondents to the late respondents. This is based on the assumption that persons responding later are more similar to non-respondents (Armstrong & Overton 1977, Lambert & Harrington 1990). An independent samples t-test was carried out to compare the means of early respondents (58.5% of sample) and late respondents (41.5%) on two demographic variables, firm size by number of employees and the number of years the owner had the business. The results of the analysis are shown in table 5.1.

Table 5.1   Independent Samples T-Test for Non Response Bias

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	*t*	df	Sig (2-tailed)	Mean Difference	Std. Error Difference
Total number of employees	Equal variances assumed	.017	.898	.717	289	.474	1.278	1.782
	Equal variances not assumed			.711	246.217	.478	1.278	1.797
Number of years in business	Equal variances assumed	2.427	.120	-.250	292	.803	-.56308	2.25153
	Equal variances not assumed			-.233	190.080	.816	-.56308	2.41941

The results indicated there were no significant differences between the early and late respondents for the total number of employees, t(289) = .717, p>0.05, and the number of years the owner had been in the business, t(292), .250, p>0.05.

5.4   Common Method Bias

The primary respondent for this study was the small and medium-sized enterprise owner, a popular level of reporting and accepted measure of data collection, particularly in the field of entrepreneurship (Chandler & Lyon 2001). However, one significant drawback with this approach is the possibility of common method bias, or variance, which arises when dependent and independent variable data are collected from a single informant (Lane, Salk & Lyles 2001, p. 1150, Podsakoff & Organ 1986). To test for common method bias variance, a factor analytic technique, Harman's single factor test, was used to examine the extent of bias in the data (Lane, Salk & Lyles 2001, Podsakoff & Organ 1986). This method assumes that if common variance were present, one general factor would account for the majority of covariance in the variables used (Podsakoff & Organ 1986, Yli-Renko, Autio & Sapienza 2001). The principal components factor analysis, discussed later, revealed a multiple factor structure. The presence of several distinct factors and the relatively low variance explained by the first factor (11.97%) showed the data did not suffer

from common method variance (Lane, Salk & Lyles 2001, Podsakoff & Organ 1986).

5.5 Sample Profile

Some descriptive statistics for a range of variables will be looked at to examine the data set more closely. The variables that will be examined include size of the business in terms of the number of full-time employees, the number of years the owner had been in the business, the sales turnover of firms in the study and a breakdown of the ANZSIC industry sectors represented in the study.

5.5.1 Number of Fulltime Employees

The mean number of full-time employees in the businesses surveyed in the study was 8.11, with a standard deviation of 14.95, ranging from a minimum of zero employees to 130 full-time staff. Table 5.2 provides a breakdown of the number of fulltime staff working in the businesses responding to the survey. There were no missing cases from the data on number of full-time employees.

Table 5.2   Number of Fulltime Employees Working in Respondent Firms

	Number of Fulltime Employees	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	106	36.1	36.1	36.1
	1-4	77	26.2	26.2	62.3
	5 – 19	73	24.8	24.8	87.1
	20-50	26	8.8	8.8	95.9
	51-199	12	4.4	4.1	100
	Total	294	100	100	
Missing		0	0		
Total		294	100		

The majority of businesses surveyed in this study did not have any employees, with the owner being the only person working in the business. This group represented 36% of the total respondents. Businesses with 1-4 employees made up the next largest segment of businesses represented in the study at 26.2%. These two business forms make up the micro-business segment of small businesses, i.e. firms with less than 5 employees and they also made up 62.3% of all respondents completing part 2

of the WASBB questionnaire. The next largest segment was the 5-19 employee group accounting for a further 73 businesses (24.8%) in the study. In the medium business segment, there were 26 firms representing 20-50 employees and, finally, only 12 firms had more than 50 full-time employees.

5.5.2   Years in Business

The number of years the owners had been in their business was also measured. The mean of business ownership years was 15.57 with a standard deviation of 14.94. The lowest amount of years the business had been owned was 2 years, which met the minimum requirement of 12 months ownership for the study. The highest number of years of ownership was 102. Clearly, the 102 years of ownership reflects a business that had been established 102 years ago and not the number of years the owner actually had the firm! The distribution of years of business ownership is provided in table 5.3.

Table 5.3   Number of Years of Business Ownership

	Years in Business	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2-5	75	25.6	25.8	25.8
	6-10	56	19.0	19.2	45.0
	11-15	55	18.7	18.9	63.9
	16-20	28	9.5	9.6	73.5
	21-25	27	9.2	9.3	82.8
	26-30	17	5.8	5.8	88.6
	31-35	14	4.8	4.8	93.4
	36-50	11	3.7	3.8	97.2
	>50	8	2.7	2.8	100
	Total	291	100	100	
Missing	System	3			
Total		294			

Over 25% of business owners had been in their business for 2 to 5 years and a further 19% had been in business for 6-10 years. Businesses with over 50 years ownership might be family-based businesses passed on from one generation to another. Three cases were missing for the years in business data.

5.5.3 Sales Turnover

There was a wide range of sales turnover reported by survey respondents. The lowest reported annual sales turnover figure was $1000 and the maximum was $45 million. Mean turnover was $3.02 million with a standard deviation of $5.98 million. Over 56% of businesses reported a turnover of $1 million per year or less while 38 businesses (15.1%) reported earnings of over $5 million per year. The distribution of sales turnover is indicated in table 5.4.

Table 5.4   Annual Sales Turnover

	Sales Turnover	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than $200,00	51	17.3	20.3	20.3
	$200,000 - $1M	90	30.6	35.9	56.2
	$1M to $5M	72	24.5	28.7	84.9
	Over $5M	38	12.9	15.1	100
	Total	251	100	100	
Missing	System	43			
Total		294			

The number of missing cases for sales turnover data was 43, indicating the sensitive nature of this information and the reluctance of many business owners to reveal financial details of their business.

5.5.4   Industry Sector Representation

Survey respondents were grouped into their respective ANZSIC industry sectors (2006) based on the description of their business activities. The main divisions represented in the survey were professional, scientific and technical services (69 firms accounting for 23.5% of samples); other services (33 firms, 11.2%); construction (28 firms, 9.5%); manufacturing (26 firms, 8.8%); and retail trade (25 firms, 8.5%). Other services represent businesses that offer services such as repair and maintenance, personal care services and civic and religious services (ABS 2006). Table 5.5 provides the breakdown of industry division representation.

The study was a cross-section of WA businesses and at least one business represented each of the different ANZSIC industry sectors. This demonstrated the

broad range of businesses that responded to the survey. There were 12 businesses that could not be categorised into an industry grouping for lack of description of business activity. Businesses also represented different geographical regions of Western Australia.

Table 5.5   Industry Sector Representation

	Industry Sector	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A. Agriculture, Forestry & Fishing	10	3.4	3.4	3.4
	B. Mining	4	1.4	1.4	4.8
	C. Manufacturing	26	8.8	8.8	13.6
	D. Electricity, gas, water & waste services	3	1.0	1.0	14.6
	E. Construction	28	9.5	9.5	24.1
	F. Wholesale trade	11	3.7	3.7	27.8
	G. Retail trade	25	8.5	8.5	36.3
	H. Accommodation & food services	6	2.0	2.0	38.3
	I. Transport, postal and warehousing	5	1.7	1.7	40.0
	J. Information, media & telecommunications	12	4.1	4.1	44.1
	K. Financial and insurance services	5	1.7	1.7	45.8
	L. Rental, hiring & real estate	11	3.7	3.7	49.5
	M. Professional, scientific & technical services	69	23.5	23.5	73.0
	N. Administrative and support services	9	3.1	3.1	76.1
	O. Public administration and safety	1	.3	.3	76.4
	P. Education & training	7	2.4	2.4	78.8
	Q. Health care and social assistance	10	3.4	3.4	82.2
	R. Arts & recreation services	7	2.4	2.4	84.7
	S. Other services	33	11.2	11.2	95.9
	Other	12	4.1	4.1	100
	Total	294	100	100	
Missing	System	0			
Total		294			

5.6   Evaluation of Constructs

The following section discusses the exploratory factor analysis of the items and constructs used for this study. The aims of the analysis are to confirm items actually load on the factors for which they were intended as determined by prior research. Such analysis helps confirm convergent and discriminant validity. Convergent validity is found when items thought to reflect a construct converge or are correlated compared to the convergence of items relevant to other constructs (Straub, Boudreau

& Gefen 2004, Hair *et al* 2006). This can be demonstrated by tabulating the results of the correlation matrix. Discriminant validity is achieved when measurement items expected to reflect a construct differ from those not believed to make up the construct (Straub, Boudreau & Gefen 2004). This can also be shown through the tabulation of the correlation of items determined through a factor analysis and will be discussed later in this section. Essentially, convergent and discriminant validity are associated with construct validity which is an issue of measurement between constructs. An additional assessment is reliability, which is an issue of measurement within the construct (Straub, Boudreau & Gefen 2004). In this case, reliability is associated with how well the items that make up a construct correspond with each other and how consistently they measure the same construct (Hair *et al* 2006, Straub, Boudreau & Gefen 2004). An assessment of the reliability or internal consistency of the items within the constructs was determined through a Cronbach's alpha analysis. Measurement of scale reliability is determined through the Cronbach's alpha of the scale where, typically, an alpha of .7 is considered the minimum acceptable standard for demonstrating internal consistency (Hinkin 1995). However, scores of .6 are also acceptable, particularly if the research in question is exploratory in nature (Straub, Boudreau & Gefen 2004).

Verifying the loading of items on specific factors is regarded as a more confirmatory approach (Tabachnick & Fidell 2007, Hair *et al* 2006, Byrne 2006, Fabrigar *et al* 1999). Given that a confirmatory factor analysis will be conducted on the data in the next section, one may ask why conduct an exploratory factor analysis in the first place? Since the development of the constructs was theory driven and scales from previous studies were used wherever possible, there is an expectation that the items would load on certain factors. The general *a priori* nature of the constructs used would suggest a confirmatory factor analysis would be an appropriate process to undertake to examine the validity of the constructs (Hair *et al* 2006, Tabachnick & Fidell 2007). Why then, the need for exploratory factor analysis? The two-step approach of first conducting an exploratory factor analysis followed by a confirmatory factor analysis certainly has its critics (Costello & Osborne 2005, Chin 1998, Segars & Grover 1993). For instance, Chin (1998) is critical of researchers that filter items through an initial set of exploratory factor analyses before running the remaining items through a confirmatory factor analysis. Chin (1998) argued that

acceptable goodness of fit measures during the subsequent CFA stage simply indicated the researcher was good at deleting items during the exploratory stage.

Chin (1998) did not specify if this was particularly the case when the two-step approach was applied on the same data set or subsamples of the data set. It is certainly considered inappropriate to conduct an exploratory analysis on a data set and then a confirmatory factor analysis (CFA) on the same data since this is regarded as fitting the data (De Coster 1998, Hurley *et al* 1997). A more acceptable approach is to analyse a subsample for exploratory work and then carry out the confirmatory work on the rest of the data set (Hurley *et al* 1997; De Coster 1998; Fabrigar *et al* 1999). Bentler and Chou (1987) seemed to favour this approach. They argued that determining the factor structure using structural modeling was a difficult and "unattractive" procedure especially since it frequently led to "data snooping," leaving a question mark on the quality of the final results (Bentler & Chou 1987). They suggested the basic factor structure of the data should be based on exploratory factor analyses on similar data bases (Bentler & Chou 1987). Many of the items and scales were drawn from previous research studies, the contexts of which were different to those of this particular doctoral study. Consequently, the wording of the items from previous research was modified to adapt to this particular study. Further, some new scales and items were also developed for the study. There were many items used for the study (68) and it was not certain the items would load on specific constructs or what the cross-loadings on other factors would be like. These uncertainties warranted an initial approach that was more exploratory in nature.

This approach has also been adopted by other researchers. Sweeney and Soutar (2001) for instance conducted an exploratory analysis and item reduction before a confirmatory factor analysis when investigating the dimensionality of a multiple item marketing scale. Similarly, Havold and Nesset (2009) conducted an exploratory factor analysis on a subset of the sample collected and used this as the calibration sample while the other subset was used with confirmatory factor analysis as the validation sample. Similar approaches in which exploratory factor analyses were conducted on a subsample of the data set and confirmatory factor analyses on the remaining, sample were evident in other management, marketing and psychological studies (Aaker 1997, Anthony, Lonigan & Hecht 1999, Cheng & Shiu 2008).

A confirmatory factor analysis (CFA) requires a larger sample size than an exploratory factor analysis since the CFA produces inferential statistics. Approximately 200 subjects would be sufficient for a standard model CFA (De Coster 1998, Hinkin 1995). Kline (2005) and De Coster (1998) consider a sample of 200 to be medium sized and sample sizes over 200 cases are considered large. Similar sample sizes are supported by Byrne (2006) and Hair et al (2006). Therefore, the data set of 294 respondents was sub-sampled to consist of 94 respondents for the exploratory work and the remaining data set of the 200 respondents was left for confirmatory work. To ensure the subsample was representative of the remaining data set, an independent t-test of the two groups was conducted on the two demographic variables of firm size by number of employees and the number of years the owner had the business. The results, presented in table 5.6, indicated no significant differences between the respondents in the subsample of 94 cases and the remaining 200 cases t(289) = 1.043, p>0.05, and the number of years the owner had been in the business, t(292), 1.005, p>0.05. The subsample therefore is considered representative of the larger 200 sample set.

Table 5.6   Independent Samples T-Test for Comparison of 94 Case Subsample and Main Sample

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig (2-tailed)	Mean Difference	Std. Error Difference
Total number of employees	Equal variances assumed	.093	.761	-1.043	289	.298	-1.959	1.877
	Equal variances not assumed			-1.005	164.453	.316	-1.959	1.949
Number of years in business	Equal variances assumed	.022	.882	-.192	292	.847	-.45734	2.37593
	Equal variances not assumed			-.179	154.237	.858	-.45734	2.54818

5.6.1   Principal Components Analysis

To verify the loading of variables and items on certain factors and the intercorrelations of items within constructs, principal components analysis was used. Principal components analysis is a psychometrically sound procedure, less complex than factor analysis and, generally, solutions generated from principal components analysis differ little from those derived from factor analytic techniques (Field 2005). The principal components analysis on the 62 items of interest was conducted using orthogonal varimax rotation, one of the most frequently reported factor analytic methods in management literature (Hinkin 1995, Veloutsou 2007). Orthogonal rotation produces a loading matrix of correlations between observed variables and factors where the size of the loadings measures the extent of the relationship between each observed variable and each factor (Tabachnick & Fidell 2007, p. 639).

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (MSA) was used to determine the appropriateness of the matrix for factor analysis (Coakes, Steed & Price 2008, Veloutsou 2007). KMO scores close to 1 indicate patterns of correlations are relatively compact and so factor analysis should yield distinguishable factors (Field 2005, p. 460; Veloutsou 2007). However, the KMO measure of sampling adequacy is sensitive to sample size and the relatively small subsample of 94 cases is therefore likely to impact on the MSA of the correlation matrix. It was mentioned earlier that the sub-sample was representative of the remaining 200 samples to be used in confirmatory factor analysis. However, a subsample of 94 cases is not the most ideal situation for factor analysis; a larger sample of at least 300 is regarded as more appropriate (Tabachnick & Fidell 2007). However, Field (2005) argued that the magnitude of factor loadings and communalities are more important considerations to that of the sample size. Accordingly, the factor loading of items and the communality of the variable were examined to ensure variables were accounted for by the factor solution (Hair *et al* 2006, Tabachnick & Fidell 2007).

Typically, in a correlation matrix, researchers take a factor loading of more than 0.3 as the minimum standard considered significant (Field 2005; Veloutsou 2007). However, factor loadings should be greater than .51 for an approximate sample size of 100 (Field 2005). For the purpose of the study, minimum factor loadings were set at .51 as this was deemed the most appropriate given the sample size used for the

exploratory work (n=94). Where variables produced significant cross loadings with two or more factors, consideration was given to the deletion of the variable from the correlation matrix or the numbers of factors were altered to determine if a larger or smaller factor structure could represent the problematic variables (Hair *et al* 2006). The significance of the factor to the correlation matrix was determined by analysing the eigenvalue associated with the factor.   Eigenvalues greater than one are considered significant (Hair *et al* 2006).

The initial sample factor analysis of the 62 items and the proposed original factor structure revealed a low KMO measure of sampling adequacy of .474. This did not meet Field's (2005) and Hair *et al*'s (2006) bare minimum of .5 measure of sampling adequacy (MSA). According to Field (2005), if there is considerable diffusion in the patterns of correlations, the MSA will be below .5 and closer to 0 and in these circumstances, factor analysis is inappropriate. As indicated earlier, MSA is affected by sample size where the higher the sample size, the higher the MSA. Since the exploratory work was carried out on a subsample of 94 cases, this could be one of the reasons for the low MSA. Cross loadings are also likely to affect MSA since this would contribute to diffusion of correlations. Another check to address low MSA includes reviewing the KMO value of each of the variables in the correlation matrix (this is viewed on the diagonal of the anti-image correlation matrix) (Field 2005). Where variables had values below .5, Field (2005) recommends exclusion from further analysis. One final check to ensure factor analysis was appropriate was to review the communality associated with a variable. A variable's communality represents the variance accounted for by the factor solution for each variable (Hair *et al* 2006, p. 130). Variables with communalities below .5 were removed from further analysis since this is considered the minimum for sample sizes around 100 (Field 2005). Where the value fell below .5, this meant less than half of the item's variance could be accounted for (Hair *et al* 2006).

The review of item factor loadings and the individual variable KMO and communality values resulted in a final set of 38 variables (from the original 62 item set) that loaded on 10 different factors with eigenvalues above one. The resultant MSA for the ensuing factor structure was .702 which was deemed appropriate for factor analysis (Field 2005) and accounted for 74.3% of variance in the sample. The

factor loadings of the remaining variables and their respective dependent and independent constructs in the study are presented in table 5.7.

Unfortunately, some of the original constructs and factors posited to reflect relationship strength and arm's-length linkages as well as factors thought to impact on knowledge acquisition, such as signalling legitimacy and dimensions of absorptive capacity were casualties of the review process. Possible reasons why these factors and variables needed omission from the study include: not clearly defining the concepts to the respondent; the small subsample size used for the initial exploratory analysis; and the varied, heterogeneous nature of the businesses operated by the survey respondents. Hinkin (1995) highlighted that even with well thought-out item development, authors of research studies often found, through subsequent analysis or factor analytical techniques, that items were not perceived by respondents to tap into predicted constructs. Nevertheless, this is a shortfall of the study and will be discussed later in the limitations section.

Table 5.7 Factor Loading of Items

	Item #	Mean	Standard Deviation	Loading	Item to Total Correlation
Independent Constructs					
Absorptive capacity construct	Q138	5.67	1.070	.859	.806
	Q139	5.25	1.217	.854	.796
	Q142	5.32	1.203	.843	.788
	Q143	5.60	1.158	.839	.794
	Q141	5.65	1.171	.830	.788
	Q140	5.32	1.342	.681	.643
Exchange partner similarity construct	Q148	4.82	1.383	.814	.630
	Q147	5.06	1.105	.747	.714
	Q150	5.33	1.186	.745	.659
	Q149	5.47	1.104	.654	.564
	Q146	4.83	1.188	.614	.514
Growth emphasis construct	Q98	2.39	1.540	.891	.760
	Q100	2.38	1.459	.810	.647
	Q99	2.67	1.520	.764	.596
Relationship initiation construct	Q119	5.62	1.245	.849	.637
	Q120	5.72	1.248	.822	.755
	Q118	5.21	1.367	.524	.455
Reputation signalling construct	Q122	3.92	2.050	.853	.664
	Q123	4.04	2.053	.778	.562
	Q121	4.01	1.902	.765	.582
Growth willingness construct	Q93	3.75	2.020	.860	.676
	Q97	4.25	1.816	.761	.501
	Q95	2.62	1.972	.679	.481
Size of client firm construct	Q132	4.90	2.011	.889	.803
	Q133	4.41	2.006	.873	.803
Trust of client firm construct	Q110	4.60	1.386	.818	.545
	Q113	4.28	1.410	.772	.530
	Q114	3.80	1.478	.606	.432
Dependent Constructs					
Knowledge acquisition construct	Q106	4.07	1.696	.85	.787
	Q108	3.93	1.759	.799	.751
	Q105	4.26	1.670	.772	.685
	Q107	3.83	1.559	.736	.695
	Q104	3.83	1.615	.735	.686
	Q103	3.92	1.698	.644	.619
Knowledge outcomes construct	Q154	4.70	1.234	.788	.728
	Q153	4.53	1.170	.786	.775
	Q152	4.11	1.477	.781	.717
	Q151	4.57	1.372	.737	.728

The results of table 5.7 show the loadings of the different variables onto their respective independent and dependent constructs. All loadings are over the minimum .51 level needed for this subsample size. It was stated earlier that convergent validity is found when items thought to reflect a construct converge or are correlated compared to the convergence of items relevant to other constructs (Straub, Boudreau & Gefen 2004, Hair *et al* 2006). The loading weights of the different items to their respective constructs, all above .51, provided support for convergent validity. Additionally, the item to total correlations all revealed scores well above .3. Items that score below .3 do not correlate well with the scale overall (Field 2005) so it is encouraging that all variables were above the .3 mark.

The other measure of validity looked at in this study is discriminant validity. Again, it was mentioned earlier that discriminant validity is achieved when measurement items expected to reflect a construct differ from those not believed to make up the construct (Straub, Boudreau & Gefen 2004). In other words, measurement items expected to reflect a construct should have higher loadings on their corresponding factor compared to their cross-loadings on other factors. Table 5.8 shows the loadings and cross-loadings of all items on the different constructs. All items were found to have higher loadings on their corresponding factor than their cross-loadings on other factors, therefore providing evidence for discriminant validity. One of the items, Q95, one of the items relating to the growth willingness construct, loaded .679 on its intended factor but also loaded .454 on the growth emphasis scale. This was deemed acceptable as items with a factor loading of at least .65 that do not cross-load on another factor above .5 are perceived as components of one factor (Veloutsou 2007). Since Q95 did not breach this requirement, it was considered a component of the growth willingness construct. Similarly, Q149 loaded .654 on its intended factor, exchange partner similarity, but also loaded .482 on relationship initiation. It is not sure why the item loaded on relationship initiation when the concepts are distinct from each other. However, the item's loading still exceeded the .65 threshold on one factor and its cross-loading was below .5 on the other, so it was regarded as a component of the exchange partner similarity factor.

Table 5.8   Correlation Matrix of Variables

Item #	AC	KA	KO	PS	GE	RI	RS	GW	SZ	TS
Q138	**.859**	.093	.000	.124	-.066	.080	.002	-.016	-.116	.015
Q139	**.854**	.055	.031	.004	-.133	.154	.088	.027	.149	-.047
Q142	**.843**	.062	.123	.060	-.057	.087	-.015	.016	-.129	.025
Q143	**.839**	-.083	.125	.150	-.147	-.054	.044	-.056	.043	.062
Q141	**.830**	.083	.206	.062	-.048	-.055	.074	-.178	.096	.122
Q140	**.681**	.167	.231	-.025	-.138	.038	-.216	.051	-.061	.001
Q106	.007	**.851**	.150	-.052	.058	.198	.010	.001	.016	.093
Q108	.254	**.799**	.213	.077	.089	-.067	.122	-.145	.102	.037
Q105	.119	**.772**	.086	.054	-.018	.199	.037	.010	-.143	.036
Q107	.069	**.736**	.283	.014	.018	-.125	.073	-.030	.156	.138
Q104	-.165	**.735**	.204	.094	-.163	.160	.092	.106	.016	.077
Q103	.156	**.644**	.039	.204	-.059	-.034	.107	.211	.262	.219
Q154	.185	.259	**.788**	.143	.001	.047	.003	.036	-.066	.059
Q153	.213	.243	**.786**	.193	.079	.124	.071	-.035	.026	-.078
Q152	.074	.203	**.781**	.066	.117	.010	-.072	.067	.141	-.031
Q151	.179	.174	**.737**	.0287	-.075	.067	.028	.076	.123	.077
Q148	-.009	.028	.089	**.814**	-.113	-.025	.161	.089	.022	-.028
Q147	.141	.244	.259	**.747**	.081	.091	-.100	.001	.080	.052
Q150	.132	-.045	.123	**.745**	.045	.209	.075	-.025	.233	.066
Q149	.054	.120	.009	**.654**	-.080	.482	-.142	-.042	.127	-.106
Q146	.157	.022	.340	**.614**	-.124	-.083	.134	.026	-.254	.254
Q98	-.153	-.051	.121	-.073	**.891**	-.006	-.037	.028	.078	-.025
Q100	-1.24	-.003	.027	-.101	**.810**	.035	.018	.105	.034	-.033
Q99	-1.66	.040	-.051	.090	**.764**	-.238	-.073	-.203	-.014	-.013
Q119	.039	.149	-.013	.168	.015	**.849**	-.069	-.033	.107	.072
Q120	.102	.106	.126	.181	-.096	**.822**	.049	-.046	.118	.253
Q118	.190	.026	.365	-.089	-.217	**.524**	.152	.193	.151	.187
Q122	-.086	.12	.020	.140	.041	.017	**.853**	-.051	-.001	.049
Q123	.097	-.023	.086	.087	-.085	-.111	**.778**	.143	.066	.172
Q121	.004	.172	-.085	-.100	-.051	.102	**.765**	.229	-.107	-.063
Q93	-.007	-.045	.035	.063	-.043	.017	.128	**.860**	-.102	-.102
Q97	-.036	.154	.151	.022	-.103	-.045	.159	**.761**	.053	.069
Q95	-.169	.-076	-.096	-.043	.454	.015	-.039	**.679**	-.279	-.022
Q132	-.037	.057	.117	.109	-.031	.083	.032	-.100	**.889**	-.059
Q133	-.016	.136	.058	.102	.118	.208	-.075	-.079	**.873**	.050
Q110	.071	.139	-.007	.106	-.075	-.041	.184	.197	.202	**.818**
Q113	.099	.107	.126	.086	.075	.202	.072	-.105	-.112	**.772**
Q114	-.048	.244	-.093	-.074	-.092	.224	-.084	-.140	-.084	**.606**

Abbreviation Key of Constructs		
Independent constructs	AC = Absorptive capacity	RS = Reputation signalling
	PS = Exchange Partner Similarity	GW = Growth willingness
	GE = Growth emphasis	SZ = Size of client firm
	RI = Relationship initiation	TS = Trust of client firm
Dependent constructs	KA = Knowledge acquisition	KO = Knowledge outcomes

5.6.2 Constructs and Reliability

Following the factor analysis and removal of items or variables that cross loaded with other factors or, indeed, did not load sufficiently (i.e. less than .51 in this study), an assessment of the reliability or internal consistency of the items within the factors was determined through a Cronbach's alpha analysis. Mentioned earlier, scale reliability is determined through the Cronbach's alpha of the scale where, an alpha of .7 is considered the minimum acceptable standard for demonstrating internal consistency (Hinkin 1995), but scores of .6 are acceptable, especially when the research in question is exploratory in nature (Straub, Boudreau & Gefen 2004). On the other hand, very high Cronbach alphas might also indicate a problem within the scale; items might be so closely worded that essentially they are asking the same thing (Field 2005). This may lead to the problem of multicollinearity. In this situation, intercorrelations among variables are so high (>.85) that mathematical operations are impossible or unstable (Kline 2005). Multicollinearity can be dealt in two ways, eliminate variables or combine redundant ones into a composite variable (Kline 2005). The following section will discuss the various constructs, their corresponding items, the variance the construct accounted for in the sample, the eigenvalue for the construct and the construct's Cronbach alpha.

5.6.2.1 Relationship Building Efforts Scale

The study theorized that efforts of the entrepreneurial business owner to build an arm's-length relationship could lead to knowledge acquisition from the arm's length client. Through the literature review and subsequent semi-structured interviews held with business owners of small and medium-sized entrepreneurial firms, four particular factors were identified as contributing to relationship building. One factor, relationship initiation (RI), included efforts to demonstrate goodwill to the arm's length-client. The construct was measured using a three-item factor derived from Larson's (1992) qualitative research on entrepreneurial network dyads. Even though the literature review found that, overall, the lack of trust was a feature of arm's-length relationships, it was also found that entrepreneurs tend to be more trusting than their other business counterparts (Goel & Karri 2006). For this reason, it was posited that the entrepreneur's trust of the arm's-length client could in fact contribute to knowledge acquisition. Trust was measured by five items adapted from Johnson,

Sohi and Grewal (2004), Zaheer, McEvily and Perrone (1998), Nielson (1998) and Wu (2008).

However, due to significant cross-loadings and KMO scores, two of the variables were deleted, leaving three items in the client trust construct (TS). Another factor considered as contributing to the small and medium-sized firm's relationship building efforts was its demonstration of legitimacy. It was posited that small and medium-sized firms that showed they were legitimate businesses were more likely to acquire knowledge from an arm's-length client. The items were developed for the study but drawn from qualitative research from Stuart (2000). However, this factor was problematic due to high intercorrelations of items within the scale. The items were collapsed into one overall item. However, since the item did not load significantly on any of the factors, it was removed from further analysis. Finally, a small and medium-sized firm's signalling of reputation to an arm's-length client was also proposed to contribute to knowledge acquisition from the arm's-length client. The items were adapted from Mishra (1998). One item, Q124 signalling reputation 4 ("to what extent do you display/publicize the names of prominent firms you conduct business with") failed to load above .51 and was removed from the scale.

All remaining variables had loadings above .51, the cut-off value selected because of the size of the subsample. Table 5.1 shows the results of the analysis together with the respective Cronbach alphas of the factors within the scale, the respective eigenvalues and the percentage of variance explained within the sample.

Table 5.9   Rotated Component Matrix for Relationship Building Efforts Scale

	Items	RI	2	3
Q119	We are responsive to last minute demands from our arm's-length clients	.849		
Q120	We make a point of going the extra distance with our arm's-length clients	.822		
Q118	We tend to initiate efforts to develop further the business relationship with our arm's-length clients	.524		
Q122	Signs which depict the training and qualifications of myself and my staff		.853	
Q123	My firm's membership in professional associations		.778	
Q121	Awards and recognition our firm has received for its service or products		.765	
Q110	My arm's length-clients can be relied upon to keep their promises			.812
Q113	My arm's-length clients are genuinely concerned that my business succeeds			.772
Q114	My arm's-length clients never act opportunistically			.606
	Eigenvalue	1.88	1.80	1.23
	% of variance explained	6.27	5.91	5.27
	Cronbach alpha	.772	.768	.689

All factors returned eigenvalues above 1 and gave Cronbach alphas ranging from .689 (TS) to .772 (RI). Interitem correlations did not exceed the .85 cut off point for possible multicollinearity (Kline 2005). The descriptive statistics for the factors within the scale are shown in table 5.10

Table 5.10   Descriptive Statistics for Relationship Building Efforts Scale

	Factor	Minimum	Maximum	Mean	Standard Deviation
1	Relationship initiation	2.67	7.00	5.51	1.067
2	Reputation signalling	1.00	7.00	3.99	2.74
3	Trust of client firm	1.00	7.00	4.22	1.25

The full range of responses (2.67 to 7.00) was not used for the relationship initiation factor. The relatively high mean of 5.51 confirms that SMEs are active at trying to develop goodwill and initiate relationships with their arm's-length clients. The standard deviation of 1.067 for the factor indicated a range of responses were received. The statistics for reputation signalling showed a full range of responses for

this particular construct (1.00 to 7.00) and the mean of 3.99 was slightly above the mid-point of 3.5. This would indicate that despite SMEs appearing to signal their reputation to their arm's length clients, they are not as active in this regard as they are in developing goodwill with their clients. The large standard deviation relative to the mean for the construct also indicates that there is a wide range in the level of signalling reputation activity in the firms within the sample. Finally, the trust construct for the relationship building efforts scale covered a full range of responses (1.00 to 7.00) and the mean was 4.22. Interestingly, this mean indicates, as posited, that small and medium-sized firms appear to be trusting of their arm's-length clients. The standard deviation for the trust construct of 1.05 also indicates some range of responses within the sample.

5.6.2.2 Knowledge Acquisition Scale

An original 8 item scale for knowledge acquisition was developed from various sources (Lyles & Salk 1996; Lane, Salk & Lyles 2001; Rindfleisch & Moorman 2001; Yli-Renko, Autio & Sapienza 2001). Two of the items developed from Yli-Renko, Autio and Sapienza (2001) were deleted when they did not load above .51. The remaining 6 item structure is shown in table 5.11.

Table 5.11   Rotated Component Matrix for the Knowledge Acquisition Scale

	Items	1
Q106	New ways to approach product development	.851
Q108	New operational processes	.799
Q105	New ideas for new products	.772
Q107	New managerial techniques	.736
Q104	New marketing expertise	.735
Q103	New technological expertise	.644
	Eigenvalue	3.95
	% of variance explained	10.6
	Cronbach alpha	.888

The inter-item correlations for the first factor were below the problematic threshold of .85 (Kline 2005). The seven-point Likert-scale used for the knowledge acquisition construct, anchored at one-strongly disagree and seven-strongly agree. The mean for the scale was above the mid-point at 3.97, suggesting businesses acquired some new

knowledge from their arm's-length clients and the standard deviation of the scale was 1.33 suggesting a range of responses was received.

5.6.2.3 Knowledge Outcomes Scale

The knowledge outcome scale was adapted from Nielson (1998) and Yli-Renko, Autio and Sapienza (2001). The four items within the scale accounted for 8.37% of the variance within the data and had an eigenvalue of 2.946. All items loaded well above .51. Table 5.12 summarises the findings of the analysis. The Cronbach alpha value for the scale was .875 indicating high internal consistency between items. No inter-item correlation exceeded .85.

The seven-point Likert scale used for the four item knowledge acquisition outcomes construct, anchored at one-strongly disagree and seven-strongly agree, had a mean of 4.48 which was well above the mid-point of 3.5 and suggested businesses tended to convert or exploit (Yli-Renko, Autio & Sapienza 2001) the knowledge they acquired from their arm's-length clients. The full range of responses was not used (range 1.75 to 7) and the standard deviation was 1.12 indicating variation in responses.

Table 5.12   Rotated Component Matrix for the Knowledge Outcomes Scale

	Items	1
Q154	My firm is more innovative as a result of the knowledge and information acquired through our arm's-length clients	.788
Q153	My firm is operating more efficiently as a result of knowledge and information acquired through our arm's-length clients	.786
Q152	My firm is operating in new markets through knowledge and information acquired from our arm's-length clients	.781
Q151	My firm has developed new products and/or services through knowledge and information acquired from our arm's length clients	.737
	Eigenvalue	2.946
	% of variance explained	8.371
	Cronbach alpha	.875

5.6.3   Moderating Items

The following section examines the principal components analysis of the constructs deemed to moderate the knowledge acquisition and knowledge outcomes relationship. Kline (2005) describes moderation as an interaction where the relation

of the "X" variable to the "Y" variable changes as a function of a third variable, "W". If the relationship of "X" to "Y" changes as a function of "W", then an interaction is indicated and "W" can be referred to as a moderating variable (Kline 2005). Moderating variables and their effects on the dependent variables will be looked at more carefully in the confirmatory factor analysis and the structural equation model later.

5.6.3.1 Knowledge Absorption Capability

A firm is unlikely to acquire knowledge and information and convert it to knowledge related outcomes such as new product development or more efficient operations, if it is not capable of understanding the knowledge and information in the first place. A firm's absorptive capacity or the ability to recognise valuable new information or knowledge and its assimilation and application for commercial gain (Cohen & Levinthal 1990), was posited to facilitate or moderate knowledge related outcomes derived from acquired knowledge. A firm's relatedness or similarity to other firms is also likely to contribute to knowledge related outcomes from the acquisition of new knowledge and information. It was argued in the literature review that a firm owner's industry knowledge contributes to knowledge related outcomes as it helps the owner recognise the value of new knowledge. Consequently, the owner is more likely to convert acquired knowledge to outcomes that benefit the firm (Lane & Lubatkin 1998). Further, firms sharing similar knowledge bases, goals and common norms (Tsai 2000, Cummings & Teng 2003) are also more likely to exchange knowledge with each other. The following scale utilised to measure knowledge absorption capability takes into account these concepts and is derived from two factors, absorptive capacity and exchange partner similarity.

The absorptive capacity factor used for this study was derived from Jansen, Van den Bosch and Volberda (2005) which contained items focusing on two overall dimensions, potential and realised absorptive capacity. Jansen, Van den Bosch and Volberda's (2005) absorptive capacity scale was in turn acquired from concepts developed by Zahra and George (2002), Szulanski's (1996) items on absorptive capacity, and Jaworski and Kohli's (1993) items on market orientation. Based on Zahra and George's (2002) definition of the different dimensions of absorptive capacity, Jansen, Van den Bosch and Volberda (2005) developed measures for

knowledge acquisition and knowledge assimilation as part of the potential absorptive capacity construct and knowledge transformation, and knowledge exploitation as part of the realised absorptive capacity construct. Since Jansen, Van den Bosch and Volberda's (2005) original 21-item scale contained items not relevant to this particular study and context, the 21-item scale was reduced to 12 items, which still covered the four underlying dimensions of interest. To clarify this, table 5.13 shows the items scales used in this thesis and their corresponding absorptive capacity dimension.

Unfortunately, of the original 12 items expected to load on the various dimensions of this scale, only 6 loaded appropriately and only on one factor. This is surprising since the items that made up the single factor scale belonged to three different dimensions of absorptive capacity on Jansen, Van den Bosch and Volberda's (2005) scale. One item, Q145, "client complaints fall on deaf ears" (reverse coded) did not load above the .51 threshold and was removed from further analysis. Similarly, Q137, "our firm is slow to recognise shifts in our competitive environment" (e.g. competition, regulation, demography) failed to load above .51 and was also removed.

Table 5.13   Modified Absorptive Capacity Scale From Jansen, Van den Bosch and Volberda (2005)

Absorptive Capacity Dimension	Item
Acquisition (potential)	▪ Our firm has frequent interactions with arm's-length clients to acquire new knowledge ▪ My firm collects industry information through informal means (e.g. lunch with arm's length clients; business functions) ▪ Our firm is always looking at ways to acquire knowledge from our arm's-length clients
Assimilation (potential)	▪ Our firm is slow to recognise shifts in our competitive environment (e.g. competition, regulation, demography – reverse coded) ▪ Our firm quickly understands new opportunities to serve our clients ▪ Our firm quickly analyses and interprets changing market demands
Transformation (realised)	▪ Our firm regularly considers the consequences of changing market demands in terms of new products and services ▪ Our firm quickly recognises the usefulness of new external knowledge to existing knowledge ▪ Our firm regularly considers what changes might be needed as a result of market trends and new product developments
Exploitation (realised)	▪ My firm constantly considers how to best use new knowledge ▪ Our firm frequently succeeds in getting new products and services to market ▪ Client complaints fall on deaf ears in our firm (reverse coded)

Both items might have been affected because they were reverse-coded items. Hinkin (1995), in his review of scale development practices in the study of organisations, found loadings for reverse-scored items were often lower than positively worded items that loaded on the same factor. Other researchers have had similar findings (Shah & Ward 2007, Flynn *et al* 1990). Other items cross-loaded with other factors and did not load significantly on their intended factor. The subsequent one factor solution explained 11.97% of the variance within the data.

The absorptive capacity factor accounted for 11.968% of variance within the sample, the most of any factor, and returned a Cronbach alpha of .917 with no significant change with item deletion. The result indicates high internal consistency of items with no inter-item correlations over .85. The factor contained elements of three of the absorptive capacity dimensions put forward by Zahra and George (2002) and

Jansen, Van den Bosch and Volberda (2005). The items represented assimilation considered as one of the dimensions of potential absorptive capacity as well as transformation and exploitation, which make up the dimension of realised absorptive capacity. Jansen, Van den Bosch and Volberda's (2005) research argued that the four-factor model that made up the two dimensions provided the best-fit statistics in their analysis.

However, the context of this doctoral research, which involves SMEs, is different to that of Jansen, Van den Bosch and Volberda's (2005) research, was conducted with the general managers of organisational units from a large, top 30 Fortune Global 500, European financial services firm. The difference in research contexts might explain the difference in the factor loadings. In addition, Jansen, Van den Bosch and Volberda's (2005) scale of 21 items contained questions that were not relevant to this particular doctoral study. For example, one of the items looked at the frequency of interaction between the organisational unit and corporate headquarters. Another item looked at the extent to which employees approached third parties, such as accountants and consultants (Jansen, Van den Bosch & Volberda 2005). Consequently, the removal of items that were deemed irrelevant to the doctoral study resulted in a scale of 12 items and this might explain the difference in factor loadings although the items used represented the dimensions of absorptive (Zahra & George 2002, Jansen, Van den Bosch & Volberda 2005). The resultant factor was called absorptive capacity.

Items that examined the SME's industry experience and the SME's/Client firm's common knowledge bases, norms and goals reflected concepts proposed by Lane and Lubatkin (1998) and Cummings and Teng (2003) considered to facilitate knowledge transfer between firms. The common knowledge bases, norms and goals between an SME and its client reflect similarity between the two firms and because of this, the construct was titled exchange partner similarity. The scale accounted for 7.93% of variance within the sample with an eigenvalue of 2.71. This factor returned a Cronbach alpha of 0.822 with no improvement to the alpha with item removal and again indicating high internal consistency. The resultant factor was called exchange partner similarity. Inter-item correlations were all below .85. Table 5.14 shows the results of the principal components analysis.

The 7-point disagree/agree Likert-scale for absorptive capacity had end-points where lower scores reflected low absorptive capacity and higher scores represented high absorptive capacity. Responses ranged from 1.67 to 7 and the factor had a relatively high mean of 5.53, indicating businesses considered themselves to have a high absorptive capacity in terms of assimilation, transformation and exploitation. The standard deviation of 1.005 shows some variation in responses.

Table 5.14 Rotated Component Matrix for the Knowledge Absorption Capability

	Items	1	2
Q138	Our firm quickly understands new opportunities to serve our clients	.859	
Q139	Our firm quickly analyses and interprets changing market demands	.854	
Q142	Our firm regularly considers what changes might be needed as a result of market trends and new product developments	.843	
Q143	My firm constantly considers how to best use knowledge	.839	
Q141	Our firm quickly recognises the usefulness of new external knowledge to existing knowledge	.830	
Q140	Our firm regularly considers the consequences of changing market demands in terms of new products and services	.681	
Q148	I find it easier to acquire knowledge and information from our arm's-length clients when we have similar knowledge bases (e.g. operate in the same industry, use similar technologies)		.814
Q147	I find it easier to acquire knowledge and information from our arm's-length clients when there has been a common language and understanding between us		.747
Q150	I find it easier to acquire knowledge and information from my arm's-length clients as a result of my qualifications and/or skill set		.745
Q149	I find it easier to acquire knowledge and information from our arm's-length clients as a result of my industry experience		.654
Q146	I find it easier to acquire knowledge from our arm's-length clients when our goals and objectives have been similar		.614
	Eigenvalue	7.964	2.705
	% of variance explained	11.968	7.933
	Cronbach alpha	.917	.822

The 5-item exchange partner similarity construct and associated 7-point strongly disagree/strongly agree scale, had a mean of 5.10, well above the mid-point of 3.5. The full range of responses was not used (range 2.6 to 7) and the standard deviation was .91, indicating some variation in responses. The descriptive statistics for the two-factor scale are shown in table 5.15.

Table 5.15 Descriptive Statistics for the Knowledge Absorption Capability Scale

	Factor	Minimum	Maximum	Mean	Standard Deviation
1	Absorptive capacity	1.67	7.00	5.53	1.005
2	Exchange partner similarity	2.60	7.00	5.10	.91

5.6.3.2 Business Growth Scale

The business owners' willingness to expand the firm was posited to be a moderating variable affecting the extent of knowledge related outcomes from knowledge acquired. Since the acquisition of knowledge can help achieve outcomes that help contribute to the growth of the firm (Barringer & Ireland 2006), this willingness to grow is likely to impact on the amount of knowledge related outcomes. The scale to measure willingness to grow was derived from Cassar (2007) and Liao, Welsch and Stoica (2003). The items measured two related concepts: the owner's willingness to grow the business as much as possible and the firm's emphasis on growth. The items were converted to Likert scale questions for the study and since they measured two related concepts, it was thought the items would load as one factor. However, two components with eigenvalues above the cut off point of one were returned, indicating two factors were associated with the business growth scale.

Two of the items failed to load above the cut off point of .51. These items were obtained from Cassar (2007). One of the questions, "I would prefer my business to provide a good living but with little risk of failure and little likelihood of making me a millionaire", was a reverse coded item that might have been confusing to respondents especially if some of the respondents were interested in becoming millionaires through their business but were trying to minimise their risk of failure. Since the question was reverse coded, this might have affected the item's loading on the factor (Hinkin 1995). Similarly, the other of Cassar's items, "I would prefer my business to be one that was much more likely to make me a millionaire, but had a much higher chance of going bankrupt" also did not load above .51. It is possible the word "bankrupt" was too strong and emotive since bankruptcy would likely impact on everything the entrepreneur owns. If rather than "bankrupt", the word was replaced with "failing", the owner might lose the business but not necessarily all of

his or her belongings and this might have provided a clearer question that would have loaded appropriately. Table 5.16 provides the rotated component matrix for willingness to grow.

Table 5.16   Rotated Component Matrix for Business Growth Scale

	Items	1	2
Q98	My firm emphasizes efficiency and smooth operations (recoded)	.891	
Q100	My firm emphasizes stability (recoded)	.810	
Q99	My firm emphasizes competitive actions and responses (recoded)	.764	
Q93	As far as the future size of my firm is concerned, I want the business to be as large as possible		.860
Q97	My firm emphasizes growth and acquiring new resources		.761
Q95	As far as the future size of my firm is concerned, I want a size I can manage myself or with a few key employees (recoded)		.679
	Eigenvalue	2.577	1.744
	% of variance explained	6.655	5.722
	Cronbach alpha	.814	.725

Factor 1 returned an eigenvalue of 2.577 and accounted for 6.65% of variance within the sample and a corresponding Cronbach alpha of .814. Item deletion had no significant impact on the factor's alpha. This shows high internal consistency of items with no inter-item correlation over .85. The items related to the growth emphasis of the firm. This factor was named growth emphasis. Factor 2 had an eigenvalue of 1.744 and accounted for 5.72% of variance within the sample. The Cronbach alpha for factor 2 was .725 with no improvement on the alpha score with item removal. These items corresponded with the owner's willingness to develop the firm to become as large as possible. This factor was named "willingness to grow". The descriptive statistics for the two factors within the scale are shown in Table 5.17.

Table 5.17   Descriptive Statistics for Business Growth Scale

	Factor	Minimum	Maximum	Mean	Standard Deviation
1	Growth emphasis	1.00	7.00	2.48	1.29
2	Willingness to grow	1.00	7.00	3.54	1.56

The descriptive statistics in table 5.17 for factor 1, growth emphasis, shows the mean score of 2.48 was substantially lower than the mid-point of 3.5. This would indicate that, overall, most of the respondents' firms did not emphasize growth although the standard deviation of 1.29 showed there were variations in the level in which firms emphasized growth. The mean response for factor 2, the willingness to grow, was 3.54 and not much greater than the Likert-scale midpoint of 3.5 indicating a slight preference to grow the business. The standard deviation of 1.56 demonstrated there was quite a range in the respondents' willingness to grow perhaps because they were interested in growing their business but not to be as large as possible. The results are rather disappointing since the actual questionnaire sought input from owner-managers of businesses intent on building larger businesses.

5.6.3.3 Size of Client Firm

It was posited that the size of the firm might have a moderating effect on the information a firm acquires from its client. Since larger firms are likely to have more experience and a greater knowledge base than the SME, it has more knowledge to pass on to the SME owner. Older firms are also likely to have a broader knowledge and experiential base to share with the SME. The measures of size and age of the client firm were developed for this study. However, the measure for firm age failed to load appropriately in the matrix and therefore was omitted for the study. The eigenvalue for the client firm factor was 1.438 and accounted for 5.65% of variance within the sample. Table 5.18 rotated component matrix for client firm size.

Table 5.18   Rotated Component Matrix for Size of Client Firm

	Items	1
Q132	The size of your arm's-length client firms compared to your firm in terms of employee numbers	.889
Q133	The size of your arm's-length client firms compared to your firm in terms of market share	.873
	Eigenvalue	1.438
	% of variance explained	5.65
	Cronbach alpha	.890

The Cronbach alpha for the scale was .890 indicating a high internal consistency and the inter-item loading did not exceed the .85 threshold prescribed by Kline (2005). The response range was 1.00 to 7.00 anchored at the end-points of generally smaller to generally much larger. The mean response for size of client firm was 4.657 and the standard deviation of 1.907. The mean is well above the mid-point of 3.5 indicating that most client firms were indeed larger in terms of employee numbers and market share.

A summary of the different constructs, their eigenvalue, the variance they accounted for in the sample, and corresponding Cronbach alpha is provided in table 5.19.

Table 5.19   Construct Details and Reliability Coefficients

Construct	Eigenvalue	Variance%	Alpha
Independent			
Absorptive capacity	7.964	11.968	.917
Exchange partner similarity	2.705	7.933	.822
Growth emphasis	2.577	6.655	.814
Relationship initiation	1.880	6.268	.772
Reputation signalling	1.801	5.910	.768
Growth willingness	1.744	5.722	.725
Size of client firm	1.438	5.651	.890
Trust of client firm	1.230	5.267	.689
Dependent			
Knowledge acquisition	3.949	10.554	.888
Knowledge outcomes	2.946	8.371	.875
Total variance		74.298%	

5.6.3.4 Conclusion

This section presented descriptive statistics and sample details of the respondents as well as exploratory factor analysis to examine the various constructs in this study. Unfortunately, some of the items and constructs originally posited for this study could not be used due to poor loadings, low individual variable KMO scores and/or low communalities. These are limitations of the study that will be discussed at a later section of this thesis. From the analyses, a model of 8 independent constructs and 2 dependent constructs will be reviewed in the confirmatory factor analysis in the following section. The constructs will be evaluated in the measurement model for possible inclusion in the structural equation model.

6.   RESULTS AND ANALYSIS - CONFIRMATORY FACTOR ANALYSIS AND THE MEASUREMENT MODEL

In the previous chapter, an exploratory analysis of the constructs used for the study found a 10-factor model consisting of 38 variables. In this section, confirmatory factor analyses of the various constructs are conducted to estimate the constructs and ensure they are valid for inclusion in the structural model developed in the next chapter. The analyses were conducted using Bentler's (2006) EQS structural equation modeling computer program version 6.1.

6.1   Structural Equation Modeling and Confirmatory Factor Analysis

The use of structural equation modeling (SEM) in business research has grown over the last 25 years (Rouse & Corbitt 2008, Shook *et al* 2004) and is regarded as the preeminent multivariate analytical technique (Hershberger 2003). SEM represents a class of tools for analysing the structure of theoretical (unobserved) constructs and for analysing the relationships between these constructs (Rouse & Corbitt 2008, p. 845). The particular SEM method used in this study is covariance-SEM and is the mainstream method for structural equation analysis and for confirmatory factor analysis (CFA) (Rouse & Corbitt 2008, Law & Wong 1999).

There are several benefits to using covariance-SEM not found in other multivariate analysis procedures. Firstly, covariance-SEM takes a confirmatory rather than an exploratory approach to data analysis and, since inter-variable relations are specified *a priori*, covariance-SEM allows analysis of data for inferential purposes (Byrne 2006). Many of the other multivariate procedures are descriptive in nature and therefore hypothesis testing is very difficult to carry out. Another advantage covariance-SEM enjoys over the traditional multivariate procedures is it provides explicit estimates of measurement error (Byrne 2006). By estimating and removing the measurement error, the reliability of the measurement can be explicitly accounted for (Tabachnick & Fidell 2007). In contrast, other methods assume error in the explanatory variables. Ignoring errors in the explanatory variables may lead to

serious inaccuracies which are made worse when the errors are sizeable (Byrne 2006).

Another advantage of covariance-SEM over other methods is that it accommodates multiple dependent variables even when a dependent variable becomes an independent variable in other relationships (Hair *et al* 2006). For instance, in this doctoral study, relationship-building efforts are hypothesized to lead to knowledge acquisition by the entrepreneurial firm. It is then hypothesized that this acquired knowledge would lead to knowledge related outcomes. Therefore, the dependent variable of knowledge acquisition becomes an independent variable in its relationship with knowledge related outcomes. Analysis with covariance-SEM involves a measurement model and a structural model. The measurement model analyses the link between scores on a measuring instrument (the observed indicator variables) and the underlying constructs they are designed to measure (the unobserved latent variables) and therefore represents the confirmatory factor analysis (CFA) model (Byrne 2006). The structural model defines the relationships among the unobserved variables. It specifies how particular latent variables directly or indirectly influence or cause changes in the values of other latent variables in the model (Byrne 2006). The subsequent translation of these relationships into a series of structural equations for each latent or dependent variable sets covariance-SEM apart from other statistical methods (Hair *et al* 2006).

The preceding discussion on SEM has focused on one particular method, covariance-SEM. This is because component-based SEM, such as partial least squares (PLS) regression, is also grouped as an SEM technique (Hsu, Chen & Hsieh 2006, McDonald 1996, Shook *et al* 2004). However, even though both methods are grouped under the same banner, the two methods are regarded as very different (Shook *et al* 2004, Rouse & Corbitt 2008). Therefore, the merits of selecting covariance-SEM over component-based SEM, specifically PLS, require a brief discussion including the differences between the two techniques.

The first obvious difference is that PLS treats factors, or rather components, as individual composite scores and it does not re-create the covariance between measured item scores (Hair *et al* 2006, Rouse & Corbitt 2008). Rouse and Corbitt

(2008) argue that PLS components are not the same as the latent variables (or factors) calculated in SEM or exploratory factor analysis. Components are essentially considered to be formative indicators that have no theoretical basis. The latent variables in SEM are "common factors" and not components. The common factors are calculated via an algebraic model that includes only the variance that is shared (or common) across all the measures which indicate the underlying construct (Rouse & Corbitt 2008, p. 848).

With covariance-SEM, one can perform confirmatory factor analysis where factors and factor structures are tested statistically. On the other hand, PLS does not create factors and therefore does not test "factor" numbers or loadings statistically (Rouse & Corbitt 2008). The statistical testing of the correspondence between the theoretical model and the sample covariances are possible with covariance-SEM with a resultant array of "goodness of fit" indicators (Rouse & Corbitt 2008). In the case of PLS, no overall model fit testing is possible and the only indicator of fit does not reveal whether the model fits the data well (Rouse & Corbitt 2008).

PLS does have its advantages in that it is robust and the method will provide a solution even when existing problems prevent a solution in covariance-SEM but the characteristics of PLS make it quite different in purpose from covariance-SEM (Hair *et al* 2006). Whereas covariance-SEM is more concerned with explanation and is more appropriate for theory testing, PLS can quickly explore a large number of variables to identify sets of variables that can predict some outcome variable (Hair *et al* 2006). The overall conclusion one can draw from this brief review is that covariance-SEM provides a more holistic approach to data analysis, enabling the researcher to test an entire model. As far as Hair *et al* (2006, p. 880) are concerned, "PLS does not provide as complete a test as does SEM". It is for this reason that covariance-SEM was selected over PLS in this doctoral study. From this point onwards, SEM refers to covariance-based SEM.

6.1.1   *Confirmatory Factor Analysis*

Since Byrne (2006) stated that the measurement model looks at the relations between the observed variables and the constructs they measure, the measurement model and the confirmatory factor analysis (CFA) are essentially the same thing. The previous

section, however, also examined observed variables to find out if they loaded on the different constructs proposed for the study. It seems a CFA is not very distinct to the exploratory work in the previous section and Anderson and Gerbing (1988) agree the distinction is not clear-cut. This needs to be clarified further.

The previous section examined the scales for factors and constructs used in this study through a principal components analysis. The analysis revealed a 10-factor structure of the 38 remaining items through the exploration of data of a sub-sample of 94 cases. Essentially, the exploratory factor analysis sought to find a model that fit the data (Schumacker & Lomax 2004) and had some theoretical support in relation to knowledge acquisition from arm's-length clients. By contrast, in confirmatory factor analysis, the statistical significance of the proposed model is tested to see whether the sample data confirms the model (Schumacker & Lomax 2004). Recall that in the previous chapter it was highlighted that many of the items and scales were drawn from previous research studies, the contexts of which were different to those of this particular doctoral study. The wording of the items from previous research was therefore modified to adapt to this particular study. New scales and items were also developed for the study and it was not clear how items would load on their intended construct and how they would cross-load on other factors. For these reasons, it was felt an exploratory factor analysis on a subsample of the data set prior to the confirmatory factor analysis was warranted.

The factor structure derived from the previous section was subjected to a CFA on the remaining sample of 200 cases before estimating the full latent variable structural model. It is common for researchers to take a two-stage approach, whereby a measurement model obtained through the confirmatory factor analysis is fitted separately before running the full structural model (Tharenou, Donohue & Cooper 2007). Indeed, Anderson and Gerbing (1988, p. 411) argue "there is much to gain in theory testing and the assessment of construct validity from separate estimation (and respecification) of the measurement model prior to the simultaneous estimation of measurement and structural sub-models".

The confirmatory factor analysis of the constructs and scales analysed in the previous section will be examined further in this section using Bentler's (2006) EQS structural

equation modelling program (version 6.1). Tabachnick and Fidell (2007, p.773) describe EQS as the most user-friendly of the SEM programs. EQS not only provides an equation method of model specification, the model can also be specified via a diagram function or with a windows "point and click method". A special feature of EQS is its estimation methods used on non-normal data and, in fact, EQS is the only SEM software program to impute non-normal data (Tabachnick & Fidell 2007). EQS is also the only program that offers the correct adjusted standard errors and Satorra-Bentler scaled chi squared for evaluating models. This constitutes the program of choice when data are non-normal (Tabachnick & Fidell 2007). Further, EQS is also the program of choice if model modifications are required (Tabachnick & Fidell 2007). There are other software programs available for Structural Equation Modelling, LISREL and AMOS among the better known ones, but the advantages of EQS over the other programs was the main reason it was chosen for this doctoral study.

6.1.2 Goodness of Fit Measures

Before proceeding further to the CFA of the various constructs, it is important to review the different fit indices that help evaluate the fit of the data to the model. This is one of the major advantages of using an SEM software program to analyse the measurement model. Ideally, a good model fit index is one that is independent of sample size, accurately reflects differences in fit, penalises the inclusion of additional parameters that render the model more complex and supports the choice of the true model (Schumacker & Lomax 2004). Unfortunately, no model fit criterion can actually meet all of these criteria (Schumacker & Lomax 2004).

The most basic fit statistic is the model chi-square (χ^2), where the closer the value of this fit is to zero (referred to as non-significant), the closer the model fits the data perfectly (Kline 2005). The χ^2 is actually a measure of the "badness of fit" because the higher the value, the worse the model corresponds with the data (Schumacker & Lomax 2004, Kline 2005). Unfortunately, the χ^2 statistic is sensitive to increases in sample size in which case the χ^2 statistic tends to indicate a significant probability and therefore a higher χ^2 value. Consequently, the model is rejected when in fact the model could hold true. Further, the evaluation of the significance of the χ^2 and whether or not it is small enough to be regarded as an adequate fit is subjective (Hu

and Bentler 1995, Kline 2005). As a guide, Hair *et al* (2006) advise a χ^2 to degrees of freedom ratio of 3:1 or less, is associated with better fitting models except when samples are very large (e.g. over 750). A stricter minimum 2:1 relationship is advocated by Hu and Bentler (1995) and Nasser and Wisenbaker (2003).

The problems with the χ^2 statistic have led to the development of other fit indices (Hu & Bentler 1995). The proliferation of these measures, however, caused some degree of confusion and it can be difficult for a researcher to decide which particular indices and associated values to report (Kaplan 2009, Kline 2005). Kline (2005) provides a minimal set of indices that should be reported and interpreted in addition to the χ^2 statistic when presenting the results of SEM analysis. This minimal set is also supported by Byrne (2006). These measures include:

1) The Steiger-Lind root mean square error of approximation (RMSEA) with its 90% confidence interval. Kline (2005) explains the RMSEA measures the error of approximation which looks at the lack of fit of a proposed model to the population covariance matrix. The RMSEA also measures the error of estimation which is the difference between the fit of model to the sample covariance matrix and to the population covariance matrix (Kline 2005). Measures of .1 or below are deemed as acceptable (Hair *et al* 2006), however Byrne (2006) advises a score below .05 is ideal but values to .08 are regarded as reasonable errors of approximation (Kaplan 2009). The RMSEA index is one of the most informative in structural equation modeling and it is sensitive to the complexity of the model (Byrne 2006). In other words, if there were two models with similar overall explanatory power for the same data, the simpler model would be favoured (Kline 2005). The 90% interval around the RMSEA is also provided by SEM computer programs to demonstrate the uncertainty associated with the RMSEA value. A narrow confidence interval would reflect model fit in the population (Byrne 2006, Kline 2005);

2) The Bentler comparative fit index (CFI) where scores of .9 or higher are deemed as acceptable. The CFI is among the most widely used indices (Hair *et al* 2006). Byrne (2006) suggests a CFI or .95 or higher as a better measure of model fit. The CFI assesses the relative improvement in the fit of a

proposed model compared with a baseline model or independence model which assumes no population covariances among the observed variables (Kline 2005); and

3) The standardised root mean square residual (SRMR). The SRMR measures the average of the standardised residuals between the observed and the model implied covariance matrices (Chen 2007). In other words, the SRMR represents the average discrepancy between the observed sample and the hypothesized correlation matrices (Byrne 2006). Values of SRMR below .1 are regarded as favourable (Kline 2005), although Byrne (2006) suggests .05 or less is more appropriate for a well fitting model.

The indices discussed above will be used for this doctoral thesis. Other common indices include the normed fit index, or NFI which, as in the case of the CFI, is derived from comparing the hypothesized model and the independence model (Byrne 2006). Again, values should ideally be .95 and above. Since this index assesses how well a proposed model fits compared to an alternative baseline model, it is an incremental fit index. The incremental fit is achieved through the respecification of the model, an issue that will be discussed shortly. The CFI is another example of an incremental fit index (Hair *et al* 2006, Nasser & Wisenbaker 2003). The non-normed fit index or NNFI is a variant of the NFI that accounts for model complexity (Byrne 2006). The NNFI is also an incremental fit index, again the value of which should ideally equal .95 and above.

Another group of indices is the absolute fit indices. These include the goodness-of-fit index (GFI) and the adjusted goodness –of-fit index. The GFI is a measure of the relative amount of variances and covariances jointly accounted for by the hypothesized model (Jöreskog & Sörbom 1982). The AGFI differs from the GFI in that it accounts for differing degrees of model complexity, penalising the more complex models and favouring those with a minimum number of free paths (Hair *et al* 2006). Absolute fit indices are a direct measure of how well the researcher's hypothesized model reproduces the observed data and represent the most basic assessments of how well the researcher's theory fits the data (Hair *et al* 2006). The χ^2 statistic, RMSEA and SRMR are also examples of absolute fit indices. Nasser and

Wisenbaker (2003) recommend the use of indices from different families of measure of fit. The use of absolute fit indices and incremental fit indices meets this recommendation. However, Nasser and Wisenbaker (2003) also recommend researchers to report at least two incremental fit indices along absolute ones. Accordingly, the NNFI, because it accounts for model complexity, was also used as one of the model fit indices for this doctoral study.

While the indices discussed here are indicators of model fit, it is wrong to rely solely on these indices in determining how well a model fits the data (Byrne 2006, Kaplan 2009, Schumacker & Lomax 2004, Hu & Bentler 1995). Kline (2005) provides an excellent description of the limitations of all fit indices, highlighting that while fit indices might demonstrate good fit, they may not be theoretically meaningful. Further, Byrne (2006) argues fit indices do not guarantee that a model is useful. Therefore, when assessing the adequacy of a model, the judgement rests on the researcher's shoulders and model adequacy should be based on multiple criteria that take into account theoretical, statistical and practical considerations (Byrne 2006).

Since fit indices should be treated with caution, given good fit does not guarantee a theoretically meaningful or useful model, other indicators should also be considered when evaluating a hypothesized model. Byrne (2006) advises one of the indicators that a model might not have good fit is a large residual value in the residual covariance matrix. The residual matrix contains elements that represent the discrepancy between the population covariance matrix implied by the hypothesized model and the sample covariance matrix. A parameter with a large residual value indicates its misspecification in the model (Byrne 2006). Therefore, a key step when assessing the EQS output file is to look for any large residual values in the covariance matrix. The EQS program highlights the 20 largest residuals and which pair of variables is involved.

Another part of the output to look at is the frequency distribution of the standardized residuals. A frequency distribution of the standardized residuals is presented in EQS where, ideally, the distribution should be symmetrical and centre near zero (Byrne 2006). The EQS program also presents the averages of the absolute standardized

residuals. Large values of standardized residuals indicate the variables are not well explained by the model (Bentler 2006).

6.1.3 Modification Indices

In EQS, tests can be carried out to determine if any possible model modifications could improve the goodness of fit indices. The Wald test, for instance, is used to identify parameters that could be deleted from the model. In other words, which parameters are not necessary in the model and therefore, if deleted, might improve model fit (Tabachnick & Fidell 2007, Schumacker & Lomax 2004). The Lagrange Multiplier test, on the other hand, determines if the model could be improved by adding parameters to the model (Tabachnick & Fidell 2007, Schumacker & Lomax 2004). Adding parameters to a model actually increases its complexity and is a deviation from model parsimony. Caution is needed when making changes to the model through confirmatory factor analysis by including suggested modifications.

When modifications are made, the approach is no longer considered confirmatory but exploratory in the sense that any model respecification and reestimation focuses on the detection of misfitting parameters in the originally hypothesized model (Byrne 2006, Tabachnick & Fidell 2007, Schumacker & Lomax 2004). In other words, when an initial theoretical model is rejected because of its poor fit to the sample data, the researcher proceeds in a more exploratory manner to modify and re-estimate the model (Byrne 2006). However, Byrne (2006) argues that researchers rarely terminate their research because of a poor fitting model and that the "strictly" confirmatory approach is not commonly found. Byrne (2006) noted that a cursory review of the empirical literature showed that researchers most commonly use the model generation approach and consequent reestimation.

Care must be taken when adding or removing a parameter from a hypothesized model suggested by one of the tests detecting model misspecification. For instance, Kaplan (2009) argues that when the Lagrange Multiplier test identifies a fixed parameter, the freeing of which would provide the largest improvement in model fit, the initial temptation is to proceed with this modification without regard to whether or not it makes sense. Byrne (2006), therefore, cautions that before the targeted

parameter is freed, the researcher must determine if the specified modification is meaningful.

6.1.4   CFA and Construct Validity

Specifying a model that fits the data well is only one part of the CFA process. A major advantage of CFA/SEM is also its ability to evaluate the convergent and discriminant validity of a construct and, therefore, its construct validity (Hair *et al* 2006). One important consideration for convergent validity is the size of the factor loadings where high loadings on a factor indicate some level of convergence. Typically standardized loading estimates should be at least .5 and ideally .7 or higher (Hair *et al* 2006). Another indicator of convergence is the average variance extracted (AVE) among a set of construct items (Hair *et al* 2006, Fornell & Larcker 1981, Farrell 2009). The AVE estimate is the average amount of variation that a latent construct is able to explain in the observed items to which it is related (Farrell 2009). The AVE estimate is calculated as the sum of all squared factor loadings (standardized) divided by the number of items related to the construct (Hair *et al* 2006).

Fornell and Larcker (1981) recommend the minimum AVE value should be .5 since anything less than this is due to measurement error larger than the variance captured by the construct. Under these circumstances, the validity of individual items and the associated construct is questionable (Fornell & Larcker 1981). From the preceding discussion, it is evident why item factor loadings should ideally be greater than .7 since this would be the minimal loading that, when squared, equals approximately 50% of variance explained by the construct. Hair *et al* (2006) highlight loadings that fall below .7 can still be considered significant but more of the variance in the measure is due to error variance. Despite the recommended AVE of .5, studies have reported constructs with AVE's below this threshold and included them for estimation in the structural model (e.g. Netermeyer *et al* 1997, Obermiller & Spangenberg 1998, Rivard & Huff 1988, Quaddus & Achjari 2005). Rivard and Huff (1988) indicate that an AVE below .5 can be acceptable in the early stages of research in a particular area.

Another indicator of convergent validity is reliability (Hair *et al* 2006). Byrne (2006) points out that while Cronbach's alpha is probably the best known index of internal consistency, it has a questionable application to latent variable models. This is due to the fact that Cronbach's alpha assumes each item is equally weighted, or assumes all factor loadings and error variances to be equal (Luarn & Lin 2005, Byrne 2006) and therefore may understate reliability (Hair *et al* 2006). Instead, Byrne (2006) suggests the Rho (ρ) coefficient provides a good measure of internal consistency particularly when used with a multifactor model set up. Hair *et al* (2006) suggest that a reliability estimate of .7 indicates good reliability and a reliability between .6 and .7 may be acceptable when other indicators of construct validity are good.

Discriminant validity represents how much a construct is truly distinct from other constructs and therefore captures phenomena other measures do not (Hair *et al* 2006). A CFA can do this in two ways. One method described by Hair *et al* (2006) is to specify the correlation between any two constructs as equal to one. This would be the same as specifying that the items that make two constructs could make up only one construct. Ultimately, if the fit of the two-construct model is not significantly better than the fit of the one construct model then there is insufficient discriminant validity (Hair *et al* 2006). The second method to assess discriminant validity of two or more factors is to compare the AVE of each construct with the shared variance (or the square of the correlation estimate) between constructs (Fornell & Larcker 1981, Farrell 2009, Hair *et al* 2006). Discriminant validity is supported when the AVE for each construct is greater than its shared variance with any other construct (Farrell 2009).

6.1.5 CFA of Constructs – Analyses of the Measurement Models

The following section focuses on the actual constructs identified in the exploratory analyses completed in the previous section. Whenever a set of measures purports to assess the same construct, the set of measures is said to be congeneric (Byrne 2006). The EQS program automatically fixes the first measurement indicator or variable for each factor. This is required since every latent variable (or factor) must have its scale determined; a requirement that arises because latent variables are unobserved and consequently do not have a definite metric scale (Byrne 2006). One approach is

related to the specification of the measurement model where the unmeasured construct or factor is mapped onto its related observed indicator variable. This scaling need is satisfied by constraining the indicator variable to a nonzero value (typically 1.0 in EQS), one factor loading parameter in each congeneric set of loadings. The fixed parameter is also termed the reference variable (Byrne 2006). This applies to both independent and dependent constructs and is why the first indicator variable on the EQS diagram output is signified as a red arrow.

6.1.5.1 Relationship Building Efforts

The CFA for the relationship building efforts scale, which includes the relationship initiation, reputation signalling and trust factors, revealed a well fitting model. The residual values in the covariance matrix all appeared low as did the standardized residual values. The frequency distribution was symmetrical and mainly centred on zero, although 4.44% of residuals fell between -0.1 and -0.2 and 4.44% fell between 0.1 and 0.2. This means there was some discrepancy in fit between the hypothesized model and the sample data although, overall, the model appeared to be well fitting (Byrne 2006). The robust methods goodness of fit summary returned a Satorra-Bentler (S-B) χ^2 of 26.702 on 24 degrees of freedom.

The Satorra-Bentler χ^2 statistic is provided when the robust methods option of the EQS program is selected, particularly when data is not normally distributed. The χ^2 statistic is below the 3:1 χ^2 to df recommended for a good fitting model (Hair *et al* 2006) and even below the stricter minimum 2:1 relationship forwarded by Hu and Bentler (1995). In this case, the ratio was 1.1. The comparative fit index (CFI) equalled .992 and the non-normed fit index (NNFI) equalled .989. Both these incremental fit indices were above .95, indicating a well fitting model. The SRMR for the model was .051, just above Byrne's cut off value of .05 for a well fitting model, but well below Kline's recommended value of .1. Finally, the RMSEA value was .024, well below the .05 cut off for a well fitting model and the 90% confidence interval (CI) = .000, .064, values which represented good precision (Byrne 2006). The model diagram is presented in figure 6.1.

While the fit statistics all revealed good model fit, figure 6.1 needed further investigation to confirm convergent and discriminant validity of the factors. The

standardized loading estimates of all indicators for the relationship initiation factor exceeded the minimum value of .5 which confirmed convergent validity (Hair *et al* 2006).

Figure 6.1   CFA Model Diagram for Relationship Building Efforts Scale
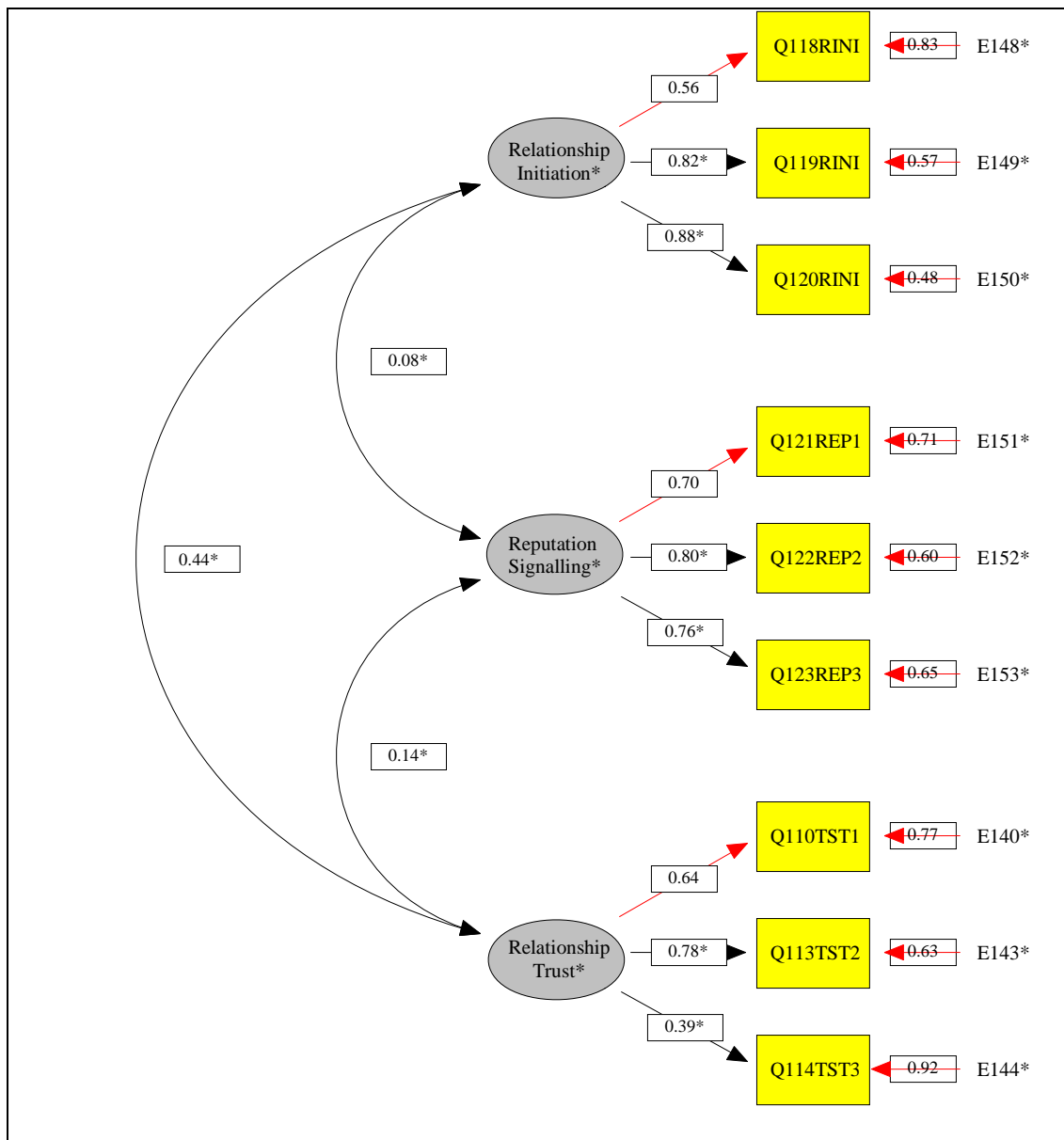
Based on the standardized loadings, the average variance extracted (AVE) among the construct items for relationship initiation was 58.7% which exceeded the recommended value of 50% (Fornell & Larcker 1981) and also showed convergent validity of the items within the construct.   Similarly, the reputation signalling construct consisted of indicators with standardized loading estimates all above .5 and also above .7, revealing good convergent validity.   The subsequent AVE for the

reputation signalling construct equalled 56.9%, well above the recommended 50% which again, confirmed convergent validity.

The relationship trust construct, however, had one indicator, Q114TST3, "My arm's-length clients never act opportunistically" with a loading of .39. This was well below the minimum recommended loading of .5 and suggests the indicator's measurement error is larger than the variance captured by the construct (Fornell & Larcker 1981). The other two indicators were above .5 but the low value for Q114TST3 pulled down the overall AVE for the factor to 39%, considerably lower than the 50% recommended minimum. Since Hair *et al* (2006) and Fornell and Larcker (1981) advocate deletion of items with standardized loading estimates below .5, the item was removed and the model retested with the modified factor. The revised model diagram is shown in figure 6.2.

The removal of the item reduced the complexity of the model, therefore, increasing the model fit indices slightly. The subsequent goodness of fit summary returned a Satorra-Bentler (S-B) χ^2 of 21.9 on 17 degrees of freedom (χ^2 to df <3:1), a CFI of .986 and an NNFI of .977 both above the recommended base of .95. The SRMR value was .049, below Byrne's (2006) recommended cut off value of .05 and the RMSEA value was .038 with a 90% CI between .000 and .079 which still indicated good model fit (Byrne 2006).

It is important to note that the revised model shows the standardized loading estimates for the relationship initiation and the reputation signalling constructs have not changed and, therefore, the AVE of both constructs also remained unchanged.

Since the item was removed from the relationship trust construct, it is this construct where loadings changed. The standardized loading estimates for the remaining two indicators for the relationship trust construct were above .5 and the AVE for the construct equalled 48.4%, a marked improvement from the 39% before the removal of the problem indicator. The figure was still below the recommended minimum AVE of 50% but, since both items returned standardized loading estimates above the minimum of .5 and an AVE below .5 can be acceptable in the early stages of research in a particular area (Rivard & Huff 1988), the construct remained part of the scale. Another measure of convergent validity is reliability (Hair *et al* 2006). The Rho (ρ) coefficient is considered to provide a good measure of internal consistency for multifactor models, such as the relationship building effort scale (Byrne 2006). The reliability ρ coefficient for the scale was .82 which was well above Hair *et al*'s (2006) recommended minimum of .7 for good reliability and, again, showed good convergent validity for the scale.

Since convergent validity for the relationship building scale has been reasonably established, the attention now turns to the discriminant validity of the scale. One approach to establish discriminant validity mentioned earlier is to specify the items that make up two or more constructs as making up only one construct (Hair *et al* 2006). Ultimately, if the fit of the three construct relationship building scale is not significantly better than the fit of the one construct model then there is insufficient discriminant validity (Hair *et al* 2006). When all indicators for the factors within the scale were specified as being part of the one construct, the resultant robust methods Satorra-Bentler (S-B) χ^2 of 224.6 on 20 degrees of freedom showed a much poorer fit. Recall the earlier χ^2 of 21.9 on 17 degrees of freedom for the three factor model. This suggested the scale had discriminant validity.

Another way of determining discriminant validity of two or more factors is to compare the AVE of each construct with the shared variance (or the square of the correlation estimate) between constructs (Fornell & Larcker 1981, Farrell 2009, Hair *et al* 2006). Discriminant validity is supported when the AVE for each construct is greater than its shared variance with any other construct (Fornell & Larcker 1981, Farrell 2009). The highest inter-factor correlation of .48 occurred between the relationship initiation and the relationship trust constructs. The shared variance of

the factors was therefore .23 or 23% ($.48^2$), well below the AVE of 58.7% for relationship initiation and 48.6% for relationship trust which provided support for discriminant validity. The relatively low inter-factor correlations between relationship initiation and reputation signalling (.08) and reputation signalling and relationship trust (.14) showed the factors were relatively independent of each other and provided further support for discriminant validity (Krause 1999).

A review of the modification indices revealed a Wald test recommendation to remove two freely estimated pathways from the model. Since these pathways related to the correlation between relationship initiation and reputation signalling and reputation signalling and relationship trust, the recommendation did not come as a surprise, given the relatively low correlation between constructs. The Lagrange Multiplier (LM) test recommended the addition of several parameters but since the resultant improvement to model fit was not much better than the initial result, no modifications were implemented. The relationship building efforts scale was retained for analysis in the structural model.

6.1.5.2 Knowledge Acquisition Scale

The CFA for the 6-item knowledge acquisition scale using robust methods to analyse model goodness of fit did not reveal a good model fit to the data. There were no large standardized residual values evident but the frequency distribution of standardized residuals was not symmetrical where 4.76% of residuals fell between .1 and .2 and a further 4.76% fell between .2 and .3. The robust methods goodness of fit summary reported a χ^2 of 47.5 on 9 degrees of freedom, a ratio exceeding the 3:1 recommended minimum and the more conservative 2:1 indicated by Hu and Bentler (1995) and Nasser and Wisenbaker (2003). Incremental fit indices included a CFI of .938 and an NNFI of .896. Absolute fit indices included a SRMR of .062 and RMSEA of .147 with a 90% confidence interval of .108 to .190. Clearly, the fit indices indicated a model that did not fit the data well. Consequently, the modification indices were reviewed to identify potential ways of improving the model.

The Wald test result indicated no removal of equation parameters would improve the model fit. The LM test on the other hand, revealed a significant reduction in χ^2 was

achievable by freely estimating the error covariance between Q107 and Q108. As recommended by Byrne (2006) and Kaplan (2009), the proposed modification was assessed to ensure it made theoretical sense. These two items related to what extent the firm's owner manager learned new managerial techniques (Q107) and new operational processes (Q108) from the arm's-length client. In reviewing the two items, one could argue there is a link between them two as it is conceivable that new managerial techniques are likely to lead to new operational processes (Yli-Renko, Autio & Sapienza 2001). Therefore, the path between error terms for Q107 and Q108 was freed.

The subsequent model respecification gave a χ^2 of 21.8 on 8 degrees of freedom (a ratio of less than 3:1 but higher than the Hu and Bentler (1995) recommended minimum of 2), a CFI of .978, and an NNFI of .958. These indices all showed good model fit, but the RMSEA of .094 only showed a mediocre fit (Byrne 2006). With this in mind, a further inspection of the Wald and LM tests was warranted. Again, the Wald test did not recommend removal of any of the parameters. The LM test, however, suggested an improved model fit could be achieved if the path between the error covariance for Q105 (to what extent have you learned from your arm's-length clients new ideas for new products) and Q106 (to what extent have you learned from your arm's-length clients new ways to approach product development) was freely estimated. The two items look at different concepts where Q105 examines product knowledge and information and Q106 examines process knowledge and information (Rindfleisch & Moorman 2001). The suggested modification made substantive sense since new product development methods are likely to lead to new product ideas (Ragatz, Handfield & Scannell 1997, Lilien *et al* 2002) so there is a cause and effect relationship here.

The inclusion of the modification where the error covariances between Q105 and Q106 were also freely estimated provided a S-B χ^2 of 9.15 on 7 degrees of freedom (a ratio of less than 2), a CFI of .997 and an NNFI of .992. The SRMR value was .028 and the RMSEA value was .039 with a 90% confidence interval (CI) of .000 to .101. Overall, these results demonstrate good model fit. However the 90% CI interval of .000 to .101 indicates the RMSEA is subject to sampling error since the result was consistent with the hypothesis of a good approximate model fit (consistent

with the lower bound of .000) but also consistent with the hypothesis of poor approximate fit (consistent with the upper bound of .101) (Kline 2005).

A further LM test modification was suggested for the error covariance of Q103 (to what extent have you learned from your arm's-length clients new technological expertise) and Q105 (to what extent have you learned from your arm's length clients new ideas for new products). The model improvement, however, would have been negligible and consequently was not included. Continuously respecifying the model could lead to overfitting the model and reflect small idiosyncratic characteristics of the sample (Byrne 2006). Furthermore, since the goodness of fit indices already showed good model fit, there was no justification for including further modifications to the model. The knowledge acquisition factor was retained for analysis in the structural model. Figure 6.3 shows the CFA model and loadings.

Figure 6.3   CFA Model Diagram for Knowledge Acquisition Scale
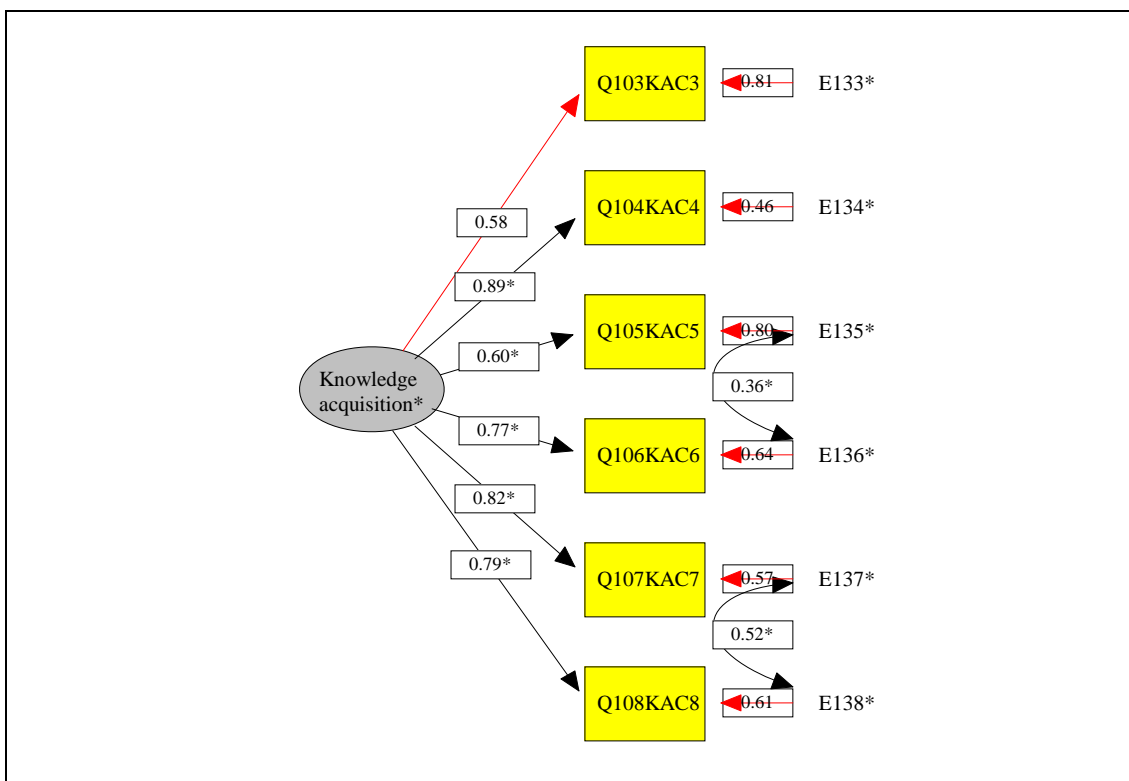
An inspection of the standardized loading estimates revealed all indicators were above the minimum of .5 which demonstrated that the construct had convergent validity (Hair *et al* 2006). The AVE for the construct was 56.3% and above the recommended minimum of 50% (Fornell & Larcker 1981) which again showed good

convergent validity. It was highlighted earlier that measuring the internal consistency of the construct is an additional way of verifying convergent validity (Hair *et al* 2006). The Rho (ρ) coefficient for the single construct scale equalled .855 which again showed good convergent validity, since it exceeded the minimum recommended level of .7 (Hair *et al* 2006).

As the knowledge acquisition scale was represented by a single construct, discriminant validity was determined using another closely related concept used in this study: knowledge outcomes (Cohen & Levinthal 1990). The two constructs were specified as one to determine if the ensuing model had a better fit to the knowledge acquisition scale. The resultant Satorra-Bentler χ^2 of 336.7 on 35 degrees of freedom showed a poor fit to the data compared with the χ^2 of 9.15 on 7 degrees of freedom for the knowledge acquisition scale. This confirmed discriminant validity. Additionally, discriminant validity was also verified by evaluating the AVE of the knowledge acquisition construct and the knowledge outcome construct with the shared variance (or the square of the correlation estimate) between the two constructs (Fornell & Larcker 1981, Farrell 2009, Hair *et al* 2006).

As mentioned earlier, discriminant validity is supported when the AVE for each construct is greater than its shared variance with any other construct (Farrell 2009). The inter-factor correlation between the two constructs was .52. The shared variance between the two factors therefore equalled 27% ($.52^2$), well below the AVE for the knowledge acquisition construct of 56.3% which provides support for discriminant validity of the construct. Similarly, since the knowledge outcome construct, (which will be discussed shortly), had an AVE of 63.2%, the shared variance of the two factors (27%) was also well below this value. The knowledge acquisition construct was retained for inclusion in the structural model.

6.1.5.3 Knowledge Outcomes Scale

The CFA for the knowledge outcomes scale identified a model that did not fit the data well. The standardized residuals did not reveal any particularly large values and while the residual frequency distribution was reasonably symmetrical, 10% of the residuals fell in the 0.1 to 0.2 range, demonstrating some discrepancy between the hypothesized model and the sample data. This was confirmed with the robust

methods S-B χ^2 value of 10.427 on 2 degrees of freedom (>3:1 minimum acceptable ratio). The incremental fit indices revealed a CFI of .969 and an NNFI of .908. The RMSEA was .146 with a 90% CI of .067 to .238. The SRMR equalled .04. The results demonstrated only a moderately fitting model to the data, especially given the RMSEA value.

The review of the modification indices revealed no Wald (W) test recommendations to remove a parameter, but the LM test suggested freely estimating the error covariances between the congeneric indicators Q153 and Q154 and also Q151 and Q152. The substantial improvement in the χ^2 statistic indicated by the LM test modification would likely result in an overfitted model where the resultant χ^2 is lower than the degrees of freedom (Kline 2005). While an overfitted model is undesirable, there is an argument supporting the inclusion of parameters in an overfitted model if they made strong substantive sense (Byrne 2006). Since the modification indices suggested freeing the relationships between four different questions, it is worth reviewing the questions at this point to identify which changes made substantive sense. The questions are shown in Table 6.1. The questions were answered on a 7-point strongly disagree/strongly agree Likert scale.

Table 6.1   Questions from the Knowledge Outcomes Scale under Review

Item No.	Question
Q151	My firm has developed new products and/or services through knowledge and information acquired from our arm's-length clients
Q152	My firm is operating in new markets through knowledge and information acquired from our arm's-length clients
Q153	My firm is operating more efficiently as a result of knowledge and information acquired through our arm's-length clients
Q154	My firm is more innovative as a result of the knowledge and information acquired through our arm's- length clients

Freeing questions 151 and 152 made substantive sense, since it is possible the development of new products and/or services might open the door for the small and medium-sized enterprise to expand into new markets (Thorburn & Langdale 2003). This is particularly true if the new developments help the business owner to understand the needs of customers within those markets (Danneels 2002). On the other hand, even though Q153 and Q154 were related concepts, freeing the error

covariance between each item made less sense. A firm is likely to be operating more efficiently if it is more innovative, but innovation is not only confined to efficiency of operations. Consequently, the error covariances were freed between Q151 and Q152 only and the resultant fit indices indicated an overfitted model presented in figure 6.4. The modified model's S-B χ^2 was .136 on one degree of freedom and the CFI equalled 1.003 while the NNFI was 1.019. The RMSEA value was .000 and the corresponding 90% CI interval was .000 to .136. The SRMR value was .004.

Since the model was shown to fit the data reasonably well, the next step was to verify the validity of the knowledge outcome construct. An examination of the standardized loading estimates for the indicators used in the scale (see figure 6.4) showed all indicators loaded above .5 and indeed above .7. The loadings showed good convergent validity. The AVE for the factor was 63.2%, well above the 50% recommended minimum and provided further evidence of convergent validity (Hair *et al* 2006). The Rho (ρ) for the single construct scale was .839, well above Hair *et al'*s (2006) recommended minimum of .7, providing further evidence of convergent validity.

Figure 6.4   CFA Model Diagram for Knowledge Outcomes Scale
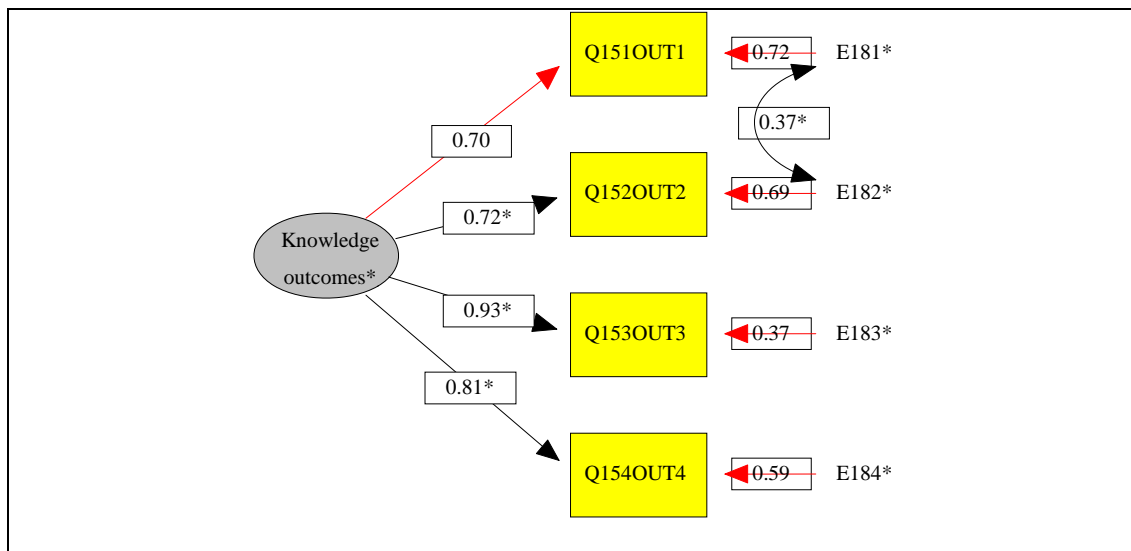
The discriminant validity of the knowledge outcomes construct was confirmed earlier in the review of the measurement model for the knowledge acquisition construct. The two concepts are related since knowledge acquisition might be exploited to lead to specific knowledge related outcomes (Cohen & Levinthal 1990,

Zahra & George 2002). This was confirmed by the relatively high correlation of .52 (Byrne 2006) between the two constructs. However, the combination of both constructs, as one returned a Satorra- Bentler χ^2 statistic of 336.7 on 35 degrees of freedom, compared with the single knowledge outcome construct χ^2 of .136 on one degree of freedom. This supported the discriminant validity of the knowledge outcomes construct (Fornell & Larcker 1981, Farrell 2009).

Also shown in the review of the measurement model for the knowledge acquisition construct, the shared variance between the two constructs, knowledge acquisition and knowledge outcomes is the square of their correlation or 27% ($.52^2$). This value was well below the AVE for the knowledge outcomes construct of 63.2% and 56.3% for the knowledge acquisition construct, and provided further support for discriminant validity of the knowledge outcomes construct (Farrell 2009). The knowledge outcomes factor was retained for further analysis in the structural model.

6.2 Confirmatory Factor Analysis of Moderating Scales

As indicated in the previous chapter, a number of moderating variables were posited to affect the extent to which knowledge acquisition resulted in knowledge related outcomes. An example of moderation occurs when the relation of the "X" variable to the "Y" variable changes as a function of a third variable, "W" (Kline 2005). Where the relationship of "X" to "Y" changes as a function of "W", an interaction is indicated and "W" can be referred to as a moderating variable (Kline 2005). Identifying moderation effects in SEM can be problematic, simply because the term moderator has been used interchangeably with the term mediator (Baron & Kenny 1986). The interchangeable use of these terms can lead to confusion because testing for moderating and mediating effects via SEM is handled differently (Sauer & Dick 1993, James & Brett 1984, Saris, Batista-Foguet and Coenders 2007). It is important, therefore, to differentiate the terms before proceeding to the CFAs of the proposed moderating variables.

Typically, a mediation relationship model has the form $x \rightarrow m \rightarrow y$, where x is the antecedent, m is the mediator and y is the consequence or outcome. In this relationship, the antecedent is expected to affect the outcome of y indirectly through

transmission of influence from *x* to *y* by the mediator *m* (James & Brett 1984). In this relationship, the mediator has a causal relationship. In the case of moderation, a variable *z* is a moderator if the relationship between two other variables *x* and *y* is a function of the level of *z* (James & Brett 1984), similar to Kline's (2005) example mentioned earlier. While the distinction might be clear, these effects may be combined in ways that moderation is mediated or mediation is moderated (Muller, Judd & Yzerbyt 2005, James & Brett 1984). This leads to the potential for the existence of hybrids and methods for testing and identifying such effects are needed. One method forwarded by Sauer and Dick (1993) applies where moderation is a function of a latent construct rather than a measured variable. In this case, the structural positioning of the latent construct determines its action as either a mediator or moderator variable (Sauer & Dick 1993). This approach is particularly relevant as the posited moderators for this study represent latent constructs and will be of focal interest in the remaining confirmatory factor analyses.

Sauer and Dick (1993) proposed adding a link in the structural model in which the posited moderating latent variable serves as a mediator, while the direct link between the independent variable (knowledge acquisition) and the dependent variable (knowledge outcomes) is retained. If the meditational role of the latent construct is non-significant but the value of the direct link changes significantly, the latent construct is behaving as a pure moderator (Sauer & Dick 1993). Alternatively, if the direct link becomes insignificant, the latent construct is not moderating the relationship but functioning as a mediator variable. If both the direct link and the mediated link are significant and the direct link's parameter value is significantly different than when the moderating latent construct is present, a hybrid moderator variable effect is occurring (Sauer & Dick 1993). These effects will be examined later in the structural equation section of this study.

6.2.1 *Knowledge Absorption Capability Scale*

The knowledge absorption capability scale was posited as a moderator of the knowledge acquisition-knowledge outcomes relationship where the relationship between the two is a function of the level of the firm owner's absorptive capacity and exchange partner similarity. The CFA for the two-factor, 11-item knowledge absorption capability scale, demonstrated the measurement model had a moderate fit

with the data. The standardized residuals were acceptable, although a pair of variables, questions 146 and 147, showed a relatively larger standardized residual of .247. The residual frequency distribution was, overall, symmetrically centred on the zero mark with 1.52% around the -0.1 to -0.2 mark, 4.53% around the 0.1 to 0.2 mark and 1.52% around the 0.2 to 0.3 mark. This showed some discrepancy between the hypothesized model and the sample data. The robust methods goodness of fit indices gave moderate fit results with an S-B χ^2 of 90.811 on 43 degrees of freedom (a ratio of <3, but greater than the more conservative χ^2:df ratio of 2). The CFI was .908 and the NNFI was .882. The RMSEA equalled .075 (90% CI of .053 to .096) and the SRMR equalled .062.

The fit results merited a review of the W and LT tests' suggestions for model modifications. The W test revealed no parameters needed dropping, however the LM test suggested a significant χ^2 reduction would be achieved by freeing the error covariances between Q146 and Q147. These were the same variables that provided the greatest standardized residual value in the covariance matrix. Table 6.2 provides the two items in question, a review of which suggests two firms that share goals and objectives are also likely to share a common language and understanding between each other. Certainly, there is support from the literature that knowledge assimilation is facilitated when firms share common organisational problems and goals, norms, values and organisational cultures (Inkpen 2000, Inkpen 1998, Tsai 2000, Lane & Lubatkin 1998). Therefore, there is a case to argue that firms that share goals and objectives are also likely to complement each other through a common language and understanding. Accordingly, the error covariances between Q146 and Q147 were freely estimated.

Table 6.2   Questions from the Exchange Partner Similarity Construct

Item No.	Question
Q146	I find it easier to acquire knowledge from our arm's-length clients when our goals and objectives have been similar
Q147	I find it easier to acquire knowledge and information from our arm's-length clients when there has been a common language and understanding between us

The subsequent modified model provided a better fit to the data with an S-B χ^2 of 66.674 on 42 degrees of freedom (χ^2:df of <2), with a CFI of .953, an NNFI of .938, a RMSEA of .055 (90% CI of .028 to .078) and an SRMR of .058. The indices demonstrated a better model fit than the one originally postulated. After reviewing the W and LT tests for the current model, the W test suggested deleting question 149 from the proposed model. The item, "I find it easier to acquire knowledge and information from our arm's-length clients as a result of my industry experience" showed no statistically significant variance. This possibly occurred after modifying the model and freely estimating the error covariances for questions 146 and 147. Though question 149 was a key item within the scale, its lack of statistically significant variance warranted its removal. Question 149 was an industry experience item that seemed out of place with the other items that focused on common knowledge bases, norms and values. Given that constructs in SEM need to be reflective, an item that does not appear aligned with the other items in the construct could be a cause for concern when establishing the validity of the construct (Hair *et al* 2006). The item loaded appropriately with the other indicators in the exploratory analysis for the construct, however it was the highest cross-loading item (.482) of all the indicators so this might also have affected its validity within the construct (Hair *et al* 2006). The subsequent modified model provided an even better fit to the data with an S-B χ^2 of 50.4028 on 33 degrees of freedom (χ^2:df of <2), a CFI of .959, an NNFI of .944, a RMSEA of .052 (90% CI of .018 to .079) and an SRMR of .051. The indices demonstrated a better model fit. Figure 6.5 shows the model diagram for the knowledge absorption capability scale.

A review of figure 6.5 showed the indicators for the absorptive capacity construct all had standardised loading estimates above the minimum requirement of .5 and all exceeded the more acceptable limit of .7 (Hair *et al* 2006), demonstrating convergent validity of the items. The corresponding AVE for the construct was 57.1% which was also above the recommended limit of 50% (Fornell & Larcker 1981) and also showed good convergent validity. The exchange partner similarity construct also had indicators with standardised loading estimates above the minimum recommended level of .5 and showed convergent validity (Hair *et al* 2006). However, the AVE for the construct was a lowly 31.9% and well below the recommended minimum of 50% (Fornell & Larcker 1981).

Earlier, the review of the relationship building efforts scale revealed the relationship trust construct also had an AVE below 50%. One of the indicators for relationship trust had a standardized loading estimate of only .39 which was below the recommended minimum of .5. This indicator was subsequently deleted and the overall AVE for the construct improved to 48.4%. Since the standardized loading estimates for all the indicators of the exchange partner similarity scale exceeded .5, none of them was a candidate for deletion. Nevertheless, the convergent validity of the exchange partner similarity construct was questionable because it was below 50% and, according to Fornell and Larcker (1981), demonstrated a measurement error larger than the variance captured by the construct.

Despite the questionable validity of constructs with an AVE below 50%, Hair *et al* (2006) argued such constructs could still be considered significant. Further, studies have reported constructs with AVEs below .5 and included them for estimation in the structural model (e.g. Netermeyer *et al* 1997, Obermiller & Spangenberg 1998, Rivard & Huff 1988, Quaddus & Achjari 2005). Indeed, Rivard and Huff (1988) advised that an AVE below .5 can be acceptable in the early stages of research in a particular area. The exchange partner similarity construct, while having questionable validity, was retained for the study. A further measure of convergent validity, reliability (Hair *et al* 2006) showed the absorption capability scale had a Rho (ρ) coefficient of .83 demonstrating good convergent validity which was significantly higher than Hair *et al*'s (2006) recommended minimum of .7. As discussed earlier, the Rho (ρ) coefficient is considered a good measure of internal consistency for multifactor models (Byrne 2006).

To examine the discriminant validity of the knowledge absorption capability scale, the two factors that made up the scale were specified as making up one construct. If the fit of the two construct model is not significantly better than that of the one construct model, there is insufficient discriminant validity (Hair *et al* 2006). Specifying all the indicators as part of the one construct resulted in an S-B χ^2 of 97.84 on 34 degrees of freedom, which was a poorer fit relative to the two construct χ^2 result of 50.40 on 33 degrees of freedom.

Figure 6.5   CFA Model Diagram for Knowledge Absorption Capability Scale
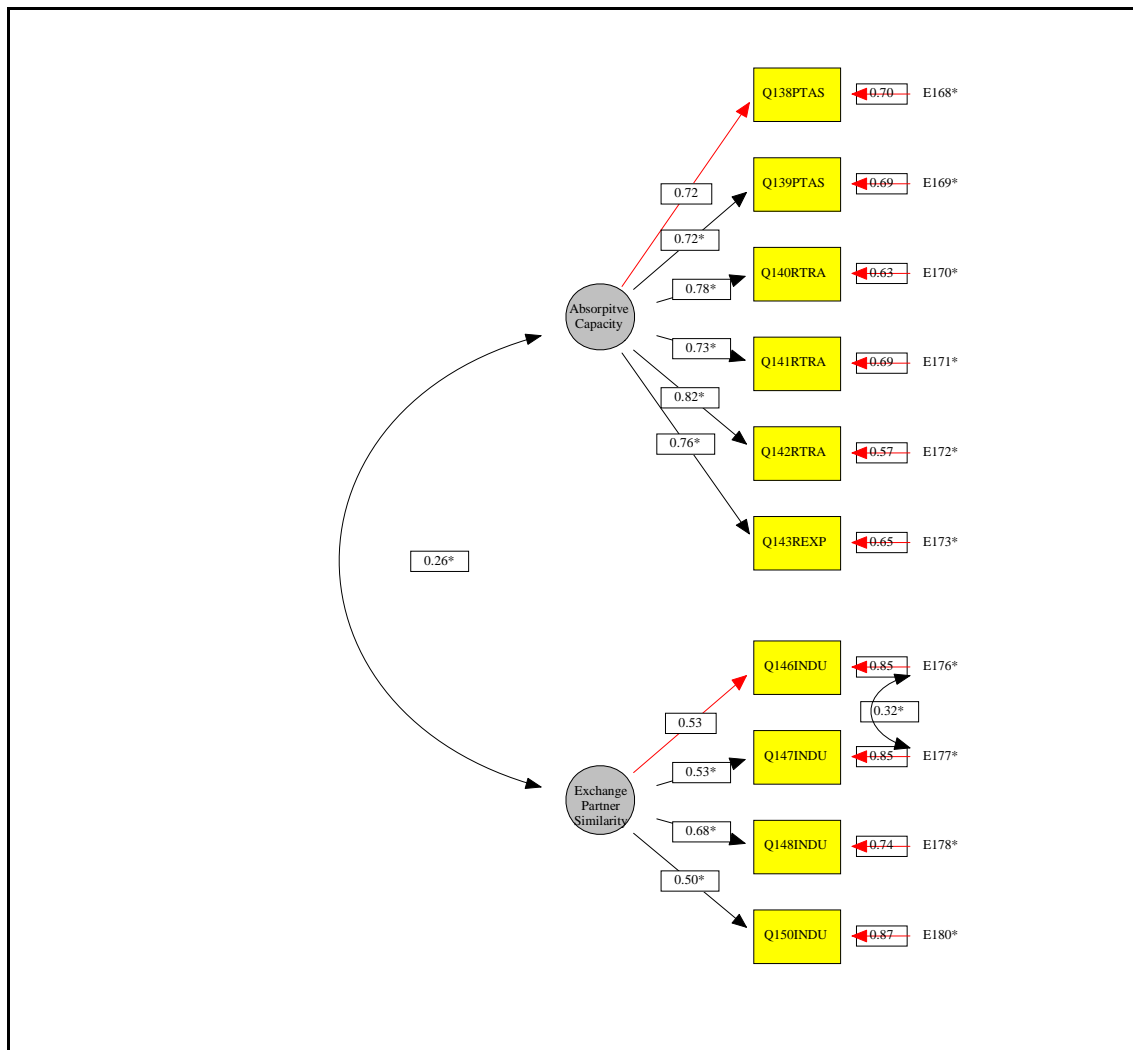
The combined factor model also had the error covariances between Q146 and Q147 freely estimated.   The comparative result indicated the knowledge absorption capability scale had discriminant validity. Discriminant validity was also assessed by comparing the shared variance between the two constructs (the square of the correlation estimate) with the AVE of each construct (Fornell & Larcker 1981, Farrell 2009).   The inter-factor correlation of the two constructs was .26 and, therefore, the shared variance was .067 or 6.7% ($.26^2$) which was well below the AVE for absorptive capacity of 57.1% and 31.9% for the exchange partner similarity construct.   Since the AVE for each construct was greater than the shared variance between the constructs, discriminant validity was supported (Farrell 2009).   The knowledge absorption capability scale was retained for inclusion in the analysis of the structural model.

6.2.2 *Business Growth Scale*

A business owner's willingness to grow the firm and the firm's emphasis on growth was posited to be a moderator of the knowledge acquisition and knowledge outcomes relationship. A firm with a strong focus on business growth is considered more likely to convert knowledge acquisition to specific knowledge related outcomes, such as new product and new market development. The CFA for the business growth scale, however, was problematic. The model fit indices showed an S-B χ^2 of 28.39 on 7 degrees of freedom (>3:1 ratio), a CFI of .921, an NNFI of .831, a SRMR of .107 and a RMSEA of .124 (90% interval of .079 to .173). These values show a relatively poor fitting model.

The relationship between the two factors within the scale showed negative correlation and covariance values which were surprising considering they intended to measure two dimensions of business growth. The factors, willingness to grow and growth emphasis were expected to complement each other since one would assume a firm would demonstrate some emphasis towards growth, or growth strategy, if the firm also demonstrated a willingness to grow (Liao, Welsch, & Stoica 2003). The expectation, therefore, was a positive correlation and covariance between the two factors so the negative values run counter to this thinking. This is a disappointing result since business growth was posited to be an important contributor to knowledge related outcomes, developed as a result of knowledge acquired from a firm's arm's-length clients (Trott 2008).

Additionally, the EQS output indicated the "willingness to grow" factor was linearly dependent on other parameters. According to Bentler (2006), this occurs when the parameter is under-identified in an equation or it is due to the effects of empirical under-identification (Bentler 2006). Generally speaking, in SEM, latent factors must have effects on three or more indicators (items) of that factor (Bentler & Chou 1987). When a factor has fewer than three indicators, it is said to be under-identified (Hair *et al* 2006). When a factor has three indicators, it is considered to be just identified and factors with four or more indicators are said to be over-identified (Hair *et al* 2006). The EQS output implied the model was under-identified when it claimed a factor was linearly dependent on other parameters. However, the willingness to grow scale had three indicators and was just identified. Bentler (2006) advises in

such circumstances, linear dependency might stem from computational problems associated with the data or start values of the parameters and experimenting to eliminate the difficulty is advised.

Further, one of the items, Q93, "As far as the future size of my firm is concerned, I want the business to be as large as possible," also proved to be a problem. The EQS output indicated a parameter condition code associated with the item whereby it was constrained at lower bound. This indicates the parameter estimate is not inside the specified boundaries and was held at the lower boundary specified for the problem (Bentler 2006). The result is a zero error variance which is regarded as an improper solution (Chen *et al* 2001). This is because a zero error variance implies the measured variable is synonymous with a factor or that a dependent variable is perfectly explained by its predecessor (Bentler & Chou 1987). Efforts at changing the start values of the factors or fixing the start values and even deleting potential problematic items did not seem to address the problem. For instance, combining the items into one factor returned a model of poorer fit. Bentler and Chou (1987) suggest one way around the problem is to modify the design of the study and add variables to create more indicators of a given factor. This was not possible in this research as the data were already collected and therefore this must become a consideration for a future study. Consequently, the willingness to grow factor was removed from the scale.

The remaining factor, growth emphasis, contained three items or indicators that were reverse coded for the study. The three items meant the scale was just identified, indicating there were just enough degrees of freedom to estimate all free parameters (Hair *et al* 2006). In a just identified model, the resulting χ^2 goodness of fit statistic is zero which indicates a perfect fit, although just-identified models do not test a theory, rather, their fit is determined by the circumstances of the model (Hair *et al* 2006, Bentler 2006). Consequently, the model shows zero residuals, zero χ^2 and zero degrees of freedom for the scale. The standardized factor loadings for the items, Q98, Q99 and Q100 were .823, .649 and .836 respectively, well above the minimum .5 loading showing convergent validity. This gave an average variance extracted of .599 or 59.9% variance in the sample and also showed good convergent validity. The reliability coefficient, ρ, for the scale is .809 which is above the recommended

minimum of .7 and also supported convergent validity. Figure 6.6 shows the CFA model diagram for the growth emphasis scale.

Figure 6.6   CFA Model Diagram for Growth Emphasis Factor
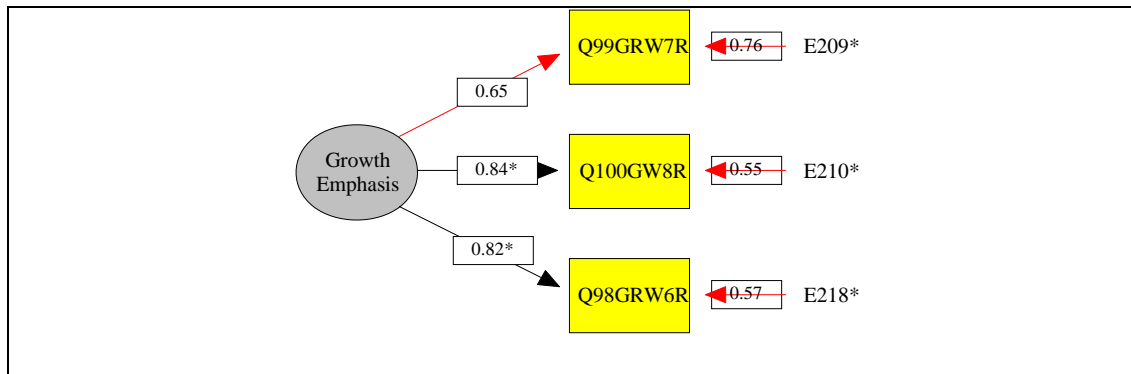
Since the business growth construct was not closely aligned to the other constructs and scales in the model, the highest correlations between business growth emphasis and the other constructs in the model was evaluated by examining the full CFA model shown in figure 6.8.   The correlation estimates were examined and, interestingly, all correlations between the growth emphasis scale and all the other factors were negative in value. In other words, growth emphasis had a negative effect on all the other constructs used in the study. The greatest effect was on reputation signalling where the inter-factor correlation value was -.221. This was a confounding result when the expectation was that growth would have some positive influence on some of the constructs used in the study. Even though growth emphasis was going to be used as a moderator variable in the study, the negative results meant it was removed from further analysis.

6.2.3   Size of Client Firm

The size of the client firm construct used in the model consisted of two items. Consequently, this led to an under-identified model since there were insufficient indicators for the proposed construct.   Under these circumstances, there is insufficient information to estimate parameters, or, in other words, there are infinite solutions possible (Byrne 2006). One way of dealing with this problem is to obtain more indicators for the factor (Bentler 2006), however, this was not possible since the data was already collected. The other option is to set the residual variances of the errors for both indicators equal to each other to reduce the number of free parameters

by one (Bentler 2006). This approach reduced the number of parameters to estimate and a solution became possible. Imposing the constraint as advised by Bentler (2006) still meant the model was just identified and therefore the CFA showed zero residuals, zero χ^2 and zero degrees of freedom for the construct. However, the standardized loading estimates for Q132 and Q133 were .882 and .873 respectively. Both estimates exceeded the recommended minimum value of .5 (Hair *et al* 2006). The AVE for the construct was 77% well above the recommended minimum value of 50% (Fornell & Larcker 1981). Figure 6.7 shows the diagram of the CFA for the size of the client firm construct.

Figure 6.7   CFA Model Diagram for Size of Client Firm Factor
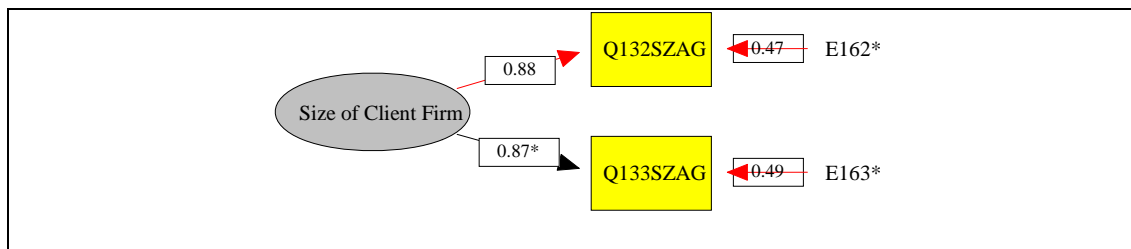
The Rho (ρ) reliability coefficient for the factor equalled .870, considerably greater than Hair *et al*'s (2006) recommended minimum of .7. An evaluation of the output for the full CFA of the measurement model (see CFA diagram of measurement model in figure 6.8) indicated the size of the client firm factor correlated most with the knowledge acquisition construct with a value of .155. Since there were no fit indices for the size of the client firm construct, it was not possible to group the two constructs, size of the client firm and knowledge acquisition as one factor, to examine the resultant model fit measures. However, discriminant validity could be assessed by comparing the shared variance between the two constructs (the square of the correlation estimate) with the AVE of each construct (Fornell & Larcker 1981, Farrell 2009). Based on this analysis, the shared variance between the two constructs, 2.4% ($.155^2$), was much lower than the AVEs of 77% and 56.3% for the size of the client firm and knowledge acquisition constructs respectively. This supported the discriminant validity of the size of the client firm construct and was retained for analysis in the structural model.

6.2.4   CFA for the Full Measurement Model

The full CFA diagram for the 9-construct measurement model is shown in figure 6.8. The full CFA of the measurement model utilizes all independent, dependent and moderator constructs and variables with the 33 individual measurement items serving as variable (construct) indicators (Coulter & Coulter 2003). Note, the measurement and structural models play different roles in the overall path model. One could alter either without changing the other. For instance, the same structural model of relationships among the latent variables might be maintained but the measurement model could be altered using different tests or measurements to index latent variables (Loehlin 1998).

Figure 6.8   Full CFA Diagram for Measurement Model
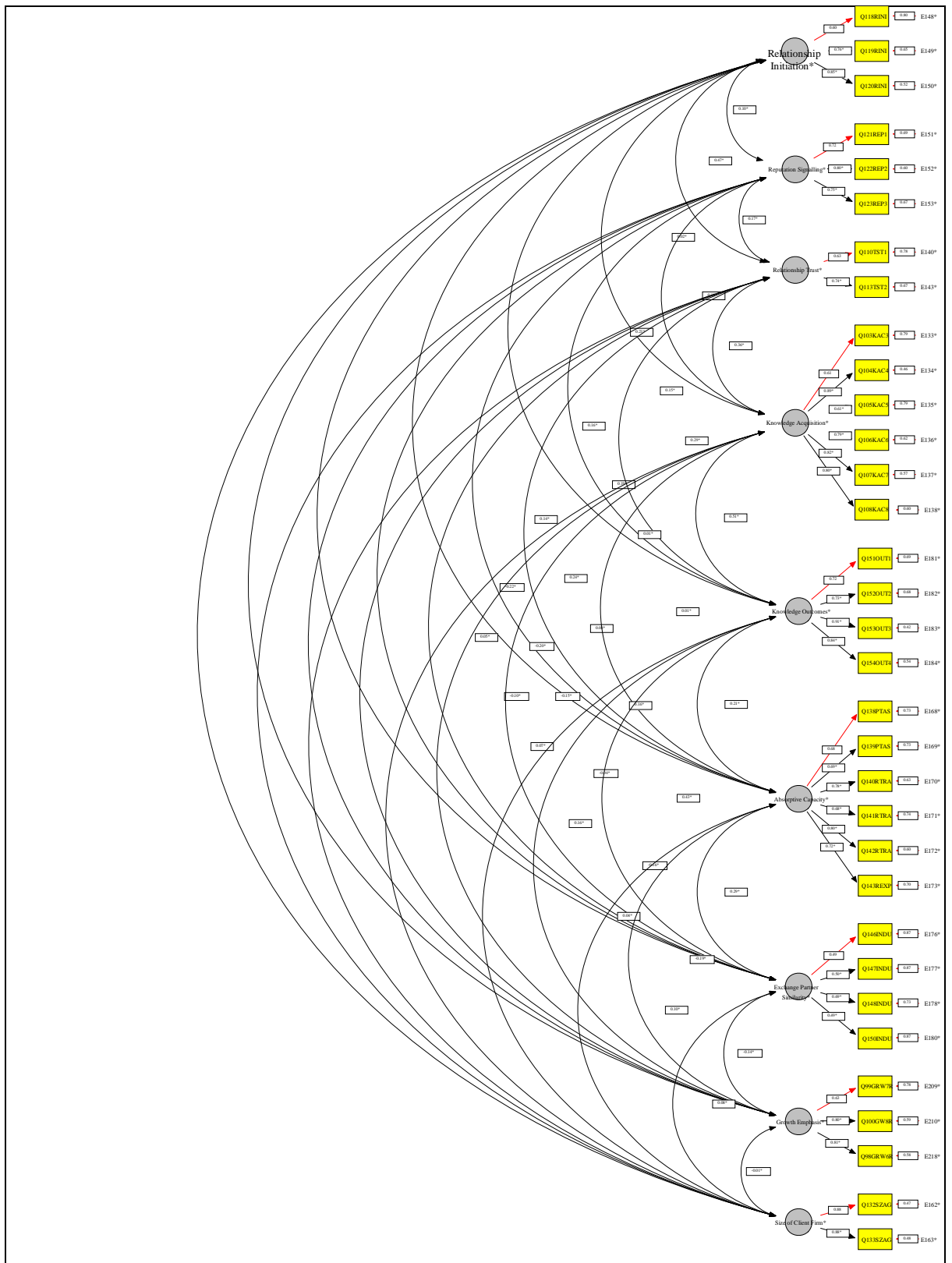
Alternatively, the same measures could be kept but the structural model could change to reflect different assumptions about the relationships among the latent variables

(Loehlin 1998). This will be the case in the next section when latent constructs included in the measurement model will be used as moderator variables in the structural model. The S-B χ^2 for the model was significant at 507.03 but the 456 degrees of freedom provided a χ^2:df ratio of well below 2 (1.11), $p = .049$. The CFI for the measurement model equalled .978, the NNFI was .974, the RMSEA was .025 with 90% CI levels between .002 and .036 and the SRMR was .055, all measures confirming the efficacy of the measurement model (Coulter & Coulter 2003).

The confounding effects of the growth scale resulted in the construct being deleted from further analysis. Therefore, the CFA for the full measurement model needed to be run again to confirm the fit indices for the full model were still appropriate without the business growth construct. The diagram of the modified measurement model without the growth construct is provided in figure 6.9. The resultant S-B χ^2 for the modified model was 409.73 on 373 degrees of freedom (χ^2: df of 1.098). The CFI equalled .982, the NNFI was .979, the RMSEA was .023 with 90% CI levels between .000 and .036 and the SRMR was .055. All fit indices show an improvement to the model containing the growth construct (albeit slight) and again confirmed the efficacy of the measurement model. The measurement model in figure 6.9 contains all the constructs that will be used in the structural model.

Each of the moderating factors thought to interact in the relationship between knowledge acquisition and knowledge outcomes will be examined individually in the structural equation model in the next chapter. Therefore, the basic model showing the relationship building constructs, i.e. relationship initiation, reputation signalling and relationship trust, and outcome constructs, knowledge acquisition and knowledge outcomes should also be evaluated for good model fit. Given the good model fit already shown with the full model, the removal of the moderating factors from the measurement model should have no deleterious effect on the overall fit of the model (Byrne 2006).

Figure 6.9   Full CFA Diagram for Modified Measurement Model without Business Growth Construct
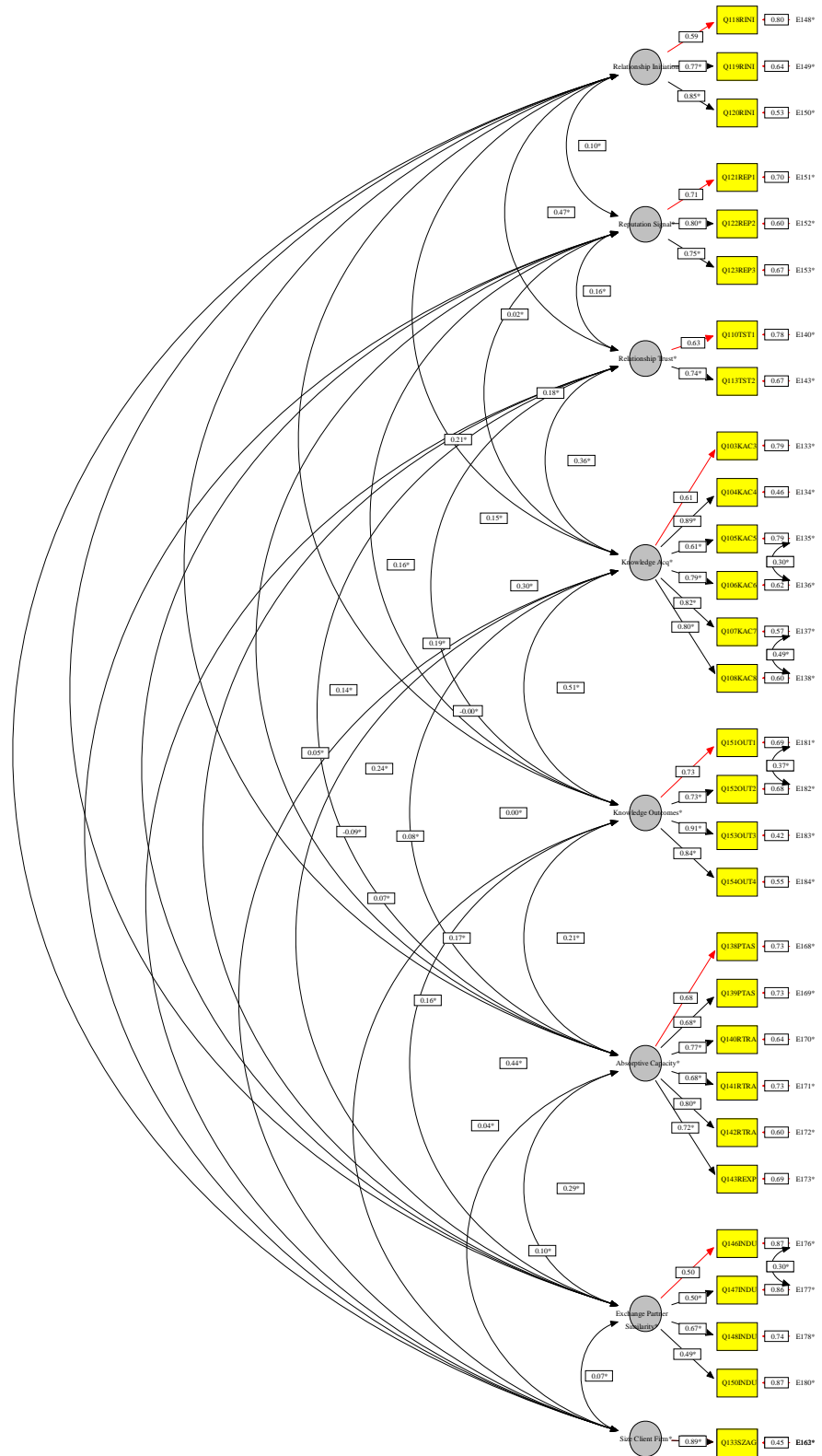
Figure 6.10 shows the CFA diagram for the basic model without the moderating factors. The resultant fit indices included an S-B χ^2 of 124.26 on 122 degrees of freedom (χ^2: df of 1.108). The CFI was .998, NNFI equalled .998 and the RMSEA was .010 with 90% CI levels of .000 to .037 and the SRMR value was .053. The fit indices were excellent, showing a very well fitting model.

Figure 6.10   CFA of Basic Measurement Model Used in SEM Without Moderating Constructs
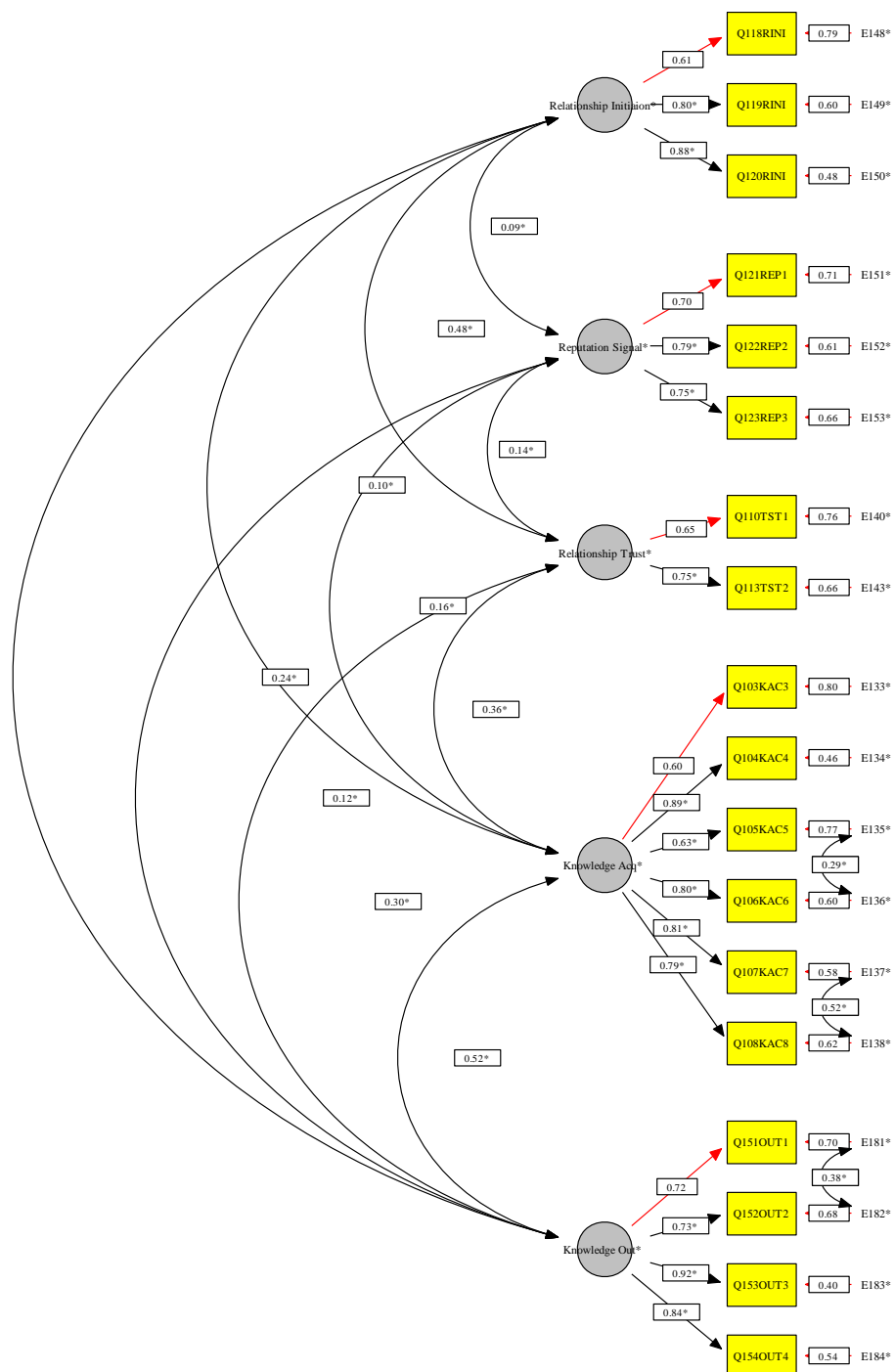
6.2.5 Conclusion

This section presented the confirmatory factor analyses of the various constructs and the measurement model used for this study. Most constructs demonstrated good construct validity and the fit indices for the different constructs also showed reasonable fit with the data. In some cases, modifications were required, particularly to account for error covariance of measurement items within constructs but these were accommodated where they made substantive theoretical sense. Unfortunately, some items that failed to load appropriately, e.g. below .5 (Hair *et al* 2006), or demonstrated inappropriate correlations were deleted, resulting in an overall measurement model consisting of 33 measurement items from the 38 refined in the exploratory factor analysis. The problems associated with the business growth scale meant, ultimately, 30 measurement items were retained for analysis in the structural model.

7. RESULTS AND ANALYSIS – STRUCTURAL EQUATION MODELING

The previous chapter presented the confirmatory factor analyses for the remaining constructs derived from the exploratory factor analyses. Generally, all the constructs showed good construct validity and good fit indices. Modifications that made theoretical sense were incorporated after consulting the results of Wald (W) and Lagrange Multiplier (LM) test recommendations for parameter deletion and addition respectively. The CFA for the full measurement model (see figure 6.8) indicated good fit with the data, however the business growth scale proved problematic and it was ultimately deleted from the modified model first posited in the literature review. This has left an overall model with eight constructs and thirty measurement items. Three of the remaining constructs posited to interact or moderate the relationship between knowledge acquisition and knowledge outcomes were absorptive capacity, knowledge outcomes and the size of the client firm. The posited interaction of the constructs is demonstrated in the diagram shown in figure 7.1.

Figure 7.1 Modified Hypothesized Model of Knowledge Acquisition and Knowledge Outcomes in Weak Client-Firm Exchange Relationships with Moderating Constructs
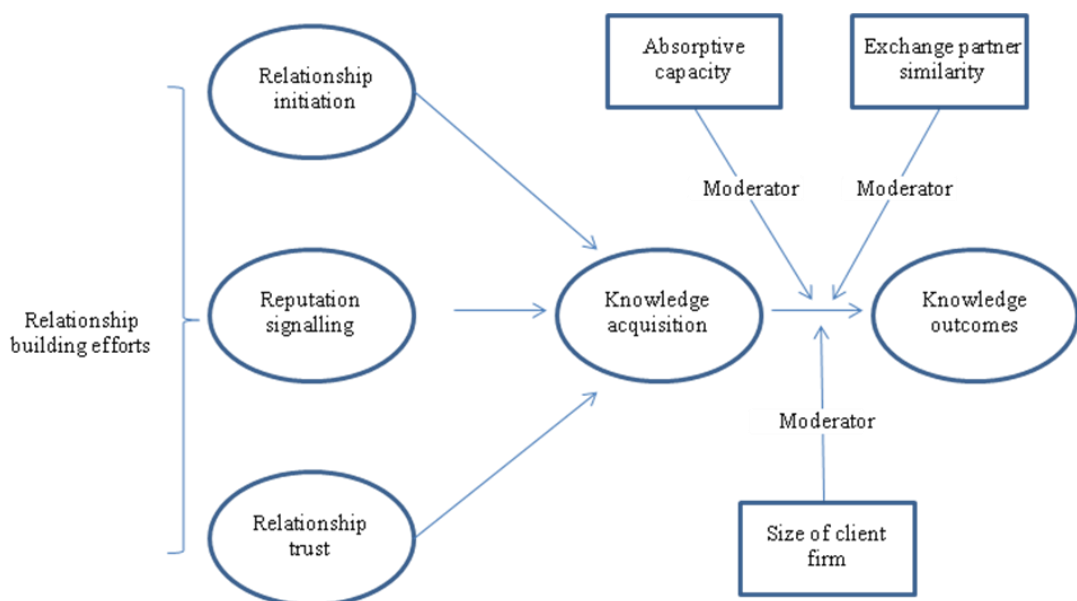
7.1   Structural Equation Analyses

The initial structural equation analysis will look at the overall model of relationship building efforts, knowledge acquisition and knowledge outcomes. The remaining structural equation analyses will examine if the posited moderator constructs indeed moderated the relationship between knowledge acquisition and knowledge outcomes. The example in figure 7.1 is that of a recursive model in that all the paths between the constructs proceed from the predictor construct to the dependent construct. Alternatively, a nonrecursive model would have a feedback loop, such as knowledge outcomes feeding back to knowledge acquisition (Hair *et al* 2006). Nonrecursive models are difficult to estimate especially when dealing with cross-sectional data such as this study (Hair *et al* 2006).

In the previous chapter, whether or not a construct was psychometrically sound required an assessment of its convergent and discriminant validity. Assessing such measures as the model fit indices, standardized loading estimates, AVE and reliability, helped account for convergent validity.   Specifying indicators of constructs as contributing to only one construct and measuring model fit was one way of determining discriminant validity. The other way was comparing the AVE percentages for any two constructs with the square of the correlation estimate between the two constructs (Hair *et al* 2006). Examining the resultant values and fit indices enabled one to draw conclusions regarding the validity of the constructs. The structural portion of a full structural equation model involves relations among only the latent variables or constructs and the point of interest in working with the full model is to assess the extent to which these relations are valid (Byrne 2006). It is for this reason that the measurements of the latent constructs needed to be psychometrically sound and why validity of the measurement model was tested before evaluating the structural model (Byrne 2006).

The CFA on the full measurement model shown in the previous chapter provided good fit indices. The evaluations of the structural models that follow will be derived from the initial evaluation of the first hypothesized model. In other words, any changes to the model structure through the deletion or adding of paths to alter relationships within the model will always be conducted as a subset of the original

model (Kline 2005). This means the models are nested as one is a subset of the other and therefore are therefore hierarchically linked (Hair *et al* 2006, Kline 2005). As was the case in confirmatory factor analysis, the fit of a structural model also needs to be assessed. Fortunately the same indices, e.g. χ^2:df, CFI, NNFI and RMSEA, used to assess the CFA of the measurement model, also apply for the structural model. However, as was the case for CFA, good fit alone does not mean a valid structural model. Other measures of validity are required.

A good starting point to verify the validity of the structural model is to assess the distribution of standardized residuals for any significant discrepancies (Byrne 2006). If few problems are encountered with the distribution of the standardized residuals, the next step involves an assessment of the loading estimates of measurement items in the structural model (Hair *et al* 2006). The estimates should be compared to the results from those derived via the CFA. Where there is significant variation, interpretational confounding is evident. In other words, the measurement estimates for one construct are being significantly affected by relationships other than those among the specific measures (Hair *et al* 2006) and requires a closer examination of the measures. Small fluctuations (.05 or less) in the measurement estimates between the CFA and structural model are acceptable and should be expected (Hair *et al* 2006). Little variation between the measurement estimates provides evidence of model validity. Individual parameter estimates against corresponding predictions or paths should also be examined to assess statistical significance (p<.05) and if the path behaves in the predicted direction (Hair *et al* 2006). Additionally, the percentage of variance in the dependent constructs accounted for or explained by the predictor variable can be established by assessing the R^2 or coefficient of determination (Hair *et al* 2006, Tabachnick & Fidell 2007, Field 2005).

7.1.1 Evaluation of the Hypothesized Model

The exploratory and confirmatory factor analyses have resulted in a modified model substantially different to the one first provided in the hypothesis chapter of this study. Unfortunately, some of the constructs originally posited to interact with knowledge acquisition and knowledge outcomes have been deleted because of validation problems. The modified model for which structural equations were analysed is shown in figure 7.2. The results of the structural analysis revealed few

problems with the frequency distribution of standardized residuals. The frequency distribution was symmetrical and mainly centred on zero, although 1.75% of residuals fell between -0.1 and -0.2 and 11.70% fell between 0.1 and 0.2.

Figure 7.2   Modified   Model   of   Knowledge   Acquisition   and   Knowledge
Outcomes
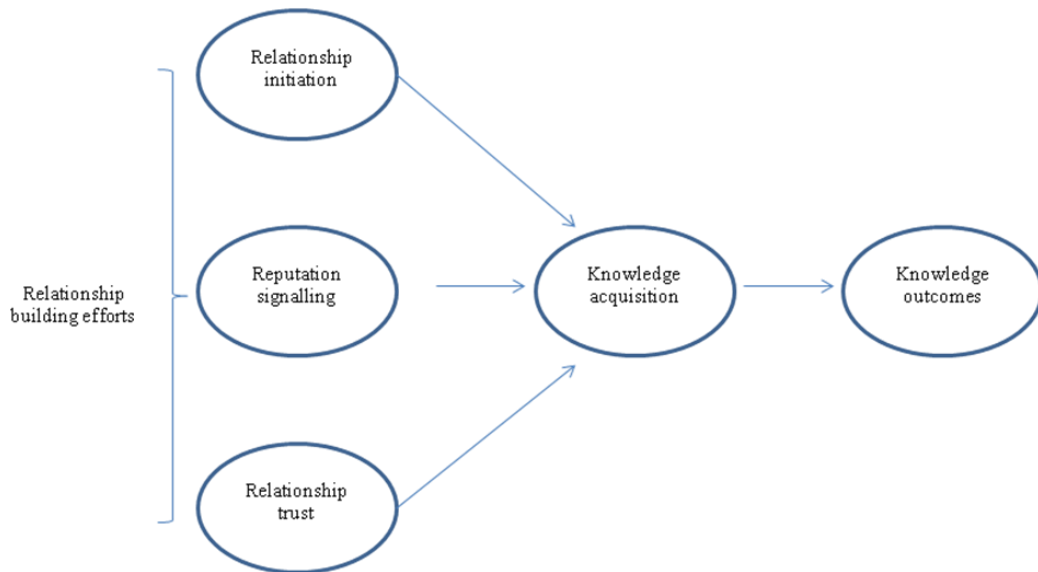
The loading estimates for the measurement items in the structural model deviated very little from the estimates obtained in the CFA analysis. These can be seen in figure 7.3 which represents the structural equation output diagram of figure 7.2. The consistency of the loading estimates between the structural model and the CFA provides evidence of a valid model. The fit indices also provide good evidence of a valid model. The S-B χ^2 was 130.65 on 125 degrees of freedom (χ^2:df <3), the comparative fit index (CFI) equalled .996 and the NNFI for the model was .995. The SRMR showed an acceptable value of .064 and the RMSEA value was .015 with 90% confidence interval values between .000 and .039. The fit indices provide evidence that the model fits the data very well. However, as mentioned earlier, a good fit is not enough to support the proposed structural theory (Hair *et al* 2006). The next step is to examine the parameter estimates for significance and to confirm paths behave in the right direction.

Recall that the hypothesized model posited that relationship initiation efforts, reputation signalling and relationship trust were all factors thought to contribute towards knowledge acquisition in arm's-length client relationships (see figure 7.2). Unfortunately, the parameter estimate for factor one, relationship initiation, showed the factor did not significantly contribute to knowledge acquisition (unstandardized coefficient -.111, p>.05). The negative value for the coefficient also indicates that relationship initiation had a negative relationship with knowledge acquisition which went against the theorized direction of the relationship. The parameter estimate for factor two, reputation signalling, was similarly not significant (unstandardized residual .085, p>.05).

Reputation signalling was also theorized to be positively related to knowledge acquisition and, while the path direction was positive, it was not significant enough to support the theory. The last factor in the relationship building efforts scale, relationship trust, significantly predicted knowledge acquisition (unstandardized coefficient .443, p<.05). The R^2 for the combined effect of the relationship building factors was .152. In other words, relationship building efforts were found to account for only 15.2% of the variance in knowledge acquisition where the only significant contributor was relationship trust.

The other hypothesis in the theorized model is that knowledge acquisition contributed positively to knowledge outcomes such as new product and service development, new market development and a more innovative organisation. This relationship was found to be significant (unstandardized coefficient .529, p<.05). The R^2 value for the effect of knowledge acquisition to knowledge outcomes was .273 or 27.3%. According to the results of the structural equation analysis, knowledge acquisition accounted for 27.3% of the variance in knowledge outcomes.

Figure 7.3   Structural Equation Diagram of the Hypothesized Model
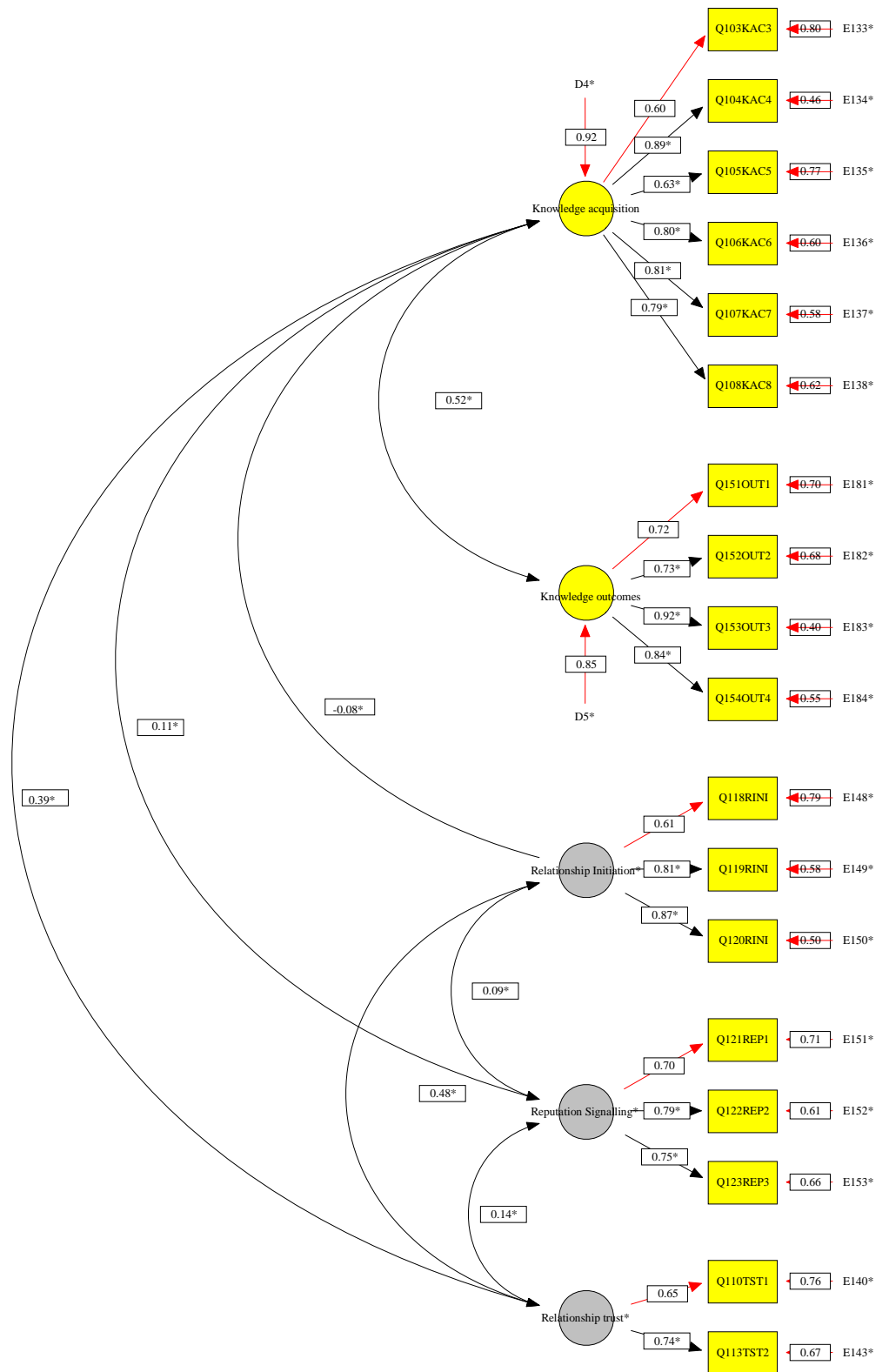
As was the case when conducting the CFAs, a review of the modification indices for better model fit, or to establish a more parsimonious model was also necessary for the structural equation analyses. The Wald (W) test for parameter deletion not

surprisingly recommended removing the insignificant relationships from the model. The first suggestion was to remove the weakest relationship between factor 1, relationship initiation, and factor 4, knowledge acquisition. The other recommendations related to the removal of the other factors that were found to not contribute significantly to knowledge acquisition. The Lagrange-Multiplier (LM) test for parameter addition recommended first freeing the covariance of errors between an indicator of relationship initiation and an item for knowledge outcomes. The recommendation did not make theoretical sense so the improvement to model fit would have been minimal. No parameters were added to the model.

When the W test recommendation for removing non-significant paths from the model was implemented, the resultant R^2 for relationship trust to knowledge acquisition reduced from the original figure of 15.2% to 12.6%, a reduction of 2.6%. This would indicate that relationship initiation and reputation signalling make some contribution to knowledge acquisition. Since the remaining structural equation analyses focus on the moderating effects of various factors on knowledge acquisition and knowledge outcomes, the original model including the non-significant paths was kept. This was to examine not only the overall moderating effects on knowledge acquisition and knowledge outcomes, but to examine also the effect on the variance explained for knowledge acquisition and the overall model (Byrne 2006). This also seemed an appropriate action to take since the fit indices for the hypothesized model shown in figure 7.2 were very good. The following structural equation analyses will focus on the moderator effects of absorptive capacity, exchange partner similarity and size of client firm on knowledge acquisition and knowledge outcomes.

7.1.2   Evaluation of the Moderation Model – Effects of Absorptive Capacity

The previous chapter highlighted that moderator effects of constructs could be examined if a link was added in the structural model where the moderating construct served as a mediator while retaining the direct link between the independent variable (knowledge acquisition) and the dependent variable (knowledge outcomes) (Sauer & Dick 1993). Three different outcomes were proposed:

1. If the mediational role of the latent construct was non-significant (p<.05), but the value of the direct link changed significantly, the latent construct would behave as a pure moderator (Sauer & Dick 1993).

2. Alternatively, if the direct link became insignificant, the latent construct was not moderating the relationship but functioning as a mediator variable (Sauer & Dick 1993). In other words, the antecedent x is affecting the outcome of y indirectly through transmission of influence from x to y by the mediator m (James & Brett 1984).

3. If both the direct link and the mediated link are significant and the direct link's parameter value is significantly different than when the moderating latent construct is present, a hybrid moderator variable effect is occurring (Sauer & Dick 1993).

The hypothesized model that will be examined for this relationship is shown in figure 7.4 where the construct absorptive capacity is hypothesized to moderate the relationship between knowledge acquisition and knowledge outcomes.

Figure 7.4   Model of Knowledge Acquisition and Knowledge Outcomes Moderated by Absorptive Capacity
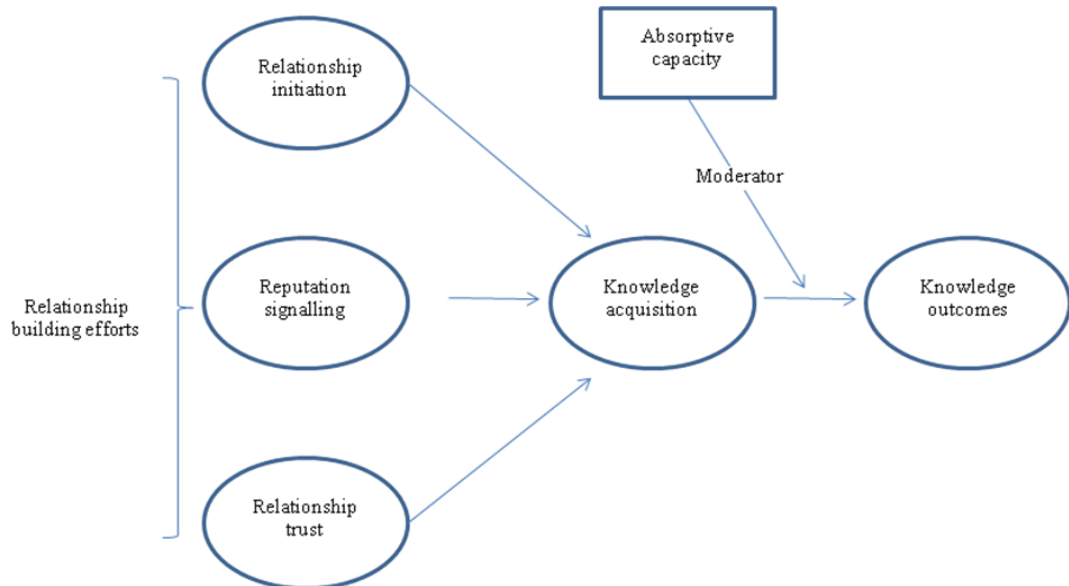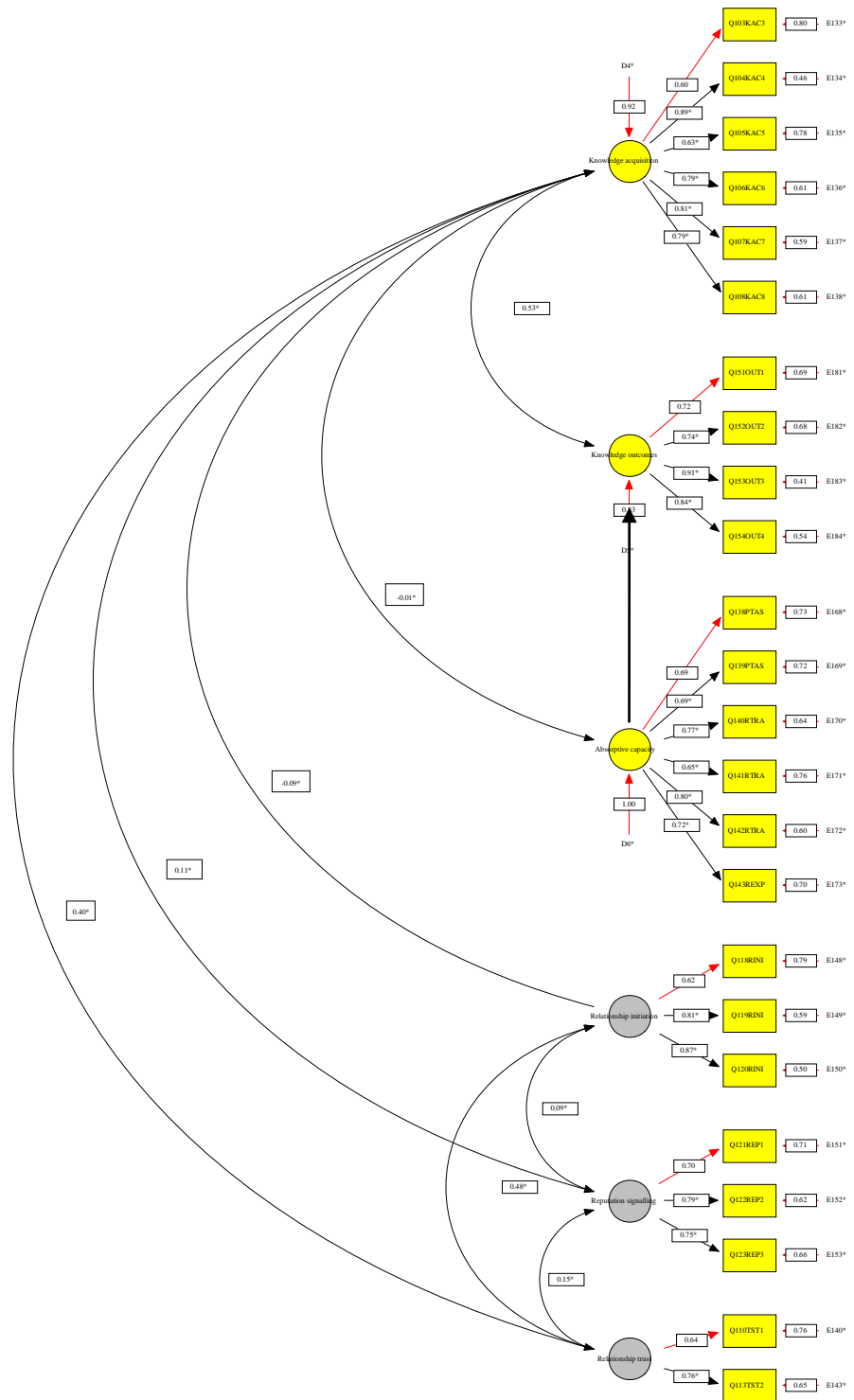
The resultant structural equation diagram for this hypothesized model is shown in figure 7.5. The results of the structural analysis showed a reasonably symmetrical distribution of standardized residuals mostly centred on zero, while 1.33% of residuals fell between -0.1 and -0.2, and 11.33% fell between 0.1 and 0.2. There was little deviation between the loadings of items in the structural model and the measurement model with any variations being less than .05. The model fit indices were very good. The S-B χ^2 value was 274.1 on 240 degrees of freedom (χ^2:df = 1.14), CFI=.981 and NNFI=.978. The SRMR was .065 and the RMSEA value was .027 with 90% confidence interval values between .000 and .041. While the fit statistics show a well fitting model, it is the parameter estimates that are critical for demonstrating moderating effects.

A review of the parameters still showed similar estimates to that presented in the previous model with relationship initiation and reputation signalling still insignificant contributors to knowledge acquisition. Relationship trust remained significant. The parameter estimate for the path absorptive capacity to knowledge outcomes showed the construct had a significant relationship in the mediator model (.263, p<.05). However, the parameter estimate for the path knowledge acquisition to knowledge outcomes also remained significant (.543, p<.05). Furthermore, the R^2 for the variance in knowledge outcomes increased from 27.3% to 31.9% showing an increase in the parameter value. Since both the direct link and the mediated link were significant and the R^2 value is higher than it was without the moderating latent construct, the evidence points to a type 3 outcome being in effect (Sauer & Dick 1993). This would indicate the absorptive capacity construct is acting as a hybrid moderator variable. Interestingly, the path of knowledge acquisition to absorptive capacity was insignificant and, in fact, the relationship was negative (-.006, p>.05). The lack of a significant relationship with knowledge acquisition would indicate absorptive capacity is acting more as a moderator than a mediator.

The extent to which absorptive capacity is a mediator of the knowledge acquisition-knowledge outcome relationship is worth looking at. To do this, one can constrain the relationship from knowledge acquisition to knowledge outcomes to zero and have a look at absorptive capacity as having a full mediator effect (Sauer & Dick 1993, Lin *et al* 2008). The difference in the S-B χ^2 and corresponding fit indices between

the full mediator model and the original moderator/mediator model will indicate which of the two models better explains the effect of absorptive capacity. The resultant S-B χ^2 was 703.55 on 245 degrees of freedom for the full mediator model. This compares unfavourably with the part moderator/part mediator model where the S-B χ^2 was 274.1 on 240 degrees of freedom. The fit indices for the full mediator model also show poorer fit. The CFI was .741, NNFI equalled .709, the RMSEA was .099 with 90% CI of .09 to .107 and the SRMR was .178. This provides evidence in support of absorptive capacity having more of a role as a moderator than a mediator.

7.1.3 *Evaluation of the Moderation Model – Effects of Exchange Partner Similarity*

The previous section examined the moderating effects of absorptive capacity on the knowledge acquisition and knowledge outcomes relationship. Common aspects between the SME and the client firm make up the exchange partner similarity construct. This construct is also posited to have a moderator effect on the knowledge acquisition and knowledge outcomes relationship. The hypothesized model that will be examined for this relationship is shown in figure 7.6.

Figure 7.6 Model of Knowledge Acquisition and Knowledge Outcomes Moderated by Exchange Partner Similarity
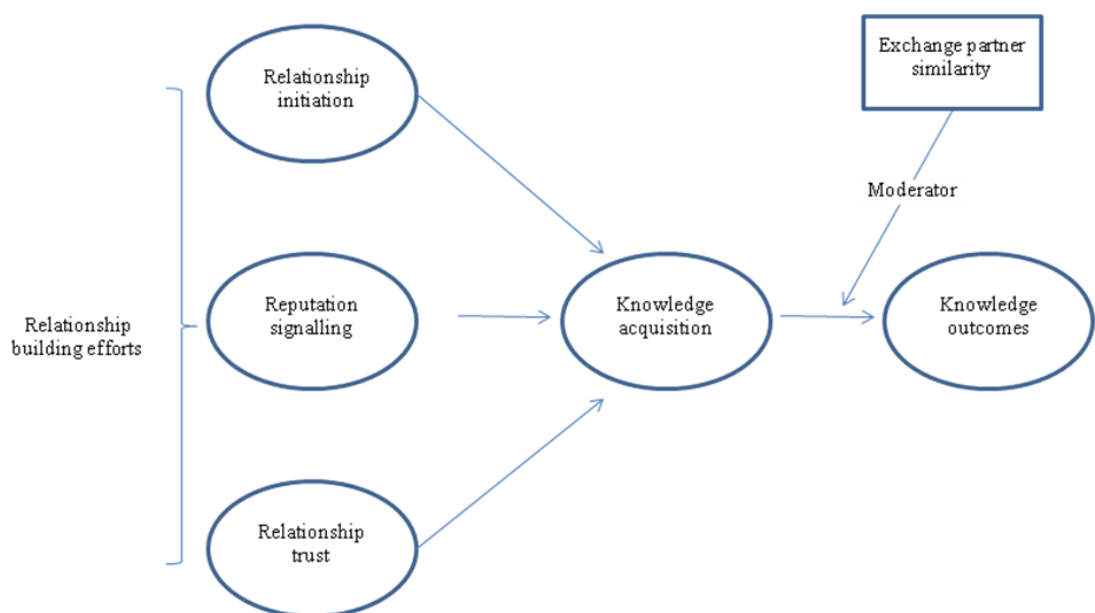
The results of the structural analysis for the hypothesized model showed the distribution of standardized residuals was acceptable with most residuals centred on zero but 1.19% of residuals fell between -0.1 and -0.2, and 14.62% fell between and 0.1 and 0.2. Loadings of measurement items in the structural equation deviated little from that of the measurement model with any variations being less than .05 (see figure 7.7). The S-B χ^2 value for the theoretical model was 215.3 on 196 degrees of freedom (χ^2:df = 1.10), CFI=.987 and NNFI=.985. The SRMR was .07 and the RMSEA value was .023 with 90% confidence interval values between .000 and .040. The fit indices showed a very well fitting model.

The parameter estimates for the paths in the hypothesized model for the relationship building factors and knowledge acquisition remained the same as the other models, with relationship trust being the only significant construct contributing to knowledge acquisition. The R^2 for the knowledge acquisition outcome from the relationship building efforts scale was 14.5%, slightly lower than the findings of the original hypothesized model. Exchange partner similarity had a significant positive relationship to knowledge outcomes (unstandardized coefficient .560, p<.05). Knowledge acquisition still maintained its significant relationship with knowledge outcomes (.451, p<.05). The relationship between knowledge acquisition and exchange partner similarity was not significant (.111, p<.05). The R^2 for the variance in knowledge outcomes increased from 27.3% to 38.6% showing an increase in the parameter value.

The findings were similar to the effect demonstrated by absorptive capacity and, therefore, it would seem exchange partner similarity also acts as a hybrid moderator construct. This conclusion was again reached because the direct link and the mediated link were significant and the R^2 value was higher than it was without the moderating latent construct (Sauer & Dick 1993). Absorptive capacity and exchange partner similarity are conceptually related in that both are posited to reflect a firm's capability of converting acquired knowledge to knowledge outcomes. The similar findings, that both act as hybrid moderators, should not be very surprising. However, it would seem that the exchange partner similarity construct had an overall greater effect on knowledge outcomes than absorptive capacity. Despite the interesting finding, it should be remembered that the CFA for the exchange partner similarity

factor had an AVE of 31.9% which meant the factor's convergent validity was questionable. The structural equation diagram for the proposed exchange partner similarity moderator model is shown in figure 7.7.

Figure 7.7 Structural Equation Diagram of the Hypothesized Model with Exchange Partner Similarity as Moderating Construct
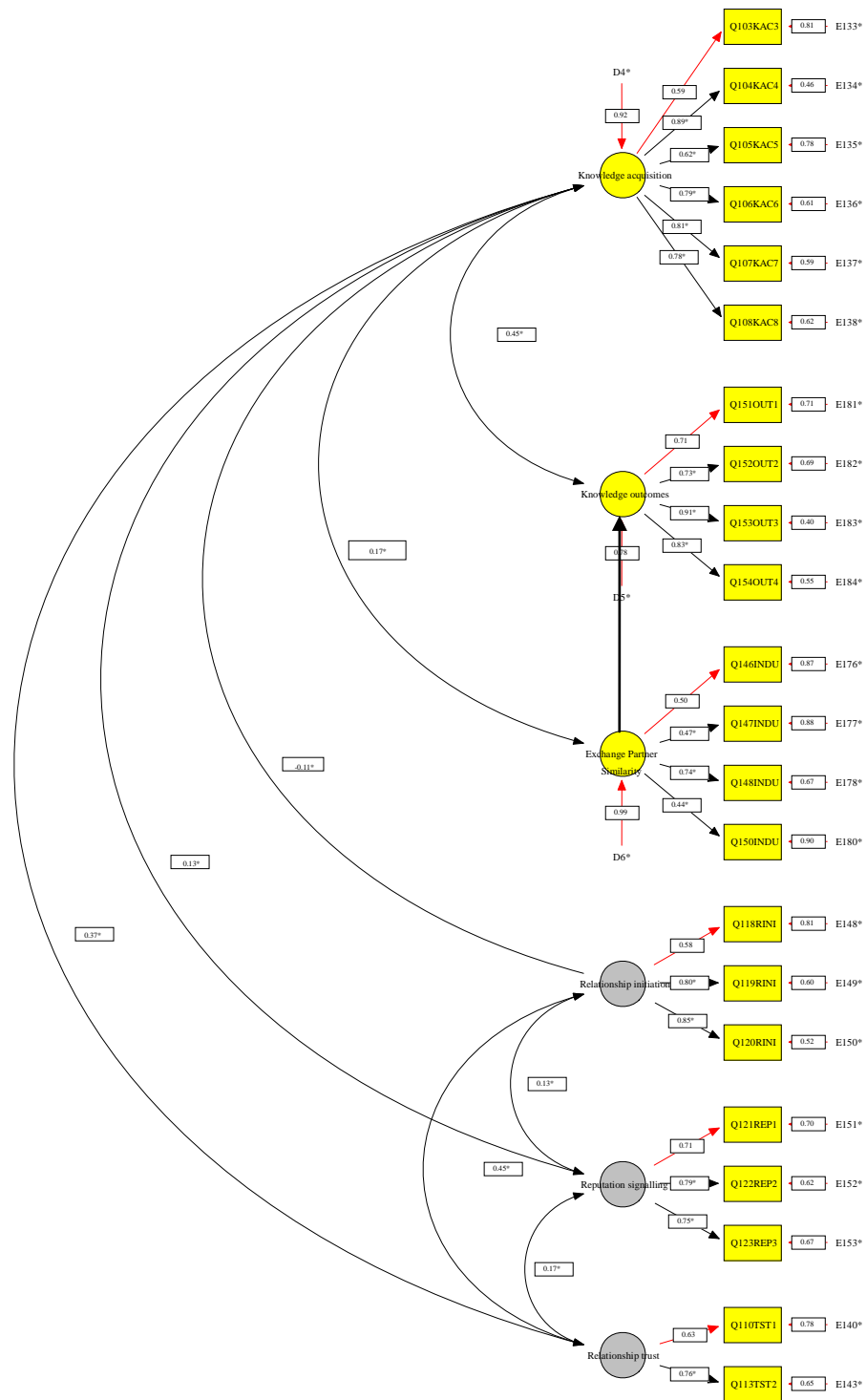
As in the case of absorptive capacity, the effect of exchange partner similarity as a full mediating variable was also examined to look at the difference in the S-B χ^2 value to examine which model had a better fit. The full mediator effect model had an S-B χ^2 of 251.71 on 197 degrees of freedom compared with the moderator/mediator model S-B χ^2 of 215.3 on 196 degrees of freedom. The fit indices for the full mediator effect (with the comparison indices for the hybrid moderator model in brackets) included a CFI of .964 (.987), NNFI of .958 (.985) and an RMSEA of .038 (.023). The 90% CI for the RMSEA value was .022 to .051 (.000 to .040) and SRMR of .104 (.07). The results indicated that the hybrid moderator model better explained the role of exchange partner similarity.

7.1.4   Evaluation of the Moderation Model – Effects of Size of Client Firm

The size of the client firm was also posited to have a moderating effect on the knowledge acquisition and knowledge outcomes relationship. A larger firm's knowledge base and industry experience could spillover to a small and medium-sized firm (Uzzi & Gillespie 2002). This spillover could contribute to the small and medium-sized firm's ability to convert acquired knowledge to knowledge outcomes. The proposed model for this hypothesis is presented in figure 7.8.

Figure 7.8   Model of Knowledge Acquisition and Knowledge Outcomes Moderated by Size of Client Firm
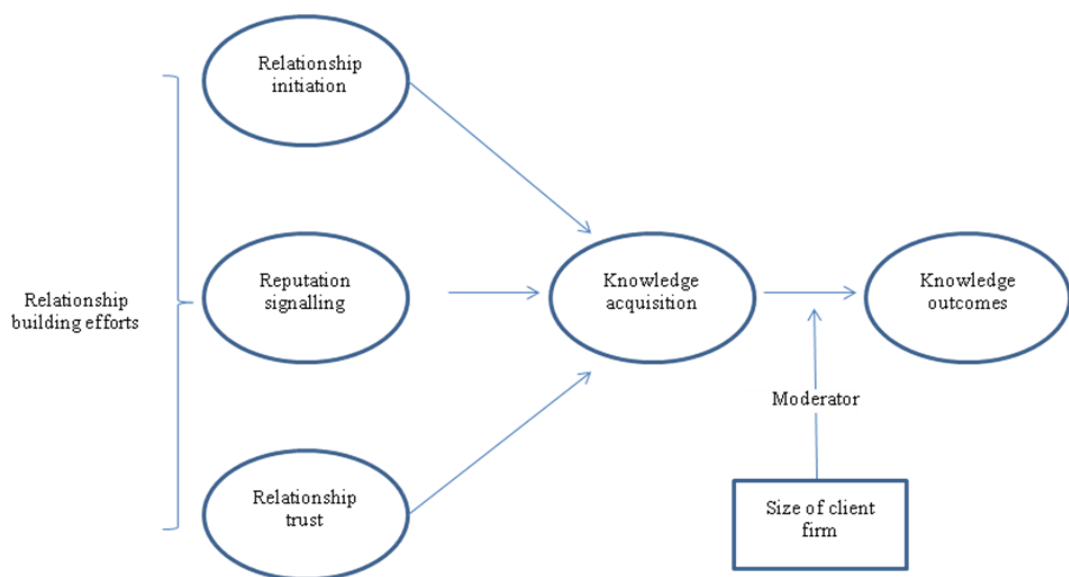
The results of the structural analysis for the hypothesized model demonstrated in figure 7.8 showed standardized residuals were distributed symmetrically. Most residuals centred on zero but 1.90% of residuals fell between -0.1 and -0.2 and 11.43% fell between and 0.1 and 0.2 and .48% fell between .1 and .2. Loadings of measurement items in the structural equation showed little deviation from that of the measurement model (see figure 7.9). The S-B χ^2 value for the theoretical model was 166.18 on 158 degrees of freedom (χ^2:df = 1.05), CFI=.995 and NNFI=.994. The SRMR was .066 and the RMSEA value was .017 with 90% confidence interval values between .000 and .038. The fit indices again provide evidence of excellent model fit.

A review of the parameters still showed relationship trust remained significant but the other two constructs in the relationship building scale were still insignificant contributors to knowledge acquisition. Interesting, the R^2 for the knowledge acquisition outcome derived from the relationship building efforts scale was 17.9%, the highest of the different nested models tested. The parameter estimate for the path, size of client firm to knowledge outcomes, showed the construct played an insignificant role in the mediator model (-.019, p>.05). The parameter estimate for the path knowledge acquisition to knowledge outcomes remained significant (.532, p<.05). The parameter estimate for knowledge acquisition and size of client firm was also significant (.283, p<.05) although it only accounted for 3.1% of variation in the construct.

The R^2 for the variance in knowledge outcomes increased very slightly from 27.3% to 27.7% showing a negligible rise in the parameter value. The lack of significance demonstrated by the size of the client firm construct and the very little change in R^2 suggests the construct played no role in the knowledge acquisition and knowledge outcomes relationship. This would indicate spillover effects were negligible in the sample of businesses collected. The structural equation diagram for the proposed exchange partner similarity moderator model is shown in figure 7.9.

7.1.5   Conclusion

The results of the structural equation analyses provided an opportunity to test the hypotheses proposed earlier in the study. Unfortunately, constructs posited to

contribute to business relationship building efforts, relationship initiation and reputation signalling were not found to be significant contributors to knowledge acquisition from arm's-length client firms. Relationship trust on the other hand had a significant positive relationship with knowledge acquisition. Knowledge acquisition had a significant relationship with knowledge outcomes explaining approximately 27% of variance in the construct. Table 7.1 provides the summary of the different models and their goodness of fit measures.

Table 7.1   Summary of Goodness of Fit Measures for Structural Models

Model	Chi-Square	Degree of Freedom	Chi-Square/ df Ratio	CFI	NNFI	RMSEA	RMSEA 90% CI Levels	SRMR
Model 1	130.65	125	1.045	.996	.995	.015	.000-.039	.064
Model 2	274.1	240	1.14	.981	.978	.027	.000-.041	.065
Model 3	703.55	245	2.871	.741	.709	.099	.09-.107	.178
Model 4	215.3	196	1.10	.987	.985	.023	.000-.040	.07
Model 5	251.71	197	1.278	.964	.958	.038	.022-.051	.107
Model 6	166.18	158	1.05	.995	.994	.017	.000-.038	0.066

Legend
Model 1 -   Modified Model of Knowledge Acquisition and Knowledge Outcomes
Model 2 -   Structural Equation Diagram of the Hypothesized Model
Model 3 -   Full Mediation - Structural Equation Diagram of the Hypothesized Model
Model 4 -   Model of Knowledge Acquisition and Knowledge Outcomes Moderated by Exchange Partner Similarity
Model 5 -   Full Mediation - Model of Knowledge Acquisition and Knowledge Outcomes Moderated by Exchange Partner Similarity
Model 6 - Model of Knowledge Acquisition and Knowledge Outcomes Moderated by Size of Client Firm

Hybrid moderator effects were found to be significant in the absorptive capacity and exchange partner similarity constructs but not in the size of the client firm. The potential effects of absorptive capacity and exchange partner similarity as full mediators were also examined through structural analysis. However, the models had poorer fit statistics than the corresponding hybrid moderator models. This indicated the two factors were not pure mediators and confirmed their hybrid moderator effects on knowledge acquisition and knowledge outcomes.

There were other hypotheses that were not able to be tested because of problems associated with construct development and the broad cross-section of businesses

sampled for this study. The discussion on the findings and results will be covered in the next chapter.

Figure 7.9   Structural Equation Diagram of the Hypothesized Model with Size of Client Firm as Moderating Construct
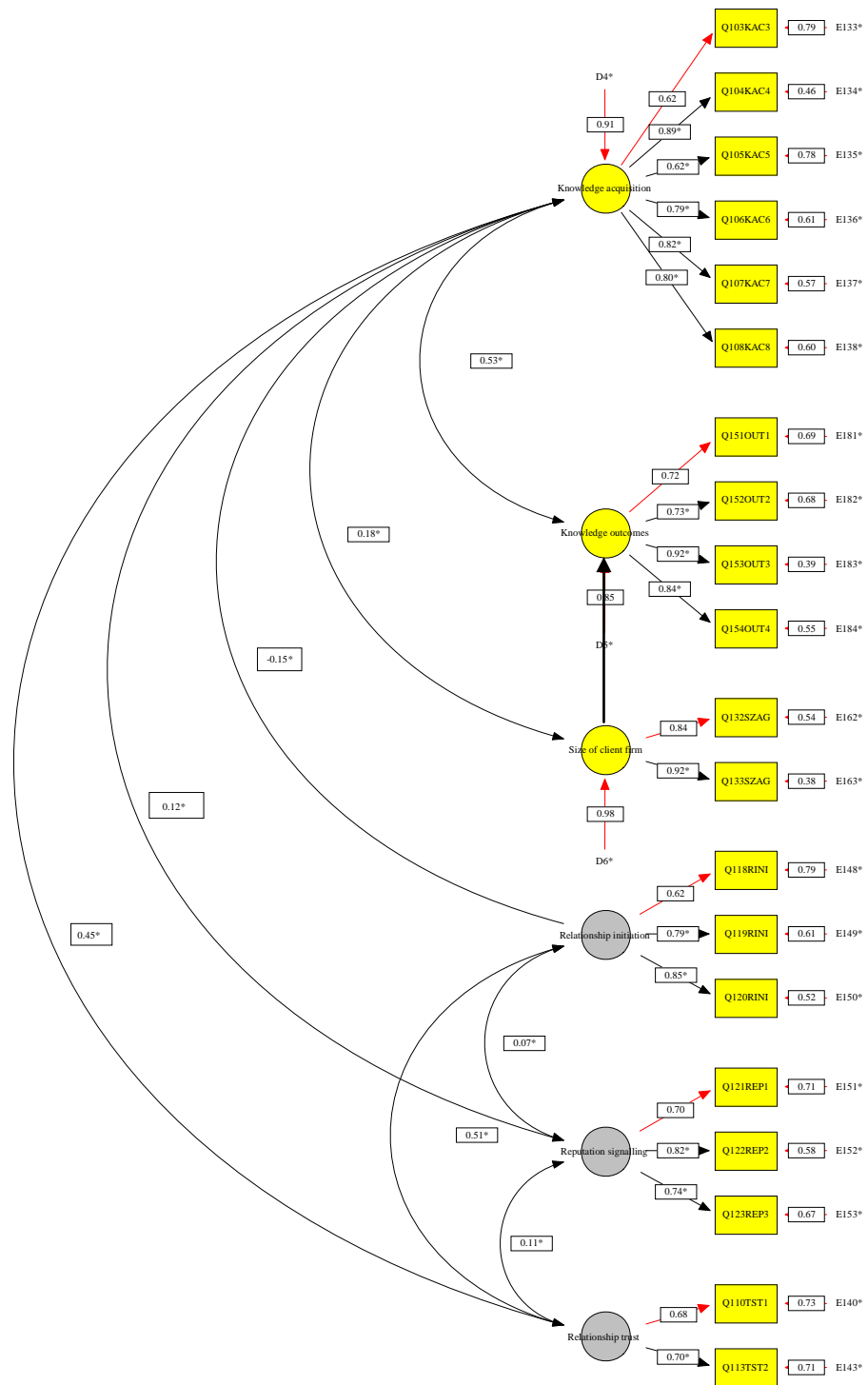
8. DISCUSSION

8.1 Introduction

The discussion section will review the results of the different analyses conducted for the study and identify where the results confirmed the hypotheses forwarded for the research and where they did not, as well as consider why this was the case. To begin this process, it would be opportune to review the proposed model presented in the hypotheses section and review what the research intended to find out. The model is shown in figure 8.1. The overall thesis of this study was that arm's-length client relationships are a valuable resource in terms of knowledge transfer and acquisition for SMEs.

The following section will deconstruct the model by looking at the different paths and relate this to the findings of the analysis and the hypotheses put forward in chapter 3.

Figure 8.1   Hypothesized Model of Knowledge Acquisition in Weak Client-Firm Exchange Relationships
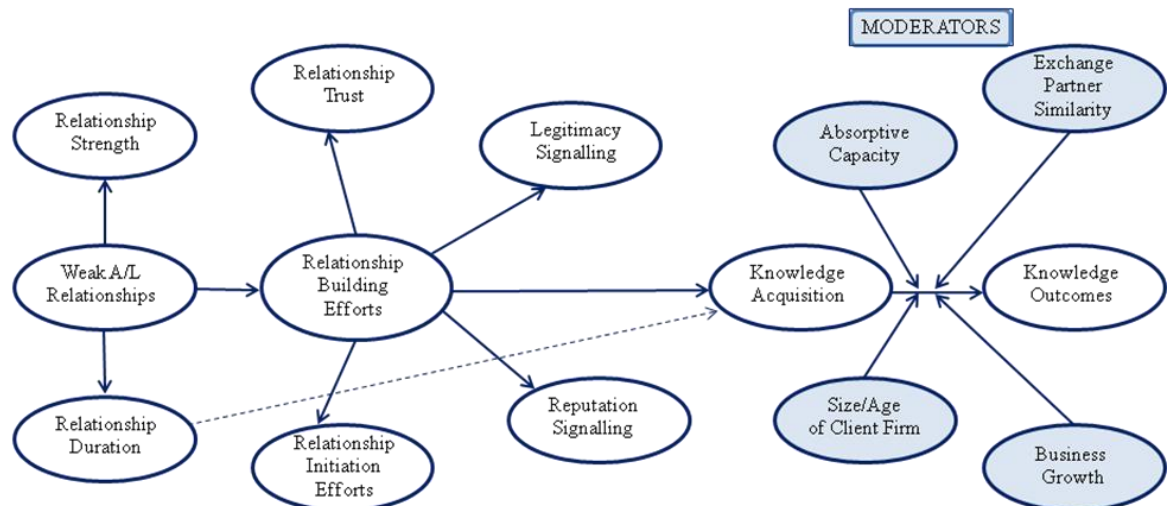
8.1.1   Arm's-Length Relationships

The first part of the model shown in figure 8.1 relates to the measure for weak arm's-length relationships. One of the main propositions postulated by this thesis was that the majority of SME relationships involved weak arm's-length linkages. This

proposition was supported by Larson (1992) and Fuller and Lewis (2002) who identified that most entrepreneurial firms' relations were adversarial supplier and customer arm's-length relationships. In order to verify this was the case, a construct measuring relationship strength was developed from the literature (Boyle *et al* 1992, Ganesan, Malter & Rindfleisch 2005, Johnson, Sohi & Grewal 2004) and modified for this study. Similarly, the linkage duration was also regarded as a measure of an arm's-length relationship since most of the literature indicated such linkages had a shorter time span than other type of interfirm linkages (Hite & Hesterly 2001, Heide & Miner 1992). The construct was developed from Wu (2008).

While the arm's-length duration was posited to have a short time span, it was also posited that some of these linkages might involve repeat transactions and some of these might have a longer time span. The longer time span linkages were thought to be linked to knowledge acquisition, which is why the two constructs are connected with the dotted line. Because these constructs were ultimately problematic in the exploratory analyses, having failed to load appropriately on their expected constructs and cross-loading with other constructs, it is useful to review the items here to identify potential causes of the problem. The items are presented in table 8.1. A review of the relationship strength items indicates a few contradictions. This was mainly attributed to items being reverse coded. However, when one item says the relationship is best described as insecure and another item says they could be described as cooperative, the efforts to add reverse coded items to the scale probably ended up confusing the respondent.

Table 8.1 **Measurement Items for Relationship Strength and Relationship Duration**

Construct	Items/Indicators
Relationship Strength	Most of the business relationships my firm has with our clients could best be described as arm's-length
	Our business relationships with our clients would best be described as insecure
	Our business relationships with our clients tend to be "one-off"
	Our business relationships with our arm's-length clients could best be described as cooperative
Relationship Duration	Our firm does more business with arm's-length clients than with closer, more collaborative clients
	Our arm's-length clients usually repeat their transactions with us
	Our firm relies on a small group of close, regular customers than a much larger group of less regular customers

To avoid confusion as much as possible, the following preamble describing arm's-length relationships immediately preceded the survey questions (see appendix one for further detail):

> "The aim of this part of the survey is to determine the extent of knowledge acquisition small firms achieve through their clients. These clients can be described as ranging from close, regular ones to less regular, non-close, 'one-off' clients from whom future transactions are not necessarily expected. The latter client type is often described as an 'arm's-length' client and is the specific focus of this part of the survey. We are interested in finding out how valuable these arm's-length clients might be in terms of knowledge your firm has acquired from them. Before focussing on your arm's-length clients, questions 93 to 100 ask you to consider your business growth intentions. Thank you for deciding to complete part two."

In an effort to keep the preamble brief and keep the definition of an arm's-length relationship as succinct as possible, the definition might have ended being too vague. Despite this definition being clarified in the semi-structured interviews and the pilot testing with 20 business owners to clarify terms in the survey, some respondents simply did not understand the term "arm's-length relationship". Further, some respondents might not have read the preamble before starting the survey. This would have been a problem with the online questionnaire since, once respondents commenced the survey, they were not able to return to the previous page where the definition could be found. A text window included in the survey allowed respondents to report any problems they experienced in the questionnaire. Some of

the responses related to the definition of an arm's-length linkage. Comments included:

- "I would have liked a more detailed description of which clients would fall in the category of arm's-length clients";
- "Where is the term arm's-length client explained? I just guessed what it might mean. Did I miss that or should I know through osmosis";
- "Was not really sure what an arm's length customer/client was - took it as a competitor - could not press back button to find out"

Since the survey was a cross-sectional study of businesses across Western Australia, there may well have been industry sectors where few arm's-length clients existed. The study assumed arm's-length clients to be owners of other businesses with industry and business knowledge to impart to the SME business owner. In other words, the arm's-length client relationship was expected to be in the context of a business-to-business relationship. Some of the respondents did not have these types of relationships. Again, some of the comments from respondents reflect these observations:

- "Because my business mainly deals with parents and children I found it hard to distinguish who was the arm's length client"
- "The intellectual property 'industry' is by definition secretive, and is not really addressed by these questions"
- "An architecture practice operates on a business-client basis; since my work is primarily residential, clients are usually not knowledgeable in this field"

Unfortunately, the findings indicate there is more work needed on the definition of an arm's length-relationship, the context of which needs to be more carefully identified. In hindsight, excluding respondents with no business-to-business client relationships might have helped make the survey more relevant. The questions relating to linkage duration had similar problems, with two of the questions reflecting the relationship strength construct more strongly than the linkage duration. This caused problems with cross-loading of items on other factors. Unfortunately, the results meant the hypotheses that related to the weak arm's-length relationship construct as shown in figure 8.1 to the left of the diagram could not be determined. The development of an appropriate scale for measuring relationship intensity and strength that includes, specifically, arm's length-relationship is a potential avenue for future research. However, the results meant the following hypotheses could not be examined:

> H1   Small and medium-sized firms are more reliant on market exchanges and arm's-length relationships for their knowledge and information needs than formal arrangements such as strategic alliances and joint ventures.
>
> H6   The fewer the number of arm's-length ties a firm has with client firms, the less the amount of knowledge it will acquire.
>
> H7   Knowledge transfer is positively related to the duration of an arm's length tie between a small and medium-sized firm and a client firm.

8.1.2 *Relationship Building Efforts*

Since weak arm's-length relationships could not be measured as a construct in this study, examining relationship building efforts in the context of weak arm's-length linkages was not directly possible. The questions that related to relationship building efforts were still in the context of arm's-length relationships. However, the misunderstanding of the term shown by some of the survey respondents meant relationship building efforts applied more to any exchange relationship with a client, rather than arm's-length one. There were four constructs thought to reflect the relationship building efforts of a firm as shown in figure 8.1. These included relationship trust, relationship initiation efforts, reputation signalling and legitimacy signalling. Unfortunately, the legitimacy signalling construct contained items that were highly intercorrelated resulting in potential multicollinearity of the construct. The items were collapsed into one overall item but this failed to load significantly on any of the factors, or as one factor on its own. Unfortunately, the legitimacy construct was removed from further analysis. This meant the following hypothesis could not be confirmed:

> H5   The more prominent and reputable are a small and medium-sized firm's exchange partners, the more knowledge it will acquire from its arm's-length exchange partners

This left three remaining constructs, relationship initiation, reputation signalling and relationship trust. With no legitimacy signalling in the relationship building efforts scale, the model of knowledge acquisition and knowledge outcomes is shown in figure 8.2. The CFA for the relationship building efforts scale provided a model that fit the data reasonably well. One of the items for relationship trust did not load above the minimum .5 and was dropped from subsequent analysis, leaving a two item construct. In the structural equation analysis, relationship initiation was found to have an insignificant negative relationship (unstandardized coefficient -.111, t-statistic = -.822, p>.05) with knowledge acquisition. This was a surprising result

since it was posited that relationship initiation with a client firm would result in a significant, positive outcome leading to knowledge acquisition because it acted as a substitute for trust.

Perhaps this demonstration of goodwill is a one way effort on the part of the SME owner with little apparent reciprocation from the client. One of Larson's (1992) respondents in her study of network dyads in entrepreneurial relationships claimed "…we initiate the step of going the extra distance for them (the client)". The initial relationship building effort might lead to some reciprocation later on in the linkage but not during goodwill demonstration. The negative value of the path estimate suggests it is negatively related to knowledge acquisition. In other words, the more the SME owner tries to initiate the relationship, the less knowledge he or she will acquire from the client. Perhaps the result is not surprising after all. If the SME owner tries to build a relationship by demonstrating goodwill, this might lead to gaining the trust of the exchange partner. But gaining the trust of the exchange partner does not necessarily mean the SME owner trusts the exchange partner in return. If there is little reciprocation, trust is unlikely to be a two-way arrangement. The corresponding hypothesis, H3, was not supported:

> H3   The small and medium-sized firm's effort at instigating greater goodwill and relationship building investments is positively related to knowledge acquisition from their arm's-length client

Figure 8.2   Modified Model of Knowledge Acquisition and Knowledge Outcomes
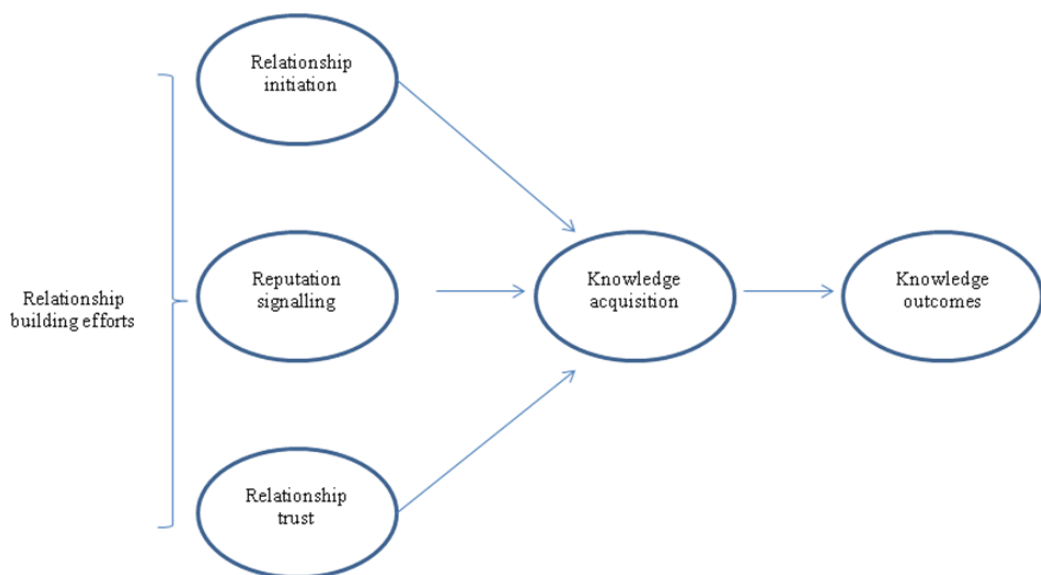
The next construct to review in the relationship building efforts scale was reputation signalling. It was hypothesized that when an SME owner signals the reputation of the business through the display of certification such as quality accreditation and membership of professional organisations (Mishra 1998), knowledge will be acquired from the exchange partner. The path estimate for this relationship was found to be insignificant (unstandardized coefficient .085, t-statistic = 1.346, p>.05). The insignificant result means reputation signalling does not contribute to knowledge acquisition to any large extent. It is not a substitute for trust.

The effort might be more marketing-related, aimed at attracting a potential transaction from an exchange partner, but not knowledge acquisition. The corresponding hypothesis, H4 was not supported by the data:

> H4   The small and medium-sized firm's reputation signalling in the form of certification is positively related to knowledge acquisition from the arm's-length client

The relationship trust construct comprising of two items was found to have a significant positive relationship with knowledge acquisition (unstandardized coefficient .443, t-statistic = 3.090, p<.05). In other words, trust of an exchange partner leads to knowledge acquisition. This indicates that the most significant construct in the relationship building efforts scale was trust and for knowledge acquisition to take place, the exchange partner has to be trusted in the first place. The result makes intuitive sense. The other two constructs, relationship initiation and reputation signalling, assumed these efforts would evoke the trust of the exchange partner, not that of the SME owner. Gaining the trust of the exchange partner on the part of the SME was thought to contribute to knowledge acquisition.

However, even if an exchange partner imparted some knowledge to the owner of an SME firm, the knowledge can only be of use to the SME owner if the partner can be trusted. The results of the relationship building scale indicate that relationship initiation efforts on the part of the SME owner and the SME owner's reputation signalling are not substitutes for trust. The R^2 for the relationship building scale, essentially through trust of the exchange partner, indicated it explained only 15.2% variance in knowledge acquisition. This result indicates that nearly 85% of

knowledge acquisition occurs from sources other than client exchange relationships. The results show the following H2 was confirmed:

> H2 Small and medium-sized firm owners' trust of their arm's-length client is positively related to knowledge acquisition

8.1.3 Knowledge Acquisition Scale

The knowledge acquisition scale was both a dependent variable and independent variable in this doctoral study. Figure 8.2 shows relationship building efforts were associated with knowledge acquisition, where the latter was the dependent variable. Knowledge acquisition then acted as an independent variable in its relationship with knowledge outcomes. The path estimate to knowledge outcomes was significant (unstandardized coefficient .529, t-statistic = 5.471, p<.05). This indicated that knowledge acquisition was a significant contributor to knowledge outcomes and accounted for 27.3% of variance in the latter. However, the result indicates that there are other contributors not examined in this doctoral study that account for another 76.7% of knowledge outcomes.

Interestingly, respondents to the 2008 WA Small Business Benchmark survey (part B of which was the survey for this doctoral study) were asked to nominate the two external sources of information and knowledge they considered most important to their business (question 36 in part a; see appendix 1). Personal networks and the internet were reported the most important by 19.6% and 18.6% of respondents respectively. This was followed by clients/customers, who were considered the most important by 6.7% of respondents (Weber *et al* 2009). Since client/customers were not regarded as the most important source of knowledge and information overall, this might explain why it only accounted for only 27.3% of the variance. It would be inappropriate to say that the hypotheses were confirmed since they related initially to the arm's-length client and the measure for such relationships could not be used in the study.

However, some liberty was taken to modify the wording of the original hypotheses where the reference to the "arm's-length" client in the original hypotheses was dropped. The hypotheses were reworded to indicate the conversion of acquired knowledge to knowledge related outcomes. Hence the following were confirmed:

H12A Knowledge acquisition will be positively related to product development and innovation.

H12B Knowledge acquisition will be positively related to new market development

H12C Knowledge acquisition will be positively related to internal change of the firm (operational efficiency and innovative).

8.1.4 Knowledge Outcomes Scale

Since the knowledge outcomes scale was the dependent variable, no path analysis can be looked at other than with the independent variable, knowledge acquisition, as discussed earlier. It is worthwhile, in this case, to review the coefficients in the structural equation for each of the items and examine which of the outcomes provided the strongest linkage with the construct knowledge outcomes. The knowledge outcomes scale reflected the items shown in table 8.2. The unstandardized coefficients with their respective t-statistics are provided.

Table 8.2   Knowledge Outcomes Measurement Items and Corresponding Coefficients and T-Statistics

Item No.	Question	Unstandardised Coefficient (t-statistic)
Q151	My firm has developed new products and/or services through knowledge and information acquired from our arm's length clients	1.076 (8.557, p<.05)
Q152	My firm is operating in new markets through knowledge and information acquired from our arm's length clients	1.075 (8.439, p<.05)
Q153	My firm is operating more efficiently as a result of knowledge and information acquired through our arm's length clients	.303 (3.842, p<.05)
Q154	My firm is more innovative as a result of the knowledge and information acquired through our arm's length clients	.598 (4.139, p<.05)

The results show the development of new products and services and the identification of new markets in which to operate were the strongest items associated with knowledge outcomes. To a lesser extent, a more innovative organisation and operation efficiency were also associated with knowledge outcomes.

8.1.5   *Moderating Effect of Absorptive Capacity*

Absorptive capacity refers to the ability of firms, through their prior related knowledge, to recognise valuable new information or knowledge, and its assimilation and application for commercial gain (Cohen & Levinthal 1990). Zahra and George (2002) identified two overall dimensions of absorptive capacity, potential absorptive capacity and realised absorptive capacity. This suggested a temporal relationship between the two dimensions, where first potential absorptive capacity, through acquisition and assimilation, helped with development of knowledge. Realised absorptive capacity transformed and exploited this knowledge resulting in new insights and outcomes from the combination of existing and newly acquired knowledge (Jansen, Van den Bosch & Volberda 2005, Zahra & George 2002).

A 12-item scale adapted from Jansen, Van den Bosch and Volberda's (2005) 21 item scale was developed for this doctoral study to suit the context of the research. Items of the scale not regarded as applicable were deleted but the remaining scale contained 3 items from each of the four dimensions. Unfortunately, the exploratory analysis found only 6 items that loaded appropriately on the absorptive capacity scale and only as one factor. In other words, the scale was unidimensional. Items that made up the scale came from three dimensions proposed by Jansen, Van den Bosch and Volberda (2005).

These included two items measuring the assimilation dimension of potential absorptive capacity, all three items measuring the transformation dimension of realised absorptive capacity and one item measuring the extent to which SME's were able to exploit new external knowledge (Jansen, Van den Bosch & Volberda 2005). Despite their ability to tap into these different dimensions in Jansen, Van den Bosch and Volberda's (2005) research, the items were found to load on only one construct. Since the scale was adapted for this doctoral study the change of some of the items to fit the context might have had an effect on the way items loaded. In any case, the 6-item scale had reasonable fit in the knowledge absorption capability scale when the measurement model for the scale was assessed.

The structural equation analysis of absorptive capacity and its effect on knowledge acquisition and knowledge outcomes scale was positive. The path estimate with

knowledge outcomes was significant (unstandardized coefficient .263, t-statistic = 2.673 p<.05). The estimate of knowledge acquisition to absorptive capacity was insignificant (unstandardized coefficient -.006, t-statistic = -.101, p>.05). The effect of the construct on the R^2 value for the knowledge outcomes factor was an increase from 27.3% without absorptive capacity to 31.9% with absorptive capacity, so there has been an increase in the R^2 as a result of absorptive capacity. Based on Sauer and Dick's (1993) methodology for evaluating moderating variables, absorptive capacity was found to have both a moderating and mediating role. The role of absorptive capacity solely acting as a mediator was assessed in the structural equation analysis and the results were much poorer than the hybrid moderator model (S-B χ^2 was 703.55, on 245 degrees of freedom compared with S-B χ^2 of 274.1 on 240 degrees of freedom). The χ^2 differential between the two models was quite high and presented some evidence that absorptive capacity acted as a hybrid moderator rather than a mediator.

James and Brett (1984) advised that in most cases, a particular variable should be classified as either a mediator or a moderator. However, in other cases, this premise is wrong, since a particular variable might assume the roles of both mediator and moderator in the same functional relation and equation (James & Brett 1984). The extent to which absorptive capacity is more of a moderator than a mediator, or vice versa, is not certain. However, some deductions can be made from the results in the measurement model and the structural equation as to the construct's main effect. Firstly, Baron and Kenny (1986) suggested that it is desirable that moderator variables be uncorrelated with both the predictor and the dependent variable. In this instance, they are knowledge acquisition and knowledge outcomes respectively. From the CFA of the full measurement model (see figure 6.9), the correlation between knowledge acquisition and absorptive capacity was very low, with a correlation coefficient of .005. This meant absorptive capacity was essentially uncorrelated with knowledge acquisition and meets one of the requirements for moderation, rather than mediation. This would also indicate no causality between the two factors, a necessary condition for mediation (Baron & Kenny 1986).

The correlation between absorptive capacity and the dependent variable, knowledge outcomes was .213. This indicated some correlation and is perhaps why absorptive

capacity had some mediating effect with the knowledge acquisition and knowledge outcomes relationship. This suggests that while knowledge acquisition does not impact on absorptive capacity, absorptive capacity is required for knowledge outcomes. Recall the construct of absorptive capacity and its items used for this study. None of the items reflected the knowledge acquisition dimension proposed by Zahra and George (2002) and Jansen, Van den Bosch and Volberda (2005). Notwithstanding, the fact that in this study the absorptive capacity construct proved unidimensional, the items nevertheless reflected components of assimilation, transformation and exploitation, all of which would be more related to knowledge outcomes than knowledge acquisition. This might explain why there was little correlation between knowledge acquisition and absorptive capacity and why in this study, absorptive capacity acted more as a moderator. The big difference in the S-B χ^2 between the full mediating model and the hybrid moderator model would also indicate that absorptive capacity had more of a moderating effect on the overall relationship (Baron & Kenny 1986). Had the items reflecting the knowledge acquisition dimension of Jansen, Van Den Bosch and Volberda's (2005) scale loaded properly, it is possible that absorptive capacity might have had more of a mediating role. Therefore, based on the overall analysis of the relationship and this particular study is concerned, the following hypothesis is confirmed:

> H9   A firm's absorptive capacity moderates the knowledge acquisition/knowledge outcomes relationship (with a minor mediation effect)

8.1.6   Moderating Effect of Exchange Partner Similarity – Common Goals, Values, Norms and Knowledge Bases

Common goals, values, norms and knowledge bases are concepts often associated with absorptive capacity (Tsai 2000, Yli-Renko, Autio & Sapienza 2001). These concepts also facilitate knowledge acquisition, assimilation, transformation and exploitation. For instance, a firm might acquire knowledge from a client firm with whom they share similar knowledge bases. If both firms have similar goals, the relevance of this new external knowledge might be made clearer to the SME owner and the owner is more likely to assimilate the new knowledge, transform this knowledge, and then exploit it. In this study, exchange partner similarity was used as a collective term to reflect common goals, values, norms and knowledge bases. One of the items in the construct was one that measured specifically, the SME owner's

industry experience. Recall earlier in the methodology section, the distinction was made between reflective and formative items. In structural equation modeling, constructs need to be reflective (Hair *et al* 2006). If they are not, the construct will not be an effective measure. Of the five items that made up the collective exchange partner similarity construct, it was industry experience that seemed the least reflective of all the other items. This is perhaps why it had no statistical significance in the CFA for the associated construct and why it was subsequently dropped from the scale.

From the structural equation analysis, the exchange partner similarity construct was found to have a type 3 moderator effect where it also partly mediated the knowledge acquisition/knowledge outcomes relationship. The path between exchange partner similarity and knowledge outcomes was positive and significant (unstandardized coefficient .560, t-statistic = 3.486, p<.05). By contrast, the path estimate for knowledge acquisition to exchange partner similarity was insignificant (unstandardized coefficient .111, t-statistic = 1.724, p>.05). The R^2 value for knowledge outcomes without the moderating effects of exchange partner similarity was 27.3%. With exchange partner similarity, the R^2 value increased significantly to 38.6%. Based on this result, the exchange partner similarity construct had a higher impact on knowledge outcomes than did absorptive capacity. Again, the results should be treated guardedly since the overall AVE for the construct equalled 31.9% which leaves some doubt regarding the validity of the scale.

Since mediation would reflect a causal relationship between knowledge acquisition and exchange partner similarity, the lack of significance in the path estimate indicates exchange partner similarity also acts as a moderator variable. However, a look at the correlation estimates between knowledge acquisition and industry outcomes showed a correlation estimate of .168. The correlation estimate for industry experience and knowledge outcomes was .436. This went against Baron and Kenny's (1986) prescription that moderator variables not be correlated with the independent variable and the criterion (dependent variable).

The structural equation analysis for the full mediation effects of exchange partner similarity, by constraining the knowledge acquisition to knowledge outcomes path to

zero, gave a poorer set of statistics than the hybrid moderator model. The full mediation model gave an S-B χ^2 of 251.71 on 197 degrees of freedom compared with S-B χ^2 of 215.31 on 196 degrees of freedom for the moderator model. This provides more support for the hybrid moderator effect than the full mediator effect. Therefore, it can be concluded that exchange partner similarity has both a moderator and mediator effect, which also makes intuitive sense. The mediator effect of exchange partner similarity indicates knowledge acquisition has a causal effect with the construct (Baron & Kenny 1986).

In other words, knowledge acquisition causes exchange partner similarity. One of the measures of exchange partner similarity was the commonality of the knowledge base with that of the client-firm. In order to have a knowledge base in the first place, the SME owner needs to acquire knowledge. This acquired knowledge might be associated with industry and market knowledge. If a client-firm operates in the same industry then there is a possibility that the common knowledge bases results in the conversion of acquired knowledge to knowledge outcomes. For instance, if two firms interact, their common understanding and knowledge of industry and customer related problems might lead to a more effective application of this common knowledge to outcomes that will benefit the SME. The more the SME acquires knowledge, the more likely it is to develop a knowledge base that is common with another firm's knowledge base. The greater a firm's knowledge base, the more acquired knowledge is likely to be converted to knowledge outcomes, therefore exchange partner similarity also has the moderator effect on the relationship. The data supported the moderator effect of exchange partner similarity on knowledge outcomes and supports the following hypotheses:

H10A The alignment of the knowledge bases of an SME and a client firm moderates the knowledge acquisition/knowledge outcomes relationship

H10B The alignment of the common goals and norms of an SME with those of the arm's length client moderates the knowledge acquisition/knowledge outcomes relationship

8.1.7 *Moderating Effect of Size of the Client Firm*

The size of the client firm was posited to have a moderating effect on the knowledge acquisition/knowledge outcomes path. Larger firms are likely to be a "repository" of market knowledge, such as market developments, new trends, and new technologies

(Alvarez & Barney 2001, Stuart 2000). The relationship between an SME and a larger firm might result in some knowledge spillover from the larger client firm resulting in the conversion of acquired knowledge to knowledge outcomes (Alvarez & Barney 2001). For instance, an SME owner might become aware of a new technology that has been introduced into the marketplace through one of the firm's clients. How important this technology is and what effects it is likely to have on the industry may be unknown to the SME owner. The larger firm might have more knowledge about the application of this new technology to the industry. Through the interaction of the SME owner and the larger client firm, some knowledge spillover effect might occur which is of benefit to the SME owner, such as knowledge outcomes.

Unfortunately, the path estimate for the moderator effect of the size of the client firm on knowledge acquisition and knowledge outcomes was insignificant (unstandardized coefficient -.019, t-statistic = -.418 p>0.05). The overall effect on the R^2 was an increase from 27.3% to 27.7%. The result indicated size of client firm was not significant and therefore the following hypothesis was not supported by the data:

> H8A The size of the client firm moderates the knowledge acquisition/knowledge outcomes relationship

The age of the client firm did not load appropriately on the overall construct and therefore the effect of the age of the firm as a moderator could not be examined. Therefore it was not possible to examine the following hypothesis:

> H8B The age of the client firm positively moderates the knowledge acquisition/knowledge outcomes relationship.

8.1.8 Moderating Effects of Business Growth Scale

The growth orientation of the SME owner was posited to contribute positively to knowledge outcomes of the firm. Since knowledge outcomes were postulated to include new product and service development as well as the identification of new markets, these outcomes required knowledge resources (Saarenteketo *et al* 2009, Davidsson, Steffens & Fitzsimmons 2009). Business owners willing to expand their business were likely to seek the conversion of acquired knowledge to knowledge outcomes. Therefore, the business growth scale was thought to have a positive

moderating effect on knowledge outcomes. Unfortunately, this hypothesis could not be confirmed because of problems with the construct including the negative correlation between two factors thought to complement each other and act as indicators of business growth.

One potential cause for the lack of validity as far as this construct was concerned was that not all of the respondents were from growth-oriented businesses. Only growth oriented SME owners were encouraged to complete part B, although, based on the responses relating to the growth questions, quite a few of the respondents would fit in the category of a "lifestyle" entrepreneur.

Consequently, hypothesis 11 could not be examined.

> H11   The SME owner's willingness to grow his or her business moderates the knowledge acquisition/knowledge outcomes relationship

Based on the findings of the analysis, the following represents the hypotheses that could not be examined, those that were not supported by the data and those that were:

Hypotheses that could not be examined:

H1   SMEs are more reliant on market exchanges and arm's-length relationships for their knowledge and information needs than formal arrangements such as strategic alliances and joint ventures.

H5   The more prominent and reputable are a small and medium-sized firm's exchange partners, the more knowledge it will acquire from its arm's-length exchange partners

H6   The fewer the number of arm's-length ties a firm has with client firms, the less the amount of knowledge it will acquire.

H7   Knowledge transfer is positively related to the duration of an arm's length tie between a small and medium-sized firm and a client firm.

H11   The SME owner's willingness to grow his or her business moderates the knowledge acquisition/knowledge outcomes relationship

H8B   The age of the client firm positively moderates the knowledge acquisition/knowledge outcomes relationship.

Hypotheses that were not supported by the data:

H3   The small and medium-sized firm's effort at instigating greater goodwill and relationship building investments is positively related to knowledge acquisition from their arm's length client

H4   The small and medium-sized firm's reputation signalling in the form of certification is positively related to knowledge acquisition from the arm's-length client

H8A   The size of the client firm moderates the knowledge acquisition/knowledge outcomes relationship

Hypotheses supported by the data:

H2   Small and medium-sized firm owners' trust of their arm's length client is positively related to knowledge acquisition

H9   A firm's absorptive capacity moderates the knowledge acquisition/knowledge outcomes relationship (with a minor mediation effect)

H10A   The alignment of the knowledge bases of a small and medium-sized firm and a client firm moderates the knowledge acquisition/knowledge outcomes relationship

H10B   The alignment of the common goals and norms of an SME firm with those of the arm's-length client moderates the knowledge acquisition/knowledge outcomes relationship

H12A   Knowledge acquisition will be positively related to product development and innovation.

H12B   Knowledge acquisition will be positively related to new market development

H12C   Knowledge acquisition will be positively related to internal change of the firm (operational efficiency and innovative).

8.2   Implications

The results show that trust is an important ingredient in the client relationships of SME owners regardless of whether they are arm's-length or not. Even though the SME business owner may carry out activities to demonstrate their bona fide attempts at developing the relationship with a client, these activities do not replace trust. The effect of trust in a relationship is knowledge acquisition from the client. If owners of SME firms trust their clients, then they are likely to trust the information and knowledge passed on to them. Knowledge acquired from the client is linked to knowledge outcomes, such as new product and service development as well as new

market development. These outcomes demonstrate the value of knowledge as a key resource to the SME.

One interesting finding is the positive moderating effect of absorptive capacity on the path from knowledge acquisition to knowledge outcomes. The scale used revealed that the dimensions associated with knowledge assimilation, transformation and exploitation were closely associated with each other for this study to the extent that they loaded as one dimension of the same construct. However, the construct was more closely associated with knowledge outcomes than knowledge acquisition. The dimensions within the construct support this finding. The importance of having an existing knowledge base to understand and assimilate knowledge is also supported by the findings. Shane (2000) highlighted that this was particularly important for entrepreneurial firms as a source of new opportunities.

The exchange partner similarity construct reflecting common knowledge bases, norms, values and goals with the client firm was also found to have a positive relationship with knowledge outcomes. Unlike the absorptive capacity construct, exchange partner similarity was also found to be more closely linked with knowledge acquisition. It would seem that knowledge acquisition results in a knowledge base that not only is common with that of a client but might also lead to organisational routines that facilitates the application of knowledge to knowledge related outcomes. The validity of the exchange partner similarity scale was not fully ascertained so drawing any conclusions from it should keep in mind this uncertainty. However, the results indicate that SME owners that line up with similar minded clients are more likely to achieve knowledge related outcomes. This suggests that SME owners should concentrate their relationship building efforts with firms that appear to be similar to them in terms of common goals and understanding, norms and values and knowledge bases.

The findings of the study identified that relationship trust, absorptive capacity and exchange partner similarity are all important factors that help a small and medium-sized firm acquire new knowledge from a client-firm. This new knowledge is absorbed within the SME's existing knowledge base and "repackaged" to form new knowledge-based resources used to achieve outcomes, specifically, the development

of new products and services and new markets. New knowledge-based resources also achieved more operation efficiency and a more innovative small and medium-sized firm. This valuable new knowledge could not have been created without the interaction of the small and medium-sized firm with the client firm. The interaction helped the SME acquire resources that added to the heterogeneity of resources under their own ownership and control and reinforced Lavie's (2006) extension of the RBV discussed earlier.

9. LIMITATIONS, DIRECTIONS FOR FURTHER RESEARCH AND CONCLUSION

9.1 Introduction

This section will review the limitations of the study and also identify directions for further research. A conclusion is drawn at the end of the chapter.

9.1.2 *Limitations of the Study*

There were a number of limitations associated with the study that affected the results and the original thesis. These were as follows:

- A major limitation of this doctoral thesis was the inability to measure properly the concept of an arm's-length relationship. This was one of the central themes of the study and unfortunately some of the hypotheses forwarded could not be examined.

- Another limitation was the lack of a proper pilot study that could have allowed for an exploratory analysis of the data and make modifications to the survey questions. Even though 20 respondents provided feedback on the survey, the sample was not large enough for statistical evaluations.

- Some of the items used in the study did not load appropriately and consequently, items and indeed, entire constructs were deleted from further analysis.

- Some of the items did not load appropriately during the CFA analyses of the measurement models. Despite the efforts to ensure reflective items were used, some items might have been formative rather than reflective, a common error in SEM studies (Chin 1998).

- The cross-sectional nature of the study where businesses from different industries were included in the study meant there were industries where it seemed little knowledge was gained via client-firm interaction. For instance,

one of the respondents highlighted that his architecture practice deals with clients seeking residential designs. Consequently clients are usually not knowledgeable in this industry.

- Another problem also associated with cross-sectional surveys is the low response rate (Brush *et al* 2003) and this study is no exception. While the sample appeared to represent the small and medium enterprise spectrum in Western Australia, especially given the ANZSIC codes represented in the sample, the low response rate leaves a question mark on the generalizability of any of the findings.

- This study focused on small and medium-sized firms. The majority of respondents were small business owners (0 to 19 employees) and made up 87% of all respondents. This meant there were still 13% of businesses that fit the medium-sized category (20 to 199 employees). There were 26 firms with 20 to 50 employees and 12 firms had more than 50 full time employees. This relatively heterogeneous group suggests there would be issues in the doctoral study that would be more pertinent to the small firm segment, than the medium-sized segment.

For instance, the liability of smallness is likely to have a greater impact on the small firm than the medium-sized enterprise. A more homogeneous group, consisting of small firms only, might have provided more consistent results. Having medium-sized firms included in the survey might have confounded the results and therefore is a limitation of this research. Future research might focus on more homogeneous groups and this is discussed in the future research directions section.

This matter is further complicated when definitions of small businesses, in terms of number of employees, differ globally. For instance, a small firm in Canada and the US consists of less than 500 employees while in the European Union, a small firm consists of less than 50 employees (Storey & Greene 2010). Therefore, there is some uncertainty when reviewing research papers by authors from different parts of the world as to which small business

definition they used. An article on the liability of smallness written by a Canadian author might still apply to firms with less than 500 employees. This study would therefore appear pertinent to small and medium-sized firms in Australia.

- One of the self-selection criteria for the part B survey was that only business owners with the intention of growing their business were encouraged to complete the survey. An analysis of the respondents found that actually half of the respondents answered negatively to the notion of business growth. This might have had a confounding effect on the survey where business owners who did not want to expand their business were not interested in converting acquired knowledge to knowledge outcomes.

- While the use of the absorptive capacity construct helped determine the extent to which acquired knowledge was transformed to knowledge related outcomes, the organisational routines and processes that contribute to absorptive capacity were not measured in this study.

- The study did not differentiate arm's-length client relationships as those involving Business to Business (B to B) relationships or Business to Consumer relationships. The study intended to study only B to B relationships but this distinction was not made in the survey and therefore a more heterogeneous group of relationships was covered in the research.

9.2   Further Research Directions

The findings associated with the absorptive capacity and industry constructs indicate that further analyses of the data involving hierarchical regression analysis (Lin *et al* 2008) would be useful. Here the sample can be divided into two segments, one with a high collective absorptive capacity score and the other with a low collective absorptive capacity score. This would enable researchers to ascertain the effect generated by higher levels of absorptive capacity. One would expect to find an even stronger relationship with knowledge outcomes. The same process could be carried

out for the exchange partner similarity construct to find out the effects of high and low scores on the knowledge acquisition and knowledge outcomes path.

The section on absorptive capacity in the literature review highlighted the need to acknowledge the underlying assumptions associated with absorptive capacity, namely the need for organisational routines and processes that facilitate each of the construct's dimensions. Future research could focus on the existence of organisational antecedents within SMEs that help develop the firm's absorptive capacity. Such a study would complement the use of the absorptive capacity construct and make better application of theory.

Another avenue of research would be to look at the business growth intentions of the business owner and to evaluate the effects of this intention on knowledge acquisition and knowledge outcomes. One question in the survey was structured dichotomously in which the respondents were asked whether the business owner wanted to grow their business as large as possible or be content with a business the owner could manage themselves or with a few key employees. Given that it was posited that the business growth intention would positively moderate the knowledge acquisition/knowledge outcomes relationship, this relationship could be investigated on the basis of separating the data into two sets and analysing the difference in knowledge acquisition and knowledge outcomes across the two sets.

Another research avenue is the development of a scale that measures, more effectively, arm's-length relationships or weak client-firm exchanges. This study used two dimensions to measure such relationships. However, it would appear that these types of relationships are multi-dimensional and a more complex scale needs to be developed that takes into consideration, not only linkage duration and strength, but also the level of commitment, level of uncertainty associated with its continuity and perhaps even its adversarial nature. Further research could also target the continuum of business relationships as it applies to SMEs.

Perhaps further applied research could investigate the continuum of business relationships, highlighted in the literature review section, that small firms have with their clients and indeed, suppliers. Such a research study could help develop a

typology of interfirm relationships as they apply to small firms and highlight how they differ from large business relationships. Further, this research could also extend to the type of knowledge that is acquired through these different types of relationships. For example, a weak client-firm exchange relationship might be identified as a source of explicit knowledge only. Tacit knowledge transfer might be seen only in linkages of greater duration. Interfirm relationships that facilitate transfer and acquisition of business versus organisational knowledge might also be identified.

Future research on weak client-firm arm's-length relationships could focus on a more homogeneous group consisting of small firms only (i.e. less than 20 employees). This would avoid the potentially confounding effect of including medium-sized firms in the study and might provide a more accurate analysis of the value of weak client-firm exchange relationships as a potential source of new knowledge.

Another avenue for future research is to look more closely at a homogeneous group of client relationships involving solely Business to Business linkages. This would help provide a more accurate picture of knowledge acquisition from such relationships without the confounding effect of Business to Consumer relationships.

9.3   Conclusion

This research study involved a complex model that focussed on an area that previously had been largely overlooked, weak client-firm exchanges. The role of these exchanges to knowledge acquisition could not be established and therefore still remains to be investigated. However, the role of trust to knowledge acquisition in an exchange with a client was confirmed. The moderating effects of absorptive capacity and exchange partner similarity were also confirmed and these provide positive avenues for further research. The role of SMEs in new product and market development and innovation is important and the consequent sustained performance of the SME is critical for its long term survival. Knowledge-based resources are crucial if an SME is to sustain its competitive advantage. However, SMEs cannot rely on their existing knowledge base for their sustained success, particularly smaller firms with few employees from which knowledge can be drawn. New knowledge

stocks exist outside the SME and if this new knowledge can be acquired and repackaged by the SME to its advantage, sustained success is possible. New knowledge can add to the heterogeneity of resources under the SME's control (Lavie 2006). This study found a valuable source of this knowledge is the client firm. Accordingly, SME owners and entrepreneurs should ever be alert for new knowledge opportunities whenever they interact with their close or arm's-length clients. This study achieved a small part in examining the importance of knowledge resources to the SME especially from client firms. Much more work looms for researchers to investigate how critical new, external knowledge resources are to the SME.

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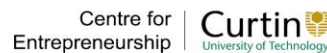# APPENDICES

Curtin University of Technology
Curtin Business School
School of Management

Western Australian
Small Business Benchmarks
Survey

business.curtin.edu.au/wasbb

Proudly supported by: Australia Post (Platinum Sponsor) and the Curtin Centre for Entrepreneurship

Complete Part One and win a $3500
Direct Mail Campaign from Australia Post

Simply by completing and returning this questionnaire in the envelope provided, you will be eligible to win a Direct Mail campaign from the team at eLetter Solutions of up to 3,000 full digital colour eLetter Wraps* valued at $3,500.00.

eLetter Wrap is a unique, full colour, direct mail product that allows you to segment your database and create individual and powerful personalised direct mail communications for your customers.

eLetter Wrap enables you to talk directly to your customers through unparalleled personalisation of text and images, to deliver a high impact campaign that will cut through the letterbox clutter.

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*To your own address database. Graphics and text must also be supplied and be free of copyright as PDF. The campaign must be used before 31 December 2008. All letters will be appended with a DPID barcode and organised into PreSort Postage Plans. Postage costs are **included** as part of this offer.*

PLUS! Complete Part Two and…

Every respondent is eligible to redeem a $500 discount voucher off the cost of the renown
Centre for Entrepreneurship Growth Program
(see separate flyer for details)

and…

Every respondent who completes both parts will have
a donation made on your behalf to a charity you select**.

and…

You will be placed in a draw to win
one of five prizes of a selection of wines or a gift voucher**.

*** Record your details and selection at the beginning of Part Two*

IMPORTANT INFORMATION

(Please tear out and retain this sheet)

Project aims: Part One

This study is the first in a proposed series of biennial surveys of a broad cross-section of Western Australian small and micro businesses. The aim of the survey is to provide data for decision making by small business owners when they are conducting forward planning. The over-arching theme of the study will be to provide free access to data on comparative benchmarks across a range of small business functions and decision areas. The data will be reported in formats that reflect:

❖ the size of the business by turnover;
❖ size of business by employee number;
❖ the industry type, mainly by ANSZIC subdivision classification;
❖ and membership of participating associations/groups.

All questions are focussed on providing competitive intelligence for decision making, reported in a manner that does not disclose the data of individual respondents. You can use this information to identify your strong points and your areas for improvement against industry norms and best practice benchmarks that are derived from the study. The data collected and reported will cover:

❖ Financial Characteristics
❖ Strategy and Planning
❖ Exporting to New Markets
❖ Operations and Productivity
❖ Human Resource Issues
❖ Community and Environment
❖ Marketing and Advertising
❖ Measuring Success

Project aims: Part Two

The questions in this section investigate the knowledge your firm acquires from the 'arm's length' relationships you have with your clients. Since the focus of this second part of the study is on entrepreneurial firms, we seek input from owner-managers of businesses **intent on growing their businesses**. The aim of this research is to determine how valuable arm's length clients might be in terms of knowledge and information small entrepreneurial firms acquire from them and the extent to which this knowledge has led to new products, new markets and overall improved operational performance.

Most small firms have a client mix that could best be described as ranging from close, regular clients with whom you might even have collaborative or cooperative arrangements to irregular, potentially "one-off" clients from which future transactions are not necessarily expected. The focus of part two is on the latter client type. For the purpose of this study, the irregular client will be described as an arm's length client. We are interested in finding out how valuable these arm's length clients might be in terms of the knowledge your firm has acquired from them.

What is required of participants?

Your involvement is limited to the completion of this survey and provision of your email address so that we may advise you of report releases. We will also use the email address offered to contact you when the next round of surveys is proposed to see if you wish to continue to be involved. We estimate that as long as you have access to the data required (typically your last set of financials will hold most of the information that is not in your head) then the whole exercise will take you between one and 1.5 hours to complete.

Confidentiality and security of information.

Only Curtin research staff will have access to an individual businesses' information, and no identifying details of businesses or their owners will be made available for public access, only the aggregated de-identified data. To preserve commercially sensitive information, benchmark reports of your industry or region (called snapshots) will only be made available where sufficient responses allow for the results to be reported in a de-identified form.

Your participation is completely voluntary, participants are at liberty to withdraw at any time without prejudice or negative consequences and non-participation will not affect an individual's rights or access to the information derived from this study. Notwithstanding that all businesses will be allowed access to the aggregate data, the potential benefit to you and your business is maximised when more businesses choose to take part. Further details on confidentiality and contacts should you have any concerns or queries may be found on the back cover of the questionnaire.
You confirm by your act of continuing to complete this survey that have been informed of and understand the purposes of the study. You confirm also that you give the information voluntarily and freely with your consent to participate.

You further understand that aggregated results will be used for research purposes and may be reported in academic journals and other research publications. The aggregated results of various business types and groups within the study will be made available to the public in general. You agree that research gathered from this study may be published provided the names or any other information that may identify you is not used. At no stage will your individual identifiable results be published without your express written consent.

Please note:

• Taking part is voluntary and you may pull out at any time.
• Your withdrawal will not affect you in any way.
• The researchers in this study are bound by confidentiality agreements which ensure the maximum possible level of confidentiality is achieved.

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You will be advised by email as results of the study become available (expected in November-December of 2008). However, if you want to check on progress before that date please visit:
www.business.curtin.edu.au/wasbb

Thank you for your decision to participate in this study. We hope that you find the task relatively straight-forward. We anticipate that completion will take you between 1 and 1 ½ hours. In exchange for this time commitment you will be offered **free priority access** to the range of best practice indicators as they are developed, with the potential to help you with your business planning and strategy. If you have any problems at all in completing the document please feel free to email SBBenquiries@curtin.edu.au with your enquiry. We commit to a response within 24 hours.

What if you own more than one business?

If you own and operate multiple business types, please focus on the business from which you derive the greatest income. We will refer to this as your **MAIN** business. If you own multiple locations of the same type of business you should answer this question based upon the **consolidated** position of **all** outlets.

NOTE: In this survey, your responses are required **only** in the ▶	**Boxed unshaded** areas
If your association/professional body has provided you a user code, write it HERE▶	**User code:**_____

▼ QUESTIONNAIRE STARTS HERE▼

The first task is to ensure that your business type is suitable for this benchmarking study. If your main business matches any of the descriptions in the screening criteria we will be **unable** to include your data in the research. We would still appreciate you **returning the unanswered questionnaire,** so that we can remove your details from our mailing list.

If any of these statements describe your MAIN business place a tick (✓) in the corresponding row.	[✓]
Your business is a **passive investment** vehicle such as a rent-roll from commercial or residential property, a personal share trader (i.e. day-trader), or an investor simply receiving all business income via interest and dividends.	[ ]
Your business is a government controlled entity or is **majority funded** by government grants or recurrent **public funding**.	[ ]
Your business is a **not-for-profit** organisation.	[ ]
Your business **started** operating **after** the 1st of July 2006.	[ ]
Your business has **200 or more employees** or is a wholly owned subsidiary of a larger entity that employs more than 200 people. NB: **Franchisees** are still **encouraged to complete** this questionnaire, even if the overall parent franchise group has over 200 staff in total.	[ ]

Please only continue with the survey if you **did not** tick any of the criteria above.　　　　▲
If you ticked any box above simply return the survey in tact with your business name noted.

What is the type of business activity that your **main** business undertakes? *describe*▶	
	ANSZIC

This section has space for the details of up to one respondent owner and one other owner/partner. If more than two owners are involved in the business then please either answer the questions based upon the two owners that are the main financial and operational participants in the MAIN business **or** photocopy this page for recording the details of additional owners. If any owner or part owner is a corporate entity then answer the questions based upon the characteristics of the working director(s) of that company.

Questions Relate To The Owner/Partner Who Is Completing The Survey			
Q 1 What year were you born? *(format 19YY)*			19 [ ]
Q 1.1 What gender are you? *Tick (✔)*		Male [ ]	Female [ ]
Q 1.2 What is your highest level of education? *(describe)*			
Q 1.3 How many hours do you work in the business per week? *(number)*			[ ] hrs
Q 1.4 How many **OTHER** businesses do you own? (write zero if no other businesses are **currently** owned) *(number)*			[ ]
Questions Relate To Owner/Partner Two			
Q 2 What year was partner two born? *(format 19YY)*			19 [ ]
Q 2.1 What gender is partner two? *Tick (✔)*		Male [ ]	Female [ ]
Q 2.2 What is partner two's highest level of education? *(describe)*			
Q 2.3 How many hours per week does partner two work in the business? *(number)*			[ ] hrs
Q 2.4 How many **OTHER** businesses does **partner two** own? (write zero if no other businesses are **currently** owned) *(number)*			[ ]
Part Two: Characteristics of the Main Business			
Q 3 How many owners/part-owners in **TOTAL** are there of the **MAIN** business? *(number)*			[ ]
Q 4 What year did your current business commence? *(format YYYY)*			[ ]
Q 5 What is the postcode of your MAIN place of business? *(four digit number)*			[ ]
Q 6 What is the name of the town, or suburb in which the business is located? *(please write name)*			
Q 7 Is your business part of a franchise group?		Yes [ ]	No [ ]

Q 8	What is the legal structure of your business? *In some circumstances you may need to tick (✔) more than one box.*	Sole Trader [ ]	Partner-ship [ ]	Pty. Ltd. Company [ ]	Trust [ ]	Other [ ]

Part Three: Financial Characteristics		
For the most recent financial year, what was the:		
Q 9	Annual turnover of the business? *($ thousands)*	$,000
Q 10	Dollar value of any **tangible** assets? *($ thousands)*	$,000
Q 11	Dollar value of any **intangible** assets (i.e. Goodwill)? *($ thousands)*	$,000
For the most recent financial year, what percentage of your annual turnover was:		
Q 12	Net profit **before tax or owner(s) wages**? *(percentage)*	%
Q 13	**Owner(s)** salary? *(percentage)*	%
Q 14	**Employee(S)** wages, including super and payroll tax? *(percentage)*	%
Q 15	Marketing and advertising expenses? *(percentage)*	%
Q 16	Premises rental (**estimate** of market rate if owned)? *(percentage)*	%

Q 17	What proportion of your customers do you deal with on the following terms?	Payment in advance	%	1 -30 day account	%
		Cash on Delivery (COD)	%	31-60 day account	%
		Other	%	61-90 day account	%

▲ These six estimates should add up to 100% ▲

Part Four: Strategy and Planning					
The following questions relate to your business strategy and planning					
Q 18	Which of these two options best describes your preference for the future size of this business? *Tick only ONE box (✓)*	I want the business to be as large as possible [ ]		I want a size I can manage myself or with a few key employees [ ]	
Q 19	Do you have a current business plan document? *(✓) tick*			Yes [ ]	No [ ]
Q 20	How far into the future do you set **formal** business goals? *Tick only ONE box (✓)*	N/A [ ]	1 year [ ]	2 years [ ]	3 years [ ] Over 3 yrs [ ]
Q 21	**Up to** what percentage of trade comes from your **biggest single client**? *Tick only ONE box (✓)*	10% [ ]	25 % [ ]	50% [ ]	75% [ ] 100% [ ]

In the past year, to what extent did the business attempt to formally assess the following? (✓) tick		**not at all**	**a little**	**a moderate amount**	**a great deal**	**don't know**
Q 22	Financial measures (gross or net profit, ROI, sales growth etc)	[ ]	[ ]	[ ]	[ ]	[ ]
Q 23	Quality measures (customer complaints, defect rates etc)	[ ]	[ ]	[ ]	[ ]	[ ]
Q 24	Human Resource issues (skills, job satisfaction , health indicators etc)	[ ]	[ ]	[ ]	[ ]	[ ]
Q 25	Operational measures (delivery times, productivity etc)	[ ]	[ ]	[ ]	[ ]	[ ]
Q 26	Do you currently have any recognised quality certification (✓) tick	Yes [ ]	No [ ]	*If yes, describe* ►		

Part Five: Exporting and New Markets					
In the PAST YEAR, to what extent did the business focus on the following markets? (✓) *Tick one box on each line*	**not at all**	**a little**	**a moderate amount**	**a great deal**	**don't know**
Q 27 Existing markets in Australia?	[ ]	[ ]	[ ]	[ ]	[ ]
Q 28 New markets in Australia?	[ ]	[ ]	[ ]	[ ]	[ ]
Q 29 Existing international markets?	[ ]	[ ]	[ ]	[ ]	[ ]
Q 30 New international markets?	[ ]	[ ]	[ ]	[ ]	[ ]
In the NEXT YEAR, to what extent do you expect to focus attention on these markets? (✓) *Tick one box on each line*	**not at all**	**a little**	**a moderate amount**	**a great deal**	**don't know**
Q 31 Existing markets in Australia?	[ ]	[ ]	[ ]	[ ]	[ ]
Q 32 New markets in Australia?	[ ]	[ ]	[ ]	[ ]	[ ]
Q 33 Existing international markets?	[ ]	[ ]	[ ]	[ ]	[ ]
Q 34 New international markets?	[ ]	[ ]	[ ]	[ ]	[ ]
Q 35 Name the country, state, region/area where you will focus the most attention on in the **next 3 years** (✓) *tick N/A if you have no new market plans. If you do, then describe* ▶				N/A [ ]	

Part Six: Operations and Productivity	
Q 36 What two **external** sources of information and knowledge do you consider most important to your business? *describe* ▶	1.
	2.
Q 37 Other than computers and telephones, what **two** technologies do you consider most important in efficiently running your business? *describe* ▶	1.
	2.
Q 38 Other than general business fire & theft insurance, what form of insurance do you consider **most important** for your business? *describe* ▶	
The following questions seek to understand how much of your current capacity you are actually utilising. Businesses that make something (a product) should use one finished product from their **main product line** as the measurement unit. Services can either use their labour on an hourly basis, where one hour equals one unit OR per service, where one customer served = one unit. *Indicate which method you will use* (✓)	Per **product** [ ]
	Per **hour** [ ]
	Per **customer** [ ]
Q 39 At your **maximum production capacity**, how many units of product or service can you produce in a **normal** month? *(number)*	[ ]
Q 40 At your **current level** of sales, how many units of product or service do you produce in a **normal** month? *(number)*	[ ]

Part Seven: Human Resource Management

Q 41	How many full-time staff (excluding owners) do you employ? *(number)*			[ ]
Q 42	How many part-time staff do you employ? *(number)*			[ ]
Q 43	How many family members (spouse, parents, children, siblings or relatives of the owners) work in the business either full-time or part-time? *(number)*			[ ]
Q 44	How many of the family members counted at Q 43 work in the business without payment? *(number)*			[ ]
Q 45	How many employees have you recruited in the past 12 months? *(number)*			[ ]
Q 46	How many employees have left your employ in the past 12 months? *(number)*			[ ]
Q 47	How many employees get performance-based incentives of any kind? *(number)*			[ ]
Q 48	How many apprentices or trainees do you employ? *(number)*			[ ]
Q 49	Do you have a formal process that allows employees to suggest improvements to the business? *Tick (✔)*		Yes [ ]	No [ ]
Q 50	If you answered yes to Q 49, do you have any formal rewards for suggestions that are adopted? *Tick (✔)*		Yes [ ]	No [ ]
Q 51	Does the business have a formal process in place to manage Occupational Health and Safety (OH&S)? *Tick (✔)*		Yes [ ]	No [ ]
Q 52	In the past 12 months have any of the **owners** undergone any work-related **external** training? *Tick (✔)*		Yes [ ]	No [ ]
Q 53	In the past 12 months have any **employees** undertaken any work-related **external** training? *Tick (✔)*		Yes [ ]	No [ ]
Q 54	In the past 12 months did the business conduct any planned **internal (on the job)** training of employees? *Tick (✔)*		Yes [ ]	No [ ]
Q 55	Do you formally measure employee satisfaction? (✔)		Yes [ ]	No [ ]

Part Eight: Community and Environment

Q 56	Do you permit your **staff** to volunteer for any community service during business hours? *Tick (✔)*			Yes [ ]	No [ ]
Q 57	Do **you** volunteer for any community service? *Tick (✔)*	Yes [ ]	No [ ]	…in the past, but not anymore ► *Tick (✔)*	[ ]
Q 58	Do you hold any positions on advisory or not for profit Boards? *Tick(✔)*	Yes [ ]	No [ ]	…in the past, but not anymore ► *Tick (✔)*	[ ]
Q 59	In the past year, have you conducted any form of environmental audit on your business practices? *Tick (✔)*			Yes [ ]	No [ ]
Q 60	In the past year, have you changed your business processes and practices to reduce your environmental impact (i.e. reducing energy usage, waste and raw materials consumption)? *Tick (✔)*			Yes [ ]	No [ ]
Q 61	Are environmental activities and impact detailed in your business plan? *Tick (✔)*			Yes [ ]	No [ ]

Part Nine: Marketing		
Estimate the percentage of your sales achieved in the following markets:		
Q 62 Business to business (inc. subcontractor arrangements) *(percentage)*		%
Q 63 Business to consumer (retail sales or consumer services) *(percentage)*		%
Q 64 Business to government *(percentage)*		%
Q 65 Other *describe*		%
		Should add to 100%▲

What percentage (if any) of your sales are made via:	Q 66 Your own e-commerce website?	%
	Q 67 Websites where you pay for a listing?(i.e. auction sites, consolidators and online directories)	%

Estimate the percentage of your advertising and other marketing effort committed to any of the following activities	**Percentage of Effort**		
Q 68 TV advertising			%
Q 69 Radio advertising			%
Q 70 Newspaper advertising (state or national)			%
Q 71 Newspaper advertising (community-local)			%
Q 72 Magazine and trade journal advertising			%
Q 73 Yellow Pages® and other printed directories			%
Q 74 Direct mail (i.e. mailed brochures and letter drops)			%
Q 75 Public relations & events (i.e. tradeshows & events)			%
Q 76 Telemarketing (outbound)			%
Q 77 Outdoor advertising (signs, billboards etc)			%
Q 78 Search engine paid listings (i.e. Google ads)			%
Q 79 Customer care and maintenance (calling clients)			%
Q 80 Loyalty programs (frequent user rewards/discounts)			%
Q 81 Personal selling - (cold-calling on non-clients)			%
Q 82 Other *(please specify)*			%
			Should add to 100%▲
Q 83 From the marketing activities suggested in questions Q 68 to Q 82 , please rank the three most important ones *describe* ►	1st	2nd	3rd
Q 84 Do you keep a record of individual customer characteristics and transactions for the purpose of future sales effort? *Tick (✓)*	Yes [ ]	No [ ]	

Part Ten: Success					
How strongly do you agree or disagree with these statements? *Tick (✓) the response on each row that best describes your degree of agreement*	strongly disagree	some what disagree	neutral	some what agree	strongly agree
Q 85 My business has fulfilled or is fulfilling my personal goals. *Tick (✓)*	[ ]	[ ]	[ ]	[ ]	[ ]
Q 86 My business has fulfilled or is fulfilling my financial goals. *Tick (✓)*	[ ]	[ ]	[ ]	[ ]	[ ]
Q 87 My business is a success. *Tick (✓)*	[ ]	[ ]	[ ]	[ ]	[ ]
Q 88 I have accomplished or am accomplishing what I wanted to do with my business. *Tick (✓)*	[ ]	[ ]	[ ]	[ ]	[ ]
Q 89 I am in business so that I can enjoy an improved lifestyle. *Tick (✓)*	[ ]	[ ]	[ ]	[ ]	[ ]

Q 90 Are there any anticipated or actual **lifestyle** benefits or drawbacks from operating your business? *describe►*	
Q 91 In what ways do you **measure** or **quantify** your own business and personal success? *describe►*	
Q 92 What do you think are the **reasons** for your current level of success? *describe ►*	

THIS IS THE END OF PART ONE

Should you choose not to complete part two of this survey, please ensure you have completed all questions in part one by completing the checklist below.

Before sealing the envelope for posting, please check that you have:

- ✓ □ Answered questions Q 1 to Q 92 ;
- ✓ □ Provided us with your contact email address below*;
- ✓ □ Inserted the group code if applicable at the start of the survey;
- ✓ □ Retained the tear out information sheet that contains details of the project you may need later;
- ✓ □ Considered completing part two and availing yourself of the **$500 incentive** available to **every person** who completes both parts of the questionnaire.

* Your email address is provided to alert you of reports that become available and to invite you to participate in future rounds of the WASBB. Your email details will not be disclosed to any party not employed by Curtin University of Technology   **▼ Please print your email address here▼**

Information on the progress of the study and publication timeline updates can be located by visiting the website www.business.curtin.edu.au/wasbb.

Part Two: Knowledge Transfer

We encourage you to complete these additional questions as they will form part of a separate report on knowledge transfer in arms length relationships. This second section does not require you to disclose any additional data on your business and **should not take more than 30 minutes to complete.**

As an additional incentive for completing part two you will find enclosed a special offer from the Curtin University of Technology Centre for Entrepreneurship that entitles you to a discount of $500 off the cost of the renowned growth program offered by the centre. You must complete **parts one and two** to avail yourself of this offer and provide us with your valid email address to verify this when redeeming.

There are other prizes and donation incentives for you to choose from in part two.

PART TWO – KNOWLEDGE TRANSFE/R AND ACQUISITION

<table>
<tr><td>**Introduction**</td></tr>
</table>

Thank you for deciding to complete part two of the Small Business Benchmarks survey.

As an additional incentive for completing both parts of the survey, five participants will win their choice of retail gift vouchers, wines or a donation to the charity of their choice valued at $100 each.

Select

Even if you if you do not win a prize, we will still donate $1 to one of these nominated charities for every complete response received.	[ ]	*RSPCA*
	[ ]	*Landcare Australia*
	[ ]	*World Vision*
	[ ]	*Cancer Council of WA*
	[ ]	*Other : describe►*

The aim of this part of the survey is to determine the extent of knowledge acquisition small firms achieve through their clients. These clients can be described as ranging from close, regular ones to less regular, non-close, 'one-off' clients from whom future transactions are not necessarily expected. The latter client type is often described as an 'arm's length' client and is the specific focus of this part of the survey. We are interested in finding out how valuable these arm's length clients might be in terms of knowledge your firm has acquired from them. Before focussing on your arm's length clients, questions 93 to 100 ask you to consider your business growth intentions. Thank you for deciding to complete part two.

<table>
<tr><td colspan="8">**▼ PART TWO QUESTIONS START HERE▼**</td></tr>
<tr>
<td>**How strongly do you agree or disagree with these statements?** *Tick (✓)*</td>
<td>**1 - Strongly disagree**</td>
<td>**2**</td>
<td>**3**</td>
<td>**4 - Neutral**</td>
<td>**5**</td>
<td>**6**</td>
<td>**7 - Strongly agree**</td>
</tr>
<tr>
<td>Q 93   As far as the future size of my firm is concerned, I want the business to be as large as possible</td>
<td>[ ]</td><td>[ ]</td><td>[ ]</td><td>[ ]</td><td>[ ]</td><td>[ ]</td><td>[ ]</td>
</tr>
<tr>
<td>Q 94   I would prefer my business to provide a good living but with little risk of failure, and little likelihood of making me a millionaire</td>
<td>[ ]</td><td>[ ]</td><td>[ ]</td><td>[ ]</td><td>[ ]</td><td>[ ]</td><td>[ ]</td>
</tr>
<tr>
<td>Q 95   As far as the future size of my firm is concerned, I want a size I can manage myself or with a few key employees</td>
<td>[ ]</td><td>[ ]</td><td>[ ]</td><td>[ ]</td><td>[ ]</td><td>[ ]</td><td>[ ]</td>
</tr>
<tr>
<td>Q 96   I would prefer my business to be one that was much more likely to make me a millionaire, but had a much higher chance of going bankrupt</td>
<td>[ ]</td><td>[ ]</td><td>[ ]</td><td>[ ]</td><td>[ ]</td><td>[ ]</td><td>[ ]</td>
</tr>
</table>

		1 - Strongly disagree	2	3	4 - Neutral	5	6	7 - Strongly agree
Q 97	My firm emphasizes growth and acquiring new resources	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 98	My firm emphasizes efficiency and smooth operations	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 99	My firm emphasizes competitive actions and responses	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 100	My firm emphasizes stability	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
How strongly do you agree or disagree with these statements? *Tick* (✓)		1 - Strongly disagree	2	3	4 - Neutral	5	6	7 - Strongly agree
Q 101	We are able to obtain a tremendous amount of market knowledge or information from our arm's length clients	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 102	We are able to obtain valuable information on customer needs from our arm's length clients	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

To what extent have you learned from your arm's length clients? (✓)		1 - Nothing	2	3	4 - Neutral	5	6	7 - A great amount
Q 103	New technological expertise	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 104	New marketing expertise	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 105	New ideas for new products	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 106	New ways to approach product development	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 107	New managerial techniques	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 108	New operational processes	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

How strongly do you agree or disagree with these statements? (✓)		1 - Strongly disagree	2	3	4- Neutral	5	6	7 - Strongly agree
Q 109	Most of the business relationships my firm has with our clients could best be described as arm's length	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 110	My arm's length clients can be relied upon to keep their promises	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 111	Our business relationships with our clients would best be described as insecure	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 112	Our business relationships with our clients tend to be "one-off"	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 113	My arm's length clients are genuinely concerned that my business succeeds	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 114	My arm's length clients never act opportunistically	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 115	I believe the information our arm's length clients provide us	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

		1 - Strongly disagree	2	3	4- Neutral	5	6	7 - Strongly agree
Q 116	Our business relationships with our arm's length clients could best be described as cooperative	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 117	I cannot rely on my arm's length clients to keep promises made to us	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 118	We tend to initiate efforts to develop further the business relationship with our arm's length clients	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

How strongly do you agree or disagree with these statements? (✓)		1 - Strongly disagree	2	3	4- Neutral	5	6	7 - Strongly agree
Q 119	We are responsive to last minute demands from our arm's length clients	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 120	We make a point of going the extra distance with our arm's length clients	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

To what extent are the following items displayed/publicized to your clients? (✓)		1-Not displayed/ publicized	2	3	4 - Neutral	5	6	7– Promin- ently displayed/p ublicized
Q 121	Awards and recognition our firm has received for it's service or products	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 122	Signs which depict the training and qualifications of myself and my staff	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 123	My firm's membership in professional associations	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 124	The names of prominent firms we do or have conducted business with	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

How strongly do you agree or disagree with these statements? (✓)		1 - Strongly disagree	2	3	4 - Neutral	5	6	7 - Strongly agree
Q 125	Our arm's length clients are more prepared to do business with us when we tell them about our more prominent customers	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 126	Our arm's length clients are more open to us when we tell them about our more prominent customers	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 127	Our arm's length clients are more willing to pass on knowledge or information to us when we tell them about our more prominent customers	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 128	Our firm does more business with arm's length clients than with closer, more collaborative clients	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

Q 129	Our arm's length clients usually repeat their transactions with us	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 130	Our firm has frequent interactions with arm's length clients to acquire new knowledge	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 131	Our firm relies on a small group of close, regular customers than a much larger group of less regular customers	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

How would you describe the size of your arm's length clients according to the following statements? (✓)	1 – Generally smaller	2	3	4 – Generally the same	5	6	7 – Generally much larger
Q 132 The size of your arm's length client firms compared to your firm in terms of employee numbers	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 133 The size of your arm's length client firms compared to your firm in terms of market share	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

How would you describe the age of your arm's length clients according to the following statement? (✓)	1 – Generally younger	2	3	4- Generally the same	5	6	7 – Generally much older
Q 134 The age of your arm's length clients' firms compared to the age of your firm	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

How strongly do you agree or disagree with these statements? (✓)	1 – Strongly disagree	2	3	4 - Neutral	5	6	7– Strongly agree
Q 135 Our firm collects industry information through informal means (e.g. lunch with arm's length clients; business functions)	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 136 Our firm is always looking at ways to acquire knowledge from our arm's length clients	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 137 Our firm is slow to recognise shifts in our competitive environment (e.g. competition, regulation, demography)	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 138 Our firm quickly understands new opportunities to serve our clients	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 139 Our firm quickly analyses and interprets changing market demands	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 140 Our firm regularly considers the consequences of changing market demands in terms of new products and services	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

How strongly do you agree or disagree with these statements? (✓)	1 – Strongly disagree	2	3	4 - Neutral	5	6	7– Strongly agree
Q 141	Our firm quickly recognises the usefulness of new external knowledge to existing knowledge	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 142	Our firm regularly considers what changes might be needed as a result of market trends and new product developments	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 143	My firm constantly considers how to best use new knowledge	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 144	Our firm frequently succeeds in getting new products and services to market	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

How strongly do you agree or disagree with these statements? (✓)	1 – Strongly disagree	2	3	4 - Neutral	5	6	7– Strongly agree
Q 145	Client complaints fall on deaf ears in our firm	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 146	I find it easier to acquire knowledge from our arm's length clients when our goals and objectives have been similar	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 147	I find it easier to acquire knowledge and information from our arm's length clients when there has been a common language and understanding between us	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

How strongly do you agree or disagree with these statements? (✓)	1 – Strongly disagree	2	3	4 - Neutral	5	6	7– Strongly agree
Q 148	I find it easier to acquire knowledge and information from our arm's length clients when we have similar knowledge bases (e.g. operate in the same industry, use similar technologies)	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 149	I find it easier to acquire knowledge and information from our arm's length clients as a result of my industry experience	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 150	I find it easier to acquire knowledge and information from my arm's length clients as a result of my qualifications and/or skill set	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 151	My firm has developed new products and/or services through knowledge and information acquired from our arm's length clients	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

Q 152	My firm is operating in new markets through knowledge and information acquired from our arm's length clients	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 153	My firm is operating more efficiently as a result of knowledge and information acquired through our arm's length clients	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Q 154	My firm is more innovative as a result of the knowledge and information acquired through our arm's length clients	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

Thank you for completing the WASBB survey.

A list of participating referring organisations and space for general comment is located overleaf.

Have you completed your email address so that you will receive email notifications as results become available?

Please use this space to make comment on any part of this survey that was unclear, assumptions you had to make, or on any other comments you would like to share.

The following is a list of participating associations (and their participant code) in chronological order of their confirmed agreement to participate up until the survey was scheduled for printing. There will be further additions to our participant list after this date. An updated list of participating association codes can be found on the website: www.business.curtin.edu.au/wasbb

200810	Curtin Centre for Entrepreneurship
200809	Australia Post
200801	Coastal Small Business Centre
200802	Stirling Small Business Centre
200803	Belmont Business Enterprise Centre
200804	Textile Clothing & Footwear WA (TCFWA)
200805	Noble & Associates
200806	Small Business Centre North West Metro
200807	City of Wanneroo
200808	Curtin Alumni
200811	Shire of Gin Gin
200812	Shire of Collie

Thankyou to all of the organisations above that have supported the study by on-forwarding the opportunity to participate to their networks.

We look forward to presenting the findings, snapshots and benchmarks towards the end of 2008 and early 2009. Progress reports will be available on our website:

www.business.curtin.edu.au/wasbb

Confidentiality and Limitation of Liability: Western Australian Small Business Benchmarks Study (Benchmarks Study)

Curtin University of Technology, through its Curtin Business School (herein referred to as "Curtin") confirms that personal details which an entrant provides Curtin for the purposes of the Benchmarks Survey will:

(1) be kept strictly confidential and shall not be disclosed to a third party without the written authorisation of the owner entrant of that confidential information; and

(2) comply with Curtin's privacy policy and protocols.

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ABOUT THE WASBB TEAM

Dr Paull Weber & Mr Louis Geneste *(front)*

Dr Weber has recent publications in the area of financial planning for tourism SMEs and case studies of successful tourism ventures in hospitality. His work on the mature entrepreneur has been recognised through conference and journal publications and he continues to write and research on the meaning and measurement of success for the mature entrepreneur, the rural entrepreneur and the lifestyle entrepreneur. Prior to academia he has a 17 year background in banking.

Mr Louis Geneste is a key investigator in the benchmark survey as the inaugural recipient of a peer-selected invitation to co-host his own research within this study. Louis lectures in the areas of entrepreneurship and small business at Curtin University of Technology. He holds a Master of Commerce from Curtin and a Bachelor of Science from UWA and has over 20 years experience in small business management.

Associate Professor Werner Soontiens

Associate Professor Soontiens is currently lecturing in the School of Management after a period working for the Institute for Research into International Competitiveness. Prior to this he was the field chair and program manager for the degree in Economic Management Analysis at Tswane University of Technology in South Africa. He has a prior research track record focused on international competitiveness in general. He has also developed expertise in assisting government instrumentalities (Landcorp) in Western Australia to execute quality control over the collecting and statistical application of data.

Professor Michael Schaper

Professor Schaper is the Dean of Murdoch Business School. His prior appointments include a period of time as the Small Business Commissioner for the Australian Capital Territory and Professor of Small Business and Entrepreneurship at the University of Newcastle Graduate School of Business. His research interests include environmental performance & sustainable development in SMEs; Aboriginal (indigenous) entrepreneurs; cultural variations in entrepreneurship, entrepreneurship education; environmental entrepreneurs and business advisory services for SMEs.

Proudly supported by: Australia Post (Platinum Sponsor) and the Curtin Centre for Entrepreneurship

APPENDIX TWO – QUESTIONS USED IN SEMI-STRUCTURED QUALITATIVE INTERVIEWS

SEMI-STRUCTURED INTERVIEWS FOR PHD STUDY

The purpose of the in-depth interview as well as the proposed set of questions to be used in the interview is to help the topic be explored as a preliminary stage for further investigation through a quantitative study in the form of a questionnaire based survey (Veal 2005).

The proposed set of questions is also related to the hypotheses derived from the literature review conducted for this PhD study. Table 1 provides the relevant set of questions..

Arm's length relationships can be described as discrete "one-off" transactions with clients where there is no expectation by either exchange party for continued transactions. **1**. How would you describe your relationships with your clients? **2**. How many do you have? **3**. How have these relationships affected your competitiveness?
4. Do you initiate any relationship building efforts with your clients and potential clients? **5.** Why do you do this? **6.** Describe what you do to initiate the relationship building efforts? **7.** Do you target any particular clients or potential clients when initiating these relationship building efforts? Why? **8.** Do any of your clients or potential clients initiate the said activities with your firm?
9. When you spend more time trying to establish or build the relationship how has it worked out (did you get something out of it)?
10. Have you provided services to prominent businesses (reputable and very well respected for fair dealing)? **11.** Do you signal these dealings to your clients? **12.** Once you have signalled these dealings to your clients, has this led to any changes in your relationship (i.e. have you found your clients are more willing to communicate and do further business

with you, has the relationship become closer?)

13. Have you provided services to prominent businesses (large market share and well-known)?

14. Do you signal these dealings to your arm's length clients?

15. Once you have signalled these dealings to your clients, has this led to any changes in your relationship (i.e. have you found your clients are more willing to communicate and do further business with you, has the relationship become closer?)

16. When you have many repeated transactions with the same firm have you found a different outcome in terms of the benefits achieved?

17. Which of these two options do you think you would benefit most from – fewer clients but closer relationships with them or more clients but more arm's length relationships with them? Why?

18. Where you have close working relationships (non-arm's length) with a number of clients, have you found the exchanges you dedicate to these clients, prevent you from accessing other clients or building relationships with other clients?

19. To what extent do you feel that you are at a disadvantage, if at all, because of the close working relationship you have with your client?

20. Where your relationship with a client is not close, have you found the longer this client continues to do business with you, the more benefits you gain from the client? How?

21. To what extent have organisational routines established for such clients contributed to these benefits?

22. Do you think the size of your client's firm has any bearing on the benefits you have gained from that client? How?

23. Do you think the length of time your client has been in industry had any bearing on the benefits you have gained from that client? How?

24. To what extent has your previous industry experience made it easier to understand and utilise (assimilate) information and knowledge acquired from a client?

25. To what extent has your personal knowledge base, eg acquired from previous qualifications and work experience made it easier to understand and utilise the information and knowledge acquired from your client?

26. Have you found the alignment of your business goals, objectives and values with that of a client firm facilitates or increases the knowledge and information you acquire from that firm?

27. Is this irrespective of the type of relationship you have with your client?

28. To what extent do you feel the common goals, objectives and values alignment with that of a client contributes to the knowledge and information you acquire?

29. Is this irrespective of the type of relationship you have with your client?

30. To what extent do you feel the knowledge and information you acquired from your client was

responsible for new products you have developed or products you improved?

31. Have you developed new products or improved products as a result of the knowledge and information you acquired from a client that you would not describe as close?

32. To what extent do you feel the knowledge and information you acquired from your non-close client was responsible for the identification or development of new market opportunities?

33. To what extent do you feel the knowledge and information you acquired from your non-close client was responsible for operational improvements such as operating efficiencies or reduced operating costs .

References:

Veal, A. J. 2005, *Business research methods: a managerial approach,* 2nd ed, Pearson Education, Frenchs Forest NSW, Australia.

APPENDIX THREE – SUMMARY OF FINDINGS OF QUALITATIVE INTERVIEWS

(Adapted from Geneste, Louis. "Knowledge transfer in non-collaborative client relationships – a preliminary investigation of small entrepreneurial firms." In *Small and medium sized enterprises: Management - marketing - economic aspects*, edited by Cleopatra Veloutsou, 81-92, Athens, Greece: Athens Institute for Education and Research, 2008).

Interviewees provided responses to questions associated with the following themes: the extent to which they had non-collaborative, arm's length relationships with their clients and the benefits they gained from these relationships; substitutes for trust that might facilitate knowledge transfer in non-collaborative arm's length relationships; the extent to which the goals and values of the interviewees' firm and the non-collaborative client firm were aligned and whether or not this facilitated knowledge transfer; and finally the extent to which knowledge and information gained from an arm's length client led to the development of new products and identification of new markets. When asked what benefits the interviewees had gained, this related to knowledge, information and advice.

Non-collaborative, arm's length relationships

Business owners were asked to describe the relationships they had with customers and the extent to which the relationships were non-collaborative, arm's length in nature. All interviewees were found to have a mixture of close customers, usually described as repeat customers and arm's length "one-off" transactions. Interviewees were asked if they had gained any benefits from the non-collaborative, arm's length clients. While the interviewees found they gained more benefits from their closer customers than their non-collaborative clients, there were benefits gained from their non-collaborative clients nevertheless. Interestingly, three of the interviewees also referred to non-collaborative relationships as ones they had with potential clients. One respondent advised that a potential non-collaborative relationship provided benefits to his business even though it did not end in any financial transaction:

> "…we went and approached Coles, and we, to be completely honest, had no intention of supplying Coles because we knew that if they said yes to our product, that we couldn't supply them anyway on the quantities that they needed, but we figured that if Coles gave our product the thumbs up with all their industry knowledge and experience, in confectionery if they approved it, and said we like it, and we think it's going to work, every independent supermarket would probably think the same".

Trust substitutes

The research attempted to identify ways to gain benefits from the non-collaborative relationships even though trust had not been established. Interviewees, for instance, were asked if they had tried to initiate relationship building efforts with clients and potential clients and if any benefits were gained as a result of these efforts. In some cases, the interviewees found they gained benefits when trying to establish closer relationships with an arm's length client. One of the interviewees for instance recalled the following when attempting to build a relationship with a large supermarket chain:

"The supermarket guy said you know, in our shelves your packaging is lost and so it suddenly made us stop and think, hold on, that's a good point. So we actually started packaging by going to all the confectionery isles and I'd buy one of everything on the shelves and I'd set up a simulation shelf in my office and I'd say these are all the products that I'm going to be sitting next to so we made sure our packaging would stand out".

Another factor that could substitute for trust in a non-collaborative client relationship is to signal trustworthiness and legitimacy to a potential client. Generally, interviewees found it was easier to do business with potential customers and arm's length clients when they signalled their previous transactions with prominent clients and this resulted in the freer transfer of knowledge as a result. One interviewee stated:

"...most people tend to react to you positively when you say we work for BHP Billiton and we've worked for Rio Tinto and we've worked for Alcoa. And people tend to prefer the fact that we've worked for Rio Tinto and BHP rather that our best customer who happens to be a smaller company".

Repeat transactions and extended linkage duration with arm's length clients

Interviewees were also asked if they gained any benefits from the non-collaborative arm's length clients who make occasional purchases over an extended period of time. Three of the interviewees found they gained benefits from repeat customers and customers who had remained with the business even though they were still classified as non-collaborative arm's length clients. One interviewee highlighted how an arm's length client from overseas explained why the delay since the previous order:

"We found that these guys will ring up once in a while and we'd just say, why's it been three months since your last order? Oh you know, because the Australian dollar is too strong. So people can't afford to buy the product. Once we knew that there was an exchange rate problem, we knew that it was an affordability problem. So we said to them, how about, we make the product smaller? Instead of giving you 100% bars, we'll give you 60% bars, it's 40% less, you can sell them for 40% less, it becomes more affordable. So they took that one and tried it and it worked. We then offered the same arrangement to another one of our importers".

The other interviewees indicated that the personnel changes that occur in client firms over the years means that repeat transactions with arm's length clients are not a source of knowledge because it means talking to someone new who did not have the same experience as the first person the owner/founder talked to.

Alignment of values and goals

The interviewees were asked if they found it easier to acquire knowledge and information from their arm's length clients if their goals and values appeared to be aligned. Overall, the apparent alignment of goals and values between the interviewees' firms and the arm's length clients had a positive effect even if it did not necessarily result in knowledge transfer. One of the interviewees indicated how it saved time to work with someone who seemed to share the same goals and values as those of his firm:

"I don't think it increases the amount of knowledge that we acquire. I think if they're well aligned, you don't want to integrate that information, because the motives are the same and we can just assume from the outset that they're doing the right thing, and they know we're doing the right thing by them. So it saves a lot of time and mucking around because you're starting off on the same foot. As opposed to when you start dealing with someone who has completely different objectives and motivations and everything else, you need a lot more information in order to be able to provide them with what they need and they need a lot more information from you to make sure that you really can work with that they're doing."

In some cases though, the alignment of goals and values was not something that became apparent until further transactions and interactions occurred with the client.

Benefits of knowledge acquisition from the arm's length client – new product and new market development

The arm's length client was seen as a positive influence to most of the interviewees as a source of knowledge and information to develop new products and identify new markets. Interestingly, one interviewee indicated that 70% of his sales revenue came from the closer, repeat client rather than the arm's length single buy customer. However when quizzed how much percentage knowledge he gained from the arm's length client that allowed him to generate new products and develop new markets he advised:

"If you're looking at drivers for innovation out of the two even though there is a 70% to 30% ratio (sales revenue from close client to arm's length client) the new ideas would probably be 50/50, so

know you almost get double the amount of the new ideas out of your new customers than you would get out of repeat customers."

One entrepreneur explained how a new market was identified through an arm's length client who had made initial enquiries a few years back:

"Well one example is at that same conference that I just talked to you about the sprinkler system we met a customer from Northern New South Wales. He's a farmer and that goes back I think 4 or 5 years ago when I first met him and he wanted to automate his irrigation system and he came back 6 months ago he contacted me again and he said do you still recall me, I said yes I do, I do I've still got your quote here on the system. He said good he said look we want to really want to start doing something about it now and he came from NSW and flew out and we had a long chat and on the basis of what he now wanted to do we are modifying our irrigation control system from the one that's focused on local government to one that's focused on farmers".