THE MEDIATING ROLE OF STRATEGY ON SMALL FIRM PERFORMANCE

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ABSTRACT

Small firms face unique challenges in crafting strategies that best utilize their resource bases. Combinations of resources and strategies lead to firm performance. Current evidence in the entrepreneurship literature shows that firm performance is a function of the contingent effects of strategy and external factors, however the consistency between firm strategy and resources is less well studied. Based on the contention that the quality of a firm’s strategy cannot be judged independently of the resources upon which it is based (Barney & Zajac, 1994), we examine the relationship between firm resources, strategies, and performance in a cross-section of 284 small firms. Using a structural equation analysis, we examine the mediating role of firm strategies as they lead to firm performance in small firms that are operating in less glamorous industries. Our findings demonstrate that neither resources nor strategies alone explain firm performance, but instead that small firms fit their strategies to their resource profiles. Human and organizational resources in combination with a strategy of quality/customer service enhance firm performance.

Author Key Words: resources, strategies, small “less glamorous” firms, structural equation modeling
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EXECUTIVE SUMMARY

Current research in the entrepreneurship area focuses on fast growth high technology firms even though these companies comprise a comparatively small proportion of firms in the US economy. Instead, an OECD report suggests that in developed countries the vast majority of small and medium-sized companies operate in mature conventional industries. Despite their prevalence, small, non-high technology firms face many performance challenges. They operate in business sectors that are notorious for their high failure rates and face few barriers to imitation, which means that they typically lack the capabilities or firm resources that can lead to competitive advantage. Resource-based theory suggests that resources that are valuable, rare, unique, and inimitable should lead to competitive advantage. These resources are usually intangible and build on the knowledge stocks of the firm. However, small less glamorous firms operate in a competitive context characterized by a lack of isolating mechanisms making it less likely they can achieve a competitive advantage based on unique resources alone. In addition, these firms may be unable to develop the human capital of their employees to respond to dynamic changes in their environment. Therefore, small less glamorous firms may achieve superior performance not because they have better resources, but because they make better use of these resources through the careful selection of appropriate strategies.

In this paper, we are interested in the relationship between resources and strategies in small firms. We begin with the premise that the quality of a firm’s strategy cannot be judged independently of the firm resources upon which it is based. This is a
contingency perspective, in that firm strategies are posited to be related to their corresponding internal capabilities or resources. We focus exclusively on two specific strategy types: quality/customer service and innovation, and their relationship to human and organizational resources. In order to test the contingency perspective, we employ a structural equation modeling technique, which provides a holistic view on the effect of resources and strategies on small firm performance. In contrast to previous research that typically operationalizes fit as a moderating effect, we adopt a broader perspective on fit, operationalizing it as a mediating mechanism.

Our findings indicate that in the context of small less glamorous firms, focusing on the main effects of either resources or strategies on performance is not enough. Instead, strategies present the generative mechanism through which resources determine small firm performance. Specifically, the human capital of the owner/founder coupled with a strategy of quality/customer service led to enhanced firm performance. For managers of small less glamorous firms this suggests a focus on quality/customer service is most likely to translate human capital endowments into enhanced firm performance.
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INTRODUCTION

Small, non-high technology firms face dramatic shifts in the competitive landscape brought on by changes in global competition and new technologies. These changes directly influence a small firm’s resources, strategic options, and future performance. Although significant research attention focuses on the strategies and performance of fast growth high technology firms (Preece, Miles & Baetz, 1999), these firms comprise a comparatively small proportion of firms in the US economy. Instead, smaller, less “glamorous” firms are far more prevalent (Acs & Audretsch, 1993; Dennis & Dunkelberg, 2000).

Referred to as the “economic core” (Kirchhoff, 1994), these businesses are popular choices for entrepreneurs because they typically require fewer assets, minimal financial investment, and few employees. US statistics from 1992 show small businesses accounted for 88% of the construction output, 74% of the service output, 62% of trade, 51% of finance, insurance, and real estate, 25% of manufacturing and mining, and 24% of transportation and communication output (Acs, 1999: 7). Relatedly, an Organization for Economic Cooperation and Development (OECD) 1997 synthesis report estimated that about 60% of small and medium sized companies in the OECD countries operate in mature conventional industries, another 30% operate in mature, global industries, and only up to 15% operate in emerging niche industries such as the high technology sector (OECD, 1997).
However, these small, non-high technology firms operate in business sectors that are notorious for their high failure rates (The State of Small Business, 1995). They also face few barriers to imitation, which means that they typically lack the capabilities or firm resources that can lead to competitive advantage (Greene & Brown, 1997; Zahra & Bogner, 2000). Resource-based theory suggests that resources that are valuable, rare, unique, and inimitable should lead to competitive advantage (Barney, 1991; Grant, 1991). These resources are usually intangible and build on the knowledge stocks of the firm (Teece, Pisano & Shuen, 1997). However, small less glamorous firms operate in a competitive context characterized by a lack of isolating mechanisms making it less likely they can achieve a unique advantage based on resource capabilities alone (Gimeno-Gascon, Folta, Cooper, & Woo, 1997). Fragmented industries, such as retail and services, are characterized by low entry barriers (Porter, 1980), a low degree of private or asymmetric information (Barney, 1991), and low levels of resources with limited strategic substitutability (Barney, 1991). In addition, these firms may be unable to develop the human capital of their employees to respond to dynamic changes in their environment (Meyer & Heppard, 2000). Therefore, small less glamorous firms may achieve superior performance not because they have better resources, but because they make better use of these resources (Penrose, 1959:54) through a careful selection of appropriate strategies (Chandler & Hanks, 1994; Brush & Chaganti, 1998).

This paper extends previous work by examining the relationship between firm resource profiles and strategies as these influence performance in small firms. Early studies on firm strategies in entrepreneurship followed the Industrial Organization (IO) literature, whereby performance was a function of industry structure and positioning
(Chaganti, Chaganti & Mahajan, 1989; Fombrun & Walley, 1989; McDougall, Covin, Robinson & Herron, 1994; McDougall & Robinson, 1989). Current research is anchored in the resource-based view of the firm (Penrose, 1959), which complements traditional IO approaches by recognizing the competitive value of resources and their interface with the strategies pursued by the firm (Mosakowski, 1993; Chandler & Hanks, 1994; Brush & Chaganti, 1998). In other words, it is argued that firm strategies in conjunction with firm competencies determine firm performance (Barney & Zajac, 1994; Chrisman, Hofer & Bauerschmidt, 1999).

We begin with the premise that the quality of a firm’s strategy cannot be judged independently of the firm resources upon which it is based (Barney & Zajac, 1994). This is a contingency perspective, in that firm strategies are posited to build on, or fit the corresponding internal capabilities or resources (Venkatraman & Camillus, 1984). The concept of “fit” has played an important role in strategy and entrepreneurship research. Several scholars have sought to define the role of fit in advancing strategic management theory (Venkatraman & Camillus, 1984; Venkatraman, 1989). Other researchers have shown the importance of fit through prescriptive studies that explored the most effective forms of fit between several organizational constructs such as a firm’s strategy and the external environment (Covin & Slevin, 1989; Dess, Lumpkin & Covin, 1997), the industry in which it competes (Carter et al., 1994; McDougall et al., 1994), organizational structure (Veliyath & Shortell, 1993), or information systems (Chan, Huff, Barclay & Copeland, 1997; Rodgers & Bamford, 2002). All of these studies build on the premise that the better the “fit” between a firm’s strategy and the organizational characteristic under examination, the better the firm’s performance.

1 Competencies are the strategically relevant behavioral and social phenomena inside the firm.
The purpose of our paper is to study the relationship between firm resources, strategies and performance. Theoretically, we seek unification between the two dominant theoretical streams in entrepreneurship research: IO economics and the resource-based view of the firm. Empirically, we build on earlier studies that argue for the importance of the owner/founder resources to firm performance (Cooper, Gimeno-Gascon, & Woo, 1994), as well as work that documents the relationship between resources and particular strategies (Chandler & Hanks, 1994; Brush & Chaganti, 1998). We focus exclusively on two specific strategy types: quality/customer service and innovation, and their relationship to human and organizational resources. In order to test the fit perspective, we employ a structural equation technique, and model the effect of resources and strategies on firm performance as a mediated relationship. In essence, we argue that in the context of smaller less glamorous firms, which lack the unique resource capabilities that directly translate into competitive advantage, carefully selected strategies serve as the generative mechanism through which resources influence firm performance. In contrast to previous research that typically operationalizes fit as a moderating variable, we instead follow Venkatraman (1989) and adopt a broader perspective on fit, operationalizing it as a mediating relationship. In the following sections, we develop hypotheses suggesting that there are positive and significant relationships between firm resources, strategies, and firm performance. We then describe our methodology, and present our findings and conclusions.
THEORITICAL FOUNDATIONS

Resources and Strategies of “Less Glamorous” Firms

Firms build competitive advantage by utilizing unique sets of resources and strategies (Wernerfelt, 1984; Barney, 1991). Resources are heterogeneous, and typically include all assets, capabilities, processes, and knowledge controlled by a firm that enables it to conceive and implement strategies to improve effectiveness (Barney, 1991; Grant, 1991). In contrast, strategies are the ways in which firms relate to their environment (Porter, 1985). They are the building blocks of managerial decisions and actions that determine the long run performance of an organization (Wheelen & Hunger, 2000).

Small firms have insufficient or inaccessible resources, which may limit the range of feasible strategic alternatives (Hofer & Sandberg, 1987; Porter 1985). In addition, small firms competing in highly populated industrial sectors may be unable to differentiate their strategies due to low barriers to entry (Wright, Smart & McMahan, 1995; Smith, Grimm & Gannon, 1992).

The context of small firms is illustrated in Kirchhoff’s (1994) model of “dynamic capitalism.” Grounded in Schumpeter’s (1934) notion of creative destruction where economic wealth creation and distribution result from the process of new firm formation, and growth through innovation, Kirchhoff’s (1994) model posits that entrepreneurship can be represented as a continuum of the firm’s entrepreneurial behavior. He proposes a two-by-two typology based on low and high rates of growth and innovation. The low/low quadrant is referred to as the “economic core.” Here, firms have a low potential for creative destruction, and growth is slowed either at the owner’s choice or due to industry structure constraints. Extending Kirchhoff’s work, Greene and Brown (1997)
suggest that each combination of growth and innovation would require different resource combinations (e.g., human, social, physical, financial or organizational). For the economic core, Greene and Brown (1997) posit human capital; especially education, experience, and expertise of the owner/founder would be of primary importance, while other types of capital would be lower. Relatedly, Penrose (1959: 129) argues that a firm’s growth is limited by the ability of a manager to coordinate resources. She suggests that growth is predicated on the interaction between the manager’s expectations for the future of the firm combined with the appropriate resources. Therefore, theory suggests that in small firms, the manager’s strategic decisions together with resource choices determine the ultimate performance of the firm. Each of these is discussed below.

HYPOTHESES

Firms build competitive advantage by utilizing unique sets of resources. Small firms competing in highly populated industrial sectors may be unable to differentiate their strategies due to low barriers to entry, or may have insufficient or inaccessible resources, limiting the range of feasible strategic alternatives (Hofer & Sandberg, 1987). In these cases, the human capital resources, such as the personal experience, connections or commitment of the entrepreneur and employees (Cooper, Willard & Woo, 1994; Cooper & Artz, 1995), or organizational resources comprised of systems and policies (Ropo & Hunt, 1995) may have a more direct impact on performance. Likewise, distinctive competence, which for small firms is contingent on the human capital of the owner/founder, in conjunction with superior organizational routines in one or more of the firm’s value-added functions may enable the firm to generate rents from a resource
advantage (Hitt & Ireland, 1985). Moreover, a central premise of Penrose (1959) is that the manager’s expectations and judgments will ultimately determine the firm’s growth. This premise is supported by Chandler and Hanks (1994), who found that firms with higher and broader levels of resource-based capabilities grew faster than those that did not. Therefore,

**H1: In small firms, firm resources have a significant impact on firm performance.**

Several studies in the entrepreneurship area follow Porter (1980, 1985) with variations on the three generic strategies: cost leadership, focus, and differentiation (Chaganti, et al., 1989; Fombrun & Walley, 1989). Research examines strategic “factors” such as planning, product advertising, and pricing, as they influence performance (Covin, Slevin & Covin, 1990). Another approach uses product/market characteristics to develop strategies in new ventures (Carter, et al., 1994). The majority of these studies find direct relationships between the scope of strategy (i.e., broad/narrow) and firm performance contingent on industry factors (Covin, et al., 1990; Carter, et al., 1994; McDougall, et al., 1994; Pelham 2000). While these studies acknowledge that resources are important, they assume a lesser role than industry or strategy. Hence, the dominance of strategy in predicting firm performance is well documented.

**H2: In small firms, firm strategies have a significant impact on firm performance**

A third stream of research establishes the “fit” of resources to strategies and their combined effect on performance. Long-term strategy rests on the “internal resources and capabilities” which can lead to the long-term profit of the firm (Grant, 1991). Previous empirical research testing the interaction between resources and strategies has been non
conclusive. Thus, Chandler and Hanks (1994) use a contingency theory approach, which assumes a “fit” between available resources and a firm’s particular competitive strategy will lead to enhanced performance. They find that the fit between competitive strategies and available resources is supported in only two of the six cases (Chandler & Hanks, 1994: 343). Brush and Chaganti (1998) find non-significant interactions between strategy and three types of firm resources. In this study, we model the alignment between resources and strategies in small less glamorous firms as a mediated relationship. We follow Chrisman, et al., (1999) who argue that the chances for a venture’s survival and growth are a function of both the formulation of a good strategy and the resources required to implement it. Based on the resource-based view contention that it is the use of resources that leads to competitive advantage (Penrose, 1959), we posit that competitive strategies are the vehicle that transforms the value of firm resources into superior performance. Therefore, we propose

**H3: In small firms, firm strategies mediate the relationship between firm resources and firm performance. Therefore, firm resources and firm strategies have a significant impact on firm performance.**

The following hypotheses predict the direction of impact of resources and strategies on small firm performance. The source of strategy in small firms is more likely to arise from human capital resources, capabilities and competencies (Hitt & Reed, 2000). Critical resources, especially in small firms, are likely to be held by the individual entrepreneur(s) or their organization (Mosakowski, 1993; Pennings, Lee & van Witteloostuijn, 1998). While some studies do show equivocal relationships between individual aspects of human resources and performance (e.g., experience or education or psychological characteristics) (Cooper & Gimeno-Gascon, 1992), overall the human
resources of the entrepreneur and team have a direct effect on the product/market strategies (Miller & Friesen, 1984). Research further shows that investment in human capital (e.g., knowledge of customers, suppliers, products) is positively related to the economic performance of the venture in small retail and service firms (Gimeno, Folta, Cooper and Woo, 1997). Hills and Narayana (1989) found success factors in high growth small firms included the quality of the product or service, a good reputation with customers, the ability to respond to customer’s requests, and hard work and devotion to the business. Hence, in small firms, when human capital resources are both strong and related to customers, suppliers and service dimensions, the relationship between human resources and a strategy of quality/customer service is likely (Chandler & Hanks; 1994). Therefore, we propose

**H4a: In small firms, greater levels of human resources have a positive and significant impact on the firm strategy of quality/customer service**

Relationships between human resources and innovation strategies also are suggested in a variety of studies. Companies pursuing an innovation strategy need creative and innovative employees, to maintain contact with customers and possess strong marketing and technical skills (Chandler & Hanks, 1994). Similarly, Amit, Brigham and Markman, (2000) posit that a managers’ influence over organizational activities influences profitability. Given that entrepreneurial strategy is defined by agility, creativity and continuous innovation (Covin & Slevin, 1990), it follows that stronger human resources will be associated with innovation strategies. Relatedly, literature from innovation technology finds that market driven innovations result from interactions with customers (von Hippel, 1981), while Aldrich and Zimmer (1986) found
that linkages and relationships of entrepreneurs to customers were associated with the innovation process. Further, Bantel and Jackson (1989) found a strong relationship among innovation, top-management team education, and functional expertise. In their study of 660 small Swedish firms, Borch, Huse and Senneseth (1999) found that "managerial firms", e.g., firms with large stocks of social capital and managerial resources, tend to follow "market" strategies, characterized by development of business ideas and exploring of market opportunities. Zahra and Bogner (2000) propose that the decisions regarding technology investment in research and development, and product upgrades are rooted in managerial perceptions and strategies for dealing with the environment. Hence, in small firms, where top managers are responsible for strategy, it follows that human resources will be related to innovation strategies. Therefore, we propose

**H4b: In small firms, greater levels of human resources have a positive and significant impact on the firm’s strategy of innovation.**

Organizational resources are referred to as the structure, processes, and systems in organizations, which permit flows of information, training, and which motivate organizational members (Andrews, 1971; Greene & Brown, 1997). In an entrepreneurial organization, organizational resources include the employees' expertise, systems and policies (Ropo & Hunt, 1995), management systems (Bracker & Pearson, 1986; Brush & Chaganti, 1998), planning and control systems (Bracker & Pearson, 1986), culture and employee skills (Dollinger, 1995) of the firm. Presumably management systems, skills of employees and routines are essential in reaching customers or providing superior levels of service. Efficient small firms are more capable of providing quality customer service, while those that develop human capabilities in the form of skilled employees are better
able to respond to customer and market needs (Hitt & Reed, 2000). Furthermore, Chandler and Hanks (1994) found a positive relationship between resource-based capabilities, measured as employees trained, and expertise in providing superior customer service. Hence, we propose

**H4c: In small firms, greater levels of organizational resources have a positive and significant impact on the firm strategy of quality/customer service.**

While it has been argued that less structure, ambiguity and open systems encourage innovation (Kanter, 1983), paradoxically, the development of systems, routines and policies would also appear to have a positive impact on a strategy of innovation. For example, it has been suggested that innovation strategies are supported by investment in research and development, obtaining copyrights, product upgrades, and other means of intellectual capital protection (Zahra & Bogner, 2000). Competencies or higher levels of organizational resources such as training of employees and their expertise are also associated with a strategy of innovation (Chandler & Hanks, 1994). Therefore, we propose

**H4d: In small firms, greater levels of organizational resources have a positive and significant impact on the firm strategy of innovation.**

Acs and Audretsch (1993) find that while large firms can achieve scale economies, small firms are more flexible and able to respond to changing consumer tastes, patterns and changes in demand. Similarly, Fiegelbaum and Karnani (1991) found that niche marketing and output flexibility were a significant source of competitive advantage for small firms. Carter, et al., (1994) propose that ventures located downstream in the supply chain should pursue a strategy of customer loyalty, to better compete with larger more cost efficient competitors. Research by Hills and Narayana
(1989) finds that the key to success in small and medium-sized growing firms is product/service quality and “passionate” responsiveness to customers. Therefore, we propose

**H4e:** In small firms, the firm strategy of quality/customer service has a positive and significant impact on firm performance.

The notion of entrepreneurial orientation is based on the premise that innovation, proactiveness, and risk-taking encourage first mover advantages that lead to better firm performance (Covin & Slevin, 1991). Firms with entrepreneurial orientation are posited to be more innovative, and therefore are better positioned to gain competitive advantage. Wiklund (1999) argues that firm smallness may foster flexibility and innovation, but that resource constraints may prevent these same firms from following cost or differentiation strategies. Similarly, Acs and Audretsch (1993) link innovation to growth, finding that innovative small firms added more employees. Finally, small firms in hostile environments perform better if they utilize advanced process technologies, and pursue product and market innovations (Covin, Slevin & Heeley, 2000). Therefore, we propose

**H4f:** In small firms, the firm strategy of innovation has a positive and significant impact on firm performance.

**METHODS**

**Data Collection**

Our research was conducted in two phases. Initially we conducted an exploratory study of 410 small ventures. In this phase of the study, small firms were identified as having less than 250 employees, in accordance with accepted operationalizations of small firms (Report to the President, 1995). Consistent with the competitive context of interest to the study, we randomly identified firms from publicly available directories of
technology sectors representative of the "economic core", or "low innovation/low growth" industrial segments (Buckley & Brooke, 1992). We received 76 completed questionnaires during the first phase, giving us a response rate of 18.5%. The second survey employed the same technology-sector sampling criteria, but to improve our response rate, we identified trade associations and personally requested their assistance in obtaining a list of firms. Prior to mailing, we called each firm listed to (1) identify key informants, (2) update the firm’s name and address, (3) identify companies that had ceased operating, and (4) extract promises of cooperation in completing the questionnaire. Associations included: primary sector- the Farm Equipment and Irrigation Associations; secondary sector- National Barbecue Association and National Poultry and Food Distributors Association; tertiary sector- National Association of Personal Financial Advisors. We received both firm names and an endorsement letter from all associations save one (National Association of Personal Financial Advisors), which provided us a member list but declined to send a letter of endorsement.

We mailed 1120 questionnaires in the second research phase. Each respondent received a self-administered, six-page questionnaire to complete, together with (1) a cover letter of appeal on university letterhead, (2) a letter of appeal from the corresponding trade association when available, and (3) a pre-addressed, stamped, business reply envelope. Fifty-nine questionnaires were returned with bad addresses, bringing the number surveyed to 1061. Two weeks after the initial mailing, a reminder postcard was sent to all firms except those from one trade association who requested we contact their members only once. This first mailing resulted in 169 responses. A second

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2 Buckley and Brooke identified three technology sectors; primary, secondary and tertiary. Primary industries are considered to be environmental and agricultural businesses; secondary are food equipment
mailing was sent to all non-respondents, followed by reminder post-cards two weeks later. The second mailing resulted in 39 additional responses, providing us with 208 responses from this phase (or 19.6%). For the total survey, the overall response rate from both research phases was 19.3%, yielding 284 useable responses. T-tests were performed to determine the appropriateness of pooling the data from the two phases (n=76 and n=208). We found no significant differences between the two samples on key variables including 1994 sales, total number of employees, and age of firm.

Measures

Resources

Two types of resources, human and organizational, were measured. Our focus on the human and organizational resources of the small firm was based on the proposition that distinctive competence, which for small firms is contingent on the human capital of the owner/founder, in conjunction with superior organizational routines in one or more of the firm’s value-added functions, may enable the firm to generate rents from a resource advantage (Hitt & Ireland, 1985). To measure resources, we used a five point Likert scale ranging from Highly Unfavorable to Highly Favorable with a defined neutral anchor. In all cases Highly Favorable was numerically coded at 5.0 while the Highly Unfavorable anchor was coded as 1.0 (i.e., large numbers denote greater favorability). Resource items were identified from previous sources (Chandler & Hanks, 1994) as well as from conceptual work in the entrepreneurship literature (Bruno & Tyebjee, 1982; Vesper, 1990). In all cases, we used the log of human and organizational resources.

Human Resources - According to prior research, human resources comprise a broad range of aspects - the owner-founder’s achieved attributes (Becker, 1964), background in

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and service organizations; tertiary are finance and service organizations.
family characteristics, education, and experience (Cooper, 1981), as well as attitudes, motivations, skills and goals (Davidsson, 1989; Birley & Westhead, 1990; Brush & Chaganti, 1998). Following prior research, our measures focused on experiential aspects of the entrepreneurs’ background (Cooper & Gimeno-Gascon, 1992). We created a latent variable for human resources, comprised of two distinctive attributes of human resources: interpersonal skills and business skills. We used this latent variable as a proxy for unique and inimitable managerial talent that is not perfectly mobile. In our model, both interpersonal skills and business skills are correlated at the .01 level of significance. Specific variable items for interpersonal skills were: team management, motivational skills and developing personal relationships, and for business skills: oral presentation skills, writing ability and problem-solving ability. All of these are attributes of the respondent who in our sample was either the owner or the senior executive. The individual measures comprising the latent variable were factor analyzed and checked for reliability. The scale for interpersonal skills demonstrated high internal validity with factor loadings at .73 or higher. Cronbach’s alpha was .79. For business skills, factor loadings were at .62 or greater, and Cronbach’s alpha was .61. Each of these alpha levels is above the acceptable threshold for reliability (Nunnally, 1970), indicating good internal validity, and reliability of the measures comprising the latent variable (See Table 1 and Table 2).

Organization Resources - Organizational resources include systems, policies, culture, and the knowledge of the organization members other than founders, as well as organizational routines and structures (Tomer, 1987; Dollinger, 1995; Greene & Brown, 1997). We

3 * One item, expertise in technology, was dropped from the scale due to low factor loadings.
followed these precedents measuring firm procedures, and firm routines and capabilities. Specifically we examined the customer service capability, operating efficiencies, high level of domestic profit, cost structure and unique product and service offerings of the organization. A five-point Likert scale was used. The measure was factor and reliability analyzed with factor loadings of .78 or above and a Cronbach’s alpha of .89 (See Table 1 and Table 2).

**Strategies**

To measure the implementation strategies adopted by the firm, we drew on existing measures of strategy developed by Chandler and Hanks (1994). While Chandler and Hanks originally examined three distinctive implementation strategies in our analysis, only two strategies, quality/customer service, and innovation showed satisfactory reliability levels. We eliminated the third strategy due to low reliability. Furthermore, Chandler and Hanks (1994) also found that quality/customer service and innovation were associated with particular resource bundles, whereas resources were not associated with cost leadership strategy. They suggested that some companies pursued cost-leadership strategies without resources that were appropriate to that strategy.

*Quality/Customer Service Strategy* – High quality and its commensurate customer service is a popular differentiation implementation strategy (Porter, 1995). We measured this strategy by examining four distinctive components: quality control, satisfaction of customer needs, highest quality, and superior service. The measure was factor and reliability analyzed. Factor loadings were a minimum of .74 and Cronbach’s alpha was

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4 Chandler and Hanks (1994) originally used three strategies, innovation, cost leadership, and quality/customer service. However, their sample contained a number of low cost suppliers for whom a low cost strategy was imposed by powerful buyers. In this respect, the utilization of a strategy of low cost may have been indicative of a lack of strategic choice.
.84, well above the minimum threshold set for reliability (Nunnally, 1970) (see Table 1 and Table 2).

**Innovation Strategy** – We also examined the firm’s innovation strategy. We looked at the firm’s product or service development/innovation, innovative marketing, and technological superiority. The measure was factor and reliability analyzed with minimum factor loadings of .72 and a Cronbach’s alpha of .62 (see Table 1 and Table 2).

**Log of Change in Return on Sales** – To measure firm performance we calculated the change in ROS between years 1990 and 1994. We chose change in return on sales because this measure reflects improvement in the overall productivity of the firm. Efficient use of the firm’s resource base, as demonstrated by the choice of firm strategy, should reflect a greater improvement in the return on sales. In addition, we used the logarithmic function to minimize the exaggerating effects of small denominators for the very small-sized firms. Change in return on sales is a single-item objective measure; therefore, no alpha values can be calculated.

In all of the multi-item scales, reliability was assured by using confirmatory factor analysis (Kim & Mueller 1978), with all items loading onto one factor. The scales were one-dimensional using SPSS’s Principal Components method. The final scales were summations of the measurement items. Table 1 shows the factor scores for each scale while Table 2 shows the mean and standard deviation, the Pearson correlation coefficients and the Cronbach’s alpha levels for each measure.

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Insert Table 1 and Table 2 about here
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ANALYSIS AND RESULTS

Fit as Mediation

Traditionally, the concept of fit has been operationalized as moderation. In moderation, the impact that a predictor variable has on a criterion variable is dependent on the level of a third, moderator variable. The popularity of this approach is illustrated in Schoonhoven’s 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 (1981:351, emphasis added).

Venkatraman (1989) offers an expanded perspective on the concept of coalignment. He suggests that fit can be seen either as a narrow relationship between two variables, or more broadly, as a relationship which encompasses many variables. He then goes on to propose that fit can be conceptualized in six different ways: as moderation, mediation, matching, gestalts, profile deviation, and co-variation.

In this study, we adopt the perspective of fit as mediation. Mediation tests specify the existence of a significant intervening mechanism (e.g., firm strategy) between an antecedent variable (e.g., firm resources) and the consequent variable (e.g., firm performance). As such, the mediator variable (e.g., firm strategy) accounts for a significant proportion of the relation between the predictor and the criterion. Figure 1 provides a schematic representation of fit as mediation.

Insert Figure 1 about here

Despite the popularity of the moderation approach, examining coalignment as mediation offers some important benefits. Specifically, mediation decomposes the
effects that a set of consequent and mediator variables has on the criterion variable into
direct and indirect effects. In doing so, mediation speaks to how or why such effects
occur, as opposed to moderation, which addresses when particular events will hold
(Baron & Kenny, 1986). In addition, previous studies examining the relationship
between resources and strategies using a moderated regression have not found conclusive
statistical support (Chandler & Hanks, 1994; Brush & Chaganti, 1998). Therefore, we
propose mediation as an alternative conceptualization.

Mediation can be complete (i.e., an indirect relationship) or partial (i.e., a direct
relationship). In complete mediation, the presence of the mediator variable (e.g., firm
strategy) is necessary for a significant outcome between the criterion variable (e.g., firm
resources) and the predictor variable (e.g., firm performance). Complete mediation is the
strongest test, indicating that, in our model, firm strategy plays a critical role in
translating resource bundles into firm performance (i.e., resources – strategies –
performance). In contrast, partial mediation implies that a direct relationship between
resources and performance exists as well as an indirect relationship that includes firm
strategies. This suggests that the coalignment between firm resources and strategies is
less important for understanding firm performance.

**Descriptive Statistics and the Structural Equation Model**

Consistent with the three-level industrial technology stratification of the survey,
businesses were distributed nearly equally across technology sectors (namely 30.1% in
primary industries, 35.8% in secondary industries, and 34.1% in tertiary industries).
Most companies were incorporated: 37.6% as c-corporations, and 34.4% as s-
corporations, while 20% were sole proprietors. The survey respondents either were owner/founders or held executive positions in 98% of the companies.

To best capture the theoretical interdependencies between resources, strategies and firm performance, we analyzed the data using Structural Equation Modeling (AMOS 4.0 statistical package). This procedure allows for a fine-grained analysis of the hypothesized relationships within the context of the entire model. Structural equation modeling is a particularly attractive choice when testing mediating variables in that in structural equation modeling, all of the relevant paths are directly tested and complications such as measurement error and feedback are incorporated directly into the model (Baron & Kenny, 1986; Venkatraman, 1989).

Before running the model, we inspected the data for any possible abnormalities. We followed Kline (1998:89) and checked the data for missing data points, the normality of the data distribution, outliers, and multicollinearity using the SPSS statistical data analysis package. To handle the problem of missing data, we used mean substitution, which is a technique in which variable means are used to replace missing values (Afifi & Elashoff, 1966). Mean substitution is a popular method of managing missing values in structural equation modeling. In addition, it is a conservative technique in that it makes the data less reactive. The missing value substitution procedure did not cause any statistically significant bias in the data; no statistically significant differences between the original and the missing value mean substituted data series were observed.

To check for skewness, which is an indication of the asymmetry of a distribution, we ran frequency distributions. In all cases, skewness was under 2.81, indicating that our data was normally distributed (Kleinbaum, Kupper & Muller, 1988). In addition, we
checked for the outliers using two methods, Mahalanobis distance and Cooks’ distance. Mahalanobis distance is a measure of the distance of an observation from the set of x-value means. Our data has a Mahalanobis distance of .23, which is between the recommended values of 0 and 1 (Kleinbaum, Kupper & Muller, 1988). Cook’s distance is a measure of the influence of an observation. In our model, Cook’s distance was .2, which is well below the 1.0 cutoff value, indicating that outliers are not a problem in our dataset (Kleinbaum, Kupper & Muller, 1988). Finally, we checked the data for multicollinearity. In all cases, the variance inflation factor (VIF) statistic was under 1.5, which is well under the 10.0 cut-off that indicates problematic data collinearity (Kleinbaum, Kupper & Muller, 1988). Therefore, we can conclude that our data does not violate any normality assumptions.

We developed a latent variable for general human resources, based on the two observed variables, interpersonal skills, and business skills. Latent variables are hypothetical constructs that combine two or more observed variables. As such, indicators that measure a latent variable should exhibit convergent validity, indicated by their correlation (Kline, 1998). For specific human resources, organizational resources, quality/customer service strategy and innovation strategy and the dependent variable, change of return on sales, we used observed variables.

To test hypotheses 1-3, we employed hierarchical testing (Loehlin, 1987; Kline, 1998). Hierarchical testing compares the chi-square, goodness-of-fit of different, nested models. The chi-square goodness-of-fit test assesses whether the observed relationships differ significantly from the hypothesized model. A non-significant chi-square indicates a good fit, however the test is sensitive to the complexity of the model.

5 as compared to ANOVA in which relevant paths are omitted during testing.
For the direct model, the chi-square test statistic is significant, indicating that the direct model is not a good representation of the data. Therefore, we have no support for hypothesis 1, which predicts a significant relationship between resources and firm performance. Likewise, for hypothesis 2, which predicts a significant relationship between strategies and firm performance, there is no support.

For the indirect, fully mediated model, the chi-square is not significant, indicating that the model fits the data. The chi-square is also not significant for the saturated, partially mediated model, but according to model building guidelines, given the fit and significance of the indirect model, no additional paths are required (Kline, 1998). Therefore, we have support for hypothesis 3, which says that strategies fully mediate the relationship between resources and firm performance. Table 3 summarizes the fit statistics between the direct and indirect models.

To insure that the indirect, fully mediated model fits the data well, we used multiple fit criteria to rule out measuring biases inherent in the various methods (Hair, Anderson, Tatham & Black, 1995). The chi-square divided by the degrees of freedom was .95, which is under the suggested ratio of two, for the hypothesized indirect model, and the p-value was .45, which is greater than the suggested .05 (Schumacker & Lomax, 1996). The model’s adjusted goodness of fit (AGFI) was .98, indicating a good fit with the data (Hoyle, 1995). The normed fit index (NFI) was .95, well above the .90 acceptable level (Hair, et al., 1995). The root-mean-square residual was a very acceptable .11, for the indirect model indicating a low difference between the observed
and model-implied covariances (Kline, 1998). Hotelling’s critical N was 924, well over the 200 mark considered acceptable thus indicating that the data fits very well with the model (Schumacker & Lomax, 1996). Table 4 shows the multiple fit statistics for the indirect or fully mediated model.

In hypotheses 4a – 4f, we make predictions about the specific paths in the fully mediated (indirect) model. To test these hypotheses, we examined the path coefficients and the critical ratios for the indirect model. In hypothesis 4a, we predicted a positive and significant relationship between human resources and the firm strategy of quality/customer service. The critical ratio for this path is 2.35, indicating strong support for this hypothesis at the $z \leq .01$ level. In hypothesis 4b, we predicted a positive and significant relationship between human resources and the firm strategy of innovation. We found strong support for this hypothesis also, with the critical ratio at 3.31 and $z \leq .001$ level. For hypothesis 4c, in which we predicted a positive and significant relationship between organizational resources and the firm strategy of quality/customer, we also found strong support with the critical ratio at 4.08 and a $z$ score at the .001 level. In hypothesis 4d, we predict a positive and significant relationship between organizational resources and the firm strategy of innovation. This hypothesis was not supported, as the critical ratio was 1.08 well under the necessary criteria for support. For hypothesis 4e, we predicted a positive and significant relationship between the firm’s quality/customer service strategy and firm performance, we found a critical ratio of 3.23, indicating strong support at the $z \leq .001$ level. Finally, in hypothesis 4f, we predicted a
positive and significant relationship between the firm’s innovation strategy and firm performance. The critical ratio for this path was a .56 indicating no support. Table 5 shows the path coefficients and the critical ratios for the independent variables in the indirect, fully mediated model. Figure 2 presents the model.

Insert Table 5 and Figure 2 about here

DISCUSSION

Our study sought to examine the effect of firm resource profiles and strategies as these influence performance in small firms, following a contingency perspective. We tested for three competing explanations of small business performance: the direct effect of resources on performance, the direct effect of strategies on performance, and the mediated effect of resources on performance, with strategy as the mediator. In addition, we tested for the effect of two types of resources (i.e., human and organizational) on two types of strategies (i.e., quality/customer service and innovation) as well as the effect of these two strategies on small firm performance. From our analysis, we arrive at three principal conclusions, which are discussed below.

The Necessity of Internal Fit between Firm Resources and Strategies Our findings support the contingency perspective, which posits that an internal fit between resources and strategies will lead to improved performance (Venkataraman & Camillus, 1984). When we tested for the direct effects of resources on performance, and strategies on performance, the effects were not significant. However, when we tested for the effect of resources on performance, mediated by firm strategies, the effect was highly significant. This suggests that neither resources alone, nor strategies alone determine performance.
Rather, we find it is the internal congruence, or fit between them that drives the performance of small companies.

However, this finding challenges other literature. Current research seeks correlates of performance in the resource base (Cooper et al., 1994; Gimeno-Gascon et al., 1997; Pennings, et al., 1998), the alignment of the product/market choices of the firm to the external environment, or the industry (Covin & Slevin, 1990; Carter et al., 1994; McDougall et al., 1994). Our work suggests that to fully understand the factors driving firm performance, the congruence, or internal fit between resources and strategies needs to be considered, as the fit between available resources and the firm's competitive strategies enhances firm performance (Venkatraman & Camillus, 1984.)

With respect to theory, our finding is consistent with conceptual work in the area of the resource-based view of the firm that suggests resources unrelated to business strategy are not likely to be sources of competitive advantage, and can sometimes actually diminish a firm's performance (Mosakowski, 1993). This is consistent with West and DeCastro (1999) who posit that resource weaknesses can become distinct inadequacies depending on the type of strategy the firm pursues. Thus, only the specialized resources that are tied in a relatively permanent fashion to the firm are likely to form the firm's base for competition (Wernerfelt, 1984). Therefore, our work shows strong support for the internal contingency perspective (Venkatraman & Camillus, 1984), and builds on a recent stream of empirical literature examining the fit between resource configurations, strategic choices, and performance implications in the context of small firms (Chandler & Hanks, 1994; Borch et al., 1999; Rangone, 1999).
With respect to empirical testing, we find a significant mediated effect of resources on performance in small low-tech firms. Thus, we move beyond the acknowledgement of internal fit between resources and strategies to examine the subtle transitive mechanisms that translate resources into superior performance. We suggest strategies are one such generative mechanism through which resources are able to influence small firm performance. The robustness of our results gives us reasonable assurance as to the good fit of the model with the data. Given the inconclusive findings of moderated relationships in previous tests of samples of similar firms, we propose that in the context of small less glamorous firms, strategies mediate the relationship between resources and performance.

Furthermore, our work suggests that the fit between strategy and organizational resources is not "one-way." Most previous work in the internal contingency perspective has assumed that strategy is the overriding concept, while organizational configurations such as structure, style, and culture, are derived in the context of the given strategy (Venkatraman & Camillus, 1984). Our results suggest that, in the context of small, resource constrained firms, resources may be the overriding concept, that is strategic choices may be derived in the context of the resource cache of the firm. This also suggests that only those resources that are linked to the strategic choices of the firm are valuable; while on the other hand, only those competitive strategies which build on the resource base of the firm are likely to enhance performance. In other words, it is the unique exploitation of resources, through appropriate strategies, that yields the productive “value” for the firm (Penrose, 1959). By way of contrast, we suggest that small resource scarce firms benefit less from sheer quantity of resources, and more from the “unique”
utilization of these. Thus, our work contributes to the development of the internal contingency perspective by suggesting that both resource bundles through strategic choices determine firm performance.

**Strategies as Mechanisms for Resource Deployment in the Small Firm.** We found significant effects of human and organizational capital on quality/customer service strategy, as well as significant effects of the quality/customer service strategy on firm performance. Further, the effects of human capital on innovation strategy also were significant, but the relationships between both organizational capital and innovation strategy, and innovation strategy and firm performance were non-significant. Given the context of the study - small, low growth companies – these results have two interpretations. First, human and organizational capital enhances the performance of a small company through a strategy of quality/customer service. Secondly, innovation strategy in small, less glamorous firms is supported by the company's human capital, but not organizational capital, and thus, can be detrimental to firm performance. In essence, our findings support Rumelt's contention that strategy concerns "the constant search for ways in which the firm's unique resources can be redeployed in changing circumstances" (1984: 569).

In the first case, we expected that human capital of the entrepreneur to be related to quality/customer service strategy, as is consistent with previous findings (Cooper & Gimeno-Gascon, 1992; Mosakowski, 1993). The ability of the entrepreneur to motivate employees, interact with employees and customers, and solve problems is central in a small firm. Yet, this alone does not guarantee success, for the choice of strategy, is also
important. Hence, the combinative effects of these two types of resources rather than specialization of one or the other, influences performance.

Conversely, in the second case, we find that human resources positively affect innovation strategy, but that organizational resources are not significant. We were somewhat surprised that organizational resources, such as organizational efficiencies, policies, and high level of profits did not lead to growth. It is possible that resources important to an innovation strategy rest in the entrepreneur (e.g., technological expertise) rather than the organization. In addition, it is also possible that for small companies pursuing innovation strategies, other resources (e.g., financial, technical, or physical) are more crucial to strategy and performance (Zahra & Bogner, 2000).

However, these findings contribute to the better understanding of the role of the resource base and the importance of strategies as resource deployment mechanisms in the context of the small companies. Our findings confirm that small firms are not merely smaller versions of big businesses, the major distinguishing characteristic being their "resource poverty" (Welsh & White, 1981: 18). Instead, small firms, often operating in mature, fragmented industries, such as service, consumer products, or retail face different competitive challenges. For example, these sectors are known for their notoriously high failure rates. Small firms face severe limitations in terms of economic and technical resources, which limit their performance (Brouthers, Andriessen & Nicolaes, 1998). Under conditions of resource constraints, the majority of small firms operate in what Kirchhoff (1994) refers to as the "economic core," in that they exhibit little capacity to pursue a high innovation strategy. The findings of our study suggest that even when human resources, (e.g., the managerial competencies of the small firm) are adequate, the
pursuit of innovation strategy may be restrained by the generally low levels of
development of organizational resources (e.g., production, research and development, or
marketing capabilities). In essence, other constraints may inhibit small firms from
successfully pursuing a strategy of innovation.

The Important Role of Human Capital We found that human capital drives small
company performance when mediated by strategies of quality/customer service or
innovation. These findings enrich existing views on the role of human capital in the
small companies. Previous research has conceptualized human capital as a key, and
oftentimes sole resource held by the firm at its founding (Mosakowski, 1993), or as a
resource endowment that forms the basis for the subsequent resource configuration of co-
specialized resource bundles and significantly influences the firm's survival and growth
(Cooper et al., 1994). Unique inimitable managerial talent is among the most robust
isolating mechanisms that explain a stable stream of rents and provide a rationale for
intra-industry differences among firms (Mahoney & Pandian, 1992). Moreover, research
in the area of small firm strategy has often emphasized the critical role of human capital
as a substitute for the formal hierarchical strategic processes characteristic of larger firms
(Brouthers et al., 1998). Some researchers have gone even further outlining the
uniqueness of strategic processes in the context of the smaller firm, by proposing that
small business strategies reflect the strengths and weaknesses of the "important people in
the business" and may be set to "satisfy their personal needs and objectives" (Curtis,
1983: 111). Our findings partially support, and partially challenge this view.

On the one hand, we find that human capital is tightly linked to the type of
competitive strategies small companies undertake. In that respect, our findings
emphasize the key importance of human capital as the foundation on which strategic choices are made in the context of small companies (Cooper, et al, 1994). On the other hand, we find that human capital is not directly related to the performance of the small firm, unless mediated by an appropriate firm strategy. Hence, our findings suggest that human capital does matter in the smaller firm, but only to the extent to which it is associated with the appropriate strategy. Our work implies that a finer grained analysis based on the internal contingency perspective is needed to develop a better understanding of the performance-enhancing role of human capital in the smaller firm.

In summary, our findings suggest that for small companies, such as those represented in our sample, it is difficult to develop organizational capabilities. Therefore, human resources play a significantly more important role in determining firm performance. However, even when small firms are successful at developing the appropriate resource bundles for effective competition, given the nature of the industries in which they are operating, it is simply inappropriate to undertake a strategy of innovation. Small firms are advised to focus on strategies that emphasize quality and customer service. Finally, consistent with the main theme of our research, any strategy that is not supported by the resource configuration of the small company will likely be detrimental to overall performance.

**CONCLUSIONS**

Small firms face unique challenges in crafting strategies that build on their resource bases and lead to firm performance. Even though significant research examines high technology, fast growing small firms, “less glamorous” firms are more prevalent. In
addition, these firms operate in highly competitive industrial sectors, and have little opportunity to erect barriers to imitation. The entrepreneurship literature illustrates that enhanced performance is a function of the contingent effects of strategy and external factors, but less studied are the internal effects of strategy and resources, especially in the small firm context. We examined the combined influences of these internal factors on performance in 284 small firms using structural equation analysis. From our study, we have three main conclusions: (1) human resources are central to small firm strategy and performance, (2) quality/customer service strategies are more likely to lead to enhanced performance in small firms than are innovation strategies, and (3) any strategy that does not build on the resource configuration of the small company will likely be detrimental to firm performance.

As with all studies, our research and findings are subject to limitations. We note that the vast majority of earlier work considers the contingent effects of the industry/environment on the strategy and performance relationship. While we confined our investigation to internal contingency effects, the cross sectional nature of our sample and variety of firms precluded a careful assessment of environment. However, future investigations might extend our work by examining the environmental effects relative to human and organizational resources, and strategy type. In addition, while our measure of performance, the log of return on sales, is acceptable as a growth measure (Brush & VanderWerf, 1992), previous research in the area of small businesses has documented that small business managers often set a threshold of performance, and therefore may choose to continue or survive despite comparatively low economic returns (Gimeno, et
Therefore, future studies might also expand the range of measures for the dependent variable and include the owner/manager’s performance objectives.

Our study is limited to small firms that are operating in less glamorous industrial sectors. An interesting extension to this work would be an examination of the relationship between resources, strategies, and performance in a sample that includes both large and small firms. Contrasting firms based on size would enhance the robustness of the research in that it would allow for greater generalizability of our findings. In addition, testing our hypotheses in a sample that included large and small glamorous (i.e., high-technology) and less glamorous firms would shed light as to the important distinctions in strategy that are dictated by size and firm type.

Limitations notwithstanding, our study makes an important empirical contribution by emphasizing the interconnectedness between resources and strategies. The relationship between distinctive competencies and strategies is an area that has been identified as in need of further research (Chrisman, et al., 1999). Our findings highlight the necessity of achieving congruence between firm resources and strategies to achieve enhanced firm performance.

Our study also makes an important methodological contribution. While previous coalignment studies have used moderated regression, thereby operationalizing fit as an interaction term, in this study we have employed an alternative operationalization of fit as a mediating variable. In doing so, we offer an expanded definition of coalignment, moving away from questions that examine fit as “when”, to questions that ask “why or how.” Given the central role that coalignment has played in both strategic management
and entrepreneurship research, our hope is that this study will inspire other researchers to use an expanded definition and methodology when examining fit in their own work.

In addition to our contributions to scholarship, our findings have important implications for managers. Innovation strategies are often touted as the route to competitive advantage for small firms in high technology sectors. However, for small firms in less glamorous industrial sectors, our study suggests a strategy of innovation is not associated with firm performance. Therefore, as tempting as a strategy of innovation may be, firms such as those in our sample are advised to focus on, and develop, the business and interpersonal skills of the owner/founder and pursue a strategy of quality/customer service. In other words, small firms should carefully utilize the resource strengths of their owner/founder while focusing on their customers, for this is the road to enhanced firm performance.

Finally, managers must critically examine both their resources profiles and their firms' strategies. If, as our findings strongly suggest, it takes both of these elements in combination to achieve firm performance, then managers must assess which, or both of these important areas needs special attention. Our study illustrates that, for less glamorous firms, focusing on one part of the equation, resources or strategies, is not enough. Instead, it takes an awareness of the ways in which these two essential elements of the firm are coaligned, to achieve enhanced firm performance.
REFERENCES


Andrews, K.R. 1971. The Concept of Corporate Strategy, Homewood, IL: Richard D. Irwin,


TABLE 1
Factor Analysis Multi-Item Scales

<table>
<thead>
<tr>
<th>Resource and Strategies</th>
<th>Factor Loadings</th>
<th>Explained Variance</th>
<th>Eigenvalues</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interpersonal Skills</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Team Building and Management</td>
<td>.86</td>
<td>36.26</td>
<td>2.44</td>
</tr>
<tr>
<td>Motivating Employees</td>
<td>.89</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Developing Personal Business Relationships</td>
<td>.73</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Business Skills</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Oral Presentation Skills</td>
<td>.77</td>
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<tr>
<td>Writing Skills</td>
<td>.84</td>
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</tr>
<tr>
<td>Problem Solving and Analysis</td>
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<td></td>
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<tr>
<td><strong>Organizational Resources</strong></td>
<td>.81</td>
<td>70.66</td>
<td>3.53</td>
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<tr>
<td>High Domestic Profits</td>
<td>.82</td>
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<tr>
<td>Customer Service Capabilities</td>
<td>.92</td>
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<td></td>
</tr>
<tr>
<td>Operating Efficiencies</td>
<td>.87</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost Structure</td>
<td>.78</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unique Products/Services</td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Quality/Customer Service Strategy</strong></td>
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<td></td>
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<tr>
<td>Quality Control</td>
<td>.74</td>
<td>68.01</td>
<td>2.72</td>
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<tr>
<td>Satisfaction of Customer Demands</td>
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<td>Highest Quality Product/Service</td>
<td>.84</td>
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<td>Superior Customer Service</td>
<td>.86</td>
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<tr>
<td><strong>Innovation Strategy</strong></td>
<td></td>
<td></td>
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</tr>
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<td>Product or Service Development/Innovation</td>
<td>.82</td>
<td>56.34</td>
<td>1.69</td>
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<td>Innovative Marketing</td>
<td>.72</td>
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<tr>
<td>Technological Superiority</td>
<td>.72</td>
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### TABLE 2
Reliability and Correlation Matrix

<table>
<thead>
<tr>
<th>Scale</th>
<th>Measure</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<tr>
<td>Interpersonal Skills</td>
<td>Scale</td>
<td>10.93</td>
<td>2.24</td>
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<td>Business Skills</td>
<td>Scale</td>
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<td>.24</td>
<td>.61</td>
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<tr>
<td>Organizational Capital</td>
<td>Scale</td>
<td>20.78</td>
<td>5.15</td>
<td>.02</td>
<td>.11</td>
<td>.89</td>
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<td></td>
</tr>
<tr>
<td>Quality/ Customer Service</td>
<td>Scale</td>
<td>18.22</td>
<td>2.35</td>
<td>.15</td>
<td>.17</td>
<td>.23</td>
<td>.84</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strategy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Innovation Strategy</td>
<td>Scale</td>
<td>7.04</td>
<td>1.72</td>
<td>.30</td>
<td>.07</td>
<td>.16</td>
<td>.62</td>
<td></td>
<td></td>
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<tr>
<td>Log of Change in Return on</td>
<td>Single</td>
<td>1.16</td>
<td>.35</td>
<td>.01</td>
<td>-.01</td>
<td>.06</td>
<td>.06</td>
<td>.19</td>
<td>N/A</td>
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<td>Sales</td>
<td>Measure</td>
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<td></td>
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</table>

* Correlation is significant at the 0.05 level (2-tailed)
** Correlation is significant at the 0.01 level (2-tailed)
a Cronbach’s alpha replaces all null values.
TABLE 3

Structural Equation Model
Hierarchical Testing

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>$\chi^2$/ df</th>
<th>df</th>
<th>P</th>
<th>$\chi^2$ diff</th>
<th>df diff</th>
<th>AGFI</th>
<th>NFI</th>
<th>Comparison</th>
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<tbody>
<tr>
<td>Direct</td>
<td>52.08*</td>
<td>7.44</td>
<td>7</td>
<td>.00</td>
<td></td>
<td></td>
<td>.84</td>
<td>.43</td>
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<tr>
<td>Indirect</td>
<td>4.74</td>
<td>.95</td>
<td>5</td>
<td>.45</td>
<td>47.34*</td>
<td>2</td>
<td>.98</td>
<td>.95</td>
<td>Indirect to direct</td>
</tr>
</tbody>
</table>

*p ≤ .05

TABLE 4

Structural Equation Model
Measurement Model Fit – Indirect Model

<table>
<thead>
<tr>
<th>Fit Statistic</th>
<th>Indirect Model</th>
<th>Recommended Value</th>
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<tr>
<td>Chi-square/ degrees of freedom</td>
<td>.95</td>
<td>≤ 2.0</td>
</tr>
<tr>
<td>p-value</td>
<td>.45</td>
<td>≥ .05</td>
</tr>
<tr>
<td>Goodness of Fit Index (GFI)</td>
<td>1.00</td>
<td>≥ .90</td>
</tr>
<tr>
<td>Adjusted Goodness of Fit Index (AGFI)</td>
<td>.98</td>
<td>≥ .90</td>
</tr>
<tr>
<td>Normed Fit Index (NFI)</td>
<td>.95</td>
<td>≥ .90</td>
</tr>
<tr>
<td>Root Mean Square Residual</td>
<td>.11</td>
<td>Low values</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0 = perfect fit)</td>
</tr>
<tr>
<td>Hotellings Critical N</td>
<td>924</td>
<td>≥ 200</td>
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### TABLE 5

Path Coefficients and Critical Ratios: Hypothesized Fully Mediated Model

<table>
<thead>
<tr>
<th>Path Coefficient</th>
<th>Critical Ratio</th>
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<tr>
<td><strong>Observed Variables to Latent Variable (Human Resources)</strong></td>
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<tr>
<td>Interpersonal Skills to Human Resources</td>
<td>3.13</td>
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<td>Business Skills to Human Resources</td>
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</tr>
<tr>
<td><strong>Observed and Latent Variables to Mediating Variables (Organizational and Human Resources to Firm Strategies)</strong></td>
<td></td>
</tr>
<tr>
<td>Human Resources to Quality/Customer Service Strategy (H4a)</td>
<td>.78</td>
</tr>
<tr>
<td>Human Resources to Innovation Strategy (H4b)</td>
<td>1.07</td>
</tr>
<tr>
<td>Organizational Resources to Quality/Customer Service Strategy (H4c)</td>
<td>.11</td>
</tr>
<tr>
<td>Organizational Resources to Innovation Strategy (H4d)</td>
<td>.02</td>
</tr>
<tr>
<td><strong>Mediating Variables to Dependent Variable (Firm Strategies to Firm Performance)</strong></td>
<td></td>
</tr>
<tr>
<td>Quality/Customer Service Strategy to Performance (H4e)</td>
<td>.03</td>
</tr>
<tr>
<td>Innovation Strategy to Performance (H4f)</td>
<td>.07</td>
</tr>
</tbody>
</table>

† z ≤ .10; * z ≤ .05; ** z ≤ .01; *** z ≤ .001
The model above can be written as a set of equations where $Y = a_0 + a_1Z + a_2X + e$ and $X = b_0 + b_1Z + e$.

The illustration above is of a partially mediated model in that the antecedent variable $Z$ (e.g., resources) has a direct relationship with the consequent variable $Y$ (e.g., performance), as well as an indirect relationship with the consequent variable $Y$ (e.g., performance) through the intervening variable $X$ (e.g., strategies).
The figure depicts a structural model with maximum likelihood estimates. Path coefficients for error terms were set at one.

A Model of the Fit between Firm Resources, Strategies and Firm Performance

FIGURE 2