

**CAN EFFECTIVE HUMAN CAPITAL MANAGEMENT LEAD
TO INCREASED FIRM PERFORMANCE?¹**

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Abstract

The objective of this paper is to study the impact of human capital resources policies on firm performance. To that end, we formulate four hypotheses which rest on the argument that effective human capital management can lead to increased firm performance. These hypotheses are tested by using a new indicator of human capital, as well as two other measures, namely Tobin's Q and total return to shareholders (TRS). The empirical results, derived from a survey carried out in the year 2000 to senior executives working in 405 North-American firms, indicate that effective human capital management leads to higher employee satisfaction, which, in turn, implies higher customer loyalty. Moreover, we have also found that this higher customer loyalty implies better firm performance in terms of both Tobin's Q and TRS.

Keywords

Human capital management, firm performance, Tobin's Q, total shareholder returns.

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Introduction

In the U.S., we have witnessed a long-term, secular increase in both the quantity and value of human capital. As regards the quantity of human capital, measured by years of formal education, this has increased dramatically. Thus, U.S. Census Bureau figures reveal that while in 1980 only 67% of the population had completed four years of high school and only 16% had completed four years of college, by 1997 some 82% of the population had graduated from high school and 24% had graduated from college. With respect to the value of human capital, Table I shows that whereas in 1980 the ratio of the market value to the book value for the typical firm in the S&P 500 was about 1.2, at the end of 1998 its market value was three times its book value. Additionally, for firms listed on the NYSE, the market to book ratio has risen from about 1.1 to over 2.0 in the same period. These two pieces of evidence imply that human capital represents between one half and two thirds of the value of the typical firm.

Furthermore, there is broad agreement in the literature that the strategic approach to human resources management (HRM) involves designing and implementing a set of internally consistent policies and practices which ensure that a firm's human capital contributes to the achievement of its business objectives (Schuler and Jackson, 1987; Huselid and Becker, 1996; Huselid *et al.*, 1997). Paradoxically, the empirical research that establishes a relationship between these HRM policies and firm performance is still scarce and inconclusive, which, in the most part, is due to the lack of adequate measures. In this sense, traditional accounting measures, whilst excellent for measuring the stewardship of physical assets or of financial capital, do not fully capture the value of intellectual capital, such as research and development projects, trademarks, brand names or human capital. Thus, given the fact that these traditional accounting measures are becoming less effective in terms of determining firm performance, and also bearing in mind that human capital assets represent an increasing share of the total value of the firm, alternative measures would appear to be required to help in the management of human capital.

In this context, the objective of this paper is to study the impact of human capital resources policies on firm performance. To that end, we formulate four hypotheses which rest on the argument that effective human capital management can lead to increased firm performance. These hypotheses are then tested by using a new indicator of human capital (IHC), as well as other two traditional measures, namely Tobin's Q and higher total shareholder returns (TRS). The empirical results are then derived by employing a regression model, which is estimated from a survey carried out in the year 2000 to senior executives in human capital management who work in 405 publicly traded firms in the COMPUSTAT database, that is to say, 370 firms from the US and 35 from Canada.

The first hypothesis establishes that North-American firms achieve higher levels of market value using effective human capital management that combines strategic, technical and social explanations. In order to test this, we identify four specific human capital drivers which can have a substantial effect on firm performance, namely recruiting excellence, collegial and flexible workplace, communications integrity and clear rewards and accountability, with all these being measured by using two performance indicators, that is to say, Tobin's Q and TRS.

With respect to these four human drivers, recruiting excellence allows the firm to acquire employees who either already possess the general human capital necessary to do the jobs required by the business plan, or can be trained in these skills. The next step is to establish a collegial and flexible workplace, so that employees are encouraged to work well together. Within this workplace, the firm must promote communications integrity. This involves trusting employees enough to share information with them and to allow them to communicate outside of hierarchical boundaries. Effective communication is crucial for leveraging human capital into outstanding customer service. Finally, there needs to be an effective performance management system with clear rewards and accountability to establish the relationship between performance and rewards.

The second and third hypotheses indicate that in North-American firms effective human capital management leads to higher employee satisfaction which, in turn, leads to higher customer loyalty. Testing these hypotheses is based on the two earlier-mentioned performance indicators, Tobin's Q and TRS, as well the new IHC which is defined as a weighted average of the four human capital drivers we have identified in the first hypothesis. Finally, the fourth hypothesis, namely that higher customer loyalty leads to better firm performance, is tested on the basis of the two initial performance indicators, Tobin's Q and TRS.

Our evidence indicates that there are mechanisms through which North-American firms can use human capital management in such a way that this has a measurable effect on firm value. Thus, we show that effective human capital management leads to higher employee satisfaction, which, in turn, implies higher customer loyalty. Moreover, we find that this higher customer loyalty implies better firm performance in terms of Tobin's Q and TRS. Furthermore, within the earlier-mentioned drivers, we confirm that some of the largest effects come from: i) recruiting excellence: having professional new hires who are well-equipped to perform their duties, designing recruiting efforts to support the business plan, having a reputation among new applicants as a desirable place to work and having hourly new hires who are well equipped to perform their duties; ii) collegial and flexible workplace: providing flexible work hours and arrangements, having a culture that encourages teamwork and cooperation, reducing hierarchical distinctions such as perquisites, titles and other status symbols and achieving higher levels of employee satisfaction; iii) communications integrity: providing employees with easy access to technologies like Intranets for cross-corporate communication and allowing employees to have input into hiring decisions; iv) clear rewards and accountability: helping poor performers to improve, terminating employees who continue to perform unacceptably, increasing the percentage of employees who are eligible to participate in stock purchase and stock option programs and paying top performers significantly more than average performers.

The rest of the paper is organized as follows. In section two we describe the theoretical background. Section three is dedicated to the methodology, which includes a brief description of the sample, as well as the indicators of firm performance, the control variables and the model. Section four is dedicated to an explanation of the empirical results, including the links between human capital management and firm performance and, finally, Section five closes the paper with a summary of the most relevant conclusions.

Theoretical framework

When seeking to establish our theoretical framework on HRM and performance, we find that this is so wide and diverse that it is really difficult to focus on a single developed theory. Thus, one line that has placed more emphasis on human resources as a source of competitive advantage is the resource-based approach, which concentrates on the technical and strategic characteristics of resources and the strategic factor markets from which they are obtained in order to explain firm heterogeneity and sustainable advantage. According to this approach, it is the rational identification and use of resources that are valuable, rare, difficult to copy, and non-substitutable which leads to enduring firm variation and supernormal profits (Barney, 1991,1992). However, and notwithstanding its important insights, the resource-based view has not looked beyond the properties of resources and resource markets to explain enduring firm heterogeneity. In particular, it has not examined the social context within which resource selection decisions are placed (e.g., firm traditions, network ties, regulatory pressures) and how this context might affect sustainable firm differences (Ginsberg, 1994), nor has it addressed the process of resource selection, that is to say, how firms actually make, and fail to make, rational resource choices in pursuit of economic rents.

A second approach, that of institutional theory, examines the role of social influences and pressures when trying to design strategy in the firm. From an institutional perspective, firms operate within a social framework of norms, values, and taken-for-granted assumptions about what constitutes appropriate or acceptable economic behavior. The institutional view suggests that the motives for human behavior extend beyond economic justification and social obligation (Zukin and DiMaggio, 1990). Thus, institutional theorists are especially interested in how organizational structures and processes become institutionalized over time, with institutionalized activities being understood as those actions which tend to be enduring, socially accepted, resistant to change, and not directly reliant on rewards or monitoring for their persistence (Meyer and Rowan, 1977; Zucker, 1977; Scott, 1987). In other words, this theory suggests that institutionalized activities are the result of interrelated processes at the individual, organizational, and interorganizational levels of analysis. Thus, at the individual level, manager's norms, habits and unconscious conformity to traditions account for institutionalized activities; at the firm level, corporate culture, shared belief systems, and political processes which support given forms of management perpetuate institutionalized structures and behavior; finally, at the interorganizational level, pressures emerging from government, industry alliances, and social expectations define socially acceptable firm conduct, whilst those social pressures common to all firms in the same sector cause firms to exhibit similar structures and activities (DiMaggio and Powell, 1983).

Against this background, we argue that an approach that combines the resources-based view with institutional theory is capable of explaining and supporting the hypothesis that establishes a relationship between HRM and firm performance (Olivier, 1997). In this sense, Figure I illustrates that there is a link that joins effective human capital management to higher shareholder returns through employee and customer satisfaction. Firms cannot manage their shareholder returns directly. Instead, managers choose their product, service, financing, and human capital strategies to try to achieve superior firm

performance. In the human capital area, we believe there are specific firm actions and patterns of behavior that can cause measurably higher levels of employee satisfaction and productivity with lower levels of employee turnover. In turn, these improvements will result in higher customer loyalty and satisfaction, with higher customer satisfaction being reflected in higher Tobin's Q or TRS.

In this context, we formulate the following four hypotheses:

Hypothesis 1: North-American firms have achieved higher levels of market value using an effective human capital management that combines strategic, technical and social explanations.

Hypothesis 2: In North-American firms effective human capital management leads to higher employee satisfaction.

Hypothesis 3: In North-American firms higher employee satisfaction leads to higher customer loyalty.

Hypothesis 4: Higher customer loyalty leads to better North-American firm performance.

Methodology

Sample and indicators of firm performance

Respondents in the data base were senior executives in human capital management. The survey questionnaire was carried out in the year 2000 to 405 publicly traded firms in the COMPUSTAT database, that is to say, to 370 US firms and 35 Canadian firms, with this sample being broadly representative of the complete database. Table II shows the percentile classification of revenues, market value and number of employees (Watson Wyatt, 2000).

With respect to the indicators of firm performance, in this study we have selected two standard measures, namely Tobin's Q and TRS. We use Tobin's Q as the measure of intellectual capital, with this capital being defined as anything that enables a firm to earn above market returns on its physical and financial assets. Tobin's Q is the ratio of the firm's market value of its tangible assets, measured at their current replacement cost and the value the firm creates through its business operations above the cost of replacing its physical and financial assets. Although Tobin's Q and TRS are related, Tobin's Q is only the relative value of the firm's intellectual capital, whilst TRS includes both tangible assets and intellectual capital. In other words, Tobin's Q measures the reduction in the firm's intellectual capital, while TRS accurately captures the change in the value of the firm, but does not capture the specific reduction in intellectual capital.

Control variables

Given that effective human capital management is not the only factor that can affect Tobin's Q or TRS, in this study we have used several variables to control for the other

factors that help to measure the creation of surplus value in an organization. Table III shows a list of these factors and the variables that we have used to control for them. Thus, human capital is not the only asset which fails to appear on the balance sheet. For example, money spent building brand names or researching new products creates assets that are just as valuable as new equipment. Accounting rules require investments in equipment to be recorded as assets. On the other hand, investments in advertising and R&D are not recorded as assets, but rather are expensed. All other things being equal, firms with high advertising and R&D expenses will have high performance, in that they will have more assets which do not on the balance sheet.

Financial factors also affect firm performance. Thus, when general economic prospects are good, firms that are in more cyclical industries gain more than other firms. During these periods, their performance will be higher than usual relative to firms in non-cyclical industries. To control for this, we include the firm's Market Beta and financial leverage. Market Beta is defined as the expected percentage change in the return for the firm when the market return changes 1%, whereas leverage is the book value of debt divided by the book value of assets, with size being measure as the natural log of assets. We also include size as a control variable, since larger firms tend to be in multiple lines of business and previous research indicates that these types of businesses have lower than expected performance. To control for potential industry effects, we include two variables indicating whether the firm is in a high-tech industry or in a financial industry.

Inventory and asset turnover are measures of the firm's ability to substitute knowledge for working capital. Innovative practices, such as Just-In-Time inventory management, depend upon strong relationships with customers and suppliers. Therefore, we expect better intellectual capital management to lead to higher turnover of assets and inventories.

We also wish to control for labor expenses, since this is a measure of the value of the firm's human capital. However, labor expenses are not publicly available and, therefore, we use Selling, General and Administrative expenses (SG&A) as a percentage of sales, and capital intensity, defined as the natural log of total assets divided by total employment, as a proxy for labor expenses. Finally, established customer relationships and reputations are valuable assets that are again not recorded on the balance sheet. To control for this, we construct a customer capital variable based on the responses to survey questions about customer relationships.

The model

Having described the indicators of firm performance, as well as the control or dummy variables, we now specify the model that allows us to derive our results. Our particular formulation can be specified as:

$$FP_{ij} = \sum_k^{n_k} \beta_{C_k} C_k + \sum_i^{n_i} \sum_j^{n_j} \beta_{D_{ij}} D_{ij}$$

where FP_{ij} is the indicator of firm performance for the i^{th} variable corresponding to the j^{th} driver, that is to say, the logarithm of Tobins'Q or TRS; C_k is the k^{th} control variable; D_{ij} is the i^{th} exogenous variable from the j^{th} driver; n_i , n_j and n_k are the sample sizes of the exogenous variables, drivers and control variables, respectively; and, finally, β_{C_k} and $\beta_{D_{ij}}$ are the parameters corresponding to the control variables and exogenous variables, respectively.

Before turning to a description of the general empirical results, we should first note that the evidence in Table III indicates that each of the control variables has a substantial effect on firm performance in the direction predicted. Thus, although collectively our dummy variables have significant explanatory power, with an R-squared of 48%, our human capital variables still have statistically significant incremental explanatory power and substantial economic effects, as we will discuss later in the text.

Empirical results

HYPOTHESIS 1

With respect to the first hypothesis, which predicts that strategic, technical and social HRM effectiveness, which links the resources-based view with institutional theory, will be positively associated with higher levels of market value, Table IV shows the expected percentage change in both Tobin's Q and TRS for increasing the answer to each question in the survey by one standard deviation.

As regards the first driver, recruiting excellence, it is well known that the initial step in successful human capital management is to acquire the human capital necessary to support the business plan. This requires that the firm should have employees with the required skills and motivation to perform an efficient job. Here, there are two options for the firm to pursue: either to hire employees who already have the necessary skills and motivation or to provide the training necessary to help employees, whether new or current, to develop these skills.

Both the theoretical and the empirical work in human resources management indicate that hiring the right employees improves firm performance. For example, Schmidt *et al.* (1986) model the effects of selection procedures on firm productivity, showing that an efficient selection procedure that is very closely related to successful job performance will significantly increase average productivity when the firm has a variety of applicants and a low selection rate. In this line, Terpstra and Rozell (1993) also find that the use of best practices in staffing earns higher returns and leads to faster profit growth.

On the other hand, the alternative to hiring employees with the necessary skills is to provide training in such a way that employees can develop the skills they lack. Given that the majority of firms do not have a single measure of training expenses, it is hard to determine the costs of informal mentoring programs or to measure the opportunity costs of lost productivity during training. As a result, the empirical evidence on the effects of training is mixed. Thus, while Bartel (1994) finds that inefficient manufacturing firms which introduce formal training programs catch up to their peers' average productivity,

Black and Lynch (1995 and 1996) fail to find a significant effect on productivity from training more workers.

In response to these two options, our survey includes questions regarding both the firm's ability to hire employees who are already well qualified to do their jobs and on its commitment to training programs that help employees develop the necessary skills. Moreover, we have also asked specific questions about the firm's strategy and whether the firm has a formal recruiting process to support it. Our evidence, presented in Table IV, indicates that there are substantial effects from improving the firm's performance in recruiting excellence. Thus, we have first identified a strong positive correlation between our both indicators, Tobin's Q and TRS; specifically, the former is approximately 0.82% of the second. Specifically, we find that having a good reputation among new applicants as a desirable place to work is associated with an increase in Tobin's Q (1.51%). We also note that it is important to have a good pool of applicants who are capable of doing their jobs without much training. Being able to find applicants with the skills the firm needs is associated with an increase in Tobin's Q (0.75%), while having professional and hourly new hires who are already well equipped to do their job is associated with increases in Tobin's Q (1.92% and 1.37%, respectively). All else being equal, firms which do a better job in their selection procedures should have lower turnover and longer employee tenures.

Although we find that increasing the percentage of workers with tenure of at least 2 years is associated with a decrease in Tobin's Q (0.57%), this is probably due to its negative correlation with firm growth. This is supported by evidence that a lower annual turnover rate for recently hired college graduates is associated with an increase in Tobin's Q (0.56%). We have also examined several policies that a firm can use to achieve these objectives. Thus, designing recruiting efforts specifically to support the business plan is associated with an increase in Tobin's Q (1.88%), whilst other policy options have less of a direct effect on market value. For example, we find that having a formal recruiting strategy for filling critical positions is associated with an increase in Tobin's Q (0.50%), while having a formal policy of hiring internal candidates to fill positions is associated with a decrease in Tobin's Q (0.47%). The evidence also indicates that filling more professional positions internally is associated with a decrease in Tobin's Q (1.64%).

Furthermore, the evidence on training suggests that providing employees with access to training to move to higher levels within the firm is associated with a decrease in Tobin's Q (1.54%). Moreover, we find that maintaining training programs even in times of less favorable economic conditions is associated with a decrease in Tobin's Q (0.84%). Finally, we fail to find an economically significant effect to either providing employees with training to be more productive in their current position or to evaluating managers in part on achieving training goals.

The second area of human capital management that we examine is the workplace environment, as reflected in the corporate culture and management style. Two important aspects of the workplace environment are the degree of flexibility in work arrangements and the extent to which it encourages teamwork and cooperation in a collegial atmosphere. In this sense, there are two main paradigms of management style, which Cutcher-Gershenfeld (1991) calls control systems *versus* commitment systems. Control

systems are very hierarchical and emphasize status distinctions. Thus, in a control system, managers direct employee actions in order to make the numbers. On the other hand, commitment systems aim to increase productivity through increased employee commitment to the firm. Furthermore, they emphasize teamwork and job security, with managers being used as coaches or mentors for employees.

The survey asked firms about their hierarchy and management style. As we can appreciate from Table IV, the evidence overwhelmingly supports the commitment systems model. We also find with respect to this second driver that the Tobin's Q values are approximately 0.83% of those corresponding to TRS for all questions. Specifically, firms with a less hierarchical system, as measured by the use of perquisites (1.17%), the propensity for employees to be on a first name basis with senior management (1.03%), the use of titles to designate authority (0.46%) and variation in office space (0.26%), are associated with higher levels of Tobin's Q. The evidence also indicates that being flexible in work hours and arrangements is associated with higher Tobin's Q (1.43%). We also find a significant effect (1.26%) from having a corporate culture which encourages teamwork and cooperation. Finally, we find that reporting higher levels of employee satisfaction is associated with a significantly higher Tobin's Q (1.11%). However, the evidence does not reveal an economically significant effect from emphasizing employment security or from defining the primary role of managers as coaches and mentors

The third area of human capital management we examine is communications integrity. In his seminal work, Hayek (1945) draws the distinction between general knowledge and knowledge of the particular circumstances of time and space, that is to say, specific knowledge. He argues that competitive markets are more efficient than centralized planning because they use more specific knowledge. Similarly, we believe that efficient firms use more of their employees' specific knowledge, which requires multiple information flows. Thus, the firm communicates the business plan, its financial information and information related to how the employee's actions effect the customer. Within the firm, these should be general knowledge. In the other direction, employees provide input into job design, hiring decisions, performance evaluations and their own preferences and feelings, i.e., satisfaction with the firm as a place to work, satisfaction with benefits or other forms of compensation, etc. Finally, efficient firms use intranets and other technologies to make direct communication across divisions or functions within the firm easier, leveraging its specific knowledge. In the survey firms were asked about their effectiveness at promoting all three types of communication flows.

The evidence in Table IV indicates that all three forms of communication are important. Again, we find a strong correlation between Tobin's Q and TRS, of approximately 82%. Specifically, the largest effect in terms of Tobin's Q (1.50%) is associated with providing employees with easy access to technologies for communicating with each other. We also find a significant effect from giving employees input in hiring decisions (1.18%) and in how the work gets done (0.33%). Both of these involve giving employees input into matters which have a direct effect on them. Moreover, we find that creating opportunities for employees to give direct feedback to senior management is associated with a significant effect (0.67%). Furthermore, we find that there is an effect associated with the firm sharing financial information (0.64%) and another, albeit small, associated with sharing business plans with its employees (0.20%). It is interesting to

note that it is the aspect of facilitating communication between employees, rather than top down communication, which most distinguishes between high and low Tobin's Q firms.

Finally, the fourth area of human capital management we examine is clear rewards and accountability. This area involves effective performance management and pay-for-performance, with it being possible to identify two facets of performance management, namely setting high performance standards and evaluating employees on the basis of whether they achieve them.

One of the key issues in performance evaluations is how to make use of the information which workers have. Typically, performance reviews are carry out for an employee by his immediate superior. The disadvantage of this approach is that an individual's co-workers, both his peers and his immediate subordinates, have information about the employee which would be relevant to his evaluation. Therefore, there is a great potential benefit in employees having input in evaluating their peers and their immediate superiors. However, there are also problems with this approach. First, employees may collude and give each other good evaluations even if they do not deserve them. There is certainly a strong incentive to avoid low evaluations, even when that is what an employee deserves, if that employee has the potential to reciprocate. Furthermore, having employees evaluate each other can lead to substantial influence costs, as employees spend more time trying to convince each other they are doing a good job than actually doing it.

Moreover, having employees evaluate their immediate superiors can also imply severe problems. First, the employee may not give an honest evaluation if he is afraid of reprisals, or may genuinely be reluctant to give a low score when one is deserved. In addition, it is possible that superiors may make popular, but wrong decisions in an effort to influence their evaluations. This survey asked firms about both areas of performance management.

On the other hand, when we review the theory regarding pay-for-performance, there is universal agreement that rewards should be higher for better performance (Blinder, 1990). This view reflects a concern over free rider problems. When compensation is the same regardless of individual performance, individuals have an incentive to shirk in their effort and free ride off the efforts of others. In part, this reflects the issue of fairness or equity. When employees work hard and the firm succeeds, they should share in the benefits. It is also prudent to reward people for better performance. Why work hard if there is no reward? Finally, it reflects the realities of the work place. Top performers are confident in their own abilities. They want to work where their rewards are based on their own performance. However, there is less agreement about the nature of these rewards: should they be cash rewards or recognition; should they be based on individual or team performance; should they be based on immediate results or on more long-term performance measures; is there a single, best system or does the right reward system depend on the firm's strategy and its unique culture?

In response, we have surveyed firms on both the level and shape of rewards. First, we have examined the position of the firm's pay relative to the market. Firms that pay above the market should attract the best applicants. If they use efficient selection

procedures, they will be able to attract a highly skilled group of employees. The second issue is the shape of the pay system. Here, we have examined how many employees have their pay tied to performance, either their own individual performance, their division's or their entire firm's. Firms that use rewards to involve their employees in improving business performance and link their rewards to their overall strategy should achieve better results.

The evidence on performance management set out in Table IV is mixed, although it maintains the strong correlation between Tobin's Q and TRS, around 83%. We find a significantly positive effect associated with setting high performance standards and with holding employees accountable for reaching them. First, we find that doing a good job in helping poor performers to improve is associated with an increase in Tobin's Q (1.47). For those employees who continue to perform unacceptably, we find that firms which are more willing to terminate them also earn significantly higher returns (1.51%). On the other hand, we find that our survey respondents who give employees more input in evaluating their peers (-2.09%) and their immediate superiors (-3.19%) are associated with lower Tobin's Q's. In these cases, it seems that the difficulties of performing so-called 360 degree evaluations have outweighed the benefits. We do not find an economically significant effect from doing a good job in promoting the most competent workers or from placing greater emphasis on people skills when selecting for leadership positions.

As regards pay-for-performance, our evidence in Table IV indicates that its effective use is associated with higher Tobin's Q and TRS. There are two elements of interest here: the manner in which pay is used in the firm and the relative effectiveness of different pay-for-performance programs. First, we see that positioning pay above the market rate (0.67%), using pay to engage employees in improving business performance (0.53%), linking pay to the firm's business strategy (0.49%) and using performance appraisals more as a tool to set pay than as a career development tool (0.37%) are all associated with higher Tobin's Q values.

However, when we look at different pay-for-performance programs, the evidence is mixed. The largest effect (1.53%) is associated with increasing the percentage of employees who are eligible to participate in stock option and stock purchase programs. We also find that paying top performers significantly more than average performers is associated with a large increase in Tobin's Q (1.26%). On the other hand, we find a very limited positive effect (0.31%) associated with increasing the percentage of employees who participate in profit sharing plans based on overall firm success, and a negative effect (-0.65%) associated with increasing the percentage of employees who participate in profit sharing plans based on the success of their division or operating unit. The evidence indicates that pay-for-performance based on individual performance has a very powerful effect on firm performance, as is to be expected, given that there is no free rider problem. Compensation based on divisional performance has a weak negative effect, since free rider problems are present and this may discourage cooperation across operating units. By contrast, programs based on overall firm success, and particularly stock plans, have a strong positive effect, since they can encourage cooperation across the firm.

HYPOTHESIS 2

In the previous section we pointed to a relationship between human capital management and firm performance, as measured by Tobin's Q and TRS. Our theory suggests that this relationship is established through a chain passing from firm behavior to employee satisfaction to customer loyalty and, finally, to firm performance. In this and the following subsections, we will explore each of these links.

The second hypothesis, that better human capital management leads to higher employee satisfaction, is tested by using our IHC, as well as the previous measures of firm performance, that is to say, Tobin's Q and TRS.

The overall IHC for a specific firm is based on the weighted average of the four human capital drivers we have identified, together with demographic information about the firm's workforce. Thus, the IHC score is a combination of the human capital management practices we have found to be correlated with shareholder value creation and of variables related to the quantity of the employee's human capital. Policy variables are human resource practices, such as a formal recruiting strategy or an employee stock purchase plan. We use demographic information on the percentage of a firm's employees who are exempts, college graduates or covered under collective bargaining agreements to estimate the quantity of a firm's human capital. Each of these demographic variables are significantly related to the firm's Tobin's Q and are correlated with the knowledge, skills and abilities of the firm's employees. Unlike human resource practices, the firm cannot dramatically change these variables in the short-run. However, over a longer period it is possible for a firm to change its strategy to a more human capital intensive approach and to alter its recruiting policies to support it. This would result in a change in the percentage of employees who are exempts, college graduates or covered under collective bargaining agreements, and thus the quantity of its human capital.

The weights are determined by the relative effect of each variable on firm performance. For example, the variable "top performers receiving significantly more pay than average performers" would receive a higher weight than the variable "firm positions its pay above the market". The index itself is constructed on a 0-100 scale so that IHC scores are percentiles. Thus, and as Table V indicates, high Tobin's Q firms also tend to be high index firms.

Table VI shows that firms which report higher employee satisfaction have higher IHC scores and are more successful, whether this success is measured by Tobin's Q or by TRS. Our evidence indicates that there are certain areas of human capital management where firms with higher employee satisfaction do better than firms with lower employee satisfaction. Thus, higher employee satisfaction comes from excellence in all phases of human capital management. Firms with higher employee satisfaction do a better job in designing their recruiting efforts to support the business plan. They then provide more training and do a better job of performance management, promoting the most competent employees and managing poor performers to help them improve. The culture at high employee satisfaction firms is also different. They do not use titles to designate authority and employees are on a first name basis with senior executives. Higher employee satisfaction firms also report placing more emphasis on people skills when

they select managers. The managers at high employee satisfaction firms are used to coaching and mentoring employees and are evaluated on the basis of their ability to achieve training objectives. The result is a culture which encourages teamwork and the firm supports this culture with a strong commitment to employment security in down times.

We also see that high employee satisfaction firms encourage communication and the flow of information. These firms share their business plans and goals, along with financial information, with their employees. In return, employees give more feedback directly to senior managers and have more input into decisions that effect them. The results are twofold. First, employees have a better understanding of how their jobs effect the customer. Second, the firm is able to develop new products and services more rapidly than its competitors. Finally, the firm uses its pay system to reinforce these values. At high employee satisfaction firms, employees are paid above the market rate. These firms also do a better job of linking pay to the business strategy and using it to engage employees in improving business performance. Finally, high employee satisfaction firms reward top performers with significantly more pay than average performers.

HYPOTHESIS 3

With respect to the third hypothesis, that higher employee satisfaction leads to higher customer loyalty, Table VII shows that firms which report higher customer loyalty have higher IHC scores and are more successful, whether this success is measured by Tobin's Q or by TRS. They are also more likely to report higher employee satisfaction. Moreover, the same firm behavior which leads to higher employee satisfaction also leads to higher customer loyalty.

HYPOTHESIS 4

The final link in our chain from better human capital management to better firm performance is to demonstrate that higher customer capital leads to better firm performance, that is to say, our hypothesis 4. As we has seen in Table VII, higher customer loyalty firms are also high Tobin's Q firms and have had better shareholder returns. From Table VIII, we can appreciate that high Tobin's Q firms are also high customer loyalty firms.

Finally, from Table IX we can note the effect of each area of customer capital on overall firm performance. This evidence indicates that there are substantial returns available to those firms that can increase their customer capital. In particular, we can see that the largest increases in Tobin's Q and TRS are associated with being able to rapidly develop new products and services (3.74%), and with being able to provide customized products (3.38%) of high quality (3.12%). There is also an increase in market value associated with increasing customer loyalty (1.83%). Finally, we can observe that there are substantial increases in market values associated with placing a greater emphasis on developing new products and services than on improving existing ones (2.77%).

Conclusions

This paper argues that a theoretical approach which combines the resources-based view with institutional theory is capable of explaining and supporting the relationship between HRM and firm performance. To that end, we have placed emphasis on the strategic and technical characteristics of human resources embedded in a social context. On this basis, we have advanced the hypothesis that effective human capital management can lead to increased firm performance, which can be measured in terms of both Tobin's Q and total returns to shareholders. This general hypothesis can be desegregated into four individual ones, which we have tested using a survey carried out in the year 2000 to senior executives in human capital management working in 405 North-American firms.

Our results offer strong support for the argument that there are ways for North-American firms to use human capital management so as to achieve a measurable effect on firm value. Thus, we have identified four human capital drivers, namely recruiting excellence, collegial and flexible workplace, communications integrity, and clear rewards and accountability, as well as their firm-specific activities, that have a higher impact on performance. Moreover, using the two earlier-mentioned measures, as well as a new indicator of human capital, we have shown that effective human capital management leads to higher employee satisfaction which, in turn, implies higher customer loyalty. Finally, we have also been able to accept that this higher customer loyalty implies better firm performance in terms of Tobin's Q and TRS.

In closing, we should indicate that it would be wrong to assume that the link between a set of HRM practices and high firm performance is universal or automatic. In this regard, one important qualification to the validity of our results is that the statistical model employed in this paper relies on the assumption that HRM success has a strong link with firm performance. However, we must recognize that other causal links may also exert an influence.

An important extension of this work would be to consider how firms choose their Human Resources practices and how they manage them in establishing a link with firm performance. Do firms choose their Human Resources practices in a random way or, by contrast, do they select those practices which lead to better financial results? In either case, we would not be dealing with the question of HR practices, but rather with that of strategic and management effectiveness.

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TABLE I.
CHANGES IN MEDIAN MARKET VALUE/BOOK VALUE OVER TIME

Year	S&P 500	NYSE firms
1980	1.208	1.112
1985	1.742	1.509
1990	1.670	1.391
1995	2.531	1.911
1998	2.948	2.006

FIGURE I.
HUMAN CAPITAL MANAGEMENT CREATES SHAREHOLDER RETURNS

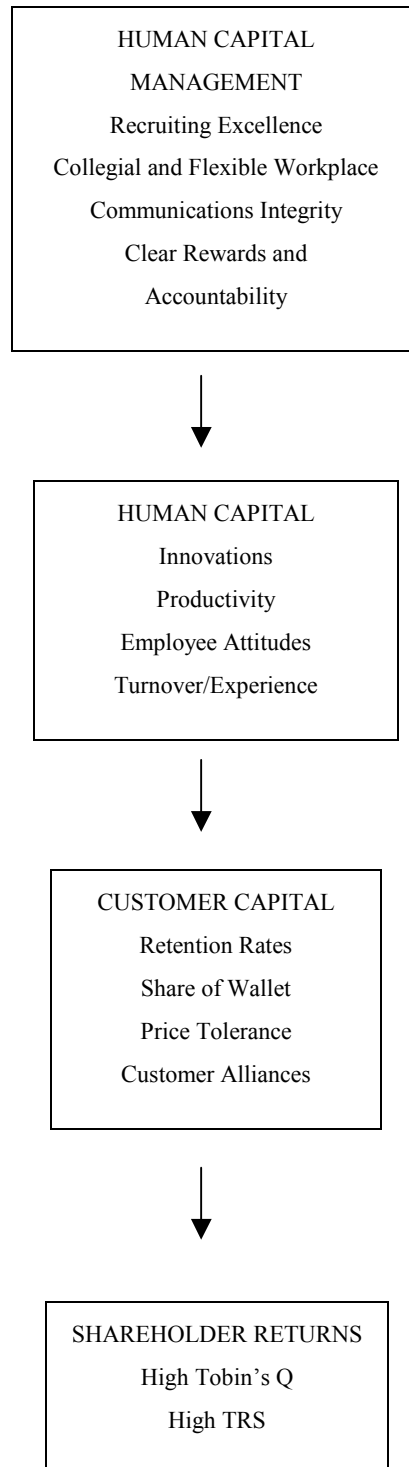


TABLE II.
CHARACTERISTICS OF SURVEY RESPONDENTS

	Revenues	Market Value	Employees
	(\$ millions)	(\$ millions)	(thousands)
75 th percentile	1,187	1,505	6.70
50 th percentile	319	383	2.23
25 th percentile	112	146	0.56

TABLE III.
ESTIMATED EFFECTS OF CONTROL VARIABLES

Factors	Control Variable	Tobin's Q (%)	TRS (%)
Brand name	Advertising expense	16.68	20.18
New products			
Customer loyalty	Customer capital factor	14.19	17.17
Business cycle effects	Market Beta	14.02	16.96
Financial effects	Leverage	4.53	5.48
Size (number of lines of business)	Assets	-14.02	-17.58
Industry	Financial industry controls	-19.55	-23.66
	High-tech industry controls	1.67	2.02
Customer and supplier alliances	Inventory turnover ratios	-2.36	-2.86
	Asset turnover ratios	-27.46	-33.23
Human capital of employees	SG&A expense	11.01	13.32
Production technology	Capital intensity of production	1.83	2.21

TABLE IV.
EXPECTED PERCENTAGE CHANGE FROM INCREASING THE ANSWER TO
EACH QUESTION IN HUMAN CAPITAL DRIVER

Human Capital Driver	Tobin's Q	TRS (%)
	(%)	
Recruiting excellence		
Professional new hires are well-equipped to perform their duties	1.92	2.32
Recruiting efforts are designed to support the business plan	1.88	2.27
Firm has a reputation among new applicants as a desirable place to work	1.51	1.83
Hourly new hires are well-equipped to perform their duties	1.37	1.66
Easy to find applicants with the skills the firm needs	0.75	0.91
New applicants interview with a number of individuals	0.68	0.82
Lower annual turnover rate for recently hired college graduates	0.56	0.67
Formal recruiting strategy for filling critical positions	0.50	0.60
Managers evaluated on success in achieving training goals	0.08	0.10
Employees have access to training for current position	-0.15	-0.18
Have formal policy of hiring internal candidates	-0.47	-0.56
Percentage of workforce with tenure of at least 2 years	-0.57	-0.69
Training programs maintained in less favorable conditions	-0.84	-1.02
Employees have access to training for higher positions within the firm	-1.54	-1.86
Percentage of professional positions filled internally	-1.64	-1.98
Collegial and flexible workplace		
Firm flexible in work hours and arrangements	1.43	1.73
Firm culture encourages teamwork & cooperation	1.26	1.52
Perquisites do not vary with position and job level	1.17	1.42
Employees are more satisfied at this firm than at others	1.11	1.35

Employees are on a first name basis with top management	1.03	1.25
Titles are not intentionally designed to designate authority	0.46	0.55
Firm emphasizes employment security	0.27	0.32
Physical office space does not vary with position	0.26	0.31
Primary role of managers is to coach & mentor employees	-0.11	-0.13

TABLE IV.
EXPECTED PERCENTAGE CHANGE FROM INCREASING THE ANSWER TO
EACH QUESTION IN HUMAN CAPITAL DRIVER (CONT.)

Communications integrity

Employees have easy access to technologies for communication across the firm	1.50	1.81
Employees have input in hiring decisions	1.18	1.43
Employees give direct feedback to senior management	0.67	0.82
Firm shares financial information with employees	0.64	0.77
Employees have input in how the work gets done	0.33	0.40
Firm shares business plans and goals with employees	0.20	0.24
Employees understand how their job effects customers	-0.14	-0.18

Clear rewards and accountability

Percentage of employees eligible for stock plan programs	1.53	1.84
Firm terminates employees who continue to perform unacceptably	1.51	1.83
Firm does a good job helping poor performers improve	1.47	1.78
Top performers get significantly more pay than average performers	1.26	1.52
Firm positions its pay above the market	0.67	0.81
Pay is used to engage employees in improving business performance	0.53	0.63
Pay is linked to firm's business strategy	0.49	0.59
Role of performance appraisals – set pay	0.37	0.44
Percentage of employees participating in profit sharing plans	0.31	0.37

based on overall firm success		
Firm does a good job of promoting the most competent	0.24	0.29
People skills are important to leadership position	0.02	0.02
Percentage of employees participating in profit sharing plans	-0.65	-0.78
based on operating unit's success		
Employees have input in evaluating their peers	-3.19	-3.86

TABLE V.
AVERAGE IHC SCORE BY TOBIN'S Q QUARTILE

Tobin's Q quartile	Average IHC
0 th to 25 th percentile	38.80
25 th to 50 th percentile	43.25
50 th to 75 th percentile	48.87
75 th to 100 th percentile	64.50

TABLE VI.
CHARACTERISTICS OF HIGH VERSUS LOW EMPLOYEE SATISFACTION
FIRMS

Variable	High Emp. Satisfaction Firms	Low Employee Satisfaction Firms
IHC score	52	45
Tobin's Q	2.13	1.45
3 yrs. TRS	64%	29%
5 yrs. TRS	109%	48%

TABLE VII.
CHARACTERISTICS OF HIGH VERSUS LOW CUSTOMER LOYALTY FIRMS

Variable	High Customer Loyalty Firms	Low Customer Loyalty Firms
IHC score	53	44
Tobin's Q	2.19	1.32
3 yrs. TRS	56%	31%
5 yrs. TRS	147%	53%
Percentage of High Employee Satisfaction	61%	43%

TABLE VIII.
PERCENTAGE OF FIRMS REPORTING HIGH CUSTOMER LOYALTY BY
TOBIN'S Q QUARTILE

Tobin's Q quartile	Percentage of Firms with High Customer Loyalty
0 th to 25 th percentile	47
25 th to 50 th percentile	46
50 th to 75 th percentile	51
75 th to 100 th percentile	68

TABLE IX.
EXPECTED PERCENTAGE CHANGE FROM IMPROVING CUSTOMER
CAPITAL

Question	Tobin's Q (%)	TRS (%)
Able to rapidly develop new products and services	3.09	0.74
Importance of providing customized products	2.79	3.38
Importance of providing goods of high quality	2.58	3.12
Customer loyalty	1.51	1.83
Importance of providing high levels of customer service	1.34	1.62
Importance of providing brand related status	1.31	1.59
Importance or customer satisfaction relative to financial measures	0.54	0.66
Importance of providing goods quickly	0.23	0.28
Use customer satisfaction in evaluations	-0.29	-0.35
Survey customers at least once a year	-0.42	-0.51
Firm focuses on existing customer relationships	-0.42	-0.51
Importance of providing goods at low cost	-1.06	-1.28
Firm focuses on existing products and services	-2.29	-2.77