INTANGIBLE STRATEGIC ASSETS AND FIRM PERFORMANCE: A MULTI-INDUSTRY STUDY OF THE RESOURCE-BASED VIEW

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Abstract

According to the Resource-Based View (RBV), firms achieve a sustainable competitive advantage and earn superior profits by owning or controlling strategic assets. The RBV literature, Hall's empirical findings (1992, 1993), and other corroborating literature indicate that certain intangible resources, such as reputation, knowhow, and organizational culture, possess the characteristics of strategic assets. This study empirically tests the relationship between these intangible strategic assets and relative return on shareholders' equity using 100 randomly selected Fortune 500 and Service 500 firms. The results are statistically significant and strongly support RBV.

Introduction

The Resource-Based View of the Firm (RBV) has become an important stream of literature in strategic management. Yet, while the conceptual development of RBV is impressive, empirical testing of it is still in its infancy. Some RBV studies focus on the linkage between firm resources and diversification (Chatterjee and Wernerfelt, 1991; Farjoun, 1994; Markides & Williamson, 1994, 1996; Robins & Wiersema, 1995). Other studies focus on the linkage between certain resources and performance but are industry specific, such as the pharmaceutical industry (Henderson & Cockburn, 1994), the Dutch audit industry (Maijoor & Van Witteloostuijn, 1996), the Hollywood film industry (Miller & Shamsie, 1996) and the Canadian oil and gas industry (Sharma & Vredenburg, 1998). Unfortunately, single-industry studies suffer from a lack of generalizability.

RBV's main prescription is that owning or controlling strategic assets leads to a sustainable competitive advantage and superior firm performance. Recently, RBV scholars have begun recognizing that only intangible resources appear capable

of simultaneously possessing all of the characteristics of strategic assets (Barney, 1991; Bates & Flynn, 1995; Godfrey & Hill, 1995; McGrath, MacMillan, & Venkatraman, 1995). Further, Michalisin, Smith and Kline (1997) note that many intangible resources are not strategic assets and that the ones most capable of being strategic assets are reputation, knowhow and organizational culture. This study empirically tests the relationship between these three intangible strategic assets and relative return on shareholders' equity using 100 randomly-selected *Fortune 500* and *Service 500* firms. The results strongly support RBV.

The paper is divided into five sections. The first section (a) discusses RBV; (b) describes why strategic assets are intangible in nature, why not all intangible resources are strategic assets, and why reputation, employee knowhow, and organizational culture appear capable of possessing the characteristics of strategic assets; and (c) presents the hypotheses. The second section describes the methodology used in the study. The third section presents and interprets the statistical results. The fourth section draws overall conclusions about the results, discusses the contributions, implications and limitations of the study, and presents possible avenues for future research. The fifth section, the appendix, describes the content analysis methodology.

Resource-Based View of the Firm

According to RBV, firm resources are the main determinant of competitive advantage and firm performance (Amit & Schoemaker, 1993; Mahoney & Pandian, 1992; Peteraf, 1993; Wernerfelt, 1984). Barney (1991) defines resources as "all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by a firm that enable a firm to conceive of and implement strategies that improve its efficiency and effectiveness" (p. 101). As such, RBV recommends that managers mainly concern themselves with selecting, acquiring, and managing resources superior to their competitors (Rumelt, 1984).

Strategic Assets and Intangibles

Not all resources are sources of competitive advantage. Some resources are necessary to conduct business but are not sources of superior profits (e.g., desks for the employees). Resources that are sources of sustainable competitive advantage and superior profits are called strategic assets. Strategic assets are resources that are simultaneously valuable, rare, imperfectly imitable, and nonsubstitutable (Barney, 1991).

Recently, RBV scholars have begun to recognize that strategic assets are generally not tangible in nature (Barney, 1991; Bates & Flynn, 1995; Godfrey & Hill, 1995; McGrath, MacMillan, & Venkatraman, 1995). Tangible resources are resources with physical properties, such as property, plant, equipment, and other physical technologies. They are often not rare because they can often be purchased in the open market. As a result, tangible-resource-based advantages are susceptible to imitation.

Conventional thinking suggests that internally-developed technologies may be important to firm success. Yet, in today's rapidly changing competitive environment, physical technologies can quickly become obsolete or re-engineered by competitors. The inability of such resources to provide a sustainable competitive advantage is inconsistent with the definition of strategic assets. Of course, internally-developed physical technologies can be afforded legal protection against imitation via intellectual property rights. Intellectual property rights, such as patents, trademarks, and copyrights, are intangible resources representing and protecting an inventive idea, name of an idea, or embodiment of an idea (Hall, 1992, 1993). Yet, it is the idea and knowledge behind the idea, represented and protected by the intangible resource, that constitutes the strategic asset, not the physical form. Moreover, the resource-based advantage is only sustainable due the legal protection afforded by the intangible resource.

This points to an important difference between tangible and intangible resources — their imitability, or lack thereof. Imitability is in large part a function of observability (Godfrey & Hill, 1995). Specifically, the extent to which resource-based advantages are imitable is a function of the observability of the resources underlying them. Thus, the more unobservable the resources driving competitive advantage, the more insurmountable the barriers to imitation, and the more sustainable the advantage. Unlike tangible resources with physical properties, intangible resources are state unobservable and difficult to imitate.

Yet, not all intangible resources are strategic assets. Supplier knowhow and distributor knowhow are not strategic assets because the knowledge is not proprietary to the firm and thus not rare. Contracts and licenses can lose their value if contexts change. For instance, a contract to purchase a specific quantity of computer chips, over an extended period of time, at a specific price, could become a liability to the firm if another supplier later develops a superior chip at a lower price. In short, it appears that only certain types of intangible resources are capable of being strategic assets.

Hall performed two studies (1992 & 1993) to determine the relative importance of intangible resources on business success. In the first study, Hall (1992) surveyed chief executive officers in the United Kingdom to determine the relative importance of intangible resources on firm success. His findings indicate that only four intangible resources are more important than tangible resources in terms of business success: reputation, employee knowhow, organizational culture and networks. If tangible resources do not possess the characteristics of strategic assets and thus are not sources of sustainable competitive advantage, then any intangible resource deemed less important than tangible resources, by RBV definition, cannot be a strategic asset. Of these four intangibles, reputation, employee knowhow and organizational culture were ranked as the three most important resources to the firms' competitive advantage. In the second study, Hall (1993) performed six case studies of British firms to determine which intangible resources were most important to their success. The results of the case studies were strikingly similar

to Hall's (1992) survey results. Reputation, employee knowhow, and organizational culture were again deemed the most important firm resources.

In sum, Hall's findings (1992 & 1993) indicate that reputation, employee knowhow and organizational culture contribute most to firm success. By RBV definition, resources contributing most to firm success are strategic assets. These three intangibles are also cited in RBV's conceptual literature as resources most capable of being strategic assets (e.g., Barney, 1986, 1991; Collis & Montgomery, 1995; Garud & Nayyar, 1994; Henderson & Cockburn, 1994; Lado & Wilson, 1994; Michalisin, Smith & Kline, 1997, Miller & Shampsie, 1996; Oliver, 1997). Unfortunately, Hall (1) does not test the relationship between these intangible resources and firm performance, (2) does not mention the Resource-Based View or the concept "strategic assets", and (3) does not demonstrate that reputation, employee knowhow and organizational culture are capable of simultaneously being valuable, rare, imperfectly imitable, and nonsubstitutable. In the next section, we draw on RBV's conceptual literature and the logic embodied in other literature streams to demonstrate that reputation, employee knowhow and organizational culture possess the characteristics of strategic assets.

Reputation

Reputation is the perception of customers, competitors, potential recruits, and other stakeholders about a firm's quality of management; quality of products and services; innovativeness; long-term investment value; financial soundness; ability to attract, develop, and keep talented people; community and environmental responsibility; and use of corporate assets (Davenport, 1989; Stewart, 1998). A favorable reputation is valuable because it helps the firm win customers, charge premium prices, attract superior human resources, improve access to capital markets and thwart competitors (Fombrun & Shanley, 1990; Fombrun, 1996; Porter, 1980, 1985; Rao, 1994; Turban & Greening, 1996; Weigelt & Camerer, 1988). It can also increase the success rate of new product and service offerings and make the firm an attractive partner for cooperative arrangements (Dollinger, Golden & Saxton, 1997).

A valuable reputation is also typically rare and imperfectly imitable. First, reputation develops through a process of legitimation (Rao, 1994). Legitimation is the outcome of certification contests (e.g., Moody's rating of insurance companies and J.D. Powers rating of automobile performance) which act as yardsticks of social standing among organizations. And second, reputation is rare and imperfectly imitable because it (1) takes long periods of time to develop, (2) "depends upon specific, difficult-to-duplicate historical settings" (Barney, 1991, p. 115), and (3) evolves through unique, socially complex relationships between the firm and its multiple stakeholders.

Reputation also appears to lack strategically equivalent substitutes. One might argue that contracts and guarantees to stakeholders are substitutes for reputation. However, socially-complex relationships with large numbers of stakeholders make

contracts and guarantees imperfect substitutes at best. In summary, (1) the value of a firm's reputation is a function of its favorableness, and (2) by nature, reputation is rare, imperfectly imitable and nonsubstitutable.

> Hypothesis 1: *A favorable reputation will be positively associated with future performance.*

Knowhow

Knowhow is the knowledge, insight, experience, skill, and judgement of the firm's managers and non-managers. It resides in individuals (knowing corporate tax laws), groups (quality circle analysis of performance), organizations (organizational charts, systems and processes), and across organizations (shared understanding of processes and practices in just-in-time arrangements) and can be articulable (training subordinates in corporate taxation) or tacit (team coordination in complex work) (Dyer & Singh, 1998; Hedlund, 1994; Inkpen & Dinur, 1998). Knowhow is valuable because it is the main driver of firm capabilities. It determines how resources are deployed to perform activities that result in new products and services (Amit & Schoemaker, 1993; Itami & Roehl, 1987). It also drives the selection, creation, and management of other firm resources such as new physical technologies (Rumelt, 1984; Wernerfelt, 1984) and affects the ability to reconfigure resources in strategically valuable ways (Galunic & Rodan, 1998).

Knowhow is also often rare and imperfectly imitable because: (1) it accumulates over time and is function of rare experiences, choices, personalities, and contexts (Coff, 1997; Tyre & Hippel, 1998), (2) the absorption and assimilation of knowledge is constrained by existing knowhow (Levinthal & Myatt, 1994), and (3) shared knowledge is socially complex and not entirely understood by employees and competitors (Barney, 1991; Henderson & Cockburn, 1994; Peteraf, 1993). Knowhow that is valuable, rare, and imperfectly imitable has been referred to as *distinctive competence* in the management literature (e.g., Lei, Hitt & Bettis, 1996; McGrath, MacMillan & Venkatraman, 1995; Prahalad & Hamel, 1990).

Distinctive competencies are generally nonsubstitutable. Expert systems, programs that run production equipment and other processes, attempt to replicate human decision making; however, they are merely embodiments of past articulated knowledge. In today's turbulent environment, competency-based advantages are only sustainable through learning and the advancement of knowledge (D'Aveni, 1994; Davidow & Malone, 1992; Von Krogh, Roos & Slocum, 1994; Prahalad & Hamel, 1990). Otherwise, superior skills and technologies will evolve and substitute for existing ones. As such, firms are constantly challenged to upgrade and leverage their distinctive competencies in new ways to better meet the demands of a changing competitive landscape (Henderson & Mitchell, 1997; Lei, Hitt & Bettis, 1996).

Hypothesis 2: *Distinctive competencies will be positively associated with future firm performance.*

Organizational Culture

Organizational culture is a set of values, beliefs, assumptions, and ideologies defining the way a firm does business (Deal & Kennedy, 1982; Denison, 1984, 1990, 1996; Peters & Waterman, 1982). Organizational culture can be a *valuable* resource when it possesses attributes important to sustainable competitive advantage (Barney, 1986; Fortune, 1998). Hall (1992, 1993) identifies six cultural attributes frequently cited in the management literature as being important to strategic competitiveness: perceptions of quality, perceptions of customer service, ability to manage change, ability to innovate, team-working ability and participative management style. If these attributes are important to strategic competitiveness, then firm performance should be enhanced to the extent they are embodied in the firm's culture.

Organizational culture is also typically rare and difficult to imitate because (1) it is shaped by the unique personalities of the firm's members and the firm's unique history (e.g., founding father influences, rare experiences), (2) values, beliefs, and assumptions underlying organizational culture are difficult to describe, yet alone understand, and (3) even if understood, its effect on firm performance is often causally ambiguous (Barney, 1986; Reed & DeFillippi, 1990; Oliver, 1997). Organizational culture also appears to lack strategically equivalent substitutes.

Hypothesis 3: *Organizational culture rich in attributes important to strategic competitiveness, such as perceptions of quality, perceptions of customer service, ability to manage change, ability to innovate, team-working ability, and participative management style, will be positively associated with future firm performance.*

Methods

As discussed earlier, strategic assets are state unobservable. The problem is that unobservable resources resist empirical testing. Godfrey and Hill (1995) note that the solution to this empirical problem is to examine observable traces left by the unobservables and then correlate the traces with firm performance. In this study, we identify and analyze trace evidence of reputation, employee knowhow and organizational culture so that we can make inferences about the presence of these intangibles in our sample firms, and then correlate the traces with relative return on shareholders' equity to determine whether these intangibles are sources of superior profits.

Identifying and measuring trace evidence of intangible resources is challenging. Godfrey and Hill (1995) suggest using qualitative methods to gather trace evidence of unobservable resources for purposes of testing RBV. In this study, we use a

qualitative research method, called content analysis, to analyze the textual data in annual reports to determine whether or not important cultural attributes existence in our sample firms. Additionally, it is worth noting that while intangibles are invisible to the naked eye, they can be perceived, discerned and sensed (Itami, 1987). For example, reputation is the *perception* of stakeholders about a firm's quality of management, quality of products and services, innovativeness, and so on (Rao, 1994). Yet, despite their inability to see the intangible resource, industry analysts have translated their perceptions about the reputations of hundreds of firms into numerical ratings and rankings for Fortune magazine each year since 1983 (Stewart, 1998). In this section, we detail the methodology used in this study, including sampling procedures and operationalization of the dependent, independent and control variables.

Sample

In this study, *Fortune's* January 30, 1989 list of "America's Most Admired Corporations" (Davenport, 1989) constitutes the population frame; mainly because *Fortune's* survey data is used in this study to measure the variable "reputation." It comprises 305 firms spanning 32 industries. These American firms are the ten largest in each industry based on *The Fortune 500* and *The Service 500* directories. We randomly selected 100 firms from the population frame, except for firms in the life insurance industry. The financial structure of life insurance companies is not conducive to measuring relative return on equity, the dependent variable used in this study.

Dependent Variable

Relative Return on Shareholders' Equity (RRoe). Performance lies at the core of strategic management (Venkatraman & Ramanujan, 1986; Robinson & McDougall, 1998), yet scholars disagree over the appropriateness of various performance measures (Chakravarthy, 1986). The choice of performance measures should be a function of one's research. RBV describes how resources can be sources of sustainable competitive advantage and above average industry profits (Amit & Schoemaker, 1993; Mahoney & Pandian, 1992; Peteraf, 1993). Thus, in this study, performance is measured in terms of firm *profitability* relative to industry competitors.

Firm profitability, or financial performance, is the most dominant measure of firm performance in strategy research (Venkatraman & Ramanujan, 1986). Woo and Willard (1983) factor analyzed fourteen quantitative financial and operational measures of performance and found that the profitability factor had the highest factor magnitude and that ROI (return on investment) loaded highly on that factor. ROI has a number of variants. This study measures firm performance using return on stockholders' equity (ROE), a popular variant of ROI (Chakravarthy, 1986; Hopkins & Hopkins, 1997; Robinson & McDougall, 1998).

RBV tells us that strategic assets are sources of sustainable competitive advantage and superior profits (Mahoney & Pandian, 1992). How many years

can a strategic asset provide superior profits? Unfortunately, the RBV literature does not answer that question. We take the position that operating, tactical and strategic time horizons are approximately one year, three years and five or more years, respectively. The notion that an asset is "strategic" indicates that it should provide superior profits for at least as long as the shortest strategic time horizon — five years. As such, to test RBV's prescription that strategic assets are sustainable sources of superior profits, we measured the observable traces of reputation, employee knowhow, and organizational culture in one year (1988) and then measured firm performance over the subsequent five-year period (1989-93) using relative return on shareholders' equity (RRoe). RRoe (1989-93) represents the difference between the sample firm's five-year average ROE (1989-93) and the median five-year average ROE for the industry (1989-93). Thus, RRoe (1989-1993) indicates whether the firm earned above-industry-median returns (superior returns), at-industry-median returns (median-level returns), or below-industry-median returns (poor returns). According to RBV, high levels of strategic assets in 1988 should be associated with high levels of returns (superior returns) in 1989-1993. The data comes from *The Fortune 500, The Service 500* and *Compustat.*

Independent Variables

Reputation. Reputation was defined as stakeholder perception about a firm's quality of management; quality of products and services; innovativeness; long-term investment value; financial soundness; ability to attract, develop, and keep talented people; community and environmental responsibility; and use of corporate assets. Each year, since 1983, *Fortune* has published the results of an annual survey on corporate reputation, entitled "America's Most Admired Corporations" (Stewart, 1998). *Fortune* surveys thousands of senior executives, outside directors, and financial analysts to determine how American companies rate in terms of the attributes of reputation noted above. Firms are rated in each reputation attribute using a 0 (poor) to 10 (excellent) scale. Firms in multiple industries are assigned to the industry contributing most to overall sales. For each firm, the category scores are averaged to compute an overall reputation score. In this study, the overall reputation score from the 1988 *Fortune* survey (appearing in the January 30, 1989 issue of *Fortune*) is used to measure the favorableness of each firm's reputation (Davenport, 1989).

Knowhow. Measuring the individual, group, organizational, and inter-organizational tacit and articulable knowledge underlying a firm's distinctive competencies is difficult, if not impossible. Yet, as discussed, an organization's products and services are manifestations of its distinctive competencies. Furthermore, the ability to create new products and services to meet changing customer needs tells of the organization's ability to learn and convert new knowledge into customer value, which is essential in sustaining a competitive advantage (D'Aveni, 1994; Davidow & Malone, 1992; Von Krogh, Roos & Slocum, 1994; Prahalad & Hamel, 1990).

Trademarks are legally-protected devices, names, signatures and other visual marks that are attached to products and services (Hall, 1992). In this study, we counted the number of applications for trademark protection for each sample firm and its competitors in *Fortune's* January 30, 1989 list of "America's Most Admired Corporations" for the ten-year period ending December 31, 1988. We then computed the difference between the sample firm's total trademarks and the median number of trademarks for *Fortune's* industry group. *Fortune's* reputation survey does not include all firms in an industry, however, it does include firms that are similar in product and service offerings and in size. Firms sharing similar organizational and strategic attributes are often considered direct competitors comprising a strategic group (Porter 1980). As such, using a relative measure of trademarks controls for differences in the number of trademarks across industries and indicates whether a firm has more or less trademarks than the median number for the strategic group. Trademarks represent many different types of new products and services developed over a long period of time, which is important given the diversity of the firms comprising our sample. The data comes from Lexis-Nexis and includes all U.S. federal trademarks and all state trademarks.

Organizational Culture. Organizations leave distinct traces of their values, beliefs and ideologies in documents, such as annual reports, and these traces can be observed and measured (Kabanoff, Waldersee & Cohen, 1995). Analysis of the values, beliefs and ideologies contained in annual reports can provide valuable information about an organization's culture (Howard, 1991). Content analysis is a research technique used to analyze textual information. It is the objective, systematic and quantitative description of attributes of communication occurring earlier in time (Holsti, 1968) and is a proven research technique for studying individual communication at a distance, as opposed to face-to-face interview, questionnaire, or observation (Morris, 1994; Rogers & Grant, 1997). In this study, we content analyzed each sample firm's 1988 annual report for emphasis on perceptions of quality, perceptions of customer service, ability to manage change, ability to innovate, team-working ability, and participative management style.

The textual information in annual reports (ART), which includes the Letter to the Shareholders, Company Report and Management Discussion and Analysis, is also useful for this type of empirical study because (1) it provides a comparable data set across a broad sample of corporations, and (2) it represents evidence of past articulations of firm leaders, useful in measuring past organizational values, beliefs, ideologies and strategic postures (Bettman & Weitz, 1983). For these reasons and because senior management, particularly the CEO, is the main crafter of organizational culture and the only one who can give a complete account as to its attributes, (Peters & Waterman, 1982; Deal & Kennedy, 1982; Kotter & Heskett, 1992), ART is a rich data source for studying senior management's intended culture.

ARTs are sometimes written with the assistance of outside consultants, however, CEOs are ultimately responsible for what is said in them and thus have final say as to their contents (Bowman, 1984; D'Aveni & MacMillan, 1990). Given that

control, CEOs, particularly those of poorly performing firms, have used ARTs to manage the perceptions of stakeholders. Empirical and anecdotal evidence indicates that CEOs of unsuccessful firms tend more than CEOs of successful firms to hide organizational outcomes and give the appearance of stronger performance and organizational strengths in ARTs than truly exist (e.g., Abrahamson & Park, 1994; Frazier, Ingram & Tennyson, 1984; Givoli & Palmon, 1982; Ingram & Frazier, 1980; Meyer, 1979; Stauffer, 1997). For example, Ingram and Frazier (1980) found that firms with poor social performance disclosed more information about their environmental activities in ARTs than did firms with better social performance, creating an exaggerated image of social responsiveness. Such exaggerations are often meant to strategically manipulate causal attributions to give the impression that the CEO has control over the organization and that they are taking steps to be more competitive (Chandler, 1987; Salancik & Meindl, 1984). Consistent with that logic, Ingram and Frazier's (1983) study of metal companies shows a negative relationship between return on investment and ART discussion about changes in operations to strengthen the company.

Two concerns of the CEO drive this behavior. One is that the board of directors will make changes to their compensation package or dismissed them (Abrahamson & Park, 1994). The second concern is that market participants will lose confidence in their managerial abilities and sell their shares, causing the firm's stock price to fall (Fama, 1980; Fama & Jensen, 1983). Falling stock prices could then make the firm a potential takeover target — whereupon the firm's existing managers would be replaced. For these reasons, CEOs of poorly performing firms tend to use *less* of their ART discussing results (failures) and *more* of it exaggerating organizational strengths and/or telling stakeholders about the steps they are taking to be more competitive, such as re-crafting organizational culture to be stronger in attributes important in gaining a competitive advantage. In either case, the more an important organizational attribute is discussed in the ART, the less it probably exists, and the poorer the firm's performance. This pattern in ART data is useful for assessing the extent to which cultural attributes exist or do not exist in an organization. Specifically, based on this ART pattern, a statistically-significant *negative* relationship between an ART emphasis on the six cultural attributes and firm performance will provide support for Hypothesis 3.

The letter to the shareholders, company report, and management discussion and analysis sections of each firm's 1988 annual report were content analyzed for emphasis on the attributes of organizational culture noted above. We computed the total number of times key words and key word combinations relating to the six attributes appeared in the ART and then divided that total by the number of bytes in the file (on diskette) containing the textual data. Dividing by the number of bytes controls for differences in the size of annual reports.

The content analysis was performed via computer, which has important advantages over manual analysis. Manual searches are expensive, time consuming, and subject to error due to fatigue, boredom, and frustration (Wolfe, Gephart &

Johnson, 1993). These problems are accentuated when samples become large (this study involves use of 42,826 sentences). Thus, an important advantage of computerized content analysis is that the researcher can focus more on interpretation and explanation. Also, computer-driven content analysis can produce perfectly reliable results, is fast, requires rigor and discipline in formulating the research, and is amenable to reanalysis (Holsti, 1968; Krippendorff, 1980; Weber, 1990; Wolfe, Gephart, & Johnson, 1993). Yet, as noted by Wolfe, Gephart, and Johnson (1993), "very little concerning this burgeoning approach to research has appeared in the management literature, however, despite its potential to contribute much to management research" (p. 637).

One potential disadvantage of computerized content analysis is that it may be unable to interpret the multiple meanings of words (Weber, 1990). Ambiguity of word meanings might then lead to validity problems. The computerized content analysis methodology used in this study considers context, thus improving validity. The computerized content methodology is described in the Appendix.

Control Variables

We controlled for the effects of the following variables: relative prior years' performance, debt structure, organizational type and size. Given our sample size and the number of variables in the statistical models, we limited the control variables to those most frequently used in performance-type studies in the strategy literature. Inclusion of other extraneous control variables would weaken the power of our statistical tests. Relative prior years' performance, debt structure and size are frequently cited in the strategy literature as influencing firm performance (e.g., Jensen, 1991; Hoskisson, Johnson & Moesel, 1994; Robins & Weisema, 1995). In addition, because our sample includes both manufacturing and service type firms, we controlled for organizational type to determine the extent to which it explains variability in the dependent variable. Firm type is measured via dummy variable, where manufacturing firms are coded as zero and service firms are coded as one.

Relative prior years' performance is measured using relative return on shareholders' equity (RRoe) for the five-year period ending 1988. RRoe 1984-1988 represents the difference between the sample firm's ROE and the median ROE for the industry for the period 1984-1988. Using a relative performance measure is an efficient way to adjust firm performance for the effects of industry performance. Moreover, because RRoe 1984-1988 (control variable) and RRoe 1989-1993 (dependent variable) use the same performance measure (ROE) and adjust for industry performance the same way, we gained some precision in controlling for the effect of relative prior years' performance on relative future years' performance.

Debt structure is the extent to which a firm's assets are funded with debt. Firms with high levels of debt use significant amounts of cash flow to service debt obligations, thereby reducing free cash flow (Jansen, 1986). The reduction in free cash flow disciplines managers to invest wisely and to closely monitor firm

activities. This can improve firm performance unless the firm becomes over-leveraged and unable to meet its debt obligations (Hitt & Smart, 1994). In this study, debt structure is measured as total debt to total assets as of 1988.

Firm size can impact performance through economies of scale, monopoly power and bargaining power (Chandler, 1990; Porter, 1980). In this study, firm size is measured as both total assets and total employees as of 1988 to capture size effects across both organizational types. The data used to measure these control variables comes from *The Fortune 500, The Service 500* and *Compustat.*

Results

The statistical model used in this study is multiple regression (Least Squares Method). The statistical and graphical analysis does not indicate any violation of the regression assumptions. The descriptive statistics and correlations are shown in Table 1 and indicate that the correlations between reputation, knowhow, and organizational culture and RRoe for the period 1989 to 1993 are statistically significant at $p < 0.01$, $p < 0.05$, and $p < 0.05$, respectively. Also, based on the data sources, the signs of the correlations between the independent variables and RRoe 1989-93 support all the hypotheses. The variance inflation factors (VIF), shown in Table 2, do not indicate any multicollinearity among the control and independent variables.

Regression Models

The regression models are shown below in standardized form. Model 1 regresses RRoe 1989-1993 against only the control variables, while Model 2 includes both control and independent variables.

Model 1: $$\text{RRoe 1989-93} = \beta_0 + \beta_1(\text{RRoe 1984-88}) + \beta_2(\text{Assets}) + \beta_3(\text{Employees}) + \beta_4(\text{Debt:Assets}) + \beta_5(\text{Manufacturing/Service})$$

Model 2: $$\text{RRoe 1989-93} = \beta_0 + \beta_1(\text{RRoe 1984-88}) + \beta_2(\text{Assets}) + \beta_3(\text{Employees}) + \beta_4(\text{Debt:Assets}) + \beta_5(\text{Manufacturing/Service}) + \beta_6(\text{Reputation}) + \beta_7(\text{Knowhow}) + \beta_8(\text{Culture})$$

The results of the regression analysis are shown in Table 2. In Model 1, the control variables collectively explain 10 percent of variation in relative future firm performance, as indicated by R^2, however the relationship is not highly significant ($p < 0.10$). RRoe 1984-88 ($p < 0.05$) and Total Employees ($p < 0.05$) have statistically-significant relationships with RRoe (1989-1993).

In Model 2, the control variables and independent variables collectively explain 24 percent of the variation in relative future performance, as indicated by R^2, which is statistically significant at $p < 0.001$. Also, the incremental change in R^2 of 14 percent (as a result of adding the independent variables) is statistically

Table 1
Descriptive Statistics and Correlations

Variable:	Mean	SD	1	2	3	4	5	6	7	8
1. RRoe 1989-93	-1.73	12.73								
2. RRoe 1984-88	-0.42	9.21	.22*							
3. Assets	12.33	19.17	-.11	-.04						
4. Employees	55.17	75.69	-.21*	.05	.52***					
5. Debt:Assets	0.61	0.18	-.13	-.25**	.43***	.10				
6. Mfg. / Svc.	0.23	0.42	-.10	-.06	.44***	.19*	.46***			
7. Reputation	6.59	0.85	.24**	.46***	.02	.16	-.37***	-.13		
8. Knowhow	24.29	84.81	.23*	.16	.04	.24**	-.01	-.02	.12	
9. Culture	43.24	20.97	-.18*	-.04	-.16	.10	-.10	-.24**	.14	.05

* $p < 0.05$
** $p < 0.01$
*** $p < 0.001$

Table 2
Results of Multiple Regression Analysis

	Model 1		Model 2		
	Beta[a]	**t**	**Beta[a]**	**t**	**VIF**
Control Variables:					
RRoe 1984-88	0.21	2.09*	0.07	0.62	1.32
Assets	0.07	0.52	0.02	0.19	1.92
Employees	-0.24	-2.11*	-0.30	-2.62**	1.58
Debt:Assets	-0.06	-0.54	0.01	0.08	1.68
Mfg / Svc	-0.03	-0.30	-0.06	-0.52	1.45
Independent Variables:					
Reputation			0.25	2.21*	1.52
Knowhow			0.27	2.77**	1.10
Culture			-0.20	-2.02*	1.15
Multiple R	0.32		0.49		
R Square	0.10		0.24		
Adjusted R Square	0.05		0.17		
F Value	2.13[†]		3.49***		
Incremental R Square			0.14		
Incremental F Value			3.92***		

[a] Standardized regression coefficients
[†] $p < 0.10$
* $p < 0.05$
** $p < 0.01$
*** $p < 0.001$
VIF = Variance Inflation Factor

significant at $p < 0.001$. Reputation ($p < 0.05$) and knowhow ($p < 0.01$) have positive, statistically-significant relationships with future performance, supporting Hypotheses 1 and 2.

The statistically-significant, negative relationship between the emphasis on key attributes of organizational culture ($p < 0.05$) and firm performance is consistent with prior empirical and anecdotal evidence which indicates that the more a key organizational attribute is discussed in annual reports, the less it probably exists, and

the poorer the firm's performance. Sentences used in the Key Word in Context (KWIC) Analysis (see Appendix) were reviewed to gain insight into this phenomenon. Interestingly, many of the sentences referred to an attribute as something the firm was striving to possess. To illustrate, a sample of sentences used in the KWIC Analysis is shown in Table 3, along with their associated cultural attribute.

Table 3
A Sample of Sentences used in the KWIC Analysis

Sentence	Cultural Attribute
In reaching this goal, we will be fulfilling Scott's vision of creating substantial wealth and value for our customers, employees, shareholders and other key stakeholders.	Perception of Customer Service
While he actively pursues instilling innovation and teamwork in every function of the organization, his emphasis is on making Lederle's approach to marketing unique.	Team Working Ability
As the production and delivery problems continued into 1989, MDC restructured this segment under a management team dedicated to bringing about fundamental change and improvement in the production process.	Ability to Manage Change
Located in St. Louis, the Motor Technology Center will be one of the worlds largest and most advanced electric motor and electronic control engineering and development centers.	Ability to Innovate
James River's strategy is to prevail with superior product performance emphasizing the unique physical and aesthetic properties increasingly required in packaging and selling these consumer products.	Quality
Meanwhile, through such vehicles as a systemwide video report and several employee publications, we are attempting to open new lines of communication with our employees.	Participative Management Style
To be the leader, I am convinced we have to be the best: the best is providing outstanding value to customers, value that will generate a high level of customer satisfaction.	Perception of Customer Service
To strengthen customer support, we are organizing glass and fiber glass sales, manufacturing and technical teams to serve specific automakers.	Team Working Ability
Among notable modernizations was a multi-million dollar upgrade underway at the main v-belt and hose plant in Lincoln, Nebraska.	Ability to Manage Change
In 1989, the division's priority will be to introduce new products, capitalizing on the well-established Airkem name and reputation.	Ability to Innovate

The sentences in Table 3 tend to emphasize future action more than present or past results, indicating that CEOs use their annual report's text to tell stakeholders about the steps they are taking to be more competitive. In short, our research findings provide support for hypothesis 3. The next section draws overall conclusions about the results of the study, discusses the limitations of the study and presents avenues of future research.

Discussion and Conclusions

The results of this study strongly support RBV. Collectively and individually, these strategic intangible assets impact future performance beyond that explained by industry performance or the other control variables. Furthermore, consistent with RBV logic and the definition of strategic assets, these strategic intangible assets are associated with above-median industry returns. The standardized regression coefficients of Reputation, Knowhow, and Organizational Culture also show that a one unit change in these intangibles has a relatively sizable impact on firm performance. This has important implications for both practitioners and academics.

For practitioners, this study identifies resources capable of being strategic assets and empirically shows their association with superior firm performance. Senior managers are the guardians of the firm's resources (Collis & Montgomery, 1997). As such, they are responsible for identifying those resources which constitute the firm's strategic assets and making certain that they are maintained, upgraded and leveraged throughout the corporation. This paper helps managers in that effort by demonstrating that strategic assets are generally intangible in nature, that not all intangible resources are strategic assets, and that reputation, employee knowhow and organizational culture are capable of possessing the characteristics of strategic assets. In our analysis of these three intangibles, we also demonstrate how managers can systematically evaluate the value, rareness, imitability and substitutability of any resource. With practice, that type of systematic resource-oriented thinking can result in more profitable ways of selecting, developing and managing firm resources. Furthermore, through training and development, strategic resource-oriented thinking can permeate throughout the firm — demonstrating yet another way managers can cultivate and leverage an important strategic intangible (resource-oriented knowhow) in the firm.

For academics, this paper has important implications for both the Resource-Based View of the Firm (RBV) and for the Industrial Organizational Model (I/O) of competitive advantage. Since Wernerfelt (1984) coined the phrase "Resource-Based View of the Firm," the RBV literature has made significant strides in conceptually crafting an alternative view of sustainable competitive advantage. Unfortunately, empirical testing of RBV is still in the embryonic stages. This paper provides empirical evidence supporting RBV's main prescription — that resources possessing the characteristics of strategic assets are sustainable sources of superior profits.

The I/O Model tells us that industry profitability is the key determinant of firm profitability and is a function of five industry forces: the bargaining power of suppliers, the bargaining power of buyers, the threat of substitutes, the threat of potential entrants, and existing rivalry among competitors (Porter, 1980). This means that firm managers should mainly concern themselves with selecting attractive industries to compete and with attempting to manipulate the five industry forces in the firm's favor. This external view of strategy is based on the two key assumptions: (1) that firms possess the same strategically-relevant resources and (2) that resources are relatively mobile (Porter, 1980, 1985; Hitt, Ireland & Hoskisson, 1999). Based on these assumptions, resource-based advantages do not exist, or if they do exist, they are very short lived. Yet, this study shows that three intangible strategic assets, measured in 1988, can explain to a statistically-significant degree why firms are either above or below industry median ROE for the subsequent five years (1989-1993). In other words, we demonstrate that resource-based advantages exist and are important in explaining future performance relative to one's competitors. This also supports RBV's assumption that firms are unique bundles of resources, while contradicting the I/O assumption that firms possess the same strategically-relevant resources. In the next section, we discuss limitations of this study and propose possible avenues for future research.

Limitations and Future Research

There are limitations inherent in this study. First, the population frame (and thus the sample) only includes American firms. Second, the firms in the population frame are relatively large. In any study, one can only generalize to the population from which the sample was drawn. Third, the organizational culture findings are subject to some interpretation and could provide opportunities for future research. For instance, one could replicate the content analysis using documents written by independent parties (e.g., reports written by industry analysts). Using documents written by individuals outside the firm may provide additional evidence as to the existence and strength of key organizational attributes. However, individuals inside the firm may be the only ones who can give an accurate account of an organization's culture.

Computerized content analysis is a useful research technique when information about a variable is in the form of text. It provides a means of translating textual data into measurable units, making it amenable to statistical analysis. This tool is particularly useful for management research where many variables are qualitative. Specifically, researchers might be able to test theory in situations where other research tools cannot get at the data. Surprisingly, the use of computerized content analysis is still fairly uncommon in management research (Morris, 1994; Wolfe, Gephart, & Johnson, 1994), particularly in strategic management. Perhaps this study will generate additional interest in the use of computerized content analysis in strategic management research.

Another possible avenue for future research would be to replicate the study using other types of intangible resources that possess the characteristics of strategic

assets. Of course, as with this study, measuring intangible resources requires considerable creativity.

Appendix
Content Analysis Methodology

This section describes, in five parts, the content analysis methodology used in this study. The first part describes the population of words used in the analysis, called the "Word Population Frame." The second part describes how management textbook concepts were used in selecting key words and key word combinations. The third part describes the process of selecting key words and key word combinations. The fourth part describes the Key Word in Context Analysis. The fifth part presents the key words and key word combinations used for measuring organizational culture.

Word Population Frame

All words appearing in the Letters to Shareholders', Company Report, and Management Discussion and Analysis sections of the 1988 annual report of all sample firms were compiled, along with their frequency, into a single alphabetic list called the "Word Population Frame" (WPF). As will be discussed, single key words and key word combinations were selected from the WPF to measure organizational culture via computerized content analysis. Consistent with the content analysis literature, irrelevant words (e.g., a, an, the, then) and low frequency words were excluded from the WPF. Eliminating these words reduces the WPF from 21,172 words to 1,681 words.

Management Textbook Key Concepts

Management textbooks discuss key concepts related to various topics in management. Among those topics are the cultural attributes of interest in this study. Key concepts about the six cultural attributes were gathered and summarized from popular management textbooks. This list served as a reference tool in selecting key words and key word combinations from the WPF.

Selecting Key Words and Key Word Combinations

Three experts in management selected key words and key word combinations relating to the six cultural attributes from the WPF. Each individual used the summary of management textbook key concepts and their knowledge about the cultural attributes in selecting key words and key word combinations.

KWIC Analysis

Key Word in Context Analysis (KWIC) is about examining a word, or combination of words, in its surrounding context to see how it is being used (Krippendorff, 1980; Weber, 1990). For each of the key words and key word combinations, ten sentences were randomly selected from the 100 annual reports

and independently read by the three experts. Key words and key word combinations were included in the final content analysis only if two of the three experts agreed that at least nine out of the ten randomly selected sentences clearly related to the relevant cultural attribute.

Each expert also had the option of requesting another random sample of sentences based on new specifications. For instance, the key word "control" may have failed to meet the nine-out-of-ten sentences rule. However, during the KWIC analysis, the reviewer may have noticed that sentences containing both "statistical" and "control" clearly related to the cultural attribute "perception of quality." Furthermore, the relationship was strongest when "statistical" and "control" appeared within four words of each other. In such instances, the KWIC analysis was repeated using the new specifications.

These procedures improve the validity of the content analysis. First, reviewing the entire population of frequently occurring words (WPF) promotes completeness in the selection of key words and key word combinations. Further, all key words and key word combinations chosen by the three experts were included in the KWIC analysis. That, coupled with the opportunity to request new specifications for KWIC Analysis, promotes completeness in the selection of key words and key word combinations for the final content analysis. Second, systematizing the content analysis procedures enhances consistency. Moreover, once content rules are established, the computer program provides perfect reliability. Third, documenting the procedures supports the possibility of replicating the study. Fourth, the tight selection criteria of key words and key word combinations enhances the accuracy of the findings. And fifth, content analyzing annual reports (a regulated document) across thirty industries (both manufacturing and service) strengthens external validity.

Final List of Key Words and Key Word Combinations

The final list of key words and key word combinations appear in Table 4. Proximity requirements for key words in key word combinations are identified via asterisk and described at the bottom of the table. The program computed the number of times the key words and key word combinations appear in the Letter to the Shareholders, Company Report, and Management Discussion and Analysis sections of each firm's 1988 annual report and then divided that amount by the total number of bytes in the file (on diskette) containing that textual data. Dividing by the total number of bytes controls for differences in the size of annual reports.

Table 4
Key Words and Key Word Combinations

Customer Service		
customer relationships*	customer satisfaction*	customer service*
serving customers*	serving clients*	customer value
customers value	customer involvement*	consumer satisfaction
consumers satisfaction	customer customers	customer support
help customers	help customer	customer focus
response customers	customer services*	customer focused*
consumer service*	customer driven*	
Ability to Innovate		
innovation	creativity	new process
advanced technology	innovator	automate
advanced technologies	innovators	automated
dramatic improvements	innovative	cycle time*
modernization	product development	new products*
changing goals	process development	new services**
innovations	new processes	significant progress
creative		
Ability to Manage Change		
restructuring	managing change	flexibility
planned changes	managing changes	change agents
strategic change	management flexibility	organizational changes*
strategic changes	manage change	expanded capacity
Team Working Ability		
team	teamwork	work together***
teams	working together**	
Participative Management Style		
team decision	development teams	employee participate
employee communication	employee decision	participation employee
employees communication	employee ownership	employee contribution
employee involvement	employees ownership	group process*
involvement teams		
Quality		
quality	excellence	superior services
continuous improvement*	product improvements**	just in time*
improve continuously	better products**	best industry**
statistical process	superior products	

* The key words must appear together in the sentence, in the order listed.
** The key words must appear within four words of each other in a sentence.
*** The key words must appear within five words of each other in a sentence.
No asterisk indicates that the key words can appear anywhere in a sentence.

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