AN INVESTIGATION INTO THE FACTORS UNDERPINNING THE EARLY RAPID INTERNATIONALISATION OF YOUNG SOUTH AFRICAN HIGH TECHNOLOGY FIRMS: A RESOURCE BASED APPROACH

By

SHINGAIRAI GRACE MASANGO

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ABSTRACT

This thesis investigates the internationalisation of South African Early Rapidly Internationalising Small Firms (ERISFs). Although there has been a shift towards incorporating young small firms from knowledge intensive industries within International Business studies, research on such firms from emerging economies is lacking. There is limited empirical evidence on ERISFs from Sub-Saharan African emerging economies, and the applicability of concepts and theoretical models underpinning the internationalisation of such firms. The potential of ERISFs from emerging economies in enriching and extending the theoretical developments within International Business has largely been ignored. As a result, this research seeks to fill this gap by using the resource based view to link the relevant key concepts which underpin the internationalisation of South African ERISFs.

The research adopts a qualitative approach. Thirty five case studies comprising young (maximum age 10 years) software and biotechnology firms exhibiting different internationalisation patterns constitute the research sample. Multiple interviews were conducted with the founders and co-founders of the firms. Supplementary evidenced was provided through: (a) business plans from the firm, (b) Curriculum Vitaes (CVs), (c) academic research papers, and (d) online and print media reports.

A priori propositions were developed based on the literature review and subsequently modified in line with the findings from the study. The results show that critical for South African ERISFs internationalisation activities are the pre-firm individual level specialist knowledge bases of how to serve specific technical international market segments, the pre-firm individual level superior technical knowledge and the interpersonal ties embedded within

and formed as a result of these knowledge bases. International Entrepreneurial Opportunity Development (IEOpD) emerges as a key embryonic capability for South African ERISFs. In addition domestic market factors play a key role in accelerating and retarding South African ERISFs internationalisation activities.

To my mother

‘You raise me up to more than I can be’

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ABBREVIATIONS

ARV	Antiretroviral
ATM	Automated Teller Machine
B	Biotechnology
BRIC	Biotechnology Regional Innovation Centres
BRIC[1]	Brazil, Russia, India, China
CEO	Chief Executive Officer
CSO	Chief Scientific Officer
CTO	Chief Technical Officer
DIMO	Direct Investment Marketing Operations
DIPO	Direct Investment Production Operations
EEO	Exporting Entrepreneurial Orientation
EO	Entrepreneurial Orientation
EOpD	Entrepreneurial Opportunity Development
ERISF	Early Rapidly Internationalising Small Firms
FDI	Foreign Direct Investment
GSM	Global System for Mobile communications
HIV	Human Immunodeficiency Virus
IB	International Business
IE	International Entrepreneurship
IEO	International Entrepreneurial Orientation
IEOpD	International Entrepreneurial Opportunity Development
IMP	Industrial Marketing and Purchasing

INV	International New Ventures
IPO	Initial Public Offering
ISMB	International Society for Molecular Biology.
KYC	Know Your Customer
MNE	Multinational Enterprise
NIMO	Non Direct Investment Marketing Operations
NIPO	Non Direct Investment Production Operations
NTBF	New Technology Based Firms
OEM	Original Equipment Manufacturer
PCR	Polymerase Chain Reaction
POS	Point Of Sale
R&D	Research and Development
S	Software
SADC	Southern African Development Community
SC	Software Consulting
SIM	Subscriber Identity Module
SME	Small to Medium Enterprise
SMS	Short Message Service
VOIP	Voice Over Internet Protocol
Wi Fi	Wireless Fidelity

CHAPTER 1

INTRODUCTION AND STATEMENT OF THE PROBLEM

1.1 Introduction

Small firms which internationalise at an early stage in their organisational development and at a rapid pace are not necessarily a new phenomenon. These firms were identified in the 1970s by the process theorists who referred to them as 'deviations', 'inconsistencies', and 'variations' from the prevailing empirical phenomenon of the 'establishment chain' (Luostarinen & Gabrielsson, 2002). Still around the same period, Simmonds and Smith (1968) pre-empted the developments within early rapidly internationalising small firms (ERISFs). They had expected the exporting activities of the young firms (age less than six years) within their sample to be driven by the internal situation within the firm, and the characteristics of the individuals, to whom the innovation could be traced. As a result developments within small firm internationalisation have been able to circumvent the prioritisation of ERISFs within theoretical development by viewing them as outliers, thus, maintaining the hegemony within International Business (IB) of focusing on established firms.

To date, most of the knowledge on small firm internationalisation relates to the understanding of the firm post-internationalisation (Coviello, 2006). Limited emphasis has been placed on the firm's pre-internationalisation and pre-founding activities. This is because internationalisation has been viewed as a process which occurs only once the firm has reached maturity through the establishment of a strong domestic market base and a formal

organisational structure. On the one hand researchers (e.g. Coviello, 2006; Jones & Coviello, 2005; Zahra, 2005) position ERISFs as new ventures which are still in their early stages of organisational evolution. On the other hand, and in what appears to be an attempt to maintain the focus on established firms, Madsen and Servais (1997) reason that ERISFs could possibly be established firms which are registered as formal entities at a late stage in their development. But, in their subsequent work, the authors suggest that ERISFs are totally new organisational firms. From the review of literature, it is clear that there is a void with regards to research that demarcates the characteristics of the ERISFs under investigation and traces the ERISF's internationalisation process with respect to the firm's evolution (Jones & Coviello, 2005; Madsen & Servais, 1997, Zahra, 2005).

Consequently, some ERISF studies, based largely on exploratory studies (McDougall *et al*., 1994; Rennie, 1993), claim that traditional international business theories are unable to capture the internationalisation process of ERISFs. In their defence, early process theorists (Johanson & Vahlne, 2006) have rightly pointed out their use of broad concepts, such as 'knowledge' and 'commitment' which have maintained their relevance within both traditional and contemporary literature. Other theorists have directed attention towards those elements of their original work which point towards how they pre empted the theoretical developments which define certain aspects of ERISFs. For example the evidence for the formation of cross border links which extend beyond outward directed internationalisation activities is to be found in Luostarinen's (1979) early work. This shows that the theoretical reasoning behind traditional process models could still be applicable to some ERISFs and can, potentially, be fused with contemporary approaches emerging from entrepreneurship. This is critical for

research being conducted in areas where there is no clear theoretical thrust to direct the research towards a particular theoretical direction.

1.2 Motivation for the Study

This study is firstly motivated by the need to dispel the perceptions of 'who' is allowed to participate within the global economy and 'how' they should be able to participate within this global economy. There is an increase in internationalisation studies, particularly from those emerging economies which fall into O'Neill's (2001) BRIC[1] categorisation, and Mathews' (2002) Periphery Economies. But, even here, the focus is on the large spectacular Foreign Direct Investments (FDI) of established firms. This is evidenced in the use of terms such as 'Dragon Multinationals', 'State Owned Enterprises' and to a certain extent, 'Late comers' to denote the category of emerging market firm which international business has chosen to maintain a focus on. It is only recently, that research which concentrates specifically on Early Rapidly Internationalising Small Firms (ERISFs) from emerging economies is starting to appear (e.g. Yamakawa *et al*., 2008). Of note, research does exist on internationalising firms from Sub-Saharan African developing countries. This is evidenced through the work of Calof and Viviers (1995), Ibeh and Young (2001), Ibeh (2003), Mtigwe (2005), and Rutashobya and Jaensson (2004) for example. The emphasis is however, on established, traditional, and medium to low technology firms. Thus, there is a gap in the literature for research which draws on ERISFs from developing Sub Saharan African countries.

Secondly, International Business (IB) theories have all emerged from specific contextual environments, where they have potentially embodied the contextual specificities of their

environment. Within the IB literature for example, there is a thread in which research from the Scandinavian group of countries has been inclined towards an initial cautious approach to internationalisation and the network approach to internationalisation. Whilst research from North America has adopted a more aggressive internally driven approach to internationalisation evidenced by the traditional MNE theories, and more recently by the entrepreneurial approaches to internationalisation. The need to map out a theoretical direction for ERISFs from developing countries, including South Africa, cannot be overemphasised.

1.3 Research Framework and Research Objectives

The focus of this study is specifically on the early stages of evolution of South African ERISFs. The research takes a holistic approach to investigating the internal and external influences underpinning the internationalisation, and subsequently the evolution of South African ERISFs. The research is positioned at the interface between IB and the new contemporary approaches being inculcated into IB from the domain of entrepreneurship. The research is reliant on the key concepts which converge at this interface. Thus on this basis, the research seeks to explore the key internal and external influences, underpinning the internationalisation of South African ERISFs through:

1. Investigating the types of resources and capabilities underpinning the internationalisation behaviour of South African ERISFs;
2. Exploring the extent to which resources and capabilities influence South African ERISFs internationalisation behaviour;
3. Establishing the extent to which South African ERISFs leverage their resources and capabilities for their internationalisation activities; and

4. Investigating how domestic market factors influence South African ERISFs ability to leverage their resources and capabilities for their internationalisation activities.

1.4 Research Approach

The study relies primarily on qualitative data. Because of the moderate levels of a priori theorisation used within the study, the research approach overlaps with elements of both interpretive and positivist paradigms. The study is based on a realist paradigm, where the philosophical assumptions are that of subjective views providing a window onto a more important and complex reality which can be triangulated with other subjective perceptions (Carson et *al*., 2001; Perry et *al*., 1999). Thus, the research is concerned with qualitative phenomena which, in addition to their empirical richness, are able, through triangulation, to provide tentative skeletal broad theoretical generalisations (Laughlin, 1995). A multiple case approach is adopted. Through a process of both deduction and induction, the research aims to engage in both theory testing and theory building.

Thirty five case studies comprising young (maximum age 10 years) software and biotechnology firms, exhibiting different internationalisation patterns, constitute the research sample. The case studies were analysed using a mixture of pattern matching techniques to identify regularities and irregularities across the cases (Yin, 2003) and within the cases.

1.5 Structure of the Thesis

The thesis contains seven chapters which are structured as follows:

Chapter 1 of the research provides an introduction to the general area of Early Rapidly Internationalising Small Firms (ERISFs), the motivation for the study, the research objectives, and the research approach.

Chapter 2 adopts a broad perspective based on the literature review. The chapter starts by mapping the evolution of the heterogeneous grouping of firms which are collectively referred to as Early Rapidly Internationalising Small Firms (ERISFs) within this study. This is followed by a review of selected MNE theories, the Uppsala Model, Innovation Models, network theories, and those approaches which appear to be primarily associated with the emergence of Early Rapidly Internationalising Small Firms (ERISFs).

Chapter 3 develops the research propositions which address the objectives of this study. The propositions are informed by the gaps identified at the interface between traditional IB theories and the contemporary approaches to ERISF internationalisation within the literature review.

Chapter 4 applies the prior theorisation reviewed in Chapter 3 to justify the research philosophy and research design of this study. The research adopts a dual, deductive/ inductive approach based on the realist paradigm. The research design is driven by an instrumental multiple case study approach (Yin, 2003). The research cases have been selected on the basis

of their ability to provide literal and theoretical replication. The multiple case study analysis is conducted using a range of data management techniques (Ghauri, 2004; Miles & Huberman, 1994), tools (Nvivo 8); and through following Yin's (2003) pattern matching rival explanation building logic.

Chapters 5 and 6 present the research results generated from using the analytical techniques mentioned in Chapter 4. The patterns or regularities emerging inductively from the data are organised under themes which confirm or disconfirm the a priori propositions; leading to the acceptance, modification or development of propositions. The confirmed, modified and new propositions collectively address the research questions.

In Chapter 7 the research results are discussed in relation to the research questions. Chapter 7 also discusses the research's contribution to knowledge, outlines the limitations of the study, and provides recommendations for further research in the area.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This study takes a broader view to the review of literature than might be considered the norm. The objective has been to adopt a holistic approach which brings to the fore concepts which have been developed within the traditional International Business (IB) literature and those that are emerging from the contemporary approaches, to explain the internationalisation process of South African Early Rapidly Internationalising Small Firms (ERISFs). This approach has been adopted specifically because of the lack of an underlying theoretical thrust for ERISFs from emerging economies. Hence the aim is to approach this study with an open mind. The review starts by providing a description of the evolution of the terminology which delineates the heterogeneous grouping of firms which constitute the main emphasis of this research. This is followed by a discussion of some elements of the MNE theories, the process models, network theories, and those theories which appear to be primarily associated with the emergence of ERISFs.

2.2 Early Rapidly Internationalising Small Firms (ERISFs)

The most recent theory development within small firm internationalisation emerges from a group of firms whose internationalisation behaviour has been said to differ considerably from that of traditional firms (McDougall & Oviatt, 2000; McDougall *et al.,* 1994). These firms have been addressed using different titles, some of these being: '*born globals*' (Knight &

Cavusgil, 2004; Rasmussan *et al.*, 2001; Rennie, 1993;), '*international new ventures'* (McDougall *et al*., 1994; Oviatt & McDougall, 2005a), *'technology based start ups'* (Autio *et al*., 1997; Preece *et al*., 1999), '*global start ups'* (Oviatt & McDougall, 1994), *'international entrepreneurs'* (Jones & Coviello, 2005), and *'micro multinationals'* (Ibeh *et al*., 2004). Some of the definitions which have been formulated are:

Young (average age of 14 years) firms which begin exporting, on average of two years after their foundation and have achieved on average 76 percent of their total sales through exports (Rennie, 1993,p.46)

'A business organisation that, from inception, seeks to derive significant competitive advantage from the use of resources and the sale of outputs in multiple countries.' (Oviatt & McDougall, 1994, p.49).

'*Business organisations that, from or near their founding, seek superior international business performance from the application of knowledge-based resources to the sale of outputs in multiple countries.' (Knight & Cavusgil, 2004, p.124*)

Table 1 shows the varying categorisations which have been used within the literature for ERISFs. These firms have been found to share a common set of core characteristics which differentiate them from traditional firms, some of these being: the start of international operations before or simultaneously with domestic operations (McDougall *et al*., 1994; Rennie, 1993), accelerated growth within global markets, and the development of visions and missions based on global markets and customers from inception (Luostarinen & Gabrielsson,

2002). Where traditional small firms have internationalised by way of a predetermined gradual and sequential pattern of internationalisation (Johanson & Wiedersheim-Paul, 1975), these firms have been found to exhibit an array of internationalisation patterns.

In Table 1, Oviatt and McDougall (1994) show four categories of ERISFs based on the firm's activities across countries and the number of countries involved. Bell *et al*. (2003) identify three categories of ERISFs: knowledge intensive technology adopter, knowledge intensive technological innovator and knowledge based firm. Bell *et al's* categorisation is based on the extent to which knowledge is a source of competitive advantage for the internationalising firm. To accommodate this diverse grouping of firms, their varying categorisations, characteristics, definitions, and titles, this study will refer to these firms, collectively, as Early Rapidly Internationalising Small Firms (ERISFs). The title essentially captures the key surface manifestations which have set these firms apart, and prompted research into this phenomenon, specifically that internationalisation starts at an early stage in the firm's development (at or close to the firm's inception), and proceeds at a rapid pace.

Table 1

Categorisation of Early Rapidly Internationalising Small Firms (ERISFs)

Author	**Criteria used to categorise ERISFs**	**Early Rapidly Internationalising Small Firm Categories**							
Rennie (1993)	Average age = 2years. % Export Sales (greater than 76%)	Born Global							
Jones (1999)	The extent and speed of formation of inward, outward & cooperative cross border links	Reluctant Developer	Conventional Developer		Rapid Developer			International entrepreneur	
Oviatt and McDougall (1994)	Activities coordinated across countries and the number of countries involved.	Export/Import Start Up	Multinational Trader		Geographically focused start up			Global Start Up	
Luostarinen and Gabrielsson (2002, 2006)	%International Sales % Global Sales	R & D Stage,	Domestic Stage	Entry Stage	Starting Stage	Develop-ment stage		Growth Stage	Mature Stage
Bell *et al* (2003)	The extent to which knowledge is a source of competitive advantage	Knowledge intensive firms technology adopters		Knowledge intensive firms technology innovators			Knowledge based firms		
Knight and Cavusgil (2004)	Extent of innovativeness.	Innovative internationally oriented firms			Non innovative internationally oriented firms				

2.3 Economic Approaches

2.3.1 The Theory of Foreign Direct Investment (FDI): Hymer, 1960, 1976

The development of FDI theories has been prompted by the inability of international trade theories to account for the existence of the Multinational Enterprise (MNE). The existence of the MNE contradicts the assumption of perfect markets made within international trade theories. One of the earliest studies providing an explanation for the existence of North American MNEs is found in the work of Hymer (1976).

It is widely acknowledged within the MNE literature (Teece, 2006; Yamin & Forsgren, 2005) that the theoretical foundations for the development of the theory of the MNE are rooted in Hymer's PhD dissertation completed in 1960 and published in 1976. Unlike his predecessors (e.g. Dunning, 1958, cited in Pitelis, 2006, p.103), Hymer was the first scholar who sought to answer the question of why MNEs chose FDI over alternative modes of internationalisation. Before Hymer, economists explained the existence of the MNE using the neoclassic financial theory of portfolio flows where the MNE was viewed as an arbitrageur of capital (Teece, 2006). By defining the MNE as an institute for international production, Hymer differentiates the economic MNE Foreign Direct Investment from the financial theory of portfolio flows (Dunning & Rugman, 1985).

Central to Hymer's (1976) argument was the MNE's need to maintain a high degree of control over its international productive activities (Pitelis, 2006). Thus, within Hymer's work, the MNE's preference for FDI is defined by two major and one minor reason. The first being

the need to retain control by minimising conflict within international operations through centralised decision making, attained through the use of a multidivisional organisational structure providing a clear hierarchical separation between strategic and operational functions (Yamin & Forsgen, 2006). The second being the ability to fully appropriate the gains from monopolistic advantage through intra firm activities. The MNE is required to possess some form of compensating advantage in order to compete against foreign firms which have a better understanding of their local market conditions (Young *et al*., 1989). Here, Hymer draws on the work of the early industrial theorists such as Bain (1956). Thus the MNE's advantage might lie in product market power, superior production techniques, imperfections in input markets and first mover advantages (Teece, 2006). A third and minor cause which Hymer identifies is the possibility of diversifying risk through international operations.

With regards to the contributions of the early theorists to the field of firm internationalisation, Pitelis (2006) emphasises the need for IB theorists (particularly new scholars in the field) to promote the development of a 'disciplinary memory' within IB by tracing core concepts back to their originators.

2.3.2 The Eclectic Paradigm: Dunning (1976 – 2000)

Developed by Dunning (1976) (cited in Dunning, 1988, p.1), the OLI paradigm represents one of the overarching paradigms of FDI. The origins of the OLI paradigm date back to 1958 when the distinction between ownership and location advantages was first made in Dunning's (1958) (cited in Dunning, 2000, p.168) study of American investment in British manufacturing. According to the OLI paradigm, the MNE's decision to expand through FDI is

governed by three interrelated variables: ownership (O) specific advantages of the enterprises seeking to engage in FDI; the location (L) advantages of the countries or regions for undertaking the value adding activities of MNEs; and the firm's propensity to internalise (I) ownership or location advantages.

In the subsequent updates of the eclectic paradigm Dunning (1988, 1998, 2000) places emphasis on: a) the structural and transactional elements of his paradigm; b) location advantages; and c) ownership specific advantages. With regards to ownership advantages, a distinction is made between asset (Oa) specific advantages based on the possession or privileged access to a specific asset, and transaction advantages (Ot) based on the multinational's capability to organise its assets both internally and externally in the most efficient way. With regards to location advantages, structural market distortions arise from government intervention, whilst transaction gains are derived from the common governance of activities in different locations (Young *et al*., 1989).

Developments within the process theories have been largely triggered by the inability of the MNE theories to explain small firm internationalisation.

2.4 Process Theories

The process models represent the second group of theories which have been used to conceptualise firm internationalisation. What this study categorises as the process theories are the two streams of research which originally emerged from Europe and North America. Andersen (1993) labels these models as the Uppsala Internationalisation Model (U-Model)

and the Innovation-Related Model (I-Model) respectively. These models contend that firms become international in a gradual incremental manner because of factors such as: the lack of foreign market knowledge, high risk aversion and high perceived uncertainty (Madsen & Servais, 1997). As to why these two streams of research have emerged, Johanson and Wiedersheim-Paul (1975) cite as a major handicap the lack of research which describes the entire internationalisation process of the firm from the start of the firm's internationalisation activities, as the driving force behind the development of the U-Model. This is primarily due to research in IB being focused on analysing the firm once it has become large and international. Bilkey and Tesar (1977) cite the need for a commonly accepted export model, which builds on the fragmented, non comparable body of literature, which was emerging from the empirical export development studies. However, a closer look at the foundations underpinning the development of the process models, particularly the U-Model, reveals that model development has partly arisen out of the need to explain how firms internationalise when faced with the dual problem of foreign risk and the need to maintain control over foreign operations (Forsgren, 2002). Specifically factors raised by Carlson (1966) (cited in Forsgren, 2002, p.258). Carlson formulated the hypothesis that firms handle uncertainty due to the lack of foreign market knowledge, through trial and error, and gradual acquisition of foreign market knowledge. Hence, these initial models do not appear to have arisen out of the need to explain internationalisation with respect to a particular firm size per se. In their later work and in response to Dunning's (1988) challenge for model development which incorporates the eclectic model and the U-Model, Johanson and Vahlne (1990) highlight the MNE theories' main weakness as being the inability to place uncertainty avoidance at the centre by assuming that firms optimise rationally.

Another factor which could have promoted the development of the process models is the growth patterns in small to medium enterprises (SMEs) identified by Loveman and Sengenberger (1991). Based on data which shows the employment shares of manufacturing SMEs within some of the largest OECD countries: the United States, France, Germany, the United Kingdom and Italy, between 1958-1982, Loveman and Sengenberger identify a V shaped pattern in SME growth. Their data shows that these nations experienced a decline in SME growth during the 1950s and 1960s followed by an increase in SME growth from the 1970s onwards. The increase in the growth of manufacturing SMEs coincides with the time period when internationalisation researchers started to focus on the internationalisation of SMEs.

To a large extent, the process models have dominated research on the internationalisation of small firms to the point that at one stage it was assumed that all SMEs internationalise by way of a slow gradual incremental process. It is only recently, more so based on the analysis of those firms which have been excluded from mainstream internationalisation research: high technology/technology based firms (Lindqvist, 1997), service firms (Majkgard & Sharma, 1998) and high value added manufacturing firms (Rennie, 1993), that process models have come under increased scrutiny, specifically as regards their explanatory power with respect to these firms. Studies, which analyse the ERISF phenomenon at a deeper theoretical level (Madsen & Servais, 1997), argue that the theoretical reasoning behind the process models has some merit when trying to understand the internationalisation pattern of ERISFs. This is in line with researchers who call for a holistic approach to conceptual thought (Coviello & McAuley, 1999) within small firm internationalisation.

The U-Model can be viewed as operating at two levels (Anderson, 1993): the theoretical level which has its origins in the model developed by Johanson and Vahlne (1977) and the operational level which has its origins in the establishment chain pattern developed by Johanson and Wiedersheim-Paul (1975).

2.1.4 The Uppsala (U) Model: Theoretical Level

The main assumption underlying the U-Model is that firms which intend to go abroad suffer from a lack of **foreign market knowledge** (Forsgren, 2002). Because of the lack of foreign market knowledge, the perceived risk of foreign market investment is considered to be high, particularly in the case of resource constrained firms. Hence the acquisition of foreign market knowledge is deemed to be fundamental for successful market entry. Three important assumptions are made within the U-Model as regards the acquisition of foreign market knowledge (Forsgren, 2002). Firstly, because of the tacit nature of market knowledge, knowledge acquisition occurs through the firm's operations in the new environment. Secondly, decisions and implementation concerning foreign investments are made incrementally due to market uncertainty. Thirdly, knowledge is highly dependent on individuals and as a result is difficult to transfer to other contexts. Thus, internationalisation is conceptualised as an organisational learning process (Forsgren, 2002) in which the firm strives for growth and long term profit whilst at the same time attempting to keep risk taking at a low level (Madsen & Servais, 1997). Based on the behavioural theories (Aharoni, 1966; Cyret & March, 1963), Johnson and Vahlne (1977) model the internationalisation process as a dynamic causal cyclic process, as illustrated in Figure 1. Within this model, the present state

of the firm represented by the firm's market knowledge and market commitment is determined and changed by the firm's commitment decisions and current activities.

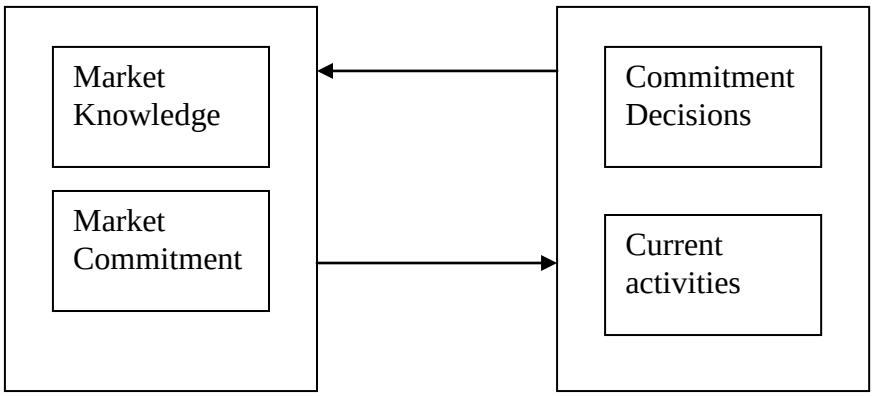


Figure 1 Theory Model - The Internationalisation Process (Johanson & Vahlne, 1977)

According to Madsen and Servais (1997) the rejection of the process models, specifically the U-Model within ERISF internationalisation, is based on the limited validity of the surface manifestations of the process theories as opposed to the reasoning behind the theories. They propose that the internationalisation process of some ERISFs can be explained using Johanson and Vahlne's (1977) model. However, because the degree of country market specificity for an ERISF is lower and the founder is more likely to have prior 'experiential' market knowledge, additional market commitments need not necessarily be slow and incremental. Here Madsen and Servais provide support for those researchers who view ERISF internationalisation as an accelerated version of the process theories. One might question what happens in the event that the reasoning behind the internationalisation process model is misguided or possibly limited? Johanson and Vahlne (1990) rightly point out that although the internationalisation process has captured the interest of many researchers, there have been only a few attempts at developing the model. Thus, Forsgren (2002) questions the model's ability to explain and

predict internationalisation behaviour accurately. The author states that, by restricting experiential learning to a reactive perspective, the U-Model takes on a narrow view of organisational learning. Conversely, the model fails to incorporate the alternative forms of learning which might emerge as a result of the recent developments within the organisation literature (Forsgren, 2002). Here an organisation has the option of learning through mimetic behaviour, proactive searches for new alternatives and so on. These alternative forms of learning allow for a less incremental and less cautious internationalisation process and ultimately lead to a broader spectrum of internationalisation routes than that predicted by the process model (Forsgren, 2002).

In a similar vein, the author contends that, because the process model employs a narrow interpretation of learning, the applicability of the model is in fact limited to certain forms of internationalisation behaviour. This essentially implies that it might not be possible to extend the reasoning beyond the U-Model to other forms of internationalisation. Furthermore, the U-Model fails to provide further explanation as to how foreign market knowledge once acquired is interpreted and subsequently internalised within the firm and transformed into actionable knowledge (Liesch *et al*., 2002). This omission is particularly worrying in light of the fact that it is assumed that the firm develops the routines to solve problems, in relation to internationalisation, through its activities in foreign markets (Madsen & Servais, 1997).

Arguably, it is apparent that by relying on a single explanatory variable in an attempt to cover 'all' internationalising firms, Johanson & Vahlne (1990) appear to have restricted the U-model to a specific pattern of internationalisation, that which is gradual and incremental. Johanson and Vahlne (1990, p. 17) reinforce their argument further by stating that, 'there is

no ambition to increase the number of explanatory variables, as our aim is really to contribute to the incremental nature of the internationalisation process'. What is worrying is that, despite the developments which have occurred within organisational learning, minimal research has actually been conducted on the basic concepts underpinning the model. Notably, there have been mixed views on the applicability of the stage models (McDougall *et al*., 1994). Some researchers contend that, despite the existence of alternative ways of gaining foreign market knowledge (such as networks), experimental market knowledge gained through the firm's foreign market activities remains the key driver of the firm's internationalisation activities (Yli-Renko *et al*., 2002). The disparity in the findings is compounded by the fact that ERISFs are a heterogeneous group of firms, exhibiting varying patterns of internationalisation, and emerge from an array of industries. The fact that this could have a bearing on the validity of the process model does not appear to have been taken into account. This brings to the fore the extent of the limitations of the U-Model.

2.4.1.1 Uppsala (U) Model: Operational Level

The establishment chain pattern developed by the U-Model researchers (Johanson & Wiedersheim-Paul, 1975) is the most commonly referenced pattern of internationalisation. According to Luostarinen and Gabrielsson (2006) there are three major stage patterns of internationalisation which have emerged from Europe. The authors categorise these stage patterns as: the target country stage pattern, the company level stage pattern, and the company level holistic stage pattern. The three stage patterns are shown in Table 2.

Table 2

Stage Patterns of Internationalisation

Researcher	**Function**	**Type of stage pattern**	**Stages**			
Johanson and Wiedersheim-Paul (1975), Johanson and Vahlne (1977)	Operation Mode	Target Country stage pattern (establishment chain pattern)	No regular export activities	Export via independent representatives	Sales subsidiary	Production/ Manufacturing
	Market Strategy		Markets selected according to psychic distance			
Luostarinen (1979)		Company level Stage Pattern **(P+O+M)**	Starting Stage	Development Stage	Growth Stage	Mature Stage
Luostarinen (1979)	Product strategy **(P)**		Goods	Services	Know how	Systems
Luostarinen, (1970) (cited in Luostarinen and Gabrielsson, 2002), Luostarinen (1979)	Operation Mode **(O)**		Non direct investment marketing operations NIMO	Direct Investment Marketing Operations DIMO	Non Direct Investment Production Operations NIPO	Direct Investment Production Operations DIPO
Luostarinen (1970) (cited in Luostarinen and Gabrielsson, 2002), Luostarinen (1979)	Market Strategy **(M)**		Markets selected according to increasing business distance, which is the sum of the geographic, business and cultural distance			
Luostarinen (1979)		Company level holistic stage pattern	Includes inward, outward and cooperative modes of internationalisation			

The establishment chain developed by the Uppsala school (Johanson & Wiedersheim-Paul, 1975; Johanson & Vahlne, 1977) represents the first stage pattern shown in Table 2. This penetration pattern has two dimensions: market and operation mode. Based on the investigation of the internationalisation patterns of four Swedish engineering firms, Johanson and Wiedersheim-Paul conceptualise the development of the international operations of firms, within individual markets, as an incremental process comprising four sequential stages. These being, no regular export activities, export via independent representatives, sales subsidiary and production/manufacturing.

However, one of the central criticisms surrounding the U-Models is the surface manifestation of internationalisation, as a set of sequential predetermined stages which cover the firm's entire internationalisation process. In fact, this was noted much earlier within the process model literature. Luostarinen and Gabrielsson (2002) maintain that the company level pattern developed by Luostarinen (1979) is much more valid than the target country/establishment pattern. This is because the country level pattern takes into cognisance the fact that the behaviour of the firm is consistent only at the early stages of the internationalisation process. Once internationalisation proceeds further, the operation modes for entry and market penetration become less consistent. This is evidenced by the empirical evidence on the progression of the company level dimensions of product strategy (P), operational mode (O) and market strategy (M) at the start of internationalisation.

Here virtually all of the firms in Luostarinen's (1979) sample identified the first market entered as a very close country (92%), the first operation mode as a non-direct investment mode (98%), and the first product as a physical product (92%). Partial support exists for this

argument within ERISFs where it has been found that internationalisation is more likely to start with Non Direct Investment Modes, with the difference being that these modes are not confined solely to marketing modes (Bell, 1995; Jones, 1999). The possibility of the explanatory value of the internationalisation model being higher in the early stages of the internationalisation process has been raised by other authors, for example Dunning (1988). The third pattern relies on data which was collected by Luostarinen (1976) on the inward and co-operative modes of Finnish firms but was excluded from their original company level strategy analysis due to the predominance of outward related internationalisation activities.

In order to explain the internationalisation process across markets, Johanson and Wiedersheim-Paul (1975) stipulate that the firm begins internationalization by entering psychically close markets which are considered to be similar to the home market and therefore require minimum adaptation of the marketing mix (Reid, 1981). The conceptualisation of the psychic distance concept has been questioned (Evans *et al*., 2000), particularly with regards to psychic distance being positioned as a country level factor (Johnson & Wiedersheim-Paul, 1975) as opposed to a firm specific factor (Evans *et al*.). The difference in the conceptualisation of psychic distance appears to have gone largely unnoticed within the ERISF literature with emphasis being placed on questioning the relevance of country specific psychic distance (Bell, 1995). Thus, within ERISF research, market selection is determined by factors such as industrial trends, client followership (Bell, 1995; Coviello & Munro, 1997), opportunity recognition emerging from weak (Sharma & Blomstermo, 2003) and social ties (Ellis & Pecotich, 2001). It would appear that the relevance of firm specific psychic distance remains under researched.

However, Johanson and Vahlne's (2009) recent work represents a total shift from the view of the business environment as a neo classical market, to one in which the business environment is viewed as a web of relationships. The authors now see being inside a network as opposed to psychic distance reduction, as the key to reducing uncertainty.

2.4.2 The Innovation I-Models

According to Andersen (1993) both the U and I models are based on the behavioural approach. In both cases the incremental pattern of the firm's internationalisation is primarily attributed to the lack of experiential knowledge and the uncertainty associated with the decision to internationalise. There are three main differences between the theories which have been highlighted by the author. Firstly, the U-Model places emphasis on organisational learning by depicting internationalisation as a dynamic process, whilst based on the innovation adoption process I-Models depict internationalisation as a stepwise progression in which higher level stages represent increasing experience and involvement.

Secondly, the I-Model depicts **export** development as a discontinuous process which applies from the time when the idea of exporting is initiated up until the point at which internationalisation is regarded as being a part of the firm's normal activities. The U-Models conceptualise internationalisation as a continuous process where there does not appear to be a definitive start or end point. Thirdly, whereas the U-Models are applicable to all firms irrespective of their size, the I-Models tend to be more aligned towards small to medium enterprises. The U and I models have emerged from two different contextual environments, where there appear to have been different push factors which have led to their development. Within the Scandinavian group of countries, firms were found to internationalise by way of a

gradual process as opposed to the spectacular FDI activities identified within larger developed economies, specifically North America.

What makes both models relevant is not so much the pattern of internationalisation which the models advocate, but the underlying basic concepts which need to be taken into cognisance together with the contextual specifics of the firm. Thus, for firms which emerge from the Scandinavian group of countries, contextual firm specific factors are reflected in the risk averse nature of the firms coupled with the pressures to internationalise from the small size and openness of the domestic market.

The I-Models conceptualise internationalisation as a learning sequence in adopting an innovative approach (Andersen, 1993). Here, it is assumed that entry into the export market is just as much an innovation as the adoption of a new product, service, or idea (Simmonds & Smith, 1968). Consequently, the models are derived from the innovation theories (Robertson, 1971; Rogers, 1962) which conceptualise innovation diffusion as a series of sequential stages concerned with the behavioural, social structural, information search and cognitive processes which individuals engage in as they move psychologically towards the acceptance or rejection of an innovation. The most commonly adopted sequence has been the one proposed by Rogers (1962) who conceptualises the diffusion of innovation as a five stage process: awareness, interest, evaluation, trial, and adoption.

Table 3 provides an overview of the early I-Models which have been developed from the innovation adoption theories. Developments in this area have been led largely by the work of the early theorists (Bilkey & Tesar, 1977; Cavusgil, 1980; Czinkota, 1982; Reid, 1981).

Within these models the development of the stages, particularly the determination of factors that govern the movement from one stage to the next, and the factors characterising the internal determinants within each stage, are hampered by the huge number of variables that influence the export behaviour of firms (Bilkey, 1978). A number of studies have attempted to narrow internationalisation variables to key export determinants. Reid (1981) acknowledges the need to make a distinction between the export expansion processes in large and small firms. This is because internationalisation behaviour is more likely to be influenced by individual decision maker factors as opposed to structural factors in the case of small firms. Attempts have been made by Cavusgil (1982), for example, to explain the firm's progression from one stage to the next. However Anderson (1993) reasons that because model development has been largely based on cross sectional studies, it is only possible to characterise the firms that have been classified into different stages. The significance of the export development studies within ERISF internationalisation is that the bulk of firms begin their internationalisation activities using direct and indirect exporting (Bell, 1995; Burgel *et al*., 2000; Shrader *et al*., 2000). Simmonds and Smith (1968) state that, because innovation could not be explained by reference to the situation within the firm and moreover because exporting was primarily initiated by change agents who introduced their own acceptance of exporting into the firm, exporting is an **innovation adoption process** with respect to the firm.

Table 3

Export Development Stages

Author/s	**Stages**						
	1			**2**	**3**	**4**	**5**	**6**
Bilkey & Tesar (1977)	Management is not interested in exporting.			Management is willing to fill unsolicited orders but makes no effort to explore the feasibility of active exporting.	Management explores the feasibility of exporting	The firm exports on an experimental basis to some psychologically close country.	The firm is an experienced exporter	Management explores the feasibility of exporting to psychologically distant markets
Weidersheim-Paul *et al*. (1978)	Domestic	Passive	Active					
Reid (1981)				Export awareness	Export Intention	Export Trail	Export Evaluation	Export Acceptance adoption or rejection of exporting
Wortzel & Wortzel (1981)						Importer Pull	Advanced production	Product marketing consumer pull
						Basic Production Capacity	Product marketing Channel push	

Author/s	**Stages**						
	1		**2**	**3**	**4**	**5**	**6**
Cavusgil (1980)	Domestic Marketing		Pre-export stage		Experimental involvement, initiation of limited internationalisation activity	Active involvement, systematic exploration of expanding international activity	Committed involvement, resource allocations based on international opportunity recognition
Czinkota (1982) Crick (1995)	The completely uninterested firm		The partially interested firm	The exploring firm	The experimental exporter	The experienced small exporter	The experienced large exporter
Moon & Lee (1990)	Lower stage of export development			Middle stage of export development		Higher stage of export involvement	
Lim *et al*. (1991)			Export awareness	Interest in selecting exporting as a viable strategy	Intention to initiate exports	Trail and adoption of exporting	
Rao & Naidu (1993)	Non exporters	Non exporters would like to explore exporting opportunities	Sporadic involvement in export activities			Regular involvement in export activities	

Source: (Leoniduo & Katsikeas, 1996)

2.4.2.1 Export Determinants

Despite the volume of studies within this area, the knowledge on export determinants remains fragmented. Aaby and Slater (1988) refer to the research as a 'mosaic of autonomous endeavours', whilst Zou and Stan (1998) view the empirical evidence on export determinants as 'a fragmented collection of confusing findings'. Morgan *et al*. (2004) attribute this fragmentation to the following three main weaknesses:

a. descriptive, a theoretic studies, studies drawing on a wide range of divergent theoretical perspectives;
b. firm level analysis which fails to capture the differences in the strategies executed by export ventures facing various market requirements; and
c. the use of individual performance measures to reflect what is in fact a multidimensional export performance construct.

In acknowledging the inherent weaknesses within the exporting literature, several reviews have been conducted drawing on studies mainly covering the period 1960-2002. These reviews represent the attempts being made in the exporting literature to promote theory development and develop a comprehensive understanding of the status of the export determinant literature. In essence, these reviews are, in part, a response to Pitelis' (2006) call to promote the development of a 'disciplinary memory' within IB by tracing core concepts back to their originators. Within the reviews, the approaches employed are either a broad focus covering all the determinants of export performance (Madsen, 1987; Zou & Stan, 1998), or a narrower focus covering a specific group of export determinants (Aaby & Slater, 1988;

Chetty & Hamilton, 1993; Leoniduo *et al*., 1998). The review analysis is conducted predominantly using statistical analysis (meta analysis or p-value analysis) based on the reviewer's experience. Following Zou and Stan (1998) export determinants are divided into internal and external determinants. According to the authors, the classification of export performance determinants into internal and external factors is theoretically justified because the two categories correspond to different theoretical basis; that is the resource based view and the industrial organisation theory respectively

i Internal Export Determinants

The number of internal variables identified varies between the different reviews and is essentially a reflection of the complexity associated with incorporating all of the internal variables which influence export performance. Thus, where Aaby and Slater (1988) identify 27 managerially controllable determinants synthesised into three categories: firm characteristics, firm competencies and export strategy, Madsen (1987) identifies 16 determinants which he classifies into marketing strategy and organisational determinants. Of note, Aaby and Slater provide a broad definition of managerial determinants which incorporates organisational factors, whereas Leoniduo *et al*. (1998) provide a narrower but more specialised focus on managerial determinants which excludes organisational factors. Overall, Leoniduo *et al* identify 17 managerial determinants which they synthesise into four broad categories: objective general, objective specific, subjective general, and subjective specific. Zou and Stan (1998) use the dimensions of controllable and uncontrollable to differentiate between internal factors which can be readily changed in the short run and are thus controllable, from those which can only be changed in the long term and are thus

uncontrollable. The export marketing strategy factors: export planning, marketing research, distribution channel relationships; and management attitudinal and perception factors - export commitment, international orientation and perceived export advantages, are found to be strong internal controllable determinants of export performance (Zou & Stan, 1998). With the exception of factors such management international experience and management education/experience, the effect of internal uncontrollable factors is considered to be mixed, necessitating further research. Thus, the themes emerging from the reviews indicate that internal factors can broadly be categorised into managerial, export marketing strategy and firm specific determinants.

Managerial Determinants

Chetty & Hamilton (1993) state that, the critical number of positive significant results required to reject the null hypothesis is dependent on the total number of studies available for scrutiny and employ Hedges and Olkin (1980) criteria which sets ten as the minimum number of studies. As noted by the authors, attitudinal and perceptual managerial influences: particularly management commitment and management international orientation are identified as important export determinants. Conversely, a closer analysis conducted by Leoniduo *et al.* (1998) shows that the effect of managerial influences is largely based on conclusions drawn from the effect of managerial influences on a single dimension of export performance, export propensity. In addition, the authors note that, whilst objective managerial factors have received considerable attention within the exporting literature, subjective managerial factors (attitudinal and perceptual factors) remain under researched.

Export Strategy Factors

On average, approximately 4 out of a total of 38 export marketing strategy variables have been examined within individual export studies (Leoniduo *et al*., 2002). This shows that a limited number of consistent export marketing strategy variables are likely to emerge from the exporting literature. Thus within Zou and Stan's (1998) review, only two export marketing strategy variables: export planning, and channel relationship management, emerge as consistent determinants of export performance. The effects of export marketing strategy variables, which fall under the product (product adaptation and product strength) and promotion (promotion adaptation and promotion intensity) categories are mixed, despite the former being frequently researched.

The conclusions reached on the effect of market selection and market segmentation variables are contradictory. Where some reviews regard these variables as insignificant (Madsen, 1987; Zou & Stan, 1998) other studies conclude that, overall, these variables are positively related to export performance (Chetty & Hamilton, 1993; Leoniduo *et al*., 2002). A closer analysis of market selection strategy reveals that: a) market concentration exhibits a significant positive effect on sales based export performance indicators, b) market spreading is positively related to export sales and export growth, and c) market segmentation is positively related to export performance (Leoniduo *et al*., 2002). The authors further contend that, export market segmentation strategies, defined as the dual process of grouping homogenous markets in accordance with the similarities of their external environments, followed by the collective segmentation of these markets into customer bases, is under researched within the exporting literature.

Firm Level Characteristics

Zou and Stan (1998) identify firm size measured in terms of the number of employees and or annual sales as 'the most researched independent variable'. Depending on the review, the effect of firm size varies from having a medium positive effect (Chetty & Hamilton, 1993) to a mixed effect (Madsen, 1987, Zou & Stan, 1998) on export performance. In line with firm size, the results of the findings relating to effect of the firm's technological level or technological intensity, mainly measured by Research and Development (R&D) intensity (Madsen, 1987) on export performance are mixed. Thus, Chetty and Hamilton (1993) identify the technology variable as the only firm specific variable where 'particularly large effects are possible'. Aaby and Slater (1989), and Madsen (1987) however, view the effect of technological intensity on export performance as being uncertain.

ii External Export Determinants

The problem with external factors is twofold. Firstly, very few studies have incorporated external determinants within their studies and secondly, in cases where some factors have been included, conflicting or weak associations have been identified between these variables and export performance. For example, less than half of the studies reviewed by Zou and Stan (1998) address the influence of the external environment. The limited emphasis on external determinants can be partly attributed to the reliance on export performance measurements which are based on total exports. This makes it difficult to clearly define an environment that is made up of several markets, which differ in terms of characteristics such as competition, size, growth, market distance and so on.

Even though Zou and Stan (1998) identify the lack of external uncontrollable factors and the non existence of external controllable factors, they fail to highlight the specific factors that additional research should incorporate in order to address this gap. However, Leoniduo *et al*. (1998) propose a contingency approach to the analysis of contextual factors. They reason that the managerial determinants which they focus on within their review are affected by industrial factors and domestic market factors.

iii Export Performance Indicators

There are various indicators and concepts related to export performance and the extent to which these dimensions can be 'deemed' to be correct is, in part, determined by the firm's goals (Madsen, 1987). Where, in an ideal world, one might be tempted to take on the macroeconomist view and narrow the firm's goal to that of profit maximisation, in reality firms pursue a range of different organisational goals which also include: survival, sales, growth, and stability (Madsen, 1987). Here, Madsen argues for export performance measurements which are individually defined for each firm. While goal centred export performance measurements are considered to be theoretically sound, very few studies have assessed export performance in reference to firms' goals (Katsikeas *et al*., 2000). It is now acknowledged that export performance is a multidimensional construct, which can be conceptualised along the dimensions of effectiveness, efficiency and adaptiveness (Morgan *et al*., 2004).

iv Theory Development

One of the main criticisms surrounding export performance literature is the lack of comprehensive theory development. Clearly, from the multiplicity of determinants and export performance measures identified from the review articles, a multitude of relationships can be hypothesised, but interestingly, minimal attempts have been made towards theory development. Through meta analysis, Chetty and Hamilton (1993) confirm the validity and relative importance of the key export determinant variables in each part of Aaby and Slater's (1988) model. Within the model, firm competencies, followed by firm's strategy and lastly firm's characteristics are found to have the most significant effect on export performance

Notably, a large proportion of studies fail to assess the influence of export determinants on each export performance measurement. Madsen (1987) employs a modified version of Thorelli's (1977) (cited in Madsen, 1987, p.181) strategy structure performance framework. The author reasons that this grouping of variables coincides with the approach taken in several of the review studies. The basic idea in this framework is that the performance of an organisation is the result of the continuous interaction between its organisational structure (O-structure), the performance of its environment (E-structure) and its strategies (Madsen, 1987).

The author identifies two main weaknesses in export performance model development. Firstly, the focus on simplistic conceptual models which fail to take into account the existence of interaction effects between the export determinants (O-structure, E-structure and strategy). It is expected that a certain level of export performance would be the result of the interaction between export determinants. Secondly, there is a lack of clarity on the direction of causality

in the proposed relationships. Morgan *et al*. (2004) integrate the strategy-conduct-performance paradigm and the Resource Based View (RBV) to develop a theoretical model for the antecedents of export venture performance.

To date, export researchers continue to regard exporting as 'the most popular, quickest and easiest way' for all small firms to become international (Leonidou *et al*., 2007). The problem is that whilst a host of mainly internal determinants which are considered to have an effect on export performance have been identified within the exporting literature the effect of these determinants remains largely uncertain. Part of the problem of focusing solely on internal determinants as Madsen (1987) rightly states, particularly for research relying on multivariate analysis, is that of specification effects. These conflicting results are further exacerbated by the lack of a consistent measurement for what is now acknowledged as a multidimensional construct i.e. export performance. With export studies focusing on younger firms (Westhead *et al*., 2001) and the emergence of the Resource Based View (RBV) as a unifying theoretical model for small firm internationalisation, the problems which were originally identified within the exporting literature, are being transferred to ERISF internationalisation. The problems identified from the review of exporting literature include:

a. the use of individualised internal determinants which exhibit mixed effects on internationalisation;

b. the use of one-dimensional internationalisation performance measurements which fail to fully capture small firm internationalisation; and

c. the exclusion of external factors.

2.5 Network Approach to Small Firm Internationalisation

The network approach represents the third theory used in the conceptualisation of the internationalisation process. The explicit inclusion of network approaches in internationalisation appears to have started in the early 1980s. One of the earliest adoptions of the network approach in internationalisation stems from a fairly broad research programme, conducted by the Industrial Marketing and Purchasing (IMP) researchers (Hammarkvist *et al*., 1982, cited in Johanson & Mattsson, 1988, p.305; Johanson & Mattsson, 1985) at the University of Uppsala, where relationships were viewed as being critical for the functioning of industrial markets and the market strategies of industrial firms. By tracking the early network literature from the mid 1980s to the 1990s, three core arguments emerge that explain the inclusion of the influence of networks on firm internationalisation.

The main thrust of the first argument stems from the need to understand the context in which firms operate. The emphasis is on moving away from treating the firm and its environment as separate entities towards firms which are able to shape their environment through their interaction with other firms. In his seminal article titled 'Internationalisation in Industrial Systems: A Network Approach' Johanson and Mattsson (1988) claim that both the internalisation and stage models stress the role of the internal development of the firm's resources and knowledge as dominant drivers of the internationalisation process**.** Whereas a firm operating in an internationalised environment is more likely to be reliant on resources which are controlled by other firms in order to enact its internationalisation strategy. The explanatory power of the stage and internalisation theories is thus limited to firms operating in non-internationalised environments (Johanson & Mattsson, 1988). The applicability of the

stage model is restricted further to firms with limited international relationships. In this context, the network approach offers a model of the market and the firm's relations to that market.

The second argument stems from the dominant focus of stage model studies on manufacturing firms (Bilkey, 1978; Czinkota, 1982; Johanson & Valhne, 1977). Although service firms play an important role in industrialised economies, little attention has been devoted to the internationalisation of service firms (Sharma & Johnson, 1987). The importance of established relationships is deemed to be more evident in service firms than in manufacturing firms. Considering that the focus of the early process theories can be narrowed down further to a specific subset of manufacturing firms, especially the predominantly low to medium technology manufacturing firms, this study questions the extent to which this argument can be extended to other types of firms which have also been excluded, for example high technology firms.

The third argument centres on the exclusion of inward internationalisation activities from the internationalisation literature (Welch & Luostarinen, 1993). The emphasis within the early internationalisation literature has been on the way in which firms develop outward-directed international operations. The authors propose that inward activities might precede and influence the development of outward internationalisation activities. This is because inward internationalisation activities form the basis for the development of network relationships, which facilitate the firm's outward internationalisation activities.

Overall, the network perspective is considered to go beyond the models of incremental internationalisation by suggesting that a firm's strategy emerges as a pattern of behaviour influenced by a variety of network relationships. The arguments proposed by the early network theorists do not counter the applicability of the earlier process theories, but appear (particularly in the case of the first two arguments) to be an attempt to narrow the applicability of the stage models to specific types of firms; manufacturing (Sharma & Johanson, 1987), specific industries; non internationalised, and a specific historical time period (Johnson & Mattsson, 1988); the early part of the twentieth century.

2.5.1 Network Theory Evolution

The objective of this review is to trace the application of the network approach to small firm internationalisation from its origins through to its most recent application within ERISF internationalisation. As shown in Table 4 the network approach is being traced from its early applications based on the work of the IMP research group through to some of the most recent applications within ERISF internationalisation. The more recent applications rely on the developments within network based research which are taking place within the field of entrepreneurship (Hite & Hesterly 2001; Hoang & Antoncic 2003).

Of note, recent emphasis in the network approach has shifted more towards SMEs. There has been an emphasis in addressing those aspects of networks that have not been fully amplified within the industrial marketing theories but have been found to have a more pronounced impact on the internationalisation of SMEs. Table 4 highlights the shift towards understanding the role of social networks on established small manufacturing firms and

ERISFs. However, further investigation on the nature of the ERISF, as a firm which begins its internationalisation activities whilst still in the early stages of its organisational development (Jones & Coviello, 2005) is intensifying. Accordingly, there now appears to be a shift from the work of the IMP researchers towards the application of entrepreneurial networks within ERISF internationalisation (e.g. Coviello, 2006).

2.5.1.1 Industrial Marketing Network Approach

Industrial network theories constitute the dominant theoretical base underpinning the development of network theories in small firm internationalisation. What this study refers to as the industrial network approach is the outcome of a fairly broad research programme dealing primarily with the functioning of industrial firms operating in business markets which originated in the mid 1970s at the University of Uppsala (Håkansson & Snehota, 1995). The theoretical underpinning of the IMP theories stems from the social exchange perspective (Cook & Emerson, 1978), where exchange networks are defined as sets of two or more connected relationships. Exchange relationships are connected to the degree that exchange in one relationship is contingent upon exchange in the other. By transposing the social exchange perspective on dyadic relationships and social exchange networks to business relationships and networks, business networks are defined as sets of interconnected relationships in which each exchange relationship occurs between firms conceptualised as actors (Johanson & Vahlne, 2003). In this context, the firm is considered to be part of an unbounded business network by virtue of its engagement in a set of relationships with important customers and suppliers who, in turn, have relationships with other firms.

Table 4

The Evolution of the Application of the Network Theories.

Theoretical Basis	Author (year)	Purpose of Study	Sample
Industrial network theories	Johanson and Mattsson (1988)	Model the internationalisation of industrial firms using the industrial network model.	Conceptual study
Stage concept from process theories and industrial network theories.	Coviello and Munro (1995, 1997)	Examine the influence of network relationships on the internationalisation process of small software firms	Case Study approach, four case studies, analysis involved an inductive approach
Industrial network theories	Chetty and Holm (2000)	Model the internationalisation of firms using the industrial network approach	Longitudinal study, case study method, four SME manufacturing firms
Industrial network theories	Johanson and Vahlne (2003)	Model the internationalisation process of the firm as an experiential learning commitment interplay based on relationship building	Single case study (firm manages clinical trials)
Social network theory (e.g. Gronvetta 1973)	Ellis (2000) Ellis and Pecotich (2001)	Examine the influence of antecedent social ties on export initiation	Case study, eleven SMEs selected from several industries
	Sharma and Blomstermo (2003)	The role of weak ties within ERISF internationalisation	Exploratory research based on two case studies
Industrial network theories, social network theories	Harris and Wheeler (2005)	Investigate the origins of interpersonal relationships and their specific functions within the internationalisation process	Three cases
Network evolution approach adopted from the entrepreneurship literature	Coviello (2006)	Trace the evolution of ERISFs networks with respect to the structural and interactional tie dimensions of the network.	Case study, three organisations
Resource Based View, Network approach	Coviello and Cox (2006)	Explore how networks facilitate resource development	Case study approach; three cases

The key findings of the network approach are summarised by four main propositions (Håkansson & Snehota, 1995). Firstly, the role, development and performance of companies are explained by their ability to develop relationships. Secondly, firms are dependent on the resources controlled by other firms hence resource development tends to take place between firms. Thirdly firm's distinctive capabilities are developed through its customer and supplier relationships. Lastly, the firm's success is dependent on the totality of its network, hence the more successful the network counterparts, the better it is for the firm.

Within the industrial marketing network approach, internationalisation is conceptualised as a cumulative process which takes place through:

a) the development of existing relations

b) the establishment of new relationships with customer or supplier firms that are similar to those customers or suppliers which the firm has already developed relationships with.

c) the establishment of relationships with customer firms that are connected to firms which the firm is already working together with (Johanson & Vahlne 2003; Johanson & Mattsson, 1988).

i Internationalisation in Industrial Systems (Johanson & Mattsson, 1988)

Johanson and Mattsson's (1988) model represents one of the few attempts that has been made towards theory development within the industrial network approach to internationalisation. As shown in Figure 2, internationalising industrial firms can be divided into four categories of

firms. The first category depicts the early starter which operates in an environment in which both the firm and its business network counterparts are characterised as having few unimportant international relationships.

		Degree of Internationalisation of the Market	
		Low	High
Degree of Internationalisation of the firm	Low	The Early Starter	The Late Starter
	High	The Lonely International	The International Amongst Others

Figure 2 Internationalisation and the Network Model (Johanson & Mattsson, 1988)

The authors contend that, the extent to which the network approach can be applied is greatly reduced by the firm's inability to acquire foreign market knowledge through its domestic market business network relationships. Hence, the internationalisation of such a firm is likely to follow the pattern of internal resource development advocated by the stage model theories. The second category represents the lonely international. The lonely international is highly internationalised, and as a result has acquired prior foreign market knowledge, and consequently has the experience of and relationships within foreign markets. The third category represents the late starter. Akin to the early starter, the late starter is characterised by its lack of foreign market knowledge. Unlike the early starter, the late starter operates in an internationalised business network by virtue of its domestic suppliers, competitors and

customers being international. In such a case, Johanson and Mattsson (1988) state that the firm is more likely to be pulled into internationalisation by its business network counterparts. Furthermore, firms operating in a highly internationalised world are more likely to be specialised. The international among others represents the final category of the network model. Both this firm and its environment are highly internationalised, and as a result the international among others firm is connected to various international networks that provide opportunities for obtaining external resources, and is thus likely to externalise a greater proportion of its activities.

Empirical evidence shows limited attempts in developing further Johanson and Mattsson's (1988) network model within small firm internationalisation. Part of the explanation could lie in the authors' attempts to position the network approach, and preceding theoretical developments as independent approaches to internationalisation, thereby narrowing the applicability of the process theories to their early starter category.

One of the areas of interest in this study, based on Coviello and McAuley's (1999) work, is the extent to which small firm internationalisation theories can be treated independently of each other. That is whether each individual theory is sufficient to describe the internationalisation patterns of the entire spectrum of internationalising small firms. Whilst Johanson and Mattsson (1988) minimise the scope of application of the stage models, Johanson and Vahlne (2003) develop a network model of the internationalization process (see Figure 3) which draws on both: the ideas and concepts developed by the Uppsala researchers at the theoretical level, and the empirical evidence of business markets developed by the IMP scholars. Johanson and Vahlne (2003) view relationship building as a learning process in

which relationships develop gradually, due to the need for firms to learn about each other's needs, resources, strategies and business contexts. Thus internationalisation is modelled as a causal cyclic process involving the interaction between four concepts: relationship knowledge (social capital), commitment decisions pertaining to the firm's network, current business network involvement, and network commitment.

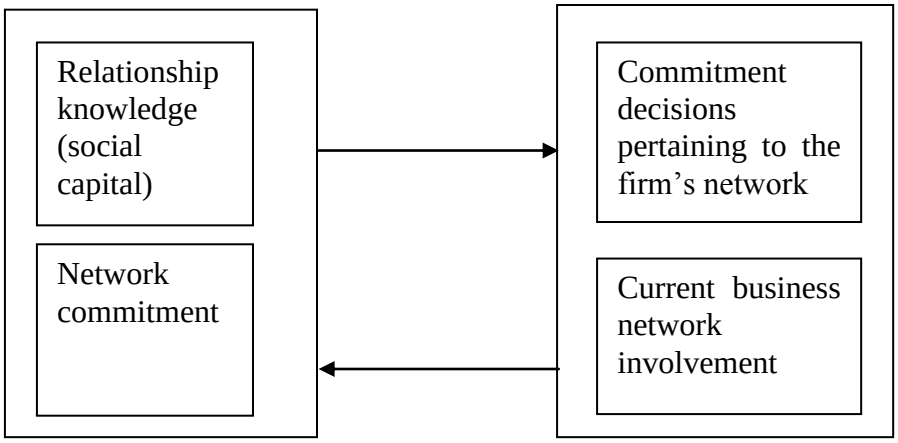


Figure 3 The Network Model of the Internationalisation Process (Adapted from Johanson & Vahlne, 2003)

In their recent study, Johanson and Vahlne (2009) continue to work towards developing a general business network model of firm internationalisation.

2.5.1.2 ERISFs Networks

Because of the dominance of the incremental models within small firm internationalisation, earlier ERISF literature has been aligned more towards understanding why the internationalisation patterns of ERISFs diverge from the process theories (particularly the U-

Model). As a result the main focus of the early ERISF studies has been on the influence of networks on the pace and pattern of internationalisation (Coviello, 2006). For example, Bell (1995) highlights the strong influence of foreign and domestic clients on the choice of foreign market entry mode and the timing of internationalisation activities of small software firms. Coviello and Munro (1995, 1997) highlight the positive and negative impacts of networks on the pace and pattern of internationalisation of small software firms. According to Coviello (2006) these studies provide a useful starting point for understanding network dynamics within ERISF internationalisation.

i Coviello and Munro (1995, 1997)

By definition network relationships are process based (Larson & Starr, 1993), therefore it is expected that the network patterns of ERISFs will change relative to time during the internationalisation process. Coviello and Munro (1997) develop a model of internationalisation that integrates time; the influence of network relationships on market entry and market development; and the characteristics of the internationalising firm. Their model represents some of the earliest attempts which have been made towards describing the network patterns of ERISFs relative to time. The authors explain that over time the firm's network relationships evolve from initial networks based on dyadic relationships established within the domestic market, to larger networks which extend beyond initial partner networks.

Here, the authors contend that the network will shift from being path dependent to being intentionally managed, as the ERISFs desire for autonomy from its initial network begins to increase. On the other hand, there is the possibility that the firm's growth pattern may

continue to be controlled by the firm's initial network (Coviello & Munro, 1997). Apart from being a factor that is likely to affect resource limited ERISFs, the dark side of initial network relationships specifically as regards their potential to lock firms into specific growth patterns remains relatively unexplored within the ERISF literature. Furthermore the current research on the evolution of ERISF networks is biased towards the early stages of network development (Coviello, 2006; Harris & Wheeler, 2005; Sharma & Blomstermo, 2003). As a result understanding of the subsequent pattern of network development beyond the early internationalisation of the firm is limited. Coviello and Munro (1997) trace the pattern of development of the firm's network from pre internationalisation to the point where the firm's internationalisation activities become established. Their argument is that increased network involvement grooms the ERISF towards becoming a prime candidate for acquisition by a larger international firm. Thus the potential exists for subsequent network involvement beyond the early stages of network development to revert to the control of a larger network partner. The possibility of the existence of an exit, strategy attained through the acquisition of the firm, can be traced back to prior ERISF studies, where a ceiling has been placed on the independent growth of ERISFs (Rennie, 1993).

ii ERISF Network Dynamics

According to Coviello (2006), a comprehensive network analysis should evaluate the structure of the network and the interactions (compositional ties) underpinning this network in a time based manner. The author comments that ERISF network analysis should start at the point of conception of the firm. This view has in essence been supported by those researchers (Harris & Wheeler, 2005) who have attempted to ascertain the nature of the

linkages underpinning ERISF business relations by tracing these relationships back to their origins. The use of theoretical sources which are based on new ventures (Jones & Coviello, 2005), as opposed to established firms, have only recently started to gain momentum within ERISF internationalisation. By relying on concepts drawn from entrepreneurship research for the analysis of ERISF networks; specifically the classic model of network development offered by Larson and Starr (1993), and the arguments put forward by Hite and Hesterly (2001), Coviello's (2006) work represents one of the earliest attempts being made towards developing an understanding of the dynamics of ERISF networks.

iii Interactional Network Dimensions

Interactional network dimensions can be analysed with respect to their tie content, direction, and duration (Coviello, 2006). The tie content refers to the makeup of the network ties. The direction of the tie (outward ties are initiated by the ERISF, whilst inward ties are initiated by an external party or third party introductions) provides some indication of the extent to which the network is intentionally managed. In order to understand the diversity in the makeup of network ties, network ties have been categorised as: social, economic, or both (Cook & Emerson, 1978); weak, strong or a combination of both (Gronvetta, 1973); and direct and indirect. The empirical evidence on network ties tends to be contradictory; Ellis and Pecotich (2001), and Harris and Wheeler (2005), find social ties to be instrumental in the early stages of internationalisation; while Coviello (2006) finds that economic ties dominate the early stages of ERISF internationalisation.

2.6. Contemporary Approaches to ERISF Internationalisation

Recent theoretical introductions to IB emerge from a group of firms whose internationalisation behaviour has been said to differ considerably from that of traditional firms. Clearly ERISFs are not a new phenomenon having been first identified in the 1970s by the Uppsala (Nordic) researchers as deviations from the main stream stage pattern of internationalisation. The lack of interest in these firms in the early 1970s and 1980s when process theories were being developed is potentially indicative of the lack of a sufficient mass of ERISFs within any specific industry. As such, the overall percentage of ERISFs remains low, with indications that only one to two percent of small manufacturing firms are international from inception (Shrader *et al*., 2000). Surveys support the assumption that ERISFs are concentrated within certain industries, specifically those that are classified as high technology and knowledge intensive industries (Jones, 1999, 2001; Yli Renko *et al*., 2002). Within high technology/knowledge intensive industries there appears to be a sufficient mass of ERISFs to justify research interest and subsequent theory development. The review of literature highlights the need to identify the internationalisation pathways, and factors triggering and motivating the internationalisation activities of firms drawn from industries which rely on knowledge creation for their competitive advantage (Zahra *et al*., 2000). Hence, focus should be on ERISF firms typically classified as technology based new firms (Yli Renko *et al*., 2002), high value added manufacturing firms (Rennie, 1993), and small high technology firms (Jones, 1999).

Table 5

Summary of ERISF Studies (1994-2008)

Author	Date	Topic/research objective	Sample Characteristics	Location	Industries	Theoretical Base
Oviatt, McDougall, Simon and Shrader	1993	Describes the founding process of Heartware	I case study	US	Medical Device	
Rennie	1993	Investigates the factors driving the emergence of and the characteristics of Born Globals.	300 firms surveyed, 60 focus groups and in-depth interviews Exporting starts two years after founding, Total average sales $16 million, Export sales = 76% of total sales	Australia	High value added industries	
McDougall, Shane and Oviatt	1994	Delineates the limits of traditional international business theories	24 case studies	New Zealand, USA, UK Switzerland, Germany, France, Israel, Singapore, Brazil, Czechoslovakia	Various (IT, medical devices, Process technology, Technical Business consultancy)	Produces results which challenge the process theories
Oviatt and McDougall	1994	Develop a framework for INVs that describes three necessary and one sufficient element for the existence of INVs.				Draws on concepts of location advantages and specific internal advantages from the MNE theories.
Bell	1995	Comparative study into the export behaviours and internationalisation of small computer firms.	187 firms (Quantitative): Less than 200 employees: Annual sales less than £5million: 24 Managing directors (Qualitative)	Finland, Ireland and Norway	IT (Software)	Produces results which challenge the traditional process theories

Author	Date	Topic/research objective	Sample Characteristics	Location	Industries	Theoretical Base
Oviatt and McDougall	1995	Examines the pattern underlying the creation of global start ups	I Case study (Logitech)	Firm headquartered in California and Switzerland	IT hardware	None
Boter and Holmquist	1996	Compares the internationalisation process in traditional manufacturing companies and companies orientated towards innovation.	6 companies: 3 convential at least 15years old, 3 newly established	Norway, Sweden, Finland	Radar technology spectacles design, electronics	
McDougall and Oviatt	1996	examine the link between new venture performance and the internationalisation of new ventures	62 domestic and international new venture manufacturers Firms founded in the 1980s	USA	Computer communications equipment industry	Strategy literature, strategic choice (Child, 1972), strategic change.
Bloodgood, Sapienza and Almeida	1996	The internationalisation of new high potential US ventures: Antecedents and Outcomes	Average number of employees = 1668 Average income = US $79.1 million	USA	Medical products, Apparel, Commercial research, Business services, Computers, Medical services, Commercial equipment	Monopolistic advantage theory and Stage theories as justification for the application of the resource based view
Lindqvist	1997	Describe and analyse the process of internationalisation of small technology-based Swedish firms.	Technology based firms established between 1965 and 1985.	Sweden		Develops a general theoretical framework.
Fontes	1997	Creation and Development of New Technology Based firms in peripheral economies	Technology based firms	Portugal	Mixed	Autio, 1997
Preece, Miles & Baetz	1998	Evaluates the internationalisation activities of early stage technology based firms	75 small technology based firms drawn from the innovation Ontario programme.	Canada		

Author	Date	Topic/research objective	Sample Characteristics	Location	Industries	Theoretical Base
Jones	1999	Explores small high technology firm early stage pattern of international development through their establishment of cross border activities.	196 internationalised and non internationalised firms No of employess = less than 200	UK	Plastic and composites, biotechnology, advanced surgical instruments and advanced instruments	Transaction cost/internalisation approach
Shrader, Oviatt and McDougall	2000	Investigates how the risk of accelerated internationalisation is managed within US based firms	87 new ventures, founded between 1983 and 1988, reported international sales within six years after firm establishment.	USA		Framework for integrated risk management in international business (Miller, 1992 (cited in Shrader *et al*., 2000, p. 1229))
Zahra, Ireland and Hitt.	2000	Investigates how new ventures use the technological learning gained from their internationalisation activities	Firm age = 6years and younger. Private and corporate new ventures. Sample size = 321 firms	USA	12 high technology industries, e.g. biotechnology, computer software, factory automation, telecommunication, environmental technologies, medical and surgical equipment.	Technological/organisational learning, (Zahra and George 2002)
Andersson	2000	Examines the internationalisation of the firm from an entrepreneurial perspective	3 cases	Sweden	Rubber products	
Crick and Jones	2000	Examines the foreign market expansion strategies of Small high technology firms.	Small indigenous firms, maximum of 100 employees	UK		Calof and Beamish's (1995) (cited in Crick and Jones, 2000, p.67)
Autio, Sapienza and Almeida	2000	Investigates the effects of age at entry, Knowledge intensity and imitability on international growth	Manufacturing firms, founded after 1970; first sales attained in 1982; 57 usable responses.	Finland	Electronics	Knowledge related views Cohen and Levinthal (1990) (cited in Autio *et al*., 2000, p.911); Grant, 1996

Author	Date	Topic/research objective	Sample Characteristics	Location	Industries	Theoretical Base
Burgel and Murray	2000	Analyse the determinants of the foreign market entry choices of high technology firms	246 high technology firms, Founded between 1987 and`1996 Average age -= 6years Average number of employees = 22 38% of total turnover generated from international sales	UK	33 high technology industries	Stage Models, Transaction Cost Economics, Organisational Capability Theories.
Burgel, Fier, Licht and Murray.	2000	Investigates the time structure of young firm entry into international markets	600 high tech firms . Firms founded between 1987 and 1996 At least three employees in 1997	UK and Germany	High technology industries as defined by Butchart (1997) (cited in Burgel *et al*., 2000)	Process Models and RBV
Rasmussen, Madsen and Evangelista.	2001	The founding process of the born global company.	5 case studies	Denmark and Australia		Focused on literature combining entrepreneurship, founding and networks.
Moen and Servais	2002	Examines the export behaviour of small and medium enterprises	677 firms: Norway and France less than 250 employees, Denmark between 10 and 499 employees.	Norway, Denmark and France		Stage Theories
Manalova, Brush, Edelman and Greene	2002	Examines the role of personal factors (human capital) in small firm internationalisation.	Phase 1: 76 firms less than 250 employees Phase 2: 284 firms Maximum sales of US 50million: less than 500 employees: average age = 18 years		Multiple industrial technology sectors.	

Author	Date	Topic/research objective	Sample Characteristics	Location	Industries	Theoretical Base
Yli-Renko, Autio, Tontti	2002	Develops a model for the international growth of technology-based new firms.	56 firms: median age, 7 years; median age at first international entry 4years	Finland	Electronics industry	Social capital theory Knowledge based view of the firm
Luostartinen and Gabrielsson	2002	Globalisation and marketing strategies of Born Globals from SMOPECs Distribute born globals between seven stages of development	104 firms 89 born global 15 conventional international or domestic companies Firms established pre 1985 pioneering Born Globals and post 1985 present Born Globals	Finland		Company level POM growth pattern originally proposed by Luostarinen (1979)
Spence	2003	Explores the strategy development patterns of internationalising small high technology companies.	3 firms, less than 250 employees, independently owned.	Canada	Electronics and precision instruments	Strategy literature Mintzberg and Waters (1995) (cited in Spence, 2003, p. 281)
Zahra, Mathene and Carleton	2003	Explores the impact of leveraging selected tangible and intangible resources on the speed and degree of sales internationalisation.	159, 8 years and younger,	USA	Software	Resource Based View
McDougall, Oviatt and Shrader	2003	Explores Differences between INVs and Domestic new ventures	214 IPO new ventures Age: six years old or less Average number of employees = 500 Average annual sales = $62 million	USA	33 industries	
McNaughton	2003	Identify possible influences on the number of export markets served by a firm	75 firms Median age of firm = 6 years Median export sales = 40% of total sales	Canada	Industrial, machinery and parts, consumer goods, food products, electronics and instruments, medical devices and software	Process models and the born global literature

Author	Date	Topic/research objective	Sample Characteristics	Location	Industries	Theoretical Base
Johnson	2004	Examines the factors influencing the early internationalisation of UK and US High Technology start ups:	12 firms (qualitative) and 89 firms (quantitative). Less than 100 employees: formed between 1981 and 1993: sales exceeding $2.5million or £2million 12 cases for qualitative part and	USA and UK	Computer software, computer hardware and electronics	Uses an integrative model
Knight and Cavusgil	2004	Innovation and organisational capabilities affecting born global firm performance	24 firms (Qualitative phase) Average no of employees = 296: Average annual sales = $52 million 203 exporting firms (Quantitative phase) Exports at least 25% of total production: Average number of employees = 190 Average sales = US$32 million : Median age at which exporting activities started= 2years	USA		Resource based perspective, innovation theories.
Hashai and Almor	2004	Adopt a stage approach to the internationalisation of Knowledge intensive Born Global firms.	140 firms: publicly traded: minimum 5% out of total sales investment in R&D: less than 500 employees. Either international sales in 3 years and at least 25% foreign sales or international sales in 9 years and at least 75% foreign sales.	Israel	Software, Information and communication technologies, electronics, biotechnology, medical technology.	Stage theories

Author	Date	Topic/research objective	Sample Characteristics	Location	Industries	Theoretical Base
Knight Madsen and Servais	2004	Delineate the key factors influencing Born Global firms.	32 exploratory case studies followed by a survey of 292 born globals. Firms founded after 1980, exporting at least 25% of total production	Demark and USA	Information technology, electronic equipment, consumer goods and medical products	Resource based perspective, innovation theories
Shaw and Darroch	2004	Investigates the perceptions of the barriers to internationalisation.	561 firms, Less than 100 employees	New Zealand	Manufacturing, food and production, textiles and clothing, Chemicals, wood and paper, services, Retail and wholesale	
De Clercq, Sapienza and Crijns	2005	The internationalisation of small and medium sized firms	92 independent owner managed firms, less than 500 employees.	Belgium		Organisational Learning Theory Entrepreneurship theory Cohen and levinthal (1990) (cited in De Clerq *et al*., 2005, p.410)
Oviatt and McDougall	2005c	Redefine International Entrepreneurship and provide a model of the forces influencing internationalisation speed.				
Coviello and Cox	2006	The resource dynamics of international new venture networks	3 INVs	New Zealand	software	Network Theory Resource Based View of the firm
Nadkarni and Perez	2007	Investigates the mediating role of complex domestic market mindsets on the degree of a firms early stage international commitments.	Mixture of internationalising and non internationalising firms. 212 firms	US		An integrated conceptual model
Fan and Phan	2007	Examine the pattern of international market entry of new ventures.	135 passenger carriers, formed between 1997 and 2004.	10+ European countries	European passenger airline industry	

Author	Date	Topic/research objective	Sample Characteristics	Location	Industries	Theoretical Base
Zahra and Hayton	2008	Investigates the interaction between the firm's absorptive capacity and international venturing.	217 manufacturing companies	36 countries	22 major industry sectors	Organisational learning theories, Absorptive capacity Zahra and George (2002)
Yamakawa, Peng and Deeds	2008	Factors driving new venture internationalisation from emerging to developed economies	15 firms Founding year – since 1999. FDI activities in Developed Economies	Taiwan, India, china, Malaysia ,	IT , biotechnology, electronics, telecommunications surveillance systems	Develop a framework drawing on the strategy, resource based and institutional views

2.6.1 Developments within the ERISF Literature

The majority of studies on ERISFs started appearing in the early 1990's. The geographical distribution of the studies shows the massive dominance of North American (mainly the USA), Western European (UK) and Scandinavian (Finland, Sweden and Norway) countries. The number and origins of the studies indicate that up until recently interest in ERISFs has been confined to developed economies. A significant proportion of the studies have focused on firms drawn from industries defined as being high technology, high service sectors (Bell, 1995; Burgel & Murray, 2000; Oviatt & McDougall, 1995, 1997; Zahra *et al*., 2000). A detailed breakdown of the categories in which ERISFs are likely to occur is provided by Luostarinen and Gabrielsson (2002, 2006) who propose that ERISFs exist in five main business areas: high technology, high design, high quality service, high unique know-how, and high sophisticated system businesses. Where:

- high technology companies utilize advanced innovative technologies in their products, their R & D expenditure is expected to exceed 5% of total sales.
- high service companies provide exceptionally high quality services.
- high design products use unique design in their products and invest heavily in creating new designs.
- high know how companies sell unique know how as their product. This know how is either patent or trademark protected and can be licensed.
- high system companies sell sophisticated systems that solve customer specific problems or needs.

High technology ERISFs constitute the largest group out of the five business areas. ERISFs tend to be associated with industries that are knowledge intensive or technology driven (McDougall *et al*., 2003). Assuming that the bulk of ERISFs are concentrated within the business areas identified by Luostarinen and Gabrielsson (2002), it is possible that the concentration of studies within developing economies inadvertently supports Ohmae's (1985) view of innovations emerging from the most technologically advanced nations before trickling down to least technologically advanced countries. However, owing to lack of data on ERISF internationalization within different industrial sectors and countries, the extent to which ERISFs can be exclusively confined to high technology sectors, or the expanded version of five business areas identified by Luostarinen and Gabrielsson (2002), or specific countries has been questioned.

A limited number of studies have drawn their samples from a spectrum of industries which might not necessarily be high technology sectors. For example, Rennie (1993) draws his sample from a range of high value added manufacturing industries, while Wickramasekera and Bamberry (2001) draw their sample from the Australian wine industry. These authors argue that ERISFs are not confined to high technology industries but can be found within a wide spectrum of industries. Rennie (1993, p.49) takes the argument further by stressing that "the born global story is not about particular technologies or sectors of the economy; fast growing firms are found in all industries. Even sectors considered to be declining in global terms."

With regards to the different types of research conducted in this field, an increased number of studies employ both quantitative and qualitative oriented approaches. The ordering of the

approaches varies between the studies. For example, Bell (1995) uses in-depth interviews to probe the findings from the survey results; Johnson (2004), and Knight and Cavusgil (2004) use exploratory case studies to identify the key issues within their research which they then empirically validate through larger quantitative survey analysis. Multiple and single case study approaches are applied in several studies (e.g. Oviatt & McDougall, 1995; Oviatt *et al*., 1993; Rasmussen *et al*., 2001). Longitudinal studies are extremely rare with the closest being a few panel studies that have been conducted by authors such as Autio *et al*. (2000) and McDougall *et al*. (1999). However, several studies have adopted a more specific explanatory theory building or hypothesis testing approach (Rialp *et al*., 2005). For example, Oviatt and McDougall (1994) develop a conceptual framework and theoretical classification of International New Ventures (INVs). Awarded the JIBS decade award Oviatt and McDougall's (1994) theory of INVs is acknowledged as one of the earliest theories to mount a direct challenge to the process models (Autio, 2005).

Of note, is the variation in the characteristics of the firms used within the empirical studies particularly with regards to factors such as: the age of the firms interviewed, and the size of the firm; as evidenced by the firm's income/sales revenue and the number of employees. For example, firm age has varied from a maximum of 6 years (McDougall *et al*., 2003; Shrader *et al*., 2000) to almost 20 years (Knight and Cavusgil, 2004). The responses derived from new venture versus mature established ERISFs are bound to be different, particularly within survey based studies, despite both sets of firms starting their internationalisation activities early. Firm size varies from less than 200 employees (Jones, 1999) to well over a 1000 employees (Bloodgood *et al*., 1996); whilst firm revenues reach US$79.1 million (Bloodgood *et al*., 1996). Whilst these samples provide a useful basis for making comparisons between;

ERISFs versus non ERISFs; and mature, established ERISFs versus embryonic ERISFs, they have not been used in this manner. This would have helped to identify the distinctive features of ERISFs.

2.6.2 Theoretical Developments within ERISF Internationalisation

There appear to be three key areas from which ERISF research has emerged: the traditional process model theorists with the work of researchers such as Luostarinen and Welch (1988); practitioners and consultants operating within the field of internationalisation (e.g. Rennie, 1993); and the work of strategic management and internationalisation researchers who have focused on the overlap between internationalisation and entrepreneurship (Oviatt and McDougall, 1994). The initial focus of the early ERISF research has been predominantly that of highlighting the key characteristics which distinguishing ERISFs from traditional internationalising firms. Rennie (1993) claims that unlike traditional firms which start their internationalisation activities once they have developed an established domestic market base at an average age of 27 years, Born Global firms start their internationalisation activities at an average age of 2 years prior to the establishment of a domestic market base. Luostarinen and Welch (1988) identify the ERISF's main distinguishing characteristic as its accelerated pace of internationalisation.

The greatest 'challenge' to the traditional theories stems from the work of the early International Entrepreneurship (IE) researchers. Beginning with the work of Marrow (1988) (cited in Oviatt and McDougall, 2005c, p.535) and McDougall (1989), the early IE researchers focused on tracing the internal developments of new ventures that had

international sales (e.g. McDougall, 1989; Oviatt & McDougall, 1995). These researchers not only questioned the extent to which existing IB theories were applicable to ERISFs, but appeared to rule out their applicability within ERISF internationalisation. Thus, McDougall *et al*. (1994) question the applicability of the monopolistic advantage theory. McDougall *et al*. argue that the assumption of rationality in which firms with the same monopolistic advantage act identically, fails to acknowledge the role of the entrepreneur in perceiving the opportunity of using their monopolistic advantage to internationalise from inception. Furthermore, the authors criticise the monopolistic advantage theory's assumption of the firm engaging in foreign investment only after the development and exploitation of its monopolistic advantage within the domestic market. ERISFs internationalise before the knowledge that provides monopolistic advantages has been developed and exploited within the domestic market.

In contrast Oviatt and McDougall (1994) justify the use of MNE theories within the context of small resource limited firms, by arguing that emergence of ERISFs contradicts the notion of 'large size' as the main firm specific variable for the multinational. Nonetheless, it is in their later work that the authors acknowledge that because the field of IE was still in its infancy, reliance on concepts drawn from IB was necessary for their work on INVs to gain acceptance within the field of IB. It is now acknowledged that the multidisciplinary nature of entrepreneurship and IB calls for reliance on theories and frameworks from a diverse range of business disciplines ranging from; international business and entrepreneurship to anthropology, sociology and psychology (Oviatt & McDougall, 2005c).

2.6.2.1 A Theory of ERISFs

Oviatt and McDougall's (1994) model represents one of the earliest theoretical attempts made within the ERISF literature to present a conceptual framework which challenges the established process theory of internationalisation. Accordingly, the main objective of the model is to explain the accelerated internationalisation of the ERISF as a combination of: the internalisation theory (Buckley & Casson, 1976; Rugman, 1982 (cited in Oviatt and McDougall, 1994, p. 49)); the concept of alternative governance structures (Williamson, 1991; Vesper, 1990 (cited in Oviatt and McDougall, 1994, p.49)); sources of foreign location advantage (Dunning 1988); and ideas about sustaining competitive advantage (Barney, 1991; Schoemaker, 1990). As shown in Figure 4, the main argument of the model is that successful INVs exhibit four basic elements: Element 1, the internalisation of a minimal proportion of assets; Element 2, the use of alternative governance mechanisms; Element 3, the ability to develop foreign location advantages from their private knowledge; and Element 4, a dependence on imperfect imitability for the protection of their key, unique knowledge. The model's core assumption is that the ERISF possesses a **unique knowledge based resource** from which it derives its **sustainable competitive advantage** which is **transferable** to a foreign location.

Considering that this is one of earliest attempts at theoretical development within the field of ERISF, a body of literature interrogating Oviatt and McDougall's (1994) model has only recently started to emerge (Autio, 2005; Zahra, 2005). According to Grant (1996, p. 110) 'the foundation for any theory of the firm is a set of initial premises which forms the basis for the logical development of propositions concerning the structure, behaviour, performance, and

indeed the very existence of firms. If one takes on board Grant's (1996) definition of a theory as constituting the basis for subsequent theoretical developments, then this model can be viewed as having formulated the basis for the application of the RBV in ERISF internationalisation.

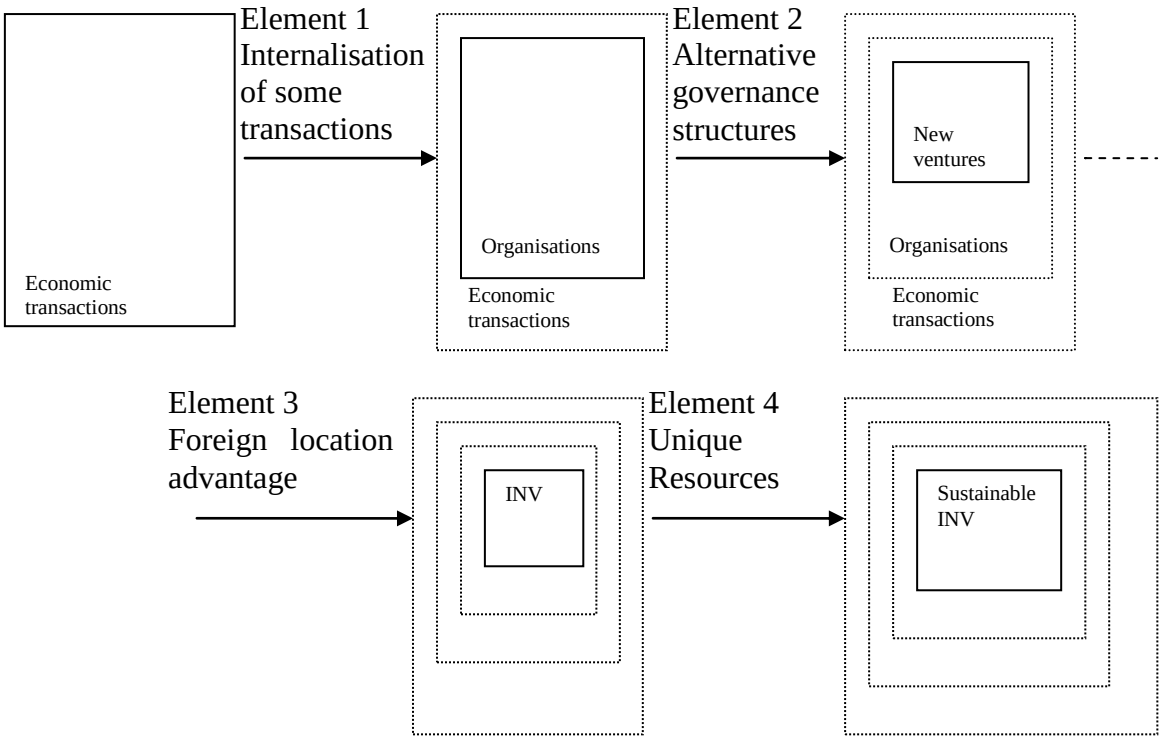


Figure 4 International New Ventures (Oviatt & McDougall, 1994)

2.6.2.2 Application of the Resource Based View (RBV) within ERISF Internationalisation

The application of the RBV has been driven, by the need to explain the role of internal firm specific determinants within small firm internationalisation, particularly in light of the

ongoing developments in International Entrepreneurship (IE). Westhead *et al*., (2001) justify the application of the RBV by explaining that past theoretical developments within small firm internationalisation fail to take into cognisance the aspirations of entrepreneurs and the resource needs of smaller newer firms. The authors deem traditional theories, particularly the stage models, to be inadequate due to their failure to accommodate internal firm specific determinants. Bloodgood *et al*., (1996) on the other hand identify the stage model and monopolistic advantage theories' emphasis on advantage, knowledge, and experience as justification for the application of the RBV to ERISF internationalisation. Internal resource determinants: specific industry know how (Westhead *et al*., 2001), management team experience in global markets, product differentiation, low cost advantages, innovation and size (Bloodgood *et al*., 1996), have been identified as having a significant effect on the propensity to internationalise and the extent of internationalisation. However, where some researchers focus on isolating individual resources and investigating their independent effects on internationalisation, Zahra *et al*., (2003) state that it is not resources per se that are important but what the firm does with these resources. Essentially how the firm leverages its resources by linking, bundling, and blending them in creative and innovative ways.

Even though ERISF literature has reached the point where it is acknowledged that high technology firms constitute the largest quorum of ERISFs, the influence of technological resources on the internationalisation of ERISFs has received limited attention (Zahra *et al*., 2003). Hence, where some researchers identify internal determinants which can be viewed as being general to all types of firms, Zahra *et al*. take their analysis a step further by focusing specifically on the technological resources which define high technology firms. The authors further argue that both, the combined and independent effects of intangible and tangible

technological resources, have a direct effect on the degree and speed of internationalisation. Within their study intangible resources are represented by the venture's network relationships and its reputation for technological excellence. Where technological excellence is evidenced by: the qualities and skills of the management team; the quality and breadth of the firm's product range, coupled with the firm's ability to upgrade its product range; and the number and quality of the firms patents and copyrights. R&D expenditure is used as a proxy for tangible resources. Despite reporting mixed findings for the combined effects of some of the resources, for example R&D expenditure and technological reputation, Zahra *et al*. (2003) put forward a case for the role of technological reputation, the development of which is underpinned by the calibre of the ERISF's researchers. Zahra and George (2002) rightly point out that the research on the effect of resources on ERISF internationalisation is still in its infancy.

2.6.2.3 International Entrepreneurship (IE)

Of note, are the two dominant streams of research which have paved the way for the formation of the field of IE. On the one hand, the Nordic group of researchers specifically through the work of Madsen and Servais (1997) and Rasmussan *et al*. (2001), identify the need to develop an understanding of the founder and the founding process of the ERISF as being key to understanding the factors driving the formation of ERISFs. Here the authors contend that their theoretical perspective of entrepreneurship stems from the view that sees the individual entrepreneur in a context, and the founding process as an action process between the entrepreneur and his external environment. On the other hand, the North American group of researchers led by the work of Oviatt and McDougall (1994, 2005a) base

their view of entrepreneurship on the notion that ERISF is founded with an international strategy from inception. The difference between these two views is that in the former, it is the founding process of the ERISF which is viewed as being entrepreneurial, not necessarily internationalisation per se. In the later, Oviatt and McDougall (1994, 2005a) allude to internationalisation being the primary objective for the founding of the firm, which would imply that the internationalisation process of the ERISF can be deemed to be entrepreneurial from inception. Recent studies have refocused attention on understanding ERISF internationalisation through the founding process of the firm (Coviello & Cox, 2006).

The extent of cross fertilisation between IB and entrepreneurship has been contingent on the extent of the developments which have occurred within the field of entrepreneurship. This is evidenced by the ongoing evolution of the definition of IE (McDougall, 1989; Oviatt & McDougall, 2005c) and the continual shift in the constructs used within IE studies. Empirical evidence shows the lack of a conceptual framework that exclusively delineates the domain of entrepreneurship (Shane & Venkataraman, 2001). Coupled to this, is the lack of consensus on the activities which can be considered to be entrepreneurial (Hornaday, 1992).

i Entrepreneurial Orientation

The initial definitions and conceptual developments within IE rely on the definition of entrepreneurship developed in the field of strategic management for established firms (Covin & Slevin, 1989; Miller, 1983). McDougall and Oviatt (2000) contend that a number of researchers seemed to coalesce around three dimensions of entrepreneurship: innovation, proactive behaviour, and risk taking action. A key latent driver is probably that these three

dimensions, which collectively define the Entrepreneurial Orientation (EO) construct, had already undergone rigorous empirical validation, starting with Miller's (1983) empirical work. Thus, McDougall and Oviatt (2000, p. 903) define IE as; "a combination of innovative, proactive, and risk taking behaviour that crosses national borders and is intended to create value in organisations".

This definition appears to have paved the way for the application of the EO construct within IE. This is evidenced by the development of constructs which build on the EO construct by extending its application to internationalisation activities whilst retaining the dimensions of innovativeness, proactiveness and risk taking. Ibeh (2003) claims that his Exporting Entrepreneurial Orientation (EEO) construct determines the propensity of the firm to engage in exporting activities. On the other hand, Knight and Cavusgil (2004) position their International Entrepreneurial Orientation (IEO) construct as one of two elements defining the firm's culture, and constituting the antecedent of the firm's business strategies. What is noteworthy is that both studies rely on mature firms. The argument is that those researchers who incorporate the founding process of the ERISF question the feasibility of applying constructs which have been developed for mature established firms. Whilst Zahra (1993) advocates for the restriction of the EO construct to established large firms, Covin and Slevin (1993) claim that despite having been developed for established firms the EO construct is transferable to all firms. What is worrying is that IE might be failing to address the internationalisation of the firms that have given rise to the fusion of the two fields. Whilst international entrepreneurial behaviour can occur within all levels of an organisation (McDougall and Oviatt 2000), expanding IE to encompass all firms, could hamper the transferability of those concepts which are specific to ERISFs.

ii Opportunity Recognition

In what they acknowledge as a movement away from the concept of EO, Oviatt and McDougall (2005c) redefine IE based on Shane and Venkataraman's (2000, p. 218) definition of entrepreneurship, '…examination of how, by whom and with what effects opportunities to create future goods and services are discovered, evaluated and exploited'

Shane and Venkataraman (2000) highlight three areas in their definition of entrepreneurship: the **sources** of opportunities; the **processes** of discovery, evaluation, and exploitation of opportunities; and the set of **individuals,** who discover, evaluate and exploit these opportunities. Unlike EO, opportunity recognition and exploitation are viewed as being constructs which 'fall squarely within the unique domain of entrepreneurship' (Singh, 2001, p.10), distinguishing entrepreneurship from other social science disciplines. As noted earlier, Shane and Venkataraman's definition has arisen out of the need for a framework which delineates the domain of entrepreneurship and elucidates some 'added value' of the discipline that previous constructs have failed to do. Oviatt and McDougall (2005c, p.540) reinstate Shane and Venkataraman's (2000) definition by noting that international entrepreneurial actors (organisations, groups, individuals) 'are those who discover, enact, evaluate, and exploit opportunities to create future goods or services and who cross national borders.'

Extending on the definition, Oviatt and McDougall, (2005c, p.540) define IE as 'the discovery, enactment, evaluation, and exploitation of opportunities across national borders.' It would appear that Shane and Venkataraman's (2000) conceptualisation of entrepreneurship is viewed as a work in progress and is open to further refinement. Thus, in response to the criticism of the framework's failure to depict opportunity recognition as a subjective process

(Baker et *al*., 2003), Oviatt and McDougall (2005c) state that there is the possibility that opportunity recognition can occur retrospectively. That is, the opportunity may only be recognised once the entrepreneur has already acted, in which event, opportunities may be viewed as objective phenomena.

Zahra and Dess (2001) add a fourth dimension of the **outcomes** of the entrepreneurial process to the three areas proposed by Shane and Venkataraman (2000). Here, new venture creation, wealth creation, human capital development and growth represent some of the possible outcomes of the entrepreneurial process

2.7 Summary

Figure 5 shows the firm categories which have delineated the boundaries of the MNE, process theories, and contemporary approaches to internationalisation. From the literature review both traditional and contemporary theories have provided a deeper understanding of the concepts underlying early internationalisation. Essentially, it is through theory that insights into early internationalisation of firms can be obtained. The common thread in the process theories and contemporary theories has been the tentative move towards the adoption of the RBV as a way of linking different concepts. Here resources can be both tangible and intangible. As evidenced within the literature review, the reliance on concepts which have been developed within the MNE theories such as internalisation and foreign location advantages, to support early theoretical development within ERISF internationalisation, underscores the potential for cross fertilisation. Contemporary approaches rely largely on concepts and approaches drawn from the domain of entrepreneurship.

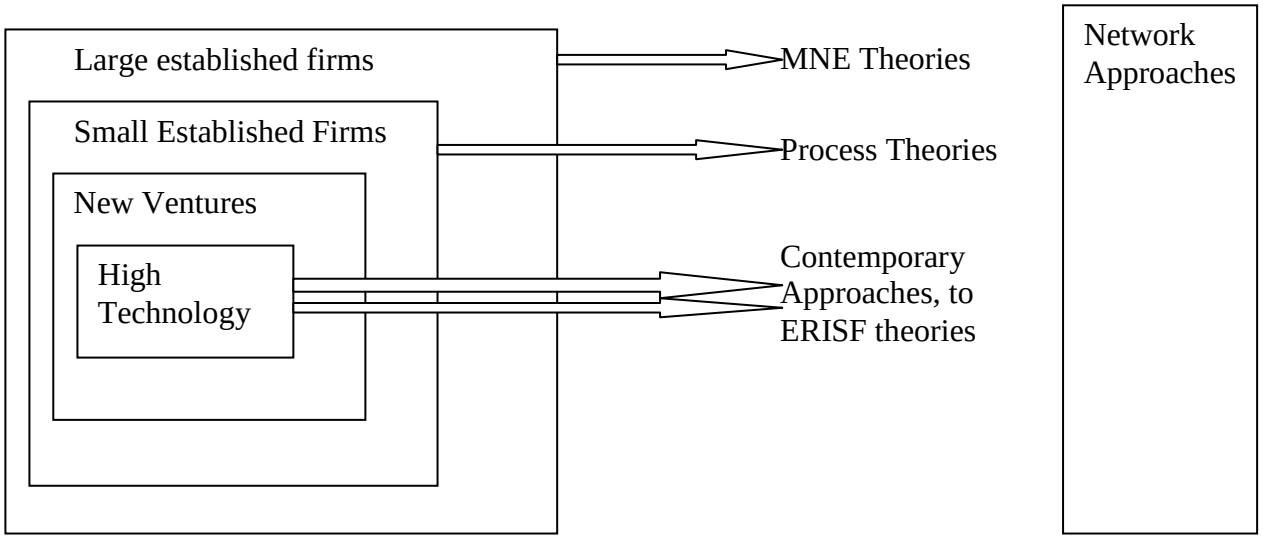


Figure 5 Firm Categorisation

Notwithstanding this, there are contradictions from literature on the applicability of traditional theories to ERISF, particularly in relation to the internationalisation of small firms' right from inception. Considering that the models underpinning these traditional theories originate from diverse cultures, that is, the Uppsala model from the Scandinavian countries and the I-model from the North American countries, these models have been developed within specific contexts by independent research teams, hence the lack of convergence even as it relates to the internationalisation of established SMEs. The emphasis within the traditional economic oriented approaches has been on explaining the internationalisation of MNEs, primarily through the theories of internalisation and monopolistic advantage. As evidenced within the literature review, the extent to which MNE theories can be applied within small firm and ERISF internationalisation has had contradictory views.

The review of relevant literature, on the other hand, puts the study in context by bringing to the fore what is known about the subject and what areas need further exploration. It is through

the review of relevant and contemporary literature that guidance on the appropriate methodology approaches was provided. The key transferable concept which has emerged from the U model has been that of 'knowledge' specifically foreign market experiential knowledge. This is to the extent that this concept has been acknowledged as one of the earliest resources identified in relation to entry mode choice. The view of foreign market experiential knowledge being the key regulator of a firm's foreign market resource commitments has persisted and found to hold within research focused on ERISFs drawn from **certain** high technology industries. More importantly the ERISF literature has widened the potential antecedents of experiential and non experiential foreign market knowledge. It is also through the review of relevant literature that invaluable information on sampling and sample size, data collection and data analysis techniques was provided.

CHAPTER 3

DEVELOPMENT OF THE RESEARCH FRAMEWORK

3.1 Introduction

This chapter sets the research questions, and maps the development of the supporting literature underpinning the a priori framework and propositions which address the research questions. The framework initially adopts two broad concepts of knowledge intensity and prior individual level experience to conceptualise the ERISF's firm and individual resources respectively. Because the research adopts both an inductive and deductive process, it is expected that a clearer dissemination of the ERISF's resources and capabilities will emerge inductively from the research. Firm level capabilities are conceptualised using the entrepreneurial opportunity and Entrepreneurial Orientation (EO) constructs. The RBV is viewed as having the ability to provide a theoretical hoist out of the deterministic approaches to internationalisation.

3.2 A Priori Framework

The internationalisation of firms in general and ERISFs in particular is affected by a combination of internal firm specific factors and those factors which are considered to be external to the firm. There is a growing focus on samples drawn from developed economies in expanding the understanding of the role of internal firm specific factors, specifically with regards to incorporating internal factors which acknowledge the state of duality of the ERISF

as new venture which internationalises whilst concurrently undergoing its formative stages of development.

In line with the extant research on ERISF internationalisation and in acknowledgement of the importance of ascertaining the significance of internal firm specific factors within the Sub Saharan African market context, this study assumes that South African ERISF internationalisation is primarily driven by internal firm specific factors. The implication is that ERISF internationalisation is a firm level phenomenon. The focus of this study is on pre-existing theoretical developments which facilitate the conceptualisation of ERISF internationalisation as an internally driven process. Theorisation within this study relies on selected concepts whose effects have been found to be more pronounced within ERISF internationalisation. The RBV represents the overarching theory which has been adopted as a means of integrating core concepts under a unifying theory. The main premise behind the application of the RBV adopted in this study is that of ERISF internationalisation being governed by the idiosyncratic resource bundles controlled by the firm.

The second key sub theoretical development which is applicable to this study is drawn from the convergence between International Business (IB) and entrepreneurship. Two main developments which have occurred within entrepreneurship and applied within ERISF internationalisation are considered to be applicable to this study. The first being Entrepreneurial Orientation (EO) which represents one of the earliest constructs imported from the field of entrepreneurship and applied within ERISF internationalisation (McDougall & Oviatt, 2000). The second area of development within entrepreneurship which is applicable to this study stems from the recent attempts that are being made to develop constructs which

delineate the domain of entrepreneurship. Steps are being made towards positioning the discovery, development, and exploitation of entrepreneurial opportunities as the key processes defining the domain of entrepreneurship.

As a start, within this study external factors will initially be confined to domestic market factors. The implicit assumption underlying this research is that ERISFs are high technology firms; being high technology firms which internationalise at or close to inception ERISFs are a subset of New Technology Based Firms (NTBFs). Studies that focus on the development of NTBFs emphasise the importance of domestic market networks in supporting and enabling the development of NTBFs (Autio, 1997; Autio *et al.,* 1997; Fontes, 1997; Fontes & Coombs, 1997). Furthermore, the study sample is being drawn from South Africa, a Sub Saharan African emerging market. This is a context in which there is limited understanding as regards the exact role and impact of the national environment on ERISF internationalisation.

Thus this research seeks to investigate the key internal and select external influences, underpinning the internationalisation activities of South African ERISFs. More specifically, the current research aims to address the following questions:

1. What are the types of resources and capabilities underpinning the internationalisation behaviour of South African ERISFs?
2. To what extent and how do South African ERISFs resources and capabilities influence their internationalisation behaviour?
3. To what extent do South African ERISFs leverage their resources and capabilities for their internationalisation activities?

4. How do domestic market factors influence the internationalisation behaviour of the South African ERISF?

These questions will be addressed using an a priori framework which draws on:

- The leading perspectives that have emerged from the application of the RBV (Bloodgood *et al.,* 1996; Zahra *et al.,* 2003) within ERISF and small firm internationalisation (Westhead *et al.,* 2001). This study assumes that two elements of the RBV drive ERISF internationalisation: the direct effect of intangible, salient resources and capabilities; and the leveraging of tangible and intangible resource combinations.
- The leading perspectives which emerge from the application of the EO construct (Knight & Cavusgil, 2004; Yamakawa *et al*., 2008) and entrepreneurial opportunity, discovery and development process within ERISF internationalisation (Matthews & Zander, 2007).
- Benito *et al*.'s (2002) conceptualisation of endogenous home country specific factors. The effect of home country factors on the internationalisation of the firm is conceptualised as the interplay between; country specific factors which act as centrifugal forces, and thus encourage the internationalisation of the firm; and country specific factors which act as centripetal forces and thus encourage the retention of the firm's activities within the domestic market.

Hence, the a priori framework shown in Figure 6 is proposed. The framework is composed of four main parts: a) the key resources and capabilities which influence the internationalisation

behaviour of the ERISF; b) the key dimensions which encapsulate the internationalisation behaviour of the ERISF; c) the leveraging step which mediates the relationship between the ERISF's resources and capabilities, and internationalisation behaviour; and (d) the endogenous domestic market factors which moderate the relationship between, the firm's resources and capabilities, and internationalisation behaviour.

The distinction between mediator and moderator variables used within this study is based on Baron and Kenny's (1986) work. As aforementioned, the combined as opposed to the independent effects of the ERISF's resources and capabilities could potentially have a greater influence on ERISFs (Zahra *et al*., 2003), thus mediating the effect between the ERISF's resources and capabilities, and internationalisation. Baron and Kenny (1986) contend that moderator variables are typically introduced in settings where weak or inconsistent relationships arise because a relationship that holds in one setting does not necessarily hold in another. This study conceptualises domestic market factors as variables that moderate the relationship between; firm level resources and internationalisation; and individual level resources, firm level resources and capabilities, and internationalisation. The components of the a priori framework are discussed in the preceding sections.

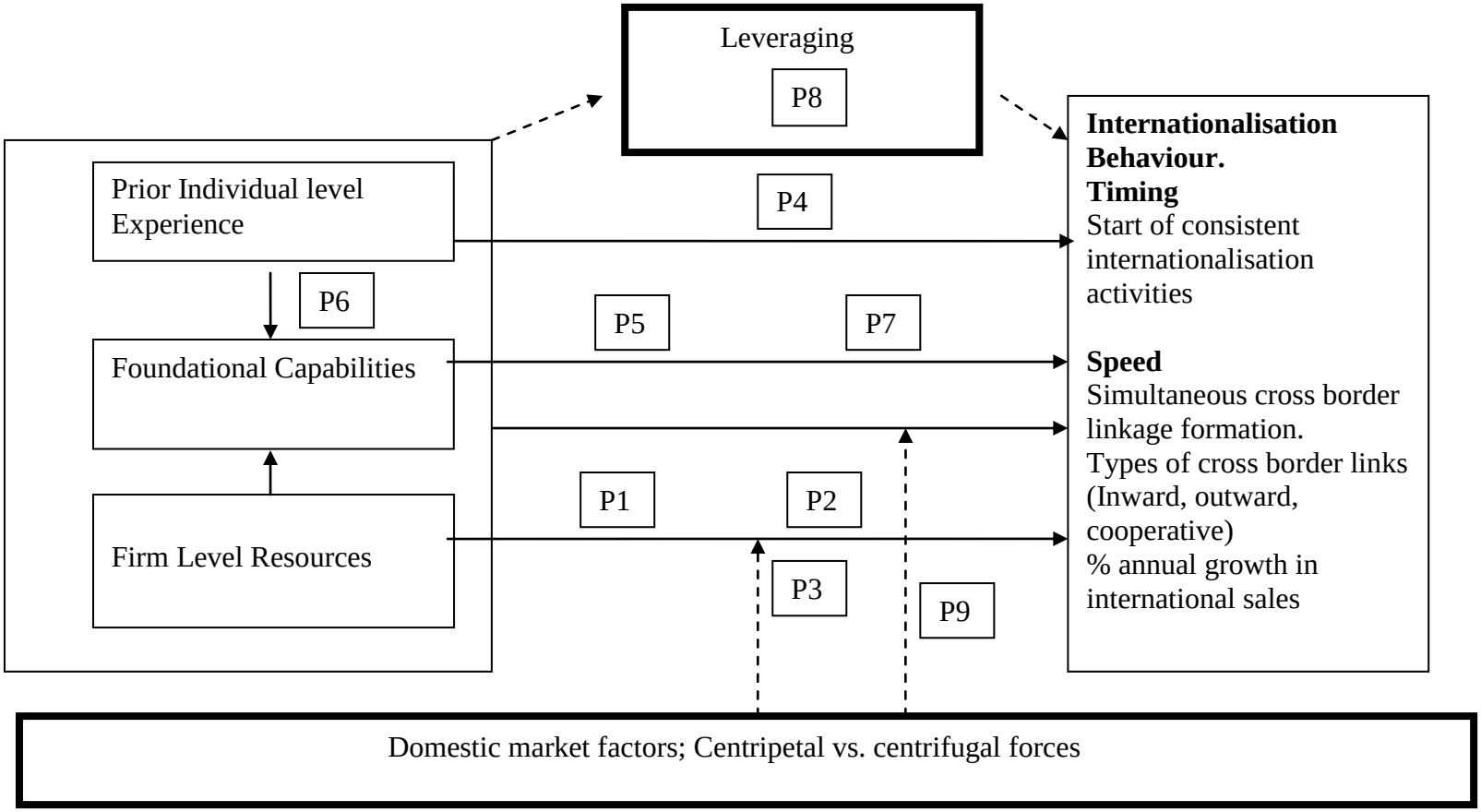


Figure 6 A Priori Research Framework

3.3 Resource Classification

Central to applying the RBV within ERISF internationalisation has been the need to ascertain the nature and types of resources and capabilities which influence the internationalisation of ERISFs. As alluded to in Chapter 2, studies which implicitly employ the RBV as regards the identification and conceptualisation of ERISF resources and capabilities are limited. Peng (2001) uses a citation based approach in which the extent of diffusion of the RBV within IB is determined by the frequency with which Barney (1991) and Wernerfelt (1984) are cited in leading IB journals. Peng (2001) contends that the selection of these two papers is driven by the acknowledgement of their influence within strategic management. Here, the author adopts what Fahy (2000) refers to as an 'all embracing' approach, in which the term 'resources' includes all the assets, capabilities, organisational processes, and firm attributes controlled by the firm, and of which the firm is able to 'conceive of' and implement its strategies. The adoption of a 'broad approach' to resource nomenclature has resulted in a range of classifications being proposed for categorising different resource sets.

Examples of typologies include Barney's (1991) classification of resources into physical capital, human capital, and organisational capital. Physical capital resources include a firm's physical technology, plant and equipment, geographic location, and access to raw materials. Human capital resources cover the attributes of individual managers and workers in a firm; for example, individual level experience, training, and relationships. Organisational capital resources include the reporting structures; informal and formal relationships, within teams and between the firm and its external environment. Coviello & Cox (2006) use Barney's categorisation in their study of the resource dynamics of INV networks. The type of resources

generated by an INV evolves from organisational capital at inception, to human capital at commercialisation, and reverts to organisational capital during the INV's growth stage (Coviello & Cox, 2006). Past ERISF research has linked human capital resources; management know how of the principal founders (Westhead *et al.,* 2001), the number of employees (Bloodgood *et al.,* 1996), and organisational capital resources; global technological competences, quality focus, leveraging of foreign distributor competences and unique product development (Knight & Cavusgil, 2004), to ERISF internationalisation behaviour and performance. According to Bergmann Lichtenstein and Brush (2001) resource based theorists tend to define and categorise resources in relation to large established corporate firms.

Within the new venture research, Brush *et al.* (2001) make a distinction between tangible and intangible resources in which the former comprise of discrete quantifiable property based resources, whilst the latter comprise complex systemic knowledge based resources which are difficult to identify and measure. For example, Brush *et al*. cite human capital resources as intangible resources which are complex and difficult to measure. The authors take their intangible/tangible categorisation further distinguishing between those tangible/intangible resources which act as resources (utilitarian), and those resources which also facilitate the development or attainment of other resources (instrumental resources). For example networks can be categorised as instrumental resources because of their ability to generate social capital (thereby acting as resources in themselves) and provide access to resources held by other network partners (Coviello & Cox, 2006). The resources which have emerged from the review of literature as being linked to ERISFs appear to be predominantly intangible resources

(Coviello & Cox, 2006; Zahra *et al*., 2003). Support for the influence of intangible resources on ERISF internationalisation is backed by Peng (2001) who states that when compared with Multinational Corporations and State Owned Enterprises, entrepreneurial start ups are unable to compete on tangible resources and can only compete on the basis of their intangible resourcefulness. Similarly, Bergmann Lichtenstein and Brush (2001) identify intangible resources as being more salient than tangible resources in the early stages of new venture creation. Salient resources are considered to be those critical resources which the firm cannot function without and are difficult to source from external suppliers (Bergmann Lichtenstein & Brush, 2001).

The difference between Barney's (1991) conceptualisation of strategic resources as being 'valuable', 'rare', and 'non imitable', and Bergmann Lichtenstein and Brush's (2001) notion of 'saliency,' lies in the temporariness which the authors attach to those resources which can be viewed as being salient. Barney attaches a sense of permanency to the resources which are 'rare,' 'valuable', and 'non imitable', whilst Bergmann Lichtenstein and Brush acknowledge that salient resources bundles may change during a new venture's development, thus capturing the time based dynamics (Jones & Coviello, 2005) of resources.

Of interest to this thesis is the notion of resource saliency proposed by Bergmann Lichtenstein and Brush (2001). Hence as a start, two key broad intangible resource categorisations for which direct effects on ERISF internationalisation have been proposed have been selected: knowledge intensity, and individual level pre-firm (prior) experiences. The selection of knowledge intensity is justified by the consistency with which it has been used as a proxy for

the ERISF's collective intangible resource base set (Autio *et al.,* 2000; Yli Renko *et al*., 2001). By definition, individual level knowledge supersedes firm level knowledge in ERISFs (Autio, 2005). This justifies the selection of individual level pre firm (prior) experience as the second broad intangible resource categorisation. This is not to say that these are the only critical intangible resource categorisations, but that these categorisations provide the basis for the initial framework. Although Zahra *et al*. (2003) use the firm's R&D expenditure as a proxy for the firm's tangible resources; R&D activities have also been used as a triangulating measure for knowledge intensity.

3.3.1 Knowledge Intensity

Knowledge intensity is defined as the extent to which a firm depends on the knowledge inherent in its activities and outputs as a source of competitive advantage. Operationalised, knowledge intensity is considered to be a function of the degree to which: a strong knowledge component exists within the firm's products and services; the firm has a strong reputation for technological excellence; and knowledge intensity is deemed to be a characteristic of the firm's business (Autio *et al.*, 2000).

A number of researchers such as Oviatt and McDougall (1994, 2005a) highlight that unlike firms which rely predominantly on tangible fixed assets, knowledge intensive firms rely on intangible knowledge based resources, which by virtue of explicit knowledge being mobile, are able to internationalise at a faster pace. Hence, the mobility of knowledge, particularly explicit knowledge, implies that knowledge can be combined with fixed assets and distribution channels in foreign markets at a relatively lower cost and with greater ease and

flexibility than would be the case with firms that rely predominantly on tangible assets (Oviatt & McDougall, 1994). As a result knowledge intensive firms are able to exploit international growth opportunities with greater flexibility. The general view is that knowledge is best conceptualised as a dichotomy between tacit knowledge which in simple terms means 'knowing how' and objective knowledge which is concerned with knowing about something (Kogut & Zander, 1992). In ERISFs, internationalisation is not simply confined to the internationalisation of sales outputs, but includes a spectrum of value adding activities which cross international borders (Jones, 1999; Oviatt & McDougall, 1994). Therefore, the specific emphasis on the mobility of knowledge as one of the key drivers of accelerated internationalisation would imply that the nature of the ERISF's internal knowledge base is primarily that of an explicit nature, which in turn implies that such knowledge is easily replicated.

However, the problem with knowledge intensity is twofold: firstly, whilst emphasising the mobility of the ERISF's knowledge, ERISF researchers also allude to the ERISF's knowledge base as being tacit (Bell *et al*., 2003). Secondly, the concept of knowledge intensity has been used as an all embracing term which incorporates the knowledge content of the ERISF's entire resource base. However, when operationalised and linked to the pace of internationalisation, the focus is on the knowledge intensity of the ERISF's product offering or outputs.

The challenge surrounding the nature of the ERISF's knowledge is partly addressed by Koghut and Zander (1992) who point out that it is the characteristics of knowledge as exemplified by the extent to which it can be codified, taught, and reduced in complexity

which defines its speed of transmission. Thus, knowledge intensity encompasses the firm's entire resource set. With software firms emerging as the key exemplars of accelerated internationalisation, the prevailing assumption is that of software once produced (codified) being amenable to rapid transmission using modern distribution channels. Hence, based on the underlying assumption that ERISFs core resources are knowledge intensive, this study proposes that:

Proposition 1

It is the ability to convert the firm's knowledge intensive intangible resources into outputs that can be codified, taught, reduced in complexity; and distributed through new modern distribution channels, at a relatively low cost, with greater ease and flexibility, which accelerates the speed of internationalisation of ERISFs.

Autio (2005) states that there is more to knowledge intensity. The author's views are similarly echoed by Zahra *et al*. (2003). Zahra *et al*., isolate and investigate the role of the technological excellence/reputation concept which constitutes one of the dimensions of Autio *et al's* (2000) knowledge intensity construct. The study proposes that:

Proposition 2

The higher the knowledge intensity, the greater the likelihood that internationalisation will begin early and will occur at an accelerated pace.

Contrary to the linear growth view which suggests that New Technology Based Firms (NTBF) operate independently (Kazanjian, 1988), the understanding is that the development

of NTBFs occurs through a web of relationships established within the firm's environment. As a result NTBFs (which constitute the ERISFs within this study) develop as part of a technological articulation processes. Thus, NTBFs are considered to be embedded within technological innovation systems (Autio, 1997). The expectation is that science based NTBFs are more likely to draw on external technological resources embedded within their domestic academic sphere, whilst engineering based NTBFs are likely to be closely connected with the domestic industrial sphere. This embeddedness increases the context specificity of the firm's knowledge and reduces the transferability of the firm's knowledge (Autio, 2005). However, according to Johnson and Mattsson (1988) it is not so much the extent to which the ERISF's production knowledge is embedded within its production network which is important, but the degree of internationalisation of the firm's production network. Thus, based on the degree of internationalisation of the ERISF's innovation/production network, the ERISF's innovation network will either delay or accelerate the ERISF's internationalisation activities. Hence this study proposes that:

Proposition 3

The relationship between the knowledge intensity of the ERISF and its internationalisation behaviour will be moderated by the degree of internationalisation of the ERISF's national production or technological innovation network.

3.3.2 Prior Experience/Prior International experience

Critical for the understanding of ERISF internationalisation has been the emphasis placed on individual level pre-firm establishment international experience (Oviatt & McDougall, 1995).

As new ventures, ERISFs are started without an organisational history, therefore by definition individual level knowledge supersedes firm level knowledge (Autio, 2005). The extent to which individual level pre-firm establishment experience is prioritised within ERISF internationalisation is evidenced by the emphasis placed on the enabling role of individual level experience (Oviatt & McDougall, 1995; Madsen & Servais, 1997). As alluded to earlier, individual level factors such as; top management's international exposure (Bloodgood *et al*., 1996), management know-how of principal founders, industry specific knowledge of the principal founders (Westhead *et al*., 2001); and individual level contacts of founders, management, and sales force (Yli Renko *et al.*, 2002) have been found to be either directly or indirectly linked to early internationalisation.

Autio (2005) proposes a closer examination of the transferability of such experiences and skills. Some of these aspects will be explored. Thus, the types of international experiences will be delineated using the logic of 'scope' and 'depth' employed by Zahra *et al*. (2000) to define the extent of internationalisation at the firm level. At an individual level scope denotes the international diversity of the founder/founding team's pre-firm experience denoted by the range of international markets in which the founder/founding team's work related experience has been gained. Depth denotes the extent to which the founder/founding team can be deemed to have mastery within specific market segments as evidenced by the duration for which the founder/founding team has worked within certain international market segments. Hence this study proposes that:

Proposition 4

The internationalisation behaviour of the ERISF will be influenced by the scope and depth of the individual level prior experience of the founders. ERISFs with a wider scope and greater depth of individual level experience will internationalise early, and internationalisation will occur at a faster pace.

3.4 Capability Classification

From the review of literature, capabilities are aligned with those organisational processes and embedded organisational routines which enable the firm to 'act upon resources' (Helfat & Lieberman, 2002). Within ERISFs embedded routines and process are virtually nonexistent. Firm specific processes which have been associated with ERISF internationalisation can be conceptualised either as embryonic capabilities (Sapienza *et al.,* 2006) or foundational capabilities (Knight & Cavusgil, 2004). In a bid to investigate how EO relates directly (Yamakawa *et al*., 2008) or indirectly (Knight & Cavusgil, 2004) to ERISF internationalisation, EO has been conceptualised as an ERISF capability (Knight & Cavusgil, 2004; Yamakawa *et al*., 2008).

The second organisational process which is still in its infancy with regards to its adoption in ERISF internationalisation is that of entrepreneurial opportunity discovery and development. In order to investigate how entrepreneurial opportunity discovery and development is related to ERISF internationalisation, entrepreneurial opportunity discovery and development will be positioned as a firm specific capability. Within the a priori framework, EO and

entrepreneurial opportunity discovery and development constitute the ERISFs foundational or embryonic capabilities.

3.4.1 Entrepreneurial Orientation

This study positions Entrepreneurial Orientation (EO) as a foundational firm specific capability. Within entrepreneurship research EO is linked to higher performance levels. EO is aligned to those attributes, processes, and practices which lead to 'new' entry (Lumpkin & Dess, 1996; Yamakawa *et al.,* 2008). It is acknowledged that EO is a multidimensional construct and several dimensions have been linked to EO (e.g. Lumpkin & Dess, 1996). Here EO is defined as the willingness to innovate, take risks, and be proactive to market opportunities in the face of limited resources (Knight & Cavusgil, 2004; Miller, 1983). There is evidence to suggest that in order to compensate for their competitive weakness emerging market firms are more likely to adopt an aggressive, proactive, and risk taking approach towards their internationalisation activities (Ibeh *et al.,* 2007; Yamakawa *et al.,* 2008). This study proposes that:

Proposition 5

ERISFs with higher levels of EO are more likely to commence their internationalisation activities early, and internationalisation is more likely to occur at a faster pace.

3.4.2 Entrepreneurial Opportunity Discovery and Development.

Defining International Entrepreneurial Opportunity

ERISF studies assume that the entrepreneurial opportunity which the firm internationalises has somehow come into being and exists at the point at which the ERISF is analysed (Oviatt & McDougall, 2005c). This is despite the acknowledgement that the sourcing and development of entrepreneurial opportunities plays a critical role in the internationalisation of new ventures. Part of the difficulties associated with adopting the concept of entrepreneurial opportunity in ERISF internationalisation can be attributed to lack of consensus on the definition of entrepreneurial opportunity. Through her analysis of 17 studies which focused on entrepreneurial opportunities, Renko (2008) identifies *novelty/newness*, *profit potential* and *new venture creation* as the key debatable attributes which appear to be commonly associated with entrepreneurial opportunities. Singh (2001) proposes a definition in which goods and services can be new or imitative. Baker *et al*. (2003) question whether goods or services which might be *new* within a domestic market setting will necessarily be *new* within different international market contexts. The patenting system has been proposed as a way of identifying new products (Renko, 2008).

The profit generating potential of an entrepreneurial opportunity can only be determined once it has been developed and exploited. The reliance on Casson (1982) for the definition of entrepreneurial opportunities implies that it is mandatory for entrepreneurial opportunities to generate a profit (Singh, 2001). Such a definition would immediately exclude what Singh (2001) refers to as some of the most 'lucrative entrepreneurial opportunities in the market

place today', which have led to the formation of ventures which never turn to a profit. Shane, 2003 (cited in Renko, 2008, p.18) provides an amended definition in which entrepreneurial opportunities need only show the 'potential' to generate a profit. According to Renko (2008) this 'releases' the need for entrepreneurial opportunities to generate profits.

Although it is not the case that all entrepreneurial opportunities will be exploited through the creation of a new venture (Saravathy et *al.*, 2003), the resultant outcome of an entrepreneurial opportunity should extend beyond the introduction of a new product or service. For example, Casson (1982), and Shane and Venkataraman (2000) equate entrepreneurial opportunities with the discovery of *new* means - ends relationships through which *new* goods and or services are introduced to produce *economic value*.

According to Shane (2003) (cited in Casson, 2005, p.425).

> A new means - ends framework is a way of thinking about the relationship between actions and outcomes. Because prices do not contain all the necessary information to make decisions about the values of resources, people develop different beliefs about the value of these resources. That is they develop new means - end frameworks.

As such, the focus of this study is on exploring entrepreneurial opportunities within the context of new venture evolution. Thus, in line with Renko (2008) the study proposes that an entrepreneurial opportunity should either lead to the formation of a new venture or significant internal improvements within the firm which extend beyond the development of a new product or service.

Hence, within this study an *international* entrepreneurial opportunity is likely to involve:

The introduction of new goods or services, which lead to, the formation of a new venture or significant internal developments within the firm, and the formation of new cross border linkages.

Sourcing Entrepreneurial Opportunities – Entrepreneurial Opportunity Discovery

Key to the entrepreneurial opportunity process is the different methods which have been proposed for sourcing opportunities. Depending on the economic market view; allocative, discovery, or creative, Saravathy *et al*. (2003) propose that opportunities are recognised, discovered or created respectively. Opportunities are recognisable when both demand and supply factors 'exist rather obviously'; and created when neither supply nor demand factors 'exist in an obvious manner' (Saravathy *et al*., 2003). The discovery of opportunities takes place when either supply or demand factors are unknown necessitating the need for the unknown side to be 'discovered' (Saravathy *et al.*, 2003).

From the review of literature (Hayek, 1945; Kirzner, 1973; Shane, 2000), entrepreneurial opportunities can be discovered in one of two ways. Firstly, on the basis of large scale disequilibrating changes within the environment in which the entrepreneur operates. These are opportunities that Shane (2003) (cited in Renko, 2008, p.33) defines as Schumpeterian opportunities where the supply side is known and the demand side is unknown. In this view, out of the three main kinds of exogenous shocks which give rise to Schumpeterian opportunities: technological, political and regulatory, and social and demographic (Casson,

2005), the focus of this study is aligned towards Schumpeterian opportunities based on technological innovations.

Secondly, the idiosyncratic knowledge of customers' problems, markets, and ways to serve markets, possessed by different market participants, results in some participants being 'alert' to certain opportunities and not others. Essentially, within the Kirznerian view, opportunities are discovered by alert entrepreneurs, where alertness infers that the entrepreneur does not engage in prior search activities. Within the Schumpeterian view opportunities are discovered through the entrepreneur's creativity (Renko, 2008). Thus this study proposes that:

Proposition 6

The discovery of international entrepreneurial opportunities will depend on the prior international market knowledge and prior superior technological knowledge of the founders.

Of note within Proposition 4 a direct relationship is proposed between the founder's prior experience and internationalisation. Within proposition 6, an indirect relationship is proposed between prior experience and internationalisation, in which specific elements of prior experience have been causally linked to the discovery of international entrepreneurial opportunities.

Entrepreneurial Opportunity Development

According to Ardichvili *et al.* (2003), while it is possible to discover elements of entrepreneurial opportunities, entrepreneurial opportunities are developed as opposed to being 'discovered'. In acknowledgement of the lack of clarity surrounding whether the discovery and development of international entrepreneurial opportunities, should be treated as separate processes, proposition 7 proposes that:

Proposition 7

The discovery and development of international entrepreneurial opportunities will influence the timing of the ERISF's internationalisation activities by decreasing the period between the establishment of the ERISF and its first cross border activity.

3.5 Leveraging of the ERISF's Resources and Capabilities

Within the resource based theory, it is assumed that the basic set of resources which confer a competitive advantage and underpin the firm's growth have already been developed by the firm (Bergmann Lichtenstein & Brush, 2001). This is despite the reorganisation and construction of organisational resources being critical for firm growth. In light of the inconsistent results which have been associated with the attempts to link individual resources directly to small firm and ERISF internationalisation, attempts are being made to ascertain the combined effects of ERISF resources and capabilities on ERISF internationalisation. It is this synergistic effect attained through the different resource permutations used by ERISFs for their internationalisation activities, which has fed into the notion of 'resource leveraging'. The

concept of resource leveraging or intangible resourcefulness (Peng, 2001) is viewed as the firm's ability to do more with less. Thus proposition 8 states that:

Proposition 8

The extent to which the ERISF's resources and capabilities influence internationalisation is mediated by the ERISF's ability to leverage its resources and capabilities.

3.6 The Role of the Domestic Market

The role of the domestic market within ERISF internationalisation remains indeterminate. On the one hand, some researchers (Madsen & Servais, 1997) question the need to include the role of the domestic market within ERISF internationalisation. This view is supported by Autio (2005) who argues for ERISFs to minimise their domestic market activities so as to avoid being locked into domestic market growth trajectories. The basis for the negative perception of the domestic market within ERISF internationalisation stems from the process theories of internationalisation (Johanson & Vahlne, 1977, 1990). Here, in contrast to ERISFs, the need to overcome domestic market rigidities results in a slow, gradual, risk averse approach to internationalisation for traditional SMEs (Autio, 2005). Conversely, by drawing on models developed within the MNE literature, Kuemmerle (2002) emphasises the importance of the ERISF's home base as the foci for strategic decision making, resource allocation and knowledge management.

Recently, studies drawing on ERISFs from emerging market economies are adopting frameworks which delineate and empirically ascertain the influence of selected domestic market factors on ERISF internationalisation (Yamakawa *et al.,* 2008). Implicit in the creation of ERISFs, is their evolution as technology based (knowledge intensive) firms. According to Autio (1997) the view of technology based firms as a bundle of technological resources lends itself to the conceptualisation of the firm's external environment as a source of external technological resources. This view is in line with the systemic approach to NTBF development (Autio, 1997). Here, it is claimed that NTBF development occurs through a technological resource evolution process, where NTBFs play an important role in the acquisition, absorption, and diffusion of technologies at a national country level (Fontes & Coombs, 2001). External resource acquisition is facilitated by the external links which the firm develops within the local research and industrial sphere (Laranga & Fontes, 1998). Thus, critical for the evolution of the NTBF, is the existence of a basic local science and technology, and industrial infrastructure through which some of the firm's external technological resources can be accessed. The extent to which the NTBF is embedded within the domestic market in part depends on the extent of development of the local national science and technology, and industrial infrastructure. Fontes and Coombs (2001) identify the scarcity of advanced technological users as the dominant weakness within intermediate country markets.

This study adopts Benito *et al.*'s (2002) logic of domestic market factors having either a resultant centrifugal effect encouraging cross border activities, or a resultant centripetal effect which encourages the retention of a firm's activities within the domestic market. This approach will also incorporate Benito *et al.*'s logic of strong domestic market centrifugal forces being a result of deficiencies or weaknesses within the domestic market (specifically

weaknesses within the national science and technology, and industrial infrastructure). Thus this research proposes that:

Proposition 9

Some country specific factors may encourage internationalisation, whilst others may encourage the retention of the firm's activities within the domestic market.

3.7 Conclusion.

An a priori framework which adopts the Resource Based View (RBV) as regards the influence of the ERISFs resource bundles and foundational capabilities on the timing and speed of internationalisation has been developed within this research. The adoption of the founding principles of the RBV has been supported by the convergence towards the RBV identified in chapter 2. This framework initially confines the role of the external environment to the domestic market. Thus, a set of four research questions and nine propositions have been developed. The a priori framework provides the map guiding this research.

CHAPTER 4

RESEARCH DESIGN AND METHODOLOGY

4.1 Introduction

Generally, social scientists approach their particular subject holding implicit and or explicit views about the nature of the social world and the way in which it can be investigated. Marschan-Piekkari and Welch (2004) emphasise the need for the qualitative researcher to justify the ontological and epistemological orientation governing their research methodology. The assumptions which the researcher holds regarding the research phenomenon's reality affects the way in which knowledge can be gained and the process via which research is conducted (Ryan *et al*., 2002).

Essentially, ontology defines the nature and form of reality of the social world whilst epistemology defines the relationship between the reality and the researcher (Guba & Lincoln, 1994). The need for methodological justification is considered to be particularly important within IB where positivism has been declared as the 'correct' scientific paradigm and as a result the ontological (objectivist) and epistemological (positivist) positions have been implicitly assumed, and the resultant methodology viewed as being self explanatory (Chapman *et al*., 2004; Marschan-Piekkari & Welch, 2004).

This chapter presents the research methodology used to investigate the key resources and embryonic/foundational capabilities (as modelled within Chapter 3) influencing the internationalisation of South African Early Rapidly Internationalising Small Firms (ERISFs). The first part of this section provides a discussion of the research philosophy and approach underpinning the research methodology. The second part provides a discussion of the research design and lastly a conclusion to the chapter.

4.2 Research Philosophy and Approach

Although the study relies on qualitative data, the level of a priori theorisation used within the study demands the use of an approach which overlaps with elements of both interpretivist and positivist paradigms. Justification for the use of a dual approach is provided by those researchers who position positivist and interpretivist approaches at the polar ends of a positivist-interpretivist continuum. Accordingly, this section starts by providing a discussion of the key debate surrounding the application of the interpretivist and positivist paradigm within social research, management research, and IB.

4.2.1 Methodological Paradigms: Positivism vs. Interpretivism

Positivist and interpretivist paradigms delineated on the basis of their ontological, epistemological and methodological characteristics (Burrell & Morgan, 1979) are commonly used to demarcate bipolar approaches to how scientific research can be conducted within social research (Perry *et al.*, 1999). Table 6 summarises the broad explanations of the positivist and interpretivist approaches on the basis of their ontological, epistemological, and

methodological characteristics. Historically positivism has been accorded a dominant position within social science research (Burrell & Morgen, 1979; Carson *et al*., 2001; Guba & Lincoln, 1994). This has been to the extent that competing paradigms are deemed to have emerged from the deficiencies within the positivist paradigm (Guba & Lincoln, 1994). Whilst Hammersley (1992) shies away from what he views as the 'misleading notion' of the superior position accorded to positivism within social sciences, he however acknowledges the existence of a strong historical influence arising from positivism within social research.

Within the positivist ontology research is treated as representing a 'reality' which is objective and epistemologically independent of the researcher and the perceptions of the phenomenon under investigation. 'Reality' is considered to be value neutral and uncontaminated by the act of research (Gill & Johnson, 2002). Knowledge is conceived as being concrete, real, factual, and tangible, existing 'out there' in the world where it can be acquired through the use of scientific instruments (Burrell & Morgan, 1979). The notion of an epistemological position based on a subject/object dualism is not without its critics. Hammersley (1992) refutes this dualism describing it as an unattainable 'caricature' of positivism, in which the concept of 'value neutrality' has been misunderstood by constructivists such as Guba (1990) (cited in Hammersley, 1992, p.135) and Smith (1989) (cited in Hammersley, 1992, p.135). Instead, Hammersley (1992) hypothesises that it is sufficient that the phenomena under investigation and not reality as a whole, be causally independent of the researcher.

Table 6

Positivism and Interpretivism: Ontology, Epistemology and Methodology.

	Positivism	Intrepretivism
Ontology		
Nature of 'being'/nature of the world	Have direct access to real world	No direct access to real world
Reality	Single external reality	No single external reality
Epistemology		
'Grounds' of knowledge/relationship between reality and research	Possible to obtain hard, secure objective knowledge	Understood through 'perceived' knowledge.
	Research focuses on generalisation and abstraction	Research focuses on the specific and concrete
	Thought governed by hypothesis and stated theories	Seeking to understand specific context
Methodology		
Focus of research	Concentrates on description and explanation.	Concentrates on understanding and interpretation.
Role of researcher	Detached, external observer	Researchers want to experience what they are studying.
	Clear distinction between reason and feeling	Allow feelings and reason to govern action.
	Aim to discover external reality rather than creating the object of the study	Partially create what is studied the meaning of the phenomena.
	Strive to use rational consistent verbal, logical approach.	Use of pre-understanding is important.
	Seek to maintain clear distinction between facts and value judgements.	Distinction between facts and value judgement less clear.
	Distinction between science and personal experience.	Accept influence from both science and personal experience.
Techniques used by researcher.	Formalised statistical and mathematical models predominant.	Primarily non quantitative.

Source: Carson *et al*. (2001)

Conversely, interpretivism takes account of the critical characteristics of what is conceptualised as the polar extremity of a positivist-interpretivist continuum (Carson *et al*., 2001). Interpretivist approaches are defined by an ontological commitment to seeing the social world from the point of view of people: the collective understanding, reasoning processes, and social norms making up their belief systems (Mason, 2005). Knowledge is construed as the intangible mental constructions embedded within the 'minds' of individuals (Perry *et al*., 1999). Researching this knowledge necessitates the proximity of the researcher to the respondent resulting in the partial or complete immersion of the researcher within the research setting (Mason, 2005).

Management studies as a whole have remained entrenched within a positivist, numerical, and objective approach to research and knowledge (Gill & Johnson, 2002; Chapman *et al*., 2004). This hegemony has persisted and is particularly pronounced within IB where much research remains enthralled with the 'economic view of the world' with its assumptions of 'rationality, goal directed action and its determinant nature of market processes' (Sharpe, 2004, p. 306). This is despite the rich non positivist agendas which have been developed within some select branches of management research, such as organisational studies and marketing management. IB is yet to undergo the antagonistic debates on the relevance of scientific theories for IB phenomena, which typify research in marketing phenomena (Anderson, 1983). Here, the consensus that the idea of 'a sole means of theory justification cannot be maintained as a viable description of the scientific process or as a normative prescription for the conduct of scientific activities' (Anderson, 1983, p.25) within marketing and marketing management research, has led to the ongoing search for approaches beyond those guided by pure positivism. Carson *et al*. (2001) illustrate this choice as a range of competing research

philosophies on a continuum between positivism and interpretivism. In presenting their philosophical paradigm spectrum Carson *et al*. (2001) lean towards the use of interpretive approaches within marketing and marketing management research.

Whilst the adoption of approaches positioned at the right hand extrema of Carson *et al*.'s.(2001) (see Figure 7) continuum is limited within IB, tentative signs of the application of those approaches previously relegated as 'bete noires' are slowly emerging. This is evidenced by the emergence of ethnographic research within IB conducted through the influence of social anthropologists such as Malcolm Chapman. With its roots in anthropology, ethnographic approaches are based on naturalistic modes of enquiry (Gill & Johnson, 2002). Because of their commitment to naturalism ethnographers argue that in order to explain the actions of people working in organisations, it is necessary to arrive at an understanding of the various cultures and subcultures operating within the organisational setting. Thus, ethnography has been accorded the status of being the art and science of how to describe a group/culture/community (Fetterman, 1989). As such, in adopting an ethnographic approach for the study of multinationals, Morgan (2001) (cited in Sharpe, 2004, p.306) portrays multinationals as forms of trans-national communities, as opposed to rational, goal oriented economic actors. Sharpe's (2004) comparative ethnographic research on the transfer of management practises within a Japanese multinational involved comparative analysis amongst six cases, where each case represented a work team. However, the extent to which studies employing ethnographic approaches with an ontological focus on the micro level conceptualisations of the subjects' own account are able to transcend national boundaries has been questioned (Burawoy *et al*., 2000, cited in Sharpe 2004, p.310). The adoption of a realist ontology within ethnography is viewed as a way of providing a 'theoretical hoist' out of the

'local', by placing ethnographic research within a historical context that links micro level analysis to a macro level analysis of institutional structures (Sharpe, 2004).

Given the conceptualisations of the broad philosophical paradigms which have been used within management studies and IB, how then does the researcher commit to a particular ontological and epistemological position? Is this position, once held guaranteed a superior status throughout the research process? Whilst literature acknowledges the need for methodological holism directed by the researcher's ontological and epistemological positions Hammersley (1992) refutes this idea. In what appears to be a call for flexibility within research, Hammersley (1992) contends that one's philosophical assumptions should not be accorded a vantage starting point. They should instead be left open to constant questioning and possible readjustment as a result of the research process.

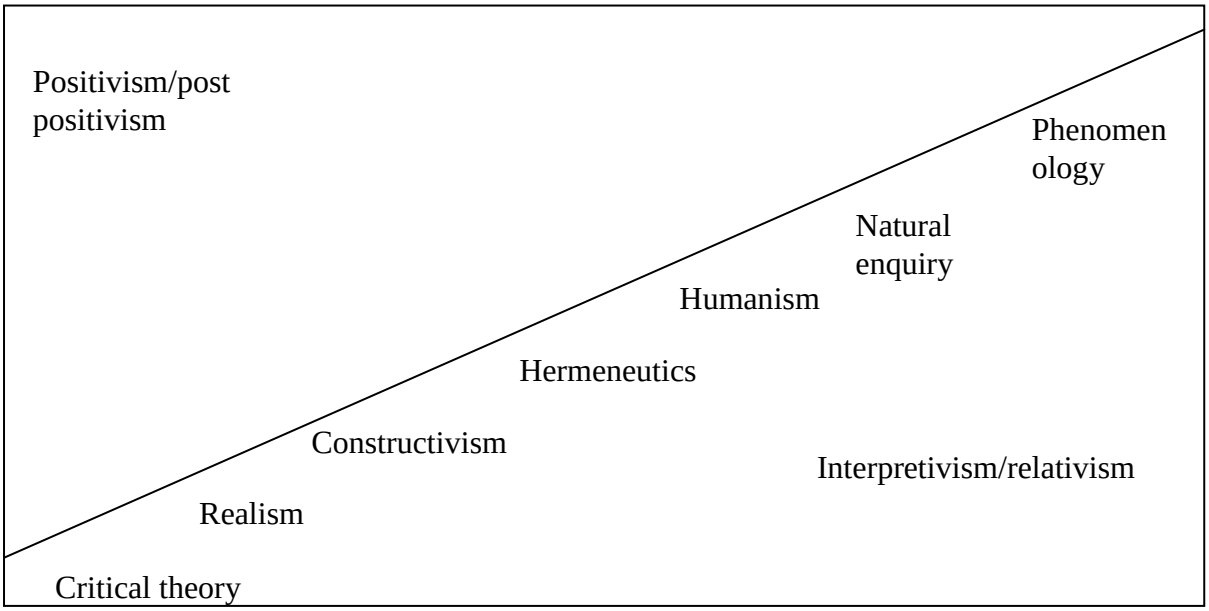


Figure 7 Continuum of Research Philosophies (Carson *et al*., 2001)

4.2.2 Levels of Prior Theorisation

The extent to which qualitative researchers can engage in prior theorisation before conducting their fieldwork is an issue which several qualitative researchers (Laughlin, 1995; Miles & Huberman, 1994) have attempted to address. At one end, it is accepted that it is virtually impossible and inadvisable for the researcher to enter the field theory free (Ryan *et al*., 2002), at the other end qualitative research is not considered to be suitable for the high levels of prior theorisation employed within positivist research. Laughlin's (1995) work illustrates the importance of prior levels of theorisation in distinguishing between different methodological approaches within accounting research. Laughlin (1995) employs a framework consisting of three dimensions: theory, methodology, and change. Although the author defines each dimension as a continuum, three levels are singled: high, medium and low.

The change dimension refers to the researcher's attitude towards changing or maintaining the situation/phenomenon under investigation. Within the change dimension, it is acknowledged that whilst the researcher might value the need for change, he/she might not necessarily be able to enact the required change. The theory and methodology dimensions focus on the level of theorisation, where the former refers to the level of theorisation prior to the research and the later refers to the level of theorisation within the research process. Three dominant methodological paradigms emerge from Laughlin's (1995) framework as highlighted in Table 7. Within the first column, the high/high/low combination represents the traditional positivist approach which assumes the existence of a material world untarnished by the researcher's perception and bias. The nature of the research is highly theorised and the researcher's role is

confined to the application of a pre defined set of techniques. The third column represents the more conventional inductive approach to qualitative research. To a certain degree the boundaries between some of Laughlin's (1995) categorisations are blurred. For example, classical positivist approaches have been known to employ the direct observation techniques earmarked within Laughlin's low/low/low categorisation. What is of particular relevance to this study however is the medium/medium/medium approach shown in the second column in Table 7. According to Laughlin (1995, p.81):

> This approach recognises a material reality distinct from our interpretations while at the same time does not dismiss the inevitable perceptive bias in models of understanding. It also recognises that generalisations about reality are possible even though not guaranteed to exist, yet maintains that these will always be 'skeletal' requiring empirical detail to make them meaningful.

Similarly, Miles and Huberman (1994) encourage the use of tighter levels of prior research theorisation within qualitative research, particularly for amateur qualitative researchers conducting research on a well studied phenomenon. They contend that months of field work and voluminous case studies conducted using loose inductive frameworks may fail to yield any meaningful results, and could result in the wastage of time and resources. In addition, they point out that the use of loose initial frameworks within multiple case studies makes it difficult to conduct cross case comparability.

Table 7

Key Characteristics of Dominant Schools of Thought

	High/high/low*	Medium/medium/medium	Low/low/low
Theory characteristics			
Ontological Belief	Generalisable world waiting to be discovered	'Skeletal' generalisations possible.	Generalisations may not be there to be discovered
Role of Theory	Definable theory with hypotheses to test	'Skeletal' theory with some broad understanding of relationships.	Ill defined theory no prior hypotheses
Methodological Characteristics			
Role of observer and human nature belief	Observer independent and irrelevant	Observer important and always part of the process of discovery	Observer important and always part of the process of discovery
Nature of method	Structured quantitative method	Definable approach but subject to refinement in actual situations, invariably qualitative	Unstructured ill-defined qualitative approach
Data Sought	Cross sectional data usually at one point in time and selectively gathered tied to hypotheses	Longitudinal, case based. Heavily descriptive but also analytical	Longitudinal case study based. Heavily descriptive
Conclusions Derived	Tight conclusions about findings	Reasonably conclusive tied 'skeletal' theory and empirical richness.	Ill-defined and inconclusive conclusions but empirically rich in detail
Validity Criteria	Statistical Inference	Meanings researcher and researched	Meanings researched
Change Characteristics			
	Low emphasis on changing status quo	Medium emphasis open to radical change and maintenance of status quo	Low emphasis on changing status quo.
* Theory, methodology and change ordering			

Source: Laughlin (1995)

Miles and Huberman's (1994) assertion of tighter prior theorisation levels being appropriate for well studied phenomena might not necessarily hold, particularly in the case of South African ERISFs. Developments in ERISF internationalisation theories are still on going and the field remains largely confined to mid range theorisation. ERISF research is now coalescing around the dominant theme of ERISF internationalisation being an entrepreneurially driven process, at least in the early stages of the ERISF's internationalisation.

Miles and Huberman (1994) point out that it is difficult at the working level to find researchers who adhere to a single fixed methodological orientation or paradigm. Instead, the author's orientation of choice is drawn from the lineage of transcendental realism (Bhasker, 1978) which Miles and Huberman (p.4) describe as follows:

> …we think that social phenomena exist not only in the mind but also in the objective world and that some lawful and reasonably stable relationships are to be found among them. The lawfulness comes from the regularities and sequences that link together phenomena. From these patterns we can derive constructs that underlie individual and social life.

The propositions and tentative framework which have been developed within this research fit in the realm of middle range theorising proposed by Laughlin (1995) and adheres to Miles and Huberman's (1994) call for tighter levels of prior theorisation. What these authors fail to address is whether the constructs derived from prior theorisation should be guaranteed a place in the final resultant theory. Laughlin refers to a priori theories as 'skeletal' theories, an analogy which he draws from the human skeleton which is fixed but requires diverse

empirical flesh in order to arrive at a meaningful whole (a complete human being). It would appear that Laughlin (1995) assumes that initial skeletal theories have a place in the resultant theory. Eisenhardt (1989) clearly outlines the need to acknowledge that constructs derived from prior theorisation can only be viewed as being tentative and as a result are not guaranteed a final position in the resultant theory. Hence this study falls within the mid range category proposed by Laughlin (1995) and supported by Miles and Huberman (1994). In line with Eisenhardt (1989) this research holds the view that the constructs identified at the beginning of the research are not necessarily guaranteed a position in the resultant theory.

4.2.3 The Selection of a Methodological Paradigm: Realism

As discussed earlier, the research questions and levels of a priori theorisation employed within this research fall within the criteria ascribed for the realist paradigm (Healy & Perry, 2000; Miles & Huberman, 1994; Perry *et al*., 1999). Within realism, people's perceptions of the world in themselves do not constitute reality, as might be averred by a constructivist or critical theorist (Perry *et al*., 1999). People's multiple perceptions provide the window onto a more important and complex reality which can be triangulated with other perceptions. The realists world as summarised in Table 8 is made up of three domains: the real domain in which generative mechanisms or causal powers exist independently with a tendency to produce patterns of observable events; the actual domain in which patterns of events occur irrespective of whether they are observed or not; and the empirical domain in which experiences which predicate the events within the actual domain reside. (Bhasker, 1978; Perry *et al*., 1999; Tsoukas, 1989).

Table 8

Ontological Assumptions of the Realist View of Science

	Real Domain	Actual Domain	Empirical Domain
Mechanisms	✓		
Events	✓	✓	
Experiences	✓	✓	✓

Source: (Tsoukas, 1989)

The premise of realism research is to discover the generative mechanisms or causal powers underlying the events and experiences within the actual and empirical domains (Tsoukas, 1989). Because of the complexity of the real world, the knowledge which can be obtained by realists is considered to be real but fallible (Wollin, 1995, cited in Perry *et al*., 1999, p.18). In essence, the realist's world is ensconced within Poppers world 3 (see Magee, 1973). Whilst Miles and Huberman (1994) position themselves as transdental realists, implying a paradigm which occupies a position between realism and constructivism, by acknowledging that they are following in the path of realists such as Bhasker (1978) the authors appear to be more aligned towards the realist paradigm.

4.3 Research Design and Approach

As shown in Figure 8, Healy and Perry (2000) isolate three methodologies which they identify as being appropriate for researchers working within a realist paradigm: in-depth interviewing and focus groups; instrumental case research; and survey and structural equation modelling. Quantitative methods involving survey and structural equation modelling are applicable to those situations in which complex phenomena are sufficiently understood and

thus warrant an attempt at generalising to a population (Healy & Perry, 2000). A distinction is made between instrumental case studies in which cases are studied with the intension of providing a window onto a reality which extends beyond people's perceptions; and intrinsic cases in which the cases in themselves constitute the focus of a study, and participants' perceptions are studied for their own sake (Healy & Perry, 2000). The 'intrinsic-instrumental' nature of case study research is highlighted in Stake's (2006) 'case-quintain' dilemma, in which the author acknowledges the suitability of case study research for different types of research, ranging from the most theoretical to the most practical.

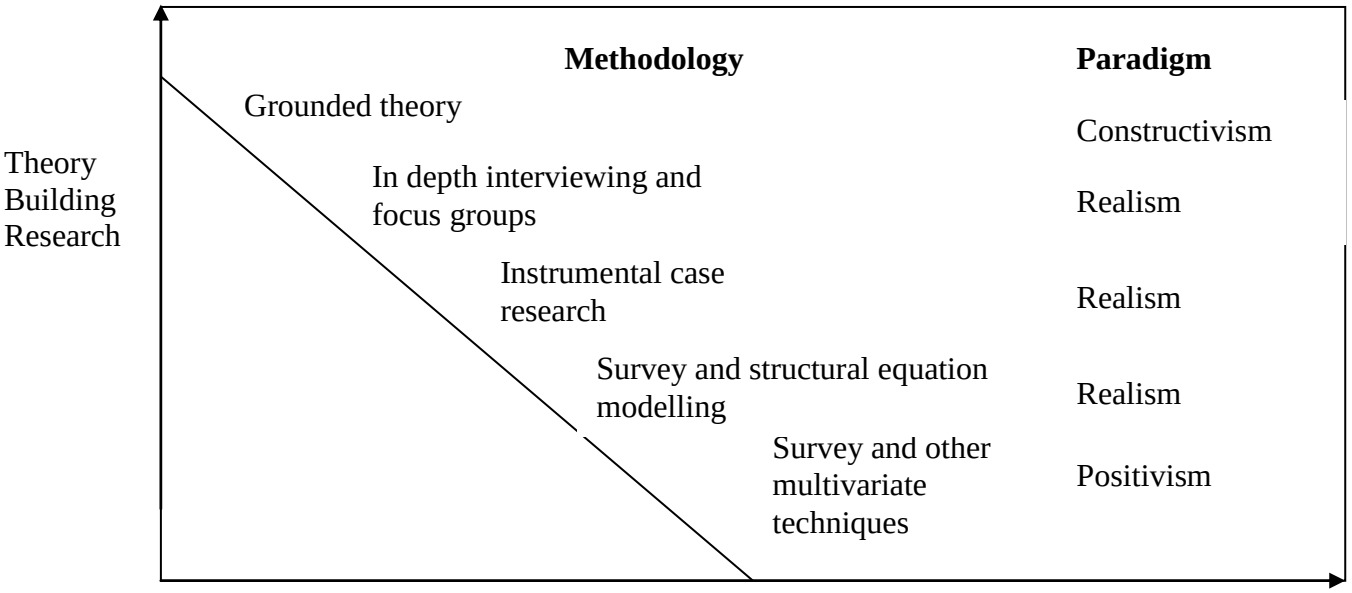


Figure 8 Methodologies and Related Paradigms (Healy & Perry, 2000)

4.3.1 Case Study Method

According to Yin (2003), case studies are the preferred approach when the research seeks to address 'why' and 'how' questions, the investigator's control over events is limited, and the focus is on a contemporary phenomenon. Ghauri (2004) widens the range of the type of questions to include 'what' questions. Eisenhardt (1989) advocates the use of case study approaches in research areas which are aligned towards theory building. However, the form of the questions highlighted by Yin might convey the initial perception of case study research being suited solely for exploratory and descriptive work. Case studies are considered to be suitable for all types of research: exploratory, descriptive and explanatory (Ghauri, 2004). Of significance to this study are the key strengths of case study research which make it suitable for application within areas that are not adequately covered by other research methodologies, these being:

- areas in which the concepts and variables under study are difficult to quantify, because there are too many variables to be considered (Ghauri & Gronhoug, 2002).
- areas in which research is yet to crystallise and distil the key variables delineating the critical processes within a phenomenon, as is the case within the ERISF literature. Here it is necessary to employ a methodology which enables the investigation of the phenomenon from a myriad of different perspectives.
- areas in which case studies can be used to explain the presumed causal links/causal powers in real life contexts which are too complex for survey or experimental strategies. (Yin, 2003)

- areas in which the phenomenon under investigation are difficult to study outside their natural settings (Ghauri, 2004). An understanding of the phenomenon under investigation within its natural setting will become pertinent within IB, as research draws more and more upon samples drawn from a diverse spectrum of emerging economies.

4.3.1 Linking Propositions, Interview Protocol and Quotations

This study adopts an instrumental case study approach which unlike exploratory and descriptive case studies is distinguished by its analytical rigour. This implies that the research methodology is based on multiple interviews conducted using set questions within an interview protocol and data analysis relies on structured steps (Perry & Coote, 1994; Perry *et al*., 1999). The development of the interview protocol is guided by the research propositions which underpin the study's research questions. The interview protocol (see A1, Appendix A) is divided into four sections: prior experience, product and service development, the internationalisation process, and the role of the domestic market. Following Sobh and Perry (2006), each section within the interview protocol begins with open questions, followed by closed probe questions, and where necessary recognised measurement scales. Open questions bring to the fore issues which have not have not been addressed within the a priori framework, whilst issues specific to the a priori framework are discussed in answers to the probe questions (Sobh and Perry, 2006). The interview protocol sections are not mutually exclusive. For example, ERISFs that engaged in inward and cooperative internationalisation activities were more likely to begin the discussion of their internationalisation activities in section 2 of the interview protocol. A breakdown of each proposition (developed in Chapter 3) and the

corresponding sections of the interview protocol which address the proposition are shown in Table 9. Thus for example proposition 4 is primarily addressed through the issues raised and responses provided within section 1 and section 3 of the interview protocol. Whilst proposition 1 is addressed through the issues raised and responses provided within section 2 and section 3 of the interview protocol. In propositions 1, 2 and 3 knowledge intensity is measured using a scale developed by Autio *et al*. (2000) and the objective measurements of knowledge intensity drawn from literature. The ad verbatim quotes (data) used within Chapters 5 and 6 are drawn from the issues raised and responses provided by the interviewees within the interview protocol sections corresponding to the particular proposition (shown by ticks in Table 9).

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Table 9

Linking Propositions, Interview Protocol, and Quotations

	Interview Protocol Sections					
Propositions Addressed	1.Prior Experience	2.Product and service development	Knowledge Intensity: subjective measurement scale (Autio et *al*., 2000) & objective indicators	3.Internationalisation Process	Entrepreneurial Orientation: Covin and Slevin (1989); Knight and Cavusgil (2004) scales	4. The role of the domestic market
Proposition 1		✓	✓	✓		
Proposition 2			✓	✓		
Proposition 3		✓	✓	✓		
Proposition 4	✓			✓		
Proposition 5				✓	✓	
Proposition 6	✓	✓				
Proposition 7		✓		✓		
Proposition 8	✓	✓		✓		
Proposition 9		✓		✓		✓

Source: Author

4.3.2 Case Selection

The number of cases which should be included within a qualitative sample is not explicitly stated within the literature. The understanding is that qualitative researchers usually work with 'small' samples varying between four to ten (Eisenhardt, 1989) to a maximum of fifteen (Miles and Huberman, 1994). When deciding on the number of cases within a qualitative sample, Mason (2005) claims that the key question here should centre on identifying the sample size which provides the researcher with enough relevant data to address the research questions. A multiple case approach, in which this study seeks to initially confirm or disconfirm the a priori propositions, has been adopted within this study. Here, Yin (2003) clearly specifies that under such circumstances case selection should be guided by the replication logic. Here, cases are deliberately selected in accordance with their potential to provide consistent results across the cases (literal replication) which either refute or support specific theoretical propositions (Gall *et al*., 1996).

Accordingly, sampling in this case has been viewed as an evolving process where the samples in question are not necessarily wholly pre-specified at the beginning of the research, making allowances for the pursuit of alternative relevant sample options which emerged within the field. Whilst acknowledging the need to continuously adjust the study parameters within qualitative studies, Miles and Huberman (1994) call for the use of a sampling framework in which the foci and boundary of the framework is determined by the study research questions and the extent of prior theorisation. Within Miles and Huberman's (1994) framework, sampling decisions are based on four parameters: settings, actors, events and processes.

Using the sampling framework within this study, the selected setting was initially focused on young software firms. The aim was to focus on high technology sectors in which a critical mass of firms appear to be coalescing within South Africa. But, with the attempts being made towards the formation of an ICT cluster and the development of the Biotechnology Regional Innovation Centres (BRICs), the software and biotechnology sectors emerged as potential sources for ERISFs. The firms where categorised as being young on the basis of the firms foundation date (Jones, 1999). Here, the foundation year is counted as year zero. Following Burgel and Murray (2000) and Burgel *et al*. (2000), the maximum age of the firm was set at 10 years. The firms fell within the new (5 years and less) and young (6 to 10 years) categorisations employed by Jones (1999). Attempts were made to interview a combination of both New Technology Based Firms (NTBFs) with limited internationalisation activities and ERISFs.

The group of software and biotechnology firms selected to participate within the study were independent firms formally registered within South Africa, with formal establishment dates ranging between 1998 and 2008 inclusively. This is with the exception of two cases in which the firms were registered abroad but had retained their core activities: manufacturing, and research and development in South Africa. One of the firms which had been established in 1997 and been interviewed the year before in 2007. The firms were selected initially through internet searches based on the investment portfolios of venture capitalist firms which targeted high growth impact firms. The search was then extended to include staff at support agencies based in Tshwane, Johannesburg, and Cape Town and additional organisations supporting high growth impact firms. Of assistance was the existence of export readiness charts used by

some of the support agencies to identify those firms which were viewed as being ready to engage or were actively engaged in internationalisation activities.

Whilst Davidsson (2005) acknowledges the use of support agencies as a cost effective and realistic approach for identifying young firms, he alludes to the possibility of selection bias occurring, which could hamper the theoretical representativeness of the sample. Here, the author highlights the possibility of excluding firms, particularly those established by experienced business founders who are unlikely to rely on support agencies. However, whilst this argument might hold in the case of young software firms with limited initial tangible resource demands, it is unlikely to apply in the case of young South African biotechnology firms whose funding requirements necessitate the attachment of the firm to a support/funding body. A total of 35 cases were selected for the study. Table 10 highlights the sampling framework.

Table 10

Sampling Frame

Sampling parameters	**Choices**
Settings	Internationalising and non internationalising software and biotechnology new ventures
Actors	Founder/ founding members
Events	Founder's prior experience, product/service identification and development, cross border activity formation, domestic market activities.
Processes	Founding of firm in relation to product and service development (entrepreneurial opportunity development), cross border link formation and termination, domestic market engagement.

Adapted from Miles and Huberman (1994)

4.3.3 Data Collection

A total of 38 semi structured interviews were carried out with the founders of the case study firms. Each interview was conducted face to face and lasted between 90 and 150 minutes. In three of the firms the interview involved two respondents: the CEO and the Chief Executive for business development; the CEO and Chief Scientific Officer; and the Managing and Financial directors. All of the interviews were tape recorded and transcribed ad verbatim. The founders of the firms were the primary focus. In each of the case studies, a request was made for documentary evidence in the form of the founder's curriculum vitae (CV), business plans, financial statements, and any other documentary evidence which the firm could provide.

4.3.4 Data Analysis

In his article titled *'Qualitative data an attractive nuisance*' Miles (1979) identifies the lack of a well formulated method of analysis as the 'most serious' and 'central' difficulty facing qualitative analysis. The author's early frustration with qualitative data should be viewed in light of the positivist paradigm which he was emerging from, where the use of a single tool had made it possible to use standardised common approaches to analyse numeric data. As Tesch (1990) contends, the different 'brands' of qualitative research preclude the development of an overarching well formulated method of analysis. Because qualitative data encompasses information which the researcher gathers that is not expressed in numbers, the term 'qualitative data' denotes an array of data: words, pictures, videotapes, photographs, and paintings (Tesch, 1990). However, qualitative data is commonly used to infer data which is gathered in the form of words (Tesch, 1990).

Whilst the research interest represents a move away from areas in which it is difficult to employ conventional guidelines (Tesch, 1990), structured steps have been identified by Miles and Huberman (1994), Perry and Coote, (1994) and Ghauri (2004) which can be used to analyse the data. The first stage of analysis used in the study involved the development of the case descriptions (Ghauri, 2004) or case narratives (Yin, 1981). Following Yin's (1981) suggestion, each case description has been organised around four main integrating themes: the founder's prior experience, the founding of the firm, the internationalisation process, and the role of the domestic market. Three case samples are provided in Appendix B. The second stage of analysis involved the categorisation and coding of the data. Miles and Huberman (1994) provide a technique for building concepts through the continual refinement of codes by moving from descriptive approaches of coding to more interpretive, explanatory modes of coding. One of the major pitfalls associated with coding, which is bound to occur within the coding process, is the use of numerous small categories (Miles, 1979; Yin, 1981) which are difficult to manipulate manually. Thus, coding has been carried out using Nvivo 8 where a mixture of both: upfront coding based on the concepts which have been drawn from the a priori framework; and in vivo coding based on the codes which have emerged from the research, have been used. However within this research Nvivo 8 has emerged as being more effective as a data management tool and a means for manipulating the data. This use of Nvivo 8 provides partial support for Perry *et al*. (1999) who consider the use of 'constructivist tools', to be non essential within realism research, because realism researchers do not seek to map all the details of an interviewee's subjective reality. In the third stage of analysis Yin's (2003) pattern matching and rival explanation approach was used to develop the themes and sub themes which either confirmed or disconfirmed the initial propositions and led to the development of new, and modified propositions.

4.3.5 Validity and Reliability within Realism

The issue of 'quality' within qualitative research is driven by a wider epistemological debate, on the nature of the knowledge produced by the qualitative research, and whether it is possible to develop criteria to judge the quality of all types of knowledge (Mays & Pope, 2000). In acknowledgment of the controversy surrounding the development of criteria for evaluating qualitative research, some researchers have called for the use of a contingent criteria approach to research evaluation which acknowledges the variance in research philosophical assumptions (e.g. Healy & Perry, 2000; Johnson *et al*., 2006). As a consequence positivist research relies on the 'conventional benchmarks of rigor': internal validity, external validity, objectivity, and reliability (Kirk & Miller, 1986), for evaluating research whose underlying philosophical assumptions acknowledge the existence of a real world independent of human cognition. Within qualitative research types in which reality is viewed as constituting multiple reconstructed realities, the criteria of credibility, transferability and consistency are considered to be appropriate for evaluating this type of research (Johnson *et al*., 2006; Kirk & Miller, 1986).

Notably, Healy and Perry (2000) develop six criteria for evaluating realism research. The first three criteria: ontological appropriateness, contingent validity, and epistemology, are unique to realism because they acknowledge the ontological and epistemological underpinnings of realism research. The remaining three criteria: methodological trustworthiness, analytic generalisability, and construct validity overlap with similar criteria developed for case study, constructivist, and to a certain degree positivist research.

Numagami (1998) questions the extent to which it is possible for idiographic case study research and management research to meet the criteria of reliability and external validity. The author contends that irrespective of the documentation which the researcher devises, the quality of the research findings from qualitative approaches will vary with the researcher's social and conceptual skills, making it impossible for the same findings to be observed repeatedly. Thus, the author proposes that management researchers abandon the façade of seeking invariant laws and instead focus solely on the two criteria of internal and construct validity for evaluating management and case study based research. Within this research attempts have been made to meet the internal validity criterion by employing a pattern matching logic and addressing rival explanations (Yin, 2003). The construct validity criterion has been met by using multiple sources of evidence and having some of the interviewees review the draft case study reports (Yin, 2003). These attempts are described in more detail under triangulation and the preceding section on the use of quotations.

Triangulation

According to Malterud (2001) the idea of triangulation originates from a craft used by land surveyors to increase the validity of a map by incorporating measures taken from a minimum of three different angles. Because case study research avails itself to the use of multiple sources of evidence, Ghauri (2004, p115) identifies triangulation as 'one of the defining features of a case study'. Easterby-Smith *et al*., (2002) make a distinction among four categories of triangulation: data, investigator, theory, and methodology. Attempts have been made to triangulate the multiple perceptions generated from the respondents during the interviewing process with documentary evidence (data triangulation): curriculum vitaes,

business plans, media reports, product description pamphlets and information collected from professional websites. In a few instances it has also been possible to use video recorded presentations and voice recordings of media interviews provided by the interviewees. Whilst limited, methodological triangulation has been achieved by interviewing more than one founding member within a firm and through additional unstructured interviews conducted with support agency staff. This proved to be critical particularly in cases where the founders where uncomfortable with providing documentary evidence and appeared to be reluctant to fully engage in the interviewing process.

The objective of triangulation within the research is three fold: firstly to identify convergent lines of enquiry and thus strengthen the validity (internal and construct validity) of the research; secondly to provide a means of ensuring comprehensiveness and increased understanding of ERISF internationalisation (Malterud, 2001); and thirdly to evaluate the truthfulness of the respondents' statements by checking the extent to which respondents might have hidden or overemphasised certain aspects (De Geer *et al.*, 2004).

Verbatim Quotation Rating

The use of quotations within qualitative research is linked to the question of what constitutes 'findings' within qualitative research (Sandelowski & Barroso, 2002). Within a positivist orientation data is viewed as the empirical material upon which scientific findings are based. In contrast the boundaries between what constitutes data and findings within a constructivist orientation are blurred. In line with findings, data such as interview transcripts and field notes are in themselves viewed as 'constructed entities' (Sandelowski & Barroso, 2002). However,

synthesizing the findings of a qualitative research necessitates a view in which findings are potentially separable from empirical data (Sandelowski & Barroso, 2002). A broad consensus exists (particularly within the health and social welfare) supporting the use of ad verbatim quotations in clarifying the links between data, interpretations, and conclusions (Corden, 2007).

What is lacking within research using verbatim quotations are explanations of the processes through which quotations are selected, used, and presented (Corden, 2007). Within the study verbatim quotations have been used to support the findings, interpretations, and subsequent claims made within the research. The objective of the study has been to avoid the two extrema: descriptive excess, where lengthy quotes and descriptions are offered with virtually no interpretation; and analytical excess where research findings are concealed through the excessive use of coding schemes, themes, sub themes and tabular representations (Lofland and Lofland, 1995, cited in Sandelowski & Barroso, 2002, p.216). To increase the internal validity of the research, each quotation is assessed for its quality, consistency, and substantiveness respectively. A scale from 0 to 10 is used to rate the quotations in Chapter 5 and 6 on each dimension. Quality, as shown in Table 24 Appendix D and explained under triangulation, covers the extent to which it has been possible to corroborate the responses provided by the interviewees using data drawn form a wide range of sources: CVs, business plans, company websites, media publications, published research, and partner websites; and interviewing more than one interviewee within each firm. The notion of consistency builds on Miles and Huberman's (1994) within case analysis and refers to the extent to which the responses provided are thematic within the case. Based on Corden's (2007) findings, substantiveness refers to the extent to which the quotations provide evidence of the

complexity of the underlying theme. That is the extent to which the response brings together different events and experiences. The substantiveness and consistency of the selected quotations is in part demonstrated by the extent to which a rapport was built and dialogue was maintained between the researcher and the interviewee during the interviewing process (see Table 24, Appendix D). The attainment of 'rapport' is in turn evidenced by the extent to which it has been possible to develop a 'thick' description of each case. An example of the bench mark used for rating the case descriptions in Table 24, Appendix D is illustrated using three cases in Appendix B.

Role of the Researcher: Reflexivity

The realist researcher is viewed as being neither value laden, necessitating a subjective relationship with the interviewee, nor value neutral necessitating a subject/object dualism, but 'value aware' through the acknowledgment of the existence of a real world, albeit one which is fallible (Healy & Perry, 2000). To facilitate 'free and frank' exchange of information and thus generate the multiple perceptions which underpin the 'causal powers' defining 'reality', multiple interviews, which employed broad questions prior to probing, were used to allow the interviewees to develop and pursue their own ideas and experiences. The perceived credibility of the researcher was enhanced by being temporarily based at two of the support agencies, meeting respondents informally at for example, breakfast meetings, conferences, and presentations, prior to conducting the interview and requesting firm introductions through agency staff who were already known to the interviewees. Whilst it was virtually impossible to rule out interviewee bias completely (Easterby-Smith *et al*., 2002), the research focused on interviewing founding members with active top management positions, who by virtue of their

prior experience and depth of knowledge, where unlikely to accommodate potential biases which might have arisen from the interviewer's misinterpretation of their responses. This meant that there also existed the potential for the respondents to manipulate the interviewer by leaving out information or adjusting answers to suit perceived expectations. In addition, whilst it was not possible to position the research as being particularly relevant to the firms (Easterby-Smith *et al*., 2002), what was impressed upon the firms was the non existence of samples of ERISFs drawn from the Sub- Saharan African content, because of the perceived lack of a critical mass of ERISFs within Sub-Saharan African countries which would warrant research, particularly at the PhD level. This resonated with some of the founders.

4.4 Conclusion

Based on the moderate levels of a priori theorisation evidenced in chapter 3, Chapter 4 has shown that this research operates within a post positivist realist ontological paradigm. A multiple case study approach aimed at attaining theoretical and literal replication has been adopted within the research design. The use of a multiple case study approach will lead to the generation of the patterns which will either underpin the causal links proposed in the a priori framework and or lead to the formation of new causal links.

CHAPTER 5

RESULTS

5.1 Introduction

This chapter presents the research findings using a set of a priori propositions developed from the literature. As alluded to earlier, the research questions that this study set out to investigate are addressed through the set of theoretical propositions developed from literature. A mixture of cross case and within case approaches have been used to identify the major systematic themes or patterns emerging from the data. The themes constitute the basis on which the a priori propositions are confirmed, or not confirmed on a case by group basis or across all groups. The quotations, supporting the themes and subthemes, are rated on the basis of; the quality, consistency, and substantiveness of the quotation. A scale from 0 to 10 is used to rate the quotations on each dimension. The case firms have been grouped according to their industrial sub sectors (as shown in Table 11) which have been further subdivided to differentiate between biotechnology firms which have developed and patented their technology and biotechnology firms which rely on standard unpatented technologies. Similarly, Software firms are divided into software firms which have developed in house generic proprietary software, and software consultancy firms which have not developed their own generic proprietary software. Because the issues surrounding the extent to which software can be patented within certain contexts is debatable. The generic software category has not been further subdivided into patented and unpatented software solutions.

The firms have been further categorised according to their internationalisation pattern into early rapidly internationalising small firms (ERISFs), early internationalising small firms (EI),

late rapidly internationalising small firms (LRISFs) and domestic market firms (DM). ERISFs start their internationalisation activities within six years and exhibit:

i) a continual increase in simultaneous cross border link formation;

ii) and or a continual increase in international sales.

Early Internationalisers (EI) start their internationalisation activities within six years but fail to show either a continual **increase** in simultaneous cross border link formation or an **increasing** growth in international sales. For Domestic Market (DM) firms, internationalisation activities are limited, sporadic, adhoc, activities making up less than 10% of the firm's total sales. The Late Rapidly Internationalising Small Firm (LRISF) starts its internationalisation activities after 6 years but within 10 years after the founding of the firm and as with the ERISF exhibits a continual increase in cross border link formation and or increasing growth in international sales.

Table 11

Firm Categorisation

Sector	**Sample Cases**	**ERISF**	**EI**	**LRISF**	**DM**
Biotechnology firms which have developed a proprietary patented technology	2B, 3B, 8B, 10B, 20B, 31B, 11B	2B, 8B, 10B, 20B, 31B, 11B	3B		
Biotechnology firms	17B, 19B, 23B	17B	19B 23B		
Software firms with have developed generic software product (s).	6S, 9S, 12S, 13S, 14S, 15S, 16S, 18S, 24S, 25S, 26S, 28S, 30S, 33S, 34S, 35S	12S, 14S, 15S, 24S, 28S, 33S	13S 35S		9S, 18S 16S, 25S 26S, 30S, 34S
Software consultancy firms (provide services and bespoke software development)	1SC, 4SC, 5SC, 7SC, 21SC, 22SC, 27SC, 29SC, 32SC	5SC 22SC, 29SC		32SC	1SC, 7SC 4SC, 5SC, 21SC 7SC

5.2 Knowledge Intensity: Proposition 1

The knowledge intensity of the ERISF's (Early Rapidly Internationalising Small Firm's) intangible resource and knowledge base has been presented in the literature review as one of the key defining constructs of ERISFs, which potentially provides an explanation as to 'how' ERISFs are able to internationalise at an accelerated pace when compared with the traditional, less knowledge intensive SMEs. The main body of research in this area emerges from Autio et *al.* (2000) and Yli Renko *et al*. (2001, 2002) who have defined knowledge intensity as the 'extent to which a firm depends on the knowledge inherent in its activities and outputs as a source of competitive advantage'. In response to 'how' the ERISF is able to internationalise at an accelerated pace, one of the arguments has centred on the mobility of knowledge intensive outputs. The inference is that the knowledge intensive outputs can be combined with fixed assets in foreign markets and distributed through new modern distribution channels at a relatively lower cost, and with greater ease and flexibility. Thus, within Proposition 1, knowledge intensity encapsulates both: the tacit element of knowledge intensity which gives the firm its competitive advantage; and the knowledge intensive outputs which by virtue of the extent to which they can be codified, taught, and reduced in complexity are amenable to distribution through modern forms of distribution channels. Proposition 2, has been developed in acknowledgement of Autio's call for the widening of the role of knowledge intensity. Proposition 3, acknowledges the potential context specificity of the ERISF's knowledge intensive resource base, which could arise by virtue of the firm's embeddedness within its domestic market industrial and technological networks, thus delaying the timing of ERISF's internationalisation activities and reducing the speed of internationalisation of the ERISF. Proposition 2 and 3 are addressed at the end of the chapter.

Proposition 1 stated that:

It is the ability to convert the firm's knowledge intensive intangible resources into outputs that can be codified, taught, reduced in complexity; and distributed through new modern distribution channels, at a relatively low cost, with greater ease and flexibility, which accelerates the speed of internationalisation of ERISFs.

Table 12

Knowledge Intensity

Sector	ERISF	EI	LRISF	DM
Biotechnology firms which have developed a proprietary patented technology	2B[7]* , 8B[7]*, 10B*, 20B[7]*, 31B[6.67]* 11B[7]*	3B*		
Biotechnology firms	17B[6]	19B[6] 23B		
Software firms with have developed generic software product (s).	12S[7]*, 14S[7]*, 15S*, 24S[7]*, 28S[6], 33S[7]*	13S[6] 35S[6]		6S[6], 9S[6]** 16S[7],18S[5.67] 25S[6], 26S[7], 30S[6]*, 34S[5.33]**
Software consultancy firms (provide services and bespoke software development)	5SC[5.67] 22SC[7] 29SC[7]		32SC[4.67]	1SC[5.33], 7SC[7] 4SC[5], 21SC[7] 27SC[7]

* Firms with a patented technology
**Firms which have been awarded innovation grants, and or have set up exclusive licensing agreements with international firms.

Table 12 illustrates the rating which each firm has allocated for knowledge intensity. The **asterisk** represents firms which hold patents, exclusive licenses, and or have received grants and international awards based on the innovativeness of their product. Table 12 also shows how the entire set of firms ranging from the DM to the ERISF category rate themselves highly on the knowledge intensity construct. Autio *et al*. (2000) and Yli Renko *et al*. (2002) identify firms with ratings averaging 5.78 and 4.16 respectively as being highly knowledge intensive.

The findings show that the knowledge intensity construct fails to differentiate between different categories of high technology firms and internationalising firms. The findings show that the combination of the subjective and objective indicators of knowledge intensity (patents, exclusive licenses and or innovation awards or grants) are better able to differentiate between the different categories of internationalising firms (ERISFs, EIs, LRISFs, DM).

Themes 1 and 2 emerge from the findings. Through theme 2 partial support is provided for proposition 1.

5.2.1 Theme 1: Relationships Formed with MNEs and Large Foreign Market Firms.

Proposition 1 alludes to the key exemplars of rapid internationalisation being software firms. The speed of transmission of the firm's outputs was analysed in terms of the method used by the firm to deploy its software. Whilst the biotechnology firms in the sample rely on traditional, physical modes for distributing their products; software and software consultancy firms rely on a multiplicity of distribution channels. These range from physical modes (e.g. shipping software installed on CDs) and onsite installation; to web based and other network platform channels. Newer, modern distribution channels which have been utilised by the software and software consultancy firms in the study include: web based platforms, mobile network channels, and other media channels such as Code Division Multiple Access (CDMA) radio channels. A systematic pattern linking the ERISF's speed of internationalisation directly to the mode of deployment and thus the mobility of the firm's software as proposed in proposition 1 did not emerge within this study. What emerges instead is theme 1, a pattern,

which irrespective of the mode of deployment of the firm's outputs, links the speed of ERISF internationalisation, particularly within software firms (both groups) to:

a. the distribution networks of South African multinationals;
b. the distribution networks of foreign multinationals;
c. and the local distribution networks and or client bases of influential foreign market firms.

In the case of firms 5SC, 15S, 24S, and 29SC the formation of organisational relationships with dominant partners marks the onset of the firm's internationalisation activities.

Table 13

Firms which have established Relationships with MNEs and Foreign Firms

Sector	Sample Cases	ERISF	E	LRISF	DM
Biotechnology firms which have developed a proprietary patented technology	2B, 3B, 8B, 10B, 20B, 31B	**2B***, 8B, 10B, 20B, **31B**	3B		
Biotechnology firms	11B, 17B, 19B, 23B	**11B***, 17B	19B 23B		
Software firms with have developed generic software product (s).	6S, 9S, 12S, 13S, 14S, 15S, 16S, 18S, 24S, 25S, 26S, 28S, 30S, 33S, 34S, 35S	**12S, 14S, 15S, 24S, 28S**, 33S	13S 35S		6S, 9S 16S, 18S, 25S 26S, 30S, 34S
Software consultancy firms (provide services and bespoke software development)	1SC, 4SC, 5SC, 7SC, 21SC, 22SC, 27SC, 29SC, 32SC	**5SC 22SC, 29SC**		32SC	1SC, 7SC 4SC, 21SC 27SC

Table 13 shows the ERISFs which have formed relationships with MNEs and influential foreign firms and gained access to the distribution networks or client bases of these firms

(firms shown in bold). ERISFs in the process of establishing new relationships are shown in bold with an asterisk. A detailed breakdown is provided in Table 21, Appendix C.

Theme 1: Relationships Formed with MNEs and influential Foreign Market Firms

Firm 14S's founder describes the on-site deployment of their software as follows:

> We take the software and we go and install it on somebody's computer in a foreign country, we integrate it to the banking systems; we train the people and we switch it on and then they can start doing business. That's what I mean by deploying. It's got to talk a different language; it's [not] got to ... run in rands [ZAR] anymore, it's got to run in the local currency and it's got to conform to the local laws and regulation. So it's a lot of things that you've got to do before you can run it [in a foreign country]. [Firm 14S]

quality	6
consistency	7
substantiveness	8

The clue as to how the firm has managed to undergo rapid internationalisation despite the need for onsite deployment is provided in the following response from the founder.

> Our customers are not individuals; our customers are banks and mobile phone operators. We help mobile operators to [...] and banks to offer that as a service. You are not going to get mobile banking from [Firm 14S] but you are going to get it from [the] Royal Bank of Scotland, from HSBC or from Orange or from Vodacom. That's who is going to give you mobile banking. But the technology that runs it is supplied by [Firm 14S]. So we have to go to Vodacom, Vodaphone, Orange, O2 and we have to go and deploy it on O2's infrastructure so that O2 can offer you this functionality. [Firm 14S]

quality	8
consistency	7
substantiveness	8

It is only recently, (as evidenced within the secondary documentation provided by the firm, a local and international client summary) with the jump from a maximum of 6 deployments in

the preceding years to 25 deployments in the firm's eighth year of operation that the firm has started to actively engage with multinational clients in deploying their software within their multinational client's international subsidiaries. In the following response, the CEO provides two examples of how the firm is working towards developing relationships with the MNE headquarters of the subsidiaries which are currently using their technology.

> Okay here is what happened. We heard about a ... it's through the [Country A client] connection, we heard about a [Name of Bank] tender in [Country A] and we tried to win the tender. We won the tender with a [Country A] bank. The banks name is [name withheld] bank and the bank got acquired by this [Country B] company, a multinational company which we then contracted with, [because] we were already working with the company that they had just acquired and so we are in the process now. So we are doing business with the multinational in [Country A] and we are now trying to extend it to their other countries. [Firm 14S]

quality	6
consistency	8
substantiveness	7

> The other one is a multinational, [country D] based multinational company that we are working with at the moment. The deployment in [country C] is with one of their subsidiaries and we are working [to see] if we can have a group decision with them at their [Country D] base. [Firm 14S]

quality	6
consistency	8
substantiveness	5

Preceding the interview, some of Firm 14S's attempts to gain access to the **entire** subsidiary base of both domestic and international MNEs have come to fruition. Heralded as one of the largest global rollouts of a mobile banking software solution (within a range of secondary sources, print media, and online publications), Firm 14S has recently signed a contract with an internationalised South African Global System for Mobile Communications (GSM) cellular network operator to deploy the firm's software within all of the MNE's international subsidiaries.

An insight into how Firm 14S is managing to gain access to dominant international technology partners and the distribution channels of MNE enterprises is provided by the following responses. Here, the CEO explains how the firm has managed to persuade, in this instance, one of the world's largest Subscriber Identity Module (SIM) technology and smart card manufacturers to deploy Firm 14S's SIM based mobile banking solution on their SIM cards. Based on secondary information gathered from the press release statements on the SIM and smart card manufacturer's website, the relationship between Firm 14S and the SIM technology and smart card manufacturer culminated into a formal co distribution agreement in 2004. The probe used in the questionnaire (in bold) has been included with the response.

> **How did you convince them [SIM Card and SMART card manufacturer] to work with you?**
>
> With difficulty, they are [Nationality of the SIM and Smart card manufacturer]. I mean there was some … that boils back to what I said in the beginning. We found some guys that could turn out to be champions for us inside [the SIM and smart card manufacturer] and they liked what we did, and they convinced their organisation internally, and you know ….So we made friends with people that were influential in [SIM and Smart Card manufacturer] basically that's what we did. [Firm, 14S]

quality	7
consistency	7
substantiveness	7

Upon reflection, the Firm 14S's CEO pointed out the champions in this case we're South African Nationals.

> It's actually, now that I am thinking of it. [Its] interesting that South African technologists are operating in a lot of companies. So if you know where to go you'll probably find a South African in any international tech company that you could work with and that helps a lot. [Firm, 14S]

quality	4
consistency	7
substantiveness	5

When asked how Firm 14S has managed to identify these South African Nationals Firm 14S's founder provided the following response.

> I don't know (laughs), their surnames or we just know them. I don't know, we get told there is another South African working in this company. Microsoft, cyberspace or whatever we find each other and then we start working together. I suppose it's a little bit like the Jewish, I didn't think of it like that before. [Firm, 14S]

quality	4
consistency	7
substantiveness	5

With Firm 28S the ease with which the firm's software can be deployed is indicated by the following statement from Firm 28S's founder.

> Our system's very simple, we've, everything sits in [Country 1] and [Country 2]. So it doesn't matter from a deployment point of view. All we need from the client at that point is a design, so what do they want their website to look like. We then do the integration into our system, and within a week, they [are] up and running. So as an example, let's say [Name of Game Site], which is a [Type of Game] site in the [Country 2]. From the deal being signed to them giving us the design; that's completing the integration, if you now go to games [Name of Game site].com, their game site is fully up and running and that takes about a week. So from a deployment point of view, it's all tech-based. There's no consultation process other than sitting on the phone and discussing these requirements through email. We don't have to go and sit there and order special machines and have a whole integration team managing it. It's really … and that's the way we've written the system. It becomes very easy to deploy and get a game site up and running within a matter of a week. If there are specific requirements, from integration into their legacy systems, and from billing and user-management, we do all that, and we've done that for some big companies in the [Country 2] as well, but it's all done through the internet. It's all just email or Skype or just sending specs through on word documents. It's very simple. [Firm 28S]

quality	7
consistency	8
substantiveness	10

Whilst Firm 28S is able to offer online gaming services directly to individual gamers, critical to the attainment of global reach and the acceleration of the firm's internationalisation

activities, has been its ability to offer a white labelled version of its game management system to both local and internationally based online media publishers interested in widening their service base by offering their client base gaming services. This was explained in the secondary documentation provided by the firm (print media publications) and the founder's response to how his offering differed from those of his competitors.

> We, as I said, offer white label versions. They don't whatever they develop, they develop for themselves. So if you [are] [Publisher 1] and you want to set up a games portal, [Game site 1] won't help you, [Game site 2] won't help you, [Game site 3] won't help you, we will help you. Although, so … we're almost competing against ourselves, because we've got [referring to his firm], which is our games brand that we're building, but we partner with publishers, so instead of having one game site, we now have 35 game sites. So from a reach point of view, [referring to his firm] might have 200,000 users, but with our publishers, we now have access to 40 million or 50 million users. So it's really a broad approach to make sure we get as much critical mass, through building a network of game sites. [Firm 28S]

Quality	7
consistency	9
substantiveness	9

However, unlike Firm 14S, Firm 28S has relied primarily on unsolicited requests which are gained by virtue of the firm's top ranking on search engines for certain key word searches around 'gaming'.

From inception, Firm 15S set out to develop web based software applications. This is explained by the then Financial Director.

> I mean that's one thing that [Managing director] and I early on, and in the beginning of [Firm 15S], we kind [of] focused on web development as being, you know, it was sort of the early days, I mean 1999 was when everyone else was actually getting out of IT. It was when the beginning of, the big kind of, you know, the dot bomb sort of time. So a lot of people were getting out of IT. But it was [really] for us, we saw a real future in that. I mean web based, it has kind of proved to be [the] right ... technology. The web has just exploded in terms of being a platform to deliver software. Cause it's

> just such, it's such, [the] total cost of ownership is so low, it's a very innovative, smart way of delivering application, low footprint etc. So it kind of made sense, so all of our applications are very much web base. [Firm 15S2]

Quality	7
consistency	9
substantiveness	8

However, the critical role of the firm's ability to gain access to the subsidiary network of their foreign multinational client's distribution network is highlighted by Firm 15S' marketing director. The firm's flagship product came out of a request for a Customer Relationship Management (CRM) software tool from a global drinks and beverage manufacturer. The global drinks and beverage manufacturer was impressed with the development work which the firm had provided for their domestic market subsidiary. The development of Firm 15S' flagship product through the local subsidiary was outlined in a previous version of Firm 15S' website which has now been updated. The financial and managing director explain independently how this prior development work combined with a mixture of serendipity has led to Firm 15S' early (starting in the firms fifth year of operation), rapid internationalisation as follows.

> [Global drinks manufacturer] sent their RM [Relationship Management] director, IT director round the world to go and look and see what all their markets round the world were doing. Cause every market was really doing their own thing and [Global drinks manufacturer] operates in like over 150 odd markets around the world, from you know every country almost …they will have some presence to some certain extent. So he went around looking at what was out there. And we were lucky, you know, normal story, right place right time, he liked what he saw here. It wasn't the thing, but it represents, kind of… he liked what he saw in terms of the kernel of what we were doing. He liked the operation, he and [managing director] had, you know, they got a good relationship going and it became the beginning of something, because they then gave us some money to build a prove a concept [POC] for them. In other words take what we have got, add on some of this additional stuff that he wanted. It was a whirl wind thing; it was like in three months, you know, here is the money build a POC, build the proof of a concept, a pilot and take it to [Continent] and implement it in [number of countries] in [Continent]. So we had never operated outside of South Africa as a business before. So this was our, as you were saying earlier, this was our

> very quick jump to internationalising our business through [Global Drinks Manufacturer] [Firm 15S2]

Quality	9
consistency	8
substantiveness	9

> Ya, I mean it's been a fairly organic process, you know, we started working in the local market and I suppose doing good work to the point where, for instance with [the local subsidiary of global drinks and beverage manufacturer], we were then recommended to the parent company in the UK and that was really [the beginning of the Customer Relationship Management tool], where [CRM tool] got going. Because it was really, we'd been working with [the local subsidiary] for a long time ...probably about three years, four years. … The work that we were doing was fairly innovative, especially in this whole relationship marketing space. One of ... the marketing directors, went over to a conference where [Global drinks and beverages manufacturer], all the marketing directors from all over the world were present and did a demonstration of what we were doing here. It so happened that there was a lot of interest, because they were looking for a similar kind of technology. So you know that's where that got going it was almost like they approached us. [Firm 15S1]

Quality	9
consistency	8
substantiveness	9

The customer relationship management Enterprise Resource Planning (ERP) type application has now been deployed within more than 35 of the Global Drinks and Beverage Manufacturers international markets, and contributes in excess of 60% to the firm's total revenue base. In line with the development of their flagship CRM tool, the development of Firm 15S' second product was prompted by a request from a local university for a security management system. Having deployed this security ERP application within some of South Africa's major shopping malls and casinos, the financial director provided the following explanation for the firm's decision to scale down its focus on this product.

> There is also a version of it that operates in the casinos in South Africa, unfortunately it doesn't operate within the [Internationalised South African resort hotel chain] which is really the other ….It operates in all the other casino groups in South Africa but until you get into [Internationalised South African resort hotel chain]… That's really not something that we are focusing on, we support it, we have monthly maintenance

> contracts with the casinos, but we are not targeting it because we have hit a sort of brick wall with [the Internationalised South African resort hotel chain]. They're busy; they [have] been busy developing their own for I don't know how long. I don't know if they have anything in place yet but we can't break through there, so that part of [the security application division] has almost died. We're not really going any further with it. [Firm 15S2]

Quality	6
consistency	8
substantiveness	8

Thus, firm 15S' inability to gain access to the internationalised network of the South African resort group has resulted in less focus being placed on marketing the security product. This is despite the fact that, as with the first product, both products are web based and can be deployed and managed remotely.

The onsite deployment of Firm 24S' offering includes the instalment of the infrastructural hardware, finger print, and palm print identification software. This enables Firm 24S to pool the necessary Know Your Customer (KYC) data, it requires to build the database from which it offers its customer identification services. The Chief Technical Officer (CTO) attributes some of the delays which the firm encountered when seeking approval for the installation of their system to the complexity of the installation process.

> It's not a risk free kind of solution, cause we need to have access to the bank's databases and things like that, so there is still, a little bit, sort of issues about it. So the first two weeks we were there we convinced them to go ahead with our pilot project. Then we got a little bit of bureaucracy, I guess you have in these banks and these sort of things, and just in terms of processes and procedures and people saying it's alright, but we have to agree [on] the cost [of the] whole system installation. And then because our system is quite expensive it had to be signed off by the Board of Directors. [Firm 24S]

quality	7
consistency	8
substantiveness	6

Notably, the need for the onsite installation of Firm 24S' identification system has not hampered Firm 24S' rapid market penetration within its major foreign market. Firm 24S has specifically targeted what the interviewee refers to as the largest bank in terms of market capitalisation within their first foreign market and convinced the bank to adopt their identification system by piloting it in five of the bank's branches in the firm's sixth year of operation. According to the secondary information provided within their business plan and independent media reports, Firm 24S started installing their identification system within all 361 of the bank's branches in their seventh year of operation. The Chief Technical Officer (CTO) explains how the firm's strategy has been to expand within each of their potential foreign markets by marketing and installing their systems firstly with influential private companies (initially banks) and institutions, which have the ability to enforce the use of their identification systems on their client and stakeholder networks.

> But our strategy was to make the right relationships and partnerships and things and then just dominate the markets**.** For example, some companies tried to, one of the smaller banks tried to sell something […] similar to them, that was much cheaper than our systems and things, but then the banks told them. [Name] bank is the biggest bank by far in [Country]. They have a big fund that funds micro financiers and things like that, so they are sort of a bank, to the smaller banks. So they told them that if they ran a system that is not compatible with ours they won't be able to lend them money, you know it's as simple as that. They can't run along a system that is not compatible with ours, any system that's not compatible with ours is out. So the big banks especially the banks in this central bank of [Country] this [relationship between banks] relationship kind of forces out the other competitors that are trying to sell stuff to the banks. [Firm 24S]

quality	6
consistency	9
substantiveness	9

Firm 24S' CTO explains how the founders have relied on a snowballing process, using the initial personal contacts that they knew within the foreign country to introduce them to influential people within the hierarchy of the bank which they had initially earmarked. The

process has taken three years and has, as the CTO explains, been accelerated by Firm 24S' offer to pilot their system within 5 of the bank's branches.

> [Firm 24S' CEO] and I went to [Country]. We knew this [Country] Guy […] tried to fix up meetings with banks. […] The big problem with it is that we didn't know any executives in banks we sort of had to market this system at an executive level. ....
>
> So we had this partially developed thing we went to [Country] put ourselves in a hotel there for two weeks. […] We would meet some guy that is sort of a branch manager and [we] would be like, come on introduce us to someone above, someone up in the ladder. And it was kind of difficult. So as soon as we got stone walled, sort of by the one guy we invited …. into the hotel for a couple of beers after working, we convinced him to introduce us to the head of the bank's pension fund. Then we, then we convinced him to introduce us to an executive at [name of bank]. So we sort of worked our way up the ladder there and we got them to agree and we decided, actually through some advice that we got here through the guys at [name of support agency] [and] …. Who founded [name of company] and one of the [name of company] guys. He said one of the problems with banks is, and we find it very true, is that banks always want to be first to follow; no bank ever wants to do something first. But as soon as somebody else does something new, they want to be the next guys to do it. So it's very difficult and a long cumbersome process to convince the bank to buy anything new, to change their systems. So we decided the quickest way to get our system into the market is to tell the guys look what we will do is, we will install a pilot inside the bank, five of your branches and we will ran it for three months and then you will see how it works and then you can buy it from us at no charge to you. So it's also a bit [daring] considering we didn't have a lot of capital. [Firm 24S]

quality	7
consistency	8
substantiveness	10

The pattern in which the firm is seeking to gain access to the client base of foreign market clients and MNEs is repeated in the case of Firms 12S and 34S. Firm 34S has only recently started its internationalisation activities, having signed a licensing agreement for its software which enables mobile Voice Over Internet Protocol (VOIP) communication, with an Asian firm. The firms intention to pursue a strategy in through which they license a white labelled (unbranded) version of their software to both local and international clients is outlined in the secondary documentation (business plan) provided by the firm. Their initial expectation was

that, because their software is deployed remotely, it would be easily integrated with any international client's 'fixed assets' as evidenced by the CEO's initial response. The CEO's second response however, paints a different picture, in which their attempts to integrate their software into their first international licensee's infrastructure has, in practise, turned out to be more difficult than expected as the CEO highlights in her second response.

Response 1

> The way we designed the product and we designed our business model through the fact that we can license our software to another company, which doesn't have to be a South African company; it can be a company in Argentina or in India that we license the software to... Because they themselves are familiar with their local market and how they want to sell our product and have got generally an infrastructure in that country, they are able to take our service and sell it to that country as if it were their own, and much quicker, and much more easily than we would have ever been able to if we tried to go to Argentina and India or anywhere else...It allows us to grow quickly into all these other countries because we never have to go and physically set up our own infrastructure to enable the software to be used in that country at all. So the business model of licensing the software is a key factor in that international strategy. So we are not limited by our physical presence in the country. [Firm 34S]

quality	6
consistency	6
substantiveness	9

Response 2

> So our side of the business model we also didn't understand their infrastructure, they had implemented a number of backend infrastructure protocols quite differently and created some problems with the application; eventually when those problems just couldn't be solved, we suggested to them to change and revert to someone else and the like so [...] those kind of hiccups, I don't think you would understand that. [Firm 34S]

quality	4
consistency	5
substantiveness	6

In contrast to Firms 12S, 14S, 15S, 24S, 28S, 34S, Firms 22SC and Firm 29SC are purely service firms i.e. software consultancy firms. That is to say they rely primarily on offering bespoke software development and consultancy services based on; technology which they

have acquired, as is the case with Firm 29SC; or technology which they source from international software vendors as is the case with Firm 21SC. Firm 29SC's early internationalisation activities have occurred through a formal technology development partnership which Firm 29SC entered with the United Kingdom (UK) e-procurement services arm of an internationalised South African investment company. The establishment of this relationship is confirmed within the secondary documentation provided by the firm (business plan) and independent media publications. The CEO explains how having worked for: (a) the South African subsidiary of the American e- commerce firm responsible for the development and provision of the e-procurement services of the UK branch of the internationalised South African investment group and; (b) the UK branch of the internationalised South African company (offering consultancy services as an employee and independently when he established the firm), he was privy to and able to capitalise on the developments which led to the technology partnership between Firm 29SC and the e-procurement arm of the UK subsidiary of the South African Investment group in the firm's 3rd year of operation. Within this partnership, Firm 29SC is responsible for providing the development and support services for the e-procurement arm of the UK subsidiary; and developing replacement technology which will enable the e-procurement arm of the subsidiary to migrate from technology which was originally developed by the American e- commerce firm.

> Now this was all during the same time whilst I was doing consulting for the client in the UK, so that time I had already started to establish my own company trying to move into the IT supply chain space. So what happened then is, when the company closed down [South African Branch of Company] which I used to work for, they had an agreement with the UK client in terms of the software.[…] The agreement said that if they would ever close the company down, the client in the UK will pay for ownership of the source code. But it's like you or me having an agreement with Microsoft to say if Microsoft closes down they are going to give us the source code for office, what are we going to do with it? We just want to work on word or work on excel we don't care about the source code. So that was the view of the client. They

> inherited all the source code but they couldn't do anything with it and because at that time they were in the UK and I was based in SA, I obviously worked with all these people and I took the resources over when the company closed down, and at that time I had negotiated the new support deal with [the] UK [client], and that's how all [these] things started. This is such a long story. [Firm 29SC]

quality	6
consistency	8
substantiveness	9

During the period in which Firm 29SC has been providing e-procurement development and maintenance services, the UK e-procurement arm of the internationalised South African investment group has been acquired by a global provider of software supply chain solutions which has in turn been acquired by a global supply chain network provider. The CEO explains the sheer size and reach of their dominant international client.

> Just to give you an idea of the scope of this procurement system. The company is called [Name of Company]; [Name of Company] is one of the biggest procurement houses in the world. They, the client in the UK alone, I am referring to the system we maintain, it consists of 45 servers the size of this door that's physically the hardware. There is about £750 million going through this system per annum that's about 10 000 transactions per day, so it's a huge system. I am not talking about a little bit of procurement, it's really big, the entire [Food chain 1] Europe, [Food chain 2], [Food chain 3], [Food chain 4], [Hotel group1], [Hotel group 2], the [an international government department], all order their physical hospitality related items through our system every single day. So the scale is very big, so that's what I am saying and we physically [are] not only technology experienced but we've deployed these things, you know the whole project. [...]So that's why I would say we also understand the business environment. [Firm 29SC]

quality	7
consistency	8
substantiveness	9

Following an almost similar pattern to Firm 29SC, Firm 22SC acquired the division responsible for providing the implementation and consultancy services of its major international software vendor (supplier/partner), within a group of African countries, from an internationalised South African information technology provider. This led to the set up of an

exclusive agreement between the international software provider and Firm 22SC, in which Firm 22SC operates as the international software vendor (operates using the international software vendor's brand name) within the Sub-Saharan African market. The CEO explains how the firm entered this agreement and the nature of this exclusive agreement as follows.

> One mechanism that was there was, another company here in South Africa called [Name of company] and they were already doing some business in Africa, but the people that did, the engineers that worked for them they didn't want to fly into Africa anymore. So we bought their customers from [them], two or three customers. That is how [the] business started to expand around those customers and just grew through that.
>
> We did not buy [Name of internationalised South African technology provider] we just bought the [International software vendor] Division and in 2007 that is when all these things started. We only bought the business because the staff who were working for them did not want to fly up into Africa anymore. They said they can't deal with it (Laughs). [Firm 22SC]

quality	4
consistency	7
substantiveness	8

> I think in the African market because we have been there, we are operating mostly as [International software vendor] and we have an exclusive agreement with [International software vendor] to do the consulting services to partners. We are unique because there is no one else with the skills. We are currently developing the skills in [country 1], [Country 2], etc. We will always be the company to do the, actually do the implementations, just because of the uniqueness and the methodologies that we apply we manage those projects and as we manage those projects, we get people from local companies abroad so that they can start to develop those skills as well. [Firm 22SC]

quality	4
consistency	7
substantiveness	8

This pattern of attempting to leverage the distribution channels of international clients is repeated in Firm 31B, a technology led biotechnology firm. According to the CEO, due to the firm's youth, lack of brand identity, and resources to develop its own international distribution channels, the firm's objective is to internationalise through partnerships and

collaborations formed with large multinational firms with existing international sales force and distribution channels. As the preferred partner of a global Clinical Research Organisation (CRO), for the provision of specialised analytical services, the CEO explains how, through this partnership, the firm is able to gain access to a broader range of clinical trial samples, whilst the CRO is able to extend its services by marketing Firm 31B's analytical services as part of their service range to their international clients.

> So we have a global partnership with one of the world's largest CROs whereby the kind of services which we offer they offer but basically they offer our services via their sales force to their clients, we are their preferred partner for those things. Point being, if a client of theirs wants the services we offer the [name of analysis] analysis they have to … on that and they have to use us if the quote is accepted. And the flip side for them is that they are able to offer the services that we have to offer to their client and we give them preference. So if one of their competitors came to us with the same study and said we are trying to organise a trial for this, can you guys do the analysis, we would preferentially offer our service to our partner if you like. So they in a sense have an in-house laboratory that can do stuff that's quite unusual and that helps their competitive position in winning the trial, the rest of the trial for themselves, and we get a global distribution for that from our partnership with them. So we don't have to do any marketing they do it all for us, so that's quite a neat partnership. [Firm 31B]

Quality	3
consistency	8
substantiveness	8

In response to how this partnership was developed the CEO provided the following response (probe has been included in bold)

> **How did you develop this partnership?**
>
> It emerged from a couple of trials that we did, where again we built a relationship with this company, we did some work for them which we have come about just by them probably googling… and we use Google advertising a lot, so they would have come across us, so they would have heard about us from a conference that we spoke at, or something like that; can't remember exactly how it came about. And then it evolved from there and then we said look we can provide this service to you on a preferred basis if you want to and they said great this is a really hot topic, an area that our clients

> are asking about we really need to be able to offer and so it made sense for us and for them to form a formal partnership arrangement. [Firm 31B]

quality	3
consistency	8
substantiveness	6

The following response from the CEO when probed on where the CRO was headquartered provides an insight into additional factors which could explain why it has been possible for Firm 31B to enter into a formal agreement as the preferred partner for a global CRO.

> In [name of City], and they have a reason to bring [their] operation into SA which is helpful because it means they are not afraid of South Africa. There is no notion of, there is no prejudice or anything about South Africa; they are a big operation here because they do a lot of trials here, so therefore the idea that there is a laboratory here that can do this kind of sophisticated analysis is not that hard for them to grasp. They understand the country well enough to realise that it is conceivable that there is a lab here that can do stuff that's actually better than what they can do in the [name of country]. [Firm 31B]

quality	3
consistency	8
substantiveness	6

Having recently completed the development of their novel bioreactor range, Firm 31B's CEO explains the steps which the firm is taking in order to license their reactor technology to a global reactor manufacturer.

> We first went there about a year and a half ago having, we identified this company as being the partner that we liked to work with and we managed to work our way into an interview with the head of R & D. It was just a process of not giving up until you get the meeting basically. So we went to the meeting we took some equipment with us which is a big deal, it's actually quite expensive to bring it with us, and we gave a presentation about our equipment, and we said look guys we would actually like to set up a project where we can show you actually how it works, so at that meeting they saw enough to be interested to continue with the project. And then we set up the project which [we] completed in August which was located in [Name of city in international country]. So we sent two of our staff to work over there to work for a few months with the partners and the people and then at the end of that they wrote up a

> scientific paper which evaluated the results of the project. It was very objective. [Firm 31B]

quality	7
consistency	8
substantiveness	8

The establishment of the project alluded to in Firm 31B's CEO's response is confirmed by secondary documentary evidence: a poster provided online by the university where the research was carried out, summarising the project results.

Firm 31B's CEO consistently emphasises the need for the firm to enter into partnerships with Global MNEs.

> What is interesting from the point of view of our work here is that we're a small technology company, we knew from the start that it was practically impossible for us to build; a global distribution, a global brand name, and a global sales force, and all that to get this technology into the global pharmaceutical market, it would take us 20 years to do that and it would be very risky and very expensive. So right from the start we knew that we had to partner with somebody, and we had to focus on what we do well which is the research, and let someone else take care of the rest of the marketing and the distribution and the branding. [...] I mean from our point of view it's just completely impossible to develop this thing to market ourselves, I mean, and we would not want to do that. So partnership and finding the right kind of partner and building a good relationship with them and being patient and just working through it over the years is critical to the success of high tech companies like ours. Particularly ones coming from a country like SA where we don't have any reputation or any brand name or anything else we need to leverage the brand name and reputation of established companies. [Firm 31B]

quality	5
consistency	8
substantiveness	8

The inability to form the relationships which would enable Firm 18S to access an international client base might, in part, explains why, despite the ease with which their product can be deployed and remotely maintained, Firm 18S is struggling to gain access to an

international client base. Firm 18S' co-founder is currently based in the UK where he is attempting to market the firm's legal services application to his previous employers, a UK based legal firm. The CEO is based in South Africa, his frustration with the firm's internationalisation activities is expressed in the following responses.

> We would enter those markets if somebody, you know if somebody found us on Google and said I [would] like the use of this software, I would like to use it on this project. We would render the service tomorrow. We have servers in the US, we already have a website that offers ourselves as a product supplier in the United States, because we are a web based company we can do that. It's just that we don't have relationships with potential clients in the US. Yet, so if somebody found us passively, which is quite remote, but it's possible. If somebody found us passively through our search engine, stumbled across our website [...]. We've got some online demonstrations you can do an online demonstration and see what it does, you can check it out and then email us using the American telephone number there and we will render a service to you no problem. It's just unlikely that it's going to happen passively; it's much more going to require relationship marketing, and that is something which unfortunately, because we are a small company, we can't employ anyone to do that over there. We don't have the financial [resources] unless we got into debt to employ someone to do that. [Firm 18S]

quality	7
consistency	7
substantiveness	8

Upon reflection, the CEO summed up the firm's internationalisation activities or lack thereof in the following response.

> It's been good for me to try and think through things; I mean you pose questions which are … uncomfortable for me to answer because you are pointing to issues that I am not addressing properly in terms of international marketing, in that sitting here talking with you, is that it keeps reminding me that although our ambition and our goal and our focus has always been international, what are we practically doing internationally; that there is a gap between the ambition and focus and the practical interventions that we are making and that gap needs to be bridged quite radically. So it is good for me to be reminded of these things and sit here and shift uncomfortably in my chair as I think about them, because you can fail to acknowledge the truths of where your shortcomings are. [Firm 18S]

quality	6
consistency	8
substantiveness	7

5.2.2 Theme 2: The Ease of Deployment of the Firms' Outputs

Whilst the ease of deployment of the firm's outputs does not appear to be the primary factor driving the rapid internationalisation of the sample case firms, it does however play a key role in enabling resource limited firms to leverage their meagre resource base for their internationalisation activities. Table 14 illustrates in bold the firms within the sample which are able to deploy and maintain their software remotely. The findings show that, where the ERISF has access to the subsidiary and foreign market distribution channels of its customers, the remote deployment and maintenance of the ERISFs software enables the firm to optimise on the 'mobility of knowledge'. The firm achieves this optimisation by; deploying its software simultaneously, within a range of foreign markets, in a shorter time frame, using less human resources than would be the case if the ERISF had had to deploy its software onsite. This is illustrated by firms 5SC, 12S, 15S and 28S in Table 14, which are shown in bold with an asterisk.

Table 14:

Knowledge Mobility as a Resource Lever

Sector	Sample Cases	ERISF	EI	LRISF	DM
Biotechnology firms with a proprietary patented technology.	2B, 3B, 8B, 10B, 20B, 31B	2B, 8B, **10B**, 20B, 31B	3B		
Biotechnology firms	11B, 17B, 19B, 23B	11B, 17B	19B 23B		
Software firms with have developed generic software product (s).	6S, 9S, 12S, 13S, 14S, 15S, 16S, 18S, 24S, 25S, 26S, 28S, 30S, 33S, 34S, 35S	**12S*,** 14S**, 15S*,** 24S, **28S*,** 33S	13S **35S**		**6S**, 9S 16S, **18S, 25S,** 26S, **30S**, 34S
Software consultancy firms (provide services and bespoke software development).	1SC, 4SC, 5SC, 7SC, 21SC, 22SC, 27SC, 29SC, 32SC	**5SC*** 22SC, 29SC		**32SC**	1SC, 7SC 4SC, 21SC 27SC

Firm 15S' financial director attempts to clarify the implications of developing web based software applications with what the founder refers to as 'a low footprint'.

> So from an internationalisation of our business that is actually a critical strategy, because if you are a software vendor or a software developer or an IT firm that requires people on site, I mean you can just imagine, I mean you roll your business out to [Continent A], now I've got to send an army of people over there, I've got to try and manage them remotely, it can't work. I mean, there you need to be the slow growing guy that then has a massive operation in South Africa then you may buy a company in [Continent A]; now you've got a footprint there; now you start expanding there; it's a very slow methodical process, you know we see companies doing it. There is no sort of leapfrogging in that scenario cause you really need to have people, kind of on site, whereas the kind of software that we do, we are able to support it from here, so we do, we support at the moment [Customer Relationship Management, System] is running in about 20 countries around the world [Continent A, Continent B, Continent C] and we support all of it from here, 24 hours. And we don't have to have people on site ever, okay. We may have people that go over to interface with [Multinational Enterprise], go over to the [country A], have user workshops, kind of to gather requirements and to engage with the client. I mean that's quite important, the face time is important, but we don't have to have people on site in the markets kind of helping the users to click here, to click there, etc. It is very much remotely supported. [Firm 15S2]

quality	8
consistency	9
substantiveness	10

The resource intensity of the onsite international deployment of the firm's software application, particularly when that firm is undergoing rapid internationalisation is highlighted by Firm 14S' CEO. Here, the CEO explains why the next stage in the development of their software application will involve attempts to find ways of making it easier to deploy their software application.

> The problem that we are trying to solve is the following: this year we deployed the product 15 times, so it's about once a month and it takes effort (emphasis here) and it takes time to deploy it; a lot of people have to work on it to make sure that we have it implemented. Next year we want to do 25 deployments it's [going to] become more difficult; it's going to take more people to deploy and so forth... so we [can't] go that route. At one stage if we deploy it a 100 times it means we are going to have, to have

> so many more people, to put so much more effort to deploy it; we've got to change the product so that it's much easier to deploy, other people can deploy it and not just us, and for that we've got to change the product and that's just basically what we are trying to do. [Firm 14S]

quality	7
consistency	8
substantiveness	8

Thus the findings indicate that the ability to remotely deploy and or remotely maintain the firm's software application minimises the resources required to deploy, maintain, and manage the firm's software application. Where proposition 1 comes in is in enabling severely resource limited South African software firms to leverage the firm's available resources for their internationalisation activities; and or remotely maintain their software applications thus, making it possible for the firm to maximise on the distribution network and access to client bases provided by their client's international distribution network and international client base.

5.2.3 Summary

The findings bring to the fore the role of organisational relationships and networks in accelerating the internationalisation of ERISFs (Coviello & Munro, 1995, 1997). Critical to the acceleration of the ERISF's internationalisation, particularly in the case of software firms and some proprietary biotechnology technology ERISFs, is the importance of gaining access to the networks and distribution channels of multinational enterprises and influential foreign market clients. As evidenced by the responses from firms 14S, 15S, 24S, 28S, 22SC, 29SC and 31B in particular, the firms are seeking to gain access to the networks, distribution channels, and sales channels of foreign market clients. In most of these cases the firms are actively seeking or have entered into formal and informal co-operative (service provision,

licensing, sales and distribution, technology development) agreements with the major players within their respective global industries or foreign markets. In the case of firms 5SC, 15S, 24S, and 29SC the formation of organisational relationships with dominant partners marks the onset of the firm's internationalisation activities.

The findings in turn, bring out the importance of prior interpersonal relationships in providing a bridge to the formal relationships which the firms are seeking to establish with the dominant clients. The potential role of knowledge based personal ties in providing access to the main decision makers within MNEs also emerges from the findings [e.g. Firm 14S]. Serendipitous events pertaining to the merger and acquisition patterns of MNEs in turn, provide a bridge for developing relationships with MNEs which the firms did not have prior access to, as evidenced in some of the sample firm cases [e.g., Firm 14S, Firm 29SC].

Where the firm has access to the subsidiary and foreign market distribution channels of its business/industrial customers, the remote deployment and maintenance of the ERISFs software enables the firm to optimise on the 'mobility of knowledge' by deploying its software simultaneously within a range of foreign markets, in a shorter time frame, using less human resources than would be the case if the ERISF had had to deploy its software onsite. Thus, this research shows that the knowledge intensity of the ERISF's resources, as formulated in Proposition 1, does not have a direct influence on the speed of ERISF internationalisation. It is only when combined with the ERISF's ability to gain access to the subsidiary distribution channels of MNEs and local distribution channels of large foreign based clients, that knowledge intensity, as conceptualised in proposition 1, accelerates the speed of internationalisation of the ERISF. Based on the research findings, two new

propositions which account for the direct and combined effects of the ERISFs industrial/business network relationships; and the combination of the ERISFs industrial/business networks and knowledge intensity respectively on the speed of internationalisation are proposed.

Proposition 1.1 states that

It is the ability to access the distribution networks and client bases of; dominant foreign firms, local, and or foreign multinational firms, which accelerates the speed of internationalisation of ERISFs and results in some ERISFs starting their internationalisation activities early.

Proposition 1.2 states that

It is the ability to convert the firm's knowledge intensive intangible resources into outputs which can be distributed and maintained remotely, at a relatively low cost, and with greater ease and flexibility, using modern distribution channels, which enables the ERISF to optimise on the distribution channels availed by their network partners, thus accelerating the speed of internationalisation of the ERISF.

5.3 Prior Individual Level Experience: Propositions 4 & 6

Two propositions, in which the influence of prior experience on ERISF internationalisation is central, were developed from the literature. Thus, Proposition 4 suggests a direct relationship between prior experience and ERISF internationalisation. Proposition 6 proposed an indirect relationship in which prior experience influenced ERISF internationalisation through the

'discovery' of international entrepreneurial opportunities. Propositions 4 and 6 respectively stated that:

Proposition 4

The internationalisation behaviour of the ERISF will be influenced by the scope and depth of the individual level prior experience of the founders. ERISFs with a wider scope and greater depth of individual level experience will internationalise early and internationalisation will occur at a faster pace.

Proposition 6

The discovery of international entrepreneurial opportunities will depend on the prior international market knowledge and prior superior technical knowledge of the founders.

The findings show that prior individual level internationalisation experiences are not only confined to those experiences in which the founder/founding team has been physically based within an international market, but are also applicable to those prior individual level experiences gained from working within local subsidiaries of foreign multinationals, or South African multinationals headquartered in the domestic market.

Tables 15 and 16 illustrate the types of transferable pre-firm establishment experiences (respective firms are in bold) centred around the founder's/founding team's superior technical knowledge and international market knowledge of specific market segments. A more detailed breakdown of the sources of these experiences is provided in Table 22 in Appendix C. The secondary data supporting the evidence provided within the interviews has been drawn from the founder's CVs, online sources, and business plans provided by the firms. The findings

show that it is not necessarily the scope of the founder's experience as indicated by the number of countries and diverse cultures that is important; but the depth of specialist technical experience, and sector specific international market experience gained within certain key markets or through providing services for global key players. The 'depth' of knowledge is evidenced by the level of the prior organisational positions which the founders have held (within both international and locally based internationalised firms), the founder's educational background, and the cumulative time spent working within specific technical sectors. The research shows that the extent of overlap between pre-firm individual level experiences and the international entrepreneurial opportunity/opportunities which the ERISF develops, determines the transferability of individual level pre-firm experiences, and the types of transferable pre-firm individual level experiences. Themes 3, 4, and 5 support these findings and feed into the development of a modified proposition for prior experience.

Table 15

Prior Superior Individual Level Technical Knowledge

	Sample Firms			
Sector	**ERISF**	**E**	**LRISF**	**DM**
Biotechnology firms with a proprietary patented technology	**2B*, 8B*, 10B**, 20B*, 31B*, 11B***	**3B***		
Biotechnology firms	17B	19B 23B		
Software firms with have developed generic software product (s).	**12S*,14S**, 15S*, 24S*,** 28S, **33S***	13S 35S		6S, **9S** 16S,** 18S, 25S, 26S, 30S*, 34S
Software consultancy firms (provide services and bespoke software development)	5SC **22SC** 29SC		32SC	1SC, 7SC 4SC, 21SC 27SC

***** Firms with a patented technology

**Firms which have been awarded innovation grants, and or have set up exclusive licensing agreements with international firms.

Table 16

Prior Individual Level International Market Knowledge

	Sample Firms			
Sector	**ERISF**	**EI**	**LRISF**	**DM**
Biotechnology firms which have developed a proprietary patented technology	2B* , 8B*, **10B**, 20B***, 31B* 11B*	3B*		
Biotechnology firms	17B	19B 23B		
Software firms with have developed generic software product (s).	**12S***, 14S*, 15S**, 24S*, **28S**, **33S***	13S 35S		6S, 9S**, 16S, 18S, 25S, 26S, 30S*, 34S
Software consultancy firms (provide services and bespoke software development)	5SC 22SC **29SC**		32SC	1SC,7SC,4SC, **21SC** 27SC

* Firms with a patented technology
**Firms which have been awarded innovation grants, and or have set up exclusive licensing agreements with international firms.

5.3.1 Theme 3: Combined Specialist Technical and Sector Specific International Market Knowledge

Firm 20B's Chief Scientific Officer (CSO), a BSc holder in microbiology, has co-founded his second firm (Firm 20B) in the same area of life sciences, Genomics, where he worked as a technology developer for a United States University, before co-founding his first international bioscience firm in the United States. This firm was subsequently acquired by two US listed bioscience firms. Secondary evidence supporting the depth of the CSO's expertise is provided on Firm 20B's website. The extent of overlap between the CSO's international market experience, the international entrepreneurial opportunity which led to the formation of Firm 20B, and the depth of the interviewee's prior technical experience is brought out in the following response.

> [Firm 20B] is in the same general area as the previous business, which I will classify as life science development - developing tools that are used in research – research tools. So I can say having been involved in [a] start up business before, we have learnt a lot of lessons about trying to start and grow a business in this industry. We are also obviously hopefully able to apply the lessons we have learnt in this situation. For instance, with regards to sales, obviously from a very early point we have been building international and regional sales, distribution capabilities. The types of products we sell are very roughly distributed as follows: 40 to 50% [of] our market is [Continent A], then very roughly 20 to 25% [Continent B], 20 to 25% [Continent C] and the difference is the rest of the world. So we have obviously wanted early on to have some reach in [Continent A], where we have a small office in the [Country A] where we sell direct, and then in [Continent B] and [Continent C] where we sell direct, and in [Continent C] we have a network of about 20 distributors who sell our products. [Firm 20B]

quality	6
consistency	8
substantiveness	8

> In my previous business again we were in [Continent A], that's the biggest market. Again, I guess we were much more inward looking in our sales strategy; we didn't go international till we were in the market for several years. The realisation was that it really takes a lot of time to build a presence in any market and it was critical for us in [Firm 20B] to get started early on building that presence. So we were much quicker into thinking about worldwide markets in this setting than in the previous business. Again it was just the experience of having been through it once and trying to be more strategic second time round. [Firm 20B]

quality	6
consistency	8
substantiveness	7

In addition, Firm 20B has relied on some of the prior contacts which the founder had established relationships with.

> Yah we have used the same legal firm, we sell to some of the same customers, we use some of the same distributors so … in the [Country A] office our VP of sales is VP of sales from [the] previous business. [Firm 20B]

quality	5
consistency	8
substantiveness	5

Within Firm 10B the CEO, a holder of a biomedical degree, has worked in the United States

for small to medium biotechnology and bioinformatics firms and provided consultancy services to firms in this industry. The CEO worked for six years within a bioinformatics firm, where she worked her way up from an entry level product manager position to the director of sales and marketing. As part of her responsibilities the founder managed the firm's international distributors. Secondary evidence supporting the depth of the founders and co founders experience is provided on Firm 10B's website and the co founders CV. Here the founder describes how this experience has fed into the internationalisation of Firm 10B. The firm initially licensed and marketed a DNA sequencing software product which came out of the co-founder's (a computational biologist and a professor of genomics) bioinformatics research work at a local South African university.

> In [Country A] we have distributors and I have a long history of managing [Country A] distributors from my work at [US Bioinformatics Company]. So I had good relationships there from people that I trust and we had [referring to current business] a fairly large customer base in [Country A] proportionally. [Firm 10B]

quality	5
consistency	6
substantiveness	5

The founder, in turn, refers to the networks, which she and her co founder have developed from their prior experience as follows.

> I think what's very natural for us in terms of international SMEs, because we already have that network set up abroad and we are both people, my husband was the other founder of the business, so I keep referring to the two of us as 'we', that can access a customer's need quite readily and quite clearly, and we can create, innovate. I don't know what you want to call it, dream up products that can fit that need because we have the technical skills and the marketing skills and so forth. So we have this nice combination between the two of us, all those aspects plus a comfort level with the amount of risk you have to take. [Firm 10B]

quality	5
consistency	8
substantiveness	7

In addition, having had first hand prior experience of working in a bioinformatics firm, which was subsequently acquired by a larger firm, which in turn had recently also been acquired, the founder viewed the bioinformatics industry as being one in which the 'small fish are swallowed by the big fish'. Thus, having had prior exposure to the growth strategies of international bioinformatics firms, the founders had been preparing the firm for acquisition by deliberately targeting specific international distributors.

5.3.2 Theme 4: Specialist Technical Knowledge

For seven years, Firm 8B's CEO together with his co founder provided design and computer modelling services to a United Kingdom and North American based orthopaedic and cardiovascular manufacture respectively. The provision of these services started during the founders' postgraduate studies in biomedical engineering at a local South African university, and continued once they had completed their degrees, prior to the establishment of Firm 8B. Firm 8B has been set up to design and manufacture coronary heart stents, an area which given their prior experience, the CEO felt they had the necessary technical knowledge and technical design skills to develop a technologically advanced version of the stents that were on offer at that time. The importance of the firm's specialist technological knowledge in enabling Firm 8B to keep abreast with the technological demands of this industry is brought out in the following comment from the CEO.

> The industry is driven by several factors; this is a very commercial industry; there is a lot of money in [it] so it's not [just] the clinical need [which] generally drives it and one has to assume that the need of the patient drives the development rate. But there is also, to some extent, a drive by industry, industry drives the treatment where it wants it to go. Now; now a drug coated implant whilst it's much more complicated is also much more lucrative, so to some extent as a small company you are also forced to take

> a line of where the industry is moving. You know you are addressing clinical issues and that, but it's a bit like the car industry, you don't necessarily need fancier headlights or whatever. Well the minute BMW has one, Mercedes feels it also has to come up with it. So there is a little bit of that and I think eventually it will be biodegradable stents, where after two years the stent will disappear, not that it necessarily has an advantage for the patient, but industry will drive it in that direction, and so we as a small company that wants to keep up, […] are often forced to go in that direction. [Firm 8B]

quality	7
consistency	8
substantiveness	9

It is how Firm 8B has managed to keep abreast with these technological developments by entering short term research and development collaborations with international firms prior to carrying out those activities in house, which highlights the significance of the firm's technical skills and knowledge base in implant design. The CEO explains how the firm has briefly entered these research and development collaborations as follows:

> We have worked with various companies; we have worked with a company in [Country A], for example [Name of company 1], we never went ahead with it, but they were interested in some technology that was useful for coating the stent. We looked at this special coating that was supposed to have some advantages, we in fact never went ahead with it because we didn't see any clear advantages, it was a surface coating on the stent […] .Then we had work with a company called [name of company 2] again, also a collaboration in which they had expertise with the drug delivery. ...The drug is not just put on a stent, it's put in a special polymer that helps it deliver from the implant, and ... they had polymer expertise. We worked with them for about a year before we realised that their expertise wasn't that great; now we develop that in house ourselves. [Firm 8B]

quality	5
consistency	9
substantiveness	7

The early termination of these collaborations highlight the speed with which Firm 8B is able to grasp new technological developments in their field, which in turn, can be attributed to the specialist technical skills set and technological knowledge base in implant design, which the

founders have built from their prior experiences. Whilst the CEO acknowledges that they had developed the specialist technical expertise around implant design, what the founders lacked from their prior experience was the necessary commercialisation experience. This is brought out in the following comments where the CEO points out that, in hindsight, he would have benefited from working within an international implant company prior to setting up Firm 8B.

> When we started out [Firm 8B] we were actually extremely inexperienced, and if I look back I would say probably the lesson learned is go and get some proper company experience before starting your own business because so many of the things that we learned the hard way in a company might have been better learned in somebody else's company rather than your own. So I would say the important lessons learned if I could do it again, I would have had some nice experience. At that point I had technical experience and very little commercial experience. What I should have done is gone off to the US or somewhere else, worked for an implant company for a couple years just to see how they do things rather than try and start up one straight away. I was too enthusiastic to say hey ... so many of the things that we have to learn … could have been better learned in that period…The benefit we got was a lot of technical experience, a lot of understanding of how implants work, and how the design should be, but the reality of starting a company is that this is only a small percentage of what you really need. ... I think that is the failing of South Africans; we are not willing to say let me go somewhere, not Capetown, not Joburg, not Zim, let's go to the lion's den, let's go to California or wherever the guys that really know what they are doing go; spend two years there then come back here and take that experience, but South Africans tend to be a bit unadventurous, they just go to London. [Firm 8B]

quality	4
consistency	8
substantiveness	9

What is interesting here is the founder's reference to commercialisation experience gained within **specific** foreign markets. That is those foreign markets, which the founder considers to be the global leaders in his area of expertise, the ones he refers to as the 'lion's den'. This, once again impresses on the point that it is not necessarily the scope of founder's internationalisation experience which is important, but focused, concentrated experience gained within specific, relevant international market segments, and contexts.

With a PhD in biotechnology focused specifically on the synergistic effects of bone morphogenetic proteins, Firm 2B's CEO and founder developed the technology for the high efficiency extraction of bone morphogenetic proteins, and the respective technological platforms, in collaboration with a local university and bone beneficiation company, prior to the establishment of Firm 2B. Secondary evidence supporting the depth of the founder's experience and pre-firm development activities was provided in the founder's CV. The founder subsequently conceded the patented technologies to Firm 2B upon the establishment of the firm. Below, the company executive (CE) for business development explains how the success of their initial attempts at gaining access to large international human tissue bank firms to license their high yield growth factor purification technology, has hinged on the firm's ability to continuously prove their technical abilities.

> I remember clearly the one meeting, when we walked into a NASDAQ listed company, about second or third largest. The VP was there; he was good enough to be there and two other guys sat down. Started discussing, this is our technology; demonstration; whatever nananana; these are our pre-clinical results; showing the rats, we grow bone under the skin; dadadada; and then these are the results of our human study. *What do you mean human study? They asked*. We've done a human study with a license in [South Africa] on 34 patients.- *Hold on for a moment, hold on, let's break for lunch, they said*. [One] hour later we came back from lunch, 30 people were in the room (laughs), all their scientists, all their PhDs, regulatory personnel, that was the difference; that's why you have to open the door and get your foot in and then eventually we picked the largest tissue bank to work with. [Firm 2B2]

quality	8
consistency	9
substantiveness	9

The need to demonstrate their technical abilities is further brought to the fore by the CE for business development.

> We are a South African company, out of Africa. We sometimes try and position ourselves as you know, very positively and usually there is a precursor to suggesting

> that you are confident and sometimes we have to be humble; we have to accept crap that a normal company would not accept. C*an we come up over to see your facility so we can kick the tyres to see that there is an actual desk and a plant,* that's what it's like. They want to physically fly here on a plane, spend US20 000 dollars to get here or whatever it is, to look at the plant and say okay, these guys do have a plant and then fly back to the states.
>
> They said well they'd fly out here and that was it, that's how we broke the door down eventually. They saw it; they said *oh [expletive removed] okay, these guys can do what they say, crikey they are getting the yields of [Growth factors]; we thought this was impossible; it's never been published before. It's not okay, but ah hold on, hold on, how do we know the process didn't damage the[Growth factors] in the process of extracting it, if it wasn't damaged so we can see the [Growth factors] there; we can analyse it, how do we know it's [going to] still work, maybe it was damaged during the process.* So we did animal studies, so they paid; put it into rats and that compared our best product against their best product … they [said] okay their best product works; ours is **four times** better than the best technology that they have in terms of our results. [Firm 2B2]

quality	8
consistency	9
substantiveness	10

The CE for business development does not have the specific technical and international market knowledge focused on the development of high growth factors and tissue regeneration technologies. What he has is an engineering background which enables him to disseminate the firm's offering; and business experience, having set up a firm providing consulting and advisory services for South African high technology businesses. In a sense, the CE for business development operates as the firm's venture capitalist partner, and has been engaged in proactively sourcing funding for Firm 2B, and searching for international commercialisation and collaboration opportunities. Secondary evidence is provided within the CE for business development's CV.

Firm 31B's CEO gained his international experience from his prior work: as a chartered accountant, a strategic consultant, and subsequently partner, within the international and local offices of two of the big four global consultancy firms. Having gained his international

experience in the financial services sector, the magnitude of overlap between the depth of the CEO's prior experience and the sector in which Firm 31B has been established is minimal. Subsequently, the transferability of the CEO's international experience in the form of useful prior contacts is also minimal. This is acknowledged by the CEO in his response, where he highlights the limited transferability of his prior internationalisation experience, specifically with regards to his prior contacts as follows:

> Well mm ya it's limited, but not, it's limited for the simple reason that I spent most of my professional [career in financial] services and then I started a biotech company, and there is not a whole lot of overlap between the two sectors. So in other words if I had started a financial services company, I would have had lots of contacts to link into. Particularly through [name of Ivey league Business School] and through [Global Consultancy Firm] both of which [have] well established, well managed alumni networks, which I still use. But the difference is that I am using them and those networks with people that I don't know at all sometimes or very well. In other words I might phone up someone who used to work at [Global Consultancy Firm] and now works at a pharma company [and say], *hey, listen I used to work at [Global Consultancy Firm], too can we chat about something,* and usually they would say, *sure, let's talk lets chat whatever.* But it's not probably somebody I used to know, whereas if it was in financial services, it would almost certainly be somebody that I used to know, which would make it different. [Firm 31B]

quality	4
consistency	7
substantiveness	8

What the CEO has developed from the depth of his prior international experience is as he explains, a global mindset, and as such is undaunted by the prospect of internationalising.

> I can imagine if you were a South African who grew up here and you spent your formative years under sanctions ... and it's not so easy to travel, and they're exchange controls, and all that stuff, you have a much more parochial sense of the world. And a lot of South Africans, you know, for the past thing, going to Europe is a big deal. They only do it once every ten years or something and there is a big hoo ha. You know, for me it's just not, it's just not a big deal at all. So I think, you know, when we started this company that mindset is relevant in the sense that we are not afraid of being a global company at all. And this may be relevant [because] I mean, I'm not sure, I mean my experience is obviously quite unusual and quite atypical of let's say an

> entrepreneur from Africa. Most entrepreneurs from Africa don't have the background, that sort of fluency, if you like, with global travel that I had and perhaps they are further a bit more daunted by the concept [Firm 31B]

quality	4
consistency	8
substantiveness	7

As evidenced through the secondary data evidence provided on Firm 31B's website and online searches, the specialist biotechnological expertise is provided by the co-founders, one of whom is a renowned South African scientist with a PhD in immunology. The firm's proprietary novel bioreactor technology that underpins the firm's technological developments, which the firm is now attempting to license to an international bioreactor manufacturer, has emerged from the PhD research of one of the firm's co-founders. The extent to which Firm 31B's specialist knowledge has been critical for the firm's internationalisation activities is highlighted by the CEO.

> I must say one of the things that amazes me is how often we end up in some discussions with some sort of international company, multinational company of some sort. We find out that they don't know near as much as we thought they would know, and we know a lot more about this topic than they do, and we can help them enormously, and in that sense I think initially we started off, the first few times we realised this. We actually know a lot about this topic and they don't know it, and now we just assume that we know it and they don't know it, which is interesting. [Firm 31B]

quality	4
consistency	8
substantiveness	7

Firm 14S' CEO and founder started his professional career working as a physicist in South Africa prior to setting up an IT firm developing CASE methodological tools (based in South Africa). This IT firm was subsequently acquired by a multinational computer technology and IT consultancy firm. The last six years of the founder's professional career were spent

working within a financial services environment as the chief scientific officer of an internationalised South African financial services group, where he was responsible for the group's technological deployments. Secondary evidence supporting the information provided by the founder on his pre-firm experiences has been drawn from the founder's LinkedIn (a business oriented social networking site) profile. The founder intentionally set out to identify an entrepreneurial opportunity, which would enable him to utilise his financial services background, hence the idea to provide financial services on mobile phones. The founder explains the importance of his prior experience, firstly in understanding how organisations operate. (The importance of the founder's response must be viewed in light of Firm 14S' customer base which consists of large corporate clients: banking institutions, local and international network service providers, international smart card, and other mobile device manufacturers.)

> I think one of the things which we have been relatively good at is to understand that we are part of an ecosystem. There are many players in this ecosystem and you've got to understand that, you've got to define your role in this ecosystem so as to grow. Cause remember that anything that grows has to either replace something or else it becomes threatening of something else, and if you don't recognise that then you don't know who your enemies are or who is going to stop you and so forth. Also you don't know who your friends are, cause you don't think of it as an ecosystem perspective, then you can't go to the right people to help you, the right organisations, right companies and so forth, so that's how it helped me. [Firm 14S]

quality	4
consistency	8
substantiveness	7

Secondly, the founder uses the following example to illustrate the bearing which his technical experience, particularly in developing a holistic understanding of the inter-linkages between different technological systems, has had on the development of the firms SIM based software application, which can be run on all types of mobile phones. This has necessitated the need

for the firm to collaborate with an international SIM card and smart card manufacturer for the deployment of a total solution.

> I think I have learned how technology works, the architecture of technology and how to put things together: what works, what doesn't work, what can go wrong, specifically.
>
> [Firm 14S] is first, what we sell is technology and the technology is designed so as to fit into the architecture that is available. So to give you an example, we write software that runs or interacts with mobile phones. […]. We had to figure out how to make sure that the software is available on most phones if the phone is different. So what we have done, we have developed software that actually sits on the SIM card. Every phone has got a SIM card, all the SIM cards work in the same way; [thus] recognising the architecture of the mobile phone, how it fits together. We recognised that by writing software that sits on the SIM card and not the phone, we could actually write software that's accessible to everybody (emphasis) with a mobile phone without having to change anything about the phone. Just a piece of software that sits on the SIM card - everybody has got access to it […]. Gives you a little bit of a feel of [the] kind of […]. If we didn't know that mobile technology consisted of mobile phones, the SIM cards, how they're interacting with each other, we wouldn't have been able to design a solution that sits on a SIM card and worked. [Firm 14S]

quality	8
consistency	9
substantiveness	10

Thirdly, the importance of Firm 14S' prior contacts is brought out in the following response from the CEO:

> I have built a global network of people in technology that I have used a lot, in many different ways; some of them are working for me at the moment because I knew of their prior skills from my previous work; some people are representing [us]; one of them became an investor. So my network that I built up during my career before [Firm 14S] was immeasurably important; the people that I knew and that I still know. [Firm 14S]

quality	5
consistency	8
substantiveness	6

With a background in Finance and IT, Firm 15S' founders met whilst working for the UK and US divisions of an international investment bank respectively. The financial director headed the UK team responsible for developing the IT specifications required by Firm 15S' managing director's US based team. Secondary information provided on the firm's website supports the information on the founder's pre-firm experiences. The founders have not been able to tap into their network of prior contacts as the managing director explains.

> No, when I was here, well, I mean the thing is, because once you're on the outside of an organisation it's really different to being on the inside. So you know, and that's one thing you know, obviously … I didn't come from a sales background; I didn't really understand the art of selling, you know what I mean. So I kind of thought that's okay, well [name of investment bank] know me. I've got a really good reputation, they know who I am, surely they'll want me to start doing work for them. It didn't work like that you know, [name of investment bank] weren't really necessarily interested in me being an outsource contractor to them. Once I had left, I had left. [Firm 15S1]

quality	4
consistency	5
substantiveness	7

What the founders have been able to transfer is their technical skills around the development, implementation, and roll out of ERP type applications. The CRM tool which Firm 15S has developed, rolled out, and implemented for its dominant customer, a global drinks and beverages manufacturer, is an ERP type application. The Financial director outlines his role whilst working for an international investment bank in the UK.

> So I headed up one of the teams that was actually specifically working in and around an application called Hyperion, which is what the banks use to do their consolidation processes. The application, Hyperion, was [...] used as the consolidation tool, and then in and around that there were a number of bolt on applications that were used by different user groups. It was my team; I sort of had a team of about six or seven people that were involved in kind of supporting, specking new requirements, and then interfacing with [the managing director's] team in the States. That was kind of, that was sort of the role we played. In my last two years at [name of investment bank], I actually moved away from that, and I was more involved in, they were implementing

> People Soft, the ERP system, and they were implementing People Soft financials into [Name of investment Bank] and given one of its functions or one of its roles was to replace some of the applications that we had built over time. So I was almost seconded to the bigger project team in implementing People Soft, specifically in and around the reporting, because that's really what we used to [do], our systems primarily revolved in and around financial reporting. [Firm 15S2]

quality	6
consistency	8
substantiveness	9

> I [was] interviewed at [name of investment bank] you know, actually one of the top five investment banks and I got a job with them. Well I got the contract for […] and then after about a year or two years [name of investment bank] offered me a permanent position, and so I became like a, an AVP, Assistant Vice President with them and I stayed on with them. […] So when I left there to come back home in 1999, I was, I was pretty much, I suppose I was, I was a project manager in the IS department, but what I had done with [name of investment bank], was we had done a lot of rolling out globally of our systems […] for [name of investment bank] offices all over the world. So I had a lot of experience in terms of..., I felt when I left [name of investment bank], in terms of how to do that, and I suppose I had the confidence also from doing work with them and liaising with people all over the world, you know in terms of getting systems up and running and supporting them, and I had a team of developers in [name of investment bank], about a team of ten guys or so. So that was the basis of what I took back to [South Africa] to start [Firm 15S]. [Firm 15S1]

quality	6
consistency	8
substantiveness	9

5.3.3 Theme 5: Sector Specific International Market Knowledge

With Firm 28S and 12S both founders have worked in senior positions. Firm 28S' founder was the vice president responsible for international business development for an internationalised South African online casino group. Firm 12S' founder was head of the consumer products division, and SMS division, of the South African and UK branches of a South African mobile services group respectively. Secondary evidence clarifying the positions held by the founders is provided within their CV's. Critical for Firm 28S has been the practical knowledge of online marketing; specifically with regards to the marketing

techniques which need to be employed within an online marketing environment in order to gain access to a wide customer base using limited financial resources. This is explained by the founder, where he firstly emphasises the importance of his prior online marketing experience, and secondly the emergence of the idea to set up casual gaming portals, which he introduced whilst working for the internationalised South African online group, as follows:

> I've always had an interest in IT. I studied COBOL programming, did a whole lot of other […] data and development diplomas and so forth, but moved into the casual gaming space. You can't go and learn about it anywhere. You've got to have an affinity for business, and obviously you've got to understand online marketing, which is learnt in the online casino industry, learnt in the home channel. So it's really 11 or 12 years of solid online experience in some of the best industries possible: real estate, gambling, and then gaming as such. [Firm 28S]

quality	8
consistency	8
substantiveness	7

> The big thing in the casino industry is you need to acquire players, and you need to acquire players cheaply, because otherwise your returns on investments aren't […], are non-existent. It was easy in the beginning because we had the likes of Google and Yahoo as vehicles to actually place advertising and draw users into the system. They shut us out with legislation that came about in the US, which immediately cut off about 60 to 70 percent of our new user acquisition mediums. I then went to them with a proposal to set up casual games portals, which is exactly what [Firm 28S] now does. And we set up a number of games portals, including one called [name of Game]. We set up a weekly million dollar lottery. We set up bingo sites. And really got, I think it was 250,000 registered users in the first three months, with a total marketing spend of $5000 which is absolutely nothing. So it was a medium that people were looking for, they were engaging in it, and more importantly they were staying in the system. We had retention rates of about 75 to 80 percent of users coming into the system and staying within the system. I then saw this as a business opportunity and offered to buy that division out of the company, which they declined because they wanted it for themselves. I then in March 2004 started what was then known as [the old name for Firm 28S], and basically started setting up casual games portals. [Firm 28S]

quality	7
consistency	8
substantiveness	10

Lastly, whilst acknowledging the usefulness of the prior contacts gained from his prior experience, it is his knowledge of online marketing which has resulted in the founder optimising his website's ranking on search engines for online gaming related searches, which he attributes to the receipt of the online solicited orders.

> If I had to rely on [Name of contact] I'd have closed my doors a while ago, because he doesn't bring in enough business to sustain a business. He's just basically an extra sales arm, almost a sales branch of our organisation. […] 90 percent of those deals come from me, from people contacting [Firm 28S'] website, and again … basically us doing the deal. [Name of contact] doesn't bring in that 70 percent of the business. He's just a factor of that. So the growth for the future, taking that 30/70 ratio, maybe making it 90/10, will come from the US and the UK partners. That's the intention. But [Name of contact] has an operational environment now … he contributes to the business, but not the 70 percent, maybe 10 percent. [Firm 28S]

quality	5
consistency	8
substantiveness	7

In line with Firm 28S, the entrepreneurial opportunity which led to the formation of Firm 12S emerged from a client request, whilst the founder was working for an international South African mobile services company, as he explains:

> Well, basically - I saw at [mobile services company], that it was a company with lots of money, the money from their IPO was being spent on licensing products which were not necessarily very good, or the right products for [mobile services company]. One of the things that we actually wanted to do when I was at [mobile services company] [which] we thought was a very good idea [is] an SMS service, a campaign management tool for radio stations, TV channels, [and] newspapers. Basically [mobile services company] was asked to do that; they decided not to go forward with it and I decided it was a good idea, so that was our first product. We built a web-based campaign manager for SMS campaigns- competitions, votes, dedications, comments; all of that type of stuff. And we packaged it in a way that it would suit a radio station or a TV Channel or a print media company. And we started off doing campaign management. [Firm 12S]

quality	8
consistency	8
substantiveness	9

The founder has relied on some of the prior contacts from his pre-firm establishment experience. However, the founder's response, in turn, highlights that not all international experiences are likely to be positive yielding contacts which the founder can utilise.

> Well, some of the customers that I've dealt with at older companies were useful and we've carried on relationships with them. One or two of the people that I worked with at older companies are like a mentor; the MD of [mobile services company] was a mentor to me; that's helped, but in general a lot of the people that I worked with, I wasn't very impressed with. And I found that especially in companies like [telecommunications companies which includes mobile service company], when it started getting corporate and people from other big companies were brought in on big salaries they basically sat down and did nothing- just enjoyed their salaries. [Firm 12S]

quality	4
consistency	8
substantiveness	7

In line with Firm 28S, Firm 12S' responses highlight the importance of sector specific prior international market knowledge. Here the founder explains the significance of simultaneously setting up the Firm's South African, UK, and US offices.

> We did the South African office, the UK office, and the US office all at the same time, from day one the idea was always to be an international company.
>
> Because the US market was so far behind everywhere else [in terms of] mobile technology, we would be starting of everywhere else on the back foot, because anywhere else we went in the world there would be other companies that were doing what we did, that were entrenched, that had customers and everything. We were basically a start up company that went to America and started up on the same footing, if not [a] better footing than anyone else. I know that a lot of the [South African] companies that I used to deal with when I was at [telecommunications company] had spent too much money getting into Europe and other countries like that, when it came to the US they still couldn't go there. [Telecommunications company] still doesn't have a presence in the US. A lot of their competitors from those days still don't have US offices. Whereas I could walk in and say just like anyone else could say, *hey we have got an office in Europe, this is who we work with [in] the US, [if you are] going to start doing mobile stuff you should use us*. You know its smoke and mirrors, [the] difference was either you have an office in the UK with one person sitting there, and they had an office in the UK with 50 people sitting there, but the people in the US

> didn't know that, they just wanted to see what you had done, who you had worked for, what your track record was, then they were happy to start talking to you. [Firm 12S]

Quality	7
Consistency	8
Substantiveness	9

Prior to setting up firm 33S, the founder was the managing director for an internationalised South African communications company. For Firm 33S the initial elements of the firm's international entrepreneurial opportunity, to develop third generation recording systems, emerged from the founder's prior (pre-firm) experience, as the founder explains below:

> Basically it came from the recording side, as you may know that they record telephone calls in call centres, and you say so much when you phone them, they say this call maybe recorded for quality insurance. […] I managed the company that manufactured those recorders. The idea came about to say, now large enterprises buy their own recorder, and they record calls coming into their premises, what about moving that hardware to the telephone network, and then the telephone company can record calls for customers who want them to be recorded, and they could just pay them a service fee instead of buying the equipment. So the concept was lets us introduce something which I called network recording, in other words make the …, in other words [cellular network provider] whatever they would be, to record certain calls for people that wanted them to be recorded, and then enterprises or whoever wanted to, could then just subscribe the service, like you are now subscribing in SA for voicemail. You have to pay to get the telephone number of whoever phones you presented on your fixed line. Those are all value added services, so make a recording a value added service, instead of a box that you have to sell to the end user, so that was really the concept for starting [Firm 33S]. [Firm 33S]

Quality	8
Consistency	7
Substantiveness	9

The founder relied heavily on an interpersonal contact, an employee who had worked within the internationalised South African communications company for the firm's initial international marketing activities as the founder explains:

> When I started, as I said, there was a phase when we were selling second generation recorders just to sustain ourselves. We sold that inside [South Africa] and outside

> [South Africa] right from day one. So I employed somebody who was involved in sales like that and his focus was very much to sell it. In fact our first major contract we got was an international contract, I remember it well, it was in 2004, and it was a million dollars, so that was quite a nice contract for a start and it was an offshore one; and our second one as well, I mean major contracts, if I say major I mean running into a millions [of] rands. We have sold recorders in SA for 100000, 200000 there, 500000 here, but big contracts running into millions. So that gave us access to the customers that we will already sell our third generation stuff as well. So we will already have some established customers relationships and we could go back to them once we have completed this product and go and offer our new product. [Firm 33S]

Quality	7
Consistency	7
Substantiveness	9

For Firm 33S the data provided during the interviewing process, as regards the founder's pre-firm experience, is supported by secondary evidence provided within the firm's business plan, and a description of Firm 33S provided within a PhD thesis.

The role of both prior and post firm establishment interpersonal contacts is in turn brought out by firms 5SC, 9S, and 34S. Here the role of interpersonal ties emerges as being important across the groups of internationalising firms. Some of Firm 9S' prior interpersonal contacts back date to the founders early work experience. Secondary evidence supporting the founders early work experience is provided in his CV. However, it is only now, in Firm 9S' ninth year of operation, that the firm is looking towards actively using these prior interpersonal contacts, some of which have already led to organisational ties being established within the domestic market. The founder cites the example of one Firm 9S' clients, an internationalised South African engineering consultancy firm.

> Like the [Internationalised South African Engineering Consultancy Firm] for example, they do work all over the world, they do work in Africa, but … some of the technology and services around [the] technology that we supply, they would pull into projects or pull into clients. So it is, would be through that partnership. The other way

> is to develop partnerships with international companies – that is basically what we would or where [we] would be going now. [Firm 9S]

Quality	8
Consistency	6
Substantiveness	6

Firm 9S' founder explains how the firm intends to use this relationship for the firm's internationalisation activities.

> They are a consulting company [the internationalised South African engineering consultancy firm], so they will not go and sell software to a customer, but some of the consulting work [that] they do, the technology [that] we have can assist in those projects. So that's what we have been doing, we have been supplying them with technology, but only on a project by project basis to perform the services they require. But what we want to [do] now [is to] leverage that relationship, to actually get to the customer that they perform the service for, so that we actually say, after you perform the service for the customer, supply the product to the customer so he can continue to get the benefit, or manage that process with the technology. [Firm 9S]

Quality	5
Consistency	8
Substantiveness	9

Firm 25S was initially been pulled into its internationalisation activities (which are currently limited hence the Firm 25S' categorisation under DM) through referrals from South Africans working within the security departments of internationalised South African companies and other foreign based companies. This is explained by the co founder as follows:

> If you look at most of these big mining companies, or even if you look at the telecommunications guys, the [Cellular network provider 1], the [Cellular network provider 2] … and there's a couple of others, you know, guys that place security guards, … I wouldn't call them mercenaries, but you know these career soldiers and those things. They're all South African based. They all work in the same sort of environment. They all know everybody, and again if they require an application software package to do a specific job, they can ask their friends what they use, and that's how these things get referred. [Firm 25S]

Quality	3
Consistency	6
Substantiveness	7

The co founder provides an example of how the firm is planning to use this referral approach proactively, for its subsequent internationalisation activities as follows:

> We set our sights on the [country A] market as well, because we know of all the mining industry that's going on there and we…, because in the mining industry, again, everybody knows everybody. Again we're trying to work off a referral basis with them. […]
>
> If anybody [South African] says they're emigrating, where are they going to? [Country A]. So [Country A] is the next logical step. [Firm 25S]

quality	3
consistency	6
substantiveness	4

The importance of interpersonal ties can be contrasted with the firms view on entering the North American Market.

> We definitely want to go into the American market as well. I think that's going to be a different kettle of fish, and we probably need to work on that a little bit differently. We'd … at this stage, our thinking is to identify a company there that can do the distribution for us, and not necessarily us working on the same principle as we are with the African market, for example, whereby we have our contacts in it. [Firm 25S]

quality	3
consistency	5
substantiveness	4

As firm 5SC explains, the interpersonal ties established during the founder's prior (pre-firm) experiences have been critical for the firm's internationalisation activities.

> I have colleagues from [Country A] from [Global Consulting Firm] days who had gone back to [Country A] to start a company called [Name of Foreign Company], which is a consulting firm which also grew out of the [buyout of the division which the founder headed] …. They worked for [The company which bought out the division] for a while, and then went out to start [Name of foreign company]. […]They were doing some off shoring to South Africa of IT development, software development, but they wanted to start their own shop. So we said to them we are looking for another challenge why don't we do it together. So in the beginning of 2006 we started [Firm 5SC] software development. […] [Firm 5SC] software development

> specialises in customised software development, in other words bespoke software development for clients in various industries using Microsoft.net technologies, and we have grown very fast. [Firm 5SC]

Quality	8
Consistency	8
substantiveness	9

Whilst Firm 34S is currently focusing on the domestic market, the founder highlights the importance of the interpersonal ties which founder has established, based on the international exposure and awards from their final year university project (which led to the formation of Firm 34S). (The probe has been included in bold.)

> **When you say you are eyeing out relationships which you can foster, how you are identifying these relationships ?**
>
> Through Microsoft people, through people that we met at the [name of competition], through companies overseas involved in transport who have already contacted us because of what they [have] seen in the internet search, on the … articles published about us. Maintaining these relationships, just kind of keeping them on the boil until a later date which is more suitable for us. [Firm 34S]

quality	8
consistency	5
substantiveness	5

Secondary documentation in the form of media reports; recorded interviews with the local media, highlighting both the local and international awards which the project received prior to the formation of Firm 34S, were provided by the founder.

5.3.4 Theme 6: Leveraging the Firm's Specialist Knowledge Base.

The second pattern which emerges, primarily through but not exclusively within technology led biotechnology firms, links the firm's current and potential internationalisation activities to

the firm's ability to leverage its specialist knowledge base for its internationalisation activities. From the findings, the firms leverage their specialist knowledge base primarily by: presenting at and attending specialist conferences, and trade events.

Firm 2B's internationalisation activities are currently focused on international research and development collaborative activities aimed at moving their Bone Tissue based products through the clinical trial pipeline. The firm has reached an advanced stage along the clinical pipeline for some of their products, but is yet to market its products. Here, firstly, the founder explains the importance of attending conferences, and how he has met some of the pilot plant equipment suppliers, and service providers through the firm's participation at specialist international conferences.

> With this company in particular [...] we are very progressive, in [that] we got our funding [in] February 2004. We have presented at every single [Bone Morphogenetic Protein] BMP conference, which is the world BMP conference for the top scientist. We presented at every single conference for the last five conferences. So that was [the CEO] previously as [name provided], and then as soon as [Firm 2B] came on the scene as [Firm 2B]. So we have been educating the market about [Firm 2B], all the scientists in the world know who [Firm 2B] are, we know who they are, the heads know who we are, the guys who develop the [Competitor] products know who we are, we know them. That's how small the market is, but we're in [South Africa] ... so they haven't really, they are not scared of us in essence. So we started that the first year, we immediately were in [Country] for the world BMP conference, that's where we started the [Country] collaborations there, it was 2004. Then [Country 2] we then went to [Country 3] and that's where we sourced a lot of our suppliers for our plant, cause locally there [are] no manufacturers here, locally they are all agents [Firm 2B1].

Quality	8
Consistency	8
Substantiveness	9

The significance of leveraging the firm's specialist knowledge through conference attendance was emphasised in my interview with the chief executive (CE) for business development of the same firm. Here, the CE for business development stresses the importance of presenting at

specialist conferences, particularly for building the firms international credibility prior to the introduction of their BMP products.

> I always tell [the CEO] we will never have the amount of money you need to market this thing correctly. So what we are trying to do, is build what we called in our founding document, to get the funding for a co-branding strategy, where we sign [licensing] agreements, be present at the leading conferences so that everyone sees [Firm 2B] all the time, *Firm 2B, Firm 2B, Firm 2B,* and what's more we are building up this awareness. So when a product hits the market, [interviewee changes tone of voice] *ah [Firm 2B] ah yes, [Firm 2B] that presented at that [conference]. Ah those are the guys that have got a collaboration with the largest tissue bank in the world, ya well let's try this product here, ya you know.* It's not like, *whose [Firm 2B]? No they are guys out of Johannesburg, oh [expletive removed] South Africa, gracious no, we can't take a chance* [laughs]. I'm telling you the truth, ah you think I'm joking, I'm being spot on. The Europeans [in comparison to the North Americans] we find are slightly different, the ones we have dealt with to date. We have gone to [Country A] for example, they paid for us to go out there to look for potential collaboration partners there, and they were more forthcoming …they [had] no credibility issues. *What's your technology? Excellent, okay, oh we have this; you guys have this, so maybe we can collaborate.* That's what we would expect out of the States [Firm 2B2]

quality	8
consistency	8
substantiveness	9

Also in the pipeline, is the firm's plan to start publishing, here the CE for business development explains how publishing within international journals is important for the firm and why the firm has delayed publishing in international journals.

> We haven't done, we purposely haven't published for the last four years, we were scared that someone would copy and we didn't have the means to block them. That's most probably one of the biggest credibility boosters that you can have, is publish papers that people can refer to all the time. So this next two to three years we will be taking all our data: packaging it, and publishing it, with the purpose of publishing it so we can start increasing our exposure on that side, and our credibility on that side, to address those types of issues. [Firm 2B2]

Quality	8
consistency	8
substantiveness	6

This pattern is repeated within Firm 22SC, a software consultancy firm which has developed its skills and expertise around systems integration and is becoming known as one of the dominant systems integrators for the collaborative software products of a global software vendor. Here the founder explains how, through international conference attendance, firstly in his individual capacity prior to the start up of his current firm and then within the current business, both the founder and the firm are becoming known internationally for their skills in systems integration and collaborative open source software. Secondary documentation acknowledging the founders participation as an expert speaker at these international conferences has been confirmed by online sources.

> I have been working with [software application] for example, it's an e-mail system. It was the very first PC based e-mail system on this planet. It is a product that was developed originally by [Vendor 1] in the United States and [Vendor 2] then bought … [Vendor 1] in 1994. I continued to develop skills on [software application]. I started to train many people in South Africa on how to implement it and use it. So I became known as probably one of about 15 [Software application] experts on a global scale. That is why I am going overseas. Next week we have what we call the [Software Application] summit in the [European country] and that is where all the specialists come together, and we present seminars to end-users' of [Software Application]. It's still one of the reasons why I became known internationally, it is because of the way I understood the way people should use [Software Application], and have become very outspoken about the use of [Software Application], and how companies should use e-mail systems, electronic communication, and those types of things.
>
> I think through our website and also through word of mouth by customers, because remember we also present at many conferences, [...] we engage with people at conferences. They start to see you as a leader in that area, or somebody will contact a vendor and say I need to know who can help me on this, and they will say contact [Firm 22SC] they know how these things work. [Firm 22SC]

Quality	8
consistency	8
substantiveness	9

Central to their internationalisation activities, has been the recognition which the firm has received for their skills and knowledge in this area, from the global software vendor. The founder explains how this recognition has led to the firm's resultant expansion into Europe.

> I think its em, I have been travelling to Europe for the past 15 years, quite often, every year, two or three times, and I have built up a lot of business contacts with people and other companies, but I have never done business with any one of those organizations. I have been speaking at conferences etc. The last two years when people talk to me, they started to complain heavily that the system integrators in Europe, either do not have the skills or they are not interested in doing system integration because it is too complex for them. That is why we decided lets duplicate what we have here in Europe. In fact [Vendor] told me that if we open a branch in Europe they will support us directly and they will refer customers to us directly, that is why it was important [that] we have […] the backing of a number of players to actually start an operation in Europe. [Firm 22SC]

quality	3
consistency	8
substantiveness	8

In line with the examples cited above, Firm 10B's founder explains how they have presented at conferences with the aim of marketing their product and setting up international collaborations with international academic experts in their field.

> So our initial internationalisation strategy; what we did initially is, we were simply selling overseas, so we tried to present ourselves as we had a limited budget. So we would go to trade shows or conferences where we knew the main, not necessarily the decision makers cause they don't necessarily attend these, but we wanted to find where the main people who determine what's good and what's not, there people like academics who decide whether or not the technology is worthwhile, so they are affecting the mindsets of others who may buy it. So we go primarily to academic conferences in our field …, we go […], we try to influence academics and because we are giving away the software for free [to the academics], we could attract them readily and we try to set up a few collaborations, using the term loosely, where we would work closely with folks [...]. One which we attended is called the ISMB, international society for molecular biology. We attended that [for] several years, and we usually had our biggest turnout and we would launch products there frequently. I think that would

> be the most important one for us. We went to other ones like…, and so we started out like that. [Firm 10B]

quality	3
consistency	8
substantiveness	9

In order to accelerate the inclusion of their product within their distributors product line, Firm 10B has, in turn, utilised their specialist knowledge in bioinformatics to not only present and answer their distributors' and end-users' questions concerning their products, but to also gauge the potential adoption rate for their product, and the necessary changes which need to be included in the subsequent versions of their products. This is brought out in the founder's explanation of how the firm has internationalised.

> These two [US based Bioinformatics Firm1] had agreed to have their sales reps present our product, they worked stage wise, have their sales reps present the product, then eventually they might role it into their product line, and then investment. What happened was I had set up these partnerships; I attended both of those companies' user group meetings. There was another one called [US based Bioinformatics Firm 2] and so I attended their user group meeting, and I could answer the questions and problems their users were encountering. [This helped] me determine whether I really was fulfilling their need or not. So I had from evaluating clients, knowing what the customer's needs were from my perspective and so forth. I had presented it to them, then they had agreed to allow me into their user group meeting which they have annually, so I can interact with their clients and we can really see how strong their need was. They wanted to get a message from their clients that they really needed our product. The ones that I attended user group meetings were those [US based Bioinformatics Firm 1] and [US based Bioinformatics Firm 2]. [Firm 10B]

quality	3
consistency	8
substantiveness	9

> I would go to [country], travel with the distributor, present the product, answer the questions and they were responsible for closing the sale on that; so there was some partnership because it was a specialised product. Then eventually after one or two road trips like that, their sales reps were trained, it was a combination of sales training and assisting in the sales. [Firm 10B]

Quality	3
consistency	8
substantiveness	9

The same pattern is repeated within Firm 31B.

> The other thing we use is, we go to conferences overseas and we talk about what we do, and we present at those conferences, and we do those mainly in Europe and the US and, so that's I suppose part of the process of breaking into those markets. But it is not a very explicit process, it much more about you go to the conference to meet people, there is a lot of serendipity involved. I mean you have twenty discussions, nineteen of which will be interesting and won't go anywhere, one of which will phone you some time later and say, *you know, remember that discussion we had, well could you guys do this for us*. But I mean, it's mainly through the partnerships that we have with international companies, that's how we interface with the global environment. [Firm 31B]

Quality	3
consistency	6
substantiveness	7

Firm 31B's CEO elaborates on the type of conferences which the firm has been attending from inception.

> Mostly biotechnology or medical conferences: US, Europe, there's lots of these conferences, there's heaps of them, the conference industry is bigger than the biotech industry. The conferences about biotech would be bigger than the biotech industry itself. There's thousands of them and once you start going to them you get invited to lots of the little ones. Well invited means you have to pay to go to them, but they inform you and harass you about it, so that's a good way in. Builds [...] credibility, more importantly it just allows you to meet people and to find out what's going on, and keep your ears to the ground, and hear what's happening. [Firm 31B]

quality	5
consistency	8
substantiveness	7

Through its partnership with a global Clinical Research Organisation, (formed as a result of the Firm 31B's expertise within a specific area of laboratory analysis), the firm leverages its specialist knowledge by forming part of the CRO's team at international conferences and client presentations.

> And we sometimes go with them to clients, we often go to conferences and we talk on their behalf, and sometimes we will go to a major pharmaceutical client together. We will tell them about what we can do, and we do present it very much as a partnership at that point. I mean, there's ultimately, the logic is that they will buy us because it makes sense for them to own us actually, but we will get to that eventually. [Firm 31B]

quality	3
consistency	8
substantiveness	7

Unlike Firms 2B, 10B, 31B and 22SC, conference attendance is mandatory for Firm 8B's internationalisation activities. However, having temporarily stopped their internationalisation activities upon realising that the firm had insufficient financial resources to meet their international distributor's requirements, the interviewee makes a distinction between the export requirements of specialist technical knowledge and traditional products. Firm 8B is acknowledged within secondary sources, prior research articles, as one of the earliest firms on the continent to have received the CE European trade mark for a class (111) medical device.

> I can't remember - we had all sorts of enquiries, from all sorts of places. The problem is, we got a lot of enquiries, and this is where companies go wrong, and often I think continue to go wrong. Somebody wants to buy your product in France, it's very easy to think oh great they'll just send an order, you will ship the product and that's the last you will have to do with it. So what we didn't really see at the time was how much money it would cost to support those relationships, to go over there, to support them at the congresses, to exhibit at the big international congresses where they would expect you to exhibit. So for example, let's say you have got a distributor in Spain, every year there is a big cardiology congress, if you can't afford to have a stand and make a noise at that congress, Spanish distributors customers are going to go there and say, *hang on how can I be using your product when the company is not even at [conference]* for example. They expect to see you on the international stage.
>
> I think the mistake that South Africans make is that they think they can sit here in Cape Town and sell products in Europe, not, you can maybe sell oranges or whatever proteas, but if you are going to sell products that require lots of visiting customers, telling the technical story, going to the hospitals, giving presentations, you've got to be there (emphasis here) and that's what we are struggling with, we are not there

> enough, and within about 2010 our intention is to have an office in Europe in which we have a permanent presence close by to our customer. [Firm 8B]

quality	5
consistency	9
substantiveness	10

5.3.5 Summary

The types of prior experiences which emerge as being transferable fall into three main categories: depth of specific technical knowledge, sector specific international market knowledge, and prior interpersonal contacts embedded within these individual level knowledge bases. Critical for the development of the ERISF's individual level knowledge has been the prior organisational level positions which the founders have held. The bulk of South African ERISF founders have held high profile, high status positions within dominant internationalised and non internationalised domestic market firms, international firms and academic institutions prior to the established of the firm. There is an overlap between the entrepreneurial opportunity that leads to the establishment of the firm and elements of the founder's pre-firm establishment experiences in virtually all of the cases. According to the findings, what is important for the transfer of prior experiences into the early internationalisation activities of the firm is the degree of convergence between the entrepreneurial opportunities which lead to the establishment of the firm's internationalisation activities and a) the depth of specific individual level technical knowledge of the founder's/founding members b) sector specific international market knowledge and c) the specialist knowledge communities in which the prior contacts have been established. The findings, in turn, show that prior international experiences include those internationalisation experiences gained whilst the founders are based within the domestic market. In other words the founders do not necessarily need to be temporarily based within a foreign market in order

to develop their prior international market knowledge bases.

The importance of prior specialist technical knowledge is particularly pronounced within the technology led biotechnology firms in this study. Here as evidenced by Firms [2B, 8B, 31B and 10B] the firms leverage their specialist technological knowledge for their internationalisation activities through their participation at major international specialist conferences and specialist trade events. The specialist conferences provide a platform through which the firm not only attracts potential international clients/customers, but begins to build a technological reputation (Zahra *et al*., 2003) which is acknowledged on an international stage.

Thus based on the research findings proposition 4.1 and 4.2 state that:

Proposition 4.1 states that:

The extent to which the individual level prior experiences: prior international market knowledge, prior international contacts, and superior technical knowledge; are transferable and thus accelerate the speed of internationalisation of ERISFs; is determined by the extent of overlap between international entrepreneurial opportunities and the individual level prior experiences.

Proposition 4.2 states that:

The extent to which ERISFs leverage their specialist technical knowledge base: by presenting at and attending specialist conferences, and trade events; influences the speed of internationalisation of the ERISF; by providing a platform through which the ERISF attracts potential international clients.

The presentation of the results is continued in Chapter 6

CHAPTER 6

RESULTS

This chapter continues with the presentation of the research findings.

6.1 Entrepreneurial Orientation: Proposition 5

Following Knight and Cavusgil (2004) and Yamakawa *et al* (2008) Entrepreneurial Orientation (EO) modified for the firm's internationalisation activities has been delineated as a foundational firm specific capability. Two scales developed by Knight and Cavusgil (2004), (a five item seven point scale) and Covin and Slevin (1989) (a nine item seven point scale) for EO have been used within the study. The ratings which the firms have provided for Knight and Cavusgil's International Entrepreneurial Orientation (IEO) construct, and Covin and Slevin's modified EO construct, are shown in brackets in Table 17. Evidence suggests that in order to compensate for their competitive weakness, emerging market firms are more likely to adopt an aggressive, proactive, and risk taking approach towards their internationalisation activities (Ibeh *et al.,* 2007; Yamakawa *et al*., 2008). Hence Proposition 5 stated that:

Proposition 5

ERISFs with higher levels of EO are more likely to commence their internationalisation activities early and internationalisation is more likely to occur at a faster pace.

Table 17

Entrepreneurial Orientation

Sector	ERISF	E	LRISF	DM
Biotechnology firms which have developed a proprietary patented technology	2B**[5.2][5.4]**, 8B**[5.2][4.0**], 10B, 20B**[6.8][5.1**], 31B**[5.8][5.4]**, 11B**[6.2][6.3]**	3B		
Biotechnology firms	17B**[5.4][3.4]**	19B**[4.2][4.6]** 23B		
Software firms with have developed generic software product (s).	12S**[6.4][5.4],** 14S**[5.8][4.6]**, 15S, 24S**[5.4][6]**, 28S**[6.8][5.9],** 33S**[6.4][4.9]**	13S**[4.6][4.8]** 35S		9S**[4.2][4]** 16S**[5.6][5.1]** 18S**[5.8][3.9]** 26S**[2.8]**, 30S**[4.8]**, 34S**[4.4]** 25S**[5.8][4.9]**
Software consultancy firms (provide services and bespoke software development)	5SC**[6.2][2.5]** 22SC**[6.4][5]**, 29SC**[7][5.3]**		32SC**[5.4]**	1SC**[2.2][2.7],** 7SC, 4SC 21SC**[7][5.9],** 27SC**[2.6]**

First rating = Knight and Cavusgil (2004) IEO scale
Second rating = Covin and Slevin (1989) EO scale modified for the firm's internationalisation activities

Within column 2 in Table 17, the findings show that the proportion of firms which rate themselves highly (above 5) on Knight and Cavusgil's (2004) IEO construct and to a lesser extent Covin and Slevin's (1989) EO scale, is higher within the ERISF category. The individual values are in line with the mean averages of 5.13 and 5.37 for IEO and EO established within Knight and Cavusgil (2004) and Covin *et al's* (1990) study respectively.

The ratings provided by firms within the EI and DM categories provide an insight into the potential short comings of the IEO and EO constructs. In line with ERISFs, firms within the

DM category [16S, 18S and 21SC] whilst engaged in limited intermittent internationalisation activities, rate themselves highly on Knight and Cavusgil's (2004) IEO construct. Differences exist between the ratings which some of the firms would have provided at the firms inception and the rating which the firm provided during the interviewing process. For example Firm 25S provides a rating of 2 for 2001 (the formal registration of the firm) and 5.8 for 2008 when the interview was carried out, on Knight and Cavusgil's (2004) IEO scale. Hence there is a possibility that the IEO construct dimensions could vary with time. In addition differences could potentially exist between the ratings which individual founders/top management team respondents provide. For example Firm 21SC's high rating is based on what the founder clearly identifies as an individual as opposed to a collective rating of the firm.

6.2 International Entrepreneurial Opportunity Development: Proposition 7

Up until recently, limited attention has been given to the opportunity discovery, and development process within ERISF internationalisation. However, of late, interest is increasing around the role of entrepreneurial opportunities within ERISF internationalisation (Chandra *et al*., 2009; Matthews & Zander, 2007; Oviatt & McDougall, 2005c). Within this study, following Renko (2008), entrepreneurial opportunities are considered to be those opportunities which have the **potential** to create 'profits' and are exploited through activities that will lead to the formation of a new firm, or significant improvements within the firm which extend beyond new product development. As previously explained the novelty/newness of the firm's product is evidenced by the existence of patents, funding grants awarded to the firm on the basis of the innovativeness of the firms offering and exclusive licensing agreements set up with international partners. International entrepreneurial

opportunities are those entrepreneurial opportunities which have the added dimension of leading to the formation of new cross border links.

Proposition 7 stated that

The discovery and development of international entrepreneurial opportunities will influence the timing of the ERISF's internationalisation activities by decreasing the period between the establishment of the ERISF and its first cross border activity.

Table 18:

International Entrepreneurial Opportunity Development (IEOpD)

	Sample Firms			
Sector	**ERISF**	**EI**	**LRISF**	**DM**
Biotechnology firms which have developed a proprietary patented technology	**2B, 8B,** 10B, 20B**, 31B,** 11B,	3B		
Biotechnology firms	17B	19B 23B		
Software firms with have developed generic software product (s).	**12S, 14S, 15S, 24S, 28S, 33S**	**13S** 35S		6S, **9S*, 16S***, 18S, 25S, 26S, 30S, 34S
Software consultancy firms (provide services and bespoke software development)	**5SC** 22SC, **29SC**		32SC	1SC, 7SC 4SC, 21SC 27SC

From the findings the discernable patterns which emerge is that of:

a. continual international entrepreneurial opportunity development (IEOpD) leading to an increase in the range of cross border links formed by the ERISF and subsequently the speed of internationalisation of the ERISF (Theme 7).
b. software firms which have developed their own proprietary software, seeking to develop, and offer a total software solution which is interoperable across a range of

different systems, platforms and networks, through IEOpD (Theme 8).

Table 18 Illustrates (shown in bold) the key firms in the research sample, in which the effects of IEOpD and entrepreneurial opportunity development (marked with an asterisk) are pronounced. A more detailed breakdown of the firm's IEOpD and entrepreneurial opportunity development process is provided in Table 23 Appendix C.

6.2.1 Theme 7: International Entrepreneurial Opportunity Development.

Firm 5SC started as a software consultancy firm providing services around the people side of Enterprise Resource Planning (ERP) implementation. The opportunity to provide outsource software development services for an international client base, in partnership with a European consulting company, resulted in the formation of a new division for exploiting both local and international outsource development opportunities. Secondary evidence confirming the firm's partnership is provided on both Firm 5SC's website and their international partner's website.

Having started by providing managed Short Message Services (SMS) services for running marketing campaigns, Firm 12S has expanded its offering to cater for the entire mobile strategy of an organisation, by developing partially complete technological platforms and systems which can be customised to suit specific customer needs. These internal developments coupled with the firm's internationalisation activities are confirmed within Firm 12S's business plan, company website, independent print, and online publications provided by the firm. In addition, the firm has developed a mobile social networking platform

which has led to the formation of a new subsidiary of Firm 12S. The progression of Firm 12S' IEOpD is explained by the founder as follows:

> We built a web-based campaign manager for SMS campaigns- competitions, votes, dedications, comments; all of that type of stuff. And we packaged it in a way that it would suit a radio station or a TV Channel or a print media company. And we started off doing campaign management. What we found is that within a year there were a whole lot of other companies doing the same type of thing, so we decided to expand our product line and we started doing bulk SMS messaging, and then from there we decided to move into really, really cutting-edge technologies, [where] we could build a platform and then adapt that platform specifically to each one of our client's needs. So that we had the servers, say, seventy-five percent built and then as each client came in we could adapt that. [Firm 12S]

Quality	8
Consistency	8
Substantiveness	9

> We've also found that we kind of moved on from there and we built a mobile social networking platform in 2006; and we obviously built it very early and it was very new technology, cutting edge type of stuff that nobody had seen before. We started marketing it ourselves under our own brand name which went okay; but at the moment the big thing that we're working on is we're licensing that technology to about twenty or thirty other companies around the world, because it's been built and refined over the course of two and a half years and there's still nobody that has that type of technology. [Firm 12S]

Quality	8
Consistency	8
Substantiveness	9

Notably, the firm is able to either license the different product modules, and or provide a managed service using its technology platform. The variation in how the firm is able to use its platform to meet the specific mobile strategy requirements of its international customers is evidenced in the following description of some of the firm's internationalisation activities.

> We have licensed software to [an international mobile service provider] in [Country] which was probably done in 2006 and that's ongoing. It's a very small market but they have our software that they resell and use it for their radio stations there. We have an ongoing relationship with an English company where we work for a mobile phone producer, a handset maker around the world, that's been going on for about three

> years, they have events every couple of months, we deliver services for those events. We have an agreement with a [European] company where we ran chat services for them in Southern Africa, we run in South Africa, and one or two other countries around in the SADC region. So it's very different it depends on … their model, […] what they are trying to do, but we can, adapt our platform to suit whatever they want. [Firm 12S]

Quality	8
Consistency	8
Substantiveness	9

The importance of engaging in continual IEOpD for the firm's internationalisation activities is highlighted by Firm 13S. Upon discovering that the market for the bespoke e-learning web-based product, which the firm had developed for a South African investment bank, extended beyond their initial client's requirement, Firm 13S started marketing their e-learning product within the domestic market, and not long after to an international market client base through a set of international distributors. Firm 13S' attempts at internationalising their software were unsuccessful because of the firm's inability to rectify the problems which their distributors faced when attempting to roll out their software product. This is explained by the founder.

> We had some great resellers, but at that stage our product wasn't stable. […] We had a very bad run of developers at one stage, and they [expletive removed] our product badly, and these resellers […] launched, and they started selling a lot of the product, and every time it rolled out there were problems. And so these resellers said, *well we'll just do this ourselves*, and they actually copied our product and they started taking that to market. It wasn't effective [Firm 13S]

Quality	2
Consistency	8
Substantiveness	6

As a result the firm has reverted to focusing on the further development of their initial e-learning product into an entire e-learning management system, whose stability is being developed through the continual testing and development of different tools for the system,

using large corporate domestic market clients and academic institutions. This is explained by the interviewee as follows:

> Truthfully, what we're trying to do there is […], we're just ploughing all the money back into the company. I'm just putting everything back, so whenever we make any money, I just put it back in, because we're trying to improve the product. I'm hoping that in two, three or four years time the product will have reached a level of stability and brand-awareness and that sort of thing. So that I can turn around and say look, would anybody be interested in buying this whole solution I've got, with the products and the brand, and the fact that they're stable, and the client base and all that. And that's pretty much where I'm going to get my money out, but after taking a small salary for myself; [we] put virtually all our turnover, everything, back into the company. And my money that I've loaned […], I've put in there to make sure this product can grow and be successful. [Firm 13S]

Quality	5
Consistency	8
Substantiveness	7

Firm 14S was established to enable the provision of financial services on a mobile phone by developing software which sits on a mobile phone and a server. The Hallmark of Firm 14S has been the continual development of the original product, which led to the establishment of the firm, increasing the functionality and stability of the original offering. Hence, the functionality of the software has been continuously extended enabling, for example, the provision of financial services, not only on mobile phones, but on a range of portable devices. The extension of the functionality of the firm's software for the provision of financial services on portable devices has been carried out in collaboration with the international manufacturers of these portable devices. Some of these developments are confirmed on the firm's website. This has not only led to the formation of new cross border links, but has also resulted in the development of new technological divisions within the firm. The development process is outlined by the CEO as follows:

Explaining their initial offering:

> So the software, is software that sits on a server with a little bit of the software that sits on the mobile phone and it enables someone with a mobile phone to do financial transactions, send money to somebody else, or to receive money, or to buy airtime, or to pay bills, or to enquire to get information about other financial transactions. […] The phone allows a consumer to get access to their financial situation, [that's] basically what it does. So it is utilising a device, predominantly mobile phones, to provide a consumer with financial control over their financial situations basically. Initially, the iterations that we did was to extend functionality, more and more functionality. [Firm 14S]

Quality	8
Consistency	8
Substantiveness	9

The current stage of development of this offering:

> So the base product that we developed in the early years is still the architecture of what we still sell today but it's been through many iterations. It's actually going [for] its fifth iteration. It started [those] years, so the current software is version four of the software and it's been constantly enhanced and extended and improved on to where we are now. Today it's technology that's deployed in 21 countries, [we are] highly profitable [with] 120 people working on the product and so forth. [Firm 14S]

Quality	7
Consistency	8
Substantiveness	7

The effect of extending their software's functionality:

> Initially the product was suitable for a consumer, that a consumer could use it [as] an individual. So at some stage during the evolution of the product, we extended it so that it could also be utilised by businesses, which required some changes to how the software worked, significant changes, because businesses would use it in a different way. I mean, to just give you one example, where an individual would have a phone bank account relationship, which is one to one, in a business situation one would find many phones many individuals; let's say maybe the managing director, the accountant, maybe some clerks, that have all got phones and they all point to the same bank account, but they have authorisations that can do different things, they have

> different limits of what they can do. So we extended the software for individuals to also support businesses that's just one example.
>
> Another example would be, we extended the software, [where] initially it ran on mobile phones to also run on devices like a point of sale device or an ATM or things like that, where it's not just mobile phones, but it's the same functionality, but you get it on a different device, in some instances portable devices. Some of these new POS [Point of Sale], I'm sure you've seen, is something which you can carry around, and we've extended the software to also be available on other devices. [Firm 14S]

Quality	8
Consistency	8
Substantiveness	10

Firm 14S international entrepreneurial opportunity development process has been driven mainly by the following:

> I mean it's basically driven by three things: everything that we've done, stuff that we thought up ourselves, great ideas that we had; what our competitors were doing sometimes, and what our clients were asking. So it's those three things that drove what we did and we tried to be really driven by things that we can think out, so that we keep on defining the industry that we are making sure that we are one step ahead of what other people are thinking [...]. The other thing is that it's only if we are original about our own thinking that we could patent a lot of our technology. […] We hold many patents, twenty plus patents of our technology, which you know, protects the architecture and things that we've built because we [...] thought of it first. It's very important for us to be thinking about what is happening on the other side of the hill on the road that we are, because if we think of it first, then we have more control over where the industry goes, than if we have to follow our competitors. …Today we are recognised as, in this industry, as the world leader in mobile payments, and mobile banking products, and mobile banking software, because I think that's what we did, we kept on innovating all the time. [Firm 14S]

Quality	6
Consistency	9
Substantiveness	10

Based on a bespoke Customer Relationship Management (CRM) application which Firm 15S developed for a global drink manufacturer, Firm 15S' entire focus has now shifted towards the development of this CRM application and the provision of services around the

implementation of the CRM application. This is to extend that the firm has recently spun out two of its former product divisions: a security software application which emerged from a customer request, and a recruitment software application, to a new firm which is now headed by the firm's former sales director. These developments have been tracked through the secondary evidence provided through Firm 15S' continual upgrade of their website. The financial director explains how, through the use of their CRM tool, Firm 15S is able to provide managed CRM related services to international clients, in addition to licensing their CRM tool to multinationals operating within different industries (the global drinks and beverages manufacturer holds an exclusive license within the drinks and beverages vertical).

> [CRM tool] it's not just the big massive multinationals, okay, that we can sell it [to], you can actually operate [the CRM tool] in what we call a managed service. Now a managed service would be, just recently we've done a couple of managed service contracts with some US [companies] like [name] in the US, where they outsource the running of a campaign to us and we use [CRM application] to do that. So we're almost using our own software and we're providing it as a service. We are now outsourcing the running of ..., so they would give us; say the list of the 4000 people, what is the email that they want to send to all of these, as well as some of the kind of defined responses etc. So we're running a campaign for them and we provide all the reporting back to them and all the data. So we're using [CRM application] as a managed service, so it's another whole revenue opportunity. [Firm 15S2]

Quality	6
Consistency	8
Substantiveness	9

Firm 21SC was set up to commercialise the methodology which the CEO had developed in his PhD thesis. The founder has provided secondary evidence in the form of a paper which makes up part of the lecture note series of the computer science department of the local university where he was based. According to the founder, the firm's internationalisation activities are limited because of their inability to develop the idea further, through software development. This is explained by the founder as follows.

> So, at the moment we cannot really internationalise because we have got one disadvantage in that because we are doing it manually [implementing the methodology], and I think we are the only people who know how to do it in the way we do it. It is very difficult to give the tool to someone else, or to explain the methodology to someone else for them to be able to use it with a client. So it limits the number of lines we can actually have. Whereas if we had developed a tool which is user friendly, the person does not need to know the details of the methodology as such. It is hidden from them in the sense that they simply use an interface on the computer or whatever to streamline the business processes of the client, without full knowledge of the technology behind it. [Firm 21SC1]

Quality	7
Consistency	9
Substantiveness	9

This lack of development has resulted in the CEO being the only person within the firm who has an in-depth understanding of this methodological tool. This is highlighted in the following response from Firm 21SC's Chief research and development officer.

> I was put on the spot [with] [A South African] magazine. […], Ah gosh sometimes actually it's a cause of stress for me to talk about this [the idea that led to the formation of the firm] so much, while knowing that we are actually still in our conceptualise [stage]. I mean we have put down the concept, we've thrashed it out, but we haven't developed it, but now because…, maybe we should remove this thing from our website because it was our initial idea….People are getting like, […] wanting to know, wanting to know […]. [The Local South African magazine] journalist wants to know how far [it is] and everything. …[CEO] gets interviewed by [local] magazine and then he flies off to [Country] on a project, and then they [Journalists] fall onto my hand saying, *sorry we were wondering what [CEO]meant by this*, and then I had to [give an] on the spot interview. [Firm 21SC2]

Quality	6
Consistency	8
Substantiveness	9

For Firm 33S the founder's original intension was to market second generation recorders to the telecommunications market, as outlined in the firm's original business plan (provided as secondary evidence). Having failed to break into this market the Firm changed its focus to the government intelligence market, leading to the firm's early internationalisation activities, and

the development of the firm's third generation recording systems. The founder explains this as follows:

> The networks still don't have, we never succeeded in breaking into that market, we actually changed our strategy in 2002 and we were going to then focus on a different market, once again as I say as a survival strategy. So we started selling recorders and then we started this product development. So we said we are not going to develop this only for telephone networks, we are now also going to sell this or make a product that we can sell to police and intelligence agencies because they were also recording telephone calls of criminals and terrorists okay. […] Actually that's what we're doing today; we are not selling anything to telephone networks, we are selling exclusively to law enforcements and intelligence agencies worldwide. So if you were to ask me what is the business today, it's different than the idea at inception. [Firm 33S]

Quality	8
Consistency	8
Substantiveness	9

> Now we are working on optical fibre based hardware. The software is the same software, but now we are enhancing it, making a provision for new technologies. Initially we had only looked at phone calls but maybe you want to add email and chat and all those kind of things: Skype and VOIP whatever people get excited about, communication technologies, ways in which people communicate with each other using electronic networks. Initially it was the telephone calls, but it's not the telephone call anymore. [Firm 33S]

Quality	5
Consistency	7
Substantiveness	7

As to what drives the Firm's continual IEOpD the founder explained as follows:

> Yes its feedback, [you are] looking at what people do, [you are] looking at the trends in the world, feedback from your customers, you use some of your own common sense, so we think we need to focus here it's a mixture [Firm 33S]

Quality	4
Consistency	7
Substantiveness	5

IEOpD is in turn pronounced within the biotechnology firms which have developed patented

proprietary technologies. Firm 8B is currently in the process of developing its drug eluting stent, the early stages of which were carried out in collaboration with an internationally based research group. Whilst, as the founder explains, incremental changes have been made to their original stent, the drug eluting stent will effectively change the regulatory status of the firm from a medical device company to a drug company. Secondary evidence detailing the progression of the firm's drug eluting stent through the clinical trial process is provided on Firm 8B's website, and a paper published within an international journal. The paper has been co-authored by researchers, two of whom include Firm 8B's co-founder and an employee who is also a shareholder. The firm's IEOpD process is being driven primarily by the competitive pressures to keep abreast with the latest technological developments within the industry.

> Well things have changed a lot since then, we make these products now, and the product that we made back in 2000 is replaced now with a more sophisticated product […]. So without going into too much detail, […] basically the materials that we use and the design have evolved; we have evolved the design by using different materials, so this stent here is made of a material called cobalt chromium, where the original material that we used was of stainless steel, a very fancy stainless steel, but still stainless steel, now we have to move to more sophisticated materials that allows us to make the thing thinner and stronger and all that. But where the complication is, for the last four and a half years we've been researching a stent that changes quite a bit because we put drug on it. So on our latest stent called the [name of stent] which we are currently busy in clinical trials with. The stent effectively has a tiny amount of drug on the surface of it and that's a long story why we do it.

Quality	7
Consistency	7
Substantiveness	9

The founder further explains the significant internal developments which are occurring within the firm as a result of the development of a drug eluting stent.

> [...] That product for us changes the game considerably because not only is it more challenging from a regulatory point of view, it's not just a device now, it's a drug. So now we are in the drug business and the device business which makes all the controls

> the lab testing everything ten times more complicated, but it also makes the regulatory environment [more complex], because in Europe there is no longer one approval body, you have two approval bodies. So we've been working on this product now for more than four years and we are in fact going, we've just finished the first clinical trial of it on a small scale of 40 patients with good trial data, and next year we will go onto a match bigger trial [with] that product. There are other drug eluting stents … we're not the first, but the other ones have certain limitations with regards to safety, there is some safety problems in those, and our [name] stent, [...] what that stent does is it effectively addresses [the] safety concerns of the current product. [Firm 8B].

Quality	7
Consistency	8
Substantiveness	10

Firm 31B's CEO, describes the idea which led to the formation of the firm as being 'vague' and not clearly thought out. According to the CEO, the firm's internal business divisions have emerged through the continual surfacing of commercially viable ideas centred on the firm's core skill set. An online search using secondary evidence gathered from Firm 31B's venture capitalists website and Firm 31B's website confirms these developments.

> So those are the three businesses, the last one number three is kind of where we started originally with the company, with the bioreactor. The other businesses have evolved from this process of figuring out what we can do and where the market is, and essentially bubbling up ideas, and kind of developing the ones where it is clear that there is a market. So you imagine a process: sort of bubbles of ideas coming up from the source of creativity, and some of those bubbles just burst because they were never good ideas in the first place. Some of them get big, the way I would think of this is, the strategy process for us is a question of looking at all these ideas that we generate. We generate a lot of ideas this is a field where there is no shortage of potential opportunity. [Firm 31B]

Quality	7
Consistency	10
Substantiveness	8

The CEO's response to the request for Firm 31B's business plan compounds the significance of continual IEOpD for the firm.

> It [business plan] is completely irrelevant to where we have ended up; I mean it would be completely useless, I'm not sure we still have it. I often say the worst thing you can do in this industry is actually execute the plan, because by the time you get to execute, the plan is irrelevant. That's what I am trying [to explain] by this strategy process of bubbling up. [Firm 31B]

Quality	6
Consistency	10
Substantiveness	6

To a lesser extent, domestic market firms engage in continual entrepreneurial opportunity development, as evidenced by Firm 9S and Firm 16S. As with IEOpD, entrepreneurial opportunity development EOpD results in significant internal developments within the firm as, evidenced by Firm 9S and Firm 16S' shift from offering purely consultancy based services to being positioned as a technology company that develops its own proprietary software products and platforms (from which a range of products can be leveraged). Secondary evidence confirming these developments has been drawn from Firm 9S' business plan.

> The idea grew and changed and some areas were added and removed and all of that, but eventually […] when [Firm 9S] started out we identified the need more on the level of providing services.
>
> We knew we wanted to get into the area where we developed technology and products. But developing technologies and products is an expensive, specifically in the area that we are in; it's an expensive development path. [This is] because investments are normally big, and take hundreds of thousands of development investment into them. So you can't just sit down and develop that and sell a product. Where we are now, our products are almost getting to a point where their getting mature, so it takes a couple of years to develop that… To fund that product development requires some way of financing, and that you finance through service in the business, you have to align your services strategy in such a way that you end up with a product [Firm 9S]

Quality	7
Consistency	7
Substantiveness	10

For the domestic market firm continual EOpD increases the propensity of the firm to internationalise, as evidenced by Firm 16S' founder's response. Secondary evidence

confirming these developments have been drawn from Firm 16S' website and the founder's LinkedIn (business oriented social networking site) profile. In addition I met the founder at a presentation which was being given by an investment and trade executive from the Maryland department of business and economic development.

> We're at the point now where I say we have two major strategies at the moment: the one you could say, the one is to capitalise our products, one is take all products the ones that we have developed and to productise them in South Africa. We're not [going to] stop innovating, were going to stop spending all our money on innovation and we are going to start rolling out the products, because we believe we've come to the point now where we've developed the technology, and the team and the clientele, the contacts in the market to start getting these things to cash flow, they must all make money. At the same time we want to continue the technology development in the United States. So we want to move the centre of development from South Africa where it is difficult to innovate and develop because we have a lack of resources, move it to the States where we can basically invest in the United States by employing top skilled Americans. [Firm 16S]

Quality	6
Consistency	7
Substantiveness	9

6.2.2 Theme 8: Interoperability across Proprietary and Non Proprietary Platforms

With Firm 24S, what initially started as the development of an identification system for one bank is now metamorphosing into an entire country wide identification system, within the firm's major international market.

> So because we are using the banks to create a distribution network, so there is currently 3800 bank branches in [Country], so if we have everything installed then we have 3800 points of presence. Through our bureau we sell other services like pension enrolments. If somebody did a bank transaction, we'll notify the pension systems that this guy is still alive, so you know he is still transacting somewhere on our system. So we give them a proof of life, then they pay the pension out and things like that. So it's a big sort of interconnected system. Also for [state governments] we're doing lots of work. We did the government salary pension identification system now, where I think they [used to] pay 12300 pensioners every month now they pay 7800, [...] the rest

> were all fraud (laughs). People don't realise how much fraud there is so it's a big saving for these kinds of people. Now we are busy with a couple of other state [systems] that we are busy doing things on, but ultimately we also partnered with the central bank of [Country] through [an interbank arrangement] service, to be our hosting partner for our bureau server. Which gives us sort of government sanctioned monopoly because the central bank of [Country] is now switching for our thing (laughs). We're sort of getting critical mass now inside our thing in [Country]. [Firm 24S]

Quality	8
Consistency	8
Substantiveness	9

The information provided during the interviewing process has been confirmed using secondary evidence drawn from Firm 24S' business plan, company website, and independent media reports.

From inception, Firm 14S has designed its software applications and where necessary collaborated with the manufactures of different platforms so as to ensure that their technology is interoperable across a range of platforms. The following statement issued by Firm 14S's founder in 2000 in a local newspaper, confirms this.

> The [Firm 14S] mobile wallet solution that we have developed in conjunction with a group of management consultants and technology partners is a completely open platform. Our intention is to urge all local and global mobile operators, banks and system integrators to use the [Firm 14S] technology, thereby providing interoperability across different cellular networks. [An online publication]

Firm 28S CEO explains how the next version of their game management system will enable the player to access gaming options on a range of different platforms. Firm 28S has provided a range of media publications which confirm these developments.

> As I said, there's this new version that we're busy with now. It's got a Facebook

element, so there's a whole community element. There's a whole recognition thing with trophies and player grading. There [are] game leagues from a multiplayer point of view. There's a sweepstakes module. So it's really now becoming the big daddy of gaming. We went and did all the research across all the top game sites globally, and really looked to see what their unique selling proposition was, and took [Firm 28S] to a totally new level. So we've incorporated a lot of what some of them have, but have built a lot of uniqueness into our new platform as well, which will be launched in February

So, as I said, in the past it was purely online, now it's online, mobile, within a Facebook environment, within a Google environment, within your Apple Mac environment, and then moving into an iPhone environment, Nintendo Wii, so really getting all the touch points from a gamer. So if a gamer wants to play online, he can play it online. If he wants to play it on his mobile phone, they can play it on their mobile phone. If they want to play it on their PC which has got no internet connection, they can play it on their PC as well. So that's […] we've really covered each of those areas. [Firm 28S]

Quality	6
Consistency	7
Substantiveness	9

6.2.3 Summary

As the findings show International Entrepreneurial Opportunity Development (IEOpD) is a critical activity for ERISFs which leads to an increase in the range of cross border links which the ERISF is able to form and thus accelerates the speed of internationalisation of the ERISF. It is also through this process that software firms which rely on proprietary technology developed in house are able to improve the stability of their products, and increase the ease with which their product can be integrated across a range of different platforms and systems. In a few limited cases IEOpD enables the survival of those ERISFs who might fail to meet their original technology development objectives and are thus forced to pursue alternative markets (Firm 33S, Firm 21SC) and find alternative uses for their technology (Firm 31B). For domestic market firms Entrepreneurial Opportunity Development increases the propensity of the firm to begin its internationalisation activities.

Thus proposition 7 is amended to reflect the more consistent pattern which links IEOpD to the range of cross border links established by the firm. Hence proposition 7.1 states that.

Proposition 7.1

International entrepreneurial opportunity development widens the range of cross border links formed by ERISFs and increases the fungibility of the ERISFs software applications, thus accelerating the speed of internationalisation of the ERISF.

6.3 Domestic Market Factors: Proposition 9

As alluded to in chapter 3, a modified version of Benito *et al*.'s (2002) conceptualisation of domestic market factors is used to model the role of domestic market factors in the internationalisation of South African ERISFs. When imported to ERISF internationalisation the argument is that centripetal forces, as evidenced by the availability of home bound assets: supporting institutions, infrastructure, related firms (related network base), and a domestic market client base, exert a pull effect on the firm, encouraging the retention of the firm's activities within the domestic market, thus delaying the firm's internationalisation activities. The absence of sufficiently strong centrifugal forces, as evidenced by deficiencies in or the lack of adequate home bound assets, exerts a net centrifugal effect on the firm, prompting the early internationalisation activities of the firm.

Proposition 9 stated that:

Some country specific factors may encourage internationalisation, whilst others may encourage the firm to retain its activities within the domestic market.

Themes 9 and 10 elucidate the main country specific factors which encourage the internationalisation of the firm and those factors which retard the firm's internationalisation activities, thus providing support for proposition 9.

Using a case ordered effects matrix (Miles and Huberman, 1994), Table 19 shows the effect of specific recurring domestic market factors (probable causes) on the formation of the firms cross border activities (probable effects). Based on the probable effect of these domestic

market factors on the formation of the firms cross border links, three clusters emerge: cluster 1, which is composed mainly of biotechnology firms which have developed a proprietary patented technology; cluster 2 and cluster 3 are composed of a mixture of software consultancy firms and proprietary technology led software firms. In comparison to Cluster 2, cluster 3 has a higher proportion of software firms that have developed a proprietary technology which is recognised for its uniqueness, mainly through patenting. Of note cluster 3 consists of the software firms identified in Theme 1 whose internationalisation activities have been accelerated through the establishment of relationships with MNEs, and foreign firms. Here the establishment of network ties which coincide with the firm's internationalisation activities overrides the potential effect of the domestic market in delaying or accelerating the firm's internationalisation activities. [Firms 5SC, 22SC, 24S, 29SC, 15S]

From the findings two main themes emerge. Within Theme 9 the following emerge as the main domestic market factors (centrifugal forces) prompting the early internationalisation of Firms in Cluster 1.

a. Underdeveloped formal regulatory system.
b. The lack of advanced technological users coupled with the paucity of external technological resources.

Within theme 10 the following emerge as the main domestic market factors (centripetal) which delay the firms in Cluster 2's internationalisation activities.

a. the existence of a domestic market base

b. the existence of a government market client base, access to which is enhanced through the governments Black Economic Empowerment Policies.

Table 19

Probable Domestic Market Causes

	Cluster 1										Cluster 2							Cluster 3										
Cases	2B	3B	8B	10B	11B	20B	31B	17B	19B	23B	32SC	1SC	7SC	6S	9S	25S	34S	5SC	22SC	29SC	12S	13S	14S	15S	24S	28S	33S	35S
Cases												4SC	27SC	26S	16S													
Cases												21SC		30S	18S													
Funded	✓	✓	✓	✓	✓	✓	✓		✓	✓							✓						✓					✓
Probable Domestic Market Causes																												
Self Funded											✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓		✓	✓	✓	✓	
Limited Domestic Market Customer Base	✓		✓	✓	✓	✓	✓																					
Lack of a Regulatory Environment	✓		✓																									
Presence of a regulatory environment		✓					✓		✓																			
Limited availability of technical services and resources.	✓	✓	✓							✓													✓					
Domestic Market available							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					✓						✓
Favourable (unfavourable) Government policies BEE								✓		✓	(✓)	✓																
Favourable Government Policies (Science and Technology Focus)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓																		

Table 19

The Probable Effects of Domestic market causes on the firms internationalisation activities

	Cluster 1										Cluster 2							Cluster 3										
Cases	2B	3B	8B	10B	11B	20B	31B	17B	19B	23B	32SC	1SC	7SC	6S	9S	25S	34S	5SC	22SC	29SC	12S	13S	14S	15S	24S	28S	33S	35S
Cases												4SC	27SC	26S	16S													
Cases												21SC		30S	18S													
Probable Effects																												
Domestic market focus												✓	✓	✓	✓	✓	✓					✓						
Formation of inward cross border links	✓				✓	✓	✓	✓	✓	✓	✓							✓		✓	✓		✓	✓	✓	✓		
Formation of outward cross border links	✓	✓	✓	✓	✓	✓													✓		✓		✓	✓	✓	✓	✓	✓
Formation of cooperative cross border links	✓	✓	✓			✓	✓																✓		✓			
Timing of internationalisation activities within the first three years	✓	✓	✓	✓		✓		✓	✓																	✓		
Timing of internationalisation activities between 3rd and 6th years.							✓																	✓	✓			

Cluster 1 Biotechnology Firms

6.3.1 Theme 9: Centrifugal Forces

6.3.1.1 Underdeveloped Formal Regulatory System

The lack of a comprehensive regulatory environment, and or deficiencies within the implementation of existing regulations, has a greater impact on the internationalisation activities of technology led biotechnology firms, specifically biotechnology firms which are involved in taking their products through the clinical trial pipeline (Firms 2B and 8B). With Firm 31B, its ability to provide specialist analytical laboratory services for its international clients is dependent on the approval of clinical trials within South Africa.

Due to the lack of a comprehensive regulatory system for class three medical devices, Firm 8B sought European CE accreditation for its coronary stents. The accreditation of the European CE mark, in turn, resulted in the firm starting its outward directed internationalisation activities in its second year of operation, in response to unsolicited requests from international distributors. Ironically, the lack of a regulatory system for class three medical devices enabled Firm 8B to move through the clinical trial pipeline at a faster pace, and thus complete the development of its coronary stent within a short time period (approximately one year). This is explained by the CEO.

> Now South Africa gets complicated. South Africa does not have regularised regulations; it is a totally unregulated environment. You can plant a cell phone into somebody's chest if you can persuade a doctor to do it. It tends to be self regulating. You won't find too many doctors that are willing to implant a cell phone into

> somebody's chest, but it's theoretically possible. So on one hand it makes for a bit of the Wild West here – well not, it tends to be quite self regulatory here and quite conservative, but on the other hand it did allow us to go for human implants before we would have been able to in Europe. But at the same time though we went for European approval, in fact we worked extremely hard at getting European approval because no one in SA had any experience of it. We were the first company, I think in the Southern Hemisphere, certainly in Africa, the first company to get European approval of what is called a class three device. [Firm 8B]

Quality	6
Consistency	7
Substantiveness	8

What Firm 8B's CEO clearly brings out in his second response, is that the firm had not intended to engage in outward directed internationalise activities at such an early stage in its commercialisation process, the initial intention had been to focus on the domestic market during the early stages of commercialisation.

> Actually this is when the commercial side of the business got quite interesting because once we had European approval we got lots of approaches from people in different countries, *can I be your distributor in this country*, *can I be your distributor in that country*, and that's in a way when we started getting a bit lost. Because our original intention, our objective with the business was to focus on the local market, get designers to make it here, sell it here, then we will see […] later what happens internationally. But we started getting all these enquiries because we had approval, we had European approval, so technically we could sell our product wherever we could get approval. So where I think we started getting lost, is because I think we started to focus on both the South African market and the European market, which obviously for a small company with very little resources was too difficult to do. [...] Looking back on it I think we did neither of them well and I think that was a big mistake, we should have decided on what we were going to do first and then kicked off.
>
> So basically as I said, in about 2001 we started getting all these things, and in 2002 we realised it was a bit expensive and I think that's when we met [Licensee] and we worked with them for about a year and a half doing some development work [...]. We did some development products which they subsequently sold, and then they sold our first stent [internationally] as well under license. [Firm 8B]

Quality	2
Consistency	7
Substantiveness	9

For Firm 2B the lack of a comprehensive regulatory framework for class three medical devices, delayed the movement of the firm's first Porcine Bone Morphogenetic Protein (BMP) product through the clinical pipeline. The lack of a regulatory framework for medical devices has forced firm 2B to adhere to the higher pharmaceutical standard for the manufacture (pilot) of their first porcine based BMP product.

> So we have a certified manufacturing facility for the production of pharmaceuticals not medical devices. We were forced to do that because as [CEO] told you there is no medical device regulation in the country, so we then automatically adhered to the higher standard which is the pharmaceutical standard for producing pharmaceuticals. We then completed all our pre clinical studies successfully following the European standard, because they were no standards locally. [Firm 2B2]

Quality	6
Consistency	7
Substantiveness	6

Both the CE for business development and the CEO identify the lack of medical device regulations as one of the main factors contributing towards the delay which the firm encountered when seeking approval for its pre pivotal human study from the [South African] Medical Controls Council. Despite adhering to the higher pharmaceutical standard, the delays which Firm 2B faced when attempting to gain approval for the start of their clinical trials, highlights the deficiencies in the implementation of existing regulatory frameworks. This is explained by both interviewees.

> That's the first obstacle we encountered as a company, the local regulatory body took 19 months to approve the start of the study. So [for] 19 months they basically messed us around and we weren't able to commence our human study. [They tried] everything they could possibly think of to, I don't know; maybe block us from starting the study because they didn't understand the technology, I don't know, that's the only way we can read it. So think about it, you are a young entrepreneurial company; you are in essence VC funded, so you have to be producing results all the time to keep your funders happy. And then you bump your head into a regulatory environment, where they don't have regulations, they don't have staff, they can't make a decision, so they

> make no decision until 19 months later. It took us 19 months to get approval, so that was most probably the biggest obstacle we faced in this country. [Firm 2B2]

Quality	7
Consistency	8
Substantiveness	9

> Eventually we had … authorisation by the Medical Controls Council (MCC) to start [the] phase 1 pre pivotal study for the medical device called [name]. Thus we had delays through the Medical Controls Council (MCC) because of what we perceived to be lack of sufficient knowledge of how to manage new chemical entities. New chemical entities is a new novel drug discovery and typically South Africa does not do very much of that. We only enter into the scene when it is in phase 2 and phase 3 and the drug discovery has already happened in the US or Europe. They have already done all the preliminaries and when it gets here it is, […] our job is to do pivotal studies in SA, to pay for something which already has established safety profile in humans and animals and to develop it further for efficacy studies. So we approached the MCC with a new technical entity requiring a phase 1 safety study and they were not sure how to handle that; they took 19 months. So that is the biggest challenge that we have to overcome; that 19 months cost a lot of money in delays and it set us behind very much. We got through the challenge and we were very fortunate to complete the study early this year. [Firm 2B1]

Quality	7
Consistency	8
Substantiveness	9

In line with Firm 8B, Firm 2B is in the process of applying for the European CE mark for their first porcine BMP product. Whilst this accreditation has enabled the firm to carry out its domestic market activities, the CE for business development views the extent to which an exclusively South African based quality management system would be accepted internationally as being limited.

> No data coming out of South Africa will be accepted for any of the international markets that are really attractive to us. So if you get a dossier coming out of South Africa, the dossier basically summarises all your clinical data and you hand it to a regulatory authority and they require some [...]. If you take a South African one and give it to Europe they are going to say, *well fantastic what the hell do you want us to do with this rubbish*. If you take a European dossier and bring it to South Africa they review it cause they accept the CE mark standard whatever. So we will, it's like if you take a European dossier to the States, it doesn't matter, they will say well please repeat this and repeat this, so they have what is called the organisation act, which is between

> Japan, Europe and the USA but it's been going for 10 or 15 years and you still have to repeat things anyway. So even then amongst themselves they don't trust each other. So that's a big issue for us, cause you need bucks, you need a lot of money then to [...]. You know your product works, [...] you [want to] go to the States, I'll repeat this clinical trial. You know it's frustrating, you have already passed the European standard, so now with South Africa we do everything South African. No other countries except maybe other African countries or Asian countries will accept a South African dossier, so what we try and do is [to] always try and look at it from an international perspective and apply it backwards into SA, backwards integrate into SA. So we would rather get a CE mark and then apply it in SA because we know it will work, rather than get an SA approval which we now have knowing we still can't sell in Europe till we have our CE mark. [Firm 2B2]

Quality	6
Consistency	8
Substantiveness	9

In contrast to Firms 2B and 8B, Firm 31B's ability to offer bio analytical services to its international clinical research organisation partner is dependent on the existence of a regulatory framework which enables clinical trials to be conducted in South Africa. This is explained by Firm 31B's CEO.

> It's well regulated from a health industry point of view, that's very important because in the end you are going to want to submit your trails to the FDA for approval, and the FDA needs to make sure the trial was conducted in places well regulated, otherwise you could have just made up the data and abused patients and all the rest of it. So they need to make sure [of] that as well. So we, surprisingly enough, still have a fairly well functioning regulatory system. I say surprisingly because we have had eight years of a completely incompetent health minister, but somehow the regulatory system has survived her worst efforts, and now we have a new health minister, so everything is changing. [Firm 31B]

Quality	6
Consistency	7
Substantiveness	6

Firm 31B's CEO attributes the delays in the approval of clinical trials more to the deficiencies within the implementation of the regulatory system, as opposed to the lack of a regulatory framework.

> The main one is the approval of clinical trials by the Medical Controls Council, they have to approve clinical trials that happen in South Africa, if they don't approve the trial can't go ahead. If the trail doesn't go ahead we can't do the analysis, and the MCC has been extremely inefficient: basically just a bungling bureaucracy of incompetent people, because they reported until recently to a completely incompetent minister who basically didn't believe in science, so why would she need an MCC in the first place [and]. So it was just not her priority, and a lot of good people left the MCC, and that meant the people who left were unable to […], I mean it's quite a complex process to determine whether a trial should be given regulatory approval, as you can imagine, and the people who were [there] just didn't know what they were doing. So trials got delayed, the approval of trials slowed down quite a bit and that's one of the factors that encourages or discourages international Pharma companies from doing trials in SA in the first place. It's going to take six months to get the approval … you might go to Poland where it takes 2 weeks.

Quality	7
Consistency	7
Substantiveness	9

Whilst the CEO highlights his frustration with the current manner in which South African's health regulatory body, the Medical Controls Council (MCC) operates, he does indicate that there is 'light at the end of the tunnel'. The current political changes have led to the replacement of the health minister. In addition, a new bill has been passed replacing the Medical Controls Council (MCC) with a new regulatory body South African Health Products Regulatory Authority (SAHPRA). According to Firm 31B's CEO these changes should accelerate the pace at which clinical trials are approved. Thus, in the case of Firm 31B, the existence of a relatively satisfactory regulatory system acts as a centripetal force, attracting inward directed international activities, which enable Firm 31B to offer its analytical services.

6.3.1.2 Limited Technologically Advanced Domestic Market User Base

The findings show that the existence and effect of a limited domestic market client base on firm internationalisation is more pronounced within technology led biotechnology firms. The availability of a domestic market client base varies, from there being virtually no

commercially viable client base, to the existence of a limited customer base which the firm relies on to initially market and or pilot its products. When asked for his thoughts on internationalisation, Firm 2B's CEO gave the following response.

> Okay, this is very important for us because South Africa is not very highly developed from a technology user (emphasis here) utilisation point of view: in medicines as a per capita basis or as a proportion of population, that's my belief. We've got 45 million people but not all of them will want to access high tech stuff, not all of them have got medical aid to pay for these things, therefore our market size is limited in SA, we have to look abroad for bigger markets to make our company able to survive better. [Firm 2B1]

Quality	6
Consistency	7
Substantiveness	7

This view was supported in an independent interview with Firm 2B's CE for business development.

> It's always been a scary thing, and we know we need to get that right. We always knew we need to get that right because South Africa is too small to justify the investment we have made to date. Well not really, the investment we want to make, and the vision we have for the company, so that's about all I can say for what we have thought about. [Firm 2B2]

Quality	6
Consistency	7
Substantiveness	6

According to both interviewees, the pricing structure of the existing Bone Morphogenetic Products (BMP) produced by the firm's international competitors precludes not only the South African domestic market client base, but developing countries as a whole. This is brought out in the following responses from the CEO.

> Because none of us can afford US$5000, am talking even China, I'm talking even India. I've got studies which show for [Growth factor products] to sell in those countries you would have to sell for about US$800. They [referring to competitors]

> can't even, most probably produce for US$800 using recombinant technology. So it's a no-brainer for them. So focus purely on America and Europe. Even Europe can't afford US$5000; they [competitor] have had a very bad uptake in Europe, [Competitor name] the recombinants. In Europe you know what the Americans tell us, they told us straight, the [Competitor] guys said that typically, you will find that typically a product that sells in the States, for it to be successful in Europe, it sells for about 60% of the price. It's just the way the whole Europe structure is, you know - the reimbursement agencies; the people, how they think; the surgeons, they are more socialist, they are not capitalist thinkers. Most of Europe is a socialist economy: Portugal, Spain, possibly not the UK, Germany; that's how they think they are thinking mostly cost saving; government is paying for most of these things. In the States the consumers will pay, they're consumerism there; it's all about hype [around] consumer products. [Firm 2B1]

Quality	6
Consistency	9
Substantiveness	10

> So, in the States most people pay for recombinant BMP themselves, no Medicaid, Medicare or whatever, they pay themselves for that. So who (emphasis here) in Africa can afford 50000 rand to try on an effect, you are going to stay in hospital and take whatever they give to you, if they have to chop out hip they'll chop out hip. The fact that you are going to have gait disturbance, possibly you going to have complicated stay, you are going to stay in hospital three days longer, you're going to be out of work for three months; so what, you are not paying 5000 dollars. It's a very select market, very small percentage that can afford it. [Firm 2B1]

Quality	6
Consistency	9
Substantiveness	10

What both the CEO and CE bring out is the current client base for BMPs concentration within certain markets, in this case predominantly developed country markets. While the possibility exists for marketing their first porcine BMP product in those markets which have been neglected by their competitors (because of the lower pricing strategy that the firm will be able to employ), starting with the domestic market, the CE points out the difficulty this would present.

> I told you [Competitor 1] and [Competitor 2] basically educated the whole world, and when I'm talking the whole world I'm taking about Europe, Japan, and the USA, about BMPs [bone morphogenetic proteins], about how good they are, and the

> reimbursement agencies know about them, and they are given their studies, whatever. South Africans know nothing, South African surgeons will know about it but the hospitals will know nothing about it, and the Discovery [medical aid company] and the medical aids know nothing about it, so we are going to have [to] educate them, and it costs money to educate them, and that's unfortunate for us. [Firm 2B2]

Quality	4
Consistency	7
Substantiveness	6

In line with Firm 2B, Firm 10B's CEO highlights the non-existence of a domestic market client base for their products. The CEO in turn draws attention to the concentration of the firm's commercial market base, as a result of pharmaceutical companies retaining their research and development activities within specific developed markets. This is supported by firm 10Bs outward directed internationalisation activities, where the CEO identifies the markets in which the firm exports its products directly and indirectly through distributors as: the 'US, UK and Japan'.

> There was absolutely no market in SA, we never even attempted to sell it in SA we had no users here. The pharmaceutical companies that were buying the product, particularly [product name], don't do any type of the kind of research [in South Africa]. Certain types of research generates the data that we use in our products, they don't do that type of research here, they mainly do manufacturing and marketing in SA, so Pfizer and Smith Kline Beechham they don't have those R and D facilities here they keep those primarily in the US and the UK. [Firm 10B]

Quality	6
Consistency	7
Substantiveness	8

With Firm 20B, while the domestic market demand for the firm's product is severely limited, the firm uses the existing domestic market base to pilot their products.

> I guess our domestic market is a small percent of our business, but where it's probably valuable is in the development of the products, it [is] good that we have a local market where we are closer to the action – we view them as the test market. So in [some] cases we've been able to provide new products to some local customers first and use

> that as an opportunity to get customer feedback. We also do test products internationally, but most … you can go and see people in the local market and interact with them on a regular basis. In some cases we have better feedback, so that's been the important advantage of the local market. It's also important to have a good presence in your local market because that's in your backyard. [Firm 20B]

Quality	3
Consistency	5
Substantiveness	7

For Firm 8B, the domestic market client base is limited. However, the importance of the domestic market and its ability to enhance the firm's credibility, can be attributed to the existence of an extensive support infrastructure within cardiology, as evidenced by the number of cath (catherization) labs and expertise in cardiology in South Africa (the first heart surgery in the world was carried out at Groote Schuur in Cape Town). In addition, the CEO points towards the existence of a considerable number of international competitors in proportion to the available commercial client base, and the subsequent high price margins which coronary stents are able to command within the domestic market, as evidence of the importance of the domestic market.

> I think a lot of commercial wisdom would say make sure you succeed at home before catching the ship abroad, because you need to establish a solid base. You know if someone in Europe sees you, *oh ya you're coming to sell your products here*...First [question] people ask is, *well how successful are you guys in SA?* [and] we'll say, *well actually, no one is using our products here, but we'll come and see if a Swiss person wants to try them.* That's not really going to go down well. Whereas we can go and say now we are well established. As I said to you initially, our original focus was, the original intention was to focus on here, but I think we lost sight of what we should have done from the beginning, [which] is forget the rest of the world for four or five years. But right now we can go to Europe and [if they] say who is using your products in South Africa? Well they are sold in every hospital in the country and that has a huge amount of credibility. But ya it's a very important market, it's a big market financially but ya quite a small market. [South Africa] uses one tenth of the number of our type of implants that are used in France for example, very small, but the price of one implant is much higher than it is in France. [Firm 8B]

Quality	6
Consistency	10
Substantiveness	9

> From a development point of view this is a good country for cardiology as I said earlier, there's a lot of cardiac disease and a huge amount of money, […] just [by] looking at the number of having more than 60 cath labs in the country. I think that's more than Britain and yet we have only got seven million people on health insurance. [Firm 8B]

Quality	6
Consistency	8
Substantiveness	7

> All the international players are here and they have got a lot of money, and they pump a lot of money into doctors [through] recreation, congresses; so it's taken us a long time to be able to compete with those guys because of huge marketing; because there is a lot of margin, there is a lot of profit in this country with higher prices; they have used a lot of that money to keep the other people out. So there is not a lot of competition in this country, I mean compared to Europe, Europe is probably twenty thirty competitors, here there is probably six eight but those people that are in here protect their territory. [Firm 8B]

Quality	5
Consistency	5
Substantiveness	7

Firm 11B's CEO in turn, emphasises the importance of the South African salon and spa market, in the initial marketing and piloting of their product, despite its limited size.

> The quality of our salons and spars is good and even the products we have, mostly international products, on salon shelves is very high. The standards are very high, and we knew if we got into the South African market which was easier to penetrate, it is close to home. If there are issues we can solve them quickly, and so going into the domestic market first, allowed us to solve any issues, to grow slowly, to test things, to reengineer things, and improve on things if there were problems. It allowed us to do that which we did. We used the market to do that and that helps us enormously. Also going into the South African market and being so close to it, and going direct to the market ourselves, we got first hand feedback. Now when we are dealing with international guys they are asking us questions, how to […], and I have had this question and this challenge, we know how to address those. We know what to do; we have already put things in place. So for example, we package in our salon products, we package those ovals in a box like this which the salons use during their treatment. They apply them during facials, but sometimes the slice is [slippery], the environment is warm in there. They get warm and the product gets quite moist and they slip a bit, and the customer and therapist have [a] hassle putting them back and that defeats the object. You are supposed to be creating relaxation not frustration in a salon. So we learnt that and developed a little eye pillow that just nestles on top of the slices. A lot of our new markets that have opened up will never experience that. They will never

have that problem of a salon not wanting to stock it because of that, and so being close to home and using home to iron up those teething problems has really been valuable. [Firm 11B]

Quality	5
Consistency	8
Substantiveness	10

And [we] have learnt credibility. When you are going offshore and they say where [is] your product, […] how many are you selling. Also when we are setting targets because we know how many products a salon sells, and you know what we have discovered, it is not much different anywhere else in the world. In the US for example, you get your big ones with 20 rooms, which you do not see here often, that's different. But with [Country 1] and [Country 2] and some of the markets which are similar sized to ours; it is all one and the same. If a salon is selling on average 20 pairs a month, they will sell on average 20 pairs a month there. We have seen that the trend is the same. So where we set targets and projections for them and performance clauses, our local market has helped us to set that. We have pioneered with the South African market: so all the creative campaigns, all the newsletters, all the training manuals, we have developed for our market, we have just adapted for our distributors. So the same thing with this mass market retail range, we are going first, we are going into [South African Retailer] [Firm 11B]

Quality	6
Consistency	8
Substantiveness	10

However for some biotechnology firm's the domestic market makes up the firms major client base. Firm 3B has been set up to identify low cost alternative Antiretroviral (ARV) drug treatments and the domestic market will constitute the firm's dominant client base. This is explained by firm 3B's CEO.

As I said in the first part, [Firm 3B] is a small company that has been established for two reasons: and the one reason is to do Antiretroviral (ARV) drug discovery, and the second reason is to build capacity in South Africa for the manufacture of ARV active pharmaceutical ingredients. So let me deal with those one by one. First of all there is an umbrella issue which is why ARVs, and ARVs, it's a focus of the company simply because it's a huge priority for South Africa. We have the greatest number of Human Immunodeficiency Virus (HIV) infected people in the world on a country basis, and the greatest number of people requiring treatment; so it's the epicentre really, as you know, of the HIV epidemic. And unless we do something about it, well; we can't rely on the resources, and the innovation, and the research of other countries to help us get ourselves out of the hole into which we have dug ourselves. So the big issue here is

> that AVRs, there is a huge demand for therapies to treat HIV and [Firm 3B] is just one of many companies that are established in order to deal with this issue. [Firm 3B]

Quality	7
Consistency	8
Substantiveness	8

Firm 31B's ability to offer its bio analytical services to international clinical research organisations is dependent on the availability of 'a domestic market client base'.

> Also for any diseases there are a lot of sick people here; the flip side of having an epidemic of TB, Aids, and Malaria, and a whole bunch of other diseases is that there are a lot of people who have those diseases, and therefore it's very easy to recruit people to a clinical trial. If you wanted to do those trials in Western Europe, it would be basically impossible, because you couldn't find enough people with TB to actually recruit for the trial. There might only be a few hundred people, it would be practically impossible. It wouldn't be a random sample either and it wouldn't be good enough statistically, so if you're doing diseases, like infectious diseases, basically Africa is a good place to do it. There's also a pretty good genetic mix here, you've got […], you can get a pre genetically diverse sample with African, Asian, European stock all in one place, which you can't get in many other countries. Which just makes it more relevant in [a] sense [than] if you just did a trial based […] let's say on African genetic stock, that may involve a genetic profile that's relevant to the disease, [however], the conclusions you can draw from a trial might not be relevant to a different genetic profile. So it's sort of [the] diversity of the genetic stock here [that] is interesting, not necessarily because of anything, but I think it's better than not having it in most cases. Because you know if you want to select let's say African or European genetic profiles you can but if you want a more diversified group you can get that too. [Firm 31B]

Quality	6
Consistency	7
Substantiveness	10

The importance of the domestic market in providing a customer base for the firm's inward (revenue generating) internationalisation activities is brought out by firm 19B, whose main internationalisation activities centre around importing and distributing international life science tools primarily within South Africa. The firm has also been appointed as the Southern African and Sub-Saharan African distributor for some of the international manufacturers, but

with export sales making up less than 10% of the firms revenues, South Africa remains its dominant client base. This is evidenced in the founder's responses.

> There is enough research organisations and they have some money to do research. The infrastructure is there. It's not too big a market, so not too many big companies are here, [in] terms of competitors; obviously we are here [locally] so we are having quick delivery times. [Firm 19B]

Quality	5
Consistency	7
Substantiveness	6

For firm 19B, as a distributor, there exists the potential threat of the firm's operations being replaced in the event that the international manufacturers decide to serve the local and sub-Saharan market directly through the establishment of their own sales offices in South Africa. This is a trend which the CEO has observed with one of its suppliers. Here the CEO views the limited domestic market size as being advantageous because of its perceived ability to act as a deterrent, from the potential threat of replacement of the firm's activities, by limiting the firm's potential sales.

> So as I said, this kind of interaction, obviously there is always a danger that they may decide to go themselves at one stage, as a distributor, because what they do with their distributors in Europe, a lot of their distributors have been now changed to [manufacturer's sales office]. See in [the] Benelux they had one, I think even the UK, you see now its [manufacturers sales office]. So they are reducing their distributor network in the EU, so I guess if you don't do too bad and you don't do too good, that's fine, that's safe. If they see it's more [worthwhile] to do it themselves, obviously they can see how much we sell. [Firm 19B]

Quality	7
Consistency	8
Substantiveness	7

Cluster 2 Firms

6.3.2 Theme 10: Centripetal Forces

6.3.2.1 The Existence of a Domestic Market Client Base

Cluster 2 consists primarily of software consultancy firms, and software firms which have developed a generic product. Notably the bulk of firms in cluster 2 were at or close to inception at the time of interviewing, some of these firms had been established within the last three years. Thus the propensity exists for these firms to move from the DM to the ERISF category. Here centripetal forces delay the firm's internationalisation activities. For software consultancy firms whose activities are primarily dependent on selling time, and whose activities necessitate the firms proximity to its client base, there is a sufficiently large domestic market client base. This is evidenced in the following responses from firms in cluster 2.

> So we want to be uniquely and contextually relevant in our environment, and when we've cracked that, we'll do it internationally. We're too small at this stage. You hear what I'm saying? We're not close to even serving the South African market completely. We're serving the Johannesburg and Pretoria market at this stage, and if we've grown appropriately with … enough…, then we'll see, are there appropriate places for us to go to? [Firm 27SC].

Quality	5
Consistency	9
Substantiveness	7

> No I see South Africa, but I use global technology and global best practice, but … I see South Africa as my market. So I don't see the world I see the market. [Firm 7SC]

Quality	6
Consistency	8
Substantiveness	4

Explaining why Firm 7SC has decided to focus on the domestic market,

> Specifically because my business is very very hands on. I spend a lot of time with my client organization, nurturing them, helping them with their strategies, and sitting down with employees to work out things. And if I was flying all over the world I wouldn't have a life. We have enough clients here, nice clients. May be in 5/6 years time I will have exhausted the markets here. Right now my days are full. I could get other consultancy but this goes back to life style. I do not necessarily want to be jetting all over the world. I have a 4-year-old son … I am picking him at half past four today and I can do that. I have just taken a lifestyle decision [Firm 7SC]

Quality	6
Consistency	9
Substantiveness	8

In line with firm 7SC firm 6S emphasises the need to maintain its proximity to its client base.

> Well, for me to have someone knocking on the doors in UK, it means managing a relationship, whether it is an employee or partner relationship it's very remote, and I need to manage that relationship one way or another. I guess part of the complexity is that our product is not neatly commoditised. If it was then you could [say], *okay here it is, it is [...], that's the menu, take the menu and go*. Whereas everything is sort of bespoke, everything is bespoke development at this stage. We need a single client, and we understand their requirements, and put it together specifically for them, based on their communication requirements. And quite frankly, trying to do that remotely is very tricky. I have worked in several agencies that have had sales forces based in Joburg, that has been hard enough, and for me to have someone selling in the UK is very daunting. [Firm 6S]

Quality	4
Consistency	9
Substantiveness	8

Firm 9S started by offering technological consultancy services. Firm 9S has built its technology platform which houses the firm's generic products. The firm's technology has been developed through the identification of bespoke customer solutions which the firm could develop into standalone product offerings. Below the founder explains how the approach

which the firm has used to build its technology platform has up until the recent completion of the development of their technology platform, led to a focus on the domestic market.

> I think up to date our stronger focus was more on getting the product to the point where it would make sense to take it international, you can't take half a product international, you can get away with it in the domestic market because you have people around it and the services around it, but not internationally, you are too far from the end customer.
>
> Well, that approach I think in some sense has led to a bigger focus on the domestic market cause you have to be closer to your customers, for it's not a box that we're selling and shipping, but as the product is now maturing we are starting to get requests from people internationally, from people saying, okay this technology you have it looks interesting we would be interested in becoming a partner, in using this technology here to serve a customer. So we are not looking at establishing an end customer base we would be looking at establishing a partner network internationally, that's a difficult thing to go and establish. [Firm 9S]

Quality	6
Consistency	7
Substantiveness	8

For firm 1SC, an e-learning consultancy firm, the focus remains the domestic market. The firm's limited internationalisation activities have been sporadic; this is evidenced in the managing director's attempts to explain why some of the initial attempts at internationalising have been unsuccessful.

> It was with my other partner [who] is more in charge of that. He heard about that opportunity via networking, and contacted the people … the potential client. I don't know why we didn't succeed. It could have been the cost. It could have been that the work never happened. That's also a possibility. I don't know. But we are not focusing so much on this aspect. In fact, South Africa is a great market for e-learning. It's needed. There's a need for training which is enormous, and the way that we produce our e-learning products … it works well for South Africa. So sometimes our products [bespoke products] are used in Africa, by the banks. They take the products out into their African countries. But it's not us directly, you understand. Looking for opportunity … we are not making 100% time commitment to go international, not at all, but if it arises, it will be … we will take it, if it's possible. [Firm 1SC]

Quality	6
Consistency	7
Substantiveness	8

Firm 34S, 30S and 26S emphasise the existence of growth opportunities within the domestic market.

> Until FIFA 2010, I believe our focus should be here. It's a market close to home, it's a market in which we already established ground roots, grass roots, we have grown up here, already built established relationships with many of the industry players. I just feel that until 2010 has passed, this market is rife with change, and the spending of money to improve many public services, and we fall right into the middle slap bang of the sector, and the main [area], [public transport], which was identified as needing improving. So we would be silly to focus anywhere else right now as the best opportunity we have is here (emphasis). I do feel maybe at the start of 2011, we would then um, well maybe now, [we are] already eyeing out relationships which we can foster, we will only actually attempt to make any moves overseas at the beginning of 2011. [Firm 34S]

Quality	7
Consistency	10
Substantiveness	8

> The fact [is] that, the variables in our reality [are], that, about 35,000 people [are] unemployed in this country. Our informal sector is massive in this country, and that [is] the reality of … a South African reality, if not an African reality. Mobile phones are extremely pervasive in this country. I read a report the other day. They took a whole lot of developing economies, and there is no economy in the world that has … that [penetration of] mobile phones … 90% of the people in this country have a mobile phone. The only people that don't have mobile phones are children. Everyone's got a mobile phone. So these characteristics of our environment … Our banks have been incredibly poor at providing financial services to the lower end of the market.
>
> They've [Domestic market characteristics] influenced our decision to come up with the concept of a [mobile] wallet that is not linked to a bank account. [Firm 30S]

Quality	5
Consistency	7
Substantiveness	7

> Well, how we're planning to grow in South Africa is, we're planning to get lots of chains like [Food Chain 1] and [Food Chain 2], and we're planning to offer our products to people like [Bank 1], so people can sit down in a bank and surf the internet, … wireless internet there for free as well. That type of stuff. So we're planning to grow over here [South Africa] first, and then once we're big here, to open up our product offering to the rest of Africa. [Firm 26S]

Quality	5
Consistency	7
Substantiveness	7

6.3.2.2 Government Policies - Government Market Client Base

Part of what makes the domestic market attractive particularly for software consultancy firms in Cluster 2, is the firm's ability to access the government market client base. The findings indicate that the ability to meet the government's BEE (Black Economic Empowerment) policies through black employee representation enhances the firm's ability to access the government market client base. This is brought out in the following responses where respondents have been attempting to either explain the role of the domestic market, or the firm has indicated a limited interest in internationalising.

> The positives have been our major client is national government, different government departments. The positive side is obviously engaging us as consultants paid the company. So we were a start up, we started as a firm based on income because for some companies it takes time. Government is the biggest customer you can ever get in a country. The other customer has been provincial government and municipal sort of level government. Those have also been Parastatals like the [Name]. What those institutions have done for us is that we have been able to apply our methodology, and test it, and prove that it works. I do not think the private sector would have brought in someone who was, as a company, that was green as it were ...There was an element that in terms of experience, that I was not completely green, but most of my colleagues were, but it would have taken longer to get there. [Firm 21SC1]

Quality	7
Consistency	9
Substantiveness	7

The above response from Firm 21SC's CEO is supported by the firm's Chief research and development officer.

> So what's really nice about our company [is that] ... three years down the line we have worked with all three tiers of government: local government, provincial government, [and] national government. We've worked with all three and the reason it's important, for me in my view, is because I think it's a competitive advantage to have that knowledge of ...as opposed to, you could be a company who is solely or somehow, you know, you just have this relationship at local government you keep on working at.

> I think it broadens your vision to be able to have worked with all, because at the end of the day, because it's linked, because at the end of the day, the three of them have to work together, they don't but you can. I find myself wanting to sell this as my as a competitive advantage, the fact that I have worked in various different national departments, also not just one [but] across these three tiers. [Firm 21SC2]

Quality	7
Consistency	9
Substantiveness	7

Government, quasi government departments constitute Firm 4SC's dominant client base, below the founder explains how the firm plans to expand its domestic market client base.

> You look at Gauteng, Gauteng GDP is quite high, Gauteng is the smallest province in South Africa, but it has got the highest growth in terms of economic growth. It's got the highest number of skills in South Africa. I am talking about skills from doctors, IT to engineers, they are all in here. There are in other provinces, but a lot is in Gauteng, so it's a lot of businesses here. You get to meet a lot of business contacts here as compared to other provinces. I mean your Cape Town, like Cape Town would be your tourist type of destination, see, Table Mountain and so forth, but here all you know is business, business, business, so for us, we know that a lot of companies they don't look into other provinces because of …But why I said our biggest market is the government, there is a government department in all the South African provinces, so we have to approach those government departments to speak to them. There are other private companies, not a lot as compared to Gauteng, but there is private business here and there that we can approach. [4SC]

Quality	6
Consistency	7
Substantiveness	7

Whilst Firm 22SC has recently embarked on an accelerated internationalisation growth pathway, the CEO acknowledges the significance of the government client market base in its domestic market operations.

> Well government is the predominant customer of ours, the educational sector is also [a] very big part of our customer base, but now the private sector is starting to increase as well. I foresee where government is probably 80% of our business today, but private sector will grow to become 50% of our business. I think it is because government tends to go through phases: sometimes they spend a lot and sometimes they do not spend a lot, it depends on what stage of technology adoption they are [at].

> Whereas the private sectors tend to, especially now there is a lot of demand in restructuring [the] private sector in terms of their technology, [are] starting to look at maybe adopting open source, because we do a lot with open source technology. We are one of the few [firms] in South Africa that's doing that, all of a sudden we have all these huge organizations contacting us to assist them with possible strategies of seeing where they can start to use the open source technology. [Firm 22SC]

Quality	3
Consistency	5
Substantiveness	8

Whilst firm 5SC operating in cluster 3 is internationalising and the revenue drawn from its internationalisation activities makes up more than 60% of the firms revenue base, the founder identifies the firms inability to access the government market as one of the factors impeding the firm's domestic market expansion. Having opened an office in Johannesburg the founder however highlights the existence of potential opportunities in South Africa.

> Government BEE [Black Economic Empowerment Policies], it's difficult to get into the government market if you are not a black company or if you don't have political connections. [Firm 5SC]

Quality	6
Consistency	4
Substantiveness	5

By attributing the slow growth of the firm within the domestic market to the firm's non compliance to the governments BEE policy, Firm 32SC's CEO brings out the importance of gaining access to the government client market in retaining the firm's activities within the domestic market. Here, the CEO explains why the government market is important for the firm's activities, and how the firm has been forced to internationalise by providing e-learning software development services to international clients.

> [Firm 32SC] is focused on e-learning, so it's between IT and education and a few things. Well I think the basis it didn't work was once again black affirmative action: firstly most of your educational work comes from government or semi state

> organisations and they will, of course, never support a white owned company, and also a lot of the e-learning development at the time was spearheaded by the SITA [State Information Technology Agency] and the sector education training authorities. Many of the private companies would, well the private companies could only claim back their training levies from the SITAs if they did SITA approved training, but to get into the SITA system you also need to be black basically. So we were [expletive removed] from the very beginning and the jobs that we did, we were either very lucky to get, or we had to work very very hard to get [the jobs] out of the system. Also other big users of e-learning, you know, well semi state like universities and so on, similar to not appointing whites they would also prefer not to work with white companies, because they must also appoint black companies. [Firm 32SC]

Quality	6
Consistency	10
Substantiveness	7

6.3.3 Summary

The findings support the conceptualisation of domestic market factors as the interplay between centripetal and centrifugal forces. Three clusters differentiated according to the net effect of the interplay between centripetal and centrifugal domestic market factors on their internationalisation activities emerge. For technology led biotechnology firms (Cluster 1), the existence of strong centrifugal forces arising from a limited domestic market technological user base; combined with the weak centripetal forces associated with the elementary stage of development of related supporting industries, and the embryonic stage of development of high technology support systems within the domestic market, exert a net resultant centrifugal force on the firm. Cluster 1 firms' early internationalisation activities cover a wider range of cross border activities spanning a combination of: inward, outward, and co-operative cross border links. The support systems which are being developed for high technology firms, particularly biotechnology firms, are all government funded mechanisms. Moderate to weak centripetal forces, as evidenced by the availability of early stage funding, allow for the retention of those activities which are core to the firm, supporting government attempts to develop a biotechnology sector. Within Cluster 2, comprising mainly of software firms, the existence of

strong centripetal forces; evidenced by the firm's ability to gain access to government and quasi government client bases (primarily through the firm's ability to meet the South African governments BEE policies) and or large corporate client bases; either delays the firm's internationalisation activities or encourages a 'half hearted' approach to internationalisation. This is evidenced by the sporadic and intermittent internationalisation activities of some of the software firms in cluster 2. Within some of the firms in cluster 3, comprising mainly of software and software consultancy firms, the presence of MNE subsidiaries influences the speed of formation of the firm's interpersonal and organisational ties, and thus the timing of the firm's internationalisation activities. Thus proposition 9 is modified through propositions 9.1 and 9.2

Proposition 9.1

The limited availability of technological inputs coupled with a restricted advanced technological user base leads to the early internationalisation of technology led biotechnology ERISFs.

Proposition 9.2

The availability of a domestic market client base retards the internationalisation activities of software ERISFs.

6.4 A Priori Framework: Bringing the Propositions Together

A summation of the original propositions, together with the modified and new propositions is provided in this section and illustrated in Table 20

Table 20

Proposition Summary

Original proposition	Confirmed/ disconfirmed	New proposition	Modified proposition	Primary internationalisation activity influenced	Dominant firm sector influenced	Resources emerging
Proposition 1	Partial Limited Supported	Proposition 1.1		Speed and Timing	Software firms (both categories)	Organisational ties, interpersonal ties (social capital)
			Proposition 1.2	Speed	Software firms (both categories)	Organisational ties, interpersonal ties (social capital)
Proposition 2	Not supported	Proposition 2.1		Speed	Proprietary patented biotechnology and software firms.	
Proposition 3	Not supported					
Proposition 4 and 6	Partial support		Proposition 4.1	Determines the transferable pre firm experiences and interpersonal ties.	Proprietary patented biotechnology and software firms.	Pre-firm individual level superior technical knowledge
					Proprietary patented biotechnology and software firms.	Pre-firm individual level sector specific international market knowledge
					Proprietary patented biotechnology and software firms.	Knowledge based Interpersonal relationships (ties)
		Proposition 4.2		Speed	Proprietary patented biotechnology and software firms.	

Table 20

Proposition Summary (continued)

Original proposition	Confirmed/ disconfirmed /partially supported	New proposition	Modified proposition	Main internationalisation activity influenced	Dominant firm sector influenced	Capabilities emerging
Proposition 5	Moderate Support					Entrepreneurial Orientation (EO) (Questionable)
Proposition 7	Partially supported		Proposition 7.1	Speed		International Entrepreneurial Opportunity Development (IEOpD)
Proposition 8	Supported		Propositions 1.1, 1.2, 4.2, 7.1	Speed		
Proposition 9	Supported		Proposition 9.1	Timing	Proprietary patented technology biotechnology	
			Proposition 9.2	Timing	Software and Software consultancy firms	

6.4.1 Knowledge Intensity: Propositions 1, 2&3

Under the role of knowledge intensity, partial limited support emerged for knowledge as regards the mobility of knowledge once produced, as conceptualised in proposition 1. This led to the development of propositions 1.1 and 1.2, from themes 1 and 2. As shown in Table 20, interpersonal and organisational relationships emerge as key resources. Thus propositions 1, 1.1 and 1.2 were presented as follows:

Proposition 1 stated that:

It is the ability to convert the firm's knowledge intensive intangible resources into outputs that can be codified, taught, reduced in complexity; and distributed through new modern distribution channels, at a relatively low cost, with greater ease and flexibility, which accelerates the speed of internationalisation of ERISFs.

Proposition 1.1 states that:

It is the ability to access the distribution networks and client bases of; dominant foreign firms, local, and or foreign multinational firms, which accelerates the speed of internationalisation of ERISFs and results in some ERISFs starting their internationalisation activities early.

Proposition 1.2 states that:

It is the ability to convert the firm's knowledge intensive intangible resources into outputs which can be distributed and maintained remotely, at a relatively low cost, and with greater ease and flexibility, using modern distribution channels, which enables the ERISF to optimise

on the distribution channels availed by their network partners, thus accelerating the speed of internationalisation of the ERISF.

As mentioned in section 5.2 propositions 2 and 3 were best addressed after propositions 4,5,6,7 and 9. The findings do not support a direct link between knowledge intensity and internationalisation as evidenced by themes 1, 2, 3, 4, 6, 7 and 8 and the inability of the subjective dimensions of knowledge intensity to differentiate between different categories of internationalising high technology firms. The findings provide support for the indirect effect of knowledge intensity. Thus the original propositions 2 and 3 and the new proposition 2.1 are as follows:

Proposition 2 stated that:

The higher the knowledge intensity the greater the likelihood that internationalisation will begin early and will occur at an accelerated pace.

Proposition 3 stated that:

The relationship between the knowledge intensity of the ERISF and its internationalisation behaviour will be moderated by the degree of internationalisation of the ERISF's national production or technological innovation network.

Proposition 2.1 states that:

It is through the ERISF leveraging its knowledge intensity for; the formation of interpersonal ties, organisational ties and continual IEOpD, that knowledge intensity influences the speed of internationalisation of the ERISF.

6.4.2 Prior Experience: Propositions 4 & 6

Under the role of prior experience, partial support emerged for the combined effect of proposition 4 and 6, which led to the development of proposition 4.1 and proposition 4.2. Thus, the original propositions (4 and 6) and the new propositions (4.1 and 4.2) are presented as follows:

Proposition 4 stated that:

The internationalisation behaviour of the ERISF will be influenced by the scope and depth of the individual level prior experience of the founders. ERISFs with a wider scope and greater depth of individual level experience will internationalise early, and internationalisation will occur at a faster pace.

Proposition 6 stated that:

The discovery of international entrepreneurial opportunities will depend on the prior international market knowledge and prior superior technical knowledge of the founders.

Proposition 4.1 states that:

The extent to which the individual level prior experiences: prior international market knowledge, prior international contacts, and superior technical knowledge; are transferable and thus accelerate the internationalisation of ERISFs; is determined by the extent of overlap between international entrepreneurial opportunities and individual level prior experiences.

Proposition 4.2 states that:

The extent to which ERISFs leverage their specialist technical knowledge base: by presenting at and attending specialist conferences, and trade events; influences the speed of internationalisation of the ERISF; by providing a platform through which the ERISF attracts potential international clients.

6.4.3 Entrepreneurial Orientation: Proposition 5

Proposition 5 was supported, with ERISFs rating themselves consistently high on Knight and Cavusgil's (2004) and Covin *et al's* (1990) IEO and EO scales respectively. However conflict surrounds the ability of IEO (as conceptualised by Knight and Cavusgil, 2004) to clearly disseminate between ERISFs and some DM firms engaged in intermittent, sporadic internationalisation activities.

Proposition 5 stated that:

ERISFs with higher levels of IEO/EO are more likely to commence their internationalisation activities early, and internationalisation is more likely to occur at a faster pace.

6.4.4 International Entrepreneurial Opportunity Development: Proposition 7

The findings provide support for the more pronounced effect of IEOpD on the speed of internationalisation of the ERISF. The findings lead to the development of proposition 7.1. Proposition 7 and 7.1 are thus presented as follows:

Proposition 7 stated that:

The discovery and development of international entrepreneurial opportunities will influence the timing of the ERISF's internationalisation activities by decreasing the period between the establishment of the ERISF and its first cross border activity.

Proposition 7.1 states that

International entrepreneurial opportunity development widens the range of cross border links formed by ERISFs and increases the fungibility of the ERISFs software applications, thus accelerating the speed of internationalisation of the ERISF.

6.4.5 Leveraging the Firm's Resources and Capabilities: Proposition 8

Proposition 8 is supported through propositions 1.1, 1.2, 4.2 and 7.1. It is primarily the speed of internationalisation of the ERISF which is influenced through leveraging the firm's resources and capabilities.

Proposition 8 states that:

The extent to which the ERISF's resources and capabilities influence internationalisation is mediated by the ERISF's ability to leverage its resources.

6.4.6 The Role of the Domestic Market: Proposition 9

The findings provide support for proposition 9, where the domestic market factors influence the timing of the ERISFs internationalisation activities. Propositions 9, 9.1, and 9.2 are thus presented as follows:

Proposition 9 stated that:

Some country specific factors may encourage internationalisation, whilst others may encourage the firm to retain its activities within the domestic market.

Proposition 9.1 states that:

The limited availability of technological inputs coupled with a restricted advanced technological user base leads to the early internationalisation of technology led biotechnology ERISFs.

Proposition 9.2 states that:

The availability of domestic market client base delays and inhibits the internationalisation activities of software ERISFs.

CHAPTER 7

DISCUSSION AND CONCLUSIONS

7.1 Introduction

This chapter begins with a summary of the overall research process in the context of the previous chapters and the objectives of the study. Subsequently, key results are presented in light of the extent to which they address the original research questions; and qualify, extend and or refute the existing literature. These issues will be examined under the following headings:

1. the types of resources and capabilities underpinning the internationalisation behaviour of South African ERISFs.
2. the extent to which South African ERISF's resources and capabilities influence their internationalisation behaviour.
3. how South African ERISFs leverage their resources and capabilities for their internationalisation activities.
4. the extent to which domestic market factors influence the internationalisation behaviour of the South African ERISF.

This is followed by a discussion of the study's contribution to knowledge, limitations, and recommendations for further research. For illustration purposes, some of the interview extracts presented in Chapters 5 and 6 are referred to whenever necessary.

The overall aim of this research was to investigate the early rapid internationalisation of high technology South African SME's using a resource based approach. Chapter 1 provided an introduction to the thesis. Within Chapter 2 a review of the literature was conducted. Chapter 3 set out the research questions, and mapped the development of the focal literature underpinning the a priori framework, and propositions used in the study. The research methodology and design were presented in Chapter 4. The research findings were presented in Chapter 5 and 6.

7.2 Types of Resources and Capabilities

Resources

As explained in Chapter 3, the focus has been on delineating those salient, intangible resource bundles and capabilities which influence ERISF internationalisation. The notion of saliency has been adopted in acknowledgement of the potential transitory nature of new venture firm resource bundles. Thus on the types of resources and capabilities underpinning the internationalisation behaviour of South African ERISFs, the research findings show that the following emerge as key intangible resources:

a. superior technical knowledge held by individuals before their firms are formally registered.

b specialist knowledge of how to serve specific international market segments, held by individuals before their firms are formally registered.

c. interpersonal network ties formed within individual level specialist knowledge communities related to (a) and (b) before and after the formal registration of the firm.

d. organisational network ties formed with key foreign firms, local and overseas MNEs

The resources identified, all fall under Brush *et al's*. (2001) category of intangible resources, which comprise complex systemic knowledge based resources. The emergence of intangible resources provides support for those researchers who emphasise internationalising small firm reliance on intangible resource bases (Peng, 2001). These findings highlight the role of individual level prior experiences, and thus provide support for ERISF literature which suggests that individual level knowledge supersedes firm level knowledge (Autio, 2005). Our findings indicate that ERISF individual firm level knowledge is derived from the founder's pre-firm work related experiences. Where the 'depth' of knowledge is evidenced by the level of the prior organisational positions held by the founders (within both international and locally based internationalised firms), the founders educational background, and the cumulative time spent working within specific technical sectors. Critical for the development of the ERISF's individual level knowledge, has been the prior organisational level positions which the founders have held. The bulk of South African ERISF founders have held high profile, high status positions, within dominant internationalised and non internationalised domestic market firms, international firms, and academic institutions, prior to the established of the firm. These results provide support for Han (2006) who acknowledges the importance of 'high status organisational positions' in determining the quality of knowledge held by an individual. As a result the ERISFs interpersonal relationships are based on knowledge

expertise and they emerge primarily from a 'business' as opposed to a 'social' context (Harris & Wheeler, 2005).

Capabilities

International Entrepreneurial Opportunity Development (IEOpD) emerges as a key foundational embryonic capability for the ERISF. The study proposed that an international entrepreneurial opportunity was likely to involve the introduction of new goods or services, which led to the formation of a new venture, or significant internal developments within the firm, and the formation of new cross border linkages. Within the study, various indicators point towards the novelty of a product or the technology which underpins the firm's offering: patents, grant funding awarded to the firm on the basis of the novelty of its technology, and exclusive licensing agreements sought by the firm's dominant clients within specific industries. The study provides support for researchers who argue that entrepreneurial opportunities are discovered in an elementary form, necessitating the need for entrepreneurial opportunity development (Ardichvili *et al*., 2003).

7.3 Effect of the ERISF's Resources and Capabilities

The extent to which the ERISF's resources and capabilities influence internationalisation, and hence the transferability of the ERISF's resources, is determined by the extent of overlap between individual level pre-firm knowledge bases and the international entrepreneurial opportunities which the firm develops. From the results one of two options emerged. One was that the ERISF used the interpersonal ties formed within its specialist knowledge community

before the founding of the firm [5SC, 14S, 22SC, 29SC, 33S] to establish organisational ties with foreign firms. Alternatively ERISFs have sought and established interpersonal ties, based on the recognition of their specialist individual level technical knowledge, after the founding of the firm [2B, 31B]. This is illustrated by Firm 2B. The Chief Executive for business developments explains how the firm has established the interpersonal ties, which precede the organisational ties, which will enable the firm to license its technology to a large international human tissue bank firm.

> They said well they'd fly out here and that was it, that's how we broke the door down eventually. They saw it; they said *oh [expletive deleted] okay, these guys can do what they say, crikey, they are getting the yields of [Growth factors]; we thought this was impossible; it's never been published before. It's not okay, but ah hold on, hold on, how do we know the process didn't damage the[Growth factors] in the process of extracting it, if it wasn't damaged so we can see the [Growth factors] there; we can analyse it, how do we know it's going to still work, maybe it was damaged during the process.* So we did animal studies, so they paid; put it into rats and that compared our best product against their best product … they [said] okay their best product works; ours is **four times** better than the best technology that they have in terms of our results. [Firm 2B2]

The importance of these interpersonal ties does not lie in their ability to provide foreign market knowledge as has been alluded to within the ERISF literature (Johanson & Vahlne, 1990, 2003; Oviatt & McDougall, 2005; Sharma & Blomstero, 2003; Yli Renko *et al*., 2002). Rather, they are important because they lead to the establishment of organisational ties with firms (domestic and overseas MNEs, dominant overseas firms) that have an established international presence, as evidenced by their international client bases and or international subsidiary networks. As such, internationalisation is accelerated because the organisational ties provide the ERISF with access to the distribution, sales channels, and international client bases controlled by the other organisation [5SC, 12S, 14S, 15S, 22SC, 24S, 29SC, 31B]. The effect of such organisational ties is pronounced within software firms which have developed a

software product/technology, which is acknowledged for its novelty. Therefore accelerated internationalisation, evidenced by the formation of simultaneous cross border links, and or a continual increase in international sales, is made possible through the utilisation of the distribution channels made available by the MNE's subsidiary network or dominant foreign firm networks.

Whilst limited, research which elevates the role of interpersonal ties within early internationalisation is emerging. For example, within Harris and Wheeler's (2005) study interpersonal ties are valued because they have the relevant foreign market and industry specific knowledge. As a result these interpersonal ties are able to make the necessary 'commitment and response' required within international markets on behalf of the firm (Harris and Wheeler. p.194). Furthermore recent attempts are being made within the literature to delineate the specific types of ties which are critical for the evolution of ERISFs (e.g. Partanen *et al.*, 2008). The identification of the characteristics of the ties which are most effective for early internationalisation within young firms, as Han (2006) points out, represents an area which is under researched within the network literature. Hence this study qualifies and extends the current developments which are taking place within network research.

Following Brush *et al*. (2001) these interpersonal ties can be conceptualised as utilitarian intangible resources. This is because they are direct ties which are formed with influential people within the organisation with which the firm seeks to establish a relationship. That is to say, the firm develops the interpersonal ties which underpin its organisational ties first; as opposed to developing these interpersonal ties once the organisational relationships have been

established, as alluded to within the industrial network literature. This research shows that organisational business network ties can be conceptualised as either **utilitarian** or **instrumental** resources. Utilitarian, because where possible MNEs attempt to confine ERISFs to their internal network. This is illustrated by Firm 15S, where the firm's dominant client, an MNE, holds an exclusive license in perpetuity for the firm's technology within the drinks and beverages sector. This is supported within the literature by Coviello and Munro (1997) who identify initial network partners who curb the diversification efforts of ERISFs by locking them into their internal distribution networks. Where the business network tie acts as an instrumental resource, the firm is provided with access to both, those resources which are controlled by the other organisation, and those controlled by the other organisations external foreign network partners. This is best illustrated by Firm 24S whose technology requires interoperability between Firm 24S' technology, and their focal network partner's supplier and customer technologies.

> But our strategy was to make the right relationships, and partnerships, and things, and then just dominate the markets**.** For example, some companies tried to, one of the smaller banks tried to sell something, […] similar to them, that was much cheaper than our systems and things, but then the banks told them. [Name] bank is the biggest bank by far in [Country]. They have a big fund that funds micro financiers and things like that, so they are sort of a bank, to the smaller banks. So they told them that if they ran a system that is not compatible with ours they won't be able to lend them money, you know it's as simple as that. They can't run along a system that is not compatible with ours, any system that's not compatible with ours is out. So the big banks especially the banks in this central bank of [Country] this [relationship between banks] relationship kind of forces out the other competitors that are trying to sell stuff to the banks. [Firm 24S]

The main interest in categorising the cross border links formed by the ERISF was an attempt to conceptualise accelerated internationalisation as simultaneous cross border link formation (Jones, 1999). However the research shows that in some cases co-operative cross border links

are deliberately formed with specific foreign firms as a precursor to gaining access to the distribution channels of these organisations [2B, 14S, and 31B]. Notably therefore, the research results provide an insight into the evolution of the establishment of organisational network ties.

The Extent to which IEOpD Influences Internationalisation

The research findings show that International Entrepreneurial Opportunity Development (IEOpD) and the outcomes of IEOpD accelerate the speed of internationalisation of the ERISF. For ERISFs, IEOpD is either carried out independently by the firm [12S, 28S, 33S], or through co operative arrangements set up with international organisations [2B, 14S, 15S, 24S]. These co operative arrangements lead to an increase the number of cross border links formed by the firm. Internally, through IEOpD, the ERISF defines and develops its specific area of focus. As a result the ERISF is able to introduce new modules (in the case of software firms), products, and or services, which build on the firm's defined or redefined area of focus. The introduction of these new products, services, and modules widens the potential international client base which the ERISF is able to address and the range of cross border links with the ERISF is able to establish and thus accelerates the speed of internationalisation of the ERISF. These developments in turn lead to significant internal developments which include the set up of new internal divisions [5SC, 29SC, 14S, and 31B], the spinoff of internal divisions which become peripheral to the firm's redefined core activities [15S], and the reclassification of the firm [8B]. IEOpD and the resultant impact on internationalisation is illustrated by Firm 12S's founder.

> We built a web-based campaign manager for SMS campaigns- competitions, votes, dedications, comments; all of that type of stuff. And we packaged it in a way that it would suit a radio station or a TV Channel or a print media company. And we started off doing campaign management. What we found is that within a year there were a whole lot of other companies doing the same type of thing, so we decided to expand our product line and we started doing bulk SMS messaging and then from there we decided to move into really, really cutting-edge technologies, [where] we could build a platform and then adapt that platform specifically to each one of our client's needs. So that we had the servers, say, seventy-five percent built and then as each client came in we could adapt that. [Firm 12S]

> We've also found that we kind of moved on from there and we built a mobile social networking platform in 2006; and we obviously built it very early and it was very new technology, cutting edge type of stuff that nobody had seen before. We started marketing it ourselves, under our own brand name which went okay; but at the moment the big thing that we're working on is we're licensing that technology to about twenty or thirty other companies around the world, because it's been built and refined over the course of two and a half years and there's still nobody that has that type of technology. [Firm 12S]

> We have licensed software to [an international mobile service provider] in [Country] which was probably done in 2006 and that's ongoing. It's a very small market but they have our software that they resell and use it for their radio stations there. We have an ongoing relationship with an English company where we work for a mobile phone producer, a handset maker around the world that's been going on for about three years they have events every couple of months, we deliver services for those events. We have an agreement with a Dutch company where we ran chat services for them in Southern Africa, we run in South Africa and one or two other countries around in the SADC region. So it's very different it depends on … their model, […] what they are trying to do, but we can, adapt our platform to suit whatever they want. [Firm 12S]

On the one hand the findings of this research provide support for researchers (Jones, 1999) who have shown that ERISFs internationalise through a combination of inward, outward, and cooperative cross border links, as opposed to solely outward directed cross border links. What the findings provide is evidence of how, through a process of continual IEOpD, ERISFs are able to internationalise through a combination of inward, outward, and cooperative cross border links. The findings in turn provide support for Autio (1997), by showing that where

necessary the total value of the ERISF's offering is developed in collaboration with the firm's international clients and suppliers [14S, 15S, 20B, 31B].

Chandra *et al*'s (2009) work represents some of the earliest studies which are emerging within this area. Their work however concentrates on the recognition of first time international entrepreneurial opportunities as evidenced by the discovery, deliberate and systematic search activities of the ERISF. Chandra *et al*. position the discovery of first time international entrepreneurial opportunities as an important stage within ERISF internationalisation that potentially influences subsequent opportunity recognition. However, by focusing solely on the recognition of international entrepreneurial opportunities, they fail to take into cognisance the more pronounced effect of IEOpD, evidenced within this research, on both the internal evolution and speed of internationalisation of the ERISF.

7.4 Effect of Leveraging the ERISFs Resources and Capabilities

The study shows that ERISFs leverages their resources and capabilities through: their individual level technical knowledge bases; the remote deployment and maintenance of their knowledge intensive outputs; and continual IEOpD.

Leveraging of Individual Level Technical Experience

As already mentioned, ERISFs (Biotechnology firms with a patented technology in particular) use their individual level specialist technical knowledge to develop some of the interpersonal ties, which lead to the formation of organisational ties with business customers and suppliers,

by leveraging their individual level specialist technology base. The ERISF uses its individual level specialist knowledge base as a resource lever by showcasing its individual level knowledge through:

a. attending and presenting at specialist international conferences [2B,8B,10B,22SC,31B, 33S]; (As shown in chapter 5, specialist conferences provide a platform through which the firm not only attracts potential international customers and suppliers, but begins to build a technological reputation (Zahra *et al*., 2003) which is acknowledged on an international stage.)

b. publishing within international journals [8B, 31B]; and

c. offering to engage in collaborative research and development activities in order to prove the superiority of their technology in relation to that of their potential clients [2B, 10B, 31B].

This enhances the firm's competence trust particularly in the eyes of developed country based clients and suppliers. The importance of competence trust, as it pertains specifically to the trust in the technical skills/abilities of ERISFs, whilst acknowledged as being important for high technology firms (Yu and Robertson, 2000), has not been explicitly addressed within ERISF internationalisation. Therefore, whilst South African ERISFs possess the factors which Zahra *et al*. (2003) identify as being important for developing the ERISF's technological reputation (technical skills, international patents, copyrights, and the ability to upgrade their products), the lack of competence trust inhibits the acknowledgement of the South African ERISF's technological reputation. Accordingly for ERISFs, especially biotechnology firms which have developed a proprietary patentable technology/product platform, leveraging of the

firm's individual level technical knowledge base is essential for establishing this competence trust. Out of all the firms in the research, the initial lack of competence trust on the part of the firm's potential clients is succinctly illustrated by Firm 2B.

> I always tell [the CEO] we will never have the amount of money you need to market this thing correctly. So what we are trying to do, is build what we called in our founding document, to get the funding for a co-branding strategy, where we sign [licensing] agreements, be present at the leading conferences so that everyone sees [Firm 2B] all the time, *Firm 2B, Firm 2B, Firm 2B* and what's more we are building up this awareness. So when a product hits the market, [interviewee changes tone of voice] *ah [Firm 2B] ah yes, [Firm 2B] that presented at that [conference]. Ah those are the guys that have got a collaboration with the largest tissue bank in the world ...ya well let's try this product here, ya you know.* It's not like *whose [Firm 2B]? No they are guys out of Johannesburg, oh [expletive removed] South Africa, gracious no we can't take a chance* [laughs]. I'm telling you the truth, ah you think I'm joking, I'm being spot on. The Europeans [in comparison to the North Americans] we find are slightly different, the ones we have dealt with to date. We have gone to [Country] for example, they paid for us to go out there to look for potential collaboration partners there and they were more forthcoming …they [had] no credibility issues. *What's your technology excellent, okay oh we have this, you guys have this so maybe we can collaborate.* That's what we would expect out of the States [Firm 2B2]

Resource Leveraging: Remote Deployment and Maintenance of the ERISF's Technology.

The study shows that where the ERISF has access to the subsidiary and foreign market distribution channels of its business and industrial customers, remote deployment and maintenance enables the ERISF to optimise on the 'mobility of knowledge' [12S, 15S, 28S]. The ERISF is able to deploy its software simultaneously, within a range of foreign markets, in a shorter time frame, using less human resources than would be the case if the ERISF had had to deploy its software onsite. It is only when combined with the ERISF's ability to gain access to the distribution channels of MNEs and large foreign based clients, that knowledge

intensity, as evidenced by the 'mobility of knowledge' accelerates the speed of internationalisation of the ERISF.

One of the implicit assumptions underlying ERISF internationalisation has been that of accelerated internationalisation being a result of the knowledge intensity of the firm as evidenced by the mobility of knowledge once produced (Autio, 2005; Oviatt & McDougall, 1994). This study has filled the gap within the extant literature by setting the conditions under which the assumption of knowledge mobility as it pertains to software firms is likely to hold.

Resource Leveraging through International Entrepreneurial Opportunity Development.

What has emerged from IEOpD is a pattern in which technology led software ERISFs seek to develop and offer a **total** software solution which is interoperable across a range of different proprietary and non proprietary systems, platforms, and networks. As a result the ERISF is able to access a broad range of industrial customers and suppliers [12S, 14S, 15S, 24S, and 33S]. This prevents the firm from being locked into the distribution network of a single dominant client, as has been evidenced within the literature by Coviello and Munro (1997). By developing international entrepreneurial opportunities beyond the requirements of any single organisation, technology led software ERISFs in particular, are able to establish organisational ties with a wider range of industrial firms.

These findings feed into the under researched (Oviatt & McDougall, 1994, 2004) area of resource fungibility (Autio 2005 & Sapienza *et al*., 2006). Here resource fungibility is defined as 'the attributes of resources that allow or inhibit their deployment for alternative uses'

(Sapienza *et al*., 2006: p.916). Whilst Autio and Sapienza *et al*. discuss the notion of fungibility in relation to the ease of resource transference between different international markets, this research brings to the fore the importance of resource fungibility in relation to the ease of transfer of resources (in this case the outcomes of the IEOpD process), between the ERISF's international suppliers and customers. The increase in resource fungibility, particularly in the case of software based firms, is made possible through continual IEOpD.

These findings, in turn, disconfirm those studies which have shown that ERISFs focus on developing software products which are interoperable with a restricted number of suppliers. For example, Bell (1995) alludes to the 'Nokia effect' in which Finnish software ERISFs focused on developing software applications which were interoperable within a Nokia environment, because of Nokia's dominance; whilst Norwegian and Irish developers developed software applications which were interoperable (compatible) with IBM hardware. What emerges are South African software ERISFs which seek to dominate their respective global sectors [28S], particularly within emerging markets [14S, 24S, 33S]. The following statement issued by Firm 14S's founder in 2000 in a local newspaper illustrates this.

> The [Firm 14S] mobile wallet solution that we have developed, in conjunction with a group of management consultants and technology partners, is a completely open platform. Our intention is to urge all local and global mobile operators, banks and system integrators to use the [Firm 14S] technology, thereby providing interoperability across different cellular networks. [An online publication]

Firm 14S is recognised by its clients as one of the leading global providers of mobile financial services technology, and has been awarded a Frost and Sullivan award in acknowledgement of its technological leadership. This deviates from the traditional view, held within the

industrial network literature, of firms seeking to develop relationships with a limited number of industrial customers and suppliers (Johanson & Mattsson, 1988; Matthews, 2002).

7.5 The Role of the Domestic Market

The effect of country specific factors which *encourage* internationalisation is more pronounced within technology led biotechnology firms [2B, 8B, 11B, 10B, 20B]. The effect of country specific factors which *inhibit* ERISF internationalisation is more pronounced within both technology led and consulting software firms [1SC, 7SC, 4SC, 27SC, 26S, and 34S].

The Influence of Domestic market factors on Technology Led Biotechnology Firms

The results show that, for biotechnology ERISFs with a patented technology, the lack of technological advanced users who are able to absorb the ERISF's product within the domestic market, coupled with the limited availability of technological resource inputs, results in internationalisation activities starting at or close to inception. The inability of the domestic market to cater for the external resource requirements of technology led biotechnology ERISFs leads to the formation of inward and co-operative cross border links, through which the ERISF gains access to technical know-how; technical, industrial and research services. The limited availability of external technological resources can be partly attributed to the lack of a related supporting industry within the domestic market, and the embryonic stage of development of the high technology support systems which are being established within the domestic market. The proprietary technology led biotechnology ERISFs in this sample can be

viewed as pioneers within their field in South Africa. These firms are partly involved in building South Africa's technological infrastructure. For example, Firm 8B is the first firm to design and manufacture coronary heart stents within South Africa. Whilst Firm 8B's competitors have sales offices within South Africa, up until the establishment of Firm 8B, no coronary heart stents were manufactured in South Africa.

These findings provide support for studies which draw on firms from Small Open Economies (SMOPECs), where limited domestic market size remains the key country factor prompting the internationalisation of the operational (production and sales) activities of SMOPEC firms (Benito *et al*., 2002). The findings are also supported by Narula (2002) whose research shows that, where technological inputs are not available within the domestic market, knowledge intensive SMEs from SMOPECs source the required technological inputs from foreign markets. The implication is that even within developed economies, established innovation systems may be limited to a narrow set of knowledge intensive industries and competencies (Narula, 2002). A limited number of studies that investigate the effect of embryonic country specific innovation systems, which characterise 'peripheral' economies, on new technology based firms (e.g. Fontes & Coombs, 1995), acknowledge the potential of cross border links in providing access to technological knowledge bases.

Whilst it has, however, been acknowledged that ERISFs rely on internationally dispersed resources for the creation of their outputs, the role of the domestic market in prompting this reliance has not been explicitly acknowledged, more so within the literature which draws their sample from large developed economies (Oviatt & McDougall, 1994).

The Influence of Domestic Market Factors on Software Firms

For software consultancy firms and some technology led software firms the ability to gain access to government, quasi government client bases (primarily through the firm's ability to meet the South African governments BEE policies), and or large corporate client bases, either:

a. delays the firms internationalisation activities [6S, 9S, 16S, 32SC, 34S] or
b. encourages a 'half hearted' approach to internationalisation [1SC, 21SC] or
c. an initial lack of interest in internationalising [4SC,7SC, 27SC].

Limited attention has been given to the role of domestic factors in delaying the firm's internationalisation activities, particularly for those firms which have the propensity to engage in early internationalisation activities.

7.6 Contributions to Knowledge

The major gaps which have been identified and this thesis has attempted to address, relate to the concepts which are positioned at the interface between traditional international business theories and contemporary approaches to ERISF internationalisation. The initial concepts identified at this interface were pooled together within an a priori framework, using the resource based approach, as shown in Chapter 3. This study makes a significant contribution to knowledge by isolating the key resources and capabilities which influence ERISF internationalisation, and then showing how ERISFs leverage their resources and capabilities. The latter is evidenced by the multiple avenues through which South African ERISFs leverage

their resources for their internationalisation activities [propositions: 1.1, 1.2, 4.2, and 7.1]. These findings have led to the revision of the a priori framework presented in Chapter 3 as shown in Figure 9. To my knowledge this is one of the earliest studies to focus specifically on the early rapid internationalisation of young high technology firms from South Africa. The study is thus a pioneering piece of research in the context of South African ERISFs. Thus this study contributes to knowledge by:

- **Delineating the Key Resources and Capabilities essential for ERISF Internationalisation**

The study sharpens our focus on the individual level resources which can be transferred to ERISF internationalisation, to the extent of convergence between prior individual level work related experiences and the international entrepreneurial opportunities with ERISFs develop. The distinction between the founders stock of prior international and technical experiences, and those experiences and skills which can be transferred into ERISF internationalisation have up until now remained indeterminate. This study responds to Autio's (2005) call for research which refines these individual level resource categorisations. Hence as shown in Figure 9 and addressed in the Research Questions 1 and 2, specialist technical knowledge, sector specific international market knowledge and knowledge based interpersonal ties are categorised as individual level resources.

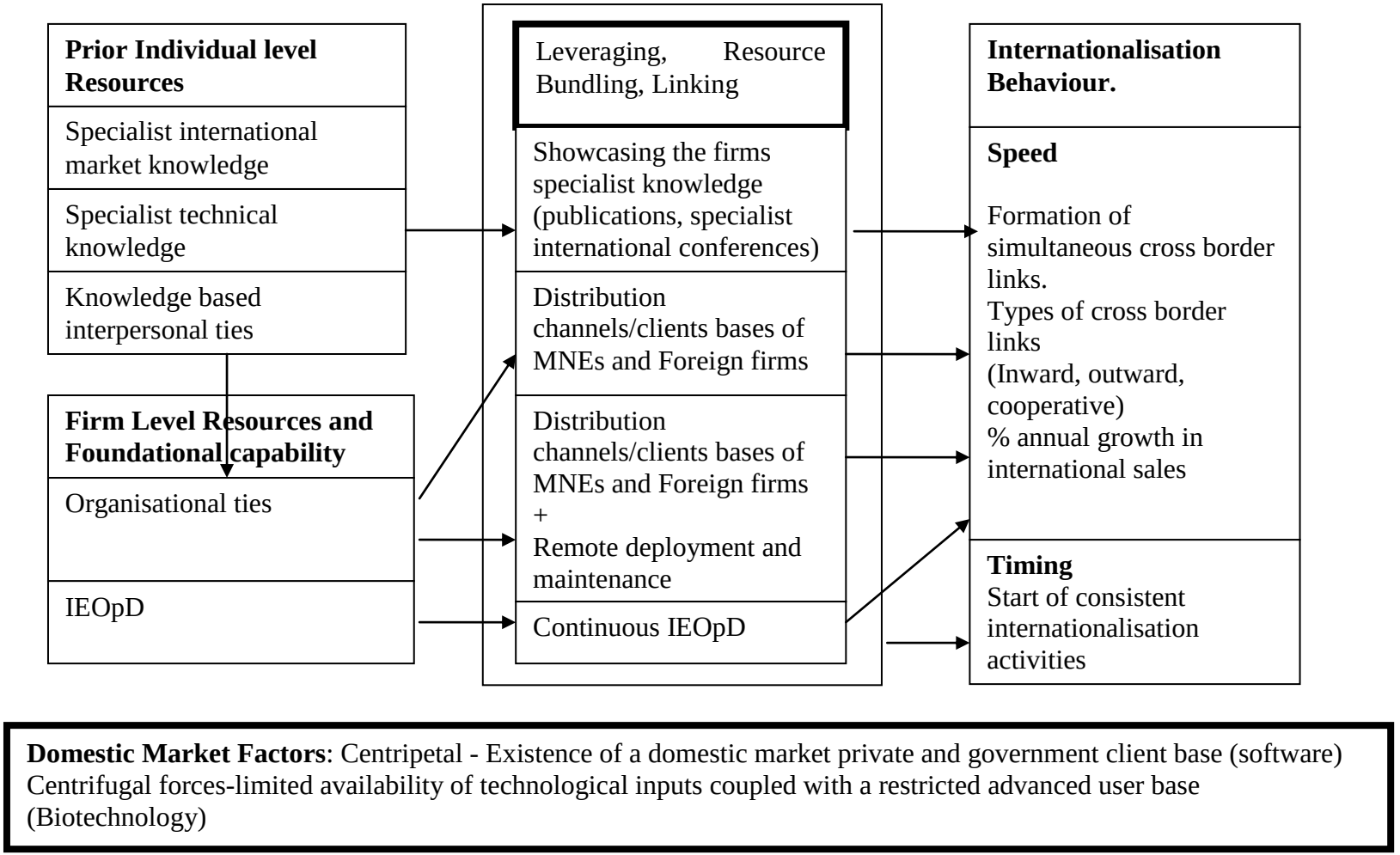


Figure 9 Amended Framework

Of note is the **type** of interpersonal ties which are pertinent for ERISF internationalisation. This research narrows interpersonal ties to those ties which are established within the individual's specialist knowledge based communities (before and after firm establishment). As explained under Research Question 2, contrary to the lesser 'third party role' of providing foreign market knowledge, these interpersonal ties are primarily established with individuals within the organisations with which the ERISF is seeking to establish a relation. Hence our findings provide further insights into the subset of interpersonal ties which the ERISF is likely to activate from its set of pre-existing interpersonal ties, or seek to establish. Furthermore this study shows how the firm's specialist knowledge base facilitates the formation of the interpersonal ties which lead to the establishment of the organisational ties (with foreign firms) which constitute firm level resources. Thus collectively this study shows how network ties are established, and more precisely which network ties are critical for ERISF internationalisation. This study responds to Zahra *et al*'s (2003, p.181) request for research which shows 'how new ventures develop network relationships so early in their lifecycle' The study qualifies and extends the current developments on the evolution of ERISF networks.

By providing a deeper insight into the evolution of the resources which are critical for the firm's internationalisation, the research addresses the resource creation problem alluded to by Foss and Robertson (2000) and represents a shift from the sense of permanency which has been attached to a firm's resource base. In addition this study questions the use of broad concepts such as knowledge intensity, which by virtue of their broadness, fail to capture the specific resources which are pertinent to ERISF internationalisation.

Organisational Ties

The study classifies organisational ties as both utilitarian and instrumental, as opposed to being solely instrumental resources. As discussed, organisational ties either provide the firm with access to the internal resources controlled by the organisation or both, the resources controlled by the organisation and its external stakeholders. This study shows that ERISFs seek to establish organisational ties with an unlimited number of organisations. The ability to establish a large number of organisational ties, as shown within the research, is made possible through continual IEOpD. Where the total value of the ERISF's offering is developed in collaboration with the firm's international clients and suppliers, the ERISF develops the technology or offering beyond the narrow requirements of a particular organisation through continual IEOpD. The variation in the development of ERISF networks reflects a view of networks which is more differentiated than that which is currently projected within the industrial network literature. Thus our findings qualify and extend the current network approaches.

International Entrepreneurial Opportunity Development

This study resolves the issue of the salient constructs which should be adopted from the domain of entrepreneurship and applied within ERISF internationalisation. This is because our findings provide evidence which clearly links International Entrepreneurial Opportunity Development (IEOpD) to the speed of internationalisation (increased simultaneous cross border formation and or increased growth in international sales) of the ERISF. Thus this study introduces IEOpD not only as an ERISF embryonic capability, but as a construct which

should be positioned at the interface between traditional international business theories and contemporary approaches to ERISF internationalisation. This differentiates IEOpD from constructs such as Entrepreneurial Orientation (EO), which do not necessarily differentiate between specific patterns of internationalisation.

In addition the credibility of IEOpD is enhanced through its ability to provide an explanation for the taken for granted assumptions which have prevailed within the ERISF literature. For example the ease of integration of the ERISF's software with proprietary and non proprietary foreign based assets is made possible through IEOpD.

- **Identifying the Multiple Avenues through which ERISFs Leverage their Resources and Capabilities for their Internationalisation Activities.**

This study provides evidence for the use of a multipronged resource leveraging approach in ERISF internationalisation. Whilst the notion of 'resource leveraging' is commonly referred to within small firm internationalisation, the specific avenues through which resource leveraging occurs in ERISF internationalisation have up until now remained indeterminate. Thus this study, as shown Figure 9, identifies the avenues for resource leveraging as: a) The use of foreign firm and MNE distribution channels; b) The use of foreign firm and MNE distribution channels in combination with the remote deployment and maintenance of knowledge intensive outputs; c) continual IEOpD; and d) showcasing/demonstrating the ERISFs specialist technical knowledge through publications and international specialist conference presentations. Thus the study qualifies and extends the current efforts (e.g. Zahra *et al*., 2003) which are being made to address the isolated resource problem (Foss and

Robertson, 2000), which has arisen as a result of the tendency to analyse some resources in isolation from others within ERISF internationalisation.

- **Acknowledging the Moderating Role of Domestic Market Factors in ERISF Internationalisation.**

Our findings here are at variance with the bulk of studies on small firms which internationalise at an early stage in their development. These studies excluded domestic market factors and thus fail to accord a specific role to, and elucidate the domestic market factors which influence ERISF internationalisation. On the other hand our findings support early research work on the internationalisation of high technology small firms which addressed a broader range of issues. Thus for example Rennie (1993), and Crick and Jones (2000) identify limited domestic market demand for specialist high technology products as a potential factor which encourages the internationalisation of small high technology firms. By isolating the key domestic market factors which encourage and deter the firm's early internationalisation activities, this study accords a role to domestic market factors, in which domestic market factors moderate the relationship between the firms resources and capabilities, and internationalisation thus influencing the timing of the ERISFs internationalisation activities.

- **Defining the Early Rapidly Internationalising Small Firm**

The research has in turn attempted to clarify the use of a term that has been developed within this study to grasp the nature of firms which internationalise early and at a rapid pace.

Theoretically early refers to the timing of the firm's internationalisation activities and rapid refers to the pace at which internationalisation occurs. At a practical level, as the findings show, the formation of the firm's first cross border links does not necessarily signal the beginning of the firm's internationalisation activities as it may occur as an isolated 'once off' event. The potentially adhoc, sporadic, and intermittent nature of a firm's early internationalisation activities makes it difficult to pin point the exact timing of the firm's internationalisation activities. The notion of 'early' needs to be taken in view of the subsequent preceding internationalisation activities. There is the possibility that the notion of 'rapid' may be sector and sub sector specific. As evidenced within this research, software firms which have developed a web based product are able to, through their distribution channels of their network partners, deploy their software rapidly within a larger number of countries. For example Firm 15S had deployed its software within an excess of 20 countries in a period of three years. This is not the case with a biotechnology firm relying on traditional modes of exporting or a software consultancy firm relying on bespoke outsource software development. Thus rapid as shown within this research is evidenced through increasing international sales, and or increasing simultaneous cross border link formation. These findings resonate with the calls being made by ERISF researchers (Jones & Coviello, 2005) for a closer examination of the time dimensions within ERISF internationalisation.

7.7 Limitations of the Study

The study has deliberately taken a broad holistic approach, as opposed to a more narrow focused approach to the study of South African ERISFs. This in itself has inherent weaknesses in which it is possible that to a certain extent the study has compromised depth

for breadth. Whilst this approach has been arguably justified by the lack of a particular theoretical thrust within the selected context as mentioned in Chapter 1, it has to be acknowledged that to a certain extent, the depth of the evidence provided within this study, could potentially have been compromised. This however is expected with such an approach (Jones and Coviello, 2005).

That said, this study has shown a heavy reliance on the resource based view. More recent studies being conducted on the internationalisation of new ventures from emerging economies are adopting an approach to prior theorisation which incorporates a broader range of theoretical perspectives. For example Yamakawa *et al*. (2008) develop their framework on the basis of the: industry based, resource based, and institution based views. They argue that a framework which draws on a broader set of perspectives is better able to address the internationalisation behaviour of new ventures from emerging economies. Understandably the need to incorporate the role of institutions within research from the Asian group of emerging economies, such as China, is assumed to be paramount within International Business (Child and Rodrigues, 2005). The potential exists for extending this understanding to firms from African emerging economies.

A better clarification of sector specific effects could have been attained by including more firms, particularly internationalising software and biotechnology firms, within the research sample. However the costs of travelling and finding accommodation within more than two provinces made this prohibitive. To a large extent the scheduling of the interviews was dictated by the availability of the interviewees.

A deeper understanding of individual level resources, particularly the evolution of interpersonal ties would have been attained by interviewing more than one founder. The aim was to interview more than one founder within each firm and requests for interviews were sent to each founder. However this also proved to be virtually impossible. Having spent more than an hour and a half interviewing one founder, more importantly the CEO, most firms did not see the need to extend the interviewing process to the remaining founders.

7.8 Recommendations for Future Research

This study shows that there is a need for a greater focus on ERISFs from emerging economies, more so the non traditional, less fashionable emerging economies, which do not appear to be receiving as much attention within international business. The current developments within IB necessitate the need for a holistic approach, not just with respect to the individual ERISF, but with respect to the countries which study samples are being drawn from. As shown by this study's contributions, an approach which draws on ERISFs from a broader spectrum of emerging market contexts is likely to produce results which accelerate the pace of theoretical development, specifically at the interface between traditional IB theories and the contemporary approaches being introduced into IB. Researchers may allude to the difficulties of finding samples within these previously excluded emerging markets. Notably with IB becoming more inclusive towards the use of non positivist approaches, small samples, which are able to provide thick descriptions, especially of key processes over time, are becoming acceptable.

Interpersonal and organisational network ties emerge as being important for the internationalisation of South African ERISFs. What is required is additional research which places greater emphasis on disseminating the origins and evolution of these ties, and their influence on ERISF internationalisation. It should be possible to conduct comparative studies with ERISFs from other emerging markets which emphasise the role of interpersonal ties. As shown within this research the use of knowledge based interpersonal ties by South African firms represents a shift away from the more coincidental, and socially based serendipitous interpersonal tie formation which might delineate firms from other contexts, as evidenced within Child and Rodrigues' (2006) study. These comparative studies would bring in the potential role of knowledge based ties in reducing psychic distance (by increasing competence trust), particularly with regards to internationalisation which is directed from emerging to developed economies.

The potential for pronounced contributions within ERISF internationalisation lie within the early developments taking place within entrepreneurship. There is a need to understand the critical processes underpinning the internationalisation of ERISFs which cannot be adequately addressed by traditional IB concepts. Arguably the use of more established tested constructs is more appealing when contrasted with the early at best 'chaotic' developments taking place within the domain of entrepreneurship. However this should not preclude ERISF theorists from contributing to the development of important constructs, despite their embryonic stage of development as evidenced within this research.

In addition further research is required in understanding how ERISF internationalisation serves to reposition traditional concepts in a different light. For example the research brings to

the fore the notion of competence trust, which represents an area which could be important, particularly in the internationalisation activities between firms from emerging economies and specific developed country markets.

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APPENDIX A

A.1 Interview Guide

Name of Project: Internationalisation of High Technology South African SMEs
Name of Interviewee:
Company Name:
Interview Date :
Location:
Firm Foundation date:
Country in which firm is head quartered:
Sector:

1. Prior Experience

Could you give a description of your background with regards to your educational background, previous work experience, the countries which you have worked in, the companies which you have worked for, and your role within these organisations?

Probes

Which countries which you have worked in?
What organisations have you worked for?
What was your role within these organisations?
What are the lessons which you have learned from your prior experience and how have they fed into the development of ....?
How have the relationships which you have developed from your prior experience fed into the development of …?

To summarise:

Country	Duration	Activity (education/ employment)	Duration

2. Product and Service Development

Could you describe your product/service development process to date, starting from the idea generation stage - that is how you identified the idea, moving through to how you have developed the products and services which make up the firms current offering

Probes
When did you start developing the business idea/ideas?
How did you identify this idea?
Why did you start developing this idea?
Could you give a brief description of your product/service offering?
How have you worked collaboratively to develop your product/service offering?
Have you had any involvement in any contract research and development?
Who do you consider to be your closest competitors?
How do you regard your product as being different (superior/inferior?) from those of your competitors?
How do you regard your products as being different (superior/inferior?) from those of your international competitors?
What is the stage of development of your product/service offering?

Objective Measurements of Knowledge Intensity

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
No of Patents						
No of Copyrights						
Countries in which copyright patents are held						
Research and Development Expenditure						
Total Expenditure						
R&D expenditure as a % of total expenditure						

Subjective Measurement of Knowledge Intensity (Autio *et al*., 2000)

	Strongly Agree	1	2	3	4	5	6	7	Strongly Disagree
We have a strong reputation for Technological excellence.									
Knowledge intensity is characteristic of our Business.									
There is a strong knowledge component in our products and services.									

3. Internationalisation Process

3. a. Could you describe your internationalisation process to date.

Probes

What do you think/what have you thought about internationalising?
What have you done about it? Why?
How does your firm prepare for internationalisation?
Have you been involved in any international collaborative cross border activities?
Technology licensing? Who has the technology been licensed from? Why has the technology been licensed from …?
Have you been involved in international R&D collaborations? Why?
Have you been involved in international procurement? Why?
Which markets have you entered? Why have these markets been selected?
What mechanisms have you used to enter these markets? Why have you used these mechanisms?
What are the barriers to internationalisation which you have faced? How have you overcome these barriers?

In summation

Markets entered	Date/year entered	Mode of entry/ mode of expansion if domestic	Value chain activity involved

Can I confirm the following?

Knight and Cavusgil (2004)

In summation on a scale of 1 to 7 with I being not at all and 7 being to an extreme extent, to what extent does/is:

Top management tend to see the world instead of just South Africa as the firms market place.

Not at all	1	2	3	4	5	6	7	To an extreme extent

The prevailing organisational culture of the firm as being conducive to active exploration of new opportunities abroad

Not at all	1	2	3	4	5	6	7	To an extreme extent

Management develop human and other resources for achieving the firm's goals in international markets

Not at all	1	2	3	4	5	6	7	To an extreme extent

Top management experienced in international business

Not at all	1	2	3	4	5	6	7	To an extreme extent

Management continuously communicate its mission to succeed in international markets to the firm's employees.

Not at all	1	2	3	4	5	6	7	To an extreme extent

Covin and Slevin (1989)

How many new lines of products or services has your firm marketed internationally.

No new lines of products or services	1	2	3	4	5	6	7	Very many lines of products or services

Changes in product or service lines have been

Mostly of a minor nature	1	2	3	4	5	6	7	usually quite dramatic.

In dealing with its international competitors, the firm……..

Typically responds to actions which competitors initiate	1	2	3	4	5	6	7	Typically initiates actions which competitors then respond to

Is very seldom the first business to introduce new products/services, administrative techniques, operating technologies, etc.	1	2	3	4	5	6	7	Is very often the first business to introduce new products/services, administrative techniques, operating technologies, etc
Typically seeks to avoid competitive clashes preferring a live and let live posture.	1	2	3	4	5	6	7	Typically adopts a very competitive out do the competitor posture.

In general the top managers of the firm believe that

Owing to the nature of the international business environment it is best to explore it gradually via timid, incremental behaviour	1	2	3	4	5	6	7	Owing to the nature of the international business environment, bold wide ranging acts are necessary to achieve the firms objectives

In general the top managers of the firm favour…….

A strong emphasis on the marketing of tried and true products	1	2	3	4	5	6	7	A strong emphasis on R&D, technology, leadership and innovation

In general, within international markets, top managers of the firm have

A strong inclination for low risk projects (with normal and certain rates of return)	1	2	3	4	5	6	7	A strong inclination for high risk projects with chances for very high returns

When confronted with international decision making situations involving uncertainty, the firm

Typically adopts a cautious 'wait and see' posture in order to minimize the probability of making costly decisions.	1	2	3	4	5	6	7	Typically adopts a bold, aggressive posture in order to maximise the probability of exploiting potential opportunities

3 b. What are the firm's future growth strategy/strategies? (still maintaining the definition of internationalisation)

Which markets are you planning to enter?
Why have you selected these markets?

What strategies/mechanisms will you use to enter these markets?

Can I confirm the following?

Market which will be entered	Date/year expected	Expected mode of entry\ mode of expansion if domestic	Value chain activity involved

4. The role of the domestic market

Taking into account the firm's entire development path, which domestic market factors have had an impact on the firm and how have these factors affected the firm's development/growth.

Probes

Which government policies? How have these policies impacted the firms development?
Which support agencies have been used? What support has the firm accessed?
Where has the firm accessed funding? VCs, Government support agencies?
What are the barriers to accessing funding?
How has the level of domestic demand affected the firm?
How has the level of sophistication of domestic demand affected the firm?
How has the level of competition within the domestic market affected the firm's development? What are the barriers to expansion within the domestic market?

5. Additional Information

Firm Specific Data

Additional countries in which firm is registered.							
Year	Y0	Y1	Y2	Y3	Y4	Y5	Y6
Number of employees							
Annual Turnover							
Annual International Turnover							
% International Sales (International sales/total sales)							
Approximate market share in main market?							

6. Documentation Checklist

	Received	To be collected at a later date
Curriculum Vitae.		
Business Plan.		
Press release statements.		
Product description pamphlets.		
Financial Statements.		

APPENDIX B

B.1 Three Case Narratives Organised around the Topics Used in the Interview Guide

Firm 2B Medical Device Growth Factors

Case Description Rating: High

Interviewee 1 Prior Experience – Founder & Managing Director

Firm 2B's founder and managing director has a background in biochemical and biotechnology. He holds a BSc majoring in Chemistry and Biology, an MSc in gene engineering and fermentation production, a PhD in orthopaedic surgery and an MBA. His work experience has been gained mainly within the South African Pharmaceutical Industry and working in various academic positions during and after his PhD. For his PhD the managing director investigated and proved the concept of synergy among recombinant growth factors for bone regeneration. Of interest to the founder, was the parallel research work which he had been carrying out on the extraction and purification of growth factors derived from natural bone tissue. Dissatisfied with the yields of growth factors he was attaining from natural bone tissue sources, the founder set up a research and development collaboration with a large private local bone company to test his hypotheses surrounding the factors impeding the extraction and purification of commercial yields of growth factors from natural bone tissue sources. The collaboration led to the development of a proprietary new technology for the high yield extraction of natural growth factors (Bone Morphogenetic Proteins) for bone regeneration. This technology makes it commercially feasible to extract growth factors from any natural bone source. The founder in collaboration with the private bone company raised

venture capitalist funding to pilot the technology and conduct a human clinical trial using the extracted human bone tissue derived growth factors.

Some of the key international relationships which the founder has developed during his prior experience have emerged through the contacts he made with various international equipment and reagent suppliers during his PhD, two of which now supply Firm 2B with reagents and equipment. It was also during this period between completing his PhD, and developing the high yield extraction technology which underpins the firm that the founder met his current business partner who holds the portfolio of Chief Executive for Business Development.

Interviewee 2 Prior Experience - Chief Executive for Business Development (CE)

With an engineering light current qualification, international marketing management (IMM) diploma and an MBA, Firm 2B's CE for business development has worked in both technical and business related roles in South Africa. The early years of his career were spent working at a leading industrial gas company; firstly as a plant engineer, then project manager, and then commercial projects manager. Having developed an interest in the marketing and commercialisation of technologies, and with the onset of the 'entrepreneurial bug' (which the CE describes as the desire to want to do something for oneself) the CE left the industrial gas company and co founded his first business an edible oil refinery. As the CEO and cofounder of the edible oil refinery, the CE had overall responsibility for both the technical aspects of setting up an edible oil refinery which included; plant installation and commissioning, and business side which included; initial business feasibility assessments, capital raising and supplier negotiations. Through a private equity deal, necessitated by the loss of their major

customer, the edible oil factory was sold to a local farming co operative. Following which, together with a business colleague the CE established a business advisory and professional services company focused on high technology sectors (excluding ICT). Here the CE worked in an advisory capacity, conducting due diligence studies on behalf of various South Africa government departments for companies seeking funding for the development and commercialisation of novel technologies. It was during his tenure at the business advisory and professional services company that the CE re-established contact with Firm 2B's founder, whom he had met whilst working at the edible oil refinery, with an offer to assist in raising the necessary funding from specific government bodies, for the commercialisation of his novel high yield growth factor technology.

Founding of the Firm – Product and or Service Development

The firm was formally incorporated in 2002. At this point the CEO had reached the stage where he had a proof of concept for his patented novel high yield growth factor extraction technology. A year later, the firm, as part of a consortium between a local university and the large private local bone company, was awarded a grant from one of the funds run by the South African Department of Science and Technology, for the commercialisation of growth factors extracted from porcine bone tissue using the firms novel high yield growth factor extraction technology. A pilot manufacturing facility was built at a local university to manufacture the firm's first porcine derived growth factors.

What the firm has effectively developed is a technology platform for the high yield extraction of growth factors from any natural bone source. Growth factors from different sources e.g.

porcine, and human bone tissue, feed into the development of the firms different product platforms. In accordance with the European standard, the firm's product is classified as a medical device because as a bone void filler, its primary mode of operation is considered to be that of physical space maintenance. The firm is able to utilise its technological platform in a variety of different ways. Firstly it can be licensed to external bone tissue banks. Secondly the firm can use this technology internally to extract growth factors from different types of natural bone tissue, and thus produce different product platforms. Unlike a product which has a single application a product platform has multiple applications. Thus from its porcine derived product platform the firm currently has four products targeting bone regeneration within different types of bones in the human body. These products have been identified from their competitors offering and the time to market of the products. The firm has a second technology platform for cross link collagen.

Internationalisation Process

The firm is involved in a range of international collaborations. According to the CE, these international collaborations have been driven by the firms need to leverage its limited resources, particularly financial resources. Currently the clinical trials for one of the porcine derived products are being carried out through a formal agreement with a foreign based university in which the firm supplies the products for free, whilst the university carries out the clinical trials. The Firm receives the clinical data which it requires to commercialise its products from this collaboration, whilst the university is able to use the clinical data for academic research and publications. Pre clinical trials have, in turn, been conducted in collaboration with a foreign based medical centre.

An additional collaborative relationship which the firm had been trying to establish with the clinical division of an international optics company fell through when after two years of what the CE refers to as progressive talks, the firm's key contact within the clinical division left. The CE has described the discussions which lead to the set up of both local and international collaborations as being lengthy taking up to two years before the non disclosure agreements which facilitate data exchange are signed. Here the CE infers to the inability to maintain the consistent interaction required to build the trust which facilitates the exchange of data, as one of the key factors delaying the time it takes to form these collaborative agreements. Because of the controversy surrounding human bone tissue donations, the firm has chosen to license their technology to tissue banks, for human bone tissue beneficiation. It has taken the firm almost two years of negotiations, which have involved collaborative research, to set up a licensing agreement for their high yield growth factor extraction technology with a large foreign tissue bank. Whilst the founder has viewed the collaborative research and development step as part of the due diligence process required to license their technology, the CE views this step as being driven by the need of the foreign based tissue bank to validate their technology in spite of the availability of clinical data.

The role of the domestic market

The biggest hurdle which the firm has faced within the domestic market has been around the regulatory environment. Because of the lack of medical device regulations, the firm has had to adhere to the higher pharmaceutical standard for the manufacture of the trial batches of their product. Due to what the founder describes as a lack of knowledge around the management of new chemical entities by the South African Medical Controls Council (MCC), it took 19

months for the firm to gain approval for the phase 1 pre pivotal studies for its first product. The firm has, in turn, followed the European standard for the preclinical trials for its first product and is working towards gaining European approval through the CE mark for its first product. This will enable the firm to gain access to the European market without having to repeat some of their clinical trials. The firm is in the process of raising its second round of funding for the establishment of a manufacturing facility. The founder views the domestic market as being limited in terms of the proportion of the population which is able to access high technology products. This view is supported by the CE who points towards the domestic market as being too small to justify the total investment which will be required for the development and manufacture of their products.

Firm 3B Antiretroviral Drug Discovery

Case description rating: medium

Interviewee Prior Experience- CEO

The CEO has a BSc in Chemical engineering and a PhD in organic chemistry. His experience, which has been gained working primarily within the chemical industry and public research institutions within South Africa spans a period of almost 30 years. From an early stage in his career the founder decided that his interests lay mainly within the research side of process engineering. This has led to a career focused within research, initially working within technology development for a South African chemicals group. Here, in addition to being involved in the development of the process technology for the large scale production of a range of chemicals the founder headed the group responsible for the process development of

the fermentation technology for the production of lysine. The founder then transferred to South Africa's public research organisation, where he worked in a variety of research roles mainly within pharmaceuticals, biochemicals, and biotechnology, leading to his appointment as group manager for research and development. The CEO has been involved in the government initiatives for the development of a national system of innovation within South Africa. His involvement has included, being a key member of the team involved in crafting South Africa's green and white science and technology papers, setting up South Africa's first biotechnology incubator, and co authoring the national biotechnology strategy. The CEO has described the contacts which he has made within the local research sphere, industry, and government as being critical for the operation of the current business.

The Founding of the firm – Product and or Service Development

The company was established in 2005, firstly to build capacity in South Africa for the manufacture of antiretroviral active ingredients, through the commercialisation of process technologies developed by South Africa's research organisation, and secondly to conduct antiretroviral drug discovery. Thus, a low cost patented process technology for the manufacture of 3 out of the 10 Active Pharmaceutical Ingredients (APIs) which South Africa currently imports for the production of antiretroviral (ARVs) has been developed in collaboration with the local research organisation. This technology has been patented by the local research organisation and is being licensed to the firm at zero royalty. The firm has an exclusive worldwide license for this technology. The firm is seeking investment for the local manufacture of APIs and is currently in discussion with a range of stake holders.

The firm's drug discovery initiatives are in their early stages of development. Here the firm is continuing the development work carried out by the local research institute, from which three local medicinal plants have been identified as potential anti human immuno deficiency (HIV) drugs.

Internationalisation Process

According to the CEO, the firm is international with respect to its involvement in international technology transfer and acquisition. The firm's international partnerships are in part, precipitated by what the CEO refers to as South Africa's small research and development and high technology community. The CEO describes the firm as having three types of international partnerships, which he has initiated. The first is focused on purely service provision where the firm relies on the international research sphere for the provision of specialist analytical services. Here, for example, the firm relies on international universities, commercial laboratories, and companies which are known to have specialist capabilities in particular research techniques. Within the second type of collaboration, the firm jointly carries out some of its specialist research and development activities in collaboration with international partners. Here the CEO refers to the firm's research and development activities as a 'multilateral initiative' requiring a lot of international assistance. Hence, whilst the simpler processes of analysing a potential plant extract would be conducted within a South African research institution, the more specialised aspects are conducted in collaboration with international partners who are renowned for their expertise in specific areas. The third type of partnership is focused on technology transfer where the firm licenses technologies from international partners. The firm is in turn, attempting to license out the process technology

international partners. The CEO describes the efforts required to establish and maintain their international linkages as being time consuming, and in spite of the availability of modern forms of communication, ultimately there is need for face to face interaction.

The role of the Domestic Market

The firm is 100% funded by the Department of Science and Technology through one of South Africa's Biotechnology Regional Innovation Centres (BRICs) and is currently being incubated within a local biotechnology incubator. The firm has been set up to manufacture and develop drugs for the local South African and the Southern African market. According to the CEO, the firm is firstly targeting the local market where with only 30 out of 100 people being able to access anti-retrovirals (ARVs), there is a huge unmet need for ARVs. Here the CEO defines South Africa as one of the world's epicentres for HIV/AIDS virus epidemic making the local manufacture and provision of low cost treatments a national priority.

Firm 23B – Energy Juice Derived from Indigenous Fruit

Case description rating: low

Prior Experience – Founder

The founder has a military background.

Founding of the Firm – Product and or Service Development

The idea to produce an energy drink emerged from the founder's knowledge of indigenous fruit. The founder used his package from the army to research into the properties of different indigenous (wild) fruit using researchers based at local universities. The founder isolated the main indigenous fruits which were high in vitamin C, fibre, and natural preservative properties. Here the founder points out that the vitamin content found in indigenous fruit is higher than that of traditional fruits. The firm's juice/tonic is produced through fermentation. Funding for the necessary machinery has been provided by the Industrial Development Corporation.

Internationalisation Process

Through his research the founder has identified the main African countries where he will be able to source specific varieties of indigenous fruit. The founder has set up collection points within these countries. The firm has received enquiries from South America.

The Role of the Domestic Market

The firm is based within one of South Africa's biotechnology incubators. The energy juice is currently being sold within some South African retail outlets. An internationalised South African brewer was expressed an interest in the firm.

APPENDIX C

Table 21

The effect of Influential Foreign Clients and MNEs on the Firm's Internationalisation Activities

		Cases					
		2B	5SC	11B	12S	14S	15S
Early Rapid Internationalisation Indicators	Period during which initial organisational relationships have been established	In the process of establishing relationship	0 to 3	In the process of establishing relationship	0 to 3	3 to 6	3 to 6
	Types of cross border links	Inward Outward Co-operative	Co-operative Inward	Inward Outward	Inward Outward Co-operative	Outward Cooperative	Inward Outward Co-operative
	Breakdown of cross border links (simultaneous cross border link formation)	Joint R&D collaborations, technical services provided by international company, importing specialist equipment (2 major suppliers)	Bespoke development services for clients in a single foreign market	10 distributors		25 International onsite deployments	CRM tool deployed in 20+ countries
	% international sales revenue	n/a	60%	50%	70%	92%	60%

		Cases					
		2B	5SC	11B	12S	14S	15S
	Method of distributing firms software/services	n/a	Web-based	Physical	Web-based & Mobile network channels	Onsite deployment	Web-based
	Presence of a large MNE client/ foreign client	In the process of licensing their high yield growth factor extraction technology to a dominant foreign based company.	Is in a partnership with a European firm, which provides international clients and their software development requirements	In the process of establishing a relationship with an international health and beauty group.	Is involved in a range of partnerships.	Co distribution agreements with two dominant international firms. Recently signed a contract with internationalised South African GSM operator.	Has a formal distribution agreement with a global drinks and beverages manufacturer to develop, install and, maintain a CRM application within the MNE's subsidiaries.
	How the firm has gained access MNE/large clients	Interpersonal relationships formed on the basis of the firm's technology.	Pre firm establishment interpersonal contacts. The European firm founders worked at the same consultancy firm as Firm 5SC's founder.		Through referral and networks of personal contacts which the founder has been actively building.	A combination of prior and post firm interpersonal relationships. Using network relationships e.g. with local and foreign subsidiaries to gain access to the decision makers within MNEs	Had been providing bespoke services for the local subsidiary for three years. Some of their work was presented at a director's conference, attracting the interest of the MNE.

		Cases				
		22SC	24S	28S	29SC	31B
Early Rapid Internationalisation Indicators	Period during which initial organisational relationships have been established	3 to 6	3 to 6	0 to 3	0 to 3	3 to 6
	Types of cross border links	Outward Co-operative	Outward	**Inward** Outward Co-operative	**Inward**	**Inward** **Co-operative** **Outward**
	Approximate number of cross border links	Consulting services offered within 5+ countries, has now opened an office in Europe	Installing software and supporting infrastructure in all 300 branches of a foreign bank.	35 White labelled sites.	Provide the software development and maintenance services for the e-procurement branch of an international trading group.	Provide bio analytical services for a US based clinical research organisation. .
	% international sales revenue	32%	90%	70%	100%	90+%
	Method of distributing firms software/services	Consulting services and project implementation conducted onsite. Web-based, remote maintenance	Onsite system installation	Web-based	Physical	Physical

Cases		22SC	24S	28S	29SC	31B
	Presence of a large MNE client/ foreign client	Exclusive formal agreement to provide consulting services for the sub-Saharan African client base of an international software vendor/supplier.	Signed a contract to install software and supporting hardware systems within all 300 of a large foreign bank's local branches.	Maintains and manages the gaming sites of 35 online publishers.	Exclusive technology development contract with the e-procurement arm of an international trading group.	Preferred partner for a US clinical research organisation in a specific area of analytical services.
	How the firm has gained access MNE/large clients	Acquired the division providing the consultancy services for their major international software vendor from a local south African firm with international operations.	Through a snowballing process, starting with their initial contact, in which they were referred to personal within the bank's hierarchy until they reached the decision makers.	Through unsolicited orders, from internet search queries.	Prior contacts; had worked for the local subsidiary of an American firm responsible for providing the e-procurement services for the internationalised trading group and was providing consultancy services for the UK subsidiary.	The firm initially provided analytical services for the local subsidiary of the CRO.

Table 22

Selected Founder Prior International Experiences

	Cases	2B1	2B2	3B	8B	10B	20B	31B
Internationalisation Indicators	Timing of internationalisation activities	0 to 3	0 to 3	0 to 3	0 to 3	0 to 3	0 to 3	3 to 6
	Types of cross border links	Inward outward cooperative		Cooperative	Inward outward cooperative	outward cooperative	Outward	Inward cooperative
	% international sales revenue				50%	100%	95%	90%
Educational level		PhD in Orthopaedic surgery	MBA Diploma in light current engineering	PhD Bio organic chemistry BSc Chemical Engineering	PhD Biomedical engineering BSc mechanical engineering	BSc Biomedical engineering; Cofounder has a PhD in Computational biology (co founder)	BSc Molecular biology	CEO:MBA Chartered Accountant, Founder 1: PhD in immunology Founder 2: deceased PhD in Biotechnology

		2B1	2B2	3B	8B	10B	20B	31B
International experiences gained before the formal registration of the firm.	Specialist Technical knowledge	Expertise in researching the synergistic effects of BMPs in tissue regeneration. Developed a high yield extraction technology.	None General technological	30 years research and development experience in chemical and pharmaceutical sectors.	Expertise in implant design: provided computational design services for international implant manufacturers.	Expertise in evolutionary biology and genomics.	Expertise in genomics.	Expertise in immunology, biotechnology.
	Sector specific international market knowledge.					Involved in marketing, strategic planning and business development for major bioinformatics companies.	Co founded first international business in life sciences in the US.	Non sector specific, but CEO has held international top management consultancy positions within financial services
	Presence of international contacts	Built relationship with major equipment manufacturers during his PhD.		Strong local contacts in government & private sector and research community		Strong networks in Bioinformatics in Japan and the USA.	Extensive network of industry specific international contacts.	CEO has strong prior international network in financial services

		2B1	2B2	3B	8B	10B	20B	31B
Experiences transferred into internationalisation activities	Transferable Experiences	Specialist technical experiences. In the process of licensing High yield BMP extraction technology to an international firm.		In the process of setting up partnerships to license out low cost chemical technology developed in partnership with a local research institute.		Firms first DNA sequencing product licensed from co founders research work at a local university. CEO has used some of the international distributors from prior experience.	Used distributors and service providers, from prior experience. Employed senior management staff and personal from prior experience.	Cofounders Specialist technical skills in bio analytical analysis and specialist reactor design.
Evidence of the firms attempts to leverage its specialist knowledge for internationalisation.		For the past five years the firm has been presenting at every major BMP conference.			Attendance and presentations at the major conferences for the past three years.	Major conference attendance e.g. ISMB. Product launches at ISMB conferences.		Presenting and attending at international conferences. Firm makes up part of CRO teams at CRO's client presentations

ISMB = international society for molecular biology.

		11B	17B	19B	23B	13S	14S	33S
Internationalisation Indicators	Timing of internationalisation activities	0 to 3	0 to 3	0 to 3	0 to 3	0 to 3	0 to 3	3 to 6
	Types of cross border links	Outward	Outward	Inward	Inward	**outward**	Cooperative Outward	**Inward** Cooperative
	% international sales revenue	11%	54%			Decreased from 20 to 0%	95%	93%
Educational level		BSc Marketing	BSc majors in biochemistry and zoology.	PhD Microbiology		Bcom marketing	MSc Physics BSc information technology	Bcom economics and accountancy
International experiences gained before the formal registration of the firm.	Specialist Technical knowledge/expertise /skills	Technology licensed in from a south African research institute and developed further in collaboration with locally based supplier and chemical companies.	10+ years Laboratory analysis, research and development experience in local pharmaceutical companies.	Postdoctoral researcher at a Swiss research institute and local south African university	Indigenous knowledge of the properties of wild indigenous fruit.	Limited IT development skills	Founder of IT firm sold to IBM. Expertise in technology deployments within financial services	

		11B	17B	19B	23B	13S	14S	33S
International experiences gained before the formal registration of the firm.	Prior knowledge of international market segments.	Served as the local agent and distributor for an international pharmaceutical company.	None	Contacts in local and Swiss research community.	None			Experience in the marketing of recording systems.
	Prior international contacts			Interpersonal relationships with international life science reagent manufacturers			Global network in technology	Contacts within the telecommunications industry. Hired sales representative with experience of selling second generation recorders to an international client base.
	Transferable Experiences			Interpersonal contacts with life science reagent manufacturers			Interpersonal contacts used to gain access to key decision makers within international companies.	Interpersonal contact with experience of selling recorders within the intelligence market.
Evidence of the firm's attempts to leverage its specialist knowledge for internationalisation		Launching products at an international trade shows *	Launching products at international trade shows *					Launching product at international trade shows*

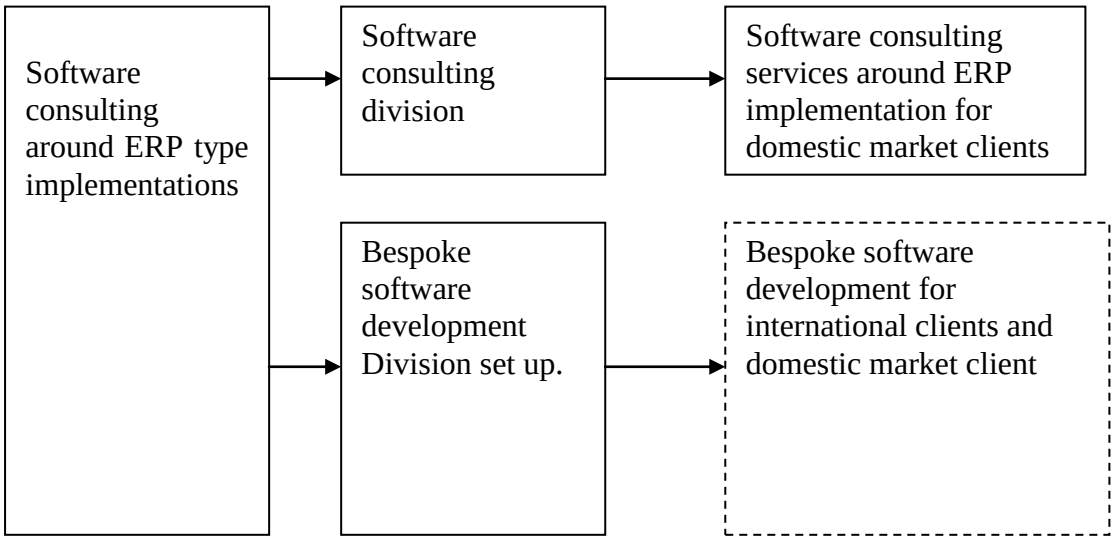
ISMB = international society for molecular biology.

Table 23

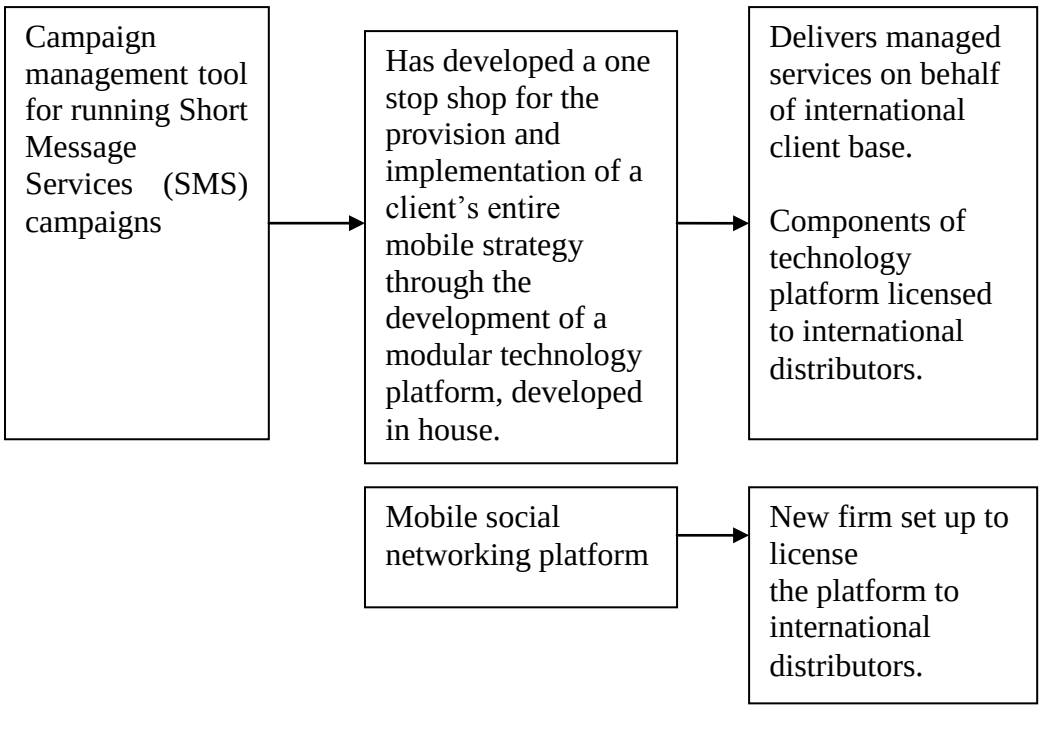
International Entrepreneurial Opportunity Development

The Progression and Outcomes of International Entrepreneurial Opportunity Development within Software and Technology Led Biotechnology Firms.

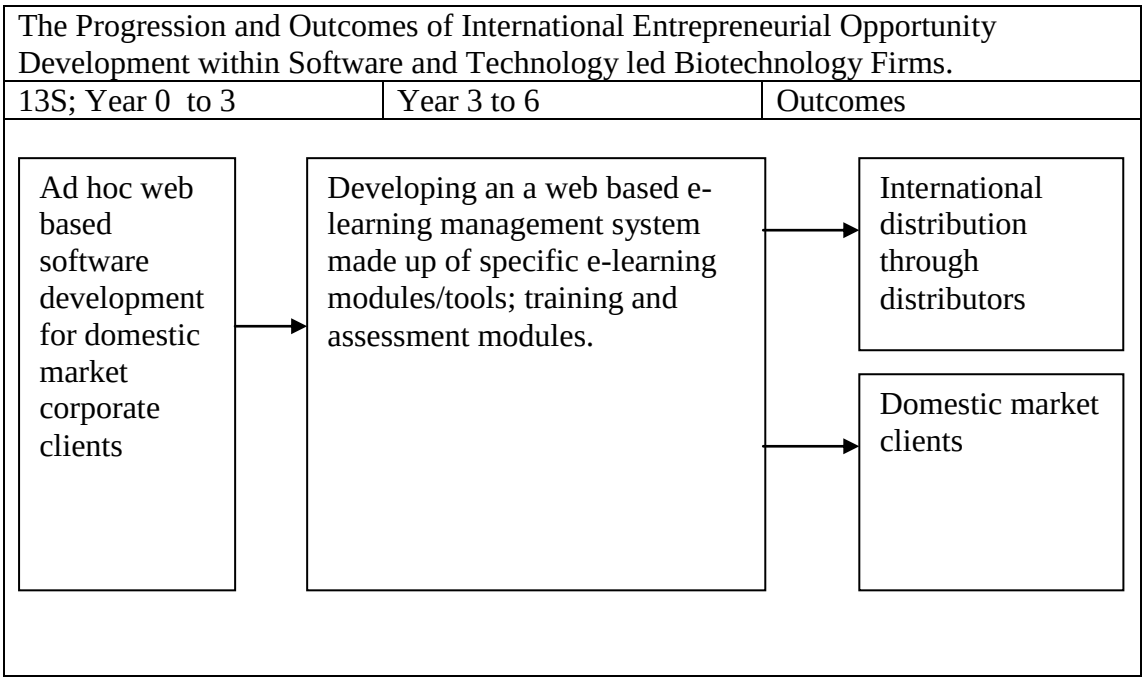
5SC; year 0 to 2	Year 2 to 6	Outcomes

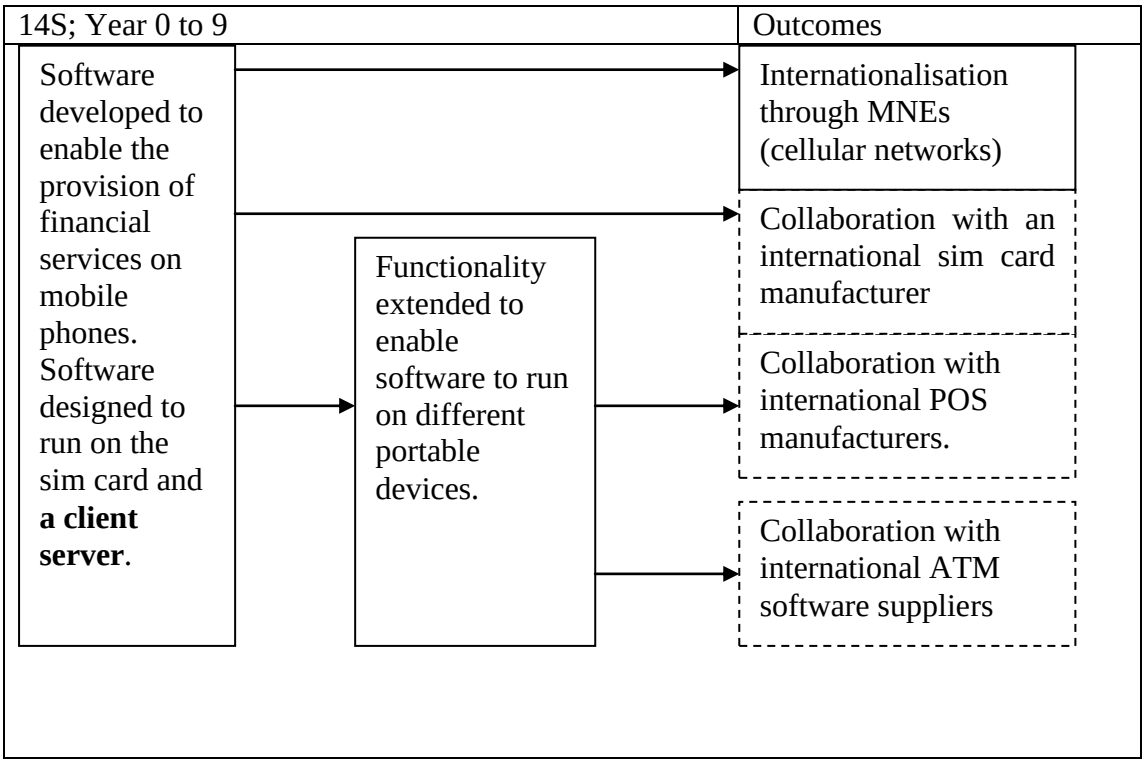


12S; 0 to 1	Year 1 to 5	Outcomes

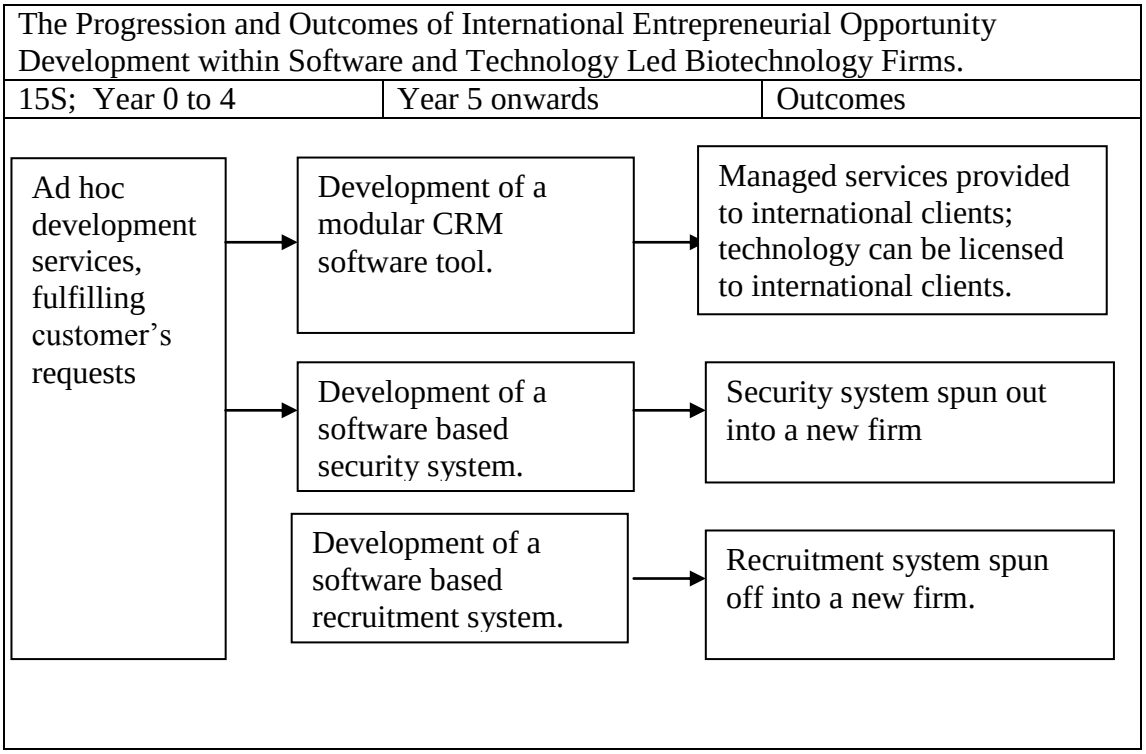


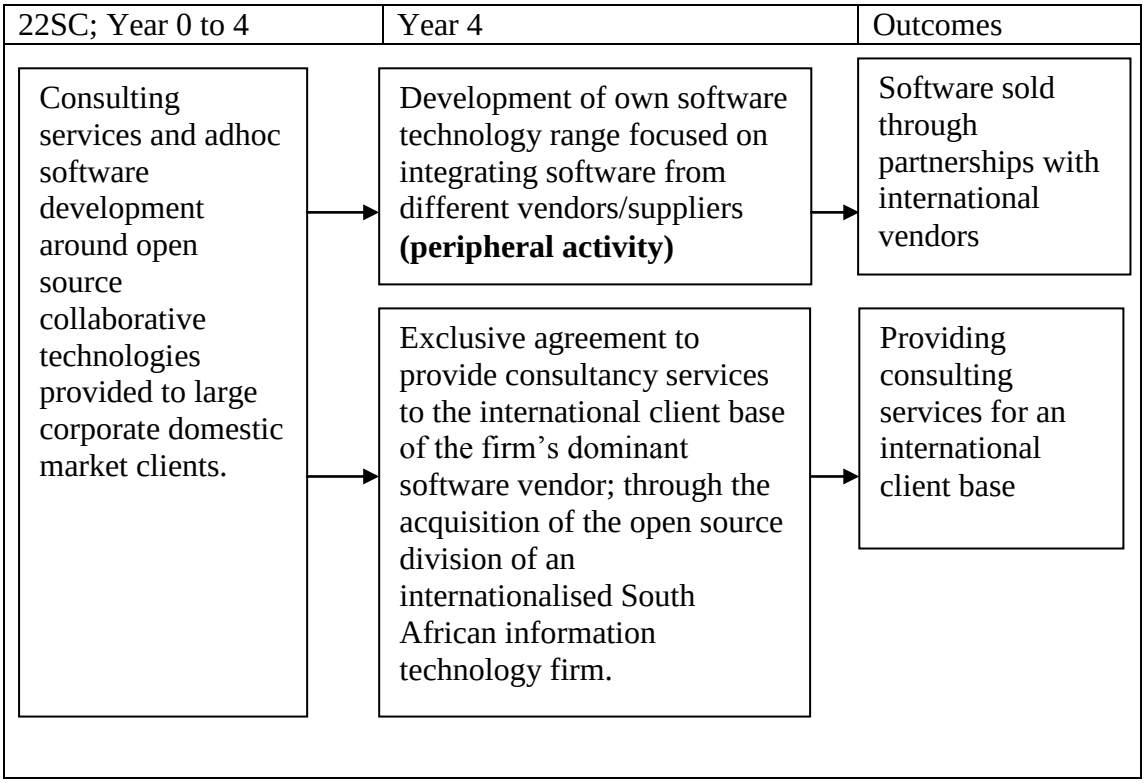
The Progression and Outcomes of International Entrepreneurial Opportunity Development within Software and Technology led Biotechnology Firms.





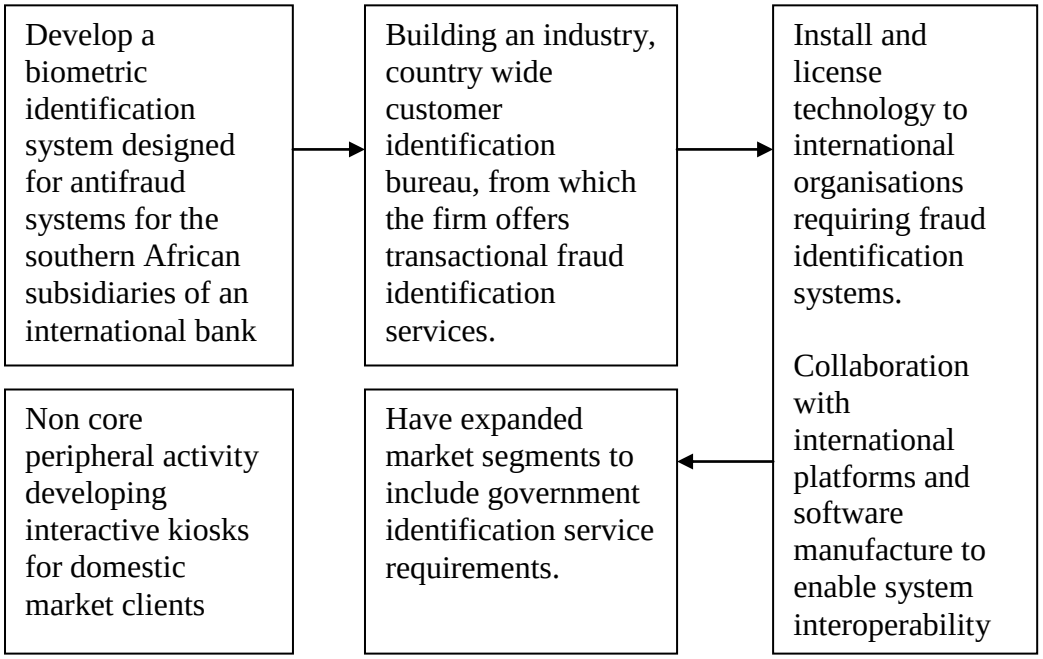
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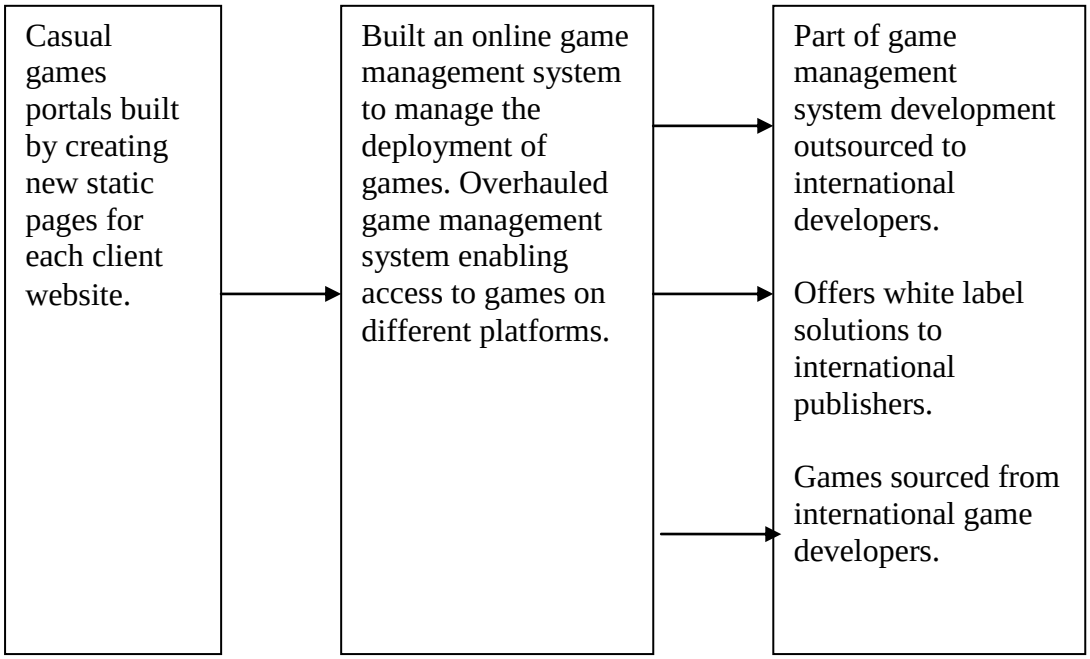


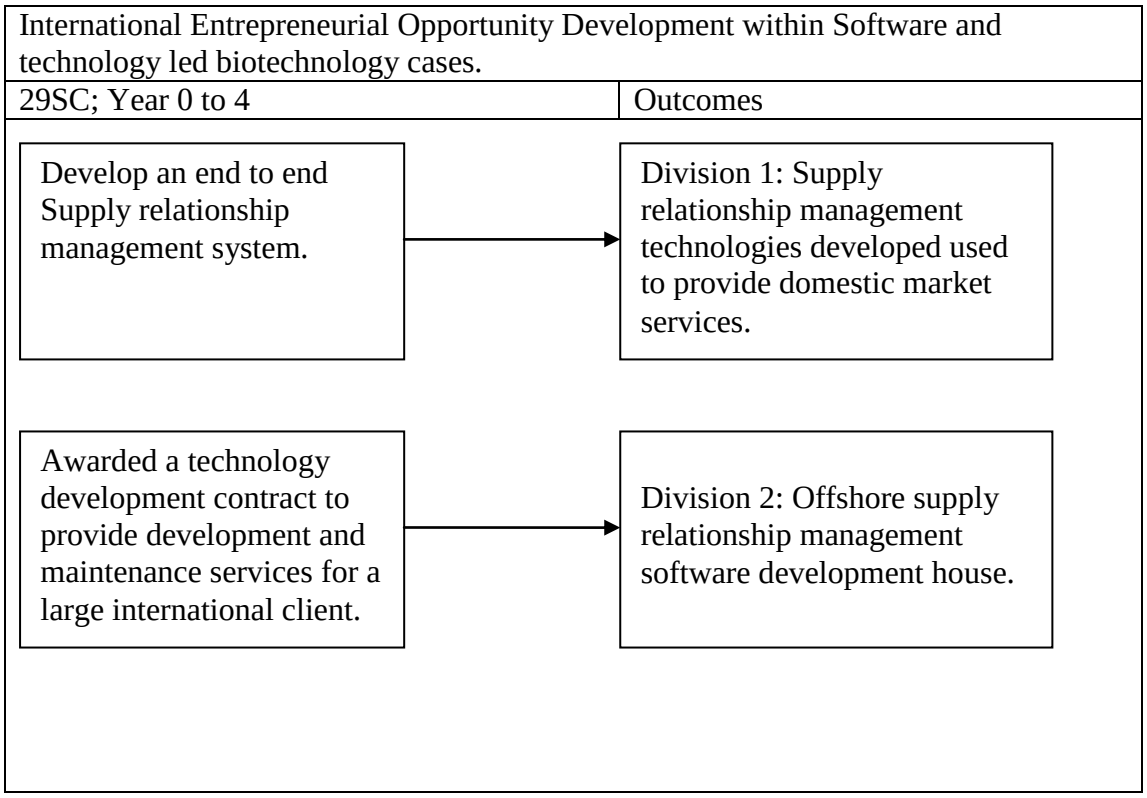
International Entrepreneurial Opportunity Development within Software and Technology Led Biotechnology Firms.

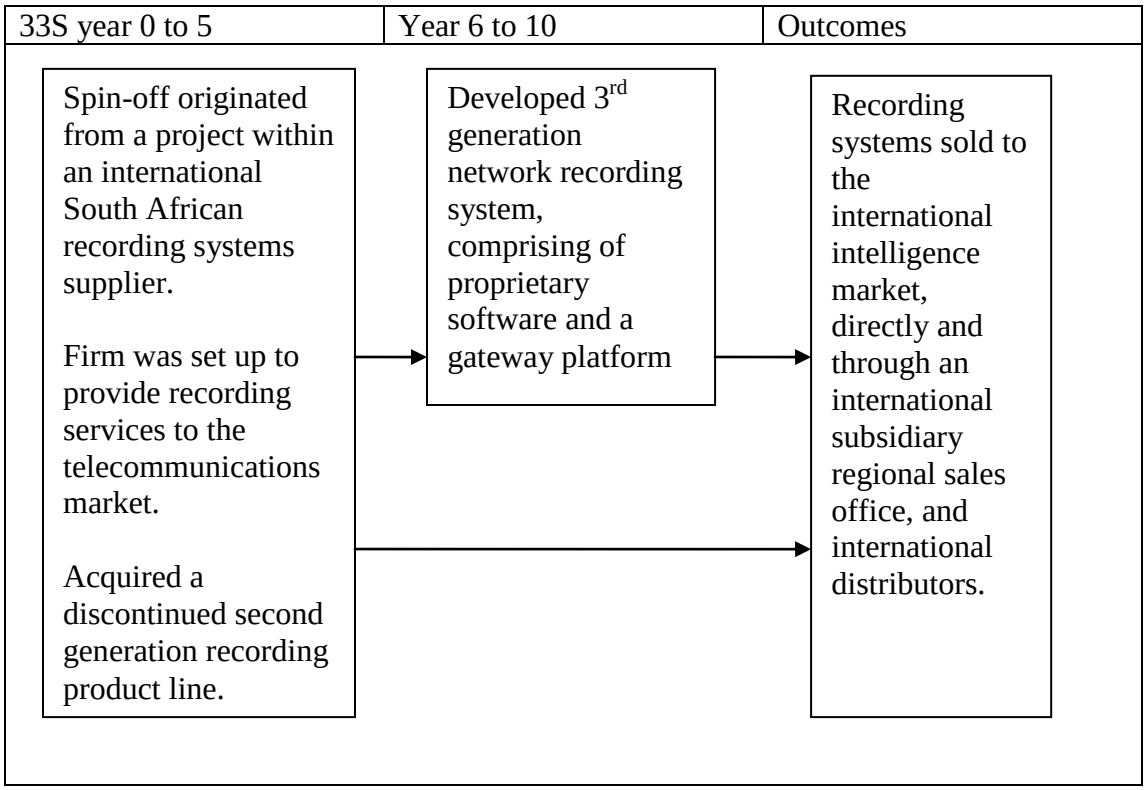
24S; year 0 to 4	Year 5 to 8	Outcomes



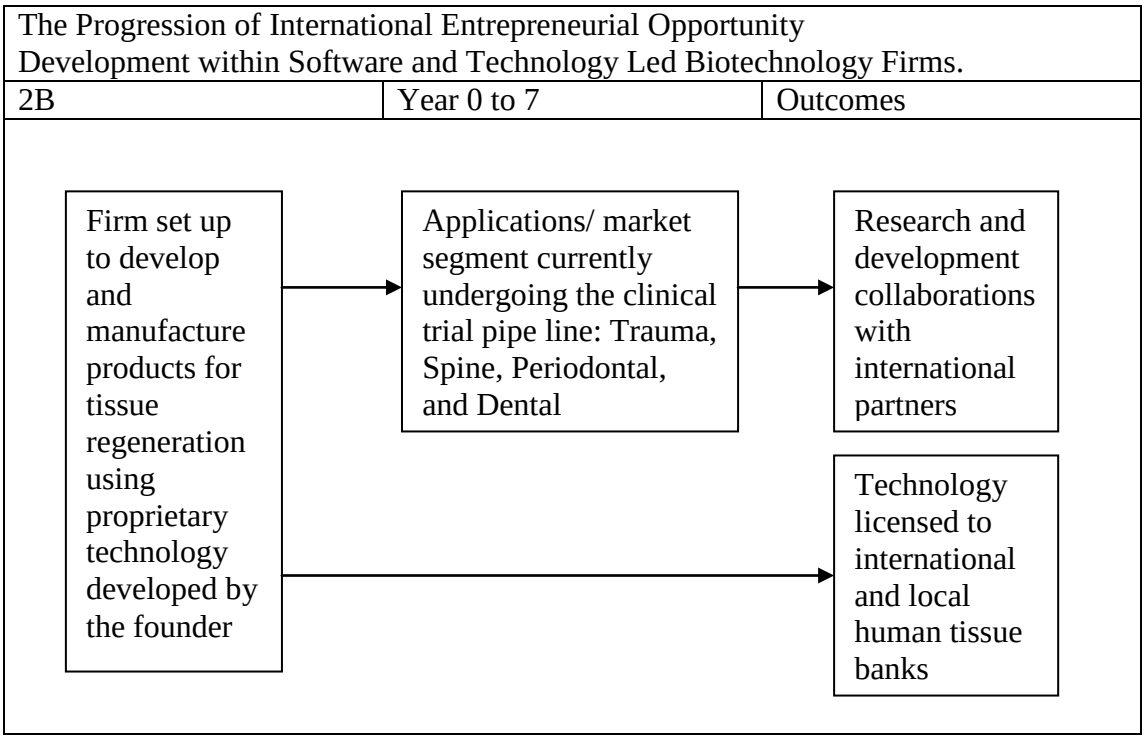
28S;Year 0 to 2	Year 2 to 5	Outcomes

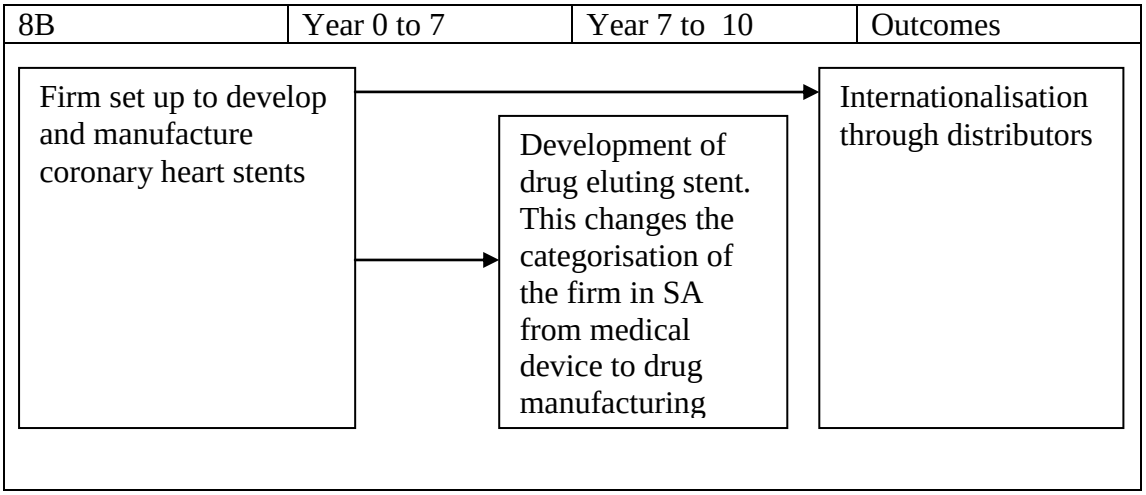



International Entrepreneurial Opportunity Development within Software and technology led biotechnology cases.
29SC; Year 0 to 4
Outcomes
Develop an end to end Supply relationship management system.
Division 1: Supply relationship management technologies developed used to provide domestic market services.
Awarded a technology development contract to provide development and maintenance services for a large international client.
Division 2: Offshore supply relationship management software development house.


33S year 0 to 5
Year 6 to 10
Outcomes
Spin-off originated from a project within an international South African recording systems supplier.
Firm was set up to provide recording services to the telecommunications market.
Acquired a discontinued second generation recording product line.
Developed 3rd generation network recording system, comprising of proprietary software and a gateway platform
Recording systems sold to the international intelligence market, directly and through an international subsidiary regional sales office, and international distributors.

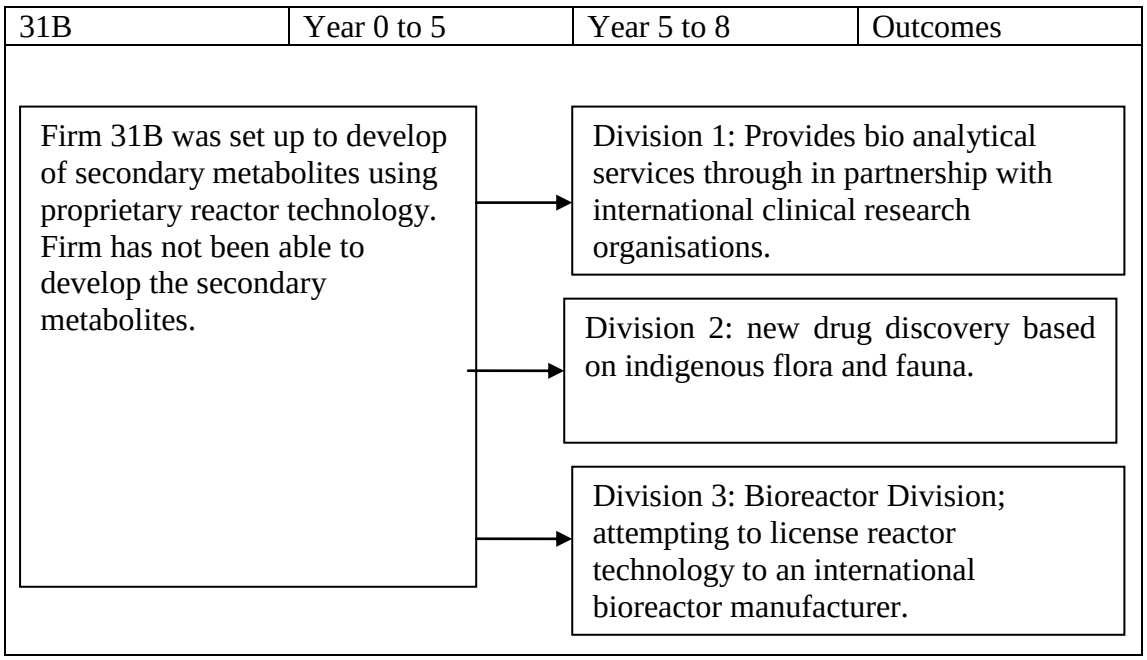
The Progression of International Entrepreneurial Opportunity Development within Software and Technology Led Biotechnology Firms.





The Progression of International Entrepreneurial Opportunity Development within Software and Technology Led Biotechnology Firms.





APPENDIX D

Table 24

Documentation and Indicators used to Gauge the Quality, Consistency, and Substantitiveness of Verbatim Quotations

	Quality Indicators								Consistency and Substantiveness Indicators	
Case	CV	Linked in profile	Business plan	Company website	Financial Statements	Online/print publications/partner websites	More than one interviewee (agency staff)	Overall quality rating for case	Rapport between interviewee and interviewer	Depth of case description
1SC	✓			✓		✓		Medium	Medium	Medium
2B	✓		✓	✓			✓	High	High	High
3B	✓					✓		Medium	High	Medium
4SC								Low	Medium	Medium
5SC	✓			✓		✓		High	High	High
6S						✓		Low	Medium	Medium
7SC	✓		✓					High	High	High
8B				✓		✓	(✓)	Medium	High	High
9S	✓		✓					High	High	High
10B				✓		✓		Medium	High	High
11B	✓			✓		✓		Medium	High	High
12S	✓		✓	✓		✓		High	High	High
13S								Low	Medium	Medium
14S		✓		✓		✓		Medium	High	High
15S				✓		✓	✓	High	High	High
16S		✓		✓				Low	High	High
17B	✓		✓	✓	✓			High	High	High
18S	✓		✓	✓				High	High	High

Table 24

Documentation and Indicators used to Gauge the Quality, Consistency and Substantiveness of Verbatim Quotations

	Quality Indicators								Consistency and Substantiveness Indicators	
Case	CV	Linked in profile	Business plan	Company website	Financial Statements	Online/print publications/partner websites/ interviewee/firm personal authored publications	More than one interviewee interviewed (agency staff)	Overall Quality Rating for case	Rapport between interviewee and interviewer	Depth of case description.
19B				✓		✓		Medium	Medium	Medium
20B				✓		✓		Medium	High	High
21SC	✓		✓	✓	✓		✓	High	High	High
22SC				✓		✓		Medium	High	High
23B								Low	Low	Low
24S			✓	✓		✓		High	High	High
25S				✓		✓		Low	High	High
26S				✓				Low	Medium	High
27SC				✓				Low	Medium	Medium
28S	✓			✓		✓		High	High	High
29SC	✓		✓			✓		High	High	High
30S				✓		✓		Low	High	High
31B				✓		✓	(✓)	Medium	High	High
32SC	✓					✓		Medium	High	High
33S			✓			✓		High	High	High
34S	✓		✓			✓		High	High	High
35S			✓	✓		✓		High	High	High