

Resources, Strategy and Performance in the Smaller Firm

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Regards,

Ryan Candy

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Abstract

This study investigates the relationship between firm resources, positioning strategies and performance in the smaller firm. Porter's generic strategies have been useful in describing how firms compete in the marketplace, and the resource based view has shown that resources can lead to a sustained competitive advantage. The strategic management field has begun to combine the two theories and examine the link between them. Small firms must make the best use of their relatively scarce resources. It is proposed that the relationship between resources and performance is contingent upon the positioning strategy the firm competes on, although there has only been limited supporting research to date. This research builds on work by Edelman et al. (2005) by examining the relationship between human, organisational and physical resources, and the strategies of quality/ customer service, innovation, and cost leadership in 447 retail, engineering, and professional service firms in New Zealand.

Using Structural Equations Modelling this research finds that positioning strategies are the mechanism by which firms can leverage their resources into higher performance. This relationship can be modelled as mediated or moderated, with statistical analysis sensitive to model complexity. The firm's environment influences this relationship with different resources required to support each position depending on the industry. Specifically human, organisational, and physical resources appear to be viable sources of competitive advantage when they are leveraged by a strategy of quality/ customer service, innovation or cost leadership when the industry environment is conducive to the resource – strategy combination.

Abbreviations

RESOURCES:

BSKL: BUSINESS SKILLS
ISKL: INTERPERSONAL SKILLS
ORES: ORGANISATIONAL RESOURCES
PRES: PHYSICAL RESOURCES
HR: HUMAN RESOURCES

STRATEGIES:

Q/CS: QUALITY/ CUSTOMER SERVICE STRATEGY
INN: INNOVATION STRATEGY
COST: COST LEADERSHIP STRATEGY

PERFORMANCE MEASURES:

PCOM: COMPARISON TO INDUSTRY PERFORMANCE
PCUR: CURRENT PERFORMANCE
PFTR: EXPECTATION OF FUTURE PERFORMANCE

CONTROL VARIABLES:

FTE: FULL TIME EQUIVALENT EMPLOYEES

Chapter One

- Introduction

1.0 Introduction

This chapter presents an overview of the thesis. I provide a brief background to my research, present the primary research questions, and explain the theoretical and practical importance of this study. The methodology is introduced, followed by an outline of the thesis and limitations of the research.

1.0.1 Background to the research

The field of strategic management is organised around one central research question: “Why do some firms persistently outperform others?” Many theories have risen to contribute to explaining why some firms do outperform others, both for short periods of time, and for longer more sustainable periods. Two theories at the forefront of research are that of Porter’s (Porter, 1980; 1985) industry positioning and generic strategies and that of the resource based view (RBV) (Barney, 1991; Penrose, 1959; Wernerfelt, 1984). Each of these theories looks at how a firm can come to have a competitive advantage over their competitors allowing them to reward stakeholders with superior performance.

Prior to the 1990s the link between firm resources and the market strategies they pursued appeared to be an important part of strategic theory, in fact a major premise was that strategy represents the approach a firm uses to align resources in pursuit of market opportunities in a way that creates a sustainable competitive advantage (De Castro and Chrisman, 1995). This link however appears to have disappeared at a time when both resource based theory and generic positioning strategy theory have developed to a stage where they are relatively robust and complete, allowing a greater understanding of how the firm may achieve a sustainable competitive advantage, through combining the essential elements of each theory. These theories may have become somewhat disparate due to the inclination of *ceteris paribus* assumptions, which help researchers to conceptually advance and demonstrate theories. Without this concept theories can become overly complex and therefore hard to conceptualise and test. Further the concept of fit is inherently multidimensional and not easily captured by simple bivariate statements (Becker and Huselid, 2006; Zajac et al., 2000) making research crossing between the two theories difficult without modern statistical techniques and packages.

Market positioning strategies have been shown to play a part in firm performance in some instances (Darrow et al., 2001; Dess and Davis, 1984; Edelman et al., 2005; Murray, 1988), however positioning strategies do not always appear to be associated with above average performance (see Campbell-Hunt (2000) for an in depth analysis of past research). A basic assumption of resource based work is that the resource bundles and capabilities underlying production are heterogeneous across firms (Barney, 1991; Peteraf, 1993). Some resources are superior to others, firms endowed with such resources are able to produce more economically and/ or better satisfy customer wants (Peteraf, 1993). Previous studies have shown that firm resources are associated with firm performance (Edelman et al., 2005; Schroeder et al., 2002; Wright et al., 1995).

This research will combine the two theories and investigate how the firms' strategy can be used to leverage firm resources, by examining how the fit between firms' resources and strategy affects firm performance. It will also provide further empirical evidence on the usefulness of both Porter's generic strategies (Porter, 1980; 1985) and the resource based view (Barney, 1991; Peteraf and Barney, 2003; Wernerfelt, 1984) as explanations of smaller firm performance.

This thesis focuses on smaller firms with less than 100 employees who, lacking the resources of large firms, must make the best use of their limited resources. For the small firm to survive it often has to compete against larger more powerful competitors. However the smaller firm has advantages too for instance entrepreneurial spirit and output flexibility. For the smaller firm to perform to its highest potential then it must use its limited resources in the most effective way possible, and the best way to do this is to ensure that its external strategy leverages these resources in the most effective manner.

Small to medium enterprises make up the largest section of the New Zealand (NZ) economy with 97% of enterprises employing 19 or fewer people (Development, 2008). This characteristic is also reflected in many other economies. These firms account for 31% of total employment (Development, 2008) and because of their prominence in the

NZ economy, the economy's fate is intertwined with the success of smaller firms. New Zealand also offers the relatively rare opportunity to study these firms as it has one of the most open economies in the world, this means that, smaller firms who survive are surviving because they are effective and not because they are supported by government intervention. This research also takes the opportunity to focus on smaller firms as although most strategic theory is applicable to the smaller firm, the majority of research has focused on larger firms.

Strategy encompasses not just the cumulative policies and resources of a firm but the common thread of logic that links them together into a coherent and consistent whole (Andrews, 1971; Ansoff, 1965). Whilst there are numerous definitions of strategy, the following demonstrates the importance that has historically been placed on fit between resources, strategies, environment (opportunities/ threats) and performance;

“a strategy describes the fundamental characteristics of the match that an organisation achieves amongst its skills and resources and the opportunities and threats in its external environment that enables it to achieve its goals and objectives” (Chrisman et al., 1988, p. 414).

This thesis tests the proposition that the resource based and generic positioning theories are most effective when used in unison as oppose to using them as alternative explanations of the same outcome. While both theories explain how a firm can come to achieve a competitive advantage, they approach this from different sides of the same coin. Porter's generic strategies approach the argument from the market positioning side, but partly ignore the role of firm specific resources and capabilities. To Porter resources and capabilities are themselves a consequence of positioning strategies and the environment of the firm (Porter, 1991). While on the other hand the RBV fails to explain how these unique resources can be leveraged in the marketplace to achieve a competitive advantage. Some authors support the view that the two theories being largely the RBV and generic positioning strategies are in fact complimentary; ‘there are overlaps among the strategy components, for example Hofer and Schendels distinctive competencies

describes the internal organisational skills and resources that determine the external competitive weapons (Porter, 1980) that organisations use to obtain competitive advantage' (Chrisman et al., 1988, p. 415). By combining these two theories we can gain a fuller understanding of performance differences in smaller firms.

1.0.2 Research questions

The research questions are as follows:

“Are positioning strategies consistently associated with higher performance across industries?”

“Are resources consistently associated with higher firm performance?”

“Does the degree of fit between firm resources and market positioning strategy influence the performance of smaller firms?”

“Is the resource – strategy – performance relationship dependant on industry or environmental factors?”

1.0.3 Justification for the research

Prior research has shown separately that both the resources the firm has and the strategy it pursues affect the overall performance of the firm. While the link between matching firm strategy with the external environment has been examined thoroughly (for instance see Murray (1988) or Carpano and Chrisman (1995)), the influence of the match between the resources the firm has and the strategy it pursues has not. This research will fill this gap by building on the work of Chandler and Hanks (1994) and Edelman et al. (2005) examining the impact of fit between a firm's resources and the strategy it pursues. This research extends the work of Edelman et al. (2005) by testing a greater number of strategic alternatives across multiple industries, allowing a finer grained analysis of the resource – strategy – performance relationship including environmental effects, and so increasing the generalisability of any findings.

This research will contribute to industry practice, providing guidance for the small firm as to which strategies are most likely to lead to higher performance, and which resources they should concentrate on building; helping them to increase effectiveness and profitability, providing greater returns to the owners and greater growth to the economy.

1.04 Methodology

This study applies a deductive research design to investigate the effects firm resources and strategies have on performance in smaller firms. The resources of interest are physical resources, human capital resources and organisational resources, whilst the positioning strategies of interest are low cost, quality/ customer service and innovation.

A quantitative research design was employed. This design was delivered through the use of a mail-based survey based on Edelman et al.'s (2005) survey. The questionnaire comprised of select response item scales as well as quantitative performance information. A mail based survey was used due to the volume of responses required.

In this study Structural Equations Modelling (SEM) is used to examine the effect of firm resources and positioning strategies on performance. The use of SEM in the field of organisational research is relatively new, although gaining in popularity. The majority of studies tend to employ case study, multiple regression or factor analysis techniques. SEM as a technique is very popular in the psychology literature and presents a number of distinct advantages over traditional first-order statistical techniques. These advantages are briefly discussed in the following section and detailed in chapter 3.

There are four advantages of using SEM common in the literature (Byrne, 2001; Hair et al., 1995):

- 1) SEM allows the researcher to test the validity of the measures in the context of what they are supposed to predict/explain;
- 2) SEM allows variables to be grouped into latent variables, as opposed to modelling singularly;

- 3) SEM acknowledges measurement error. This becomes more important when using latent variables that cannot be measured directly and therefore cannot be assumed to be measured with perfect accuracy; and
- 4) SEM places an emphasis on model fit, and allows the researcher to explore the possible relationships between variables, as opposed to multiple regression which focuses only on the significance of the relationships between variables as modelled.

1.0.5 Outline of the report

The next chapter provides a review of the literature related to the resource based and generic positioning strategy theories. This includes each theory being described in the context of this thesis; a discussion of each theory's contribution to explaining firm performance; and the concept of 'fit' is discussed.

The third chapter provides a review of the research methodology: including the design of the study instrument, the sample, administration of the survey, limitations of the methodology and the statistical analysis techniques used for data analysis.

The fourth chapter presents the initial empirical results of this thesis. This includes an overview of the research measure and analysis techniques used, a summary of descriptive statistics and correlations between variables, and the presentation, evaluation and discussion of the Edelman et al.'s (2005) structural model based on the samples in this study.

The fifth chapter presents, evaluates and discusses the structural models based on the hypotheses of this study for the aggregate sample.

Chapter six presents, evaluates, and discusses the structural models specific to each industry based on the hypotheses of this study, and presents a brief conclusion on the analysis process.

Chapter seven details the findings of this study relating to each of the hypotheses.

The final chapter of this thesis presents the conclusions and implications of the results. Conclusions related to the research are presented, insights into the general research questions are discussed, implications for theory and practice are identified and future areas for research are outlined.

1.0.6 Limitations

There are a number of limitations related to this thesis. These are related to both the methodology and the primary research questions. On the research questions, this research is primarily interested in financial performance of the firm, specifically current and expected future financial performance. This is only one way to define firm performance and firms could be considered successful on a number of other measures like employment creation, survival, or meeting the lifestyle needs of the owner. Second, due to the emphasis on financial performance not-for-profit firms were not surveyed. Finally the sample consisted only of smaller firms operating in New Zealand. The selection of performance measures and population of interest restricts somewhat the generalisations to other groups of firms. The methodological limitations of this thesis are discussed in chapter three. This includes a thorough discussion and justification of the unit of analysis and its limitations.

Chapter Two

- Literature Review

2.0 Literature Review

In this chapter, I will provide a review of the literature related to the resource based view and generic positioning strategy theories, including the concept of ‘fit’ between resources and the market positioning strategies. Each of these will be discussed in separate subsections. These subsections discuss the theory, related research and the specific hypotheses relating to each theory. The final section of this chapter presents a hypothesised structural model based around these hypotheses.

2.0.1 Overview of the key theories

Porter’s generic strategy theories (Porter, 1980; 1985) gained huge popularity in the literature as the predominant theory of how a firm competed in the marketplace, and how it was able to achieve a competitive advantage through competing on the basis of either cost, differentiation or focus. Porter saw the value chain of activities as an integral part of how a firm came to achieve a competitive advantage (Porter, 1985).

The modern RBV has built on the work of Penrose (1959), and has become popular as a theory that describes how a firm may come to obtain a *sustainable* competitive advantage after the work of Wernerfelt (1984) and Barney (1991). Barney describes the difference between a competitive advantage and a sustainable competitive advantage as:

“A firm is said to have a competitive advantage when it is implementing a value creating strategy not simultaneously being implemented by any current or potential competitors.

A firm is said to have a sustainable competitive advantage when it is implementing a value creating strategy not simultaneously being implemented by any current or potential competitors and when these other firms are unable to duplicate the benefits of this strategy” (Barney, 1991, p. 102)

2.1 Porters Generic Strategies

The generic positioning strategy theory was introduced in Porter’s (1980) text *Competitive Strategy*. This model prescribes where in the industry a firm should position

itself, the choice of positioning determining whether the firm's profitability is above or below the industry's average. Porter (1980; 1985) outlined that there are only two types of competitive advantage a firm could have, overall cost leadership or differentiation, and these determine a firm's ability to cope with industry forces better than its rivals. These two types of competitive advantage can be achieved in three ways, hence the three generic strategies of: cost leadership, differentiation and focus. Cost leadership and differentiation involve competing in a broad range of industry segments while focus involves competing in a narrow segment. The small firm is less able to compete with larger firms on the basis of unit cost because it lacks the pre-requisites of economies of scale or learning curve effects based on cumulative output.

2.1.1 The generic strategies

The generic strategies can be considered in terms of an absolute market position, or as a strategic dimension with various levels of strategic emphasis along a continuum.

When pursuing a cost leadership strategy the firm seeks to be *the* low cost producer in its industry. The firm has broad scope and serves many industry segments and will often be diversified across industries (Porter, 1985). The sources of achieving the cost advantage are varied but the main reasons are economies of scale, proprietary technology, and preferential access to raw materials. The firm cannot ignore differentiation aspects of their product or service because failing to reach an acceptable level of 'differentiation' even for these low cost producers will lead to subnormal profits.

With a differentiation strategy a firm seeks to be unique in its industry in some way that is valued by customers. The firm identifies a product/ service attribute that is valued by customers and positions itself to meet this need. This allows the firm to charge a premium price for its products and earn above average profits. Differentiation can come from many different areas other than products; it can also come from support services such as dealer networks or marketing campaigns. The cost of differentiation needs to be less than the price premium that can be charged in order to lead to above average profits (Porter, 1980, 1985, 1991)

The Focus strategy has two variants in that a firm can either aim to have a cost or a differentiation advantage in particular market segments; either way the firm only serves a narrow segment of the market. These target segments must be different to that of the rest of the market either through unusual needs or through a different production and delivery system that best serves this segment of the market. Markets can be segmented by a variety of factors, for instance geographical features, different needs and different preferences. To gain an advantage in this focused segment the firm must do something better than its competitors to meet the needs of the customer (Porter, 1980, 1985).

Porter states that “a firm that engages in each of the generic strategies but fails to achieve any of them is ‘stuck in the middle.’ It possesses no competitive advantage” (1985, p. 16). If they do not set their competitive priorities and stick with them then they will be outperformed by competition on both aspects; cost and differentiation, and hence their sales and profits will be lower than the average. However in research it has been found that on average ‘stuck in the middle’ firms can be more profitable (Miller and Dess, 1993), or that a balance must be struck with how differentiated the firm is (Deephouse, 1999). Whilst this research does not specifically set out to examine this issue, the researcher treats the generic strategies as non competing strategic dimensions, with no examination of the role that ‘stuck in the middle or ‘all rounder’ strategies have on the relationship between firm strategy and performance.

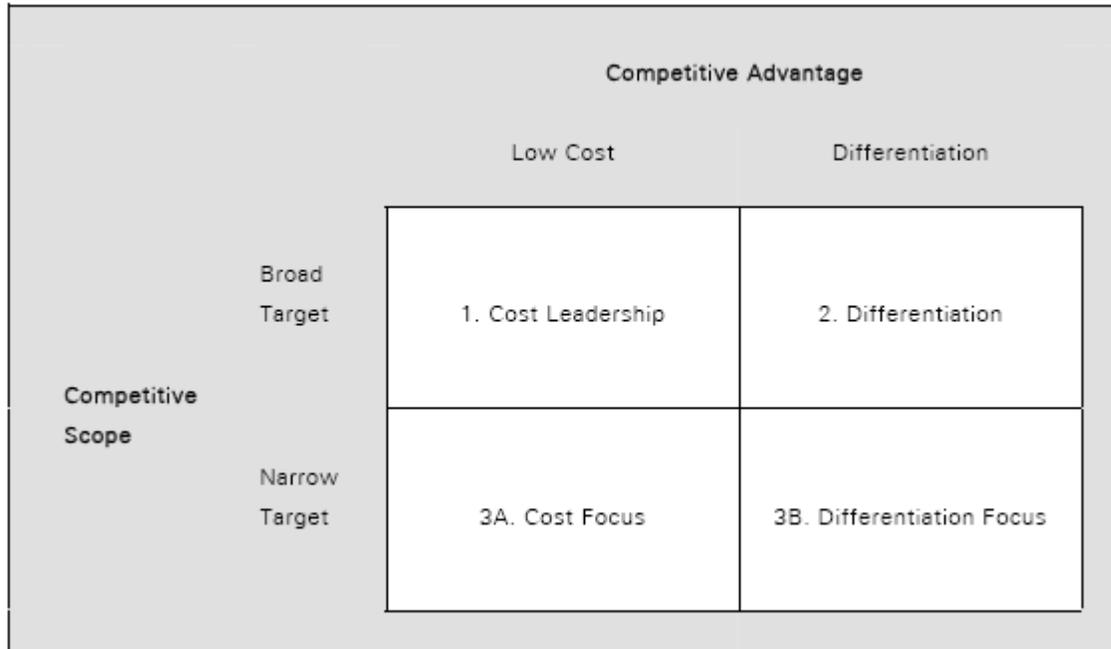


Figure 1 (source, Porter, 1985, p. 12)

2.1.2 Research on generic strategies influence on performance

Porter’s generic strategies have generally been found to be effective in explaining firm behaviour with extensive support in the strategy literature. The smaller firm is most often prescribed to compete on a focus strategy, especially a differentiation focus strategy as it does not have the necessary economies of scale to compete on cost (Beal, 2000; Kean et al., 1998)

Darrow et al. (2001) found that the generic strategies were useful in explaining how small hardware stores competed against their larger rivals. They found that small firms in the industry could survive by following a niche strategy and emphasising customer service. Kao went further by arguing that “if there is no niche or gap, there is no hope for the firm’s survival and prosperity” (Kao, 1981, p. 62)

However whilst there has been some support for smaller firms competing on a focus strategy, some studies have shown that the small firm may be able to compete head on with larger competitors (Cooper et al., 1986). Lee et al. (1999) found that as well as following a niche strategy firms could ‘free-ride’ on larger firms’ market development

efforts by producing identical products, or they can form strategic alliances to increase their capabilities and to force bigger rivals to accommodate them in the industry.

Beal (2000) states that smaller firms should only compete on a differentiation basis as they are too small to pursue a cost leadership strategy. He identified four possible differentiation strategies; innovation, service, marketing and quality differentiation. It has been suggested that small firms should compete on differentiation and focus strategies as they can adapt faster and stay in close contact with customers, whereas they lack the economies of scale to compete on a cost leadership strategy (Kean et al., 1998). It is common for smaller firms to compete on aspects of a differentiation strategy such as innovation, marketing or service. (Amboise, 1993)

Deepphouse (1999) looked at how differentiated a firm should be from those in the rest of the industry. He proposed that by being similar a firm benefits because it is seen as legitimate, and by being different (highly differentiated) a firm benefits because it faces less competition. He found that a balance must be struck: the firm should differentiate to face less competition but it should not differentiate too much or it loses legitimacy. The best performing firms were those who were as different as was legitimately possible.

The strategy of choice is related to the order of market entry with pioneers more likely to pursue a differentiation strategy, and followers a cost leadership strategy (De Castro and Chrisman, 1995).

Campbell-Hunt (2000) supported Porter's theories in that competitive dimensions of cost and differentiation played a high level role in discriminating between the many possible designs of competitive strategy. However he found no evidence to support that any generic competitive strategy was more profitable than any other. Campbell-Hunt (2000) also tried to discover how managers actually operationalised the strategies of cost and differentiation. From cluster analysis of the results from many different studies he found six clusters or meta-designs of competitive strategy. He found that the cluster of innovation and operations leadership emphasised high prices, new products, specialty

products, manufacturing innovation and operating efficiency. The cost economy cluster gained economies through advertising, low prices, and new products. The Focused quality economy cluster gained economies through reputation, low prices, product quality, service quality, product focus, and customer focus. The sales leadership cluster emphasised advertising, promotion, sales force, new products, and gained economies through a product focus. The broad quality and sales leadership cluster emphasised promotion, sales force, service quality, as well as product and customer breadth. The final cluster of focused quality leadership emphasised high prices, and product and service quality. It gained economies through a product and customer focus. He concluded that only one meta-design showed significantly above average levels of performance: those firms following a strategy of innovation and operations leadership have higher than average odds of superior financial performance (Campbell-Hunt, 2000).

Some studies have shown that contrary to Porter's own assertion, his generic strategies are not mutually exclusive, with firms competing on multiple dimensions not necessarily performing worse than comparison firms (Amboise, 1993; Dess et al., 1999). Dess and Davis (1984) supported Porter's theory that commitment to a generic strategy would result in higher performance than if the firm fails to develop a generic strategy becoming 'stuck-in-the-middle'. The study was done in the Paints industry, in which they found being the overall low cost leader had the highest return on assets. There was however a large number of firms pursuing a differentiation strategy, which may have eroded the firm's ability to earn as high a level of performance as other less populated strategic groups. The firms which pursued a focus strategy had the highest growth rate of all the strategic groups, although they had the lowest level of return on assets, illustrating a possible trade-off between short-term profitability and growth.

Campbell-Hunt (2000) found no evidence to support that any generic competitive strategy was more profitable than any other. This included 'stuck in the middle' strategies which he found to be just as profitable as any other strategy, he advocated that instead of labelling this strategy 'stuck in the middle' it should be labelled an 'all rounder strategy'. Stuck in the middle strategies may even be preferable in some situations (Chrisman, et

al., 1988; Murray, 1988), however this success is likely to rely on environmental (Sandberg, 1986) or resource related factors (Chrisman and Boulton, 1992). Miller (1992) asserts that 'utility' strategies competing on both cost and differentiation aspects should be effective when there is no conflict between quality and low price, when industries are mature, and when it is difficult to be distinctive on cost or differentiation aspects.

Although the generic strategies have been found to be generally effective in explaining firm competitive behaviour, their link to performance appears less consistent with prior research showing that no strategy consistently outperforms any other including stuck in the middle strategies (Campbell-Hunt, 2000). Spanos and Lioukas (2001) found that following generic strategies as in Porter's framework influences market based measures of performance such as market share, absolute sales volume and increases in market share and sales for manufacturing firms, however they did not find that strategies influenced profitability. Their research also indicated that both industry and firm asset effects also contribute to firm success, and that generic strategies were a pre-requisite for above normal performance.

Whilst no strategy appears to consistently lead to superior financial performance, this does not mean that following positioning strategies does not enhance performance. There are several possible reasons for this:

Theoretically there should be limited space for firms competing on any one position on the strategy dimensions, with each firm likely to earn 'average' returns, with no strategy appearing superior. However if more firms competed on cost, they would compete away any higher than average profits, making it probable that differentiation would appear to be a more profitable strategy. Even though both strategies are viable, the free will of competitors in an industry may make a market position more profitable. It is only when more firms are following a strategy than what proportionally and economically (normal returns) should be that one strategy should appear to work better than others in an industry.

In statistical analysis, many firms are essentially aggregated, with high performers and low performers competing on a particular strategy concealing the performance effects. A particular strategy may deliver superior profits for a firm in question due to resource, or environmental effects, which are not consistent across all firms in a study.

Firms which do not compete on any positioning dimension may fail, and therefore not be available for analysis in research.

2.1.3 Hypotheses

Porter saw strategy as the way the firm could position itself in its industry compared to its rivals. He proposed that the firm should position itself as either the cost leader, or it should focus on differentiating itself. Alternatively the firm could focus on meeting the needs of a particular niche. In this research the generic strategies were considered to be strategic dimensions as in Campbell-Hunt (2000). Whist research has shown that no strategy consistently outperforms any other (Campbell-Hunt, 2000), the generic strategies have been shown to discriminate between how firms compete, and several studies have found positive associations between following a generic strategy and firm performance. Therefore

H1: Porter's generic strategies are positively associated with firm performance

2.1.4 Specific positioning strategies

The specific strategies that are tested in this thesis are; the differentiation strategies of quality/ customer service, and innovation, and the cost leadership strategy. Whether a firm was following a focus strategy was not investigated.

2.1.5 Quality/customer service

The size of a smaller firm is said to give it significant advantages in flexibility; allowing it to respond better to changes in consumer demand, tastes, and patterns (Acs and Audretsch, 1993). Similarly niche marketing and output flexibility have been found to be a source of significant competitive advantage for small firms (Fiegenbaum and

Karnani, 1991). It has also been suggested that ventures located downstream in the supply chain should compete on customer loyalty to better compete with larger more cost efficient competitors (Carter et al., 1994). Chandler and Hanks (1994) found that a quality/ customer service strategy was associated with firm growth and Edelman et al. (2005) found that a quality/ customer service strategy enhanced firm performance. Research has also indicated that the key to success in smaller sized growing firms is product/ service quality and “passionate” responsiveness to customers (Hills and Narayana, 1989). Therefore:

H2: A strategy of quality/ customer service is positively associated with firm performance

2.1.6 Innovation

Innovation is often touted as a small firm’s most likely successful strategy, where their nimbleness compared to the largest firms gives it a distinct advantage. Small firms may foster flexibility and innovation, however resource constraints may prevent these firms from following cost or other differentiation strategies (Wickland, 1999). Innovation is also associated with growth with more innovative small firms adding more employees (Acs and Audretsch, 1993). Small firms competing in hostile environments perform better if they utilize advanced process technologies, and pursue product and market innovations (Covin et al., 2000). Therefore I propose:

H3: A strategy of innovation is positively associated with firm performance

2.1.7 Cost Leadership

Whilst small firm research generally proposes that smaller sized firms should not compete on unit cost due to their inherent lack of economies of scale, some small firms, particularly service based, may compete on this basis because of their lower overheads, or sweat equity. The small firm may be able to compete on the basis of cost leadership in a narrow competitive scope (Porter, 1980; 1985). In a market where there are few customers with high buying power, cost leadership may be a viable competitive strategy (Chandler and Hanks, 1994). Chandler and Hanks (1994) found that having resource

based capabilities supportive of a cost leadership strategy enhanced the firm's level of performance while following this strategy. Therefore it is proposed:

H4: A strategy of cost leadership is positively associated with firm performance

2.2 The resource based view

2.2.1 Overview

The modern RBV, built on the work of Penrose (1959) proposes the long term competitiveness of a company depends on its endowments of resources that differentiate it from its competitors, that are durable and are difficult to imitate and substitute (Peteraf, 1993; Rangone, 1999). According to Barney (1991) a *sustainable* competitive advantage was due to differences in resources allowing a firm to pursue different strategies and cope with environmental pressures better than its rivals. The RBV does not consider all resources possessed by a company, but focuses only on critical or strategic resources i.e. those that are the basis of the company's sustainable competitive advantage (Rangone, 1999). That is not to say other resources are not important, these other resources may be required for the firm to be viable, however due to their nature they are not able to provide the firm with the basis for long term above average performance from a sustainable competitive advantage.

A basic assumption of resource based work is that the resource bundles and capabilities underlying production are heterogeneous across firms (Barney, 1991; Peteraf, 1993). It is an efficiency based explanation of performance differences, rather than one relying purely on market power, collusion, or 'strategic' behaviours (Barney, 1991; Peteraf and Barney, 2003). Some resources are superior to others, these superior resources are more 'efficient' in the sense that they enable a firm to produce more economically and/ or better satisfy customer wants, i.e. maximum benefits produced for the dollar spent (Peteraf, 1993; Peteraf and Barney, 2003). Other levels of analysis attribute performance outcomes more directly to external factors, such as market structure, institutional factors,

or strategic interactions rather than to internal or enterprise level factors (Peteraf and Barney, 2003).

In order for a resource to lead to a sustainable competitive advantage it must be; valuable, rare, imperfectly imitable, and non substitutable. A series of tests have been proposed to ascertain if a resource could lead to a sustainable competitive advantage (Barney, 1991; 2001; Peteraf, 1993; Rangone, 1999; Wernerfelt, 1984), the most important of these are:

- Competitive superiority test. A resource must be able to differentiate a firm from its competitors. This differentiation is in the form of enabling the firm to produce more 'efficiently', not as a generic strategy position;
- Imitability test. Competitors must not be able to imitate the resource, typically a resource cannot be imitated due to; physical uniqueness, path dependency, causal ambiguity, or economic deterrence;
- Duration test. The resources benefits must continue to be generated in the long term;
- Appropriability test. The firm owning the resource must be able to exploit the generated advantages in the marketplace, and;
- Substitutability test. Competitors must not be able to replace the resource with an alternative that gives the same advantages.

If a resource meets all of these tests then it is possible that the resource could lead to a sustainable competitive advantage, however it is not enough that the firm could exploit the resource, they must actually exploit the resource for it to lead to a competitive advantage.

The RBV argues that a firm should base its strategy on its internal resources and capabilities for two reasons. First the organisation has little control over the pace of external change; this being especially true for smaller firms which have less market power. Secondly models to analyse the external environment are common knowledge making it harder for firms to gain a unique position based on the external aspects (Gibcus

and Kemp, 2003). It is more useful for firms to concentrate on their internal resources, because resource advantages are more robust against market changes allowing the firm to compete across external changes which is increasingly important in today's turbulent modern economic environment. Resources that are valuable, rare, non-imitable and non-substitutable allow a firm to have unique product-market combinations (Barney, 1991) that give superior value to customers in either differentiation or cost, leading to a competitive advantage in the market. Superior resources will allow the firm to provide greater value to customers, if competing firms cannot provide as higher value to customers then the firm has a sustained competitive advantage, leading to higher performance in both market based performance (market share) and financial based performance (return on investment).

Resources are commonly classified in multiple ways; divided into homogenous classes, such as physical capital resources, human capital resources, organisation capital resources (Barney, 1991), social capital of the entrepreneur or manager, and financial capital (Lichtenstein and Brush, 1997). Classified as tangible resources like financial, physical, and human resources, or intangible such as reputation, organisational know how and others. Alternatively resources can be split between assets and skills, where assets are something the firm possesses, brands and land etc, and skills are things the firm is able to do i.e. advertising or efficient manufacturing (Rangone, 1999).

Whilst the RBV demonstrates the strategic value to the firm of superior resources, it appears to have an emphasis on recognising existing strategic resources rather than the development of those strategic assets (Becker and Huselid, 2006). This could be partially due to the breadth of possible firm resources, and the various fields of research and theory specialising in increasing firm resources e.g. human resources management, organisational behaviour and finance.

Rangone (1999) suggested that an endowment of critical resources cannot be directly related to a firm's financial performance, as this also depends on the structure and

attractiveness of the industry in which the firm competes, and the ability of the company to translate resources into capabilities and subsequently competitive advantage.

2.2.2 Research on firm resources influence on performance

The RBV is still a relatively new theory in strategic management and has been criticised as being hard to test empirically (Priem and Butler, 2001). There has however been a growing amount of research in the strategic management literature investigating firm resources influence on performance. The challenge in testing the RBV is identifying and measuring the most critical resources of firms (Hitt et al., 2001) i.e. those that can lead to a sustainable competitive advantage.

The predominant stream of research has centred on human resources, which is due to the ability to build a *sustained* competitive advantage due to the difficulties in imitating this complex resource (Dierickx and Cool, 1989). Human resources are a resource that management of the firm can develop into a competitive advantage within capital constraints; it is unlikely that management could purchase better physical assets on the factor market, without the price premium negating the impact of any achieved advantage. Management can impact on the level of human resources through human resource management practices and systems, which although not leading directly to firm performance, influence firm human resources i.e. capital or employee behaviours, which can be suggested to lead directly to performance (Wright et al., 1994). Huselid et al. (1997) found a relationship between a firm's human resource management capabilities and the performance of the firm.

Competition may be beneficial in developing firm resources with Barnett et al.(1994) finding that firms with previous experience of high competition had built capabilities to deal with this, and performed better than firms which had led 'sheltered' existences. Other studies have proposed that relatedness of assets is even more important than market relatedness (Farjoun, 1998; Markides and Williamson, 1994).

Schroeder et al.'s (2002) examination of performance in manufacturing firms from a RBV perspective found that one source of competitive advantage in manufacturing arose from proprietary processes and equipment, which in turn, is driven by internal and external learning. They argued that this source of competitive advantage was more likely to be sustainable than standard equipment and employees with generic skills as these are available on the factor market and are thus imitable. They argued that following 'best practice' for example (Wheelwright and Bowen, 1996) could only result in competitive parity, not competitive advantage.

Resource advantages are not consistently related to superior performance. Ray et al. (2004) propose that the reason why there has been so much difficulty in empirically showing resource advantages relating to above average performance is because whilst the firm may have resource advantages in some areas these are cancelled out by the resource disadvantages in other areas, hence traditional testing of performance has failed to show the link between resource advantages and performance. They proposed that alternatively performance should be measured at the business process level, thereby capturing the true effect of the resource advantage/ disadvantage. Ray et al. (2004) then went on to find that resource advantages were related to more efficient business processes, but not necessarily performance.

2.2.3 Hypotheses

The RBV shows that unique firm resources can lead to a competitive advantage; research has shown the resources in some situations are related to higher firm performance. Therefore:

H5: Resources are positively associated with firm performance

2.2.4 Specific resources measured

Firm resources include all assets, capabilities, organisational processes, firm attributes, information, knowledge, etc. controlled by a firm that enable the firm to conceive of and implement strategies that improve efficiency and effectiveness (Daft,

1983). There are many possible categorisations of resources; this research will focus on three broad areas which the management of the smaller firm arguably has the most control over;

Physical Capital Resources: these are made up of; technology, plant and equipment, geographic locations and access to raw materials.

Human Capital Resources: these are made up of; training, experience, judgement, intelligence, relationships and insights of individual managers and workers.

Organisational Capital Resources: these are made up of; formal reporting structure, formal and informal planning, controlling, and coordinating systems, as well as the firms informal relations among groups within a firm and those in its environment.

2.2.5 Human Resources

The term ‘human capital resources’ covers a broad range of resources relating to the collective worth of the individual members of the organisation in terms of the skills or competencies they have (made up of education, experience, inherent ability, etc) and the effort (commitment and motivation) they apply. It is widely recognised human resources can be an important source of a sustainable competitive advantage (Delery, 1998; Pfeffer, 1994; Prahalad, 1983; Youndt et al., 1996). Human resources rather than physical resources may even be the ultimate determinant of organizational performance in today’s global business environment (Pfeffer, 1994; Reich, 1991; Wright et al., 1995)

The field of strategic human resource management (SHRM) looks at how this type of resource can be developed to give a competitive advantage. The resource is of primary interest due to the resources ability to contribute to sustained competitive advantage, and the manager’s ability to influence this variable, vs. physical resources which are most likely constrained by financial/capital resources. It is widely accepted in the SRHM literature that HR practices don’t impact directly on performance, but rather impact by influencing resources such as human capital (Becker and Huselid, 2006; Delery, 1998).

Research has shown that human resources are a significant source of competitive advantage, and for the small firm this may be even more so. Therefore:

H6: Greater levels of human resources are positively associated with firm performance

2.2.6 Organisational Resources

Organisational capital resources refer to the; formal reporting structure, formal and informal planning, controlling, and coordinating systems, as well as the firm's informal relations among groups within a firm and those in its environment (Daft, 1983). In an entrepreneurial business, organisational resources include the employees' expertise, systems and policies (Ropo and Hunt, 1995), management systems (Brush and Chaganti, 1999), and the culture and employee skills of the firm (Dollinger, 1995). Edelman et al. (2005) found that higher levels of organisational resources when combined with a strategy of quality/ customer service were positively associated with firm performance. Organisational resources enable the firm to coordinate its resource base to work towards the same goals and enable continuous improvement through organisational learning, therefore

H7: Greater levels of organisational resources are positively associated with firm performance

2.2.7 Physical Resources

These are made up of; technology, plant and equipment, geographic locations and access to raw materials (Daft, 1983). Specific resources tested; plant equipment and production facilities, geographic location, and access to raw materials. Schroeder et al.'s (2002) examination of performance in manufacturing firms found that one source of competitive advantage in manufacturing arose from proprietary processes and equipment. Physical resources are used in the production of goods and services, and superior physical resources allow the firm to produce goods or services more effectively than their competition. Therefore:

H8: Greater levels of physical resources are positively associated with firm performance

2.3 Fit between resources and positioning strategy

2.3.1 Overview

The notion of fit has been explored since Chandler (1962) asserted a firm's strategy, structure and managerial processes must fit with one another. Both Porter (Porter, 1980; 1985) and Barney (1991) in their seminal works on generic positioning strategies and the resource based view alluded that resources and positioning strategy work with each other, with resources seen as supporting a firm's ability to pursue a strategy successfully; for instance preferential access to raw materials supporting a cost leadership strategy (Porter, 1985), or alternatively with superior resources limiting a firm's competitor's ability to duplicate their strategy (Barney, 1991). The IO economics based generic positioning based theory assumes homogeneity across firm resources and heterogeneity amongst firm positions in the market, whereas resource based theory takes external factors (market positioning and industry conditions) as a constant given for the purpose of sharpening and facilitating its theory (Peteraf and Barney, 2003).

Although it has not gained much attention in the literature, a central tenant of the RBV is that the value of resources is in enabling the firm to successfully implement a strategy "it is important to recognise that the productivity of superior resources depends upon the nature of their employment and the skill with which a strategy based on resource superiority is implemented" (Peteraf, 1993, p. 185). Resource based theory is not a substitute for industry level analytic tools, such as 5-forces analysis (Porter, 1980) and game theory. Rather it is a complement to these tools (Peteraf and Barney, 2003). The significance of any strength or weakness a firm has is ultimately a function of how it impacts the strategic dimensions of differentiation or cost (Gibcus and Kemp, 2003; Porter, 1991). If a resource meets all of the tests of the RBV then it may be the source of a sustainable competitive advantage however, to actually lead to a competitive advantage it must be consistent with the firm's strategic intent (Rangone, 1999). The fit between the firm's competencies and strategy plays an integral part of Miles and Snow's (1978)

strategy typology; *Prospectors* typically have decentralised decision making, and the coordination and communication structure is simple. *Defenders* emphasise tight control with decision making dominated by experts of financial and production problems. Whereas *analysers* tend to emphasise formal planning processes. According to Becker and Huselid (2006) strategic human resource management has relied on the implication that an appropriate match between the HR architecture and strategic choice (for example Porter's positioning strategies) results in effective implementation.

On inductive and experiential grounds students and practitioners argue that the fit between strategy, structure and managerial processes is an important component in organisational performance, however whilst we have made progress in understanding strategy and structure, we have not made headway in understanding the relationships between them (Milgrom and Roberts, 1995). Milgrom and Roberts (1995) suggested that this could be explored using the notion of *Edgeworth complements* and *lattice theory*. Activities are Edgeworth complements if doing one (more of) any one of them increases the return of doing (more of) the others.

It is overly simplistic to consider the 'levels' of analysis of resources, positioning strategy, and industry separately, and a contingency approach must be undertaken. The RBV helps us to understand what resources may help the firm to achieve a sustainable competitive advantage; however it does not explain how these resources can translate into a competitive advantage. Porter's generic positioning strategies can be used to explain how these resources can translate into a specific competitive advantage in the marketplace considering the external market factors. Specifically for a resource to lead to a competitive advantage it has to help the firm perform on one of Porter's competitive dimensions of cost or differentiation in a way valued by the industry's customers. Without helping the firm to compete on cost or differentiation the resource advantage does not pass the competitive superiority or appropriability tests.

Barney (1986) argued that the economic performance of firms depends not only on the returns from their strategies but also on the cost of implementing those strategies.

Without imperfections in strategic factor markets, where the resources necessary to implement strategies are acquired, firms can only hope for normal returns. This is due to firms competing away above normal profits by trying to gain the same position.

The notion of fit is developing in the strategic human resource literature, as discussed in an earlier section HRM practices are not seen to directly impact on firm performance, rather they influence resources such as human capital or employee behaviours which are seen to ultimately lead to performance (Wright et al., 1994). Alternatively Becker and Huselid (2006) argue that it is the fit between the HR architecture and the strategic capabilities and business processes that implement strategy that is the basis of HR's contribution to competitive advantage. However very few researchers appear to have measured the mediators or adequately addressed their importance (Becker and Huselid, 2006; Delery, 1998).

2.3.2 Research on fit between firm resources and positioning strategy

Although fit is recognised as “one of the most widely shared and enduring assumptions in the strategy literature, there has been very little research on the subject, either empirically or theoretically in recent years” (Zajac et al., 2000, p. 429). The reason behind this declining attention to fit is the nature of the concept. It is inherently multidimensional and not easily captured by simple bivariate statements (Becker and Huselid, 2006; Zajac et al., 2000). Research on the performance effects of the degree of fit between resources and strategy is rare, with inconsistent results. Several studies have provided limited support to the positive performance implications of a theoretical match between resources and positioning strategy.

Access to a greater resource base increases the likelihood that cost leadership and differentiation strategies will be more advantageous than a focus strategy for larger firms. Greater access to raw materials, technology, economies of scale, and distribution channels permit the larger firm, with superior resources, to offer a standardised product to reach a broader range of market segments (Kean et al., 1998).

Carpano and Chrisman (1995) found no relationship between a firm's international market strategy, the internal integration of its marketing activities and performance as return on investment. Likewise Brush and Chaganti (1999) found no interaction between strategy and resources with respect to firm performance.

Youndt et al. (1996) found a quality manufacturing strategy to moderate the effects of human capital enhancing HR systems effect on performance. They argued that the main effect of human capital HR systems on performance is predominantly contingent on the linkage with a quality manufacturing strategy. Whilst this study only looked at HR systems relationship with strategy in the manufacturing industry it does give strong support to the argument that 'fit' between resources and strategy plays an important role in firm performance. Hitt et al. (2001) found support for human capital impacting both directly and indirectly on performance in the professional services industry. Human capital directly impacted on firm's performance but was also found to moderate the firms' geographic and service diversification strategies.

Using case studies to support their theory Schuler and Jackson (1987) proposed that the effectiveness of human resource management practices depends on the strategy the firm tries to pursue: strategies were more likely to be consistent if the human resource practices encourage behaviours that are consistent with the strategy. Role behaviours that emphasised risk taking were deemed an appropriate fit with an innovation strategy (Schuler and Jackson, 1987).

There are two main studies which specifically look at the relationship between 'fitting' strategies to resources, in the context of resource based and generic position strategy theories, these are by Chandler and Hanks (1994), and Edelman et al. (2005).

Chandler and Hanks (1994) hypothesised that a 'fit' between the firm's strategies and their resource-based capabilities would be related to venture performance. They found mixed results in that while this hypothesis was not supported in all cases the firm's specific resource based capabilities were related to the firm's stated competitive strategy

in two out of the three generic strategies. Resource-based capabilities supportive of a cost leadership strategy enhanced the level of performance while following this strategy. Also performance appeared to be positively influenced following a product or service quality differentiation strategy when resources were supportive of this strategy. They concluded that that both market attractiveness and the overall abundance of resource-based capabilities were related to venture performance.

Edelman et al. (2005) argued that the firm strategy was a mediating mechanism through which resources lead to firm performance. They tested two distinct strategies; one of quality and customer service and one of innovation. They found that human and organisational resources in combination with a strategy of quality and customer service enhanced firm performance (refer figure 2). No other strategic combinations showed a significant relationship with performance. Their research suggests that there is a relationship between the profitability of the firm and the ‘fit’ between the firm’s resources and the strategy it pursues.

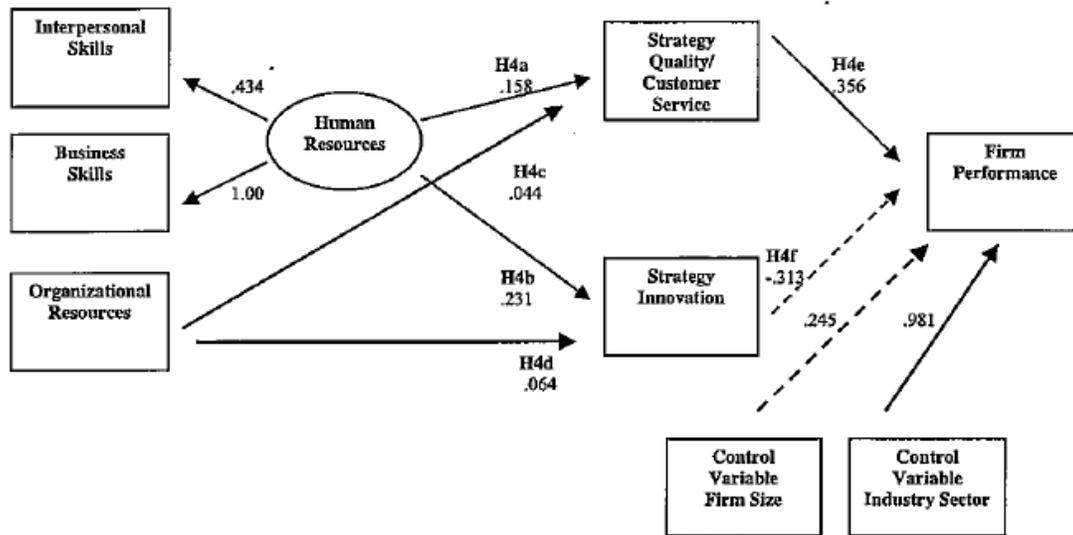


Figure 2 (source, Edelman et al., 2005, p.375)

These two studies by Chandler and Hanks (1994) and Edelman et al. (2005) confirm that the fit between resources and positioning strategy plays an important role in enhancing

firm performance. This gives support to strategies operating as the mechanism in which firm resources are leveraged into a competitive advantage in the market and superior firm performance. These studies both had limitations, therefore further research is required to further investigate the role of 'fit' across industries using multiple methods of performance.

Edelman et al.'s (2005) sample was exclusively of 'the economic core' rather than fast growth high technology firms. Whilst the differentiation positioning strategies of quality/customer service and innovation were tested, the cost leadership strategy was excluded from the analysis due to low internal validity of the measurement scale. In this sort of market conditions are unlikely to be as conducive to the success of an innovation strategy even though many firms may compete on this basis. Cost leadership may have been a more appropriate strategy due to the typical maturity of the economic core industries, where cost may be a major competitive factor. It is necessary to investigate the relationships under multiple industry conditions where alternative resource and positioning strategies may be important in explaining firm performance.

The performance measure used a log in the increase of return on sales percentage (ROS). This measure may favour differentiation strategies where typically the firm may receive a higher margin on sales. Whilst competing on cost does not mean reducing the margin on goods sold (Porter, 1980) in reality firms may lower their margin to beat competitors on price, with the aim of increasing sales to achieve higher net profits. Using a ROS performance measure a 'differentiator' may be seen to perform better than a cost leader even though both are making identical returns to their owners. However the alternative profitability measure of return on assets (ROA) also has a flaw; small firms in particular may substitute labour for physical assets such as machinery. This will affect the ratio of net profit to assets because lower asset values are recorded. Even though net profit should be similar to firms following either option due to the depreciation on the assets roughly equalling (given a rational decision) the alternative of wages. The performance measure used disadvantages firms that had high performance at the start of the period; therefore interpretation is limited to resource strategy combinations that have improved firm

performance, not necessarily current firm performance. Measuring multiple measures of performance would increase the robustness of findings.

2.3.3 Conceptualisations of 'fit'

Venkataraman (1989) proposed co-alignment or fit could be conceptualised in six different ways; moderation, mediation, matching, gestalts, profile deviation and covariation. A brief description of each will be provided:

Moderation has been the most commonly applied operationalisation of fit or coalignment as illustrated by Schoonhoven's (1981, p. 351) statement that "when contingency theorists assert that there is a relationship between two variables... which predicts a third variable, they are stating that an *interaction* exists between the first two variables (emphasis added). In this research strategy could be modelled to moderate the impact firm resources have on performance. That is the impact that a resource has on performance is dependent on the level of a strategy.

Mediation specifies the existence of a significant intervening mechanism (strategy) between a predictor variable (resources) and the dependant variable (performance). The mediator variable accounts for a significant proportion of the relationship between the predictor variable and the dependant variable (Edelman et al., 2005). Mediation offers some important benefits over moderation. Mediation represents the generative mechanism through which the independent variable is able to influence the dependant variable of interest (Baron and Kenny, 1986). Mediation can either be full or partial; full mediation is the strongest test, indicating that the presence of the mediator variable is necessary for a significant relationship between the independent and dependant variables. In this research mediation would mean firm strategies are necessary for firm resources to lead to increased firm performance. Partial mediation implies that a direct relationship exists between the independent and dependant variables, as well as an indirect relationship that includes a mediating variable. For example in this research partial mediation would suggest that there is a direct relationship between resources and

performance, as well as strategy playing an important role in translating superior resources into superior performance.

Fit as matching is conceptualised by two variables that match theoretically, independent of any performance variable, although subsequently the effect on a performance variable could be investigated.

Gestalts are defined in terms of the degree of internal coherence among a set of theoretical attributes. The role of gestalts is described by Miller, “Instead of looking at a few variables or at linear associations among such variables we should be trying to find frequently recurring clusters of attributes or gestalts” (Miller, 1981, p. 5).

In the profile deviation perspective, fit is the degree of adherence to an externally specified profile. For instance in this research high levels of physical resources and a cost leadership strategy are expected to lead to superior performance, any deviation from this resource-strategy coalignment profile would be expected to result in a negative impact on performance

With covariation fit is determined by the level of internal consistency amongst a set of theoretically related variables. If the resource – strategy – performance relationship was modelled as covariation in this research then the levels of the resources and strategies would load onto a factor which in turn is modelled to be related to performance.

Alternatively from the economics perspective fit can also be modelled using Edgeworths complements and lattice theory (Milgrom and Roberts, 1995). Activities are Edgeworth complement if doing one (more of) any one of them increases the return of doing (more of) the others. Milgrom and Roberts discuss the logic behind Edgeworth compliments using the example of lean manufacturing.

In the context of this study mediation is the strongest test of the resource-strategy-performance relationship. Therefore the possible relationships will in the first instance be

modelled with strategy mediating resources relationship with performance. Should the modelling of this relationship not illustrate acceptable fit, the relationship will be tested with strategy moderating the resource-performance relationship. Strategy has been chosen to mediate or moderate resources relationship with performance due the researcher deeming the relatively fixed human capital of the owner/manager to the most likely source of competitive advantage for the smaller firm. Alternatively resources could be seen to mediate or moderate the firms strategies effects on performance, see for example Hitt, Bierman et al. (2001). Whether strategies mediate or moderate the resource-performance relationship or whether resources mediate or moderate the strategy-performance relationship is largely just an academic issue. In practice the important point of significant findings would be that the fit of resources and strategy matters, not the statistical way in which the relationship is modelled. The researcher however would argue that in a smaller firm where the most likely source of sustained competitive advantage is the owner/manager who has relatively fixed human capital, the owner manager should choose a strategy that complements the strengths and mitigates the weaknesses of their resources in an environment that is conducive to maximise their firm's performance.

2.3.4 Hypotheses

Following Edelman et al. (2005), it is proposed that strategies are the means through which superior resources are leveraged to achieve a sustainable competitive advantage and increase firm performance. For a strategy to leverage the resources of a firm to achieve the highest performance possible then it must make the best use of them. For instance if a firm has resources (of any type) that are better at making a low cost product than a differentiated product then the most appropriate strategy will be one in which they aim to produce low cost product. If their strategy is to produce a highly differentiated product for instance on the basis of innovation then they will be outperformed by firms whose resources are simply better at innovation. For instance these other firms may have more innovative staff, and more flexible machines. Therefore I propose:

H9: Strategies impact on the relationship between resources and firm performance (Resources and strategies are positively associated with firm performance)

Mediation specifies the existence of a significant intervening mechanism (strategy) between a predictor variable (resources) and the dependant variable (performance) (Edelman et al., 2005). Mediation represents the generative mechanism through which the independent variable is able to influence the dependant variable of interest (Baron and Kenny, 1986). Mediation is the strongest test of the resource-strategy-performance relationship. Therefore:

H10: Strategies play a mediating role on the relationship between resources and firm performance

The impact of human resources on firm performance may be enhanced when practices are matched with the requirements of a firm's strategy (Miles and Snow, 1978). If a firm's approach to competition depends on, or makes use of, the talents and capabilities of employees, then HR practices would have an impact on performance, otherwise the connection between HR and performance would be minimal (Youndt et al., 1996). Investment in human capital (e.g. knowledge of customers, suppliers, and products) is positively related to the economic performance and profitability of small retail and service firms (Gimeno-Gascon et al., 1997), moreover Edelman et al. (2005) found that human resources combined with a quality/ customer service strategy were associated with firm performance. Therefore:

H11: Greater levels of human resources combined with a strategy of quality/ customer service are positively associated with firm performance

Companies pursuing an innovation strategy need creative and innovative employees, long-term contact with customers, and strong marketing and technical skills (Chandler and Hanks, 1994). Because entrepreneurial strategy is defined by agility, creativity, and continuous innovation (Covin and Slevin, 1990) it is likely that superior human resources

will be associated with innovation strategies. Bantel and Jackson (1989) found a relationship between the top management team education and functional expertise and level of innovation. Therefore:

H12: Greater levels of human resources combined with a strategy of innovation are positively associated with firm performance

Human resources enable the firm to combine resources and continuously improve processes to produce products or services in the most efficient manner. Human capital enhancing systems are associated with higher employee productivity (Youndt et al., 1996) Human resources are a key part of Deming waste reduction philosophies (Deming, 1986). Therefore:

H13: Greater levels of human resources combined with a strategy of cost leadership are positively associated with firm performance

Organisational resources in the form of management systems, skills of employees, and routines are essential in providing quality customer service. Chandler and Hanks (1994) found a positive relationship between resource-based capabilities measured in terms of employee training and their expertise in providing superior customer service. Edelman et al. (2005) found that organisational resources in combination with a quality/ customer service strategy were positively related with firm performance. Therefore:

H14: Greater levels of organisational resources combined with a strategy of quality/ customer service are positively associated with firm performance

Whilst structure and formality are thought to stifle creativity and innovation, the development of systems, routines and policies appear to have a positive impact on a strategy of innovation (Edelman et al. , 2005). Innovation strategies are supported by investment in research and development, obtaining copyrights, product upgrades, and other means of intellectual capital protection (Zahra and Bogner, 2000). Higher levels of

organisational resources, such as training of employees and their expertise, are also associated with a strategy of innovation (Chandler and Hanks, 1994). Edelman et al. (2005) also found a significant relationship between organisational resources and innovation. Therefore:

H15: Greater levels of organisational resources combined with a strategy of innovation are positively associated with firm performance

Organisational resources including processes and systems provide the structure within which continuous cost control and reduction can take place (Deming, 1986). Expertise in process technology developing highly efficient production and information system also helps the firm to achieve a cost leadership competitive advantage (Chandler and Hanks, 1994). Therefore:

H16: Greater levels of organisational resources combined with a strategy of cost leadership are positively associated with firm performance

Superior physical resources in the production environment provide the ability to produce goods of a higher or more consistent quality. Superior physical resources also can aid in superior customer service, for instance the firm location may be more accessible to customers. An abundance of physical resources may also enable customer needs to be met in a more timely fashion than competitors. Therefore:

H17: Greater levels of physical resources combined with a strategy of quality/ customer service are positively associated with firm performance

Romanelli (1989) argues that the ability to innovate depends on resource abundance. More flexible machinery for instance may enable the firm to introduce new lines at a lower cost than competitors, giving them an advantage and greater incentive to launch new products, or to change production processes. Therefore:

H18: Greater levels of physical resources combined with a strategy of innovation are positively associated with firm performance

A greater level of physical resources, for instance more sophisticated machinery, allow the firm to produce goods and services more efficiently, giving the producer a cost advantage they can choose to exploit in the market. Whilst superior physical resources are generally seen as the domain of large companies, for instance see (Beal, 2000; Kean et al., 1998) in some industries firm size may not be related to the superiority of physical resources. Therefore:

H19: Greater levels of physical resources combined with a strategy of cost leadership are positively associated with firm performance

A key strength in the resource based view and generic positioning strategies is that the theories are equally useful in explaining firm behaviour and likely performance across many different industries. Superior human, organisational and physical resources are considered likely to be associated with above average performance in each of the industries studied, as are the strategies of quality/ customer service, innovation and cost leadership. That is superior resources and strategies should enhance firm performance in all industries. Therefore

H20: The association between resources, strategies and firm performance will be consistent across industries

2.4 Hypothesised Model

Based on the hypotheses presented in this chapter, two models have been created to represent these relationships. These models will be tested against the data set using SEM. The first model (figure 3) shows the relationship between resources, strategy and performance using a fully mediated approach for the aggregate industry sample; note covariance lines have not been included in the diagram to simplify presentation. The second model (figure 4) presents the relationship between resources strategy and

performance for the specific industries. Once again no covariance lines are shown to aid presentation.

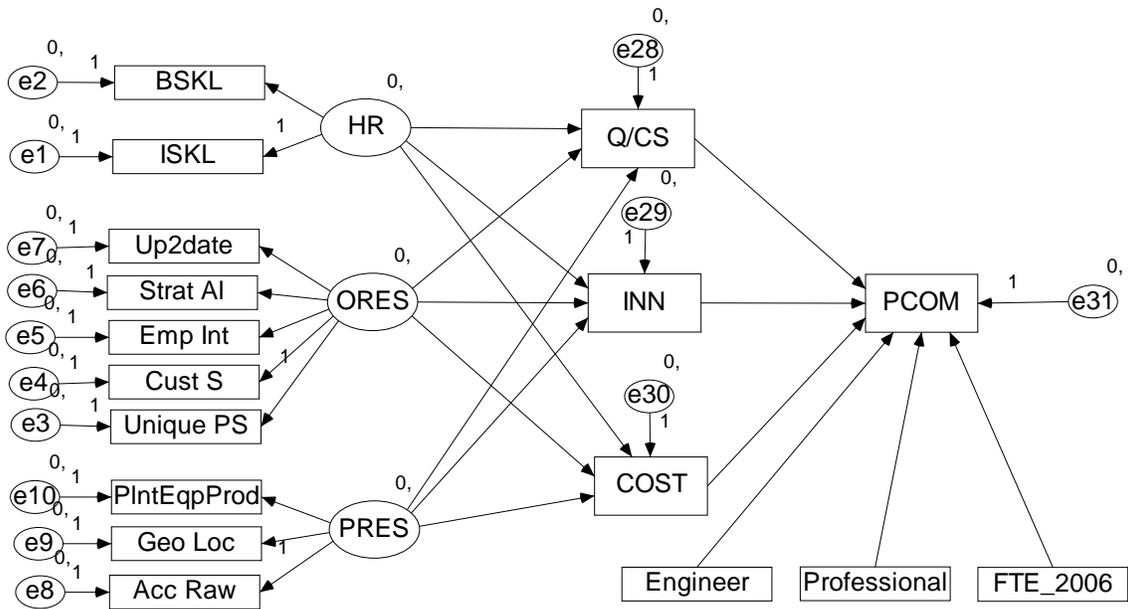


Figure 3: Hypothesised Model (Aggregate Sample)

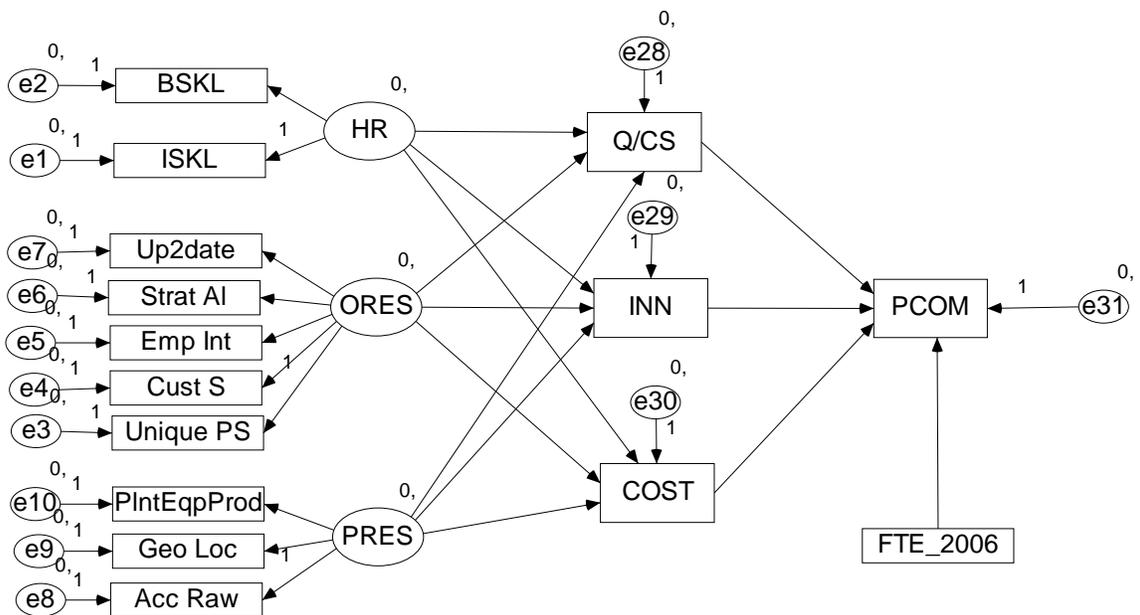


Figure 4: Hypothesised Model (Industry Specific Sample)

Chapter Three

- Methodology

3.0 Methodology

This chapter provides a review of the research methodology: including the design of the study instrument, the sample, and the administration of the survey. The limitations of the methodology are also identified and rationalised and the statistical analysis techniques selected for data analysis are detailed and justified.

This study applies a deductive research design to investigate particular effects firm resources and strategies have on organisational performance in smaller firms. The resources of interest are physical resources, human capital resources and organisational resources, whilst the positioning strategies of interest are low cost, quality/ customer service and innovation. A quantitative research design was employed. This design was delivered through the use of a mail-based survey comprising select response item scales as well as quantitative performance information. A mail based survey was used due to the volume of responses required.

3.1 Study Instrument

Structural Equations Modelling will be used to examine the relationship between resources of the firm, the strategy it pursues and performance. Three types of resources will be tested; physical capital resources, human capital resources, and organisational resources as in Barney (1991). Each construct was measured using a number of variables to ensure reliability. These variables are adapted primarily from Edelman et al. (2005) and Chandler and Hanks (1994). The strategies tested will be low cost (Chandler and Hanks, 1994), quality/customer service, and innovation (Edelman et al., 2005). Adapting the study instruments used by Edelman et al. (2005) and Chandler and Hanks (1994) has several advantages; it enables direct comparisons between this research and those studies, the items have proven internal reliability and the items have proved acceptable in tapping the constructs. The following sections discuss the development of the sub scales and other questions. The survey instrument (Appendix A) comprises of six item subscales, three demographic questions, and five questions in relation to organisational performance.

3.1.1 Measurement of human resources

Following Edelman et al. (2005) human resources comprised two distinctive attributes; business skills, and interpersonal skills. These were chosen as they represent unique and inimitable managerial talent that is not perfectly mobile (Edelman et al., 2005). The owner/managers level of human capital resource was measured as in the small firm the owner manager is likely to be the main source of human capital due to the predominant role they play as often the main if not only significant decision maker (Edelman et al., 2005; Walley, 2007). Both business and interpersonal skills variables were developed from Edelman et al. (2005) and measured using a five point Likert scale. The specific business skills variables tested were: problem analysis, problem solving, writing ability, and oral presentation skills. The specific interpersonal skills tested were; team building, team management, motivating employees, and developing personal business relationships.

3.1.2 Measurement of organisational capital resources

Organisational capital resources refer to the; formal reporting structure, formal and informal planning, controlling, and coordinating systems, as well as the firms informal relations among groups within a firm and those in its environment (Daft, 1983). Organisational capital resources are notoriously hard to measure due to their complexity, therefore several aspects were measured to use as a surrogate measure, specifically; up to date equipment and computer technologies, strategic alliances and linkages, employees with international experience, customer service capabilities, and unique products and services. These were developed from Edelman et al. (2005) and were measured using a five point Likert scale.

3.1.3 Measurement of physical capital resources

Physical capital resources are made up of; technology, plant and equipment, geographic locations and access to raw materials (Daft, 1983). Items were developed from Chandler and Hanks (1994) and were measured also using a five point Likert scale. The specific resources tested were; plant equipment and production facilities, geographic location, and access to raw materials.

3.1.4 Measurement of quality/ customer service

Porter (1980; 1985) saw strategy as the way the firm sought to position itself in its industry of choice compared to its rivals. He theoretically proposed that the firm should position itself as either the cost leader, or it should focus on differentiating itself. Alternatively the firm could focus on meeting the needs of a particular niche. In this research the generic strategies were considered to be strategic dimensions as in Campbell-Hunt (2000) as opposed to absolute positions.

The quality/ customer service items were developed from Edelman et al. (2005). Four distinctive components were measured using a five point likert scale; the firm's emphasis on quality control, satisfaction of customer needs, high quality products/service, and superior customer service.

3.1.5 Measurement of innovation

Innovation is often touted as a small firm's most likely successful strategy, where their nimbleness compared to the largest firms gives it a distinct advantage. The research item was developed from Edelman et al. (2005), the specific variables tested on a five point likert scale were; product/service development/innovation, innovative marketing, and technological superiority.

3.1.6 Measurement of cost leadership

While small firm research generally proposes that smaller firms should not compete on cost due to their inherent lack of economies of scale, some small firms may compete on this basis. This variable lacked internal reliability in Edelman et al. (2005) and was therefore excluded from analysis, however it is an important strategic option that must be considered. Chandler and Hanks (1994) found that having resource based capabilities supportive of a cost leadership strategy enhanced the firm's level of performance while following this strategy. The items were developed from Edelman et al. (2005) and Chandler and Hanks (1994). Specific variables tested using a five point Likert scale were the firm's emphasis on; cost reductions in all facets of business, improvement

of employee productivity and operations efficiency, and developing lower costs through process innovation.

3.1.7 Measurement of performance

Multiple dependant variables were chosen to measure the performance of the firm in different ways. Profitability was measured by two different ratios; return on sales and return on assets, use of both measures reduces the inherent weaknesses in each. In addition future expectations of performance were measured by asking whether the firms return on assets and return on sales percentages were likely to decrease, stay the same, or increase. To complement these measures, the managing director/ owner was asked to subjectively rate the performance of the firm compared to others in their industry. Subjective measures have been shown to be good approximates of objective measures (Bommer et al., 1995) and do not encounter many of the problems of accounting based measures. The use of multiple measures allows comparisons and increases the robustness of results.

3.2 Research sample

The population of interest for this research are smaller New Zealand firms. This population was selected due to its prominence and importance in the New Zealand economy, illustrated by 97% of firms employing 19 or fewer people, and accounting for 31% of total employment (Development, 2008). The smaller firm was also of interest to study the effect of strategy beyond the typical large firm with the open economic environment of New Zealand also providing an excellent opportunity to study these firms in the absence of significant government intervention.

Three industries were surveyed to allow cross industry comparisons and to broaden the bases of strategy research beyond manufacturing firms; engineering, professional services, and retail. The professional services industry consisted of firms in the following areas; accounting, finance companies, consultants, and services, insurance brokers and agents, and business consultants. These industries were chosen for their ability to generate a large sample size and because they cover a diverse range of business activities.

The firms from the engineering and professional services industries were sampled from the *New Zealand Business Who's Who directory (NZBWW, 2005)*, with 500 firms chosen randomly from each industry. The retail firm sample was selected from the *Kompass international directory (2006)*. To be selected the firm had to employ less than 100 full-time equivalent staff. The owner or managing director was asked to fill out the questionnaire as they were the person most likely to know about the capabilities of the firm, and one variable measured their human capital.

Structural Equations Modelling requires approximately 10-15 observations per parameter studied and at least 50 observations in total, preferably between 100 and 200 (Hair et al., 1995). 447 responses were received in total from 1500 questionnaires with relatively even distributions across industries; Retail 138, Engineering 163, and Professionals 146. The relatively high response rate, considering the survey method, of 30% allows analysis to be completed at both the aggregate and individual industry level.

3.3 Administration of the survey

The survey (Appendix A) was administered via mail during April 2006 via the University of Canterbury on a Department of Management letterhead. Return post-paid envelopes were included with each survey addressed directly to the researcher. Surveys were addressed to the postal address of each company as listed in the *Who's Who* or *Kompass* business directory.

The surveys requested respondents to return completed surveys within two weeks of receipt. This deadline was set to ensure that respondents applied some urgency to completing the survey but were not placed under undue time pressure. A cover letter was attached to the survey detailing the purpose of the research, as well as supervision arrangements. Full contact details for the researcher and thesis supervisor were supplied. A reminder letter was sent one month later to ensure an adequate response rate. The responses were deemed to be representative of the three industry population of interest due to the relatively uniform and high response rate of 30% and the narrow definition of

the sample frame with firms with less than 100 staff. Respondents averaged 11.92 full time equivalents, with the largest firms in each industry; retail 70, engineering 95, and professional services 65.

3.4 Limitations of the methodology

The sampling frame used for the study has a number of limitations. The directories used were not a comprehensive list of all New Zealand organisations, but were used due to ease of access and wide demographic spread of organisations. The database is only updated annually possibly inflating the number of non respondents. The time to complete a questionnaire of 5-10 minutes may have taken too much time for some respondents. In addition to the direct limitations, the quantitative nature of this research also presents a number of limitations. These will be discussed in the implications for future research section in chapter eight.

3.5 Statistical analysis techniques

The primary survey data were analysed using SEM and was accompanied by descriptive statistics and variable correlations. Analysis was performed using SPSS version 13.0 and AMOS version 7.0. SPSS was used to generate descriptive statistics, run confirmatory factor analysis and variable correlations. Structural equations models were run using AMOS.

3.5.1 Descriptive statistics

Basic descriptive statistics were generated for the data using SPSS and are discussed in detail in chapter four. SPSS was also used to test for issues of normality, variable correlations and the internal validity of the resource and strategy and performance scales.

3.5.2 Structural equation modelling (SEM)

Structural Equation Modelling was chosen as the preferred method of analysis, as it offers several important advantages over traditional ‘first order’ statistical techniques like, multiple regression or factor analysis. When performing SEM, the researcher uses

path diagrams to set out the proposed structural relationships between variables. This can include; measured independent variables, latent variables, dependant latent variables and dependant measured variables. Essentially the program performs factor analysis, at the same time as multiple regression analysis along each path, loading each path to maximise entire model fit.

There are four advantages of using SEM common in the literature (Byrne, 2001; Walley, 2007):

- 1) SEM allows the researcher to test the validity of the measures in the context of what they are supposed to predict/explain i.e. measured variables relationship with a latent variable, taking into account the impact on the dependant variable;
- 2) SEM acknowledges measurement error. This is extremely important when using latent variables that cannot be measured directly and therefore cannot be assumed to be measured with 100% accuracy;
- 3) SEM places an emphasis on model fit, and allows the researcher to explore the possible relationships between variables, as opposed to multiple regression which focuses only on the significance of the relationships between variables as modelled; and
- 4) SEM allows variables to be grouped into latent variables, as opposed to modelling singularly.

3.5.3 Formative vs. reflective measures (latent vs. emergent constructs)

The majority of statistical analysis methods assume that measured variables are either the construct in question or reflect the value of the construct, as opposed to being formative (or influencing) the construct. In this research consider the latent variable of physical resources; are the measured variables (in terms of favourability); plant equipment and production facilities, geographic location, and access to raw materials reflective or formative of physical resources?

If they are considered reflective then higher levels of physical resources leads to greater levels of *all three* measured variables. Thus these variables are presumed to tap the construct and be indicative of it. Alternatively if the variables are considered formative,

then independently of each other they influence the level of physical resources the firm has. Greater levels of any three of the variables leads to greater physical resources, but a higher level of physical resources does not mean that any one of the three variables measured should necessarily be greater.

When item parcelling using factor scores is performed we assume that the variables that determine a latent construct are correlated. However while measured variables may influence a latent variable, they may not necessarily be reflective of the variable. For example, in this research geographic location may have nothing to do with the plant, equipment and production facilities, although both impact on the latent construct of physical resources. In fact it is logical that a trade off between the two variables may occur. Consider the following; a firm has limited resources financially and has to build a new plant and production facility. There are two broad decisions; where does it acquire land to build the plant, and how much does it spend on building the plant and equipping the production facilities? It is logical that the best geographic locations are the most expensive to purchase, therefore the better the location purchased the less financial resources left to spend on building the plant and equipping it. Thus there are dangers in assuming that the variables are reflective of the underlying latent construct or factor of physical resources. This is one reason why SEM is so powerful, it considers the underlying constructs in terms of how they influence the other variables in the model and weight the measured variables accordingly, and not just by how much they correlate to each other. In this research organisational and physical resources are considered to be formative, as such AMOS is left free to determine the weights on each measure of these latent variables. All other independent variables are considered to be reflective, so the items were parcelled using factor scores for each latent construct. This differs slightly from Edelman et al. (2005) who appeared to use factor scores to represent the latent variable organisational resources. It was chosen to let AMOS determine weights of each measure of organisational resources as this was considered more theoretically accurate and will allow analysis of which determinants of organisational resources have the strongest influence on performance.

3.6 Ethical issues

This research obtained approval from the University of Canterbury Human Ethics Committee. Due to the potentially sensitive nature of the data participants were given the option to remain anonymous, which the majority of respondents chose to do. No concerns or queries were raised by any participants in regards to the ethics of the research. Given the commercially and personally sensitive information supplied in the survey, all participants were assured of anonymity and privacy in all written and verbal reports.

Chapter Four

- Preliminary Results

4.0 Preliminary Results

In this chapter I present the initial empirical results of this thesis, this includes; a summary of the descriptive statistics and correlations between the variables, a discussion on model fit criteria and the testing process and finally a retest of the Edelman et al. (2005) structural model on the aggregate and industry specific data sets.

4.1 Descriptive statistics

4.1.1 Descriptive statistics of independent variables

Table 4.1 presents the mean, standard deviation, range, skew, kurtosis and Cronbach Alpha values for the independent variables used in this study. Structural equations modelling is sensitive to normality of data (Hair et al., 1995), before transformation variables exhibited signs of skew and kurtosis, therefore the researcher used a natural logarithm transformation consistent with Edelman et al. (2005).

Variable	Mean	SD	Skew	Kurtosis	Alpha
BSKL (ln)	10.66	1.68	-0.18	-0.28	0.69
ISKL (ln)	10.82	2.23	0.07	0.40	0.82
ORES (ln)	11.91	1.92	-0.35	-0.13	0.63
PRES (ln)	8.25	1.60	-0.80	1.59	0.63
Q/CS (ln)	14.09	1.76	-0.47	-0.60	0.81
INN (ln)	7.41	1.93	-0.11	-0.23	0.66
COST (ln)	8.51	2.10	0.07	-0.40	0.78

Table 4.1: Descriptive Statistics of Independent Variables

The independent variables all achieved minimum levels of internal reliability as represented by Cronbach's Alpha values; interpersonal skills (.82) and the strategies of quality/customer service (.81), and cost (.78) all show good levels of internal reliability with alphas in excess of 0.7 (Nunnally, 1978). Business skills (.69), organisational resources (.63), physical resources (.63) and the strategy of innovation (.66) all had alphas above the acceptable threshold for this exploratory type of research (Nunnally, 1978). The reliability of the measures as measured by Cronbach's Alpha were similar to

those found by Edelman et al. (2005). and Chandler and Hanks (1994). Whilst all the variables met acceptable levels of reliability for exploratory research, further work on the measures is required to increase reliability to that of a standard ideally higher than .90 (Nunnally, 1978) that would be suitable for an applied setting. Tests for skew and kurtosis were well within the acceptable range of -2.00 to +2.00 indicating no issues in regard to the normality of these independent variables after logarithmic transformation.

4.1.2 Descriptive statistics of dependent variables

Table 4.2 presents the means, standard deviations, ranges, skew, kurtosis and Cronbach Alpha values for the dependent variables used in this study.

Variable	Mean	SD	Skew	Kurtosis	Alpha
PCOM (ln)	1.21	0.29	-1.44	4.282	NA
PCUR (ln)	5.53	1.97	0.84	2.73	0.70
PFTR (ln)	1.60	0.51	-1.37	1.75	0.81

Table 4.2: Descriptive Statistics of Dependant Variables

Current performance (PCUR) (.70) and expectation of future performance (PFTR) (.81) measures both exhibit good measures of internal reliability. The comparison to industry (PCOM) measure cannot be examined for internal reliability as it consists of a single measure. Both PCOM (4.3) and PCUR (2.7) measures exhibit moderate signs of Kurtosis in the sample. The values of 4.3 and 2.7 indicate the data has a relatively peaked distribution (Hair et al., 1995), the frequency of responses close to the mean is higher than what would be expected given a normal distribution. The effect of Kurtosis is that there is less variation in the sample to correlate with other variables. In this case there are more firms performing with close to average returns than expected. This may be due to the nature of the population rather than the degree to which the sample is representative of the population. Small firm owners do not always have a profit maximisation goal, therefore there is likely to be a number of owners who settle for average results and do not push to get higher returns. Also aside from some determined owners who no doubt are expecting their firm's performance to increase in the future, owners will not settle for

less than average results. The result of this is a peaked distribution. Also the 5 point Likert scale measure of the owner/managers comparison of the firm's performance compared to their industry may have contributed to this somewhat, with a high proportion choosing the midpoint of 3, a 7 point scale in further research may alleviate this somewhat (Byrne, 2001). The normal method for dealing with kurtosis in SEM is bootstrapping, and is an ideal method for dealing with issues of non-normality in the data (Byrne, 2001). However a requirement of bootstrapping in SEM is the requirement of no missing data. In the research it was chosen to let AMOS use the maximum likelihood method to estimate missing data points, this was due to its superior performance over other approaches (Byrne, 2001). There are significant disadvantages in deleting cases listwise, or mean substitution. Deleting listwise would have significantly reduced the sample size, and the ability to analyse at the industry level, whereas substituting the mean would significantly reduce the variation and risk understating the relationships. Due to the relatively mild level of kurtosis in the sample, compared to other studies using financial information and the disadvantages of alternative methods of dealing with missing data it was decided to ignore the kurtosis.

4.1.3 Descriptive statistics of control variables

Two control variables are included in the analysis, industry and number of FTE employees. Descriptive information is provided in table 4.3. One way analysis of variance tests and bivariate correlations were performed to test for any significant control variable effects. All control variables had some level of significance with one or more performance variables. A significance level of .05 was used as a cut off.

Variable	Mean/ Occurrence	SD
FTE 2006	11.92	14.69
Retailer	138	NA
Engineer	163	NA
Professional	146	NA

Table 4.3: Descriptive Statistics of Control Variables

There were two significant covariate effects with respect to a firm's level of full time equivalent employees and performance; current performance ($F = 1.52, p = .02$), expectation of future performance ($F = 2.22, p = .00$). There was no significant covariate effects with the comparison to industry ($F = .90, p = .70$). There were significant correlations with comparison to industry ($r = .12, p = .01$), and current performance ($r = -.19, p = .00$).

There was one significant covariate effect with respect to retailer and performance; current performance ($F = 5.69, p = .02$). There were no significant covariate effects with comparison to industry ($F = .68, p = .41$), or expectation of future performance ($F = 0.01, p = .93$). There was one significant correlation between retailer and current performance ($r = -.15, p = .02$).

There was one significant covariate effect with respect to engineer and performance; current performance ($F = 7.95, p = .01$). There were no significant covariate effects with comparison to industry ($F = 1.89, p = .17$) or expectation of future performance ($F = 2.59, p = .11$). There was one significant correlation between engineer and current performance ($r = -.17, p = .01$).

There was one significant covariate effect with respect to professional and performance; current performance ($F = 26.80, p = .00$). There were no significant covariate effects with comparison to industry ($F = .348, p = .555$) or expectation of future performance ($F = 2.49, p = .12$). There was one significant correlation between professional and current performance ($r = .31, p = .00$).

The findings demonstrate that the control variables of FTE employees and industry may impact on the performance variables, therefore the control variables will be included in any initial models.

4.2 Correlations between the variables

Bivariate correlations between the research variables used in the structural equations model are shown in table 4.4 page 56. Correlations were calculated to provide a general overview of the strength of the relationships between the research variables and to identify any issues of multicollinearity in the data. Significance was tested at the 0.05 level (2 tailed).

As can be seen from the correlations table there are significant correlations between most of the independent variables. The correlations are particularly strong between each of the strategy variables indicating many firms in the study may be competing on more than one strategic dimension. Only the comparison to industry performance variable appears to have consistently significant correlations with the resource and strategy variables. Of the performance variables the only significant correlation was between comparison to industry (PCOM) and current performance (PCUR).

There is no commonly accepted cut off point for identifying multicollinearity from bivariate correlations. Literature frequently indicates that an r value of between .5 and .8 may indicate issues of multicollinearity (Dielman, 1996). As the correlation matrix (table 4.4) shows there are no instances where the correlation between variables is greater than .5. Therefore multicollinearity is not likely to cause major issues in this study.

4.3 Structural Equation Modelling (SEM)

This section details the SEM analysis through providing an overview of the specific techniques and methods used. This includes a discussion on the measurement model, confirmatory factor analysis (CFA), item parcelling, and model fit criteria. I will then discuss the testing of the hypothesised models and the reasons for final model selection.

Research Variables	BSKL	ISKL	ORES	PRES	Q/CS	INN	COST	PCOM	PCUR	PFTR	Retail	Engineer	Professional	FTE 2006
BSKL	1													
ISKL	.45**	1												
ORES	.28**	.30**	1											
PRES	.06	.12*	.26**	1										
Q/CS	.27**	.30**	.31**	.14**	1									
INN	.16**	.28**	.43**	.28**	.39**	1								
COST	.07	.28**	.24**	.22**	.41**	.44**	1							
PCOM	.25**	.24**	.21**	.14**	.16**	.19**	.13**	1						
PCUR	.12	.04	-.01	-.03	.00	-.12*	-.11	.25**	1					
PFTR	.06	.06	.14**	.10*	.04	.11*	-.02	.07	.02	1				
Retail	.06	.09	.06	.06	.16**	.12*	.01	.04	-.15*	.01	1			
Engineer	-.12*	-.11*	-.06	.12*	-.10*	-.05	.05	-.07	-.17**	-.08	NA	1		
Professional	.06	.03	.01	-.18**	-.06	-.07	-.05	.03	.31**	.08	NA	NA	1	
FTE 2006	.04	.06	.10*	.07	-.04	.09	.05	.12*	-.19**	-.03	-.17**	.24**	-.08	1

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 4.4: Correlation Matrix of Variables Included in Structural Equation Models

4.3.1 Measurement and structural models

A SEM can be decomposed into two sub models: a measurement model and a structural model (Byrne, 2001). The measurement models purpose is to define the relationships between the observed and latent variables. The structural model then calculates the relationships between the latent variables, specifying how the various latent constructs influence each other (Byrne, 2001). In the hypothesised SEM in this research the measurement model relates to the measurement of the latent variables of human resources, organisational resources and physical resources. The structural model relates to the testing of the proposed relationships between resources, positioning strategy, and performance.

4.3.2 Item parcelling

Item parcelling is a technique that can be used to combine multiple related items into a single score or variable for SEM i.e. using the factor scores as the indicator for a latent variable as opposed to including each individual measure. This has the effect of improving overall model fit as there are fewer parameters to estimate and also often leads to reductions in sampling error (Bandalos, 2002). Items should only be parcelled where they represent a uni-dimensional construct, and have a Cronbach Alpha coefficient greater than .7. Several items will be parcelled in this research, described as reflective; business skills, interpersonal skills, and the separate positioning strategies of quality/customer service, innovation, and cost. All of these measures had alphas of .7 or greater except for business skills (.69) and innovation (.66). Both of these measures are not considered materially different from the accepted cut off and will be treated as parcelled items consistent with a more relaxed cut off of .6 in exploratory research (Nunnally, 1978).

4.3.3 Model fit criteria

There are number of goodness of fit criteria used to evaluate the accuracy of the hypothesised structural model. There are three broad categories of fit statistics:

Absolute fit indices: test the extent to which the model predicts the observed covariance.

Incremental fit indices: test the extent to which the specified model performs better than a baseline model i.e. the independence model where there are no underlying factors.

Parsimonious fit indices: these take into account the complexity of the model in the assessment of model fit.

This thesis uses the following four tests to evaluate model fit:

1. Chi-square test (χ^2) (CMIN): this is the most common test used to assess how accurately the hypothesised structural model fits the data. The χ^2 tests how significantly the sample departs from the proposed model. A non-significant χ^2 of ($p>0.05$) indicates the data does not depart significantly from the model and indicates satisfactory fit (Byrne, 2001).
2. Comparative fit index (CFI): the CFI is derived by a comparison of the hypothesised versus the independence model adjusted for sample size. A value >0.9 was originally considered representative of a well fitting model (Bentler, 1992), however this has now been revised with an advised cut off of 0.95 (Hu and Bentler, 1999) cited in Bryne (2001).
3. Root mean square error of approximation (RMSEA): the RMSEA is one of the most well rounded measures of model fit. It estimates the lack of fit in the examined model compared to a perfect saturated model (Steiger, 1990) taking into account degrees of freedom and thus parsimony. Values less than 0.06 indicate a close fitting model (Hu and Bentler, 1999) cited in (Walley, 2007). Values of 0.08 to 0.10 indicate mediocre fit, and values greater than 0.10 indicate poor fit (MacCallum et al., 1996).
4. Path weights and significance: in addition to the model fitting the data, all paths that tested a hypothesised relationship had to be significant at the 0.05 level. Other paths i.e. control variables were left in if required for model identification.

Each of these measures was chosen to complement the others to address the three categories of absolute fit, incremental fit, and parsimony.

4.3.4 Model testing process

There are two ways to examine the relationships between variables; confirmatory analysis and exploratory analysis. Confirmatory analysis is testing proposed hypotheses determining if they hold true, or not. Under this approach each proposed relationship or combination of relationships would be represented and subsequently tested using a structural model. It may be found that alternative combinations of resource/ strategy relationships all hold true. If the researcher alters the model to improve fit the researcher is essentially embarking on exploratory analysis also referred to as specification search (Schumacker and Lomax, 2004). Byrne (2001) emphasises that any major changes to the model must be supported theoretically. The researcher must be careful when following this approach not to allow paths that have no logical meaning, thereby ‘over fitting’ the model to the data. Byrne (2001) explains that there are three primary ways through which SEM models can be re-specified to improve fit: by including additional variables, by including additional paths in the model, and eliminating variables and paths from the model. In addition to theoretical justification any changes to an SEM model should be supported by significant changes to goodness of fit measures (Schumacker and Lomax, 2004).

4.3.5 Presentation of structural models

If the ability to interpret hypothesised models is hindered by visual complexity the hypothesised models will be shown excluding covariances to simplify presentation. In all cases the relevant covariances are included in analysis and will be shown in the diagram of any accepted structural models.

4.4 Direct replication of Edelman et al.

One of the aims of this research is to test whether the Edelman et al. (2005) findings were supported in a different industry setting, that of the smaller New Zealand

firm, and across multiple industries; retail, engineering, and professional services. Therefore research started with testing their final model on the data set of this research.

4.4.1 Aggregate sample results

Edelman et al. (2005) found that a quality/ customer services strategy fully mediated human and organisational resources effect on firm performance (refer figure 2 page 30). This model is replicated using the aggregate sample with the PCUR performance measure (refer figure 5).

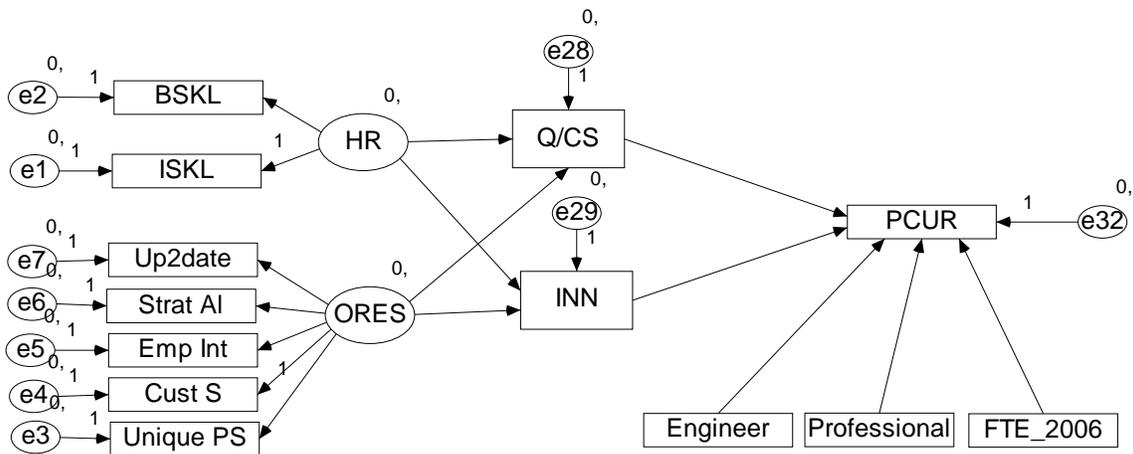


Figure 5: Structural Model Replication of Edelman et al. (2005)

The model was considered admissible to AMOS with 52 degrees of freedom. The fit indices are consistently poor (χ^2 .000, CFI .784 and RMSEA of .095), suggesting that the model is not a good fit to the data. This provides no support to the findings of Edelman et al. (2005). It is worthwhile to test whether there is any support to the model in any of the three industries.

4.4.2 Retail industry results

The model (refer figure 6) was admissible with 38 degrees of freedom. The fit indices were once again poor (χ^2 .000, CFI .766 and RMSEA of .093), suggesting that the model is not a good fit to the data, again providing no support to the findings of Edelman et al. (2005).

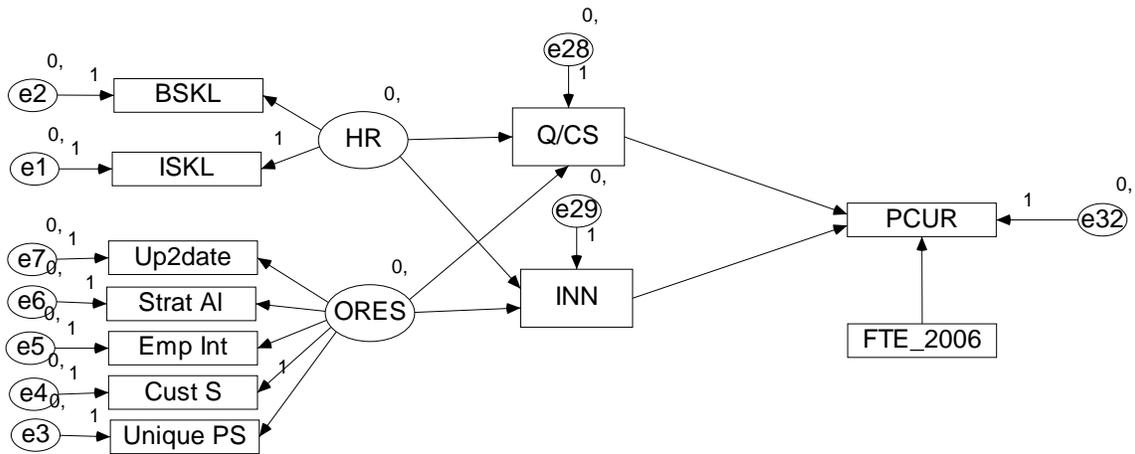


Figure 6: Industry Specific Structural Model Replication of Edelman et al. (2005)

4.4.3 Engineering industry results

The model (refer figure 6) was admissible with 38 degrees of freedom. The fit indices were once again poor (χ^2 .000, CFI .748 and RMSEA of .098), again providing no support to the findings of Edelman et al. (2005).

4.4.4 Professional services industry results

The model (refer figure 7) was admissible with 38 degrees of freedom. The fit indices suggest that the model is an acceptable fit to the data (χ^2 .077, CFI .951 and RMSEA of .049). Whilst the model was an acceptable fit to the data, it did not provide complete support for the findings of Edelman et al. (2005). Consistent with Edelman et al. human resources were significantly related to both positioning strategies of quality/customer service and innovation with very good path weights of .87 and 1.05 respectively. Inconsistent with Edelman et al. the relationship between organisational resources and the strategies of quality/ customer service and innovation were not significant. Most importantly the strategy of quality/ customer service only had a low (.06) and non significant relationship with current performance, providing no support for a quality/ customer service strategy mediating human (or organisational) resources effect on performance, as Edelman et al. found (2005)

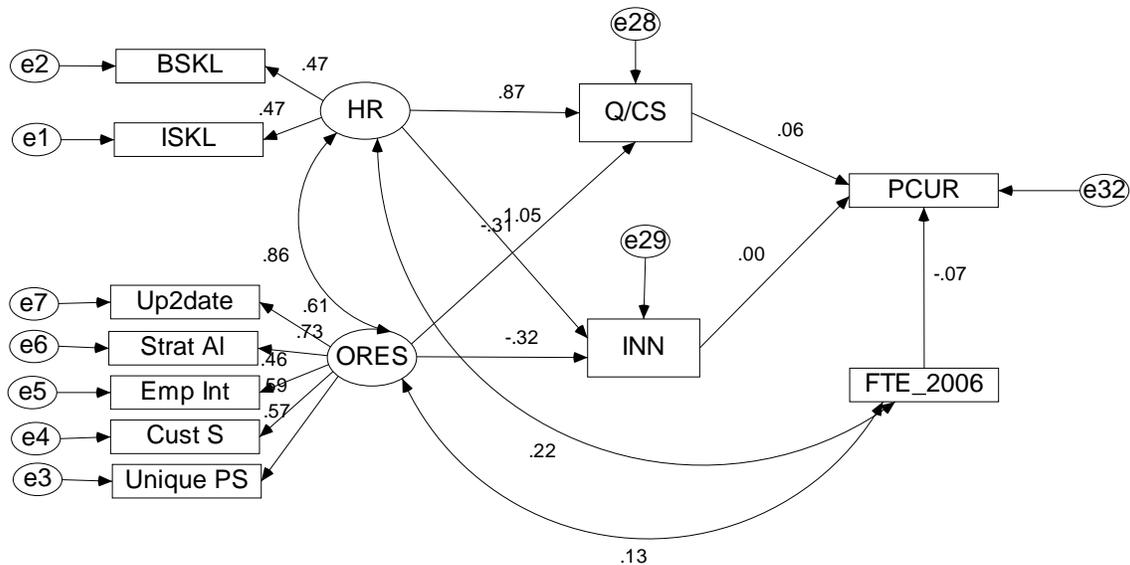


Figure 7: Professional Services Replication of Edelman et al. (2005)

4.4.5 Summary: replication of Edelman et al. (2005)

The findings of Edelman et al. (2005) are largely not supported by the dataset in this analysis, for the aggregate sample or any of the industry models, with the exception of human resources being associated with a quality/ customer services strategy in the professional services industry. There was no evidence to suggest that strategies mediate resources relationship with performance. The main difference between the tested model and Edelman et al.'s is the use of a current performance latent variable using the factor scores of return on assets and sales, compared with an increase in the return on sales %. Whilst not expected, the finding that Edelman et al.'s model was not supported by the data is not surprising with research beginning to show a trend that whilst the relationship between resources strategy and performance may be important, it is difficult to show statistically. Edelman et al.'s finding was significant as one of the few studies to show a significant relationship between resources, strategy and performance. Previously Chandler and Hanks (1994) had found that performance is enhanced when resource based capabilities are supportive of a cost leadership strategy, or when firms differentiate on product and service quality when their resource based capabilities are supportive of that strategy. Other strategic management literature specifically looking at the resource –

strategy – performance relationship has been largely conceptual (Chrisman et al., 1998) or found non-significant interaction effects (Brush and Chaganti, 1999).

The lack of support for Edelman’s model does not mean that fit is not an important concept; rather there could be reasons why this model is not supported, both due to the testing process, and industry differences. Firstly strategies may not mediate the relationship between resources and performance; this relationship could be postulated in many different ways including moderation. Edelman et al.’s model may not generalise outside of the sample population of the US ‘economic core’. The influence of the competitive environment may be significant on the resource – strategy – performance relationship. The performance measure used in this research varies from the Edelman measure. Edelman et al. used the increase of return on sales %, whereas in this research an arguably more appropriate combination of return on assets, and return on sales was used. Edelman et al.’s findings may explain an improvement in performance, but not actual current firm performance.

To further investigate the resource – strategy – performance relationship the following chapters go into further detail, testing a more complete model which includes physical resources, a cost leadership strategy and multiple measures of performance. When all of the possible resource strategy performance combinations are considered there is a complex array of possible resource – strategy – performance combinations. As stated earlier there were no significant issues of multicollinearity in the data, however most latent variables were significantly correlated somewhat. This could have the impact of suppressing relationships real influence when considered in a complete model with other resource – strategy – performance options. To alleviate the impacts of any potential issues the entire structural model will be tested, along with separate models testing each possible resource – strategy – performance combination (refer Appendix B).

Chapter Five

- SEM Results for the Aggregate Sample

5.0 SEM results for the aggregate sample

This chapter presents the results of the hypothesised structural models presented in chapter 2 tested on the aggregate sample.

5.0.01 Fully mediated SEM

The first hypothesised model (figure 8) has the resource performance effect fully mediated by strategy. This is the most powerful test of the theorised hypotheses, with significant results giving the strongest support to the way in which resources combine with strategies to lead to superior performance. The model with 129 degrees of freedom was considered admissible to AMOS with no under-specification issues. However AMOS was unable to estimate the parameters of the model. This can be caused by two different issues; the model fits the data very poorly or the sample size is not big enough.

The hypothesised model is relatively complex and the research somewhat exploratory in nature, therefore it is likely that the sample size is not large enough to allow the program to estimate the multiple parameters. The complexity of the model was reduced by testing the multiple measures of performance; comparison to industry, current performance, and expectations of future performance independently. The adjusted model is shown in figure 9.

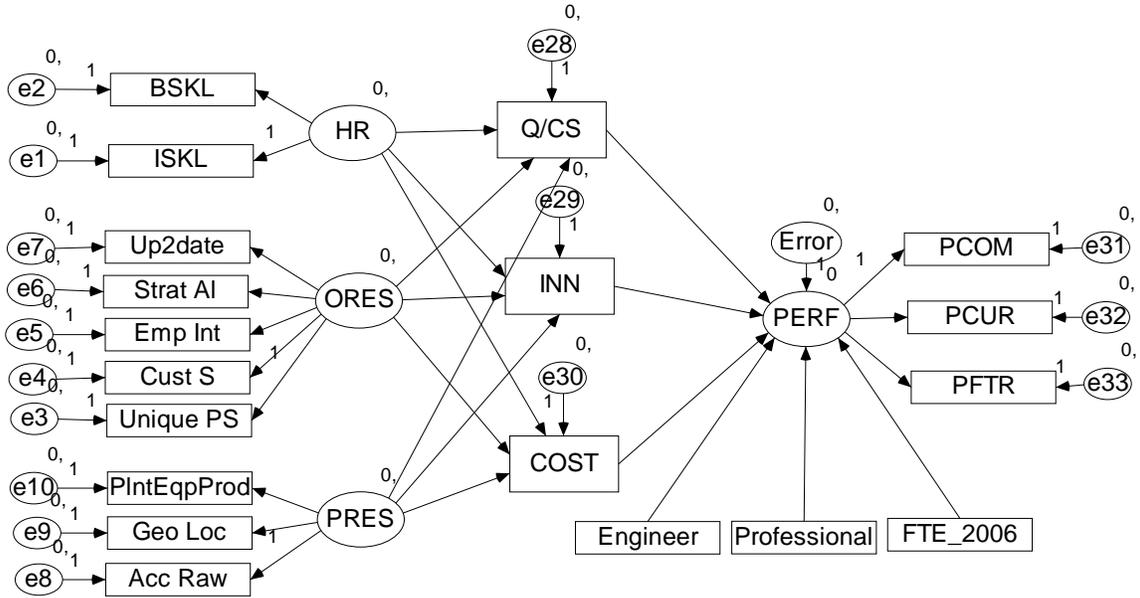


Figure 8: Hypothesised Model (Aggregate Sample) based on Figure 3

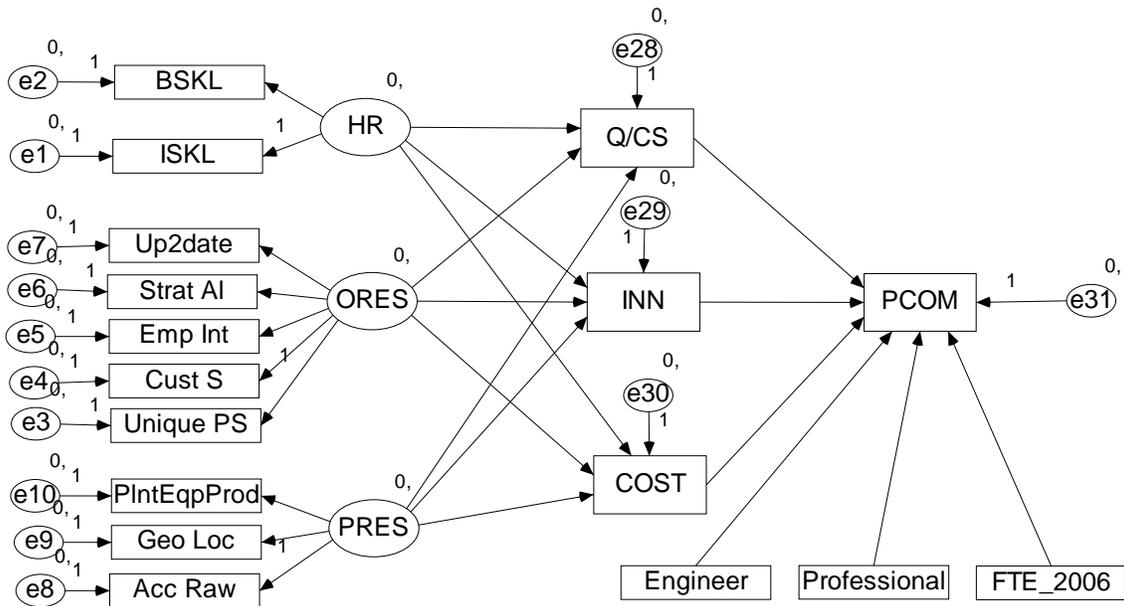


Figure 9: Adjusted Model with Single Performance Variable

5.0.02 Comparison to industry performance, fully mediated

The model was considered admissible by AMOS with 97 degrees of freedom, and parameters were able to be calculated due to the reduced complexity of the model. Fit

statistics were poor, consistent with multiple paths having low path coefficients, demonstrating little or no statistical relationship to the performance variable in question, and thus no support of the particular hypothesised relationship. In an attempt to better fit the model to the data specification search was undertaken by removing paths and subsequently variables where there was no significant relationship resulting in a more parsimonious model. All modifications were consistent with the literature, with no new relationships between variables postulated. After modification no models that fitted the data satisfactorily were found. This provides no support for any hypotheses with strategies fully mediating resources effects on performance. The model was then re-specified (figure 10) to reflect partial mediation of the resource – strategy – performance relationship.

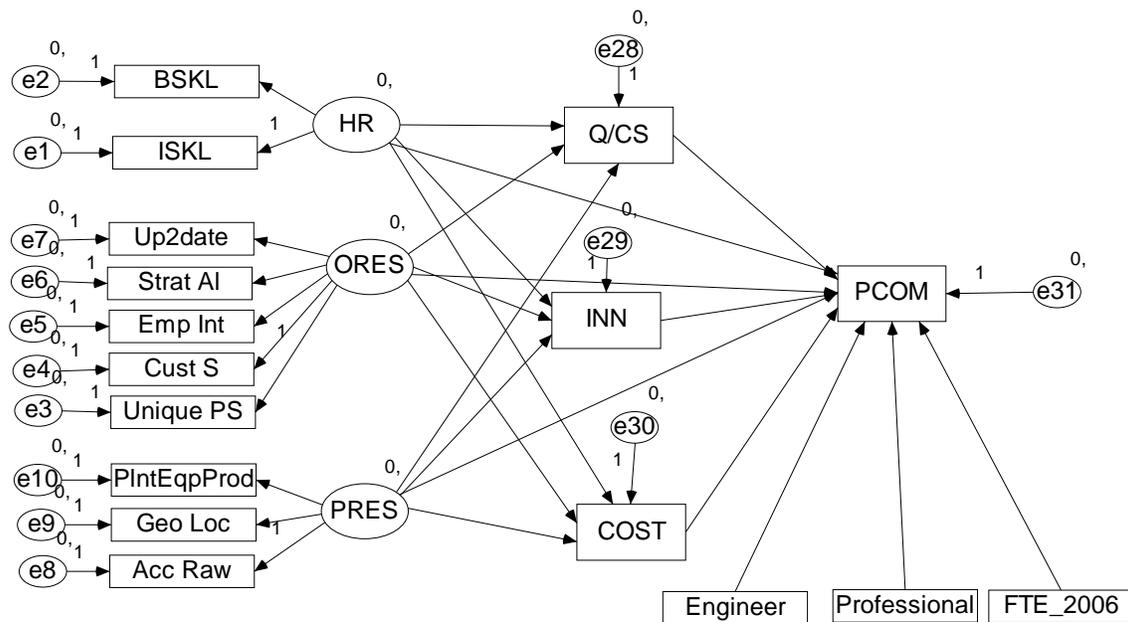


Figure 10: Partially mediated relationship between resources – strategy – performance

5.0.03 Comparison to industry performance, partially mediated

The model was considered admissible by AMOS with 94 degrees of freedom. However fit statistics were poor, consistent with the previous analysis. The model was modified by removing insignificant paths and subsequently variables. An acceptable final solution was found (figure 11) providing support for a direct relationship from human resources (made up of business and interpersonal skills) to performance as represented by

the owner/managers comparison to other firms in the industry. The fit indices were all satisfactory with a χ^2 of .675, CFI of 1.000 and RMSEA of .000. The standardised path coefficients from business skills and interpersonal skills, to human resources were satisfactory at .68 and .66 respectively. The path coefficient between human resources and comparison to industry was reasonably strong at .36. It is possible that business skills and interpersonal skills are better modelled to impact on performance directly rather than through the latent variable of human resources. Therefore a third model was tested as a comparison to see if these resources are better represented working through a more general human resources variable, or directly to performance (as represented by comparison to industry). This model, though admissible, did not fit the data satisfactorily. Therefore it is likely that business and interpersonal skills are best modelled to work through the more general latent variable of human resources.

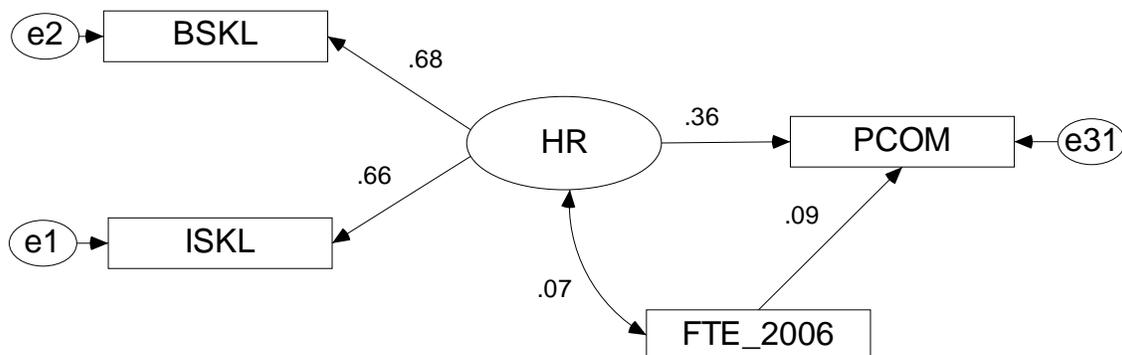


Figure 11: Final Model under partial mediation (in fact a direct effect is found)

5.0.04 Comparison to industry performance, moderated

The model (refer figure 12) was considered admissible by AMOS with 84 degrees of freedom. However fit statistics were poor, consistent with previous analysis. The model was modified by removing insignificant paths and subsequently variables. During the modification process a point was reached where all of the paths in the model were significant, but the model was not an acceptable fit to the data. This model had human resources moderated by strategies of innovation, quality/ customer service and cost (refer figure 13). Fit statistics were mixed with a poor χ^2 probability of .002, a moderate RMSEA of .074, and a satisfactory CFI of .964. It was decided to remove the moderating

strategy of cost as it appeared to have the least impact in the model with a coefficient to human resources of .30 versus quality/customer service (.42) and innovation (.36). Some caution must be applied to the results as the cost strategy was not removed due to its level of influence in the model, but in an attempt to improve model fit, risking over fitting the model to the data.

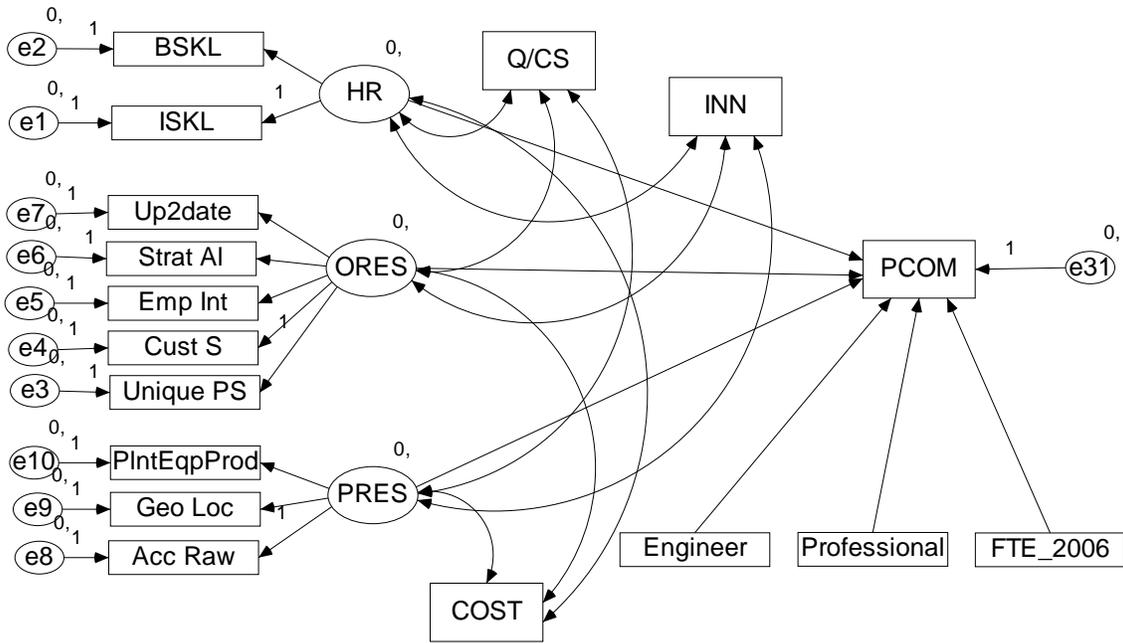


Figure 12: Aggregate sample, initial model, PCOM, moderated

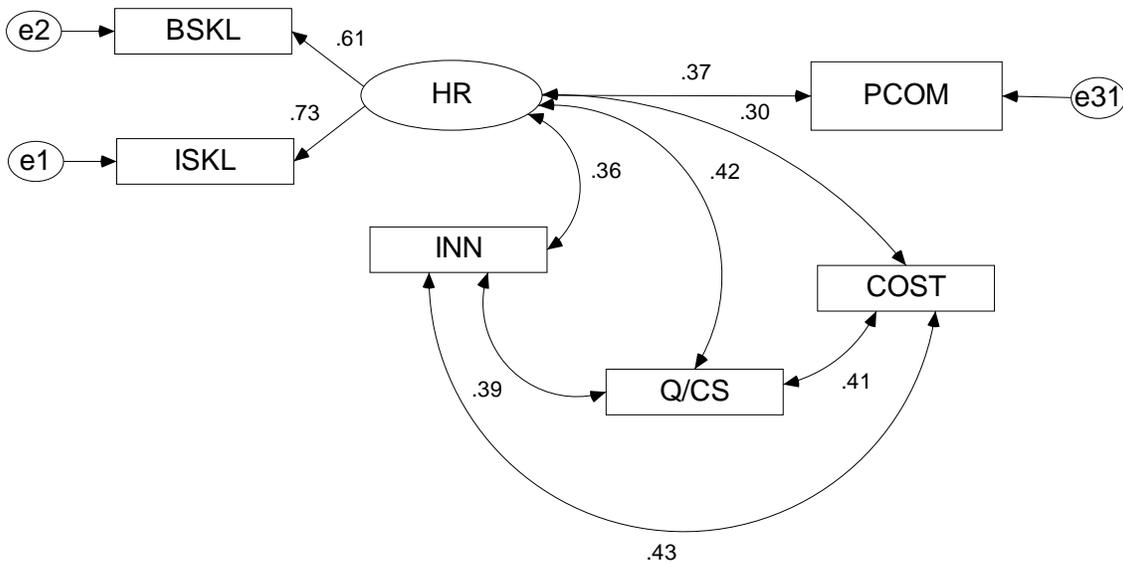


Figure 13: Aggregate Sample, PCOM, moderated

After removal of the cost variable an acceptable final solution was found (model a, figure 14) providing support for a moderated relationship with human resources (made up of business and interpersonal skills) relationship with performance as represented by a comparison to the firms industry moderated by the two differentiation strategies of INN and Q/CS. The fit indices were all satisfactory with a χ^2 of .145, CFI of 0.990 and RMSEA of .040. The standardised path coefficients from business skills and interpersonal skills, to human resources are satisfactory at .62 and .71 respectively. The path coefficient between human resources and comparison to industry was reasonably strong at .37. The differentiation strategies had moderate coefficients with human resources with an innovation strategy at .35 and a quality/ customer service strategy at .42.

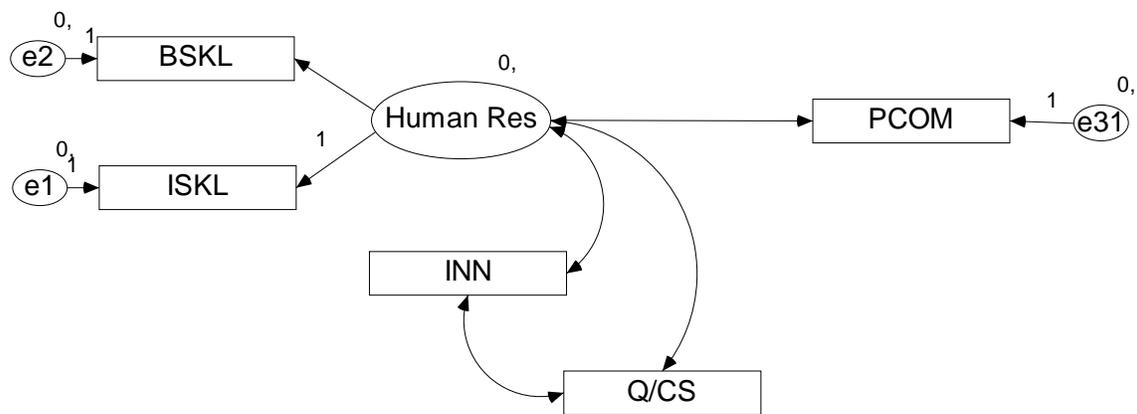


Figure 14: Model a, aggregate sample, PCOM, moderated

5.0.05 Current performance, fully mediated

The hypothesised model was then tested using the current performance variable as represented in figure 15. The model was considered admissible by AMOS with 97 degrees of freedom; however with poor fit statistics the model did not fit the data well. The model was modified to remove paths and variables that did not appear to be related. Consistent with the analysis on the comparison to industry performance variable, no model was found that was an appropriate fit to the data. The model was re-specified using partial mediation refer figure 16.

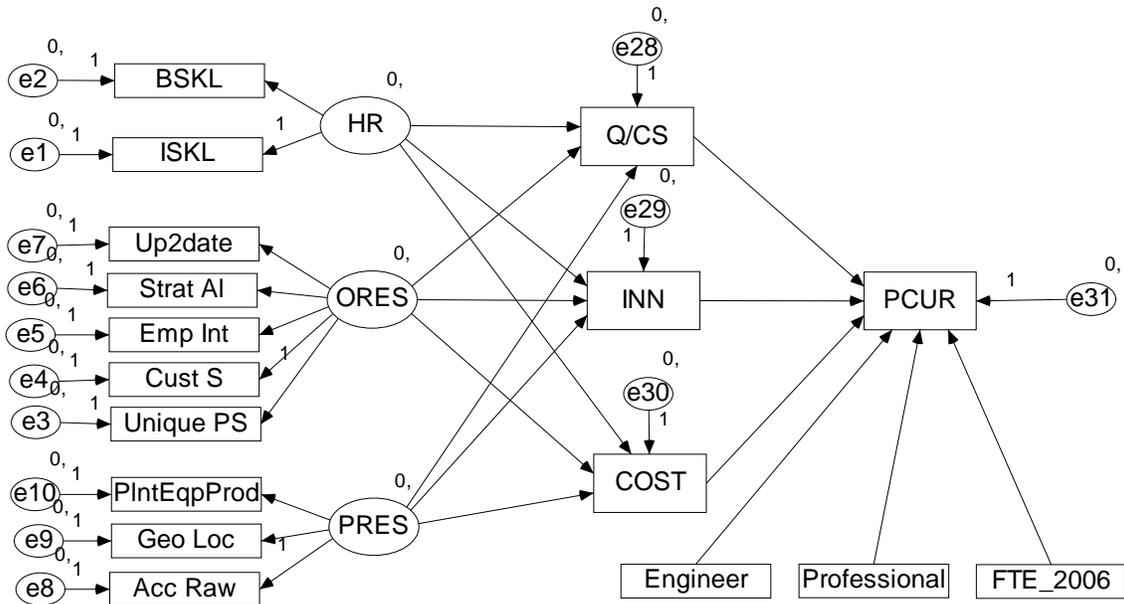


Figure 15: Aggregate sample, PCUR, fully mediated

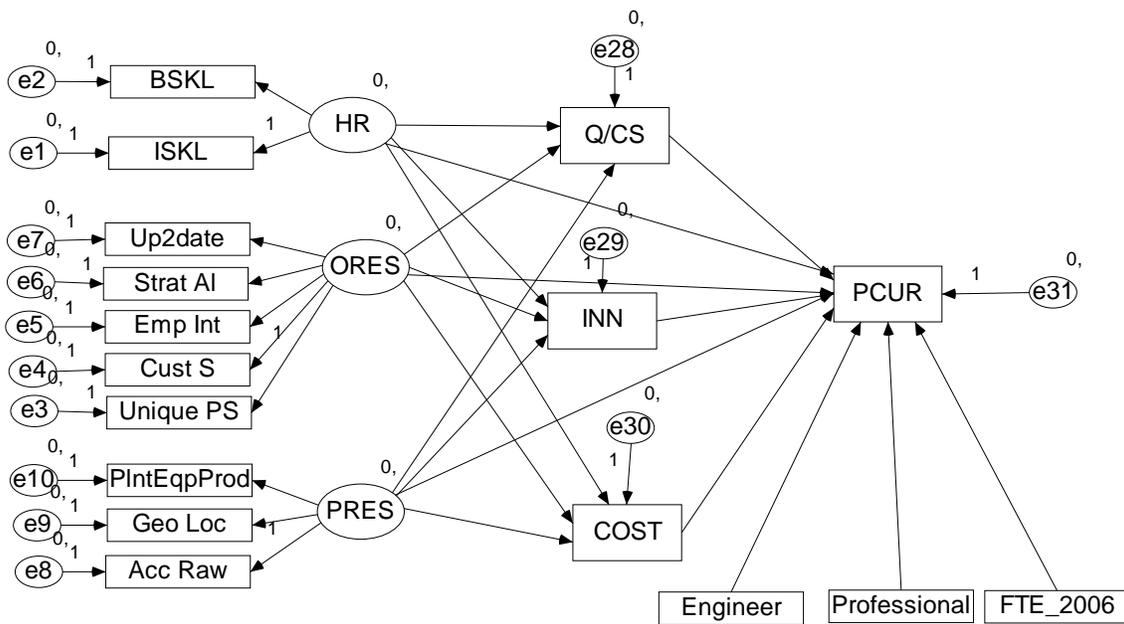


Figure 16: Aggregate sample, PCUR, partial mediation

5.0.06 Current performance, partially mediated

The initial model was admissible although showed poor fit to the data therefore it was modified to see if a better fit within the theoretical constraints could be found. Once again no acceptable model was found to fit the data.

5.0.07 Current performance, moderated

The initial model was admissible with 84 degrees of freedom however showed poor fit to the data. After modification no model was found that had an acceptable fit to the data.

5.0.08 Expected future performance, fully mediated

The hypothesised model was then tested using the expectation of future performance variable as represented in figure 17. The model was considered admissible by AMOS with 97 degrees of freedom; however with poor fit statistics the model did not fit the data well. The model was modified to remove paths and variables that did not appear to be related. Consistent with analysis using the current performance variable no model was found that was an appropriate fit to the data. The model was then re-specified using a partially mediated approach.

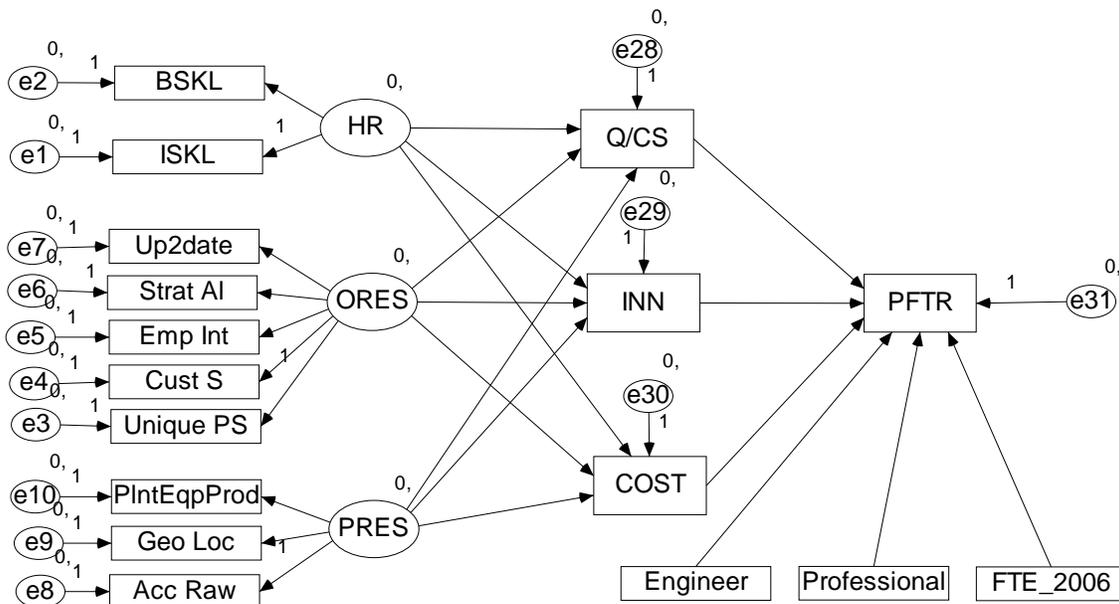


Figure 17: Aggregate sample, PFTR, fully mediated

5.0.09 Expected future performance, partially mediated

The initial partially mediated model (figure 18) was considered admissible with 94 degrees of freedom, however the model did not show acceptable levels of fit with the data, and after modification no acceptable model was found.

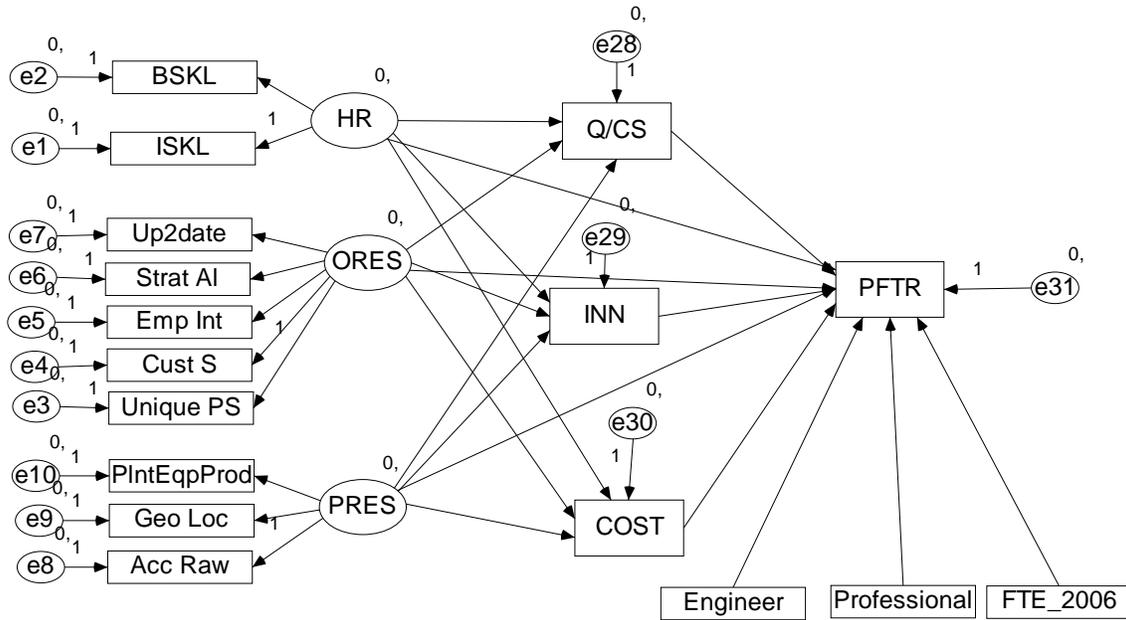


Figure 18: Aggregate sample, PFTR, partially mediated

5.0.10 Expected future performance, moderated

The initial model was admissible with 84 degrees of freedom however showed poor fit to the data. After modification no model was found that had an acceptable fit to the data.

5.0.11 Full model summary

The previous analysis has only given support for one hypothesis, with human resources relationship with PCOM moderated by quality/ customer service and innovation strategies. The relatively high complexity of the model and some level of multicollinearity may have contributed to these results with the effects of lesser strength relationships becoming lost. To allow a more fine grained analysis each possible resource – strategy – performance relationship was run independently removing any possible issue

of multicollinearity. This creates a multitude of models to test and only acceptable models of significance will be discussed here, for a full list of analysis refer to Appendix B.

It is probable using the single testing method that competing models will emerge of the resource – strategy – performance relationship, with the same resource – strategy combinations proving acceptable modelled as strategy fully mediating, partially mediating or moderating resources effects on performance. Where this occurs following Edelman et al. (2005) a fully mediated model will be preferred over a partially mediated model, over a moderated model due to a fully mediated model being the strongest test of the hypothesised role strategy plays in leveraging firms resources into performance. If an acceptable model is found where multiple resources or strategies play a role in firm performance this model will be preferred over the individual models as it too provides stronger support for the particular resource – strategy – performance relationship being a more complete model. Likewise a model with mediation or moderation effects on a resources relationship with performance will be chosen over a model with no mediation or moderation in the resource – performance relationship.

5.1 Single hypothesis testing

For the aggregate analysis only a few of the hypothesised relationships were supported:

- Human resources directly related to performance as comparison to industry consistent with previous analysis (refer model a, figure 14);
- Human resources moderated by a strategy of quality/ customer service with performance as comparison to industry, consistent with model a;
- Human resources moderated by a strategy of innovation with performance as comparison to industry, consistent with model a;
- Human resources fully mediated by a strategy of innovation and performance as expectation of future performance (refer model b, figure 19). Significantly the model gives support for an innovation strategy fully mediating human resources' relationship with performance as measured by the owner/ managers expectation of

future performance. The fit indices were all satisfactory with a χ^2 of .627, CFI of 1.000 and RMSEA of .000. Path coefficients ranged from poor to excellent. A coefficient of .11 from an innovation strategy to performance is still considered meaningful due to the possibility of macro economic factors, or other influences on performance. Human resources and an innovation strategy had a moderate coefficient of .32, whilst business and interpersonal skills had good to excellent path coefficients of .51 and .87 respectively to human resources.

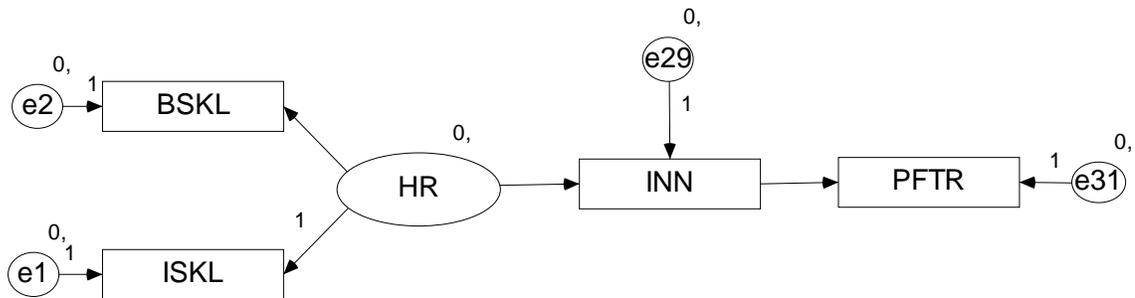


Figure 19: Model b, aggregate sample, PFTR, fully mediated

- o Physical resources partially mediated by a strategy of cost and performance as comparison to industry (model c, figure 20). This gives support to a cost leadership strategy partially mediating the effect of physical resources on performance. Whilst the theoretical implications of partial mediation are not as strong as for complete mediation, a strategy of cost leadership combined with superior physical resources appears to lead to better performance than just physical resources alone. The fit indices were all satisfactory with a χ^2 of .093, CFI of .975 and RMSEA of .037. Path coefficients ranged from poor to good with physical resources to performance poor at .12 and a strategy of cost leadership to performance poor at .10. Whilst both of these path coefficients are relatively weak, they are meaningful given the nature of the research. The path from physical resources to a strategy of cost leadership was moderate at .27. Whilst the manifest indicators of physical resources ranged from moderate to very good, this is not unexpected given the formative nature of these indicators. In the context of the model a firm's plant, equipment and production facilities appear to have more

importance with a path coefficient of .76 to physical resources than its geographic location at .41 or access to raw materials at .56.

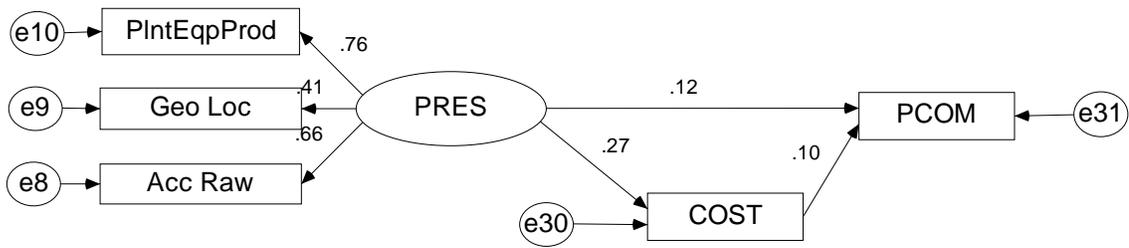


Figure 20: Model c, aggregate sample, PCOM, partially mediated

- o Physical resources moderated by a strategy of cost with performance as expectation of future performance (model d, figure 21). Contrary to the previous model this model gives support to a strategy of cost operating as a moderating variable in the effect of physical resources on performance as measured by the owner/ managers expectation of future performance. The fit indices were all satisfactory with a χ^2 of .103, CFI of .977 and RMSEA of .040. The path coefficient was poor between physical resources and performance at .10 however is still considered to be meaningful. Physical resources and a cost leadership strategy had a moderate coefficient of .27, whilst once again the manifest indicators of physical resources had moderate to very good coefficients of between .41 and .77 with plant equipment and production facilities playing a predominant role at .77.

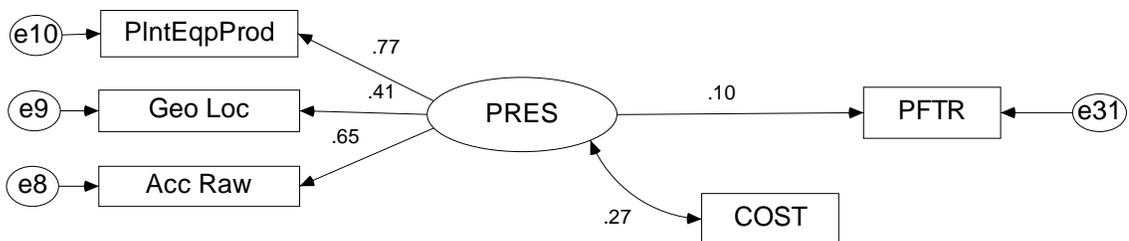


Figure 21: Model d, aggregate sample, PFTR, moderated

5.2 Aggregate sample summary

Data analysis on the aggregate sample generated some interesting findings, in that whilst the complete test of the Edelman et al. (2005) model did not support their findings, further model refinement offered some support, with a quality/ customer services strategy influencing human resources relationship with performance. The resource – strategy combinations found to be associated with performance in the aggregate sample are expected to be relatively stable across industries and thus more generalisable to industries outside of this analysis; this will be explored further in the industry specific analysis. Further significant findings are that an innovation strategy also appears to ‘fit’ with high levels of human resources increasing firm performance. Physical resources appear to ‘fit’ with a cost leadership strategy with this association also related to firm performance.

These findings suggest that for the smaller firm with high levels of human resources, performance will be enhanced by competing on the basis of quality/ customer service, or innovation. Alternatively a smaller firm wanting to compete on the basis of quality/ customer service or innovation should focus on increasing its human resources. The smaller firm with a high level of physical resources should compete on the basis of cost leadership. The findings suggest that organisational resources are not as likely as human or physical resources to lead to a competitive advantage and higher performance in the smaller firm; however this does not mean that organisational resources have no influence on firm performance. The next chapter will analyse the stability of these findings in the specific industries of retail, engineering, and professional services.

Chapter Six

- Industry Specific Results

6.0 Industry Specific Results

Prior research has shown that the success of strategies is partially dependant on environmental characteristics (Murray, 1988). Therefore it is necessary to analyse the resource – strategy – performance relationship at the individual industry level, thereby controlling some environmental issues. This chapter details analysis for the retail, engineering and professional services industries. To remain consistent with prior analysis, performance was represented by only one factor at a time.

6.1 SEM results for the retail industry

6.1.01 Comparison to industry performance, fully mediated

The model (figure 22) was considered admissible by AMOS and was over specified with 76 degrees of freedom. Fit statistics were poor, consistent with multiple paths having low path coefficients. It was decided to modify the model by removing paths and subsequently variables where there was no proof of relationships, thus resulting in a more parsimonious and less complex model.

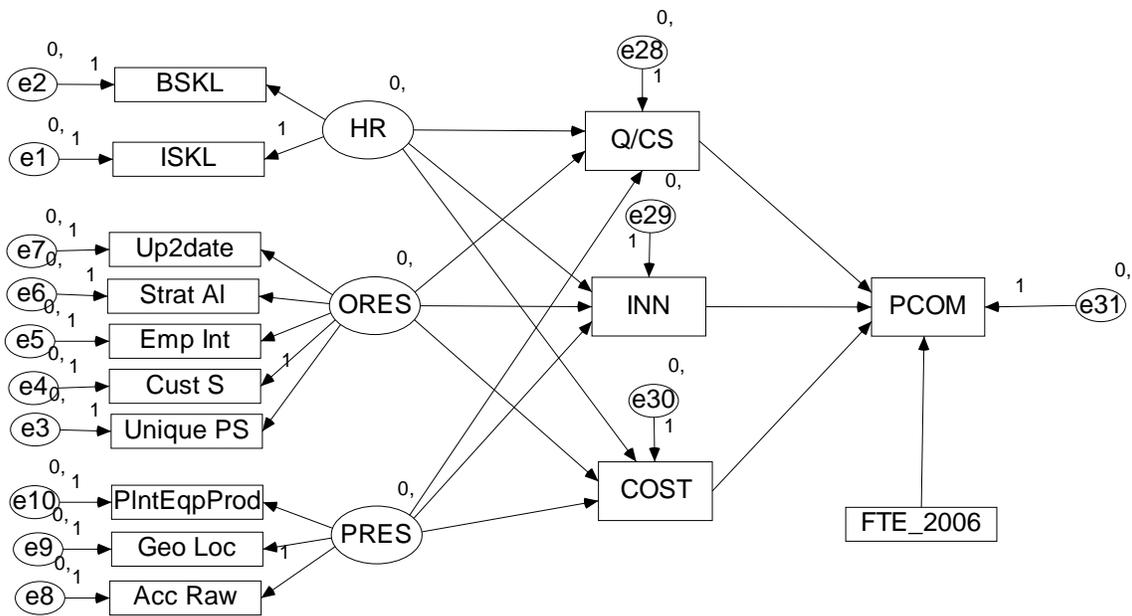


Figure 22: Adjusted hypothesised model (industry specific) based on figure 4

After modification, only one resource – strategy – performance model was found to be acceptable. Organisational resources fully mediated by a cost leadership strategy with performance as comparison to industry (model e, figure 23). Customer service capability was removed as a measurement of organisational resources as it had a low coefficient of .29 and was creating excessive noise resulting in an otherwise acceptable model violating fit statistics. The fit indices were all satisfactory with a χ^2 of .203, CFI of .959 and RMSEA of .051. The path coefficient between a cost leadership strategy and performance was moderate at .20. Organisational resources and cost had a moderate coefficient at .29, whilst the remaining manifest indicators had moderate to very good path coefficients of between .31 and .79 with up to date equipment and computer technologies and strategic alliances and linkages playing predominant roles. Once again the model was not modified further due to the risk of over fitting the model to the data.

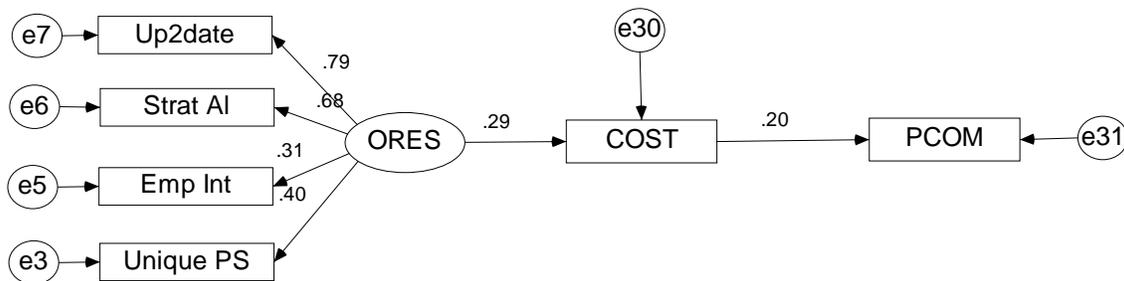


Figure 23: Model e, retail industry, PCOM, fully mediated

As testing for a fully mediated relationship is the hardest test, the hypotheses were tested with the various strategies partially mediating resources effect on performance.

6.1.02 Comparison to industry performance, partially mediated

The model was admissible with 73 degrees of freedom. Once modified the only acceptable model was that found in previous analysis, refer model e figure 23.

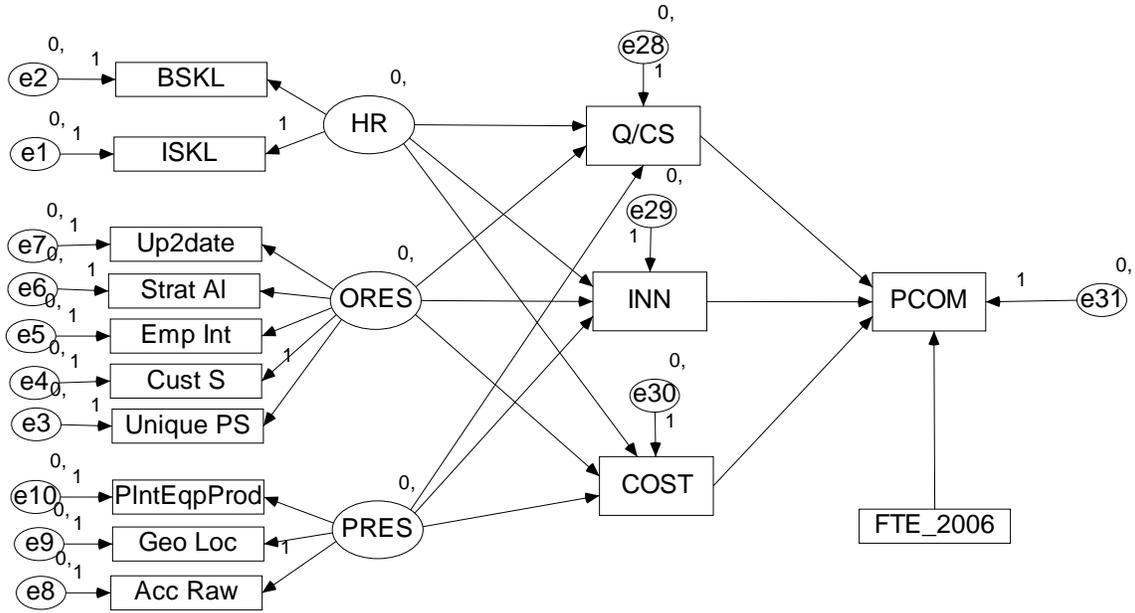


Figure 24: Industry specific partially mediated relationship between resources – strategy – performance

6.1.03 Comparison to industry performance, moderated

The model (refer figure 25) was admissible with 70 degrees of freedom. After modification the model was acceptable. Human resources moderated by a strategy of quality/ customer service (model f, figure 26). The fit indices were all satisfactory with a χ^2 of .911, CFI of .1.000 and RMSEA of .000. Quality/ customer service and human resources had a moderate coefficient at .34. Human resources and performance as has a moderate path coefficient of .19 (sig .078) with both manifest indicators having very good coefficients of .69 and .73.

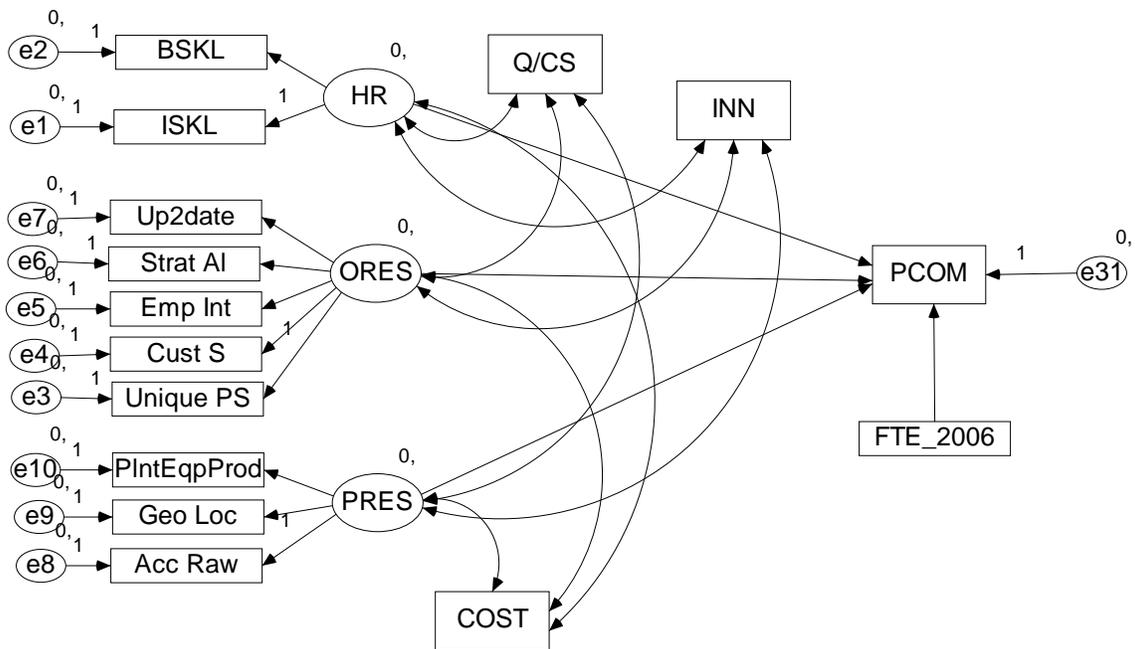


Figure 25: Industry specific, moderated relationship

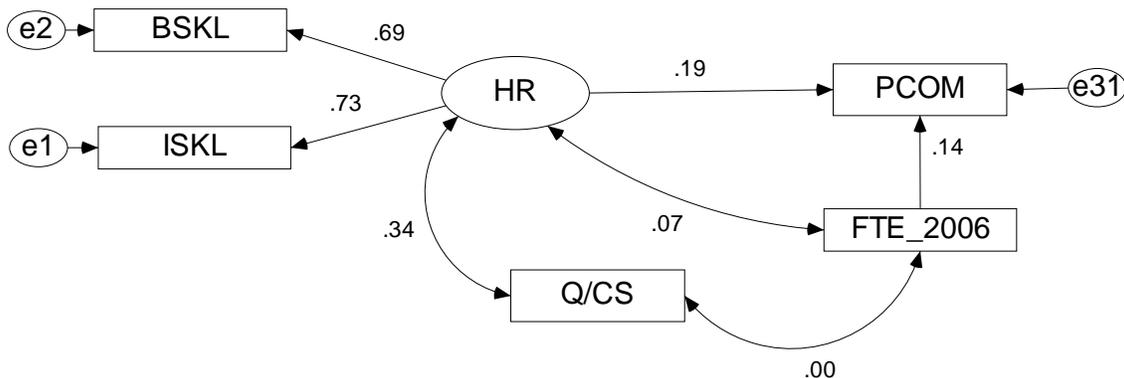


Figure 26: Model f, retail industry, PCOM, moderated

6.1.04 Current performance, fully mediated

The hypotheses were then tested using the current performance measure, as previously the relationships were modelled as fully mediated (figure 22, page 79). The model was over specified with 76 degrees of freedom, however fit statistics were poor. The model was then modified, however no solution was found that was an acceptable fit to the data.

6.1.05 Current performance, partially mediated

The model was then run as partially mediated (refer figure 24, page 81). The model was over specified with 73 degrees of freedom. After modification no acceptable model was found.

6.1.06 Current performance, moderated

The model (refer figure 25, page 82) was over specified with 70 degrees of freedom, after modification no acceptable model was found.

6.1.07 Expected future performance, fully mediated

The hypotheses were then tested using the expectation of performance measure, as previously the relationships were modelled as fully mediated (figure 22, page 79). The model was over specified with 76 degrees of freedom, however fit statistics were poor. The model was then modified, however no solution was found that provided an acceptable fit to the data.

6.1.08 Expected future performance, partially mediated

The model was then run as partially mediated as in figure 24, page 81. The model was over specified with 73 degrees of freedom. After modification no acceptable model was found.

6.1.09 Expected future performance, moderated

The model was over specified with 70 degrees of freedom, after modification no acceptable model was found.

6.1.10 Single hypothesis testing

Each possible resource – strategy – performance relationship was then tested. As there are too many possible models to show, only the acceptable models will be discussed.

- Organisational resources fully mediated by a cost leadership strategy with performance represented by the owner/ managers comparison to industry. This is consistent with results from previous analysis (refer model e, figure 23).
- Human resources fully mediated by a quality/ customer service strategy with performance as the owner/ managers expectation of future performance (refer model g, figure 27). The fit indices were all satisfactory with a χ^2 of .848, CFI of 1.000 and RMSEA of .000. A quality and customer services strategy and performance as measured by the owner/mangers expectation of future performance had a poor path coefficient of .15 however this is still considered to be meaningful. Human resources and a quality and customer service strategy had a moderate coefficient of .34. Whilst the manifest indicators of human resources both had very good coefficients of .7 and .72.

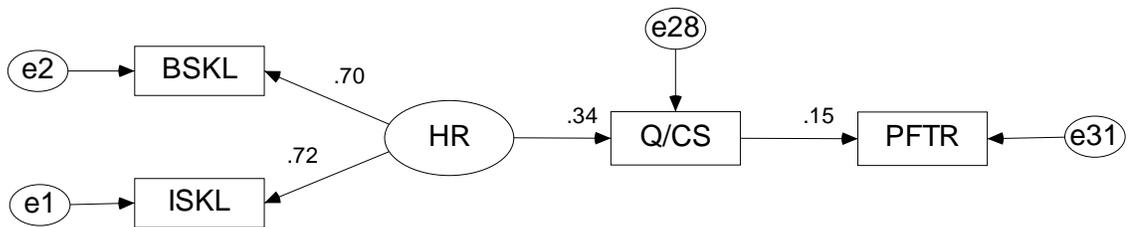


Figure 27: Model g, retail industry, PFTR, fully mediated

- Human resources moderated by a strategy of quality/ customer service with performance as the owner/ managers comparison to the firms industry. This is consistent with results from previous analysis (refer model f, figure 26).
- Physical resources fully mediated by a strategy of cost leadership with performance represented by the owner/ managers expectation of future performance (refer model h, figure 28). The fit indices were all satisfactory with a χ^2 of .099, CFI of .910 and RMSEA of .070. Cost leadership and performance had a coefficient of .19. Physical resources and cost had a coefficient of .25, with the manifest indicators of physical resources having moderate to very good coefficients of between .47 and .77, with plant, equipment and production

facilities playing a predominant role. The size of the firm also appeared to have a slight influence with a coefficient to performance of -.11

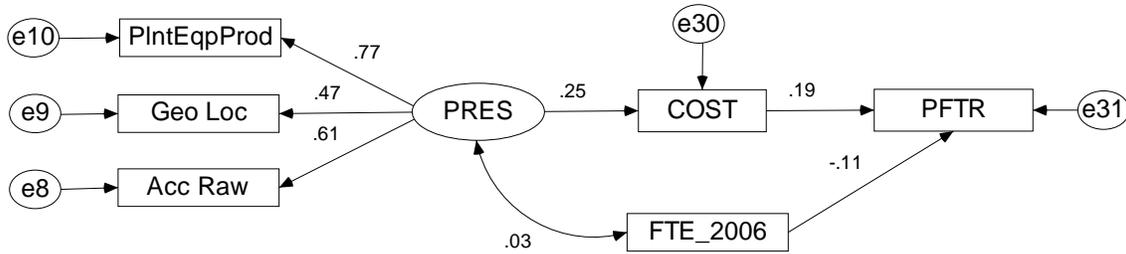


Figure 28: Model h, retail industry, PFTR, fully mediated

- o Physical resources moderated by an innovation of strategy with performance represented as the owner/ managers expectation of future performance (refer model i, figure 29). The fit indices were all satisfactory with a χ^2 of .372, CFI of .995 and RMSEA of .023. There was no support of an innovation strategy operating as a mediating mechanism with the path from innovation to performance not significant; however there is support for innovation operating as a moderating mechanism with a moderate coefficient of .44 between physical resources and innovation. The path from physical resources to performance was moderate at .21, with the indicators of physical resources exhibiting moderate to very good path coefficients of between .47 and .82 with plant equipment and production facilities once again taking a predominant role.

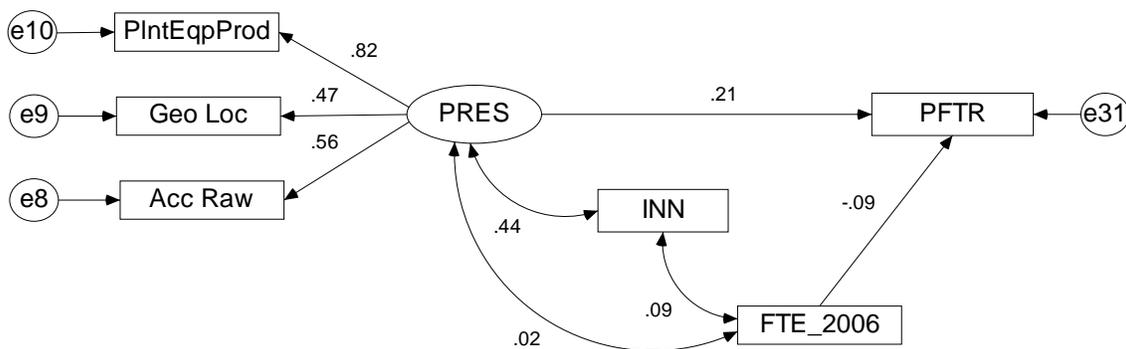


Figure 29: Model i, retail industry, PFTR, moderated

6.1.11 Retail industry summary

The results of analysis on the retail industry once again provide some support to Edelman et al.'s (2005) findings with a quality/ customer service strategy moderating human resources relationship with performance (PCOM) and mediating the relationship with expectations of future performance. Consistent with the aggregate sample, a low cost strategy appears to positively influence physical resources' relationship with performance (PFTR). Inconsistent with findings in the aggregate sample a cost leadership strategy fully mediated organisational resources relationship with performance (PCOM). Also an innovation strategy moderated physical resources relationship with expectations of future performance.

These findings suggest that for the smaller retail firm with high levels of human resources, a quality/ customer services strategy will provide the most likely path to higher performance. Firms wishing to compete on the basis of cost leadership should focus on building organisational and physical resources with higher levels of organisational resources associated with higher current performance, and physical resources expected to deliver higher future performance for the firm competing on a cost leadership basis. Leveraging higher levels of physical resources with an innovation strategy also appears a viable strategy to increase the firm's future performance.

6.2 SEM results for the engineering industry

6.2.01 Comparison to industry performance, fully mediated

The model was considered admissible by AMOS and was over specified with 76 degrees of freedom. Fit statistics were poor, consistent with multiple paths having low path coefficients. It was decided to modify the model by removing paths and subsequently variables where there was no proof of relationships, thus resulting in a more parsimonious and less complex model. After analysis no acceptable model was found.

6.2.02 Comparison to industry performance, partially mediated

The model as per previous, was considered admissible by AMOS and was over specified with 73 degrees of freedom. Fit statistics were poor, consistent with multiple paths having low path coefficients. It was decided to modify the model by removing paths and subsequently variables where there was no proof of relationships, thus resulting in more parsimonious and less complex model. After analysis no acceptable model was found.

6.2.03 Comparison to industry performance, moderated

The model as per previous, was considered admissible by AMOS and was over specified with 70 degrees of freedom. After modification one model was found to be acceptable; human resources moderated by strategies of quality/ customer service, innovation, and cost leadership with performance as comparison to industry (refer model j, figure 30). The fit indices were all satisfactory with a χ^2 of .215, CFI of .983 and RMSEA of .051. Path coefficients ranged from moderate to very good, with moderate coefficients from the strategies of quality/ customer service (.46), innovation (.37), and cost leadership (.41) to human resources. Human resources to performance had a moderate coefficient to performance of .25, whilst the indicator variables of human resources business skills and interpersonal skills had moderate and very good coefficients of .50 and .82 respectively.

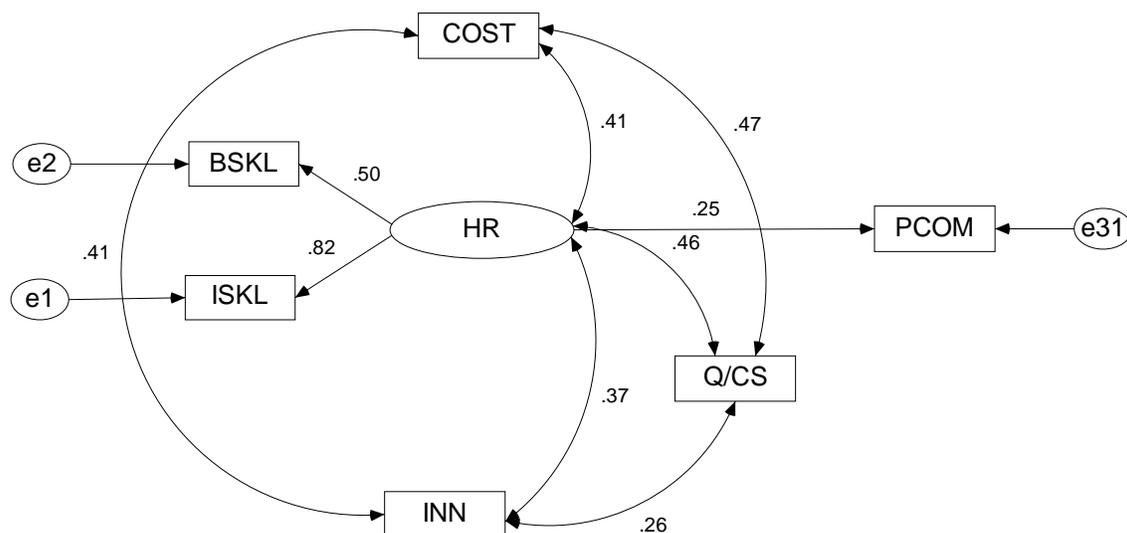


Figure 30: Model j, engineering industry, PCOM, moderated

6.2.04 Current performance, fully mediated

The hypotheses were then tested using the current performance measure, as previously the relationships were modelled as fully mediated (refer figure 22, page 79). The model was over specified with 76 degrees of freedom, however fit statistics were poor. After modification no acceptable model was found.

6.2.05 Current performance, partially mediated

The model was then run as partially mediated (refer figure 24 page 81). The model was over specified with 73 degrees of freedom. After modification no acceptable model was found.

6.2.06 Current performance, moderated

The model (refer figure 25, page 82), was over specified with 70 degrees of freedom, after modification no acceptable model was found.

6.2.07 Expected future performance, fully mediated

The hypotheses were then tested using the expectation of performance measure, as previously the relationships were modelled as fully mediated in the first instance. The model was over specified with 76 degrees of freedom, however fit statistics were poor. The model was then modified, however no solution was found that was an acceptable fit to the data.

6.2.08 Expected future performance, partially mediated

The model was then run as partially mediated. The model was over specified with 73 degrees of freedom. After modification no acceptable model was found.

6.2.09 Expected future performance, moderated

The model was over specified with 70 degrees of freedom, after modification no acceptable model was found.

6.2.10 Single hypothesis testing

Each possible resource – strategy – performance relationship was then tested. Once again as there are too many possible models to show, only the acceptable models will be discussed.

- Human resources moderated by a quality/ customer services strategy with performance represented by the owner/ managers comparison to their industry. Consistent with model j (figure 30).
- Physical resources fully mediated by a cost leadership strategy with performance represented by the owner/ managers comparison to the rest of their industry (refer model k, figure 31). The fit indices were all satisfactory with a χ^2 of .160, CFI of .926 and RMSEA of .060. Cost and performance had a relatively poor coefficient at .15, however this was statistically significant and meaningful in the research. Physical resources to cost had a moderate coefficient at .36. Physical resources indicators had moderate to good coefficients from .31 to .69 with plant, equipment and production facilities and access to raw materials playing a larger role than geographic location. The FTE control variable coefficients were not statistically significant but the variable was left in the model as it significantly improved model fit.

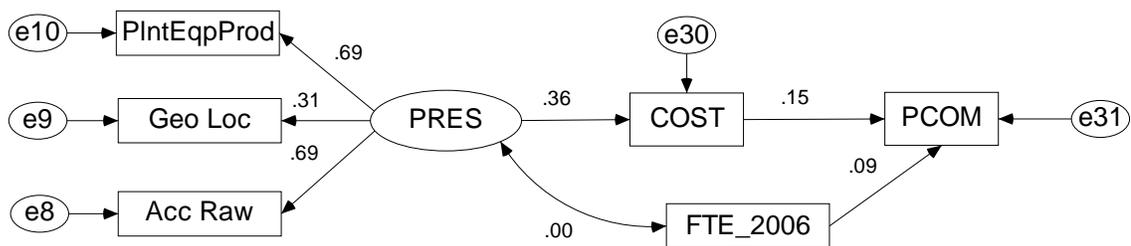


Figure 31: Model k, engineering industry, PCOM, fully mediated

- Physical resources moderated by a strategy of innovation with performance represented by the owner/ managers comparison to their industry (refer model l, figure 32). The fit indices were all satisfactory with a χ^2 of .167, CFI of .953 and RMSEA of .059. The coefficient from physical resources to performance was

moderate at .19, it is noted that this coefficient is only significant at a .93 cut off which reduces the certainty in this relationship. The path from innovation to performance was not significant giving no support for a mediating effect, however the coefficient between physical resources and innovation was moderate and significant giving support for a moderating effect. The indicators of physical resources had coefficients ranging from moderate to very good with access to raw materials, and plant, equipment and production facilities playing larger roles than geographic location.

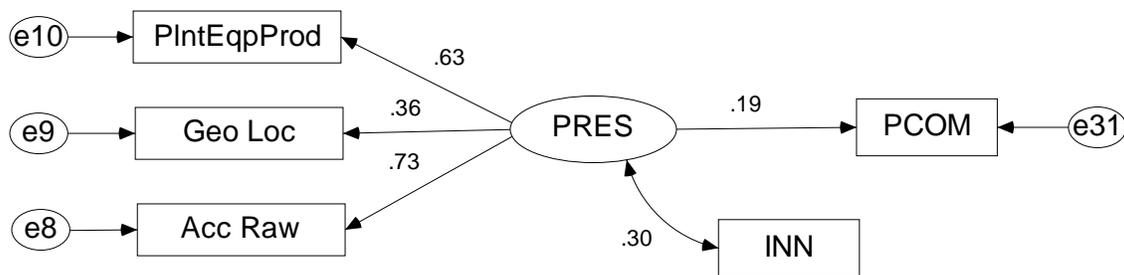


Figure 32: Model 1, engineering industry, PCOM, moderated

6.2.11 Engineering industry summary

The results of analysis on the engineering industry once again provide some support to Edelman et al.'s (2005) findings with a quality/ customer service strategy moderating human resources relationship with performance (PCOM), consistent with the findings in the aggregate and retail samples. Also consistent with the aggregate sample, an innovation strategy appears to influence the relationship between human resources and performance, and a cost strategy influences physical resources relationship with performance (PCOM). Inconsistent with the aggregate sample but consistent with the retail sample, a cost leadership strategy influences physical resources relationship with performance, although in the engineering industry it impacts on PCOM as opposed to future expectations in the retail industry. Along similar lines, physical resources and an innovation strategy are associated with performance (PCOM), whereas in the retail industry this combination was associated with expectations of future performance.

Unique to the engineering industry a cost leadership strategy also appears to moderate human resources relationship with performance.

These findings suggest in the smaller engineering firm human resources are a flexible source of performance as they can be combined with any of the three strategies investigated. Also the engineering firm with higher levels of physical resources is best to compete on the basis of cost leadership or innovation.

6.3 SEM results for the professional services industry

6.3.01 Comparison to industry performance, fully mediated

The model as per previous was considered admissible by AMOS and was over specified with 76 degrees of freedom. Fit statistics were poor, consistent with multiple paths having low path coefficients. It was decided to modify the model by removing paths and subsequently variables where there was no proof of relationships, thus resulting in a more parsimonious and less complex model. After analysis no acceptable model was found.

6.3.02 Comparison to industry performance, partially mediated

The model as per previous, was considered admissible by AMOS and was over specified with 73 degrees of freedom. Fit statistics were poor, consistent with multiple paths having low path coefficients. It was decided to modify the model by removing paths and subsequently variables where there was no proof of relationships, thus resulting in a more parsimonious and less complex model. After analysis no acceptable model was found.

6.3.03 Comparison to industry performance, moderated

The model as per previous, was considered admissible by AMOS and was over specified with 70 degrees of freedom. After modification one model was found to be acceptable; human resources moderated by strategies of quality/ customer service, and innovation with performance as comparison to industry (refer model m, figure 33). The

fit indices were all satisfactory with a χ^2 of .708, CFI of 1.000 and RMSEA of .000. Path coefficients ranged from moderate to very good, with moderate coefficients from the strategies of quality/ customer service (.41) and innovation (.55) to human resources. Human resources to performance had a good coefficient to performance of .67, whilst the indicator variables of human resources business skills and interpersonal skills had very good and moderate coefficients of .68 and .56 respectively.

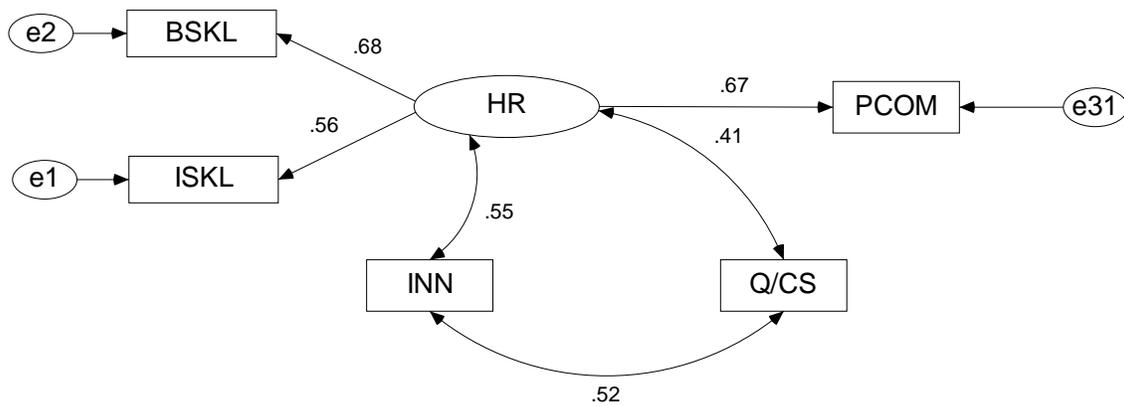


Figure 33: Model m, professional services industry, PCOM, moderated

6.3.04 Current performance, fully mediated

The hypotheses were then tested using the current performance measure, as previously the relationships were modelled as fully mediated. The model was over specified with 76 degrees of freedom, however fit statistics were poor. The model was then modified, however no solution was found that was an acceptable fit to the data.

6.3.05 Current performance, partially mediated

The model was then run as partially mediated. The model was over specified with 73 degrees of freedom. After modification no acceptable model was found.

6.3.06 Current performance, moderated

The model was over specified with 70 degrees of freedom, after modification no acceptable model was found.

6.3.07 Expectation of future performance, fully mediated

The hypotheses were then tested using the expectation of performance measure, as previously the relationships were initially modelled as fully mediated. The model was over specified with 76 degrees of freedom, however fit statistics were poor. The model was then modified, however no solution was found that was an acceptable fit to the data.

6.3.08 Expectation of future performance, partially mediated

The model was then run as partially mediated. The model was over specified with 73 degrees of freedom. After modification no acceptable model was found.

6.3.09 Expectation of future performance, moderated

The model was over specified with 70 degrees of freedom, after modification no acceptable model was found.

6.3.10 Single hypothesis testing

Each possible resource – strategy – performance relationship was then tested. Once again as there are too many possible models to show, only the acceptable models will be discussed.

- Human resources moderated by a quality/ customer services strategy with performance as the owner/ managers comparison to their industry. Consistent with model m (figure 33).

- Organisational resources moderated by an innovation strategy with performance as the owner/ managers comparison to their industry (refer model n, figure 34). The fit indices were all satisfactory with a χ^2 of .201, CFI of .977 and RMSEA of .043. Once again there was limited support for strategy operating as a mediating mechanism, although the path from strategy to performance was significant, the model as a whole did not fit. After the model was re-specified with strategy as a moderating mechanism the model showed good levels of fit on all criteria. Organisational resources to performance had a good coefficient of .50.

Organisational resources to a strategy of innovation had a good coefficient of .60. All indicators of organisational resources had moderate to good coefficients of .45 to .72.

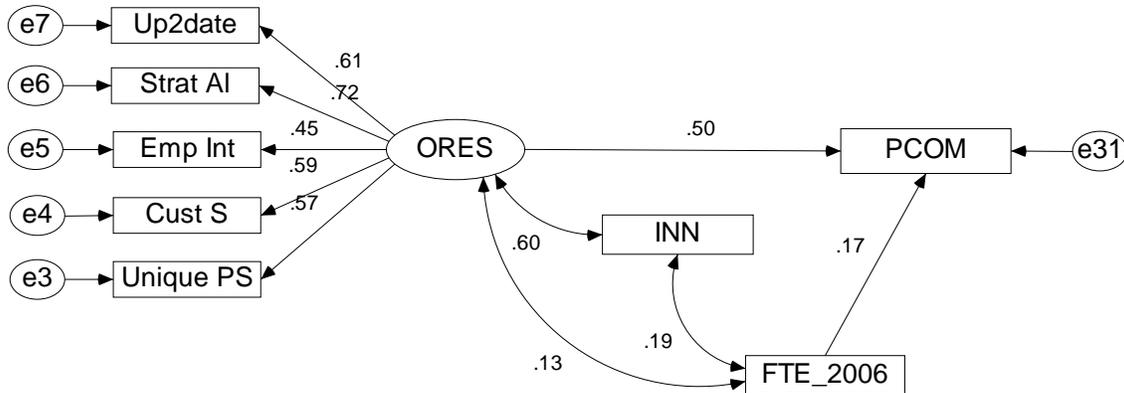


Figure 34: Model n, professional services industry, PCOM, moderated

- Physical resources fully mediated by a strategy of innovation with performance as the owner/ managers comparison to their industry (refer model o, figure 35). The fit indices were all satisfactory with a χ^2 of .114, CFI of .959 and RMSEA of .065. The innovation to performance coefficient was moderate at .37. Physical resources to an innovation strategy had a moderate coefficient of .26, whilst the indicator variables of physical resources had moderate to excellent path coefficients from .49 to .91 with plant, equipment and production facilities once again playing a predominant role.

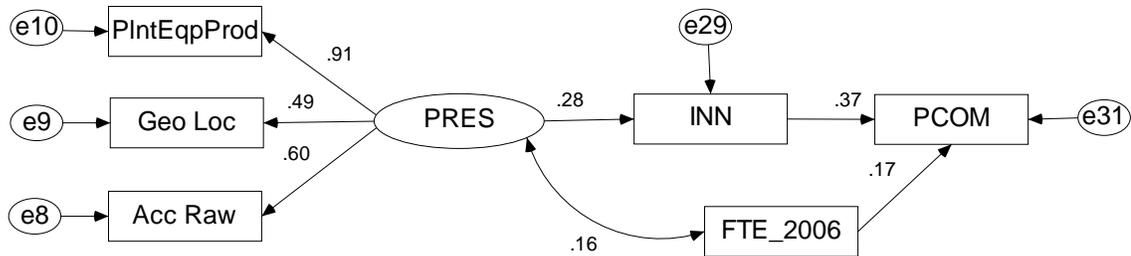


Figure 35: Model o, professional services industry, PCOM, fully mediated

- Physical resources fully mediated by a quality/ customer services strategy with performance represented by the owner/ managers comparison to their industry

(refer model p, figure 36). The fit indices were all satisfactory with a χ^2 of .220, CFI of .975 and RMSEA of .048. The strategy of quality/ customer service and performance had a moderate coefficient of .29. Physical resources and a quality/ customer services strategy had a moderate coefficient of .25. The indicator variables of physical resources had moderate to excellent coefficients from .50 to .88 with plant, equipment and production facilities once again taking a predominant role.

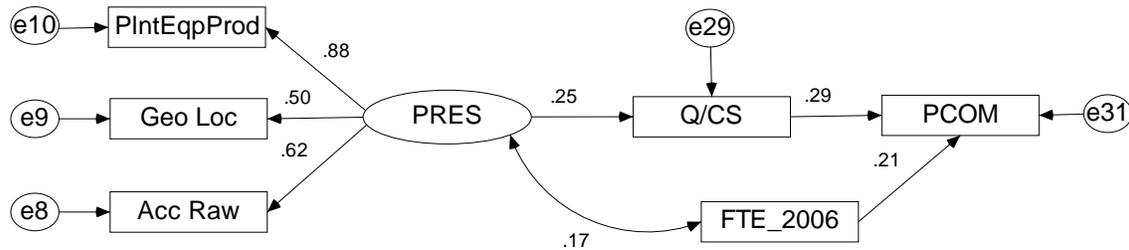


Figure 36: Model p, professional services industry, PCOM, fully mediated

6.3.11 Professional services industry summary

The analysis on the professional services industry, consistent with the aggregate, retail and engineering samples, provides partial support for the findings of Edelman et al. (2005) with human resources combined with a quality/ customer services strategy associated with performance (PCOM). Human resources combined with an innovation strategy is associated with higher performance (PCOM), consistent with the aggregate and engineering samples. Physical resources combined with an innovation strategy are associated with performance (PCOM), consistent with the engineering (PCOM) and retail (PFTR), but not the aggregate sample. Unique to the professional services industry is the positive association that organisation resources combined with an innovation strategy and physical resources combined with a quality/ customer service strategy have with performance (PCOM).

These results suggest that smaller professional service firms should leverage higher human or physical resources with a quality/ customer service or innovation strategy. Higher levels of organisational resources appear to work with a strategy of innovation

also. There was no evidence for a cost leadership strategy being associated with higher performance, therefore the professional services firm is not recommended to pursue this positioning strategy.

6.4 Structural model summary

Industry	Model	Figure	Industry	Resources	Strategy	Performance Measure	Relationship Type
Aggregate							
	a	14	All	HR	INN & Q/CS	PCOM	Moderation
	b	19	All	HR	INN	PFTR	Full Mediation
	c	20	All	PRES	COST	PCOM	Partial Mediation
	d	21	All	PRES	COST	PFTR	Moderation
Retail							
	e	23	Retail	ORES	COST	PCOM	Full Mediation
	f	26	Retail	HR	Q/CS	PCOM	Moderation
	g	27	Retail	HR	Q/CS	PFTR	Full Mediation
	h	28	Retail	PRES	COST	PFTR	Full Mediation
	i	29	Retail	PRES	INN	PFTR	Moderation
Engineering							
	j	30	Engineering	HR	Q/CS & INN & COST	PCOM	Moderation
	k	31	Engineering	PRES	COST	PCOM	Full Mediation
	l	32	Engineering	PRES	INN	PCOM	Moderation
Professional							
	m	33	Professional	HR	Q/CS & INN	PCOM	Moderation
	n	34	Professional	ORES	INN	PCOM	Moderation
	o	35	Professional	PRES	INN	PCOM	Full Mediation
	p	36	Professional	PRES	Q/CS	PCOM	Full Mediation

Table 6.1: Summary of Structural Models with Significant Performance Relationships

6.5 Results conclusion

The data set used did present some problems in general analysis due to missing and non-normal data which were dealt with through the use of maximum likelihood estimation and transformation. The measurement model was acceptable, although could be improved upon for future research with some alpha levels lower than ideal. The analysis demonstrates that the resource – strategy – performance relationship is complicated with multiple models receiving generally good support from the data using an SEM analyses. This thesis has not applied a purely confirmatory approach, with significant changes made to the model at each stage of analysis. These changes however were all consistent with the literature, and related to simplifying the model rather than theorising new relationships between variables. The multiple measure of model fit were considered to be a real strength in the SEM analysis, with superficial relationships more likely to be rejected than in a traditional regression analysis due to the evaluation of each relationship in the context of the model as a whole. The main disappointment was that no

one model was able to demonstrate the effectiveness of the resource – strategy combinations, possibly due to multicollinearity and the relatively low explanation of performance in most models in comparison to traditional SEM analysis in the psychology research. This is consistent with most strategic models with explanation of performance as low as 10% considered quite significant theoretically. Path weights were also consistent with Edelman et al. (2005), whose strongest relationship with performance was a .36 coefficient from a quality/ customer service strategy to performance. The lack of correlation between the performance variables was disappointing and reduces the confidence in inferences drawn from the research.

Chapter Seven

- Research Findings

7.0 Conclusions regarding hypotheses

This chapter will discuss the specific findings from chapters 4 through 6 relating to the hypotheses stated in chapter 2 to provide insights into the primary research questions presented in chapter 1. The primary research questions were to investigate the impact of resources and positioning strategies on performance, including implications of fit, and consistency of relationships across industries. Each hypothesis will be restated, a general conclusion presented and justified. Findings will then be contrasted to the literature discussed in chapter 2.

7.01 H1

H1: Strategies are positively associated with firm performance

After consideration of the final structural models (table 6.1) and the correlation matrix of variables (table 4.4) this thesis suggests that there is a significant relationship between firm strategies and firm performance. Whilst not all strategies are consistently associated with higher performance across all industry groupings, particular strategies were associated with higher performance in each industry grouping. The correlation matrix only provides weak support, with significant correlations between strategies and comparison to industry between .13 and .19, innovation and current performance -.12, and expectation of future performance .11. Several structural models provided greater evidence of the relationship between strategies and firm performance with the strongest examples in the professional services industry, with a coefficient between an innovation strategy and performance as comparison to industry of .37 (refer model o). As well as a coefficient between a quality/ customer services strategy and performance as comparison to industry of .29 (refer model p). This finding is generally consistent with the literature discussed in chapter 2 with studies by Campbell-Hunt (2000), Chandler and Hanks, (1994), Edelman et al. (2005), and Spanos and Lioukas (2001) finding that following generic strategies are often associated with firm performance, but not all strategies are consistently associated with superior firm performance, although the generic strategies are useful discriminators of firm behaviour.

7.02 H2

H2: A strategy of quality/ customer service is positively associated with firm performance

After consideration of the correlation matrix (table 4.4) and the final structural models (table 6.1) this thesis suggests that a strategy of quality/ customer service is associated with firm performance in all of the industries sampled. The .16 correlation between the strategy of quality/ customer service and the owner/managers comparison to industry was significant at $p < .05$. Structural models in all of the industries, as well as the combined sample, demonstrated a relationship between a quality/ customer services and performance as comparison to industry (refer models a, f, j, m, and p), and in the retail industry with performance as expectation of future performance (refer model g). A caveat must be made on the support of this hypothesis in that the strategy was not associated with all measures of performance, in particular current performance. This finding is consistent with the literature in particular Edelman et al. (2005) and Chandler and Hanks (1994) who found that a strategy of quality/ customer service was positively associated with firm performance.

7.03 H3

H3: A strategy of innovation is positively associated with firm performance

After consideration of the correlation matrix (table 4.4) and the final structural models (table 6.1), this thesis suggests that a strategy of innovation is associated with firm performance in all of the industries sampled. Correlations between innovation and the various performance variables were mixed with positive correlations between the comparison to industry (.19), and expectation of future performance (.11), whilst the correlation with the current performance variable was negative (-.12). The structural models provided support with an innovation strategy being positively associated with performance when measured as comparison to industry in the combined sample and the engineering and professional services industry (refer models a, i, j, l, m, n, and o), and with expectation of future performance in the combined sample and retail industry (refer models b and i). Once again a caveat must be applied to the acceptance of this hypothesis

in that an innovation strategy was not consistently associated with performance across all industries and performance variables, in particular current performance. This finding is generally consistent with the literature which suggests that for the small firm, innovation is a particularly viable strategy (Acs and Audretsch, 1993; Beal, 2000; Covin et al., 2000; Wickland, 1999), however this finding is somewhat inconsistent with Edelman et al. (2005) who did not find a significant relationship between an innovation strategy and performance.

7.04 H4

H4: A strategy of cost leadership is positively associated with firm performance

After consideration of the correlation matrix (table 4.4) and the final structural models (table 6.1), the results of this thesis provide moderate support for a cost leadership strategy being positively associated with firm performance. There was a positive correlation to comparison to industry (.13). Several structural models also provided support with cost leadership playing a significant role. Cost leadership was associated with performance as comparison to industry in the combined sample, as well as engineering and retail industries (refer models c, e, j and k), and with expectation of future performance in the combined sample and the retail industry (refer models d and h). The conclusions drawn regarding the hypothesis are restricted due to the inconsistency across industries and performance measures. The results are somewhat consistent with the literature, in particular Chandler and Hanks (1994) who found that a cost leadership strategy was associated with higher performance when resource based capabilities are supportive and Cooper et al. (1986) who found that small firms can compete head on with their larger counterparts. However the moderate support for this hypothesis is inconsistent with the suggestion that the small firm cannot compete on cost and therefore must pursue a differentiation strategy in order to survive (Beal, 2000; Kean et al., 1998).

7.05 H5

H5: Resources are positively associated with firm performance

After consideration of the final structural models (table 6.1) and the correlation matrix of variables (table 4.4) this thesis suggests that there is a significant relationship between the level of firm resources and firm performance. Whilst not all resource types appeared to be consistently associated with performance in all industries, at least one resource type was associated with measures of performance in each industry. In support of this is the presence of resources in structural models for the performance measures of the owner/managers comparison to industry, and expectation of future performance across all industries. The correlation matrix only provides weak support for the relationship with weak to moderate significant correlations between .14 and .25 between the individual firm resources, current performance and comparison to industry, and weak correlations of .10 and .14 between physical and organisational resources respectively and the owner/managers expectation of future firm performance. Several structural models however give stronger support to this hypothesis with the strongest examples in the professional services industry; with a coefficient of .67 between human resources and performance represented by the owner manager's comparison to their industry (refer model m). And model n with a coefficient between organisational resources and performance represented by comparison to industry of .50. This finding is generally consistent with the literature discussed in chapter 2 in that resources are sometimes, but not always, directly associated with firm performance, and provides support for Rangone (1999) and Ray et al.'s (2004) contentions that an endowment of critical resources cannot be directly related to a firms financial performance, as this also depends on; the structure and attractiveness of the industry in which the firm competes, the ability of the company to translate resources into capabilities and subsequently competitive advantage, and resource advantages in some areas are cancelled out by the resource disadvantages in other area This finding is also consistent with Chandler and Hanks (1994) who found that an abundance of resource-based capabilities were associated with firm performance, and Edelman et al. (2005) who found that both human and organisational resources were (indirectly) associated with firm performance

7.06 H6

H6: Greater levels of human resources are positively associated with firm performance

After consideration of the correlation matrix (table 4.4) and the final structural models (table 6.1) this thesis suggests that greater levels of human resources are associated with firm performance in all of the industries sampled. Significant correlations between business skills and comparison to industry of .25 and interpersonal skills and comparison to industry of .24 give support to this hypothesis as well as several structural models. Human resources were associated with performance as comparison to industry in each of the industries and combined sample (refer models a, f, j, and m), and expectations of future performance in the combined sample and retail industry (refer models b and g). A caveat must be drawn on this conclusion in that human resources were not associated with performance consistently across all performance measures. This finding is consistent with the extensive research into the effects of human resource based capabilities' impact on performance (Huselid et al., 1997; Wright et al., 1994; Youndt et al., 1996) and the proposition that human resources, rather than physical resources may even be the ultimate determinant of organisational performance in today's global business environment (Pfeffer, 1994; Reich, 1991; Wright et al. , 1995)

7.07 H7

H7: Greater levels of organisational resources are positively associated with firm performance

After consideration of the correlation matrix (table 4.4) and the final structural models (table 6.1) this thesis found limited support for greater levels of organisational resources being positively associated with firm performance. There was a significant correlation between organisational resources and performance as comparison to industry of .21. The structural models provided support for organisational resources to be an important factor in firm performance in the retail (model e) and professional services industry (model n). There was no evidence of organisational resources being positively associated with firm performance in the engineering or combined sample. This is somewhat inconsistent with the literature outlined in chapter 2, in particular with Edelman et al. (2005) who found organisational resources to be associated with higher firm performance. However this is

consistent with literature demonstrating the inconsistency of the relationship between firm resources and performance (Rangone, 1999; Ray et al., 2004)

7.08 H8

H8: Greater levels of physical resources are positively associated with firm performance

After consideration of the correlation matrix (table 4.4) and the final structural models (table 6.1), this thesis suggests that greater levels of physical resources are associated with firm performance in all of the industries sampled. A caveat must be drawn on this conclusion in that physical resources were not associated with performance consistently across all performance measures. Significant correlations between physical resources and comparison to industry of .14 and expectation of future performance of .10 give weak support to this hypothesis. Several final structural models give stronger support to this hypothesis, with physical resources playing a significant role in models in; the combined sample, engineering and professional services industries with performance as comparison to industry (models c, k, l, o, and p) and in the combined sample and retail industry on expectation of future performance (models d, h, and i). This finding is consistent with RBV literature which suggests that physical resources can help the firm produce more efficiently, reducing costs or helping to better serve customer needs (Barney, 1991; Peteraf, 1993; Peteraf and Barney, 2003), and research that shows that physical resources can be a source of competitive advantage (Schroeder et al., 2002).

7.09 H9

H9: Strategies impact on the relationship between resources and firm performance. (Resources and strategies are positively associated with firm performance)

This thesis suggests that strategies do impact on the relationship between resources and firm performance based on the final structural models (table 6.1). All final models in the research showed resource – strategy interaction effects, the strongest evidence was in the professional services industry with a coefficient between organisational resources and a strategy of innovation of .60 (refer model n), a coefficient between human resources and

innovation of .55, and quality/ customer service of .41 (refer model m) with performance as comparison to industry. This finding is generally consistent with the literature discussed in chapter 2, with studies by studies by Chandler and Hanks (1994) and in particular Edelman et al. (2005) showing significant effects of ‘fit’ between resources, strategies and firm performance.

7.10 H10

H10: Strategies play a mediating role on the relationship between resources and firm performance

After consideration of the final structural models (table 6.1) this thesis only found moderate support for the hypothesis in that strategy *can* play a mediating role on the relationship between resources and firm performance but that mediation is not always the way in which strategies impact on the relationship between resources and firm performance. Out of the final structural models, seven showed evidence of full mediation, one of partial mediation and eight of moderation. This finding is consistent with the literature (Chandler and Hanks, 1994; Edelman et al., 2005; Venkataraman, 1989) in that ‘fit’ can be postulated as either a mediating or moderating relationship.

7.11 H11, H12 and H13

H11: Greater levels of human resources combined with a strategy of quality/ customer service are positively associated with firm performance

H12: Greater levels of human resources combined with a strategy of innovation are positively associated with firm performance

H13: Greater levels of human resources combined with a strategy of cost leadership are positively associated with firm performance

After consideration of the structural models (table 6.1), this thesis suggests that greater levels of human resources combined with a strategy of quality/ customer service are positively associated with firm performance in all of the industries sampled. In support of this finding, structural models were found in the combined sample and each of the industries in which human resources and a Q/CS strategy were structurally related and had an effect on performance as PCOM (refer to models a, f, j, and m). The best example of this relationship was human resources moderated by a quality/ customer service strategy in the retail industry with a coefficient to performance of .19 (refer model f). A quality/ customer service strategy also fully mediated human resources' relationship with expectation of future performance in the retail industry (refer model g). Once again this finding is somewhat limited by the lack of consistency across performance variables. The finding is consistent with the literature in particular Edelman et al. (2005) who found that a quality/ customer services strategy fully mediated human resources relationship with performance.

After consideration of the structural models (table 6.1), this thesis suggests that greater levels of human resources combined with a strategy of innovation are positively associated with firm performance contingent upon the environmental impacts of industry participation. Support was found for an innovation strategy moderating the relationship between human resources and performance as comparison to industry in the combined sample and engineering and professional services industries (refer models a, j, and m). Innovation was also found to fully mediate the relationship between human resources and expectation of future performance in the combined sample (refer model b). Once again the conclusion regarding this hypothesis is limited due to the lack of consistency across performance variables. This finding is generally consistent with innovation regarded as an appropriate strategy for the small firm (Beal, 2000; Porter, 1980), however is not consistent with Edelman et al. (2005) who found that whilst human resources were associated with an innovation strategy, a strategy of innovation was not associated with firm performance.

After consideration of the structural models (table 6.1) this thesis only found limited support for the hypothesis of human resources combined with a strategy of cost leadership being positively associated with firm performance. This relationship was only supported by one structural model (model j) with a cost leadership strategy moderating the effect on human resources relationship with performance in the engineering industry. The coefficient between cost leadership and human resources was .37, and human resources and performance of .25 with performance as comparison to industry. There was no support for this resource – strategy combination being associated with firm performance in any of the other industries, or performance measurements. This finding is inconsistent with some literature which suggests that human resources have a role in waste reduction (Deming, 1986), or that human capital development is related to higher employee productivity (Youndt et al. , 1996), although no studies have statistically found a positive performance implication of fit between human resources and a cost leadership strategy.

7.12 H14, H15 and H16

H14: Greater levels of organisational resources combined with a strategy of quality/ customer service are positively associated with firm performance

H15: Greater levels of organisational resources combined with a strategy of innovation are positively associated with firm performance

H16: Greater levels of organisational resources combined with a strategy of cost leadership are positively associated with firm performance

After consideration of the final structural models (table 6.1), this thesis found no evidence to support the hypothesis of greater organisation resources combined with a strategy of quality/ customer service being associated with firm performance. This finding is inconsistent with the literature in particular Edelman et al. (2005) who found that a quality/ customer service strategy fully mediated organisational resources positive relationship with performance.

After consideration of the final structural models (table 6.1), this thesis found only limited support that organisational resources combined with a strategy of innovation are positively associated with firm performance. There was support for a strategy of innovation moderating organisational resources relationship with firm performance in the professional services industry (model n). The coefficient between an innovation strategy and organisational resources was very good at .60 and organisational resources and performance as comparison to industry was very good at .50. This finding is fairly consistent with Edelman et al. (2005) who found that whilst organisational resources were associated with an innovation strategy, this combination was not significantly related to performance.

After consideration of the final structural models (table 6.1), this thesis found only limited support for organisational resources combined with a strategy of cost leadership being positively associated with firm performance. There was support for a strategy of cost leadership mediating organisational resources relationship with firm performance in the retail industry (model e). The coefficient between organisational resources and a cost leadership strategy was moderate at .29, and cost leadership and performance as comparison to industry was moderate at .20. This finding is generally inconsistent with the literature which suggests that the effectiveness of organisational processes impacts on performance (Deming, 1986), and that performance is enhanced when resource based capabilities are supportive of a cost leadership strategy, including expertise in process technology to develop highly efficient production and information systems (Chandler and Hanks, 1994).

7.13 H17, H18 and H19

H17: Greater levels of physical resources combined with a strategy of quality/ customer service are positively associated with firm performance

H18: Greater levels of physical resources combined with a strategy of innovation are positively associated with firm performance

H19: Greater levels of physical resources combined with a strategy of cost leadership are positively associated with firm performance

After consideration of the final structural models (table 6.1), this thesis only finds limited support for greater levels of physical resources combined with a quality/ customer service strategy being positively associated with firm performance. There was support for a strategy of quality/ customer service fully mediating physical resources relationship with firm performance in the professional services industry (model e). The coefficient between physical resources and a quality/ customer services strategy was moderate at .25 and cost leadership and performance as comparison to industry was moderate at .29. There was no evidence of this strategic combination being associated with firm performance in any other industry. This finding is inconsistent with expectations that a higher level of physical resources would allow the firm to provide goods and services of a higher quality, faster, and with increased ease of access by customers.

After consideration of the final structural models (table 6.1) this thesis found moderate support for physical resources combined with an innovation strategy being positively associated with firm performance in each of the industries, but not the combined sample. A greater level of physical resources combined with an innovation strategy was positively associated with performance as comparison to industry in the engineering and professional services industries (refer models l and o). This resource – strategy combination is also positively associated with expectation of future performance in the retail industry (refer model i). This finding is generally consistent with the literature where resource abundance is seen to be an enabler of innovation (Romanelli, 1989).

After consideration of the final structural models, this thesis finds moderate support for a combination of physical resources and a cost leadership strategy being positively associated with firm performance. This strategic combination was associated with higher performance as comparison to industry in the combined sample and the engineering industry (refer models c and k). Physical resources combined with a cost strategy also

appeared to increase the expectation of future performance in the combined sample and retail industry (refer models d and h). This finding is consistent with the literature, with physical resources playing an integral part in being able to produce goods and services more efficiently. This finding is consistent with Chandler and Hanks (1994) who found that resources supportive of a cost leadership strategy, one of which is leading edge plant, equipment and production facilities increases the performance of firms competing on this strategy. It illustrates that contrary to some theory (Beal, 2000; Kean et al., 1998), small firms can compete on the basis of cost, when their resources are supportive of this strategy.

7.14 H20

H20: The association between resources, strategies and firm performance will be consistent across industries

The results of the structural models in this thesis provide only limited evidence for the hypothesis that the resource – strategy – performance relationship is consistent across industries. Human resources in combination with a quality/ customer services strategy was positively associated with performance as comparison to industry across all industry groups studied (refer models a, f, j and m). This result is consistent with Edelman et al. (2005) who found that human resources in combination with a quality/ customer services strategy was associated with higher performance. Other resource – strategy combinations were associated with higher firm performance in some cases, however they were not consistently associated with firm performance. This result is consistent with contingency theorists' assertion that the quality of a firm's resources and strategies is dependant on the industry environment it is operating in (Carpano and Chrisman, 1995; Murray, 1988).

Chapter Eight

- Conclusions and Implications

8.0 Conclusions and Implications

The aim of this thesis was to investigate whether a fit between resources and strategies is associated with firm performance, and to investigate whether the success of strategic combinations is dependent on environmental factors. Primarily this research followed the work of Edelman et al. (2005) extending it by including more resource – strategy combinations, and testing across industries to investigate the effectiveness of resource – strategy combinations in different competitive environments and in a different industry setting, that of the smaller NZ firm. To answer this question, this thesis has been presented in eight chapters. The first chapter presented a general overview of the research with key background literature and a justification of its importance. The second chapter further developed the overview of background literature specifically examining the effect of resource and market positioning strategies’ impact on firm performance, both theoretically and empirically. Hypotheses were developed and presented at the end of each section. The third chapter focused on documenting and justifying the research methodology applied in this thesis, including; the development of research measures for the independent and dependant variables, the data collection process, and the data analysis process chosen. The fourth chapter presented the preliminary results of the data analysis for the research measures and replication of Edelman et al.’s (2005) model. The fifth chapter presented the data analysis for the aggregate sample, whilst industry specific results were presented in chapter six. Chapter seven answered directly the conclusions regarding the specific research hypotheses based on the results of analysis. This final chapter will be broken into five sections; the first will provide a conclusion to the primary research questions considering the conclusions of each hypothesis. The second and third sections will present the implications of the research on theory and practice. Finally limitations and directions for future research will be provided.

8.1 Conclusions regarding the primary research questions

8.1.1 Are positioning strategies consistently associated with higher performance?

“Are positioning strategies consistently associated with higher performance across industries?”

The results indicate that commitment to a generic market positioning strategy is associated with higher performance in all industries. In each industry market positioning strategies were found to play a significant role in the structural models of performance. This finding is significant in that previous research has often found the generic positioning strategies to be good discriminators of firm behaviour, but not necessarily performance (Campbell-Hunt, 2000). This finding is as expected with extensive support throughout the literature supporting aspects of the generic positioning strategies (Campbell-Hunt, 2000; De Castro and Chrisman, 1995; Dess and Davis, 1984). This finding is consistent with Edelman et al. (2005) who found a quality/customer service strategy to be associated with firm performance.

8.1.2 Are resources consistently associated with higher firm performance?

“Are resources consistently associated with higher firm performance?”

The results indicate that firm resources are consistently associated with higher performance in all industries. In each industry firm resources were found to have a significant role in the structural models of performance. This finding supports the RBV tenant that firm resources that differentiate it from its competitors, that are durable and, are difficult to imitate and substitute, can be a source of sustainable competitive advantage. This finding is consistent with studies in the literature, finding resources to be associated with firm performance (Huselid et al., 1997; Schroeder et al., 2002; Wright et al., 1994). This finding is also consistent with Edelman et al. (2005) who found that both human and organisational resources were related to higher performance.

8.1.3 Does ‘fit’ between resources and strategy influence performance?

“Does the degree of fit between firm resources and the market positioning strategy it pursues influence the performance of smaller firms?”

The results of this research provide significant support for the contingency perspective that ‘fit’ between a firm’s resources and strategies significantly influences performance. Whilst firm resources and strategies had a number of significant correlations with performance measures, the structural models provided consistent support for the role of internal strategic fit in determining firm performance. All accepted structural models showed some level of interaction between resources and strategy, there was no evidence that resources or positioning strategy impact on performance alone in any industry studied. Rather positioning strategies appear to be the mechanism by which firms can leverage their superior resources into a competitive advantage and higher profitability. This finding would suggest that higher levels of resources alone will not lead to increased firm performance; firms must exploit these resources by competing on dimensions of differentiation and/or cost leadership to achieve a competitive advantage and superior performance. Likewise, following a generic positioning strategy is unlikely to lead to a sustained competitive advantage without the resource base to support it. Without a supportive resource base the firm may attempt to achieve a generic market position but will be unable to sustain it in competition with competitors utilising a superior resource base. This finding was as expected and supports studies by Chandler and Hanks (1994) and in particular Edelman et al. (2005) who found that fit between resources and strategy plays an important role in determining firm performance.

8.1.4 Is the resource – strategy – performance relationship dependant on the industry environment?

“Is the resource – strategy – performance relationship dependant on industry or environmental factors?”

The findings of this research suggest that the resource – strategy – performance relationship is somewhat dependant on the competitive environment of the industry and the characteristics of the industry itself. In most industries each of the generic strategies were associated with firm performance; quality/customer service was associated with higher performance in all industries, as too was innovation, whilst cost leadership was associated with performance in all industries expect for professional services. This contrasts somewhat to prior research which has found that the environment does impact on the effectiveness of the generic strategies, see Murray (1988) or Carpano and Chrisman (1995). The subtle difference appears to be that the resources required to support the strategy can be different depending on the industry. Human resources combined with a quality/ customer services strategy were consistently associated with performance in all industries. Whereas innovation was supported by human resources in the combined sample, engineering and professional services industries, physical resources were required to support the strategy in the retail industry.

It is noted that physical resources also appear to support an innovation strategy in the engineering and professional services industries. Whilst outside the bounds of this research, the execution of each strategy is likely to be different in each industry, consumers will value different aspects of product or service differentiation, and what constitutes a meaningful price difference will vary. It is this aspect which is likely to influence just which resources are required to compete successfully with the chosen generic strategy. Another environmental aspect which is likely to determine the success of the chosen competitive strategy is the positioning of competition in the industry. If a firm is attempting to compete on the same aspect as a competitor, then the findings of this research would indicate they would require a resource advantage to out perform the

competitor and gain a competitive advantage; without the superiority of resources they will fail to assume to the competitive position and will not achieve a competitive advantage. These findings indicate that contrary to Edelman et al. (2005), each strategic combination can lead to superior firm performance in the right circumstances, namely if the firm has superior resources that allow it to out perform their competitors at their targeted generic position. It indicates that all resources and strategies are important and viable given the right environmental circumstances.

8.2 The nature of fit: mediation vs. moderation

Fit can be modelled in many different ways (Venkataraman, 1989), and it has been suggested that mediation is the strongest test (Baron and Kenny, 1986; Edelman et al., 2005). The results of this research offered no conclusion to the means by which the 'fit' between resources and strategies impact on performance. Approximately half of the final models showed evidence of mediation, whilst the other half evidence of moderation. This does not provide support to Edelman et al. (2005) who found that strategies mediated resources relationship with performance. The results of this thesis suggest that this relationship can occur as mediation, or moderation, or possibly in a number of other ways. The inferences that are drawn however remain the same: strategies that fit with and leverage the resources of the firm, or conversely resources that fit with strategies, offer the best chance of higher firm performance.

8.3 The complexity of firm performance

This research indicated that consistent with the bulk of research in the greater business fields, the drivers of firm performance are complex and multi dimensional. The strategic elements of resources, strategies, and the environment all play a part. As too do the methods of increasing firm resources, implementing strategies, interacting with the environment, and the interactions between each of these. As such, small explanations of performance can be quite significant. This helps to explain why so many seemingly competing models of resources and strategies can be found, with each supported by the theory and data. Unfortunately for the small firm there is no one prescription for performance that can be given, the findings of this research suggest however that the firm

must work at increasing the resources that matter, and compete definitively on the competitive dimensions it chooses, in an environment that values it, and where it has the ability to out perform its competitors based on its resources.

8.4 What comes first, resources or strategy?

This research started with the premise that strategies leverage unique firm resources, for instance in the small firm, a key resource is likely to be the skills of the owner/founder (Edelman et al., 2005), however generating a competitive advantage does not necessarily have to start with resources meeting the RBV requirements. Small firms wishing to build a competitive advantage should focus on the strategy most likely to yield this position and then acquire or build the resources that support this position, thus increasing their resource base in support of a strategic position which over time may become the source of a sustained competitive advantage.

8.5 Resources not associated with performance

In some industries particular resources were not associated with firm performance. However, the absence of support for a resource influencing performance does not mean that the resource is not important, or that the resource could not be the basis for a sustained competitive advantage. In this research there was only limited support for the influence of organisational resources on performance, this could be for multiple reasons, including; the resource is common, therefore incapable of being the basis of a competitive advantage, but still required to perform. Alternatively relatively few firms may have high levels of this resource, restricting the ability for it to show up in statistical models.

8.6 Implications for theory

The most significant implication for theory from this research is that the fit between firm resources and strategy plays an important role in determining firm performance. Theory should now attempt to integrate these two theories of strategic management into a coherent whole, illustrating the importance of strategy leveraging firm

resource advantages into competitive advantages, and resources supporting a firm's strategic competitive advantage to enable it to be sustained in the long term.

Whilst the findings of this research provide limited support to Edelman et al. (2005), replication of their model did not provide direct and complete support to their findings in any industry. Therefore whilst their contribution is significant in showing that the fit between resources and strategy impacts on the performance of the firm, the results cannot be expected to be replicated consistently. The relationship appears to be complex and difficult to prove statistically, with the firm's industry environment also impacting on the performance of resource – strategy combinations. Combining different industries into one sample appears to blunt the effects that particular resources, positioning strategies, and combinations thereof have on performance. This reinforces that no strategy or resource is consistently more important than any other, but rather the likelihood of a resource or strategy to lead to a competitive advantage is dependent on the industry environment. The resources that support a strategy are also likely to vary across industries.

8.7 Implications for practice

This research also has several important implications for practice. The most important of these is that the manager of the smaller firm should leverage their resources with strategies to achieve higher performance. It is unlikely that resources not leveraged by a strategy will lead to higher performance, and it is equally unlikely that a strategy not supported by the firm's resources will enable sustained high performance. To optimise performance the firm should compete on a strategy that utilises their resource base in the manner that the environment values the most. To maintain and extend a position based competitive advantage the firm should build and acquire resources in support of their chosen strategy. There are also important implications for each of the industries studied in New Zealand as illustrated in the industry specific results summaries. For instance an engineering firm competing on the basis of innovation should focus on its physical resources to support the strategy, or alternatively, the firm could leverage superior physical resources with either an innovation or a cost leadership strategy, but it is

unlikely that a quality/ customer service strategy is the best way to leverage this resource advantage into a competitive advantage and higher performance.

8.8 Limitations and directions for future research

The findings of this thesis combined with the limitations of the sample frame and methodology, present opportunities for future research. The sample limits some conclusions that can be drawn on industries outside of the scope of the research, i.e. smaller engineering, professional services, or retail firms in New Zealand. Research in other settings would increase the robustness of results, although results from New Zealand are likely to replicate in other countries due to a relatively low level of government protection.

Research has shown that there are a multitude of factors that determine firm performance, however unfortunately research cannot hope to include each and every determinant of firm performance in one study. This research has just examined a few of the possible determinants of firm performance and as such has ignored the influence of other variables. This research focused on three resource categories, namely; human, organisational, and physical resources. Inclusion of other resource classes would enhance future research (Barney, 1991; Lichtenstein and Brush, 1997; Rangone, 1999). Likewise there are many possible differentiation strategies; inclusion of which would enhance future research.

No one structural model was able to satisfactorily explain firm performance including the implications of fit between each resource and strategy. Further research using more refined measures, with a tighter industry group, and larger sample size may help illustrate the relationships in a more complete although complex model, giving greater support to findings. The multiple measures of performance used in this research had relatively low correlations, further research could take more consideration as to why the relationship between resources – strategy and performance appears to vary depending on the performance measure used. Resource advantages in some areas may be cancelled out by resources disadvantages in other areas (Ray et al., 2004), therefore it may be useful to

measure performance at the business process level, rather than the firm performance level. Statistical analysis provides the most certainty in confirming theoretical relationships however echoing Porter (1991), due to the complexity of strategic relationships including environmental factors, statistical analysis may be limited in the insights and understanding it can provide. In depth examination of high numbers of case studies may be a more appropriate way to examine the complex relationship between resources – strategy and performance considering other factors including the environment.

Finally the execution of each strategy is likely to be different in each industry, consumers will value different aspects of product or service differentiation and what constitutes a meaningful price difference will vary. Additionally the resources required to support a competitive advantage appear to vary across industries, it would be useful to investigate the particular resources that support each strategy depending on the type of industry and key success factors.

6.0 References

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10.1 Appendix A: Research Questionnaire

Please fill in the following section by marking the box that applies.

Please rate yourself on the following business skills:

	Poor	Fair	Good	Very Good	Excellent
Oral presentation	<input type="checkbox"/>				
Writing ability	<input type="checkbox"/>				
Problem analysis	<input type="checkbox"/>				
Problem solving	<input type="checkbox"/>				
Team building	<input type="checkbox"/>				
Team management	<input type="checkbox"/>				
Motivating employees	<input type="checkbox"/>				
Developing personal business relationships	<input type="checkbox"/>				

Please rate the favourability of these dimensions as they relate to your firm:

	Highly Unfavourable			Highly Favourable		N/A
Up to date equipment & computer technologies	<input type="checkbox"/>					
Strategic alliances and linkages	<input type="checkbox"/>					
Employees with international experience	<input type="checkbox"/>					
Customer service capabilities	<input type="checkbox"/>					
Unique products/services	<input type="checkbox"/>					
Plant equipment and production facilities	<input type="checkbox"/>					
Geographic location	<input type="checkbox"/>					
Access to raw materials	<input type="checkbox"/>					

Please indicate the degree to which your firm places emphasis on the following strategic approaches:

	Not Emphasised			Strongly Emphasised	
Quality control	<input type="checkbox"/>				
Satisfaction of customer needs	<input type="checkbox"/>				
Highest quality product/service	<input type="checkbox"/>				
Superior customer service	<input type="checkbox"/>				
Product or service development/innovation	<input type="checkbox"/>				
Innovative marketing	<input type="checkbox"/>				
Technological superiority	<input type="checkbox"/>				
Cost reduction in all facets of business	<input type="checkbox"/>				
Improvement of employee productivity and operations efficiency	<input type="checkbox"/>				

Developing lower costs through process innovation

PTO

How many full time equivalent employees did this business employ as at 31 March 2002? _____

If started after March 2002, please indicate when the business started? _____

How many full time equivalent employees did this business employ as at 31 March 2006? _____

How do you feel this business performs compared with others in your industry?

Much less profitable About average Much more profitable

What was the percentage Return on Assets for your business for the years ending in 2001 and 2005?
(Earnings before interest and tax, divided by total assets)

2001 2005
_____% _____%

Over the next three financial years, do you expect your Return on Assets to:

Decrease Stay the Same Increase

What was the Return on Sales for your business for the years ending in 2001 and 2005?
(Net profit after tax, divided by total sales)

2001 2005
_____% _____%

Over the next three financial years, do you expect your Return on Sales to:

Decrease Stay the Same Increase

Thank you for your participation, it is greatly appreciated.

Please remember to include a business card if you would like a summary of the results.

10.2 Appendix B: Individual hypothesis tests repeated for aggregate and individual industry samples

TEST	RESOURCES			STRATEGY			PERFORMANCE MEASURE			RELATIONSHIP TYPE		
	HR	ORES	PRES	Q/CS	INN	COST	PCOM	PCUR	PFTR	PARTIALLY MEDIATED	FULLY MEDIATED	MODERATED
1	✓						✓					✓
2	✓							✓				✓
3	✓									✓		✓
4	✓			✓			✓			✓		
5	✓			✓			✓				✓	
6	✓			✓			✓					✓
7	✓			✓				✓		✓		
8	✓			✓				✓			✓	
9	✓			✓				✓				✓
10	✓			✓						✓		
11	✓			✓							✓	
12	✓			✓								✓
13	✓				✓		✓			✓		
14	✓				✓		✓				✓	
15	✓				✓		✓					✓
16	✓				✓			✓		✓		
17	✓				✓			✓			✓	
18	✓				✓			✓				✓
19	✓				✓					✓		
20	✓				✓						✓	
21	✓				✓							✓
22	✓					✓	✓			✓		
23	✓					✓	✓				✓	
24	✓					✓	✓					✓
25	✓					✓		✓		✓		
26	✓					✓		✓			✓	
27	✓					✓		✓				✓
28	✓					✓				✓		
29	✓					✓					✓	
30	✓					✓						✓

TEST	RESOURCES			STRATEGY			PERFORMANCE MEASURE			RELATIONSHIP TYPE		
	HR	ORES	PRES	Q/CS	INN	COST	PCOM	PCUR	PFTR	PARTIALLY MEDIATED	FULLY MEDIATED	MODERATED
31		✓					✓					✓
32		✓						✓				✓
33		✓							✓			✓
34		✓		✓			✓			✓		
35		✓		✓			✓				✓	
36		✓		✓			✓					✓
37		✓		✓				✓		✓		
38		✓		✓				✓			✓	
39		✓		✓				✓				✓
40		✓		✓					✓	✓		
41		✓		✓							✓	
42		✓		✓							✓	✓
43		✓			✓		✓			✓		
44		✓			✓		✓				✓	
45		✓			✓		✓					✓
46		✓			✓			✓		✓		
47		✓			✓			✓			✓	
48		✓			✓			✓				✓
49		✓			✓				✓	✓		
50		✓			✓						✓	
51		✓			✓							✓
52		✓				✓	✓			✓		
53		✓				✓	✓				✓	
54		✓				✓	✓					✓
55		✓				✓		✓		✓		
56		✓				✓		✓			✓	
57		✓				✓		✓				✓
58		✓				✓			✓	✓		
59		✓				✓					✓	
60		✓				✓						✓
61			✓				✓					✓
62			✓					✓				✓
63			✓						✓			✓

TEST	RESOURCES			STRATEGY			PERFORMANCE MEASURE			RELATIONSHIP TYPE		
	HR	ORES	PRES	Q/CS	INN	COST	PCOM	PCUR	PFTR	PARTIALLY MEDIATED	FULLY MEDIATED	MODERATED
64			✓	✓			✓			✓		
65			✓	✓			✓				✓	
66			✓	✓			✓					✓
67			✓	✓				✓		✓		
68			✓	✓				✓			✓	
69			✓	✓				✓				✓
70			✓	✓						✓		
71			✓	✓							✓	
72			✓	✓								✓
73			✓		✓		✓			✓		
74			✓		✓		✓				✓	
75			✓		✓		✓					✓
76			✓		✓			✓		✓		
77			✓		✓			✓			✓	
78			✓		✓			✓				✓
79			✓		✓					✓		
80			✓		✓						✓	
81			✓		✓							✓
82			✓			✓	✓			✓		
83			✓			✓	✓				✓	
84			✓			✓	✓					✓
85			✓			✓		✓		✓		
86			✓			✓		✓			✓	
87			✓			✓		✓				✓
88			✓			✓				✓		
89			✓			✓					✓	
90			✓			✓						✓
91				✓			✓					✓
92				✓				✓				✓
93				✓						✓		✓
94					✓		✓					✓
95					✓			✓				✓
96					✓					✓		✓
97						✓	✓					✓
98						✓		✓				✓
99						✓			✓			✓