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The degree of internationalisation and financial performance of South African multi-national enterprises

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The degree of internationalisation and financial performance of South African multi-national enterprises

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A research report submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Business Administration

Johannesburg, May 2013

ABSTRACT

The world is far more interconnected economically, and with the removal of investment barriers, many firms are expanding their scope of operations beyond the borders of their home country through a process of internationalisation. This is a phenomenon that South African firms have embraced enthusiastically since the late 1990's.

A great deal of attention has been directed toward studying the relationship between the financial performance of firms and their degree of internationalisation, but the closest research on South African companies has primarily focussed on politico-economic issues rather than the internationalisation-performance relationship. This study, to the best of the author's knowledge, is one of the first to examine this relationship for South African multinationals.

The study comprises a sample of eighty four JSE listed firms whose international operations are material enough to have been reported. Data on financial performance and foreign sales were collected from the published annual reports of these firms for the period from 2007 to 2012 and analysed in this study.

Three hypotheses were proposed, corresponding to a linear, a quadratic, and a cubic relationship respectively, the results providing support only for the cubic relationship. Thus, the study indicates that the internationalisation-performance relationship is a sinus curve, where performance increases with internationalisation up to a first threshold, beyond which performance drops rapidly until a second threshold is reached, at which point performance begins to increase rapidly again.

The results of this research reveal that performance does not increase monotonically with the degree of internationalisation adopted by the firm. There is instead, a "gulf of globalism" that South African firms must learn to come to terms with. Furthermore, the research reveals more questions than it answers. Consequently, there is a need for more extensive research in this area of study.

DECLARATION

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

Sandhir Singh

_____

Signed at ……

On the …….. day of …… 2013

DEDICATION

This research is dedicated to my father, who taught me the value of honesty, integrity, and perseverance, as well as my wife Renu and daughter Suvarna, whose sacrifice made this possible.

ACKNOWLEDGEMENTS

I would like to express my gratitude to my supervisor, Professor Emeritus Frederick Ahwireng-Obeng for his guidance and support. Special thanks go to Professor Winfried Ruigrok of the University of St. Gallen and Professor Farok Contractor of Rutgers University for reviewing this dissertation and providing helpful feedback and suggestions.

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I would like to acknowledge Mr Fritz Broeze for his assistance in performing the statistical analysis, and the companies collectively being researched for publishing and making their data available for me to gather and analyse.

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CHAPTER 1: INTRODUCTION

1.1. Context of the study

The last four decades have seen a paradigm shift in the way business is conducted around the world. Companies, no longer shackled to their country of origin, were freer and open to opportunities around the world, thus beginning the era of the huge multinationals. Internationalisation can be defined as a firm's expansion beyond the borders of its home country. The terms multinationality, internationalisation, international diversification and multinational diversification are often used interchangeably in the literature, although this report will use the term internationalisation for the sake of consistency.

The initial motivation for this expansion was the search for higher profits but it was also believed that firms that expanded internationally also benefitted from a reduced risk in profits and that the reduction in risk was proportional to the level of foreign operations (Choi & Jiang, 2009; Qian & Li, 1998; Rugman, 1976). There is additional support for the idea that multinational corporations present less risk than their domestic counterparts due to them having lower volatility in share price (Michel & Shaked, 1986) and a lower risk of insolvency (Shaked, 1986). Other evidence however, suggests that multinational corporations may actually have an increased risk exposure (Fillat & Garetto, 2010; Goldberg & Heflin, 1995; Reuer & Leiblein, 2000).

While there may be an advantage to firms in receiving benefits from internationalising because they diversify away risk, the primary reason for expanding internationally is to search out new markets, thereby improving financial performance. The conventional wisdom has been that high profitability is related to high market share (Douglas & Craig, 1983), and what better way to expand market share than by going after the world market? Geringer, Beamish, and daCosta (1989) point out that multinational firms that best use their competitive advantage obtain benefits from this strategy and Hennart (2007) argues that some firms may derive benefits from expanding internationally as a

result of achieving greater economies of scale, especially if the firm's home market is particularly small.

Throughout much of the boom period of international expansion by American, European and Japanese firms, South African firms were isolated and confined to their home market, resulting in a closed and concentrated business environment (Klein & Wöcke, 2007). The ending of apartheid opened up the floodgates and South African businesses began streaming into Africa (Daniel, Naidoo, & Naidu, 2003), using their surplus capital to begin a two-decade long period of investment and expansion in the region (Daniel, Naidoo, & Naidu, 2003; Klein & Wöcke, 2007).

Companies may internationalise in a number of different ways, such as through export only or by foreign direct investment either locally, regionally (intra-region) or globally (inter-region) (Banalieva & Santoro, 2009; Qian, Khoury, Peng, & Qian, 2010), and the degree of internationalisation can therefore differ substantially. Differing degrees of internationalisation bring different costs and benefits (Qian, et al., 2010; Yang & Driffield, 2012), therefore it is of paramount important to understand the nature of the financial performance gain from internationalisation. This is especially true in the South African context due to the differences in the level of internationalisation between firms such as FNB (local), Massmart (regional) and MTN (global).

Throughout much of the last two decades, an extraordinary effort has gone into studying the relationship between the degree of internationalisation and the financial performance of the firm, with a view to understanding what level of internationalisation yields the greatest benefits to firms. Early studies found that benefits increase linearly with the level of internationalisation (Grant, 1987), while later studies found a U-shape (Capar & Kotabe, 2003; Endo & Ozaki, 2010; Mathur, Singh, & Gleason, 2001) or inverted-U shape (Hsu & Boggs, 2003; Qian, et al., 2010; Yang & Driffield, 2012). An idea that is gaining traction is that of a sideways-S shape relationship (Contractor, 2007; Contractor, Kundu, & Hsu, 2003; Lu & Beamish, 2004; Riahi-Belkaoui, 1998; Thomas & Eden, 2004). The wide variety found in the relationship between internationalisation and performance suggests that there may not be a universal relationship that

applies to all firms and all countries but rather a number of different context-specific relationships (Ruigrok, Wagner, & Amann, 2004) with the unique characteristics of the firm and the country determining which model is suitable. This then begs the question: which relationship holds true for South African multinational companies? This research will attempt to answer this question by employing cross-sectional time-series regression to establish the nature of the internationalisation-performance relationship for South African firms.

1.2. Problem statement

1.2.1. Main problem

Firms diversify internationally in the expectation of superior performance but this promise is not always fulfilled; sometimes, internationalisation harms the firm financially. Quite frequently, the divergence between expectations and reality (with regard to the financial benefits and costs of internationalisation) is not well understood, especially for South African firms. As a result, firms are unaware of what the optimal level of internationalisation is, and what strategic changes need to be made to improve financial performance.

1.2.2. Sub-problem

The sub-problem is to understand to what extent internationalisation benefits or harms the financial performance of South African firms.

1.3. Purpose of the study

The purpose of this research is to examine the financial performance of firms originating in South Africa that have pursued a strategy of internationalisation. This research intends to address the gap in knowledge in this particular business area in the South African context by attempting to discover the nature of the internationalisation-performance relationship for South African multinational companies.

1.4. Significance of the study

The existing research on the international business operations of South African companies is qualitative in nature (Daniel, Naidoo, & Naidu, 2003; Daniel, Naidoo, Naidu, Habib, & Southall, 2003; Games, 2010; Klein & Wöcke, 2007; Whitehouse & Associates, 2004) and offers primarily politico-economic analyses as opposed to sound quantitative analysis with insights for business strategy. There is some research into the internationalisation-performance relationship for emerging market firms (Banalieva & Santoro, 2009; Contractor, Kumar, & Kundu, 2007; Elango, 2006; Kumar & Singh, 2008) but no studies of this nature have been performed in the South African context.

This study fills that gap in the research by addressing the nature of the relationship between the degree of internationalisation and the financial performance for South African multinational firms. This area deserves a more thorough study because a large number of South African firms have expanded aggressively throughout the African continent in search of growth opportunities, often in high growth but relatively more risky countries (Whitehouse & Associates, 2004). The perception in the business world is that South African firms could be even more aggressive about Africa expansion, given that the continent offers a huge estimated market and an opportunity to diversify risk away from depressed developed economies (Flaaten, 2012; Kamhunga, 2012). Without adequate information on what effect this is likely to have on the firm's performance, this decision cannot be taken lightly.

The study may provide guidance to professionals responsible for business strategy working within multi-national enterprises who wish to understand the optimal level of internationalisation their companies should assume. The research may also be of interest to academics and students, particularly for persons studying international business and strategy formation and execution; touching, as it were, one of the fundamental decisions of how to obtain and sustain competitive advantage.

1.5. Delimitations of the study

The study is delimited in the following manner:

a. The study will consider South African multi-nationals that conduct any type of business in other countries, as long as these business activities accrue revenue to the firm.
b. The study will include firms that originated in South Africa and may have moved their headquarters outside of South Africa, provided they are still listed on the JSE main board.
c. The study will only consider historical reported financial and firm data for the last five financial years, i.e. 2007/2008 to 2011/2012.
d. The study will not attempt to establish the reasons and motivations behind the firm's decision to diversify internationally.
e. If a relationship exists between the degree of internationalisation and firm performance, the study will not attempt to identify the factors responsible for the relationship.

1.6. Definition of terms

Strategy is the deliberate choice by management of a firm to perform different sets of activities to attain certain goals (Hill, 2011; Porter, 1996).

Multinational Diversification, International Diversification or **Internationalisation** is a firm's strategic plan to pursue competitive advantage by geographically expanding business activities (Lu & Beamish, 2004).

A **Multi National Enterprise (MNE)** or **Multi National Corporation (MNC)** is a firm that conducts business in two or more countries through its subsidiaries, affiliates or agents (Ghoshal & Bartlett, 1990; Hill, 2011).

Financial Performance is the set of financial ratios and indicators that indicate the extent of the monetary return from a firm's operations.

Risk is the chance of an unexpected (usually negative) outcome.

1.7. Assumptions

The following assumptions have been made regarding the study:

a. The sample of firms on the JSE is representative of the population of South African firms.
b. South African firms face similar opportunities and challenges compared to other emerging market firms.
c. Data obtained from companies' financial statements will be a true and accurate reflection of their situation. Inaccurate data will skew the results of the study and reduce its validity.
d. The measurements used to operationalise the constructs of internationalisation and performance result in a reasonable representation of that construct. Even if this assumption is not strictly true, it opens up avenues for further research in the South African context.

e. There is a causal relationship between internationalisation and performance. This assumption, which is generally believed to be true in all international business studies, justifies the face validity of the final regression result.
f. There is temporal and cross-sectional stability in the relationship between the constructs being studied. This is important, because the entire research will be jeopardised should this transpire to be false.

1.8. Rest of the Report

This report is divided into six chapters, including this introductory chapter, chapter one. Chapter two is a review of the literature relating to internationalisation, firm performance, and studies of the relationship between the two. Chapter three describes the research methodology that was followed, and discusses the issues that were relevant in conducting the research. Chapter four presents the results obtained from the research, while chapter five discusses the results and how they pertain to the hypotheses. Finally, chapter six concludes the study, and provides recommendations and suggestions for future research.

CHAPTER 2: LITERATURE REVIEW

2.1. Introduction

This section contains a literature review of the key themes of relevance to the study. The first area is internationalisation, including its key components, and the measurement of the degree of internationalisation. The second area is financial performance of multinational corporations and the third area discusses how financial performance is affected by the degree of internationalisation of the firm. The section concludes with a critique of the methodology used in previous studies and expounds the hypotheses tested in this study. This chapter is structured as shown in Figure 1.

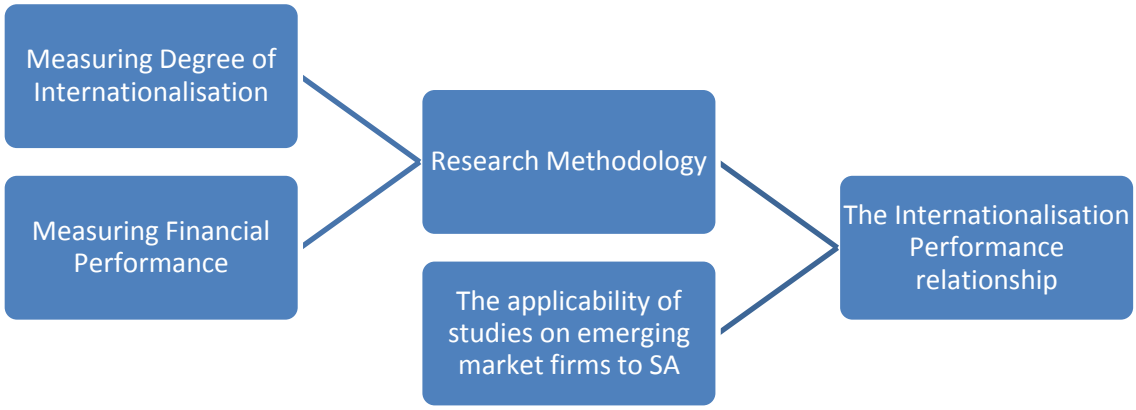


Figure 1: Structure of Chapter 2

2.2. Background discussion

The business world has become increasingly competitive at a time when global economic conditions are tougher than they ever were. Firms are jockeying for position and sometimes fighting hard just to survive. In this climate, firms look for any competitive edge, one tactic being to expand into multiple markets, with the battles moving away from the national stage to the international stage (Hill, 2011). Even in cases where firms are unable to compete globally, many viable

strategies exist to compete across boundaries within a region (Ghemawat, 2003, 2005).

Beginning in the mid-1990's, South African firms have begun a process of concerted expansion into the African continent (Daniel, Naidoo, & Naidu, 2003; Daniel, Naidoo, Naidu, et al., 2003), a phenomenon which the literature has documented rather scantily. Given the not insubstantial risk arising from international exposure (Goldberg & Heflin, 1995), a relevant concern for many strategy formulators is to find the optimal level of multinational expansion. This question, which can best be answered by describing the relation between internationalisation and financial performance, has not had any treatment in the literature in the context of South African firms. However, some key theoretical assertions can be applied from a review of the literature.

2.3. Internationalisation and Firm Performance

One of the strategic decisions a business has to make is to define its scope, one aspect of which is geographic location (Collis & Rukstad, 2008). The decision to internationalise is a strategic one (Melin, 1992). Firms enter foreign markets to exploit market conditions or factor endowments that do not exist in their home market (Lu & Beamish, 2004) and may do so using a number of different entry strategies (Hill, 2011). Whatever method is chosen, the extent to which the firm commits to, or depends on markets outside of its home country determines its geographic orientation, which can be either local, regional or global (Banalieva & Santoro, 2009). There are many possible ways to quantify the geographic orientation of the firm, resulting in a measure that this study will refer to as the Degree of Internationalisation (DOI).

There are also many possible ways to measure the financial performance of the firm, each one exposing a slightly different facet of the firm's performance. One can focus specifically on financial results, or one can look at those aspects of firm performance that are hidden from the outside world, but are equally

important when it comes to assessing how well the firm performs (Ruigrok & Wagner, 2003).

Once the quantitative measures of internationalisation and performance are known, strategists and scholars alike will then want to know the nature of the relationship between them, since insights gleaned from this experience can influence management thinking into the best way to run multinational businesses (Wiersema & Bowen, 2011). Is there a pattern in the data or is it all just random? Does the body of knowledge suggest the best possible choices to be made when it comes to expanding geographically, or are results determined by other factors (Contractor, 2007; Hennart, 2007)? These questions have received extensive attention by many scholars and will continue to do so until the results of their studies start to converge (Glaum & Oesterle, 2007).

2.3.1. The theory of internationalisation

The decision by a firm's management to expand operations internationally is, to varying degrees, a combination of a rational one, i.e. benefitting the firm and its shareholders, and an irrational one, i.e. serving only their selfish interests (Dastidar, 2009).

Rational theories to explain internationalisation embark from the point of view that managers use it as a growth strategy (Capar & Kotabe, 2003) to increase the value of the firm for shareholders by delivering higher returns or lower risk. The implication of this viewpoint is that managers will take strategic actions (such as expanding internationally) if that action will result in an increase in shareholder value or decrease in shareholder risk (measured in the firm's share price) (Lubatkin & Chatterjee, 1991). The rational theories include the internalisation theory, risk reduction and arbitrage opportunities (Morck & Yeung, 1991).

Internalisation theory, which was pioneered by Hymer (1960), Caves (1971), and Buckley and Casson (1976), and developed further by Dunning (1979), Rugman (1982), and Hennart (1982, 2007); seems to provide the most convincing and long-lasting argument for internationalisation (Buckley &

Casson, 2009; Morck & Yeung, 1991; Verbeke, Li, & Goerzen, 2009). The main thrust of the theory is that firms that possess a comparative advantage in certain intangible assets but cannot exploit them in their home country to deliver superior returns will "internalise" them and set up operations in other countries where they *can* exploit their comparative advantage to earn superior returns (Buckley, 1988; Wan, 1998; Yang & Driffield, 2012). The firm's key objectives are to increase revenues by exploiting market imperfections (Caves, 1971; Endo & Ozaki, 2010; Lu & Beamish, 2004; Ruigrok & Wagner, 2003) and to minimise costs through economies of scale and higher productivity (Dastidar, 2009). Dunning's extension to the internalisation theory is the eclectic paradigm (Dunning, 1973, 1980, 1988, 1993), which considers firm ownership and location economics in conjunction with the firm's own internal advantages when planning international growth (Qian & Li, 1998).

Managers may also attempt to reduce risk for investors (Rugman, 1976), and thereby increase the share price, by diversifying the company internationally. This assists investors to diversify their portfolios internationally; an action they are prevented from doing themselves due to imperfect world capital markets (Lessard, 1976). The evidence for this theory is quite limited (Morck & Yeung, 1991) and given the openness and globalised nature of modern world capital markets, this idea seems even less relevant. It is however, true that multinational corporations seem to have less systematic risk than domestic firms (Goldberg & Heflin, 1995; Michel & Shaked, 1986; Shaked, 1986) and a lower probability of insolvency (Mitchell, Shaver, & Yeung, 1992; Shaked, 1986). This lower risk may be appreciated by investors (Riahi-Belkaoui, 1999), but there is also some evidence to indicate that the firm's value is diminished by diversification (Denis, Denis, & Yost, 2002).

Firms may also attempt to exploit the arbitrage opportunities that exist as a result of differences between countries or regions (Ghemawat, 2007) such as differences in tax treatment, subsidies, regulations, or lower input costs (Thomas & Eden, 2004). While this is a compelling argument for locating certain parts of the firm's value chain in different countries, there is no support for the

idea that internationalising for tax avoidance or lower input costs adds any value to the firm in the eyes of its shareholders (Morck & Yeung, 1991).

The main irrational theory of multinational expansion is the agency theory, where managers expand the firm geographically mainly for their own personal benefit (Denis, Denis, & Sarin, 1997, 1999; Filatotchev & Wright, 2011), such as building an empire to increase their own sense of power and prestige (Jensen, 1986; Stulz, 1990), demanding higher compensation (Jensen & Murphy, 1990) or strengthening their own position within the firm (Shleifer & Vishny, 1989). Morck & Yeung (1991) obtained results that were not necessarily inconsistent with this theory, however Dastidar (2009) was able to clearly show that the decision to diversify internationally is sometimes endogenous, and as Buckley and Strange (2011) point out, can be made by the firm's management on poor grounds.

Somewhere in between the two extremes of rational and irrational theories is the oligopolistic reaction theory (Knickerbocker, 1973), which proposes that firms will follow each other into foreign markets for fear of conceding a market, losing competitive balance or simply because they are following-the-leader (Hill, 2011).

2.3.2. Measuring the Degree of Internationalisation

There are many ways a firm can choose to structure its operations across a global canvass, so ideally, a nuanced approach is required when attempting to classify one firm as "more international" than another. Qian and Li (1998) suggest the two dimensions of geographic scale and geographic scope across which to define a firm's international operations. Scale broadly refers to the relative magnitude of the firm's foreign operations, while scope refers to the relative breadth of operations across multiple regions or countries (Hitt, Hoskisson, & Kim, 1997); where both dimensions are important to accurately capture the reality of internationally diversified firms (Qian & Li, 1998). For example, a Canadian firm exporting most of its product (say lumber) to the United States would have high scale but limited scope whereas a South African

firm exporting a small proportion of its product (say Mrs Balls chutney) around the world would have limited scale but high scope.

Geographic scale can be captured across four dimensions: operational performance, operational structure, attitudinal attributes, and ownership (Lei Li, 2007). Operational performance measures have been based on a ratio of Foreign Sales to Total Sales – FSTS, which is by far the most popular way to measure the degree of internationalisation in empirical studies (Capar & Kotabe, 2003; Contractor, et al., 2007; Daniels & Bracker, 1989; Geringer, et al., 1989; Goldberg & Heflin, 1995; Grant, 1987; Hsu, 2006; Hsu & Boggs, 2003; Kim, Hwang, & Burgers, 1989; Kumar & Singh, 2008; Mathur, et al., 2001; Mathur, Singh, & Gleason, 2004; Qian, 1996; Riahi-Belkaoui, 1998, 1999; Rugman, 1976; Ruigrok & Wagner, 2003, 2004; Ruigrok, Wagner, & Amann, 2007; Sambharya, 1995; Shaked, 1986; Tallman & Li, 1996; Thomas, 2006). Operational structure measures use the ratio of Foreign Assets to Total Assets – FATA (Daniels & Bracker, 1989; Lee Li & Qian, 2005; Mathur, et al., 2001, 2004; K. Ramaswamy, 1993; Sambharya, 1995), the number of people employed in foreign subsidiaries, or the number of foreign offices (Kim, et al., 1989), but these are less common. Attitudinal attributes consider the attitudes held by top management towards the importance of multinationality and the "psychic dispersion" of the firm (Sullivan, 1994a), while ownership measures consider the percentage of common equity (stock/shares) in the firm held by foreign companies (Gerpott & Jakopin, 2005). One of the main reasons for the popularity of using the FSTS measure is the practical difficulty in obtaining appropriate data to measure the other dimensions (Glaum & Oesterle, 2007).

Most empirical studies on internationalisation have focussed predominantly on operational performance indicators (Lei Li, 2007) because the source data is readily and freely available and the construct can be objectively measured and replicated across multiple studies. An acknowledged limitation of this this approach, however, is that the resultant measure only captures one facet of international diversification and overlooks the range of other strategic options open to the firm (Lei Li, 2007; Sullivan, 1994a; Wiersema & Bowen, 2011). This

limitation has been known for some time, which is why Sullivan (1994a) attempted to construct a multi-dimensional measure of internationalisation by using a number of indicators to construct a single composite index. This approach was criticised by Ramaswamy, Kroeck and Renforth (1996) who felt that it lacked content validity; however, no alternative was proposed by these authors (Kannan Ramaswamy, et al., 1996; Sullivan, 1996) and Sullivan's approach of combining measures continued to be used in some later studies as the resultant composite index was believed to be a more appropriate reflection of the degree of internationalisation (Contractor, et al., 2003; Endo & Ozaki, 2010; Gomes & Ramaswamy, 1999; Lu & Beamish, 2004; Thomas & Eden, 2004).

Geographic scope is a complex construct; in addition to the overall number of foreign countries where the firm has operations, one may also need to distinguish between countries that are substantially similar or diverse (Qian & Li, 1998). A common approach was to divide the world into regions that consisted of essentially similar countries, although the number and type of regional groupings has varied considerably over time (Berry, 2006; Grant, 1987; Hitt, et al., 1997; Kim, et al., 1989; Kim, Hwang, & Burgers, 1993). The most widely accepted (Chang & Wang, 2007; Goerzen & Beamish, 2003; Hitt, et al., 1997; Kim, et al., 1993; Lee Li & Qian, 2005; Mathur, et al., 2004; Palepu, 1985; Qian, et al., 2010; Qian & Li, 1998; Sambharya, 1995; Wan, 1998) quantitative measure of geographic scope is the entropy measure, which brings together the absolute number of countries, the relative size of each country's contribution to the multinational enterprise, and the geographic dispersion across multiple regions (Qian & Li, 1998). The entropy measure is sometimes combined with the Herfindahl index (Tallman & Li, 1996) which is a sales-based index, as the two are highly correlated (Chang & Wang, 2007).

Table 1 summarises the existing research with respect to the measure of Degree of Internationalisation.

Table 1: Existing research: Degree of Internationalisation

Measurement of Degree of Internationalisation (DOI)	Author(s)
$\frac{\text{Foreign Sales}}{\text{Total Sales}}$ FSTS	Mathur, Singh & Gleason, 2001 Elango, 2006 Capar & Kotabe, 2003 Ruigrok & Wagner, 2003 Riahi-Belkaoui, 1998 Thomas, 2006 Contractor, Kumar & Kundu, 2007 Hsu, 2006 Kumar & Singh, 2008 Ruigrok, Wagner & Amann, 2004 Ruigrok, Wagner & Amann, 2007 Banalieva & Santoro, 2009 Geringer, Beamish & daCosta, 1989 Thomas & Eden, 2004 Gomes & Ramaswamy, 1999 Contractor, Kundu & Hsu, 2003 Hsu & Boggs, 2003 Tallmann & Li, 1996 Grant, 1987 Majocchi & Zucchela, 2003 Sambharya, 1995 Mathur, Singh & Gleason, 2004
$\frac{\text{Foreign Assets}}{\text{Total Assets}}$ FATA	Mathur, Singh & Gleason, 2001 Mathur, Singh & Gleason, 2004 Thomas & Eden, 2004 Gomes & Ramaswamy, 1999 Sambharya, 1995
Foreign countries	Thomas & Eden, 2004 Gomes & Ramaswamy, 1999 Lu & Beamish, 2004

	Endo & Ozaki, 2010 Hsu & Boggs, 2003 Tallmann & Li, 1996
Foreign subsidiaries	Lu & Beamish, 2004 Endo & Ozaki, 2010
Herfindahl index	Chang & Wang, 2007
$\frac{\text{Foreign Employees}}{\text{Total Employees}}$ FETE	Contractor, Kundu & Hsu, 2003
$\frac{\text{Foreign Offices}}{\text{Total Offices}}$ FOTO	Contractor, Kundu & Hsu, 2003
Entropy	Qian, Khoury, Peng & Qian, 2010 Wan, 1998 Hitt, Hoskisson & Kim, 1997 Goerzen & Beamish, 2003 Qian, Li, Li, Qian, 2008 Li & Qian, 2005

There seem to be two major schools of thought in the field on how to measure Degree of Internationalisation. The European school seems to favour geographic scale (ratios such as FSTS, FATA, FETE, etc.) while the Oriental school seems to favour geographic scope (entropy measures and Herfindahl indices). The literature review suggests that the FSTS measure of degree of internationalisation is the most widely accepted and that the results of this study can be compared with a majority of the prior studies by adopting the same measure.

2.3.3. Measuring firm performance

Firm performance can be thought of as a multi-dimensional construct, with the three dimensions of financial performance, market performance, and operational performance reflecting an overall notion of organisational effectiveness (Venkatraman & Ramanujam, 1986).

Financial performance reflects the narrowest interpretation of firm performance, namely the fulfilment of the economic goals of the firm (Venkatraman & Ramanujam, 1986); and uses accounting data to calculate measures such as Return on Sales (ROS), Return on Equity (ROE), Return on Assets (ROA), or Gross Profit Margin (GPM). Some authors have even suggested considering bringing in the Weighted Average Cost of Capital (WACC) to assess the value creation potential of the firm (H.-I. Jung, 2008; Yeniyurt, 2003). Being accounting-based, these measures reflect *historical* short-term performance (Ruigrok & Wagner, 2004; Yang & Driffield, 2012) and can therefore provide little guidance into *future* performance. Accounting-based measures are used extensively in the literature though (Banalieva & Santoro, 2009; Capar & Kotabe, 2003; Contractor, et al., 2007; Contractor, et al., 2003; Elango, 2006; Endo & Ozaki, 2010; Geringer, et al., 1989; Gerpott & Jakopin, 2005; Gomes & Ramaswamy, 1999; Gomez-Mejia & Palich, 1997; Grant, 1987; Hitt, et al., 1997; Hsu, 2006; Hsu & Boggs, 2003; Kumar & Singh, 2008; Lee Li & Qian, 2005; Lu & Beamish, 2004; Majocchi & Zucchella, 2003; Mathur, et al., 2001, 2004; Qian, et al., 2010; Qian, Li, Li, & Qian, 2008; Riahi-Belkaoui, 1998; Ruigrok & Wagner, 2003; Ruigrok, et al., 2004, 2007; Sambharya, 1995; Tallman & Li, 1996; Thomas, 2006; Thomas & Eden, 2004; Wan, 1998), because the data required to calculate them is readily available, and many scholars would like to preserve some degree of validity and comparability with similar studies.

Market performance is a reflection of the *expectations* investors have for the *future* long-term performance of the firm (Ruigrok & Wagner, 2004; Yang & Driffield, 2012), and is believed to be more appropriate (Venkatraman & Ramanujam, 1986) since firms with better prospects should be more highly valued in the equity market. Measures of market performance include Market/Book ratios, Price/Earnings ratios, Tobin's q, and risk-adjusted market measures such as Jensen's α and Sharpe's measure (Goerzen & Beamish, 2003; Lei Li, 2007; Ruigrok & Wagner, 2003, 2004). Some of these measures are used in the literature (Chang & Wang, 2007; Goerzen & Beamish, 2003; Lu & Beamish, 2004), but to nowhere near the same extent as the accounting measures.

Operational performance indicators peek into the “black box” that makes the organisation work, and quantify the advantage arising from operational factors that may ultimately lead to financial reward (Ruigrok & Wagner, 2004; Venkatraman & Ramanujam, 1986). Measures of operational performance include market share, productivity, innovation, product introduction and quality, cost efficiency, and marketing effectiveness. This measure is the least used (Gomes & Ramaswamy, 1999; Niromand, Majidazar, & Balaghar, 2012; Ruigrok & Wagner, 2003; Ruigrok, et al., 2004) of any of the performance indicators in the literature due to the difficulty in obtaining appropriate data.

While the idea of considering the multi-faceted nature of firm performance has gained some acceptance in principle (Goerzen & Beamish, 2003), academic studies in the International Business and Strategy field do not necessarily consider all three aspects (Hult et al., 2008) for reasons of convenience, availability of data, and comparability with previous studies.

Table 2 summarises the existing research with respect to measures of Firm Performance.

Table 2: Existing research: Firm Performance

Measurement of Firm Performance	**Author(s)**
Return on Assets ROA	Thomas & Eden, 2004 Kumar & Singh, 2008 Hsu & Boggs, 2003 Lu & Beamish, 2004 Ruigrok & Wagner, 2003 Gomes & Ramaswamy, 1999 Riahi-Belkaoui, 1998 Ruigrok, Wagner & Amann, 2007 Qian, Khoury, Peng & Qian, 2010 Banalieva & Santoro, 2009 Hitt, Hoskisson & Kim, 1997 Contractor, Kundu & Hsu, 2003

	Contractor, Kumar & Kundu, 2007 Ruigrok, Wagner & Amann, 2004 Majocchi & Zucchela, 2003 Sambharya, 1995 Mathur, Singh & Gleason, 2004 Qian, Li, Li, Qian, 2008 Li & Qian, 2005
Return on Sales ROS	Capar & Kotabe, 2003 Endo & Ozaki, 2010 Thomas, 2006 Geringer, Beamish & daCosta, 1989 Tallman & Li, 1996 Contractor, Kundu & Hsu, 2003 Contractor, Kumar & Kundu, 2007 Grant, 1987 Majocchi & Zucchela, 2003 Sambharya, 1995 Qian, Li, Li, Qian, 2008 Li & Qian, 2005
Return on Equity ROE	Thomas & Eden, 2004 Kumar & Singh, 2008 Hsu & Boggs, 2003 Contractor, Kumar & Kundu, 2007 Hsu, 2006 Wan, 1998 Grant, 1987 Sambharya, 1995 Mathur, Singh & Gleason, 2004 Li & Qian, 2005
Operating Profit Margin	Mathur, Singh & Gleason, 2001
Gross Profit Margin	Elango, 2006 Mathur, Singh & Gleason, 2004
Tobin's Q	Lu & Beamish, 2004

	Chang & Wang, 2007
$\frac{\text{Operating Costs}}{\text{Total Sales}}$	Ruigrok & Wagner, 2003 Gomes & Ramaswamy, 1999
Labour cost efficiency	Ruigrok, Wagner & Amann, 2004
Sales Growth	Wan, 1998 Grant, 1987
Jensen's alpha	Goerzen & Beamish, 2003
Sharpe's measure	Goerzen & Beamish, 2003
Market-to-book ratio	Goerzen & Beamish, 2003

Accounting-based measures (ROA, ROS, ROE, margins) are the most convenient and most readily available data, and hence there is an inclination to use them. The literature review suggests that the Return on Assets (ROA) measure of firm performance is the most widely accepted and that the results of this study can be compared with prior studies by adopting the same measure.

2.3.4. The relationship between internationalisation and performance

Internationalisation brings a certain set of benefits and costs (Hennart, 2010; Lu & Beamish, 2004), which vary with the degree of internationalisation, resulting in a certain relationship between internationalisation and performance. The prevailing wisdom for a long time was that the benefits accrue faster than the costs and hence, when it came to internationalisation, "more is better" (Riahi-Belkaoui, 1998). The empirical evidence showed that this axiom was not true and that there was a certain threshold beyond which costs started to accumulate faster than benefits (Geringer, et al., 1989). Later findings showed that there may be more than one inflection point (Riahi-Belkaoui, 1998); this exposed the need for a more intricate model, with the three-stage model currently gaining credence in the literature (Contractor, et al., 2003; Hsu, 2006; Lu & Beamish, 2004; Ruigrok, et al., 2007). There is however, still a wide divergence in the findings of different studies (Hennart, 2011) and this has led

some to propose that the relationship between internationalisation is performance is unique to the context (Ruigrok, et al., 2004); or that there is no real reason to believe that there is a definite relationship, and the scholarly effort should move from testing ever more sophisticated statistical models to investigating the fundamentals of the underlying relationship more pragmatically (Hennart, 2007, 2011; Verbeke, et al., 2009).

Multinational Corporations are believed to experience certain performance benefits arising from the decision to expand internationally (Contractor, et al., 2003; Fillat & Garetto, 2010; Mathur, et al., 2001; Sambharya, 1995) in order to pursue competitive advantage (Porter, 1990). Conducting business across many countries makes it possible for the firm to increase the level of its market participation (Bühner, 1987); the increase in volume leads in turn to the possibility of achieving cost benefits by economies of scale (Caves, 1996; Grant, 1987; Kogut, 1985; Lei Li, 2007; Qian, et al., 2008; Yip, 1989) and by spreading overheads over more countries (Caves, 1996; Contractor, et al., 2003; Hitt, et al., 1997; Kobrin, 1991; Lu & Beamish, 2004). In addition, the firm can use its subsidiaries to take advantage of specific resource or factor endowments and location economic advantages in the host countries to bolster its overall competitive advantage (Y. Jung, 1991; Kogut, 1985; Porter, 1990; Yang & Driffield, 2012), to augment its global knowledge base (Hitt, et al., 1997; Kobrin, 1991), or to compete strategically (Elango, 2006).

The firm can also increase its market share (Hill, 2011) and make more efficient use of its productive capacity in its area of competence (Gomez-Mejia & Palich, 1997) by marketing its products into less saturated markets outside of its home country (Dunning, 1993), which also has the advantage of increasing the firm's market power (Lu & Beamish, 2004; Qian, et al., 2008). This also makes it possible to perform price discrimination and cross-subsidisation (Contractor, et al., 2003; Hamel & Prahalad, 1985) to smooth out revenue fluctuations between the different markets (Caves, 1996; Kim, et al., 1993; Qian, 1996; Qian, et al., 2008), and to diversify away market risk (Kim, et al., 1993), which may reduce the risk of profit fluctuations (Rugman, 1976). This does not mean however, that multinational corporations pose a lower level of risk, as they generally face a

greater exposure to exchange rate, political and economic risk (Choi & Jiang, 2009; Fillat & Garetto, 2010; Goldberg & Heflin, 1995; Hennart, 2007).

It should be pointed out that the marginal benefits from expanding internationally decrease as the firm goes along its expansion path (Contractor, et al., 2003). This is because eventually, the firm will run out of high-potential countries and each subsequent country on the list will have slightly poorer prospects than the last.

Companies that expand internationally face environments with which they are not familiar, or in which the firm's accumulated management knowledge is not relevant. This "liability of foreignness" results in them being exposed to higher establishment and operating costs, or causes them to make certain mistakes (Zaheer, 1995). The firm will also be at a disadvantage compared with local firms as it will not have experience and an established business network in the newly entered market – this causes the firm to suffer from the "liability of outsidership" (Johanson & Vahlne, 2009). Both of these effects have a negative impact on performance, although they ameliorate over time (Lu & Beamish, 2004).

Internationalisation also brings about organisational costs arising from the complexity associated with managing a dispersed organisation (Contractor, et al., 2003). Managers' limited capacity to successfully deal with this complexity puts an upper bound on the level of internalisation the firm can pursue without harming its performance (Grant, 1987), and there arise diseconomies of scale in managing larger and larger operations (Bartlett & Ghoshal, 1989, p. 87). The possibility also exists that additional costs may arise from resources being inefficiently allocated across the firm (Goerzen & Beamish, 2003).

A greater degree of internationalisation also leads to higher transaction and governance costs (Hitt, et al., 1997; Tallman & Li, 1996; Williamson, 1979) arising from the asymmetric flow of information (McAfee & McMillan, 1995) as well as misalignment between managers in the headquarters and the subsidiaries (Denis, et al., 2002; Hitt, et al., 1997; Lu & Beamish, 2004).

Multinational corporations also face additional costs arising from, amongst others, transportation, trade barriers, international taxation, cross-border transactions, and modification of the product to suit a variety of local tastes (Dastidar, 2009; Qian, et al., 2008). Foreign exchange risk, which arises from differences in the exchange rates amongst the countries, and the different inflation climate has the potential to negatively affect the firm financially (Ruigrok & Wagner, 2003; Thomas & Eden, 2004).

The interaction between the benefits and costs of internationalisation, and the relative strength of their effects at different levels of internationalisation, results in a relationship between the degree of internationalisation and the performance of the firm. While the supposition that this relationship is a monotonic linear relationship may be an over-simplified approach to the problem (Ruigrok & Wagner, 2003), it is nonetheless a good place to start.

The fundamental premise of the linear model of internationalisation, which has become the bedrock of international business studies (Contractor, et al., 2003), is that the benefits of internationalisation outweigh the costs, and hence there is a roughly positive linear relationship between the degree of internationalisation and performance (Ruigrok & Wagner, 2004). It has also been proposed that the costs might outweigh the benefits, resulting in a roughly *negative* linear relationship, but if this were true, one would expect to see firms becoming less internationalised over time as there would be no incentive to expand internationally. This case has largely been ignored in the literature due to its limited credibility.

The rationale for the existence of a period of expansionary growth during which the benefits outweigh the costs is captured in the Uppsala model (Johanson & Vahlne, 1977). This essentially states that firms embark on international expansion in an incremental fashion, and accrue benefits from economies of scale and scope, location economics, and market familiarity as they operate in environments and conditions with which they are familiar (Gomes & Ramaswamy, 1999; Lei Li, 2007). There is some empirical support for the linear model, at least in certain circumstances, from Bühner (1987), Grant (1987), as well as Kim, Hwang & Burgers (1989), who observed that firms obtain a higher

return on sales as a consequence of their broader presence in international markets (Goerzen & Beamish, 2003).

One notable point about the three studies just mentioned is that they are fairly old – the monotonic linear model did not stand up very well to further scrutiny and many subsequent studies (Daniels & Bracker, 1989; Geringer, et al., 1989; Gomes & Ramaswamy, 1999) found an inflection point where performance started to drop after the level of internationalisation passed a certain threshold. That led to a refinement of the theory, which made the linear phase a special case of a more general curvilinear inverted U-shaped model. In this model, depicted in Figure 2, internationalisation is associated with positive returns up to a point, but thereafter has a detrimental effect on performance (Yang & Driffield, 2012).

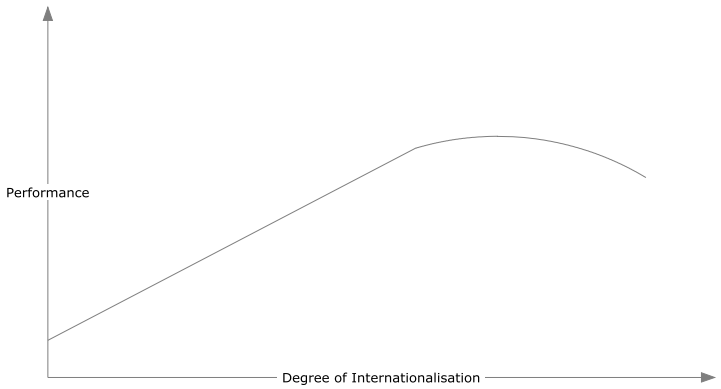


Figure 2: Curvilinear inverted U-shaped model

Hitt, Hoskisson, and Ireland (1994) put forward one possible theoretical explanation for the existence of a curvilinear inverted U-shaped relationship between internationalisation and performance. These authors suggested that domestically successful firms have an incentive to diversify globally, and, provided that the firm's products are suitable for the new markets without much modification, there will be a positive impact on performance. This essentially echoes the sentiments of the Uppsala model proposed by Johanson and Vahlne (1977), and implies a need for some sort of homogeneity in the market.

Hitt et al. (1994) introduce two important additions to the Uppsala model: the effect of innovation and product diversification. While they propose that international diversification stimulates innovation, which has a positive effect on performance, the authors also point out that excessive product diversification has a sharply negative impact on performance, and that the need to be responsive to a multitude of local markets by adapting or modifying products can be instrumental in bringing about this this condition. Excessive product diversification impacts performance negatively by increasing the costs of adapting, modifying, manufacturing and marketing a wider range of products.

If it is assumed that markets within a region are more homogenous than markets in different regions (where a region can be broadly defined as a set of roughly similar countries), then firms ought to benefit from intra-regional geographical diversification but there ought to be a performance penalty for diversification that stretches across regions. This hypothesis of a curvilinear relationship was tested and found to be plausible in a number of studies (Banalieva & Santoro, 2009; Lee Li & Qian, 2005; Qian, et al., 2010; Qian, et al., 2008). Geringer, Beamish & daCosta (1989) obtained a similar result even though they were actually looking for a linear relationship. The validity and reliability of their results was questioned by Sullivan (1994b) however, on the basis that the independent variables were operationalised (in his opinion) incorrectly. Later, Gomes and Ramaswamy (1999) looked for and found a curvilinear relationship, and a meta-study by Palich, Cardinal and Miller (2000) found substantial support for the curvilinear inverted-U model, with similar outcomes arising across a wide time period.

Another widely cited reason (Gomes & Ramaswamy, 1999; Hitt, et al., 1994; Hitt, et al., 1997; Qian, et al., 2010; Qian, et al., 2008) for the inverted U-shapes internationalisation-performance curve is the more dominant effect of costs at higher levels of internationalisation. There is a disproportional increase in coordination, distribution, management, transaction, and governance costs at higher levels of internationalisation which completely overwhelms the incremental benefits. Widely dispersed operations are thought to limit the potential for strategic alignment with each other (Hitt, et al., 1994), create more

complex and costly organisational structures (Thomas, 2006), and result in a need for costly location-specific investments (Qian, et al., 2010). Elango (2006) surmises that emerging market firms may face much higher costs than developed country firms at high levels of internationalisation due to their limited experience with international operations.

The discovery by Sullivan (1994b), Qian (1997) and later by Riahi-Belkaoui (1998) of an inflection point at low degrees of internationalisation, prior to which performance decreases and past which performance increases, spawned a theory based on a curvilinear U (or J) shaped model, shown in Figure 3.

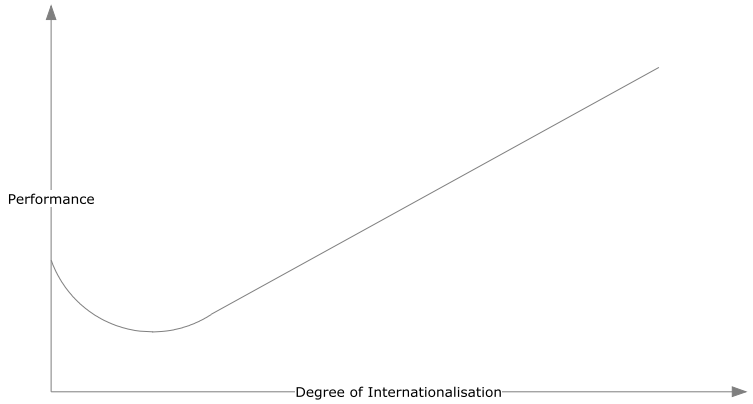


Figure 3: Curvilinear U/J shaped model

The first threshold point is a minimum hurdle which the firm must jump over in its path towards internationalisation in order to start to reap the rewards of being an internationally diversified company. Prior to crossing this point, the firm is exposed to disproportionally high costs which negatively impact its performance in the early stages of multinational diversification, but after crossing this point, the benefits of internationalisation outweigh the initial cost disadvantages (Mathur, et al., 2001).

These initial high costs stem from market entry costs (Lee Li & Qian, 2005), the “liability of foreignness” (Zaheer, 1995) and the “liability of outsidership” (Johanson & Vahlne, 2009) as previously discussed, and also from the costs arising from organisational complexity (Yang & Driffield, 2012), with which the firm is unfamiliar. The firm must “pay tuition” by sacrificing some profit to overcome their lack of knowledge of foreign markets, cultures, environments

and global operations (Hsu, 2006; Lu & Beamish, 2004). If the reasons for pursuing the strategy of multinational diversification are not well considered, then the firm may find itself exposed to the costs pursuant from internationalisation but not the benefits (Hsu, 2006). It has also been postulated that service firms are subjected to even higher costs in the initial stages of international expansion due to onerous regulations, extensive service adaptation requirements, and the need to set up local facilities (Capar & Kotabe, 2003).

Eventually though, firms gain knowledge and experience in the new markets and begin to compete more effectively using newly developed strategies and processes, and a more efficient organisational structure (Thomas, 2006), while keeping costs under control (Ruigrok, et al., 2004). Ruigrok and Wagner (2003) emphasise the importance of organisational learning to enable the firm to take advantage of the benefits obtained from higher levels of internationalisation. The firm is also in a position to spread its fixed costs and overheads over a wider area (Qian, et al., 2008). If the organisation has reformed itself appropriately, the benefits of internationalisation will start to exert a more dominant influence once the threshold is crossed (Endo & Ozaki, 2010), and the internationalisation-performance curve shifts into the linear phase.

The curvilinear U or J shaped internationalisation-performance relationship does not just exist in theory; there is empirical support for the model (Capar & Kotabe, 2003; Endo & Ozaki, 2010; Mathur, et al., 2001; Ruigrok & Wagner, 2003; Thomas, 2006). This raised the conundrum in the field of International Business studies of which model (the U/J-shaped or inverted U-shaped mode) was correct.

In an attempt to reconcile the two somewhat contradictory curvilinear models in existence, a three-stage sigmoid S-shaped model was proposed; first very tentatively by Riahi-Belkaoui (1998), and later more confidently by Lu and Beamish (2001, 2004) and Contractor et al. (2003). The model is shown graphically in Figure 4.

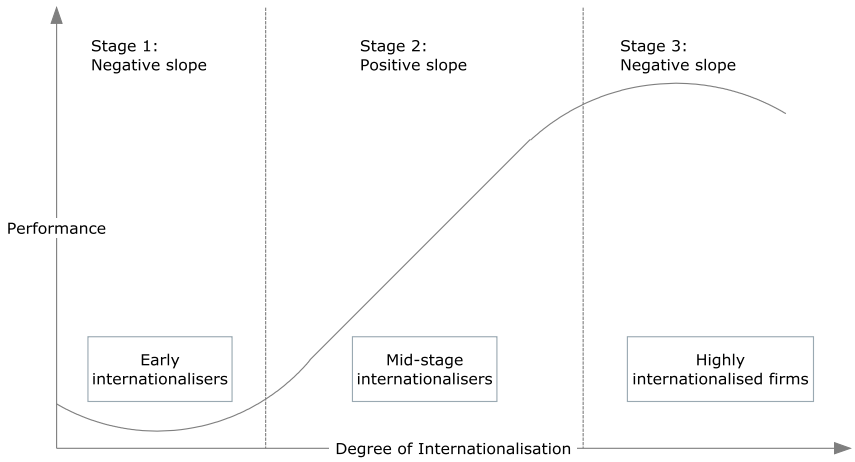


Figure 4: A three-stage sigmoid S-shaped model (Contractor, et al., 2003)

The implication of this theory is that the there is an initial threshold up to which performance decreases (stage one), followed by a period of linear increase (stage 2) up to a second threshold, beyond which performance decreases again (stage 3). Contractor et al. (2003) surmise that the reason for the inconsistencies in past empirical studies is because negative relationships capture only stage one of the international expansion path, curvilinear J/U shaped curves capture stage one and two only, while curvilinear inverted-U shaped curves capture stage two and three only.

The shape of the curve arises from the relative magnitude of the benefits and costs of internalisation through the different stages of the internationalisation process, as shown in Figure 5. During the initial period of internationalisation, stage one, the firm experiences all the costs associated with early internationalisation, which outweigh the benefits of internationalisation. This has the effect of reducing the profit during this phase of the business expansion (Lu & Beamish, 2004). The costs and barriers are not believed to be acute though, as there would otherwise be little incentive to pursue this strategy (Contractor, et al., 2003).

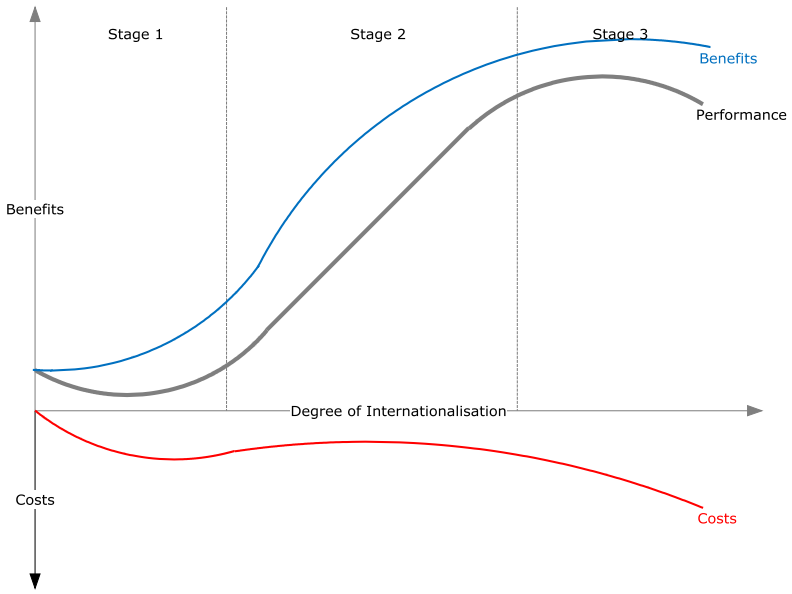


Figure 5: Benefits, Costs and Net Performance (Lu & Beamish, 2004)

During the second stage, further geographical expansion unlocks the potential associated with experiential learning, economies of scale, arbitrage and cross-subsidisation (Contractor, et al., 2003). The benefits begin to accumulate rapidly, while costs are brought under control, resulting in growth in the firm's profitability (Lu & Beamish, 2004).

Finally, in stage three, the management costs associated with coordination and governance begin to dominate over the benefits (Lu & Beamish, 2004), which are starting to reduce as a result of the less attractive nature of the peripheral markets (Contractor, et al., 2003) and the difficulty in feeding information back to the central strategic function. In this stage, therefore, performance starts to decline again. Li (2007) uses evidence borrowed from Sullivan (1994b) as well as ideas from Lu and Beamish (2004) to argue that the performance downturn may be just the start of a cyclical organisational evolution process, during which the organisation learns to adjust to and overcome the present challenges and set off on an upward trajectory again.

Many firms may over-internationalise and harm their profitability purely by miss-chance or ignorance, while others may do so deliberately as part of a long-term strategic decision – in this case value is being created in a way that is not

reflected in the existing performance measures (Contractor, et al., 2003). Despite the pace of their internationalisation, there is no reason to believe that firms from emerging markets (such as South Africa) would have over-internationalised, and hence become subject to stage three of the sigmoid model, due to their smaller size and the fact that international expansion is a relatively new phenomenon for them (Contractor, et al., 2007; Thomas, 2006).

Although the three-stage model is fairly new, there is a reasonable amount of support from empirical studies (Contractor, et al., 2007; Contractor, et al., 2003; Kumar & Singh, 2008; Lu & Beamish, 2001, 2004; Thomas & Eden, 2004) to justify its continued use as a working theory. However, the failure of some studies to confirm the three-stage model (Endo & Ozaki, 2010; Hsu, 2006), coupled with the finding that the internationalisation-performance relationship is very context dependent (Ruigrok, et al., 2004, 2007) and can take on many complex forms (Hult, 2011) has led some to question the course of this line of study.

Wiersema and Bowen (2011) believe that previous studies suffer from some methodological problems, due in part to a "failure to fully grasp a complex phenomenon". One example of this issue is when Sullivan obtained a different relationship between internationalisation and performance than Geringer, Beamish and daCosta on the same sample purely as a result of operationalising some variables differently (Sullivan, 1994b). For this reason, Hennart is leading a growing chorus for more research to be conducted into the underlying theory of internationalisation and performance, rather than just assessing the magnitude and form of the statistical relationship between the two (Hennart, 2011; Kirca et al., 2011). Hennart (2007), as well as Verbeke, Li and Goerzen (2009) have argued that the study of internationalisation deserves more effort to understand the substance of the concept itself and that there is no reason to expect a positive relationship between internationalisation and performance (Hennart, 2007); rather it will be random – a statement rejected by Contractor (2007).

Table 3 summarises the existing research with respects to prior findings on the internationalisation-performance relationship.

Table 3: Existing research: Internationalisation-Performance relationship

Findings with respect to the Internationalisation-Performance relationship	Author(s)
Linear	Mathur, Singh & Gleason, 2004 Grant, 1987 Goerzen & Beamish, 2003 Hsu, 2006 Contractor, Kumar & Kundu, 2007 Elango, 2006
Curvilinear inverted-U	Qian, Li, Li, Qian, 2008 Geringer, Beamish & daCosta, 1989 Hitt, Hoskisson & Kim, 1997 Qian, Khoury, Peng & Qian, 2010 Hsu & Boggs, 2003 Thomas, 2006 Elango, 2006
Curvilinear U/J	Majocchi & Zucchela, 2003 Endo & Ozaki, 2010 Gomes & Ramaswamy, 1999 Ruigrok & Wagner, 2003 Capar & Kotabe, 2003 Mathur, Singh & Gleason, 2001
Sigmoid/Sinus S	Ruigrok, Wagner & Amann, 2004 Ruigrok, Wagner & Amann, 2007 Kumar & Singh, 2008 Contractor, Kundu & Hsu, 2003 Chang & Wang, 2007 Riahi-Belkaoui, 1998 Lu & Beamish, 2004 Thomas & Eden, 2004

No relationship	Sambharya, 1995 Tallmann & Li, 1996 Wan, 1998

A final concluding thought to bear in mind in studies of this nature is that internationalisation does not in itself affect firm performance without some intermediate process in the firm that extracts value out of the strategic position taken (Hult, 2011). The decision to expand internationally is just the key, as it were; the firm must still step through the door to superior performance by taking advantage of the benefits and controlling the costs that arise out of their strategic decision.

2.3.5. The relationship between internationalisation and performance for South African firms

An extensive search of the current academic literature has not revealed any studies of the internationalisation-performance relationship for South African firms. A limited set of studies examine the problem for emerging market firms (Contractor, et al., 2007; Elango, 2006; Kumar & Singh, 2008; Thomas, 2006; Wan, 1998), but even though South Africa is also an emerging market, it is uncertain how applicable the findings are to the South African context.

There is no substantial reason to believe that South African firms would be in a substantially different situation from other emerging market firms and hence the results obtained from prior studies of emerging market firms may have some face validity for South African firms as well. However, some key points of difference between South Africa and other emerging market firms do exist, such as the fact that South Africa can be considered to be more developed and more euro-centric than many other countries. There is also a bias towards alignment within the so-called BRICS group of countries, as well as an affinity towards local and regional African markets. It would therefore be unwise to automatically assume that the results obtained from studies of other emerging market firms would apply to South African firms.

2.4. A Critique of Methodology

Almost all the studies examining multinational diversification and firm performance have used regression analysis in some way or other to analyse the data and demonstrate the nature of the relationship between the two. Riahi-Belkaoui (1998) used multivariate adaptive regression spline without time-series data in his study, while Mathur, Singh and Gleason (2001) used multiple regression and obtained roughly the same result. The disadvantage of these techniques is that the information contained in the time dimension is lost.

For this reason, studies in the last two decades have predominantly used pooled, cross-section, time series analysis as scholars have taken advantage of the capabilities offered by this method (Contractor, et al., 2003; Ruigrok, et al., 2007). However, this method is sensitive to non-stochastic errors, non-constant variances, and autocorrelation (Gomes & Ramaswamy, 1999), a shortcoming that can be effectively overcome through analytical techniques.

The area in which these studies differentiate themselves is how the respective authors choose to operationalise the variables used in the regression analysis, as shown in section 2.3.2 and 2.3.3, where a wide range of variables and techniques have been used. This is problematic, because Sullivan (1994b) showed that it is possible to obtain different results with the same sample simply by operationalising the variables differently. The choice of how to operationalise variables, therefore, needs to be carefully considered. There is nevertheless, a tendency to use the same variables (even though they are imperfect constructs) to maintain comparability with other studies in the field, which is important because it gives a sense of the relevance of the result in different contexts.

There is also a wide range of intervening variables used in the empirical studies (Elango, 2006; Hsu, 2006; Thomas, 2006), with convincing arguments in favour of size, industry and region playing a part in the relationship (Contractor, et al., 2003; Elango, 2006; Gomes & Ramaswamy, 1999; Ruigrok & Wagner, 2003; Ruigrok, et al., 2004, 2007; Thomas & Eden, 2004). The snag, though, is that there are so many other possible variables that can be used, that there is a lack of certainty regarding the correct set to be used. In the studies covered in the

literature, however, these variables do not form part of the crux of the model, and their only purpose is to increase the statistical fit.

Table 4 summarises the existing research with respect to the statistical analysis techniques used in prior studies.

Table 4: Existing research: Methodology

Research Methodology	Author(s)
Pooled cross-section, time-series regression	Li & Qian, 2005 Qian, Li, Li, Qian, 2008 Qian, Khoury, Peng & Qian, 2010 Ruigrok, Wagner & Amann, 2004 Ruigrok, Wagner & Amann, 2007 Kumar & Singh, 2008 Hsu, 2006 Contractor, Kumar & Kundu, 2007 Contractor, Kundu & Hsu, 2003 Endo & Ozaki, 2010 Chang & Wang, 2007 Gomes & Ramaswamy, 1999 Ruigrok & Wagner, 2003 Lu & Beamish, 2004 Thomas & Eden, 2004 Elango, 2006 Mathur, Singh & Gleason, 2001
Simple multiple regression	Mathur, Singh & Gleason, 2004 Sambharya, 1995 Majocchi & Zucchela, 2003 Grant, 1987 Tallmann & Li, 1996 Geringer, Beamish & daCosta, 1989 Hitt, Hoskisson & Kim, 1997 Hsu & Boggs, 2003

	Wan, 1998 Banalieva & Santoro, 2009 Thomas, 2006 Riahi-Belkaoui, 1998 Capar & Kotabe, 2003
Structured Equation Modelling	Goerzen & Beamish, 2003

The literature review suggests that the pooled cross-section time-series analytical technique is the most widely accepted. Therefore, the results of this study can be compared with prior studies by adopting the same method.

2.5. Issues of Knowledge Accumulation

Knowledge accumulation is the process of incrementally building a body of knowledge in a certain field through an approach of newer studies adding new knowledge on to a foundation of older knowledge. Reliable accumulation of knowledge in a field of study depends on different operationalisations of the same underlying construct being robust (Eden, 2002), resulting in high concurrent validity between the different measures.

The literature review has alluded to the difficulties in knowledge accumulation in the study of the internationalisation-performance relationship due to differences in operationalising the variables as well as differences in methodology, which have some role in explaining the mixed results in empirical studies obtained thus far. This is a problem that is not unique to the field of internationalisation and is one that has received some attention from Shepherd and Wiklund (2009) who established certain boundary conditions for empirical studies to ensure that knowledge in that field of study can be reliably accumulated.

Although Shepherd and Wiklund were concerned with growth studies, most of the issues highlighted by these authors are common to internationalisation studies and therefore there is some scope to applying the boundary conditions proposed by these authors to internationalisation studies such as this one.

The first boundary condition proposed by Shepherd and Wiklund (2009) is to only consider studies as accumulating knowledge when the concurrent validity between different measures of the same construct is moderate or (preferably) high. The concurrent validity is measured by the correlation coefficient and should be between .3 and .5 (moderate concurrent validity), or greater than .5 (high concurrent validity). Under this condition, there is a fair sense of certainty that the results from related studies are comparable.

The second boundary condition proposed by Shepherd and Wiklund (2009) is to clearly specify the domain of the theory and acknowledge the specificity of the measures and therefore the theory being studied to the unique context of the study. The authors raise the point that different approaches may be appropriate under different circumstances and it may not be possible to specify a general theory that is universally applicable.

The third boundary condition proposed by Shepherd and Wiklund (2009) is to replicate other studies as closely as possible in terms of variable measurements, formulae and time spans. The authors' suggestion leads to the deduction that achieving some level of uniformity in methodology is an important technique to accumulate knowledge.

2.6. Summary and Conclusion of Literature Review

The literature review has furnished a rounded picture of the important facets of internationalisation, one of the long-term strategic decisions a firm will make when pursuing competitive advantage over its rivals. The decision to diversify internationally is not a light one to make, given the associated costs and risks and uncertainty with regard to the benefits, but it is especially important to realise when the firm has overstretched itself, as it will start to suffer financially and destroy value. Finding the ideal level of internationalisation is therefore an important aim for managers plotting the strategic course of the firm.

One way of doing this is to ascertain the nature of the internationalisation-performance relationship; a question that still needs to be conclusively

answered in the literature. South Africa is an emerging market and it is not unreasonable to expect that results obtained from studies of other emerging market firms would apply to South Africa as well. It is thus plausible to make the *a priori* assumption that the curvilinear internationalisation-performance relationship found in studies of other emerging market firms may be found in thus study as well.

It is also necessary to use the boundary conditions proposed by Shepherd and Wiklnd (2009) as guidance when assessing the potential of this study to add to the existing body of knowledge in the field, and in rating the comparability of this study's results with others performed in other contexts.

2.6.1. Hypothesis 1:

There is a linear relationship between the degree of internationalisation and firm performance for South African firms.

2.6.2. Hypothesis 2:

There is a quadratic relationship between the degree of internationalisation and firm performance for South African firms (i.e. these firms will only occupy the first two stages of the three-stage model).

2.6.3. Hypothesis 3:

There is a cubic relationship between the degree of internationalisation and firm performance for South African firms (i.e. these firms will occupy all three stages of the three-stage model).

CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY

This section outlines the methodology used to conduct this research. Firstly, the literature around the specific quantitative method used in this research is discussed, followed by a review of the research design and research instrument used. Issues of data collection and analysis in relation to this study are provided, followed by a discussion of the validity and reliability of this study.

3.1. Research Design

The strategy devised by the researcher to address a research problem is known as the research design (Leedy & Ormrod, 2001). Procedures for sampling, data collection and analysis must be devised. In this study, the research is designed to examine the degree of internationalisation and the financial performance of South African firms, and to establish through statistical analysis whether sufficient grounds exist to presume a causal relationship between internationalisation and performance. A quantitative method was chosen for the study in order to test this objective hypothesis by examining the relationship between these variables. Issues of sampling are addressed in section 3.3, while issues of data collection and analysis are addressed in section 3.5 and 3.6.

The research design of this study is in the form of a simple functional study, where a problem is broken down into its constituent elements, and each element is solved through scientific methods. The design is best suited to situations where patterns of ordered events or behaviours being studied are largely independent from the act of conducting the observation or interpretation, and standardised data collection tools can be employed (Bhattacherjee, 2012).

The advantages of this approach are that researcher is detached from the area being studied, resulting in higher reliability (Trochim, 2006); as well as the fact that it is more economical, requiring only a few explanatory variables. The

disadvantages are that the outcome of the study is not as precise, complete, or detailed as an interpretive study (Bhattacherjee, 2012).

3.2. Research methodology

This study used a quantitative methodology in order to gather the appropriate data to test the hypotheses posed in the research. Quantitative methodology is used extensively in social sciences research as it provides a toolset to create a representation of real-world experiences and phenomena, and to use statistical methods to draw out insights from this model (Kaplan, 2004).

Due to the observable nature of the subject area, this research method is suitable as this is an exploratory study, conducted using empirical methods, seeking a nomothetic explanation for the phenomenon of multinational diversification (Bhattacherjee, 2012). The task of testing the theory of the non-linear internationalisation-performance hypothesis (Contractor, et al., 2003; Lu & Beamish, 2004) required a methodology whose results are replicable and generalisable, which is the case in quantitative research.

The data has been collected from a secondary source, namely audited financial results extracted from each of the firms' annual reports in the sample, and therefore, it is originally in the form of numbers. The variables required to represent the constructs being studied were extracted and processed to calculate the dependent and independent variables, which were then statistically analysed to test the theory.

The study assumes that the financial information obtained from the annual reports of the firms in the sample is free from misrepresentation and is an accurate reflection of the actual business situation.

3.3. Population and sample

3.3.1. Population

The population is all South African firms that have expanded internationally through any one of the international expansion strategies (exporting, licensing, or foreign direct investment).

3.3.2. Sample and sampling method

The sample is the set of JSE listed firms that have business activities (that generate sales or other revenues) in at least one country outside of South Africa. JSE listed firms are chosen because it is a listing requirement to publish audited financial data in an annual report, and it is hence easier to obtain the data required for the study. There are 353 firms listed on the JSE. That number dropped to 325 after excluding firms that are local subsidiaries of foreign firms, and those that are dual-listed as part of a group. A further round of elimination took place to remove firms that had no foreign component to their operations, or had a foreign component that was too small to be reported or was not material, or that were dominantly government owned (Ruigrok, et al., 2004). That yielded a final sample of 84 firms, of which 82 are headquartered in South Africa. Studies of this nature have yielded results with sample sizes as low as 80 (Ruigrok, et al., 2007); hence the sample size was considered adequate.

3.4. The research instrument

The research instrument is based on the mathematical model shown in Figure 6, where the construct ‘Degree of Internationalisation’ is hypothesised to exert an influence on the construct ‘Financial Performance’; the effect being moderated to some extent by the intervening or control variables.

To ensure that all hypotheses are tested, the research tested three models:

Linear: $Performance = \beta_0 + (\beta_1 \times DOI) + (\beta_2 \times Size) + (\beta_3 \times Industry) + (\beta_4 \times Region)$

Quadratic: $Performance = \beta_0 + (\beta_1 \times DOI) + (\beta_2 \times DOI^2) + (\beta_3 \times Size) + (\beta_4 \times Industry) + (\beta_5 \times Region)$

Cubic: $Performance = \beta_0 + (\beta_1 \times DOI) + (\beta_2 \times DOI^2) + (\beta_3 \times DOI^3) + (\beta_4 \times Size) + (\beta_5 \times Industry) + (\beta_6 \times Region)$.

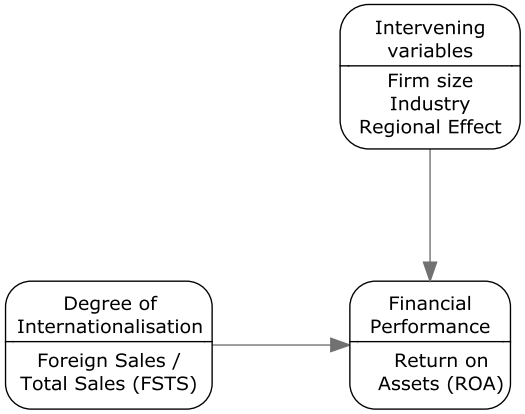


Figure 6: Mathematical model used in this study

3.4.1. Definition of Variables

3.4.1.1. Independent variable

The independent variable *Degree of Internationalisation* (DOI) was operationalised using the $\frac{Foreign\ Sales}{Total\ Sales}$ (FSTS) measure, in accordance with the vast majority of the literature and the key studies in this field (Capar & Kotabe, 2003; Contractor, et al., 2007; Contractor, et al., 2003; Elango, 2006; Hsu, 2006; Kumar & Singh, 2008; Ruigrok & Wagner, 2003; Ruigrok, et al., 2004, 2007). The data required to calculate this measure was extracted from the segmental report, which is part of the annual financial statements published by the firms as part of their responsibilities towards the JSE.

3.4.1.2. Dependent variable

The dependent variable *Financial Performance* (Performance) was operationalised using the Return on Assets (ROA) measure, again in accordance with the vast majority of the literature and the key studies in this field (Contractor, et al., 2007; Contractor, et al., 2003; Gomes & Ramaswamy, 1999; Kumar & Singh, 2008; Lu & Beamish, 2004; Ruigrok & Wagner, 2003; Ruigrok, et al., 2004, 2007; Thomas & Eden, 2004). Return on Sales (ROS) is sometimes used in this context, but since ROA and ROS are highly correlated, the use of a single measure is acceptable (Capar & Kotabe, 2003). In order to control for company-specific tax circumstances, the pre-tax ROA was used. Pre-tax ROA is calculated as $\frac{Net\ Profit\ before\ Tax}{Total\ Assets}$, both numbers being reported as part of the annual financial statements published by the firms.

3.4.1.3. Intervening variables

The intervening variables being used to control this study are *Firm Size* (Size), measured by the total number of employees, as well as the effect of the *Industry* in which the firm operates, and the *Region*, both coded as dummy variables. These control variables have been used in previous studies (Contractor, et al., 2003; Elango, 2006; Gomes & Ramaswamy, 1999; Ruigrok & Wagner, 2003; Ruigrok, et al., 2004, 2007; Thomas & Eden, 2004). The rationale for using firm size is to control for economies of scale at the organisational level - larger firms may have advantages over smaller firms (Contractor, et al., 2003). There may also be some industry-specific and region-specific effects that need to be controlled for (Banalieva & Santoro, 2009; Ruigrok, et al., 2007). The industry dummy variable was coded for each of the following industries: retailing, pharmaceuticals, petroleum and chemicals, financial services, telecommunications, construction and materials, manufacturing and engineering, IT and high-tech, entertainment and hospitality, beverages, restaurant and food, and other. The dummy variable for the regional effect was coded for the following regions: southern Africa, sub-Saharan Africa, North Africa and Middle East, Europe, Americas, and Asia Pacific.

All of the variables described in this model have been operationalised in conformity with past studies to maintain comparability of results with those studies.

3.5. Procedure for data collection

The data required for this study was available in all of the company's annual reports, and had been extracted therefrom, as shown in Table 5.

Table 5: Data collected for the research

Data extracted	**Source**
Total Sales/Revenue (5 years)	Income statement
Profit before tax (5 years)	Income statement
Total Assets (5 years)	Balance sheet
Employees (5 years)	Annual report
Foreign sales (5 years)	Segmental report
Industry	Annual report
Region of Operations	Annual report

The data is confidential because this research report only reports aggregated and analysed data. It was not considered necessary to take special care of the source data because it was all published as part of the annual report and is freely available on the internet or at the JSE.

3.6. Data analysis and interpretation

The data was analysed using a pooled, cross-section, time-series, non-linear regression analysis (Hsiao, 1995; Sayrs, 1989), following a technique similar to Ruigrok et al. (2004, 2007), Contractor et al. (2003, 2007), and Gomes & Ramaswamy (1999). The regression model is cross-sectionally heteroscedastic and time-wise auto-regressive (Kmenta, 1986), making it possible to analyse both variations between firms as well as variations over time (Contractor, et al., 2007; Contractor, et al., 2003). This type of analysis increases the degrees of freedom (Hsu, 2006) because more observations are available (Gomes & Ramaswamy, 1999), which improves the reliability and stability of the regression parameters (Ruigrok, et al., 2004, 2007), but it assumes both temporal and cross-sectional stability, i.e. that the parameters of the regression do not change over time or between firms (Kumar & Singh, 2008).

In chapters four and five of this report, the researcher presents descriptive statistics for the variables analysed in this study, followed by the results of the regression analysis. The regression results are discussed, and conclusions drawn based on the significance of the regression parameters.

3.6.1. The Procedure

The data was analysed in R, which is a language and environment for statistical computing.

The first step followed prior to commencing the analysis was to pool the data. This was done by pooling together the ROA data, the FSTS data, and the Employee data for all companies and all years, and leaving the Region and Industry variables unchanged for each company. After eliminating missing data points, the data to be analysed consisted of 384 pooled data points. A multiple regression using an autoregressive model was then performed on this set of data.

3.6.2. Regression

A multiple linear regression was conducted on the data using the linear, quadratic, and cubic statistical models described in section 3.4. The regression parameters were considered significant at confidence levels greater than 95%, and a model needed to have at least one independent variable to be significant in order to confirm the hypothesis.

This research is based on the assumption of temporal and cross-sectional stability. This means that the underlying process must be stationary, i.e. the joint probability distribution does not change when shifted in time and space. This is especially important in this research because time-series data is being pooled with cross-sectional data. It was possible to check whether the statistical process is stationary or non-stationary by checking for the existence of a unit root. The Dickey-Fuller test (Dickey & Fuller, 1979) was therefore conducted to check for the presence or absence of a unit root, which is an important consideration in autoregressive models. The absence of a unit root meant that the process was stationary.

3.6.3. Tests

A regression result is only valid if a number of conditions are met:

- The independent variables are stationary. If there is a linear relationship between the dependent and independent variables, the variables should be co-trending. Alternatively, the independent variables can be appropriately transformed.
- The dependent variable is continuous.
- The residuals (difference between actual and predicted value) must be uniformly distributed, i.e. homoscedastic.
- The residuals are normally distributed with a zero mean.
- There is no autocorrelation in the independent variables.
- The level of multicolinearity is acceptable.
- The variables display no endogeneity.

The tests performed to validate these conditions are described in this section, and the results are presented in Appendix B.

3.6.3.1. Linearity

Linearity was only assumed for the first hypothesis, and was tested by visual examination of a scatter diagram of DOI and Performance. Linearity was not assumed in the second and third hypotheses, as the hypothesised relationship is a non-linear one. The statistical model used a transformation technique to test for the non-linear relationship by squaring and cubing the DOI independent variable.

If, however, the variables are stationary, then linearity is not required since stationary variables are by default linear (arranged around a mean with a zero slope).

3.6.3.2. Continuous variables

The dependent and independent variables (with the exception of the dummy variables) are inherently continuous.

3.6.3.3. Homoscedasticity

When the residuals are evenly distributed on either side of the regression line, there is homoscedasticity. When the distribution of the residuals is uneven and assumes a fan or a diamond shape, there is heteroscedasticity; the resulting non-constant variances are problematic for the regression. A check for heteroscedasticity was performed using the Breusch-Pagan test (Breusch & Pagan, 1979).

3.6.3.4. Normal distribution of residuals

This research also tested for normal distribution of residuals using the Shapiro-Wilk test (Shapiro & Wilk, 1965).

3.6.3.5. Autocorrelation

When successive observations of the dependent variable are correlated, then autocorrelation is said to occur. The research checked for autocorrelation by calculating the Durbin-Watson statistic (Durbin & Watson, 1950, 1951) and ensuring it was between 2 and 4, and was not significant.

3.6.3.6. Multicolinearity

Multicolinearity occurs when the independent variables are correlated amongst themselves. This can cause problems with the stability of the regression, or may cause type-II errors where a true statistical relationship is missed because of a lack of significance. The research checked for the existence of multicolinearity through the use of the Variance Inflation Factor (VIF) statistic.

3.6.3.7. Endogeneity

Endogeneity occurs when movement in one of the independent variables influences movements in one or more other independent variables. This can cause problems with the stability and the accuracy of the regression. This research checked for the existence of endogeneity through the Hausman test.

3.6.3.8. Statistical Significance

The regression model was tested for statistical significance to ensure that the regression results can be accepted with a reasonable level of confidence. The test for statistical significance was performed using the F-test. The F-test tests the statistical model that has been fitted to the data to determine whether the model fits the data. The hypothesis being tested is that the proposed regression model fits the data, while the null hypothesis is that the model does not fit the data. A low p-value (typically less than .05 or .001) means that the F-statistic is significant and the null hypothesis must be rejected. The alternate hypothesis, that the regression model fits the data, must then be assumed.

3.7. Limitations of the study

One of the key criticisms of studies of this nature is that insufficient attention is given to the internal processes of the multi-nationally diversified firms (Hennart, 2011). That means that the full set of intervening variables may not be captured and the resulting model may not be completely accurate.

An important limitation of this study is the simplified way the key constructs of 'Degree of Internationalisation' and 'Financial Performance' are operationalised. This makes the analysis somewhat uni-dimensional as it fails to capture all of the richness and complexity of the two phenomena. The results are only valid for accounting-based measures of performance. More insight could be gained by also using market and operational performance measures. Furthermore, by using a simple measure of 'Degree of Internationalisation', this study fails to gather additional insight into the nature of the firm's internationalisation by for example, using measures of geographic dispersion. Additionally, South Africa's proximity and position of economic dominance with Lesotho, Swaziland, and Zimbabwe means some people cross the border to shop, making it difficult to distinguish between pure domestic sales and foreign sales.

Internationalisation is a complex process, and events unfold over long periods of time. The fact that this study only considers five years' worth of data is a limitation that should be noted and acknowledged.

Another weakness of this study is that there may be a selection problem due to the fact that the sample is taken from JSE listed firms. Since larger firms are more likely to be listed, the sample may be skewed in favour of larger firms, ignoring smaller firms, an important part of the population; the sample is fairly homogenous, excluding some small firms, domestic firms, and firms from other countries, thereby limiting the study's generalisability.

The cross-sectional and time-series analysis that is performed in this study estimates, but cannot precisely measure changes in the firm that occur longitudinally. Hence the results should not be interpreted to hold exactly true

for a single firm over a long period of time; rather they reflect the average position of several firms over various stages.

Finally, the direction of causation in the internationalisation-performance relationship may operate in either direction – it is not inconceivable that higher performance may lead to higher internationalisation instead of higher internationalisation leading to higher performance. This study did not lag the independent variables, so causation cannot be established categorically.

3.8. Validity and reliability

3.8.1. External validity

External validity refers to the extent to which the findings from a research study can be generalised from the sample to the population (Bhattacherjee, 2012; Campbell & Stanley, 1966). The results obtained by studying the firms in the sample group should therefore be applicable to other groups or other settings. It has already been pointed out the sample is drawn from JSE listed firms, so there is a possibility of bias in the sample itself – this may be a threat to external validity. One way this research attempted to maximise the external validity was to use a large sample size. There was a reasonable number of smaller firms in the sample, which allowed the research to make meaningful statistical analysis and resulted in higher population validity (Bhattacherjee, 2012).

The use of data spanning five years contributes to higher external validity while the fact that the firms are sampled randomly from different industries increases the ecological validity (Bhattacherjee, 2012).

3.8.2. Internal validity

Internal validity refers to the extent to which the causal inferences described in findings from the research are true (Bhattacherjee, 2012). This comes about from assessing how well the study was performed (the quality of the research methodology) as well as the confidence in the relationship between the dependent and the independent variable. This being an *ex-post* study, the researcher had no means to alter the independent variables, posing a slight challenge to internal validity. This was overcome by ensuring that a set of intervening variables were captured in the model, thereby reducing the possibility of other extraneous variables affecting the relationship (Trochim, 2006) and increasing content validity.

One possible challenge to construct validity has already been mentioned (Hennart, 2007), i.e. the simple measures used to determine the key constructs of Internationalisation and Performance, however, the construct validity was defended by Capar & Kotabe (2003) and Contractor (2007), and hence this study should also have good construct validity.

The study also ensured internal validity by following the same data collection process throughout – internationalisation, financial performance, region data, and employees are always collected from the annual report. The researcher cannot however, preclude the possibility of deliberate deception, manipulation, or misrepresentation in the annual report itself.

One important factor that positively impacts this study's internal validity is the fact that this is a replication of other studies following the same methodology (Contractor, et al., 2007; Contractor, et al., 2003; Gomes & Ramaswamy, 1999; Lu & Beamish, 2004; Ruigrok, et al., 2004, 2007). This study's internal validity and statistical conclusion validity (Bhattacherjee, 2012) is therefore derived from prior studies.

3.8.3. Reliability

Reliability refers to the extent to which the research study is consistent and repeatable, i.e. it will repeatedly produce similar results under similar conditions (Bhattacherjee, 2012; Trochim, 2006). The reliability of the study is proportional to the reliability of the underlying constructs and variables, so they need to be produce consistent and repeatable measures as well, i.e. the random and systematic errors as well as biases need to be minimised.

Nothing can be done about the random error introduced in the variables being measured in this study, but systematic error had been reduced by taking measurements across a wide (5 years) time period. In this way, systematic error between the various years became transformed into random error which, although undesirable, was preferable to systematic error as it did not bias the measurement (Trochim, 2006).

Inter-rater and Test-retest reliability (Bhattacherjee, 2012; Trochim, 2006) was not anticipated to be a big problem since the variables being measured do not need to be observed or interpreted by a human prior to being recorded – they are hard facts recorded in the company's financial system and processed for external reporting in the same way every year. This research used a split-half or parallel-forms reliability test (Bhattacherjee, 2012; Trochim, 2006) to ensure that the measurement of the dependent and independent variables is reliable. It has already been established that there is a high correlation between Return on Assets (ROA) and Return on Sales (ROS) (Capar & Kotabe, 2003); both measures were calculated and the correlation between the two measures was calculated to test ROA reliability. The study also calculated the Cronbach's alpha between these two different measures of the construct to verify Internal Consistency (Bhattacherjee, 2012; Trochim, 2006).

CHAPTER 4: PRESENTATION OF RESULTS

4.1. Introduction

This chapter describes the final sample and the data, presents descriptive statistics for the variables analysed in this study, and presents the results of the regression analysis for each of the three models. Each hypothesis is then discussed in a separate section where the regression results are discussed, and conclusions are drawn based on the significance of the regression parameters.

4.2. Descriptive Statistics of the sample

This section quantitatively describes the characteristics of the data set under scrutiny and provides a basic overview or summary of the data in the dataset. Descriptive statistics are useful to understand the characteristics of the data, though not necessarily for the purposes of testing the hypotheses. As previously mentioned, the dataset was missing entries in the DOI field; however, this problem was not considered a major issue.

The statistical characteristics of the variables in the pooled data set (a count of the number of observations for categorical variables and the means and standard deviations for ratio variables) are described in Table 6. The final sample size was 84 firms and with 5 years of data, there should have been 420 observations to analyse. Some DOI observations were however, lost due to unavailability of data, resulting in the final data set containing 384 observations (N = 384).

Table 6: Descriptive Statistics of the sample

	N	%	*M*	*Sd*
Industry				
Retailing	40	10%	-	-
Pharmaceuticals	5	1%	-	-
Petroleum and Chemicals	37	9%	-	-
Financial Services	39	10%	-	-
Telecommunications	15	4%	-	-
Construction and Materials	52	13%	-	-
Manufacturing and Engineering	26	7%	-	-
IT and High-Tech	58	15%	-	-
Entertainment and Hospitality	8	2%	-	-
Beverages, Restaurant and Food	50	13%	-	-
Other	68	17%	-	-
Region				
Southern Africa	351	28%	-	-
sub-Saharan Africa	269	22%	-	-
North Africa and Middle East	114	9%	-	-
Europe	205	16%	-	-
Americas	133	11%	-	-
Asia Pacific	177	14%	-	-
Firm Size	384	100%	13883.91	20001.21
Return on Assets (ROA)	384	100%	11.20%	14.24%
Return on Sales (ROS)	384	100%	10.99%	16.87%
Degree of Internationalisation (DOI)	384	100%	27.57%	23.97%

Note: N=number of observations

Table 6 suggests that the different industries are fairly well represented across the sample, except for pharmaceuticals, and entertainment & hospitality. There seems to be a clear preference, however, for companies to internationalise in Southern Africa and sub-Saharan Africa. This suggests that the internationalisation process follows a clear sequence, with (the familiar) Africa being the first step in that sequence.

The standard deviations of the ratio variables were all very large compared to their means. The large variance in the set of results suggests that there must be a number of other factors that drive these variable and that the set of variables used in this study (and by implication the other studies on which this study is based) are incomplete. This is an acknowledged limitation of studies of this nature.

Table 7 shows the correlations, means and standard deviations of the major variables in the study. A brief discussion of the inter-variable correlations follows.

A Cronbach alpha test was conducted to test the internal consistency of ROA and ROS as measures of Financial Performance. The Cronbach alpha was .61 and the correlation between the two variables was .44 (significant at the 1% level), showing that the internal consistency is acceptable, albeit not outstanding. This is to be expected since the firms in the sample are in different sectors, and will probably have different asset and capital structures, thereby resulting in differences between ROA and ROS. Given the reasonably low correlation between the two variables and the suggestion that ROA and ROS may really be different dependent variables (the author thanks Prof. Ruigrok for this insight), this study proceeded to use the ROA measure exclusively during the regression analysis. With a correlation of .44 between ROA and ROS, the concurrent validity of the performance construct is moderate, thereby satisfying Shepherd and Wiklund's first boundary condition.

Besides the correlation between ROA and ROS, none of the other variables correlated strongly with ROA. This means that a high R^2 was not expected (nor

needed) from the regression analysis. The only variable not to have an insubstantial correlation with ROA is retailing, which, with a correlation of .32 (significant at the 1% level) suggests that retailers as a group will tend to have higher ROA's than companies in other industries. Similarly, the only variable not to have an insubstantial correlation with ROS is financial services, which, with a correlation of .27 (significant at the 1% level) suggests that financial service companies as a group will tend to have higher ROS's than companies in other industries. These relationships, which seem to arise from the structure of the relevant industries and not as a result of internationalisation, will not be commented on any further in this report.

None of the independent variables correlate strongly with each other, although there are quite a few weak statistically significant pairwise correlations between the industry and region variables. This does not suggest that multicolinearity in the regression model would be a problem, although this was tested using the VIF statistics.

Table 7: Correlations (N=384)

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. ROA	11.20%	14.24%																				
2. ROS	10.99%	16.87%	**.44****																			
3. Retailing	-	-	**.32****	.01																		
4. Pharmaceuticals	-	-	.00	.08	-.04																	
5. Petroleum	-	-																				
& Chemicals			-.08	-.08	**-.11***	-.04																
6. Financial Services	-	-	**-.18****	**.27****	**-.11***	-.04	**-.11***															
7. Telecommunications	-	-	**.11***	.07	-.07	-.02	-.06	-.07														
8. Construction	-	-																				
& Materials			.04	-.02	**-.13***	-.04	-.12	**-.13***	-.08													
9. Manufacturing	-	-																				
& Engineering			**-.11***	**-.10***	-.09	-.03	-.08	-.09	-.05	**-.10***												
10. IT & High-Tech	-	-	-.08	**-.12***	**-.14****	-.05	**-.13****	**-.14****	-.08	**-.16****	**-.11***											
11. Entertainment	-	-																				
& Hospitality			**.16****	.06	-.05	-.02	-.05	-.05	-.03	-.06	-.04	-.06										
12. Beverages,	-	-																				
Restaurant																						
& Food			**.19****	**.12***	**-.13***	-.04	-.12	**-.12***	-.08	**-.15****	**-.10***	**-.16****	-.05									
13. Other	-	-	**-.22****	**-.15****	**-.15****	-.05	**-.15****	**-.15****	-.09	**-.18****	**-.12***	**-.19****	-.07	**-.17****								
14. Southern Africa	-	-	**.16****	.07	**.12**	.04	**-.15****	**-.12***	**-.13****	.03	-.03	-.05	.05	**.14****	.06							
15. sub-Saharan Africa	-	-	**.15****	.02	.05	.08	.04	-.02	**.14****	.03	-.01	.03	.10	.02	**-.24****	**.36****						
16. North Africa	-	-																				
& Middle East			-.05	-.01	-.12	**.18****	.08	**-.12***	.02	.00	-.01	-.03	.03	**-.16****	**.21****	**.15****	**.27****					
17. Europe	-	-	**-.13****	.05	**-.34****	**.11**	-.12	.07	.06	**-.18****	.01	.09	**-.15****	**.14****	**.25****	**-.20****	-.05	**.34****				
18. Americas	-	-	.04	.02	**-.24****	**.16****	.09	-.05	-.00	**-.12***	.01	.04	.09	**.13****	.03	**-.22****	**.10**	**.26****	**.47****			
19. Asia Pacific	-	-	-.03	**-.11***	**-.13***	**.13***	**.18****	**-.12***	-.04	**-.12***	-.03	**.13****	**-.13**	**-.11***	**.20****	**-.14****	-.06	**.33****	**.33****	**.53****		
20. Firm Size	13883.91	20001.21	.04	.03	**.26****	-.05	-.12	**14****	-.04	**-.11***	**-.13***	**-.23****	-.03	.04	**.18****	**.17****	**.12***	**.10***	.08	-.04	.04	
21. DOI	27.57%	23.97%	**-.14****	-.07	**-.27****	.08	**.18****	**-.14****	.00	-.02	-.01	-.02	**-.10***	.03	**.21****	**-.20****	-.05	**.26****	**.38****	**.40****	**.39****	**.11***

Notes. ***Correlation is significant at the 0.01 level (2 tailed)*
**Correlation is significant at the 0.05 level (2 tailed)*
N=number of observations

4.3. Demographic profile of the sample

The sample was drawn from the list of firms listed on the JSE main board that had some foreign component to their operations, even if it was just exporting to distributors in other countries. This gave a potential sample size of around 150. During the data gathering process, the researcher was forced to eliminate mining firms, investment holding firms, as well as firms that did not report the extent of their foreign operations either because they were incapable of doing so (they did not have the data themselves), or because the foreign component was below the threshold (10%) required by IFRS to be considered material and hence reportable. The final sample size ended up being 84.

Some very notable firms with international operations were thus excluded from the sample, such as Taste Holdings, Basil Read, Murray & Roberts, Clicks Group, Clover, and Italtile. Some of these are extremely large and influential companies, so their exclusion from the sample was disappointing. Nevertheless, the firms remaining in the sample offer a great diversity of industries, regions, and size. It is not unreasonable to consider the 84 firms to be representative of the broader population.

The eighty four firms are distributed across industries in the manner shown in Figure 7. The firms are fairly uniformly distributed across the various industries, except for Pharmaceuticals, Telecommunications, and Entertainment & Hospitality, which are under-represented in the sample. This is not surprising since the South African economy is relatively small and probably does not have the critical mass required to sustain a larger number of firms in these sectors.

The distribution of these firm's activities across the various regions is shown in Figure 8. The result tells a clear story; firms seem to be most comfortable expanding into Southern Africa, probably because of the cultural similarity between South Africa and the countries in SADC. Sub-Saharan Africa is the next most favoured destination, presumably because of the regional affiliation. After that, the next biggest region is Europe, which corresponds to Europe's status as South Africa's biggest trade partner and closest relative in terms of

cultural norms. Business activities in the other three regions are quite similar in scale.

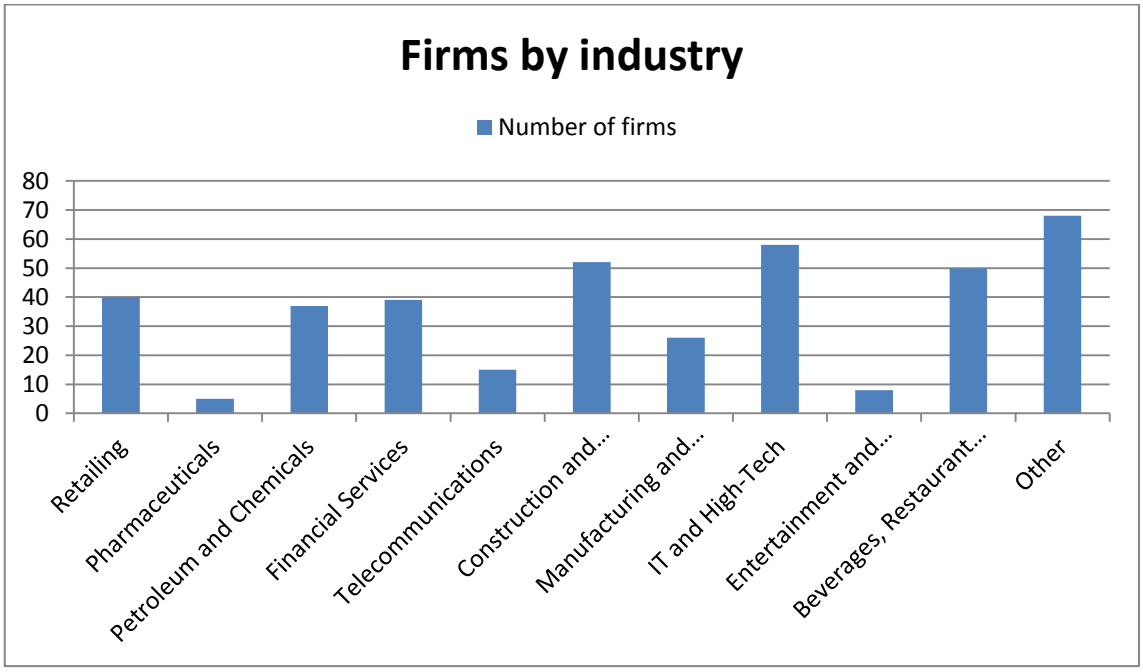


Figure 7: Firms by industry

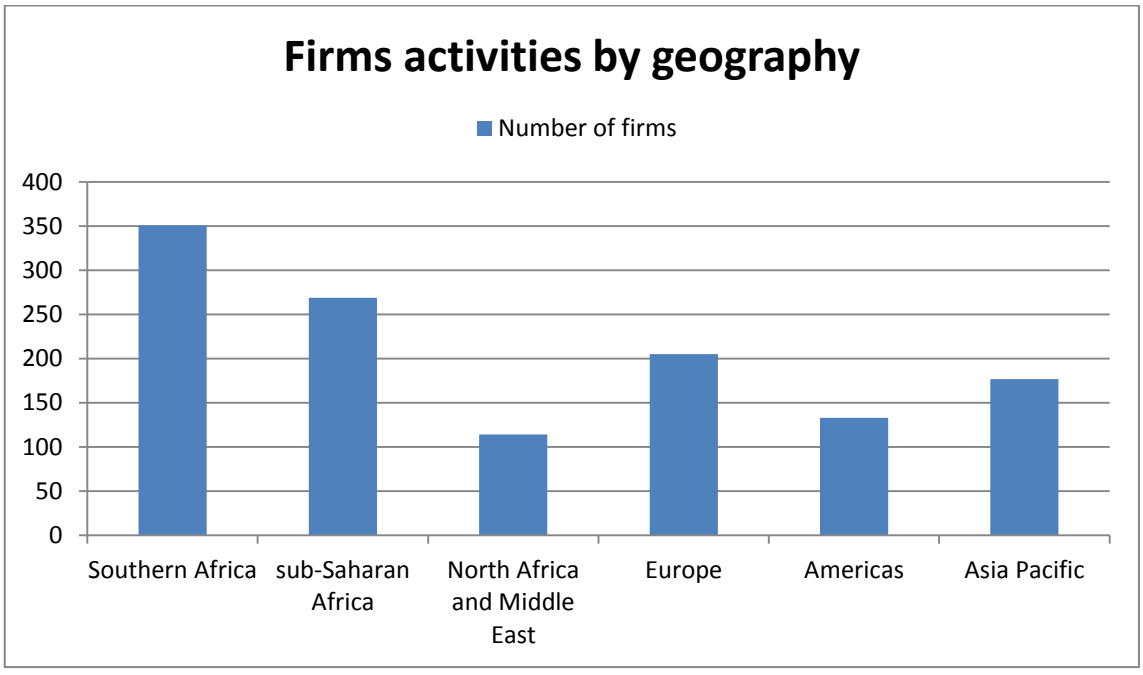


Figure 8: Firms activities by geography

4.4. Description of the Data

The data used in this research was collected from the annual reports of all the firms listed on the JSE main board from the year 2007 to the year 2012 (five years). Eighty four observations were available, covering all firms that have data on foreign operations. Each observation consisted of eighteen variables, described below.

Company. This variable describes the name of the company. It does not have any actual meaning and was not analysed statistically.

Industry. This variable describes the industry in which the company operates, and is a categorical variable on a scale from 0 to 10, where the different categories were assigned values according to the classification in Table 8.

Table 8: Industry categorical variable

Category	**Value**
Retailing	0
Pharmaceuticals	1
Petroleum and Chemicals	2
Financial Services	3
Telecommunications	4
Construction and Materials	5
Manufacturing and Engineering	6
IT and High-Tech	7
Entertainment and Hospitality	8
Beverages, Restaurant and Food	9
Other	10

Region. This variable describes the region(s) in which the company operates, and is a categorical variable on a scale from 0 to 5, where the different categories were assigned values according to the classification in Table 9.

Table 9: Region categorical variable

Category	Value
Southern Africa	0
Sub-Saharan Africa	1
North Africa and Middle East	2
Europe	3
Americas	4
Asia Pacific	5

Firm Size. The average number of employees in the firm in each year was used as a proxy for the firm size. Where the average number is not available, the number at year-end was used. This is a ratio variable.

Financial Performance. The Return on Assets (ROA) measure was used for financial performance in each year. This number is a percentage, and is therefore a ratio variable.

$$Return\ on\ Assets\ (ROA) = \frac{Net\ Profit\ before\ Tax}{Total\ Assets}$$

In order to test the reliability of this measure, the Return on Sales (ROS) measure was also captured for each year. This number is also a percentage, and is a ratio variable.

$$Return\ on\ Sales\ (ROS) = \frac{Net\ Profit\ before\ Tax}{Total\ Revenue}\ or\ \frac{Net\ Profit\ before\ Tax}{Total\ Sales}$$

Degree of Internationalisation (DOI). The ratio of Foreign Sales to Total Sales (FSTS) measure was used for Degree of Internationalisation in each year. This

number is a percentage ranging from 0% to 100%, and is therefore a ratio variable.

$$Degree\ of\ Internationalisation = \frac{Foreign\ Sales}{Total\ Sales}$$

Although the data set was generally fully populated, there were some instances of missing data. In instances where DOI was 0% in any year, all variables for that observation in that year were eliminated. Where there was no employee data for a company in a specific year, the data for the following year was used. If no data for the following year was available, the average of available data points for that company was used; however, this happened very infrequently. After pooling the date cross-sectionally and temporally, 384 observations were available for analysis.

During the regression analysis, the Industry and Region variables were re-coded as dummy variables in order to analyse their effect on Firm Performance, these. The DOI variable was also squared and cubed during regression so that the quadratic and cubic models (hypotheses 2 and 3) could be tested. An additional regression analysis on the cubic model was performed with a natural logarithmic transformation on Size (number of employees) to account for the large variance in this variable as a result of considerable differences in firm size.

4.4.1. Dependent and Independent Variables

In this research, Performance (ROA) was taken as the dependent variable. The following independent variables were used during the estimation:

- Size (Employees)
- DOI (FSTS)
- DOI^2 ($FSTS^2$)
- DOI^3 ($FSTS^3$)
- Industry: Most of the companies were IT and High-Tech. This was used as the reference variable.
- Region: Most of the companies were Southern Africa. This was used as the reference variable.

4.5. Results pertaining to Hypothesis 1

4.5.1. Stationarity of variables

The Augmented Dickey-Fuller test was applied to the variables in Table 10 to test for stationarity. The null hypothesis H0 was that a unit root is present; while the alternate hypothesis was that the variables were stationary.

Table 10: Augmented Dickey-Fuller Test: Hypothesis 1

Variable	*Dickey-Fuller*	*Lag order*	*p-value*
Performance (ROA)	-6.39	7	< .01
Size (Employees)	-3.91	7	.01
DOI (FSTS)	-9.76	7	< .01

The p-value of all these tests was less than 0.05, therefore the null hypothesis H0 can be rejected and the variables were deemed stationary.

4.5.2. Estimation of model

This model was based on the following regression equation:

$$Performance = \beta_0 + (\beta_1 \times DOI) + (\beta_2 \times Size) + (\beta_3 \times Industry) + (\beta_4 \times Region)$$

4.5.3. Tests on model

The outcomes of the statistical tests conducted on this model are presented in Appendix B and described in this section.

4.5.3.1. Autocorrelation

The Durbin-Watson statistic tests whether variables in a model are correlated with themselves, i.e. whether autocorrelation is present. The null hypothesis H0 is that there is no autocorrelation, while the alternate hypothesis is that autocorrelation is greater than zero (is present).

The test applied to the linear model resulted in a Durbin-Watson statistic of 2.08, with a p-value of .80. The p-value was above .05, hence the null hypothesis cannot be rejected, and it can be assumed that there is no autocorrelation.

4.5.3.2. Multicolinearity

The Variance Inflation Factor (VIF) test measures the degree of multicolinearity, since it is mostly the case that variables in a model are correlated with each other to some extent. The VIF values are all below 5, therefore multicolinearity is low.

4.5.3.3. Homoscedasticity

The Breusch-Pagan test measures whether variables have similar variances. The test was applied to the model in order to check the null hypothesis H0 that the variables are homoscedastic. The Breusch-Pagan test resulted in a value of 16.23, with 17 degrees of freedom and a p-value of .51. Since the p-value was above .05, the null hypothesis H0 cannot be rejected, and it can be assumed that the variances are homoscedastic.

4.5.3.4. Normality of errors

The Shapiro-Wilk test measures whether the errors follow a Normal distribution, with the null hypothesis H0 that errors follow a normal distribution. If the model explains a large part of the dependent variable, the errors should be centred on a mean of zero.

The Shapiro-Wilk measure is .76, with a p-value less than .01. Since the p-value is below .05, the null hypothesis can be rejected, and it can be assumed that the errors are not normally distributed. This however, is to be expected, as none of the adjusted R-squared values are particularly high.

This means that the model does not do a particularly good job of describing the dependent variable; it is likely that there are many more variables involved in determining ROA. Since the point of the study is to evaluate the effect each variable has on ROA, and not necessarily to obtain a model with very high forecasting power, this wasn't a problem.

4.5.4. Result of regression

Table 11: Regression results for Hypothesis 1

	Effect on Performance (ROA)	
	B	*Standard Error*
Intercept	5.78%*	2.31%
DOI (*FSTS*)	-.05	.03
Size (*Employees*)	-.00%	.00%
Industry		
Retailing	17.74%***	3.0%
Pharmaceuticals	1.53%	5.91%
Petroleum and Chemicals	-.77%	2.74%
Financial Services	-3.87%	2.75%
Telecommunications	10.85%**	3.64%
Construction and Materials	5.60%*	2.48%
Manufacturing and Engineering	-2.37%	2.95%
Entertainment and Hospitality	18.85%***	5.03%
Beverages, Restaurants and Food	10.81%***	2.54%
Other	-2.74%	2.42%
Region		
Sub-Saharan Africa	2.23%	1.53%
North Africa and Middle East	-.70%	1.70%
Europe	.17%	1.74%
Americas	1.56%	1.86%
Asia Pacific	3.30%	1.70%
R^2		.28
Adjusted R^2		.24
F		8.52***

Note: N = 384, DF = 380, B = unstandardised effect;
*** = p < .001, ** = p < .01, * = p < .05;
"IT and High-Tech" is the reference variable for the "Industry" dummy variables;
"Southern Africa" is the reference variable for the "Region" dummy variables
N=number of observations

Since the p-values of FSTS or Employees are above .05, neither is statistically significant in this model. These variables therefore have no role in explaining ROA. The coefficients of some of the industry variables are statistically significant, implying they have some influence on the ROA but this relationship has nothing to do with internationalisation.

4.5.5. Conclusion regarding Hypothesis 1

The empirical results provide no support for Hypothesis 1. The Financial Performance (ROA) does not exhibit a linear relationship with Degree of Internationalisation (FSTS), so the hypothesis cannot be confirmed.

4.6. Results pertaining to Hypothesis 2

4.6.1. Stationarity of variables

The Augmented Dickey-Fuller test was applied to the variables in Table 12 to test for stationarity. The null hypothesis H0 was that a unit root is present; while the alternate hypothesis was that the variables were stationary.

Table 12: Augmented Dickey-Fuller Test: Hypothesis 2

Variable	*Dickey-Fuller*	*Lag order*	*p-value*
Performance (ROA)	-6.39	7	< .01
Size (Employees)	-3.91	7	.01
DOI (FSTS)	-9.76	7	< .01
DOI^2 ($FSTS^2$)	-9.38	7	.01

The p-value of all these tests was less than 0.05, therefore the null hypothesis H0 can be rejected and the variables were deemed stationary.

4.6.2. Estimation of model

This model was based on the following regression equation:

$$Performance = \beta_0 + (\beta_1 \times DOI) + (\beta_2 \times DOI^2) + (\beta_3 \times Size) + (\beta_4 \times Industry) + (\beta_5 \times Region)$$

4.6.3. Tests on model

The outcomes of the statistical tests conducted on this model are presented in Appendix B and described in this section.

4.6.3.1. Autocorrelation

The Durbin-Watson statistic tests whether variables in a model are correlated with themselves, i.e. whether autocorrelation is present. The null hypothesis H0 is that there is no autocorrelation, while the alternate hypothesis is that autocorrelation is greater than zero (is present).

The test applied to the quadratic model resulted in a Durbin-Watson statistic of 2.08, with a p-value of .78. The p-value was above .05, hence the null hypothesis cannot be rejected, and it can be assumed that there is no autocorrelation.

4.6.3.2. Multicolinearity

The Variance Inflation Factor (VIF) test measures the degree of multicolinearity, since it is mostly the case that variables in a model are correlated with each other to some extent. FSTS has a VIF of 14.01 and $FSTS^2$ has a VIF of 12.47, indicating that these variables are correlated with each other, which comes as no surprise, but this is not a cause for concern because the variables are on different powers. The VIF values of all the other variables are below 5, therefore multicolinearity is low.

4.6.3.3. Homoscedasticity

The Breusch-Pagan test measures whether variables have similar variances. The test was applied to the model in order to check the null hypothesis H0 that the variables are homoscedastic. The Breusch-Pagan test resulted in a value of 17.33, with 18 degrees of freedom and a p-value of .50. Since the p-value was above .05, the null hypothesis H0 cannot be rejected, and it can be assumed that the variances are homoscedastic.

4.6.3.4. Normality of errors

The Shapiro-Wilk test measures whether the errors follow a Normal distribution, with the null hypothesis H0 that errors follow a normal distribution. If the model explains a large part of the dependent variable, the errors should be centred on a mean of zero.

The Shapiro-Wilk measure is .76, with a p-value less than .01. Since the p-value is below .05, the null hypothesis can be rejected, and it can be assumed that the errors are not normally distributed. The quadratic model therefore has the same problem as the linear model, but again, it was not a cause for concern.

4.6.4. Result of regression

Table 13: Regression results for Hypothesis 2

	Effect on Performance (ROA)	
	B	*Standard Error*
Intercept	5.08%*	2.43%
DOI (*FSTS*)	.04	.1
DOI² (*FSTS²*)	-.1	.11
Size (*Employees*)	-.00%	.00%
Industry		
Retailing	18.04%***	3.0%
Pharmaceuticals	1.00%	2.75%
Petroleum and Chemicals	-1.00%	2.75%
Financial Services	-3.85%	2.75%
Telecommunications	11.09%**	3.65%
Construction and Materials	5.31%*	2.50%
Manufacturing and Engineering	-2.64%	2.97%
Entertainment and Hospitality	19.00%***	5.04%
Beverages, Restaurants and Food	10.73***	2.55%
Other	-2.76%	2.42%
Region		
Sub-Saharan Africa	2.11%	1.54%
North Africa and Middle East	-.83%	1.71%
Europe	-.00%	1.76%
Americas	1.59%	1.86%
Asia Pacific	3.34%*	1.70%
R^2		.28
Adjusted R^2		.24
F		8.09***

Note: N = 384, DF = 379, B = unstandardised effect;
**** = p < .001, ** = p < .01, * = p < .05;*
"IT and High-Tech" is the reference variable for the "Industry" dummy variables;
"Southern Africa" is the reference variable for the "Region" dummy variables
N=number of observations

Since the p-values of FSTS, $FSTS^2$, or Employees are above .05, none are statistically significant in this model. These variables therefore have no role in explaining ROA. The coefficients of some of the industry variables are statistically significant, implying they have some influence on the ROA but this relationship has nothing to do with internationalisation.

4.6.5. Conclusion regarding Hypothesis 2

The empirical results provide no support for Hypothesis 2. The Financial Performance (ROA) does not exhibit a quadratic relationship with Degree of Internationalisation (FSTS), so the hypothesis cannot be confirmed.

4.7. Results pertaining to Hypothesis 3

4.7.1. Stationarity of variables

The Augmented Dickey-Fuller test was applied to the variables in Table 14 to test for stationarity. The null hypothesis H0 was that a unit root is present; while the alternate hypothesis was that the variables were stationary.

Table 14: Augmented Dickey-Fuller Test: Hypothesis 3

Variable	*Dickey-Fuller*	*Lag order*	*p-value*
Performance (ROA)	-6.39	7	< .01
Size (Employees)	-3.91	7	.01
DOI (FSTS)	-9.76	7	< .01
DOI^2 ($FSTS^2$)	-9.38	7	.01
DOI^2 ($FSTS^2$)	-9.05	7	.01

The p-value of all these tests was less than 0.05, therefore the null hypothesis H0 can be rejected and the variables were deemed stationary.

4.7.2. Estimation of model

This model was based on the following regression equation:

$$Performance = \beta_0 + (\beta_1 \times DOI) + (\beta_2 \times DOI^2) + (\beta_3 \times DOI^3) + (\beta_4 \times Size) + (\beta_5 \times Industry) + (\beta_6 \times Region)$$

4.7.3. Tests on model

The outcomes of the statistical tests conducted on this model are presented in Appendix B and described in this section.

4.7.3.1. Autocorrelation

The Durbin-Watson statistic tests whether variables in a model are correlated with themselves, i.e. whether autocorrelation is present. The null hypothesis H0 is that there is no autocorrelation, while the alternate hypothesis is that autocorrelation is greater than zero (is present).

The test applied to the cubic model resulted in a Durbin-Watson statistic of 2.05, with a p-value of .70. The p-value was above .05, hence the null hypothesis cannot be rejected, and it can be assumed that there is no autocorrelation.

4.7.3.2. Multicolinearity

The Variance Inflation Factor (VIF) test measures the degree of multicolinearity, since it is mostly the case that variables in a model are correlated with each other to some extent. FSTS had a VIF of 75.62, $FSTS^2$ had a VIF of 404.85, and $FSTS^3$ had a VIF of 158.49. This finding is similar to the quadratic model, and again, was not a cause for concern because the variables are different powers of each other and are expected to exhibit some association over the range from 0% to 100%. The VIF values of all the other variables are below 5, therefore multicolinearity is low.

4.7.3.3. Homoscedasticity

The Breusch-Pagan test measures whether variables have similar variances. The test was applied to the model in order to check the null hypothesis H0 that the variables are homoscedastic. The Breusch-Pagan test resulted in a value of 17.58, with 19 degrees of freedom and a p-value of .55. Since the p-value was above .05, the null hypothesis H0 cannot be rejected, and it can be assumed that the variances are homoscedastic.

4.7.3.4. Normality of errors

The Shapiro-Wilk test measures whether the errors follow a Normal distribution, with the null hypothesis H0 that errors follow a normal distribution. If the model explains a large part of the dependent variable, the errors should be centred on a mean of zero.

The Shapiro-Wilk measure is .77, with a p-value less than .01. Since the p-value is below .05, the null hypothesis can be rejected, and it can be assumed that the errors are not normally distributed. The cubic model therefore has the same problem as the linear and quadratic model, but again, it was not a cause for concern.

4.7.3.5. Endogeneity

The Hausman test can be used to detect the presence of endogeneity in the regression model by comparing the residuals of an instrument variable estimate with the Ordinary Least Squares estimate. The null hypothesis is that no endogeneity exists. The p-value of the Hausman test was .65, and since it was greater than .01, the null hypothesis cannot be rejected. Therefore no significant endogeneity is present.

4.7.4. Result of regression

Table 15: Regression results for Hypothesis 3

	Effect on Performance (ROA)	
	B	*Standard Error*
Intercept	.24%	2.87%
DOI (*FSTS*)	.66**	.22
DOI^2 (*FSTS*^{2})	-1.91**	.60
DOI^3 (*FSTS*^{3})	1.33**	.43
Size (*Employees*)	-.00%	.00%
Industry		
Retailing	18.95%***	2.96%
Pharmaceuticals	2.14%	5.89%
Petroleum and Chemicals	-1.69%	2.73%
Financial Services	-3.84%	2.72%
Telecommunications	13.03%**	3.67%
Construction and Materials	5.79%*	2.47%
Manufacturing and Engineering	-2.36%	2.94%
Entertainment and Hospitality	19.01%***	4.98%
Beverages, Restaurants and Food	10.82***	2.52%
Other	-2.02%	2.40%
Region		
Sub-Saharan Africa	2.29%	1.52%
North Africa and Middle East	-1.25%	1.70%
Europe	.00%	1.74%
Americas	2.55%	1.87%
Asia Pacific	2.68%	1.69%
R^2		.30
Adjusted R^2		.26
F		8.34***

Note: N = 384, DF = 378, B = unstandardised effect;
*** = p < .001, ** = p < .01, * = p < .05;
"IT and High-Tech" is the reference variable for the "Industry" dummy variables;
"Southern Africa" is the reference variable for the "Region" dummy variables
N=number of observations

The p-values of FSTS, FSTS^2, and FSTS^3 are below .05, so all are statistically significant in this model; these variables therefore have a role in explaining ROA. The coefficients of some of the industry variables are statistically

significant, implying they have some influence on the ROA but this relationship has nothing to do with internationalisation.

By following a process of continually removing the variable with the highest p-value, the model was whittled down to its essential form, with the regression result shown in Table 16.

Table 16: Regression results for Hypothesis 3 (essential form)

	Effect on Performance (ROA)	
	B	*Standard Error*
Intercept	.22%	2.1%
DOI (*FSTS*)	.72***	.21
DOI^2 (*FSTS*^{2})	-2.08***	.57
DOI^3 (*FSTS*^{3})	1.45***	.41
Industry		
Retailing	20.73%***	2.25%
Telecommunications	15.37%***	3.33%
Construction and Materials	7.37%***	1.90%
Entertainment and Hospitality	19.45%***	4.48%
Beverages, Restaurants and Food	12.09***	1.92%
Region		
Americas	4.54%**	1.48%
R^2		.28
Adjusted R^2		.26
F		16.67***

Note: N = 384, DF = 388, B = unstandardised effect;
*** = p < .001, ** = p < .01, * = p < .05;
"IT and High-Tech" is the reference variable for the "Industry" dummy variables;
"Southern Africa" is the reference variable for the "Region" dummy variables
N=number of observations

There isn't a substantial difference in the R^2, which is expected because the variables that do not influence the fit were removed from the model. The major difference is that the effect of all the variables is now significant.

The graph in Figure 9 shows the actual values of ROA vs. the fitted ROA, and the resulting errors. This indicates that when outliers are ignored, the model actually fits the actual data reasonably well, notwithstanding the low R^2. Since the intention of this study was not to maximise R^2, but rather to find statistically

significant relationships between Internationalisation and Performance, this model was accepted as valid in its current form.

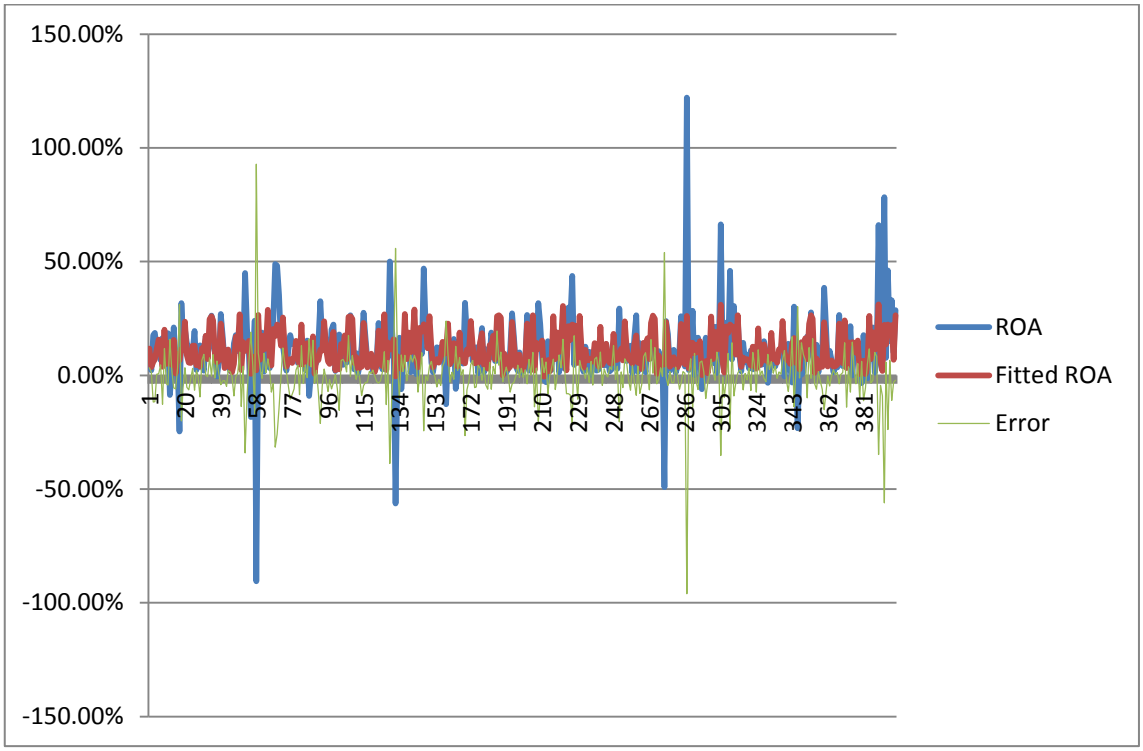


Figure 9: Actual vs. Fitted ROA and the resulting errors

The size of the company (employees) still had no influence in the model, but this may have been as a result of the different scale of the employee data. To address this issue, the regression model was re-run with a natural logarithmic transformation applied to the Size (employees) variable. The result of this regression model is shown in Table 17.

Table 17: Regression results for Hypothesis 3 (essential form with employee data logged)

	Effect on Performance (ROA)	
	B	*Standard Error*
Intercept	.84%	3.92%
DOI (*FSTS*)	.71**	.21
DOI^2 (*FSTS*^{2})	-2.05***	.58
DOI^3 (*FSTS*^{3})	1.43***	.42
Size (*Employees*)	-.13%	.39%
Industry		
Retailing	20.99%***	2.39%
Telecommunications	15.42%***	3.34%
Construction and Materials	7.44%***	1.91%
Entertainment and Hospitality	19.56%***	4.50%
Beverages, Restaurants and Food	12.14***	1.93%
Region		
Americas	4.59%**	1.50%
R^2	.28	
Adjusted R^2	.26	
F	14.98***	

Note: N = 384, DF = 387, B = unstandardised effect;
**** = p < .001, ** = p < .01, * = p < .05;*
"IT and High-Tech" is the reference variable for the "Industry" dummy variables;
"Southern Africa" is the reference variable for the "Region" dummy variables
N=number of observations

The Size (log of Employees) variable was still not statistically significant. This, however, makes sense since employees and ROA are stationary and hence revolve around a mean. Taking the logarithm of employees changes the values, but not the centrality - they will still revolve around a mean. A logarithmic transformation is required when the dependent variable follows a linear trend, and the independent variable follows an exponential trend (or vice versa). By taking the logarithm of the independent variable, it will be converted into a linear trend, and then the regression can establish whether the two are co-trending. Since however, all the variables in this analysis are stationary, this doesn't apply. The implication of this result is that the regression model specified in Table 16 is superior and therefore forms the basis of all further discussion.

4.7.5. Conclusion regarding Hypothesis 3

The empirical results support Hypothesis 3. The Financial Performance (ROA) exhibits a cubic relationship with Degree of Internationalisation (FSTS), so the hypothesis can be confirmed.

4.8. Summary of the results

Three regression models were developed and employed to test each of the three hypotheses. The statistical analysis does not provide support for the linear and quadratic hypotheses, while the cubic hypothesis is supported by the regression results, since the pertinent independent variables were significant.

Multicolinearity did not seem to be much a problem as analysis through VIF's did not show VIF's higher than 10 except for the DOI, DOI^2, and DOI^3 variables in the cubic model, which was expected. Autocorrelation was assessed through the Durbin Watson test, but there was no cause for concern. There does not seem to be much possibility of heteroscedasticity, but there is an associated non-normality of residuals, which does not seem be much of a problem. The result of the Hausman test indicates that endogeneity is not much of a problem either. All of these tests taken together do not suggest that the assumptions used in the data model are violated.

The overall fit of the multiple regression was fairly low (R^2 = .28, Adjusted R^2 = .26, F = 16.67, p < .001), although it compares very favourably with other studies, where R^2's of .27 (Contractor, et al., 2003), .21 (Thomas & Eden, 2004), .10 (Lu & Beamish, 2004), .15 (Chang & Wang, 2007), .23 (Kumar & Singh, 2008), and .15 (Ruigrok, et al., 2007) have been obtained.

CHAPTER 5: INTERPETATION OF RESULTS

5.1. Introduction

The focus of this chapter is to interpret the results obtained in chapter four, especially with reference to the literature review in chapter two.

The research was conducted with the intention of discovering the nature of the relationship between the degree of internationalisation and the financial performance for South African multinational firms. Three hypotheses were proposed, corresponding to a linear model, a quadratic model, and a cubic model, with the results only providing support for the cubic model. This chapter will discuss these results using the theoretical background as a frame of reference and postulate reasons for certain hypotheses being accepted or rejected.

The remainder of this chapter is organised in three parts. The first part (section 2) discusses the demographics of the sample, including the difference between the data that was planned to be obtained, and what was actually obtained. The second part (sections 3 to 5) discusses and explains the results of each of the three hypotheses, while the last part (section 6) concludes and summarises the discussion.

5.2. Demographics of the sample

Eighty four firms were included in the final sample out of a total of 353 firms that are listed on the JSE main board. The elimination of a large proportion of these firms was not unexpected due to the nature of business of many of those firms.

A particular case in point is mining firms – by definition these are firms that are heavily export oriented. The bulk of their production is exported and hence calculating the degree of internationalisation for these firms would have been a futile effort – it would all have been close to 100%. Secondly, the nature of their

business itself means that revenues are highly dependent on global commodity prices and the macroeconomic cycle, all factors totally unrelated to the structure of their business.

Another notable exclusion from the sample is investment holding companies such as Mvelephanda, and Shanduka. These firms, by their very nature, do not carry out productive business activities on their own accord but rather indirectly through their interests in other business enterprises. Their returns would therefore be correlated with the returns of the underlying companies they have interests in. Additionally, these firms invest almost exclusively in South African firms (The Shanduka investment in MTN Nigeria in November 2012 is a new trend), so all their revenues are derived from within the republic anyway. Calculating the degree of internationalisation for these firms would also be a futile effort – it would all have been close to 0%.

The remaining exclusions consist of firms that either did not report the extent of foreign earnings, or whose foreign earnings were not material to the business because they were less than 10%. These exclusions were regrettable because there is still a lot of good data that could have been put to use in this study had these firms reported these earnings, no matter how small. Many construction companies, fast-food restaurants and chain stores have a sizable proportion of international business activities, which has not been captured in this research.

What is noteworthy from the correlation matrix in Table 7 is that DOI is negatively correlated with Southern Africa. That means that firms that operate in Southern Africa are more likely to have a lower DOI. Equally noteworthy is the fact that the correlation between DOI and sub-Saharan Africa is close to 0 and not significant. That means that firms operating in sub-Saharan Africa are also not likely to have a high DOI. DOI is positively (and significantly) correlated with all the other regions, so firms that internationalise to these regions will have high DOI's. The inference that can be drawn from this result is that South African firms do not expose themselves too much to the Southern Africa and sub-Saharan Africa regions and do not become highly reliant on these regions. This is remarkable, considering that these regions are so close geographically.

With very few exceptions, this study was able to gather all of the data required for the study from the annual reports of the eighty four companies in the sample. Where data was not obtainable, the data point for that year was deleted. This highlights the major advantage of pooling cross-sectional and time-series data – the resilience to missing data is much higher since only one data point out of five is deleted.

In comparison to the mean, the standard deviations of ROA, ROS, DOI and the number of employees are very large. That implies an extraordinarily large variance in these variables. A lower variance would have been preferred as the resulting regression models would have been more robust, but that is unfortunately not how the data actually is. Nevertheless, this amount of variance is not uncharacteristic for the type of data, as similarly large variances have been found in other studies (Elango, 2006; Lu & Beamish, 2004; Thomas, 2006; Thomas & Eden, 2004). This does not suggest that there could be problems with the study's internal validity.

5.3. Interpretation of Hypothesis 1

Hypothesis 1 postulated a linear relationship between the degree of internationalisation and firm performance by proposing a model of the following form:

$$Performance = \beta_0 + (\beta_1 \times DOI) + (\beta_2 \times Size) + (\beta_3 \times Industry) + (\beta_4 \times Region)$$

The statistical analysis conducted in this research tested the null hypothesis H0 that the coefficient of *DOI* is zero, i.e. $\beta_1 = 0$, and the result of the analysis, presented in Appendix B, showed that it was not possible to reject the null hypothesis. This result suggests that the financial performance of South African multinational firms did not increase linearly with their degree of internationalisation over the period from 2007 to 2012.

A linear relationship between internationalisation and performance is the original “more is better” theory of international business, where improvements in financial performance arise out of increasing degrees of internationalisation, without limitation. The findings of this study differ from those of Grant (1987), Goerzen and Beamish (2003), and Mathur et al. (2004) in that these studies obtained a significant result when testing a linear hypothesis, while this study was forced to reject the linear hypothesis because it was not significant.

A possible explanation for the discrepancy with Grant’s (1987) study may be the different time period under examination – Grant analysed data from 1972 to 1984, compared to the period from 2007 to 2012 that was analysed in this study. The nature of the international economic environment at that time is vastly different from the present time, with internationalisation a new trend for most companies. It may be, therefore, that companies at the time did obtain immediate and sustained success on the global stage whereas companies of the present time find business conditions more challenging. Grant also averaged the data in the analysis as opposed to pooling the time-series data as was done in this study. This practice may have introduced distortions in the data and also removed several degrees of freedom, thereby permitting the linear relationship to exhibit significance.

There are extensive differences between the methodology used in this study and that of Goerzen and Beamish (2003), and Mathur et al. (2004) which make comparing the results quite challenging. Goerzen and Beamish (2003) approximate internationalisation by International Asset Dispersion, while they also use market based (instead of accounting based) measures of financial performance. Mathur et al. (2004) classify firms into three categories (domestic, exporter and multinational) and investigates differences in financial performance across the three categories. The two studies are therefore examining the same problem from a different angle than this study and essentially telling a different part of the story.

5.4. Interpretation of Hypothesis 2

Hypothesis 2 postulated a quadratic relationship between the degree of internationalisation and firm performance by proposing a model of the following form:

$$Performance = \beta_0 + (\beta_1 \times DOI) + (\beta_2 \times DOI^2) + (\beta_3 \times Size) + (\beta_4 \times Industry) + (\beta_5 \times Region)$$

The statistical analysis conducted in this research tested the null hypothesis H0 that the coefficient of DOI^2 is zero, i.e. $\beta_2 = 0$, and the result of the analysis, presented in Appendix B, showed that it was not possible to reject the null hypothesis. This result suggests that the financial performance of South African multinational firms did not increase quadratically (curvi-linearly) with their degree of internationalisation over the period from 2007 to 2012.

The findings of this study differ from those of other studies such as Thomas (2006), Elango (2006), Capar and Kotabe (2003), Endo and Ozaki (2010), Mathur et al. (2004), Geringer et al. (1989), Gomes and Ramaswamy (1999) and Qian et al. (2010) in that those studies obtained a significant result when testing a curvi-linear hypothesis, while this study was forced to reject the curvilinear hypothesis because it was not significant.

A curvilinear U shaped relationship implies that there is some hurdle or threshold to internationalisation up to which there is a reduction in performance. Once these initial barriers and 'teething problems' are overcome, firms obtain performance gains from subsequent internationalisation. A curvilinear inverted-U shaped relationship implies that firms obtain immediate financial benefits from internationalisation but are unable to exploit these benefits at very high DOI's. Once a certain threshold is reached, the costs begin to overpower the benefits, and financial performance diminishes.

It is possible that the differences in the result arise because of the very different nature of the markets and the extent to which it is fragmented or homogenous. South African firms face a relatively uniform, albeit small market in the narrow

SADC region, and a highly fragmented heterogeneous market in the broader sub-Saharan Africa region, in contrast to Mexican, Indian and European firms who have markets that are largely culturally homogeneous.

There may also be some influence from the structural nature of the labour market and its level of education and skill. For example, Indian firms may be better able to exploit the benefits of internationalisation while reducing the negative effects as a result of the superior education of their workforce, an advantage that is not available for South African firms.

In contrast to the approach taken in some other studies to study firms from many countries together and to segregate manufacturing and service firms, only South African firms were analysed in this study, and manufacturing and service forms were analysed together. It may be misleading to analyse service firms on their own as they may not have been in operation long enough or have reached a sufficiently high degree of internationalisation to reach a second inflection point, or they may have a completely different cost structure altogether.

Methodological differences can also account for the difference in results between this study and others. The Performance variable is operationalised differently in this study (Return on Assets) compared to Thomas (2006) and Elango (2006) who use Profit Margin. The manner in which Internationalisation is measured can also vary substantially, such as entropy measures used by Qian et al. (2008, 2010), or a count of foreign subsidiaries as in Gomes and Ramaswamy (1999).

5.5. Interpretation of Hypothesis 3

Hypothesis 3 postulated a cubic relationship between the degree of internationalisation and firm performance by proposing a model of the following form:

$$Performance = \beta_0 + (\beta_1 \times DOI) + (\beta_2 \times DOI^2) + (\beta_3 \times DOI^3) + (\beta_4 \times Size) + (\beta_5 \times Industry) + (\beta_6 \times Region)$$

The statistical analysis conducted in this research tested the null hypothesis H0 that the coefficient of DOI^3 is zero, i.e. $\beta_3 = 0$, and the result of the analysis, presented in Appendix B, showed that it was necessary to reject the null hypothesis and assume the alternate hypothesis that $\beta_3 \neq 0$. This result suggests that the financial performance of South African multinational firms moved according to a cubic relationship with their degree of internationalisation over the period from 2007 to 2012.

5.5.1. Interpretation of the result

The parameters of the cubic model specifically related to internationalisation obtained from the regression analysis described in Appendix B are shown in Table 18.

Table 18: Parameters of the cubic model

Parameter	Value
β_1	.72
β_2	-2.08
β_3	1.45

The coefficients of *DOI*, DOI^2, and DOI^3 are .72, -2.08, and 1.45 respectively, where both *DOI* and *ROA* are measured as a percentage. The non-linear nature of the modelled relationship means it is easier to visualise and discuss the impact of a change in DOI on ROA by using a graph of the two variables with the coefficients just declared, as shown in Figure 10.

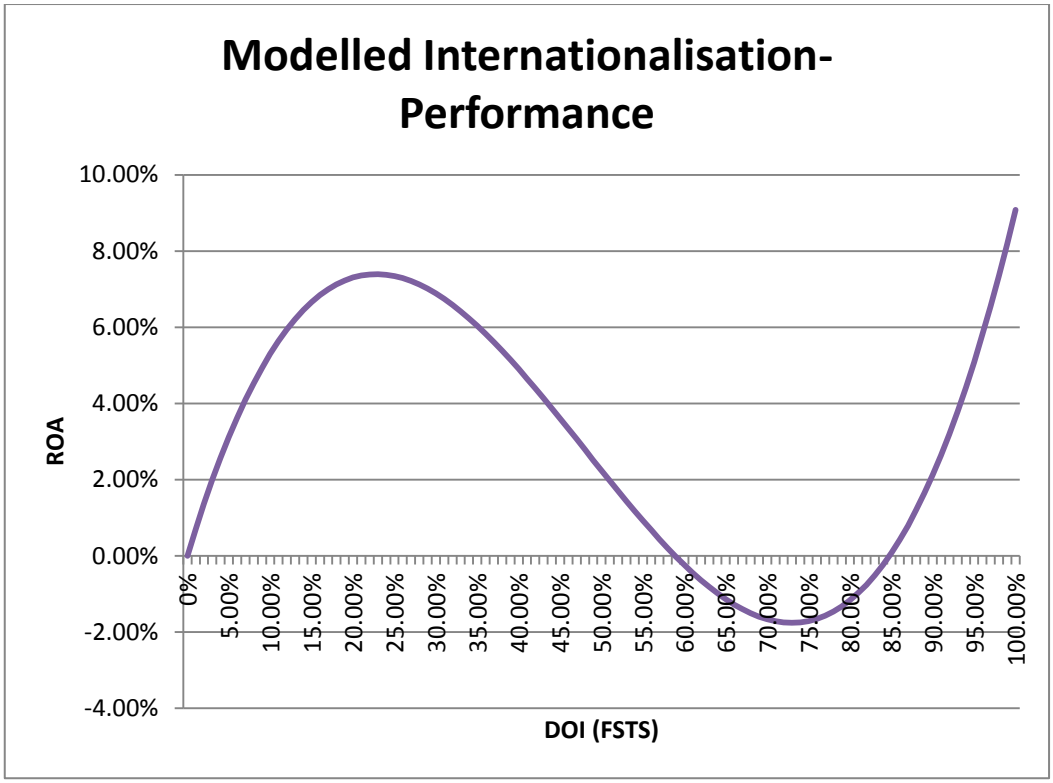


Figure 10: Modelled Internationalisation-Performance relationship

The graph in Figure 10 indicates that once all other effects (industry, region, etc.) are excluded, the contribution to ROA from a DOI that is 0 will be 0, or very close to it. Increases in DOI result in an increase in ROA up to the first threshold, past which ROA starts to drop rapidly until the second threshold, whereupon ROA will increase rapidly again. This can be roughly described as a sinus curve, rather than the sigmoid curve described in section 2.3.4. These three stages correspond to the three stage model presented by Contractor et al. (2003) and Lu and Beamish (2004), but in the opposite direction, i.e. the coefficients all have the opposite sign, which is an intriguing result.

What this means is that South African firms expanding internationally reap great rewards in the early stages of this expansion from being able to exploit new markets and reach more customers, achieve greater economies of scale, and spread risk and costs over a wider area. The costs of initial expansion seem to be negligible in the early stages; it is only when internationalisation reaches a higher degree that costs (such as transaction costs) start to catch up with the

firm and performance starts to suffer. These costs seem to afflict the firm quite considerably because performance only recovers at quite high degrees of internationalisation.

The results indicate that an important moderating variable is the industry the firm operates in. From the results shown in Appendix B, it is clear that, in descending order of importance, it is better for the firms' performance if the firm is international and operates in:

1. Retailing
2. Entertainment and Hospitality
3. Telecommunications
4. Beverages, Restaurant and Food
5. Construction and Materials

Therefore, a multinational firm will have the best performance if their line of business is either retailing, or entertainment and hospitality. The next best line of business for multinational firms is telecommunications, and then beverages, restaurant and food. The last remaining line of business which gives a boost to the performance of multinational firms is construction and materials.

The results of the statistical analysis shown in Appendix B also indicate that multinational firms which have operations in the Americas have financial performance superior to firms which have operations in any of the other regions. This perhaps is not an obvious result at face value, and one which will need to be investigated further before it can be explained.

5.5.2. Possible explanations

There are a number of reasons why this study should find a cubic relationship (sinus curve) between internationalisation and performance. First among these is the nature of the South African business environment. South Africa is a small, open economy, so prospects for firms are constrained if they remain domestic. Greater returns can only be obtained by tapping into larger markets and there

are therefore immediate benefits in terms of increased financial performance from internationalising.

South Africa is the biggest economy in the SADC region, and one of the most developed economies in sub-Saharan Africa (SSA), so these are natural avenues for international expansion. The nature of doing business in SSA though, means that this opportunity does not come easy. Infrastructure in SSA is generally under-developed; there are high administrative and operational costs, it is a difficult and demanding region to do business in, and there is a high risk of political turmoil. Currencies also tend to be somewhat volatile, so companies employ hedging strategies to increase the predictability of their earnings. The costs that result from all these factors may drop returns at intermediate degrees on internationalisation.

At very high degrees of internationalisation, firms are operating on the global stage. At this point, they can spread their costs over a very wide range, achieve economies of scale, cross-subsidisation, even out economic cycles, and take advantage of differences in factor endowments and labour markets to improve overall financial performance. Considerable capital investments must be made for South African firms to realise this global scale, as they must cross the divide from small, domestic-orientation to large, global-orientation. This could be another cause for the dip in performance at the intermediate stage and the strong rally once that gulf is crossed.

The fact that the results of this study show an S-curve that is vertically flipped compared to the usual S-curve as found by Contractor, Kundu and Hsu (2003) means that the initial stage of internationalisation has an immediate positive benefit. It could be that this is because South African firms are initially expanding into similar proximate emerging nations or that the competition in neighbouring nations is very weak. The author thanks Prof. Contractor for this notion.

5.5.3. Comparison with Emerging Market Firms

This report has been one of the first to study the effect of internationalisation on the financial performance of South African firms. It was plausible to assume that South Africa, as an emerging market, would share many of the characteristics of other emerging market firms, such as their firms not having internationalised to a very great extent. Therefore, *a priori*, it was thought most likely that the results obtained would be roughly similar to other emerging market firms, i.e. that a curvilinear relationship would apply. The following sections will discuss the similarities and the differences between this study of South African firms, and studies of other emerging market firms.

5.5.3.1. Similarities

The finding of this study, namely a sinus, or three stage relationship between internationalisation and performance, is consistent with studies of other emerging market firms, such as Kumar and Singh (2008), except for the fact that the coefficients of DOI, DOI^2 and DOI^3 are all the opposite sign to what was found in this study. A possible explanation for this discrepancy can be inferred from the authors' writings. This study perhaps generalised too much by artificially grouping all the firms together, and therefore insufficient attention was paid to contextual factors, like country of origin and industry. Whereas this research studied firms from a number of industries, Kumar and Singh (2008) only studied firms from India in the pharmaceutical industry; it could therefore be that different relationships between internationalisation and performance exist for firms in different countries and different industries.

The negative result arising from Wan (1998) testing a curvilinear hypothesis during a study of Hong Kong firms is similar to the negative result obtained in this study when testing the same hypothesis. The sigmoid relationship had not been hypothesised at the time of his study, and it is not beyond the reach of imagination to conjecture that Wan might have tested the sigmoid hypothesis when performing his study. Wan concluded that internationalisation does not affect profitability directly, but rather the stability of profitability, but this does not

come as much of a surprise because one reason put forward for firms to internationalise was to reduce their risk and the variability of their earnings.

The finding that performance is almost unaffected by differences in the regional orientation of firms (except for forms that are orientated towards the Americas) coincides roughly with the study of Mexican firms by Thomas (2006), who was also unable to verify whether a difference in financial performance arises from internationalisation in geographically proximate versus distant locations.

This result does however, have a plausible explanation. Since the degree of internationalisation is measured by the proportion of foreign sales (or revenue) to total sales (or revenue), internationalisation by exporting is treated the same as internationalisation by foreign direct investment. The nature of the global financial, communication, and transport systems means that exporting is relatively easy and cheap (Thomas, 2006) and hence emerging market firms would be able to export (internationalise) to just about anywhere in the world with low overheads and transaction costs. The advantage arising from geographically proximate locations therefore evaporates and exporting becomes just as profitable whether it is to England, or Australia.

5.5.3.2. Differences

The finding of a sigmoid, or three stage relationship contrasts with similar studies performed by Thomas (2006), Elango (2006), and Contractor et al. (2007) who found support for a curvi-linear relationship.

This result should however, be read with caution. In Thomas' (2006) study of Mexican firms, performance initially declines, and then rises linearly, but the sample is biased towards firms that derive a large percentage of their revenue from the United States. The existence of such a large, overbearing and, to an increasing extent, culturally homogeneous market right on Mexico's doorstep means that this scenario is less of internationalisation but more of a highly extensible local market. South African firms are not in the same position, facing a relatively uniform, albeit small market in the narrow SADC region, and a highly fragmented heterogeneous market in the broader sub-Saharan Africa region.

These conditions are, however, very similar to the conditions faced by the Indian manufacturing firms in Contractor et al.'s (2007) study, who obtained a similar relationship for manufacturing firms, while for services firms, the result appears to be a simple linear relationship. It is postulated that Indian firms may be better able to exploit the benefits of internationalisation while reducing the negative effects as a result of the superior education of their workforce; an advantage that is not available for South African firms. South African firms face a shortage of skills in their labour force and may find themselves running out of much needed skilled labour at higher levels of internationalisation. This could be a cause for the drop in performance that occurs at DOI's of around 20%. It may be feasible to bring in skilled labour from other parts of the world to augment existing talent (thereby boosting performance) at very high levels of internationalisation (around 75%).

In contrast, Elango's (2006) study shows that, for manufacturing firms, performance initially rises, but then drops after a certain threshold is reached, while for services firms, the result is the same as Contractor et al. (2007). Here, the sample stretches across sixteen countries, and includes firms from virtually all across the globe. Although the study considers the different macroeconomic environment (GDP growth rates), there are still large number of other factors that are not adequately considered. Differences in tax structures, fiscal incentives, monetary policy and input costs between the different countries may have a substantial effect on the underlying relationship. This study is different in that it looks only at South African firms, so all firms are on an equal footing. Additionally, no effort was made to segregate purely manufacturing firms from purely service firms.

Another major difference between this study and the studies performed by Thomas (2006), and Elango (2006) is the way in which *Performance* has been operationalised. Both studies use a Profit Margin of some sort (Net Profit Margin/Return on Sales and Gross Profit Margin respectively), while this study uses Return on Assets. Although ROA and ROS exhibit a moderate correlation, the difference between the two indicators of the firm's performance may be

enough to explain the difference in the findings between this study and that of Thomas and Elango.

This study analysed the effect of regional orientation on the performance of South African firms, with results that differed from those obtained by Banalieva and Santoro (2009). Banalieva and Santoro found that firms were able to obtain performance benefits from staying close to their home region. Even when firms are active in geographically distant (global) regions, they were able to obtain superior performance by maintaining focus on their home region. This may be as a result of a difficulty in overcoming the "liability of foreignness" aggravated by a too high cultural distance. It is quite suggestive that this study finds a performance advantage accruing to firms who have exposure to the American market; the single biggest unified market in the world with a western culture very similar to that of South Africa. China and India put together are probably larger markets than the US, but culturally they are highly dissimilar to South Africa, hence it may be more difficult to achieve higher performance from tapping into these markets.

5.5.4. Comparison with Developed Market Firms

The following sections will discuss the similarities and the differences between this study of South African firms, and other studies of developed market firms.

5.5.4.1. Similarities

This study reports findings very similar to that of other studies of developed market firms, such as Riahi-Belkaoui (1998), Lu and Beamish (2004), Contractor et al. (2003), Ruigrok et al. (2004, 2007), Thomas and Eden (2004) and Chang and Wang (2007).

Riahi-Belkaoui (1998) used a Multivariate Adaptive Regressive Spline (MARS) technique to investigate the internationalisation-performance relationship for U.S. manufacturing and service firms and found a nonmonotonic relationship with two inflection points. Performance decreases up to the first inflection point, then increases until the second inflection point, after which performance starts

to decrease again. Thomas and Eden (2004) and Chang and Wang (2007) performed a pooled least-squares regression analysis, and essentially obtained the same result. This corresponds to a cubic/sigmoid relationship between internationalisation and performance, but the effect is in the opposite direction to what was observed in this study (described as a sinus curve).

It is possible that this difference comes about as a result of a major structural difference between the U.S. and S.A. economies. The U.S. is a very large, self-sufficient economy, so firms have a tendency to be rather inward-looking. These firms therefore face a steep learning curve with concomitant costs when going abroad for the first time. South Africa, in contrast is a much smaller economy, so firms are forced to be more outward looking from the start in order to obtain growth. Internationalisation therefore delivers immediate positive returns for South African firms.

There is some support for this explanation from Ruigrok et al.'s (2007) study of Swiss manufacturing companies. The author makes the point that Switzerland is a very small home market whose firms were forced to expand into other countries very early on. A pooled cross-section time-series analysis identical in every way (even down to the variables) to the one conducted in this study showed exactly the same type of relationship between internationalisation and performance for Swiss and S.A. firms. The coefficients of DOI, DOI^2 and DOI^3 are all the same sign in the two studies, and their relative magnitudes are comparable. This is quite a stable finding, since a similar study by the same authors on Swiss firms conducted in 2004 obtained the same result. The authors on this occasion caution against undue generalisation by noting that the form of the relationship could be very context specific and could differ by country and by industry. It would therefore not be unexpected for studies in one context to obtain a sinus curve and other studies in different contexts to obtain a sigmoid curve.

This is exactly the situation exhibited with Contractor et al.'s (2003) study of developed market firms, Lu & Beamish's (2004) study of Japanese firms, and Thomas and Eden (2004) and Chang and Wang's (2007) study of U.S. firms, which all found evidence of a sigmoid relationship between internationalisation

and performance. In these cases, therefore, a cubic relationship between internationalisation and performance is observed, just as it was in this study, but the effect is in the opposite direction. The explanation offered by this author for this discrepancy, namely the inward-looking nature of certain firms still seems to hold some validity. Chang and Wang's (2007) study was conducted solely on a sample of U.S. firms, while Contractor et al.'s (2003) sample was comprised of a disproportionately large percentage (42%) of U.S. firms. The fact that Lu & Beamish (2004) obtained a similar result solely by studying Japanese firms is somewhat puzzling at first. It would be expected that Japan, being a fairly small country, would be in a comparable position to Switzerland, and therefore the results should be somewhat analogous to that of Ruigrok et al. (2004, 2007), i.e. a sinus curve instead of a sigmoid curve. A possible explanation for this may be the dependence Japan had on the U.S. economy in the last few decades, which effectively made Japanese firms an extension of U.S. firms, resulting in the same structural make-ups.

The difference between developed market and S.A. firms in the second stage may have something to do with scale. By the time they internationalise, developed market firms would already have attained substantial scale which they exploit to deliver higher ROA. S.A. firms still have to build up this size and capacity, incurring costs and substantial capital investment in the process, so ROA suffers. At extreme levels of internationalisation, S.A. firms achieve economies of scale, and ROA increases, while developed market firms start struggling to manage a highly dispersed organisation, thereby resulting in a drop in ROA.

5.5.4.2. Differences

The finding of a sinus, or three stage relationship between internationalisation and performance in this study contrasts with similar studies performed on developed markets that either found linear (Goerzen & Beamish, 2003; Grant, 1987; Hsu, 2006; Hsu & Boggs, 2003; Mathur, et al., 2004), curvilinear U (Capar & Kotabe, 2003; Endo & Ozaki, 2010; Mathur, et al., 2001; Ruigrok & Wagner, 2003) or curvilinear inverted-U relationships (Geringer, et al., 1989;

Gomes & Ramaswamy, 1999; Hitt, et al., 1997; Lee Li & Qian, 2005; Qian, et al., 2010; Qian, et al., 2008), or failed to find any relationship whatsoever (Gerpott & Jakopin, 2005; Majocchi & Zucchella, 2003; Sambharya, 1995; Tallman & Li, 1996).

Part of the reason that differences between the results of this study and those of Grant (1987), Goerzen and Beamish (2003), and Mathur et al. (2004) arise is that a different time period was under study, and there were also major methodological differences. In fact, the methodology used in this study most closely resembles that used by Hsu and Boggs (2003), and Hsu (2006), and it is therefore surprising that those studies were able to confirm a linear relationship despite testing for a curvilinear and a cubic relationship between internationalisation and performance. Hsu and Bogg's (2003) finding of an inverted-U relationship is not necessarily contrary to this study, however, as it corresponds with the first stage of internationalisation described in section 2.3.4. This study did not test a cubic model, and hence was unable to detect or report the second inflection point. Hsu's (2006) study was conducted on a sample of pharmaceutical/biotechnical firms and it may be that the findings are different from this study due to some industry-specific effects. The approach taken in this study was to examine firms from a wide range of industries and to control for industry-specific effects using a dummy variable.

Of the four studies reporting a curvilinear U shaped relationship, two were performed solely on service firms (Capar & Kotabe, 2003; Endo & Ozaki, 2010) and two were performed on a set of both service and manufacturing firms (Mathur et al., 2001; Ruigrok & Wagner, 2003). This suggests that there may not be anything particularly special about service or manufacturing firms, and hence the decision not to discriminate between the two in this study can be justified.

The country of origin for the firms sampled in these four studies is quite diverse, namely Germany, Japan, and Canada. The variables have been operationalised in a roughly consistent manner to this study, with the exception of the internationalisation variable in Endo and Ozaki's (2010) study, and the performance variable in Mathur et al.'s (2001) study. This may account for part

of the variance between the results of those studies and the results of this study, but the most likely explanation is one suggested by the authors themselves (Ruigrok & Wagner, 2003; Capar & Kotabe, 2003), namely country-specific characteristics and expansion strategies.

Additional difficulties arise with studies confined to service firms only, as these firms may not have been in operation long enough or reached a sufficiently high degree of internationalisation to exhibit a second threshold or inflection point, or they may have a different cost structure altogether (Endo & Ozaki, 2010). The firms sampled in this study were not segregated into manufacturing and service firms; however, they were segregated on the basis of industry. Although the five industries identified as significant factors in the regression analysis in this study have a strong service component to them, they require substantial asset and capital investment; as a result, structurally, the firms in these industries bear a closer resemblance to manufacturing rather than service firms.

Of the six studies reporting a curvilinear inverted-U shaped result on developed market firms, three (Gomes & Ramaswamy, 1999; Qian, et al., 2010; Qian, et al., 2008) examine the effect of internationalisation alone on performance, while the other three examine the interaction between internationalisation and product diversification strategies on performance (Geringer, et al., 1989; Hitt, et al., 1997; Lee Li & Qian, 2005). It is worth pointing out that an inverted-U relationship is not necessarily at odds with this study, as it corresponds with the first inflection point in the diagram shown in Figure 10. It may just be that these studies have simply been unable to detect the second inflection point and hence have made a different assumption.

This study is roughly consistent with the studies of Qian et al. (2008, 2010) in terms of *the principle* of scrutinising differences in the regional orientation of the firms in the sample; the only real difference is the manner in which regional orientation was measured and modelled. Qian et al. used an entropy measure in their 2008 and 2010 study, in contrast to the practice in this study of classifying firms' operations by regions. Gomes and Ramaswamy (1999) counted the number of foreign countries in which the firm had operations and therefore captured some element of geographic dispersion, but nothing of how

the operations were dispersed. These data were used in varying degrees to operationalise the independent variable – internationalisation – and hence could account for part of the difference between the results of the study described in this report, and the studies referenced. It is also possible that the difference in the relationship may be due to other factors, such as firms in developed markets exhibiting a more regional orientation, i.e. focussing more on countries in their own geographic region (intra-regional diversification) due to the lower costs involved (Qian et al., 2008, 2010). Finally, although Qian at al. (2010) tested a cubic model in their study, this was more of an after-thought, and there are substantial differences in the methodology between that study and this one. This makes it difficult to put forward a satisfactory explanation for the divergence in the findings.

Whereas Geringer et al. (1989) and Hitt et al. (1997) studied international diversification and product diversification both in isolation and in combination, Li and Qian (2005) studied the joint effect of regional diversification, international diversification and product diversification on financial performance. There are however, considerable differences between the methodology utilised in these three studies and this one which may account for the difference in the results. Geringer et al. (1989) used ANOVA analyses to reach their conclusions, while Hitt et al. (1997) and Li and Qian (2005) used entropy measures to quantify the degree of internationalisation. The model used by these authors also differed markedly, from relatively simple (Geringer et al., 1989), more complex (Hitt et al., 1997) and very complex (Li & Qian, 2005), with the explanatory power increasing all the time from a low 5.5% (Geringer at al., 1989) to a moderate 20% (Hitt et al., 1997) to a remarkable 50.5% (Li and Qian, 2005). This suggests that the model used in this study may have benefitted from introducing additional sophistication.

Another factor which is worth pointing out is that the studies of Geringer et al. (1989) and Hitt et al. (1997) were conducted over a relatively distant time period (prior to the blossoming of the information age), when it would have been more difficult to establish and maintain regular lines of communication between geographically dispersed business operations. This study has used a more

recent time period (1997 to 2012) when email, the internet, and cellular telephony are ubiquitous and hence the manner in which international operations are managed is substantially different. This may have some influence on how internationalisation affects financial performance.

5.6. Conclusion

This section concludes the interpretation of the results of the research conducted in this study, which intended to discover the nature of the relationship between the degree of internationalisation and the financial performance for South African multinational firms. Three hypotheses were proposed, corresponding to a linear model, a quadratic model, and a cubic model, with the results only providing support for the cubic model.

Table 19: Stepwise regression analysis

	Pooled data analysis (N=384)			
	Linear	**Quadratic**	**Cubic**	**Cubic (essential form)**
DOI	-.05	.04	.66**	.72***
DOI^2		-.1	-1.91**	-2.08***
DOI^3			1.33**	1.45***
Adj. R^2	24.35	24.32	25.99	26.21
Delta adj. R^2		-.03	+1.64	+1.86

Note: N = 384, B = unstandardised effect
*** = $p < .001$*
N=number of observations

The stepwise regression analysis depicted in Table 19 shows that the explanatory power of the cubic model is greater than that of the linear or quadratic models, and that the essential form of the cubic model has the greatest explanatory power. The author thanks Prof. Ruigrok for advising this form of presentation.

This study indicates that the internationalisation-performance relationship is a sinus curve, where performance increases with internationalisation up to a first threshold, past which performance drops rapidly until a second threshold is reached, whereupon performance increases rapidly again. South African firms expanding internationally reap great rewards in the early stages of this expansion, during which the costs seem to be negligible. It is only when internationalisation reaches a higher degree that costs severely afflict the firm and performance starts to suffer. Performance only recovers at quite high degrees of internationalisation.

This result can be placed in the appropriate context by comparing it with other studies of emerging market and developed market firms, i.e. by performing a rough meta-analysis. The similarities and differences between this study and other studies of emerging market and developed market firms are shown in Figure 11.

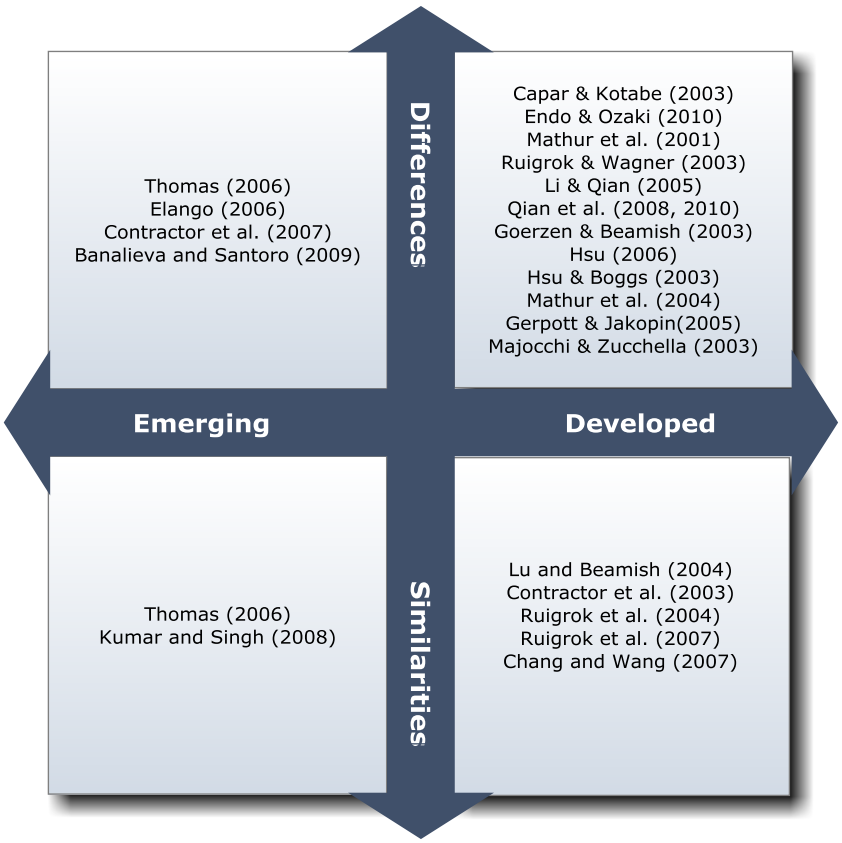


Figure 11: Similarities and differences with respect to emerging and developed markets

This rough meta-analysis indicates that the results of this study are more similar to studies of developed market firms than emerging market firms. There are more differences too, but that could be as a result of there being considerably more studies of developed market rather than emerging market firms. The *a priori* premise adopted at the beginning of this research, that results would be more closely aligned with other studies of emerging market firms, was therefore proved false.

In fact, the results indicate that South African firms are affected by internationalisation in exactly the same way as Swiss firms. The explanation postulated for this is that Switzerland and South Africa are both small open economies, and firms are forced by necessity to internationalise early and in roughly the same way to maintain competitiveness.

Hypothesis three is supported by this research, but the robustness of the research could be improved by specifying the constructs of internationalisation and performance better and by increasing the sophistication of the model.

CHAPTER 6: CONCLUSIONS, RECOMMENDATIONS AND IMPLICATIONS OF THE STUDY

6.1. Introduction

This chapter concludes the research and provides recommendations to the relevant stakeholders. The implications that arise as a result of the research are identified and finally, the report proposes suggestions for future research in this academic area.

6.2. Conclusions

Internationalisation is a business strategy that involves expanding the scope of a firm's operations beyond the borders of its home country. This strategy has been employed by many large firms from developed markets for some time now and by certain emerging market firms for a relatively shorter time. During much of this period, South African firms were confined to their home country due to the effects of apartheid, but they began a process of rapid expansion outside South Africa from the late 1990's.

The primary reason for firms internationalising is to seek out new markets, thereby obtaining greater returns, but there are a number of other ancillary reasons that can be used to justify this choice of strategy. Whether or not the expected benefits from internationalisation actually materialise is an area that has been studied for almost three decades, but up to this point, not for South African firms.

This study is one of the first to examine the relationship between the degree of internationalisation and the financial performance of South African multinationals. Eighty four multinational firms from the JSE main board were studied, all of them had international operations of a material scale.

The first hypothesis was that there is a linear relationship between the degree of internationalisation and firm performance, but it was not supported by the data. This result suggested that the financial performance of South African multinational firms did not increase linearly with their degree of internationalisation.

The second hypothesis was that there is a quadratic relationship between the degree of internationalisation and firm performance, but it was also not supported by the data. This result suggested that the financial performance of South African multinational firms did not increase curvi-linearly (quadratically) with their degree of internationalisation.

The third hypothesis was that there is a cubic relationship between the degree of internationalisation and firm performance. This hypothesis was supported by the data; the result suggested that the financial performance of South African multinational firms moved according to a cubic relationship with their degree of internationalisation.

Once all other effects (industry, region, etc.) are excluded, the contribution to performance (ROA) from internationalisation (DOI) that is 0 will be 0, or very close to it. Increases in DOI result in an increase in ROA up to the first threshold, past which ROA starts to drop rapidly until the second threshold, whereupon ROA will increase rapidly again. This can be roughly described as a sinus curve, with the three stages corresponding to the model proposed by Contractor et al. (2003) and Lu and Beamish (2004), but in the opposite direction. The results also indicate that an important moderating variable is the industry the firm operates in, while multinational firms that have operations in the Americas have financial performance superior to firms that have operations in any of the other regions.

South African firms will obtain immediate benefits from internationalisation, but once they reach a threshold of around 22%, performance starts to drop and only recovers again after about 84% internationalisation. This suggests that the ideal or most optimal degree of internationalisation for a firm that does not want to internationalise greatly is 22%. In between these two thresholds is the “gulf of

globalness", during which the firm must invest immensely to transform itself into a global player, and take a performance penalty in the meantime. The rewards for transforming themselves into a global company are copious, though.

Firms that operate in the Americas will have superior performance compared to all other firms – this means that there is no benefit to staying within the home region (SADC), or even in Africa. A firm should therefore think big and 'reach for the stars' because there is no performance gain from staying within comfortable surroundings.

South African firms seem to have more in common with developed market firms than with emerging market firms. In particular, there is a clear similitude between South African firms and Swiss firms when it comes to how their performance is affected by their degree of internationalisation, most probably because both countries are small, open economies, whose companies face similar challenges. It is perhaps a bit surprising that there is less resemblance between South African firms and other emerging market firms, but it could be an indication that South African firms are endowed with a high quality of management and an international vision that compares with the best in the world.

Despite the similarities, there are a number of differences between this research and other published research, both from emerging markets and developed markets. It is an acknowledged limitation of studies of this nature that no consensus exists on how the variables used are to be operationalized and how the internationalisation-performance model is constructed. These issues were discussed in sections 5.5.3 and 5.5.4; the approach taken in this research was to identify the most common elements and use those so as to enhance cross comparability of this study with other published studies. The robustness of the research could be improved by specifying the constructs of internationalisation and performance better and by increasing the sophistication of the model.

6.3. Recommendations

The study intended to provide guidance to professionals responsible for business strategy working within multi-national enterprises who wish to understand the optimal level of internationalisation their companies should assume. The research was also intended to provide insight to academics and students in the areas of international business and strategy formation and execution.

The results of this research reveal that performance does not increase monotonically with the degree of internationalisation adopted by the firm but instead, there is a “gulf of globalism”, which is a period of intermediate internationalisation during which performance is diminished. Businesses should either keep internationalisation below the threshold at which this effect manifests itself, or make the required capital investments to cross the gulf as quickly as possible. Businesses should also not be afraid to think big and go after far-flung markets if they offer good prospects.

From an academic standpoint, it seems clear that there are large holes in the body of knowledge of international business and international strategy in the South African context and a lot is still not properly understood. This research provides one perspective on the topic but it needs to be augmented with further research to form a foundation for informed option selection and decision making. There will be a fuller discussion of this matter in section 6.5.

6.4. Implications

The implications of this research to the business world are that having a more multinational organisation is no guarantee of success, where success is viewed as better financial performance. There are a number of other factors to consider, such as what business line the company is in and what markets did they choose to go after. It may happen that a company in the wrong business line or one with exposure to the wrong market will achieve no better results from

internationalising than a company that stayed domestic. Internationalisation is therefore not a magic 'cure all' strategy to be applied without very carefully considering everything else that affects the company.

The academic world may also imply from this research that care should be taken before assuming a close association between South African firms and other emerging market firms. The character of the formal economy from which the sample of firms was drawn for this study seems to be more closely related to certain developed market countries. A number of business processes may need to be modelled from a more Euro-centric standpoint and this has a number of implications for other social sciences studies in the field of business administration.

6.5. Suggestions for further research

There is a great deal of scope for further research in this field as there are a large number of gaps in the existing body of knowledge with regard to the internationalisation of South African firms.

Firstly, the motivation for firms choosing to internationalise is not well appreciated, neither is the means or process by which they internationalise well understood. For example, a case study by Singh (2008) on the internationalisation of MTN showed discrepancies with internalisation theory (Dunning, 1979; Hennart, 2007) and also the Uppsala model of internationalisation (Johnson & Vahlne, 1977). The study by Singh also implied numerous non-financial reasons for following the course of internationalisation in the way they did. When contrasting MTN's experience with the internationalisation experience of Vodacom, the differences are glaring and beg further study. South African companies seem to approach internationalisation largely through a trial and error process; some concepts from the existing literature based on developed markets seem to work, some don't. Therefore, a more complete body of knowledge in terms of the theory and practice of internationalisation, including a more complete set of moderator effects

(sequence, method, and scope of foreign expansion, management capability and attitudes, etc.) should be developed to support strategy development and execution when it comes to internationalisation. This study postulated that South African firms' initial expansion seems to take place in the region but this can only be confirmed as fact by collecting data on South African multi-national firms' expansion experience and researching the sequence of internationalisation more thoroughly. The author thanks Prof. Ruigrok for pointing this out.

Secondly, the implied result that South African firms do not expose themselves too much to the Southern Africa and sub-Saharan Africa regions and do not become highly reliant on these regions deserves further study. Many companies overtly state their desire to expand into Africa, and some studies have chronicled South African companies' expansion into Africa, so why would expansion into Africa result in a lower proportion of Foreign Sales to Total Sales? The relationship between regionalisation and performance therefore deserves further study.

Thirdly, this study specified the key constructs of 'degree of internationalisation' and 'firm performance' as well as the causative model relatively simply. The danger that arises from inferring results from studies when there is a difference in the specification of the variables was highlighted by Sullivan (1994b), and also showed itself to be evident in this study. Furthermore, Li and Qian (2005) showed that it was possible achieve very high predictive power from a sophisticated model with the variables specified in quite an adroit manner. The warning issued by Wiersema and Bowen (2011) on not fully understanding the complex phenomenon of internationalisation needs to be reiterated, and hence more research needs to be conducted on the best way to specify the variables used in studies of this nature, as well as how best to specify the analytical model. This would help in identifying where genuine differences exist, and where differences are just statistical artefacts.

Fourthly, the exact effects on firms through the different stages of internationalisation are not clearly known. This study has speculated somewhat on possible effects that could explain the observed behaviour, but the proposed

explanations are still largely speculation. In this respect, the calls by Hennart (2007) as well as by Verbeke, Li and Goerzen (2009) should be heeded to conduct more research on the underlying theory and realities of internationalisation and performance, and to understand the substance of the concepts more thoroughly. The suggestion by Thomas and Eden (2004) to research the effects of protectionism and anti-globalisation movements will also shed more light on this topic. This will give a clearer picture of the magnitude of the relevant effects and how they change in a dynamic process. In the intermediate stages of internationalisation where the incremental costs exceed the incremental benefits, the subsequent expansion may be taking place in much more difficult markets but this can only be confirmed or examined further by studying the individual stories of the firms' international expansion experience. The author is indebted to Prof. Contractor for this suggestion.

Lastly, it would be good to gain a firmer understanding of the reasons for the similarities and differences between this study and other studies of emerging market firms. The *a priori* assumption that South African firms would closely resemble other emerging market firms was not upheld, and this deserves further understanding; especially given South Africa's affiliation with the BRICS group of emerging markets and the widely held belief that South Africa, as an emerging market, is more similar to other emerging market countries.

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APPENDIX A: CONSISTENCY MATRIX

Table 20: Consistency matrix

Research problem: Quite frequently, the divergence between expectations and reality (with regard to the benefits and costs of multinational diversification) is not well understood, especially for South African firms.					
Sub-problem	**Literature Review**	**Hypotheses or Propositions or Research questions**	**Source of data**	**Type of data**	**Analysis**
The sub-problem is to understand to what extent internationalisation benefits or harms the financial performance of South African firms.	Contractor, Kundu & Hsu (2003) Lu & Beamish (2004) Elango (2006) Thomas (2006) Contractor, Kumar & Kundu (2007) Kumar & Singh (2008) Ruigrok, Wagner & Amann (2007)	1. There is a linear relationship between the degree of internationalisation and firm performance. 2. There is a quadratic relationship between the degree of internationalisation and firm performance. 3. There is a cubic relationship between the degree of internationalisation and firm performance.	Published financial statements in company annual reports.	Ratio data Independent variable: *Degree of Internationalisation (Foreign Sales / Total Sales)* Dependent variable: *Return on Assets*	Pooled, cross-section, time-series regression (Hsiao, 1995; Sayrs, 1989)

APPENDIX B: RESULTS OF THE STATISTICAL ANALYSIS

Analysis of the Linear Model

```
> adf.test(ROA)
        Augmented Dickey-Fuller Test
data:  ROA
Dickey-Fuller = -6.3861, Lag order = 7, p-value = 0.01
Warning message:
In adf.test(ROA) : p-value smaller than printed p-value

> adf.test(Employees)
        Augmented Dickey-Fuller Test
data:  Employees
Dickey-Fuller = -3.9077, Lag order = 7, p-value = 0.01382

> adf.test(FSTS)
        Augmented Dickey-Fuller Test
data:  FSTS
Dickey-Fuller = -9.7604, Lag order = 7, p-value = 0.01
Warning message:
In adf.test(FSTS) : p-value smaller than printed p-value

> linearmodel <- lm(ROA ~ FSTS+Employees+S1+S2+S3+S4+S5+S6+S7+S9+S10+S11+R2+R3+R4+R5+R6,mydata)
>
> #Test for autocorrelation
> dwtest(linearmodel)
        Durbin-Watson test
data:  linearmodel
DW = 2.0827, p-value = 0.7999
```

```
> vif(linearmodel)
     FSTS Employees        S1        S2        S3        S4        S5        S6
 1.519730  1.398034  2.048740  1.125858  1.641639  1.732809  1.246635  1.809023
       S7        S9       S10       S11        R2        R3        R4        R5
 1.380730  1.294213  1.845956  2.151022  1.337782  1.538364  1.953563  2.000090
       R6
 1.843673

> bptest(linearmodel)
        studentized Breusch-Pagan test
data:  linearmodel
BP = 16.2333, df = 17, p-value = 0.5074

> shapiro.test(residuals(linearmodel))
        Shapiro-Wilk normality test
data:  residuals(linearmodel)
W = 0.7615, p-value < 2.2e-16

> summary(linearmodel)
Call:
lm(formula = ROA ~ FSTS + Employees + S1 + S2 + S3 + S4 + S5 +
    S6 + S7 + S9 + S10 + S11 + R2 + R3 + R4 + R5 + R6, data = mydata)

Residuals:
     Min       1Q   Median       3Q      Max
-0.93069 -0.04324 -0.00053  0.03819  0.94654

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept)  5.781e-02  2.309e-02   2.504 0.012698 *
FSTS        -4.616e-02  3.196e-02  -1.445 0.149391
Employees   -2.134e-07  3.674e-07  -0.581 0.561623
S1           1.774e-01  2.955e-02   6.004 4.50e-09 ***
```

```
S2           1.525e-02  5.913e-02   0.258 0.796661
S3          -7.688e-03  2.739e-02  -0.281 0.779060
S4          -3.871e-02  2.748e-02  -1.409 0.159731
S5           1.085e-01  3.639e-02   2.983 0.003041 **
S6           5.599e-02  2.477e-02   2.260 0.024367 *
S7          -2.366e-02  2.951e-02  -0.802 0.423212
S9           1.885e-01  5.031e-02   3.747 0.000206 ***
S10          1.081e-01  2.544e-02   4.247 2.73e-05 ***
S11         -2.737e-02  2.419e-02  -1.131 0.258562
R2           2.228e-02  1.534e-02   1.453 0.147172
R3          -7.035e-03  1.703e-02  -0.413 0.679709
R4           1.722e-03  1.736e-02   0.099 0.921037
R5           1.560e-02  1.861e-02   0.838 0.402362
R6           3.292e-02  1.696e-02   1.941 0.052963 .
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.1238 on 380 degrees of freedom
Multiple R-squared: 0.2759,     Adjusted R-squared: 0.2435
F-statistic: 8.516 on 17 and 380 DF,  p-value: < 2.2e-16
```

Analysis of the Quadratic Model

```
> adf.test(ROA)
        Augmented Dickey-Fuller Test
data:  ROA
Dickey-Fuller = -6.3861, Lag order = 7, p-value = 0.01
Warning message:
In adf.test(ROA) : p-value smaller than printed p-value

> adf.test(Employees)
```

```
        Augmented Dickey-Fuller Test
data:  Employees
Dickey-Fuller = -3.9077, Lag order = 7, p-value = 0.01382

> adf.test(FSTS)
        Augmented Dickey-Fuller Test
data:  FSTS
Dickey-Fuller = -9.7604, Lag order = 7, p-value = 0.01
Warning message:
In adf.test(FSTS) : p-value smaller than printed p-value

> adf.test(FSTSsq)
        Augmented Dickey-Fuller Test
data:  FSTSsq
Dickey-Fuller = -9.382, Lag order = 7, p-value = 0.01
Warning message:
In adf.test(FSTSsq) : p-value smaller than printed p-value

> quadraticmodel <- lm(ROA ~
FSTS+FSTSsq+Employees+S1+S2+S3+S4+S5+S6+S7+S9+S10+S11+R2+R3+R4+R5+R6,mydata)
>
> dwtest(quadraticmodel)
        Durbin-Watson test
data:  quadraticmodel
DW = 2.0757, p-value = 0.7769

> vif(quadraticmodel)
     FSTS    FSTSsq Employees        S1        S2        S3        S4        S5
14.018341 12.472804  1.419255  2.074755  1.137377  1.656014  1.732928  1.252700
       S6        S7        S9       S10       S11        R2        R3        R4
 1.837671  1.395331  1.295465  1.847909  2.151283  1.347341  1.548068  1.999518
       R5        R6
 2.000653  1.845308
```

```
> bptest(quadraticmodel)
        studentized Breusch-Pagan test
data:  quadraticmodel
BP = 17.3297, df = 18, p-value = 0.5006

> shapiro.test(residuals(quadraticmodel))
        Shapiro-Wilk normality test
data:  residuals(quadraticmodel)
W = 0.7596, p-value < 2.2e-16
```

`> summary(quadraticmodel)`

```
Call:
lm(formula = ROA ~ FSTS + FSTSsq + Employees + S1 + S2 + S3 +
    S4 + S5 + S6 + S7 + S9 + S10 + S11 + R2 + R3 + R4 + R5 +
    R6, data = mydata)

Residuals:
     Min       1Q   Median       3Q      Max
-0.92588 -0.04229  0.00013  0.03694  0.94522

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept)  5.080e-02  2.433e-02   2.088 0.037436 *
FSTS         3.768e-02  9.708e-02   0.388 0.698110
FSTSsq      -9.669e-02  1.057e-01  -0.915 0.360922
Employees   -2.548e-07  3.702e-07  -0.688 0.491678
S1           1.804e-01  2.974e-02   6.067 3.15e-09 ***
S2           9.774e-03  5.944e-02   0.164 0.869477
S3          -1.003e-02  2.751e-02  -0.365 0.715549
S4          -3.850e-02  2.749e-02  -1.401 0.162094
S5           1.109e-01  3.648e-02   3.039 0.002542 **
```

```
S6           5.314e-02  2.497e-02   2.128 0.033987 *
S7          -2.644e-02  2.968e-02  -0.891 0.373538
S9           1.900e-01  5.035e-02   3.773 0.000187 ***
S10          1.073e-01  2.546e-02   4.214 3.14e-05 ***
S11         -2.761e-02  2.419e-02  -1.141 0.254486
R2           2.109e-02  1.540e-02   1.370 0.171486
R3          -8.273e-03  1.709e-02  -0.484 0.628513
R4          -7.139e-04  1.756e-02  -0.041 0.967599
R5           1.589e-02  1.862e-02   0.853 0.393981
R6           3.338e-02  1.697e-02   1.967 0.049885 *
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.1238 on 379 degrees of freedom
Multiple R-squared: 0.2775,     Adjusted R-squared: 0.2432
F-statistic: 8.086 on 18 and 379 DF,  p-value: < 2.2e-16
```

Analysis of the Cubic Model

```
> adf.test(ROA)
        Augmented Dickey-Fuller Test
data:  ROA
Dickey-Fuller = -6.3861, Lag order = 7, p-value = 0.01
Warning message:
In adf.test(ROA) : p-value smaller than printed p-value

> adf.test(Employees)
        Augmented Dickey-Fuller Test
data:  Employees
Dickey-Fuller = -3.9077, Lag order = 7, p-value = 0.01382
```

```
> adf.test(FSTS)
        Augmented Dickey-Fuller Test
data:  FSTS
Dickey-Fuller = -9.7604, Lag order = 7, p-value = 0.01
Warning message:
In adf.test(FSTS) : p-value smaller than printed p-value

> adf.test(FSTSsq)
        Augmented Dickey-Fuller Test
data:  FSTSsq
Dickey-Fuller = -9.382, Lag order = 7, p-value = 0.01
Warning message:
In adf.test(FSTSsq) : p-value smaller than printed p-value

> adf.test(FSTScu)
        Augmented Dickey-Fuller Test
data:  FSTScu
Dickey-Fuller = -9.0536, Lag order = 7, p-value = 0.01
Warning message:
In adf.test(FSTScu) : p-value smaller than printed p-value

> cubicmodel <- lm(ROA ~
FSTS+FSTSsq+FSTScu+Employees+S1+S2+S3+S4+S5+S6+S7+S9+S10+S11+R2+R3+R4+R5+R6,mydata)
>
> dwtest(cubicmodel)
        Durbin-Watson test
data:  cubicmodel
DW = 2.0527, p-value = 0.7002

> vif(cubicmodel)
      FSTS     FSTSsq     FSTScu  Employees         S1         S2         S3
 75.622793 404.849861 158.491209   1.427095   2.095172   1.142033   1.666938
```

```
       S4         S5         S6         S7         S9        S10        S11
 1.732930   1.290868   1.844650   1.396734   1.295467   1.848162   2.172660
       R2         R3         R4         R5         R6
 1.349235   1.558380   2.015007   2.057472   1.875478

> bptest(cubicmodel)

        studentized Breusch-Pagan test

data:  cubicmodel
BP = 17.5802, df = 19, p-value = 0.5506

> shapiro.test(residuals(cubicmodel))

        Shapiro-Wilk normality test

data:  residuals(cubicmodel)
W = 0.7729, p-value < 2.2e-16
```

Full cubic model

```
> summary(cubicmodel)

Call:
lm(formula = ROA ~ FSTS + FSTSsq + FSTScu + Employees + S1 +
    S2 + S3 + S4 + S5 + S6 + S7 + S9 + S10 + S11 + R2 + R3 +
    R4 + R5 + R6, data = mydata)

Residuals:
     Min       1Q   Median       3Q      Max
-0.90730 -0.04675 -0.00145  0.04025  0.93713
```

```
Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept)  2.396e-03  2.870e-02   0.083 0.933499
FSTS         6.602e-01  2.230e-01   2.961 0.003258 **
FSTSsq      -1.910e+00  5.956e-01  -3.208 0.001451 **
FSTScu       1.326e+00  4.287e-01   3.094 0.002125 **
Employees   -1.707e-07  3.671e-07  -0.465 0.642307
S1           1.895e-01  2.955e-02   6.411 4.31e-10 ***
S2           2.141e-02  5.890e-02   0.363 0.716464
S3          -1.687e-02  2.729e-02  -0.618 0.536938
S4          -3.841e-02  2.718e-02  -1.413 0.158502
S5           1.303e-01  3.662e-02   3.559 0.000420 ***
S6           5.784e-02  2.474e-02   2.338 0.019904 *
S7          -2.356e-02  2.936e-02  -0.802 0.422815
S9           1.901e-01  4.979e-02   3.819 0.000157 ***
S10          1.082e-01  2.518e-02   4.297 2.20e-05 ***
S11         -2.023e-02  2.404e-02  -0.842 0.400580
R2           2.286e-02  1.524e-02   1.500 0.134351
R3          -1.254e-02  1.695e-02  -0.740 0.459948
R4           4.015e-03  1.744e-02   0.230 0.817998
R5           2.548e-02  1.867e-02   1.365 0.173040
R6           2.675e-02  1.692e-02   1.581 0.114732
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.1225 on 378 degrees of freedom
Multiple R-squared: 0.2953,     Adjusted R-squared: 0.2599
F-statistic: 8.337 on 19 and 378 DF,  p-value: < 2.2e-16
```

Cubic model, essential form

```
> summary(cubicmodel)

Call:
lm(formula = ROA ~ FSTS + FSTSsq + FSTScu + S1 + S5 + S6 + S9 +
    S10 + R5, data = mydata)

Residuals:
     Min       1Q   Median       3Q      Max
-0.92761 -0.04902 -0.00519  0.04320  0.96003

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept) -0.002249   0.021152  -0.106 0.915373
FSTS         0.724002   0.213803   3.386 0.000781 ***
FSTSsq      -2.083248   0.571744  -3.644 0.000305 ***
FSTScu       1.450045   0.409861   3.538 0.000452 ***
S1           0.207348   0.022532   9.202  < 2e-16 ***
S5           0.153744   0.033281   4.620 5.24e-06 ***
S6           0.073716   0.019013   3.877 0.000124 ***
S9           0.194469   0.044803   4.341 1.82e-05 ***
S10          0.120910   0.019197   6.298 8.17e-10 ***
R5           0.045379   0.014831   3.060 0.002368 **
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.1223 on 388 degrees of freedom
Multiple R-squared: 0.2788,     Adjusted R-squared: 0.2621
F-statistic: 16.67 on 9 and 388 DF,  p-value: < 2.2e-16
```

Cubic model with Employees logged

```
> summary(cubicmodel)

Call:
lm(formula = ROA ~ FSTS + FSTSsq + FSTScu + EmployeesLog + S1 +
    S5 + S6 + S9 + S10 + R5, data = mydata)

Residuals:
     Min       1Q   Median       3Q      Max
-0.92571 -0.04858 -0.00416  0.04302  0.96130

Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)   0.008357   0.039160   0.213 0.831131
FSTS          0.714540   0.216058   3.307 0.001031 **
FSTSsq       -2.051670   0.580747  -3.533 0.000461 ***
FSTScu        1.425726   0.417230   3.417 0.000700 ***
EmployeesLog -0.001269   0.003941  -0.322 0.747653
S1            0.209868   0.023877   8.790  < 2e-16 ***
S5            0.154209   0.033351   4.624 5.14e-06 ***
S6            0.074378   0.019145   3.885 0.000120 ***
S9            0.195627   0.044999   4.347 1.76e-05 ***
S10           0.121431   0.019288   6.296 8.31e-10 ***
R5            0.045902   0.014936   3.073 0.002268 **
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.1224 on 387 degrees of freedom
Multiple R-squared: 0.279,      Adjusted R-squared: 0.2604
F-statistic: 14.98 on 10 and 387 DF,  p-value: < 2.2e-16
```

Hausman test for endogeneity

```
> zFSTS <-
lm(FSTS~lag(FSTScu)+Employees+S1+S2+S3+S4+S5+S6+S7+S8+S9+S10+R1+R2+R3+R4+R5+R6,mydata)
> zFSTSfit <- zFSTS$fitted.values
> zFSTSres <- zFSTS$residuals
> summary(zFSTS)

Call:
lm(formula = FSTS ~ lag(FSTScu) + Employees + S1 + S2 + S3 +
    S4 + S5 + S6 + S7 + S8 + S9 + S10 + R1 + R2 + R3 + R4 + R5 +
    R6, data = mydata)

Residuals:
     Min       1Q   Median       3Q      Max
-0.20773 -0.06565 -0.00243  0.05765  0.25251

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept)  8.673e-02  2.528e-02   3.430 0.000669 ***
lag(FSTScu)  1.054e+00  3.182e-02  33.122  < 2e-16 ***
Employees    1.172e-06  2.942e-07   3.984 8.12e-05 ***
S1          -8.517e-02  2.319e-02  -3.673 0.000274 ***
S2           8.365e-02  4.784e-02   1.749 0.081179 .
S3           5.687e-02  2.294e-02   2.479 0.013622 *
S4          -3.951e-02  2.198e-02  -1.797 0.073110 .
S5          -1.782e-02  3.096e-02  -0.576 0.565208
S6           4.373e-02  2.045e-02   2.138 0.033125 *
S7           3.166e-02  2.443e-02   1.296 0.195740
S8          -1.685e-02  1.969e-02  -0.856 0.392637
S9          -6.455e-02  4.110e-02  -1.571 0.117093
S10         -1.268e-02  2.055e-02  -0.617 0.537646
```

```
R1           4.404e-02  1.984e-02   2.220 0.027000 *
R2          -1.583e-03  1.336e-02  -0.119 0.905718
R3           1.542e-02  1.393e-02   1.107 0.269018
R4           6.569e-02  1.413e-02   4.649 4.62e-06 ***
R5           3.647e-02  1.522e-02   2.397 0.017032 *
R6           5.925e-04  1.373e-02   0.043 0.965601
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.1 on 379 degrees of freedom
Multiple R-squared: 0.8339,     Adjusted R-squared: 0.826
F-statistic: 105.7 on 18 and 379 DF,  p-value: < 2.2e-16

> zROA <- lm(ROA ~ FSTS+FSTSsq+FSTScu+S1+S5+S6+S9+S10+R5+zFSTSres,mydata)
> summary(zROA)

Call:
lm(formula = ROA ~ FSTS + FSTSsq + FSTScu + S1 + S5 + S6 + S9 +
    S10 + R5 + zFSTSres, data = mydata)

Residuals:
     Min       1Q   Median       3Q      Max
-0.92765 -0.04946 -0.00384  0.04266  0.95898

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept) -0.01166    0.02958  -0.394 0.693732
FSTS         0.77735    0.24398   3.186 0.001559 **
FSTSsq      -2.07832    0.57243  -3.631 0.000321 ***
FSTScu       1.38711    0.43293   3.204 0.001468 **
S1           0.21239    0.02512   8.454 5.79e-16 ***
S5           0.15528    0.03348   4.637 4.84e-06 ***
S6           0.07249    0.01922   3.771 0.000188 ***
```

```
S9           0.20057    0.04681   4.285 2.31e-05 ***
S10          0.12129    0.01924   6.306 7.84e-10 ***
R5           0.04167    0.01694   2.460 0.014327 *
zFSTSres    -0.06731    0.14779  -0.455 0.649065
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.1224 on 387 degrees of freedom
Multiple R-squared: 0.2792,     Adjusted R-squared: 0.2606
F-statistic: 14.99 on 10 and 387 DF,  p-value: < 2.2e-16
```