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HR Contribution to a Firm's Success Examined from a Configurational Perspective: An Exploratory Study Based on the Spanish CRANET Data[**]

The objective in this study was to examine whether a firm's economic/financial success can be associated with the application of certain HRM policies, practices and strategies. In this empirical study, an extended rationale borrowed from a configurational conceptual model was used in order to examine the multiple linkages and architecture between certain HR policies and practices, HR Department characteristics as well as some organizational characteristics, and the overall economic/financial performance of the firm. Employing a series of ANOVAs and classification and regression tree analyses, results show that HRM policies and practices play an important role in predicting the economic/financial success of the firm in the intermediate range. In relative terms and within the tree architectural structure, the HR variables explain significant variance, more than HR Department or organizational characteristics. Controlling for size and economic sector, results show that the HR function within certain configurations plays an important strategic and operational role in adding value to the firm's bottom line; in contrast, when some HR policies and practices are absent or poorly implemented, the detrimental consequences to the firm's economic/financial performance can be observed.

Key words: **Firm Performance, HRM, Configurational Analysis**

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The saying that employees are the critical element in a firm's success has become common wisdom. Indeed, a growing number of experts now state that the key to a firm's economic success can be attributed to the effective management of its human resources (Huselid 1995; Ulrich/Lake 1991). However, the links between HR effectiveness and organizational effectiveness have been explored from different conceptual angles (e.g., for an extensive review see Wright/Boswell 2002, or the special issue on "HR trends" in: Schuler/Dolan/Jackson 2001). The angle chosen for this study, is the multiple links that exist between certain HR policies and practices (e.g., staffing, compensation, training and the like), the characteristics of the HR Department (e.g., ratio of professionals, average level of education, and others), and the organizational features (e.g., size, sector, etc.), and the overall economic/financial performance of the firm.

> "Our costs are lower because our productivity is higher, which is achieved through the dedicated energy of our people. We have the same equipment as other airlines. The difference is, when a plane pulls into a gate, our people run to meet it."
>
> Herb Kelleher, Chairman Southwest Airlines (cited in: Diba/Muñoz 2001)

Recent years have been characterized by an increased interest in examining the added value of HR to a firm's success. The literature suggests that human resource management can be a source of sustained competitive advantage (Pfeffer 1994; Wright et al. 1994). Huselid (1995), for example, suggested that a proper configuration of human resources practices may not only help an organization sustain its competitive advantage, but may also contribute significantly to a firm's performance. The challenge that HRM has to face relates to the outcomes. What is important, says Ulrich (1998), is not so much what HR does, but its "deliverables", or its contribution to the overall organizational outcomes.

Certain research work has traditionally focused on the impact of HR practices on individuals or, alternatively, on examining that impact using the organization as the level of analysis. Another possible distinction (Wright/Boswell 2003) lies in the number of practices analyzed. Many scholars have focused on one or more HRM practices, and examined their effect on various performance measures (e.g., Banker et al. 1996; Delaney/Huselid 1996, Delery/Doty 1996; Harel/Tzafrir 1999; Khatri 2000, among others).

Studies in the late 90's have examined the effect of sets of HR practices on performance (Arthur 1994; Becker *et al.* 1997), and the characteristics and orientation of the HRM function and the link to performance (Huselid et al. 1997; Snell/Youndt 1995). The common denominator for these studies lies with the concept of multiple human resources practices as a system, borrowing from the paradigms of systems approach.

Thus, in the HRM system perspective, the implicit assumption is that a single or isolated HRM practice may have only limited competitive effects on overall performance. In fact, despite voluminous theoretical and empirical literature, no consensus exists among HR scholars regarding the ways in which HRM might have an impact on the firm's outcomes (Becker/Gerhart 1996).

Moreover, no consensus exists with regard to the right set of contingencies that explain the relationship between HRM practices and performance (Ferris et al. 1998),

nor is there general agreement as to the precise policies and practices that comprise any HRM system (Beckert/Gerhart 1996). More importantly, the ways in which an HRM system is constructed may be critical to its success, and the role of HR processes in this construction is often overlooked (Purcell 1999; Monks/Schuster 2001).

To make things worse, there is no consensus on what the term "performance" actually means. While some researchers (e.g., Huselid 1995) concentrate on financial performance, others (e.g., Arthur 1994; MacDuffie 1995), measure productivity and quality. The absence of a widely accepted measure of firm performance construct (in addition to an HRM practices construct) makes it difficult to compare findings across studies (Rogers/Wright 1998). Most of the previous studies focus on one or two of them; subsequently, they do not adopt a more integrated view.

In this study, the aim is to identify profiles or configurations of the essential HR policies and practices that are tied to organizational success measured in terms of financial and performance objective yardsticks. A data set based on the largest Spanish firms which employ over 200 people was chosen for the empirical work. Thus, the goals of this study are twofold. First, to identify the different sets of HRM practices and processes, which result in value added to firm productivity and financial performance: the principal research question examines the HRM practices, processes and policies that contribute to the economic success of the firm. With respect to the second goal, the study re-examines the traditional roles and activities of the HRM function, and attempts to identify their relative importance in comparison with other known organizational factors (see Figure 1).

The contribution of human resources to organizational performance

There is currently a wide range of angles to analyze the practices of human resource management (HRM). Jackson and Schuler (1995), and Schuler and Jackson (2005) in their state-of-the-art summary of the various models and theories used by researchers studying human resource management, stressed the interdisciplinary nature of such research. They conclude, for example, that numerous perspectives are of a sociological (institutional theory), economic (human capital, transactional costs), managerial (agency theory or resource-based theory), or psychological (role-behavior perspective) nature.

In HRM-performance linked research, the basic issue arising is that of the "fit" between HRM and the business strategy. Thus, a brief review of the different approaches to the strategic "fit" is called for, and can be summarized along the following three lines: universalistic, contingent and configurational (Delery/Doty 1996, Youndt et al. 1996).

An important issue is whether HRM practices are universally superior to more traditional practices or rather whether the HR system should be contingent upon organizational strategy or other contextual conditions. The *universalistic perspective* takes a "best practices" perspective (Huselid 1995), the central argument being that the contemporary environment facing most organizations is turbulent and uncertain; top employee contribution is needed at all levels. Many studies attempted to provide empirical evidence to prove that organizations that have and apply certain HR policies and practices have greater levels of organizational effectiveness that those that do not (e.g.,

Arthur 1994; MacDuffie 1995; Huselid 1995; among others). For example, Delaney and Huselid (1996) find support for the hypothesis that those HR practices that improve general employee skills, motivation and work structure are positively related to the performance of the organization. Referring to the strategic HRM field, Delery and Doty (1996) raised concern about whether HR practices independently affect organizational outcomes or need to be embedded in a broader and internally *consistent configuration* of such practices.

To achieve the optimal impact of such practices on organizational outcomes such as firm performance, it is necessary to have "internal fit" or consistency among these various HRM practices; that is, "horizontal linkage", a coordination among the various HRM practices within the organization. Numerous research reports seem to bear this out. (e.g., Huselid 1995; MacDuffie 1995; Arthur 1992; Ichnioeski,/Shaw/Prennushi 1997). The vertical fit (or external fit) refers to the congruence of HR systems with other organizational characteristics such as the firm's strategy. Thus, an organization must develop an HR system architecture that achieves both a horizontal and vertical fit (Becker/Gerhart 1996).

Nevertheless, not all studies find support for the premise that the configurational perspective shows which established orientations are the best (e.g., Delery/Doty 1996). However, the preponderance of evidence seems to favour the position that HR practices should be considered as systems, and that those systems that adopt certain orientations will produce synergies and lead to better results (Arthur 1992, 1994; MacDuffie 1995; Huselid 1995; Pfeffer 1994). Hence, the configurational approach to HRM is concerned with how patterns of multiple human resources policies and practices achieve the organization's goals.

In contrast, the *contingency perspective* argues that HR policies must be consistent with other organizational aspects in order to be effective and that it is important that there be an appropriate fit between HR strategy and the external environment in which the organization operates. The absence of the external fit would lead, in the contingency perspective, to suboptimal performance. Youndt, Snell, Dean, and Lepak (1996) provide empirical support for the contingency perspective. However, other studies that have researched the contingency perspective have not found empirical support for such a relationship (e.g., Delery/Doty 1996).

Wright and Snell (1998) have proposed a theoretical argument suggesting that these two points of view are not necessarily contradictory and that firms can design systems that promote flexibility while concurrently attaining some level of fit between HR strategy and organizational strategy.

Whereas some authors explain differences in HRM practices through an overriding contextual variable like strategy, there are others who point out the multiplicity of factors involved. This includes pointing both to external factors such as cultural aspects, legislation, the national economy, and the structure of the industry sector; and to internal factors, such as the size of the organization, its history and traditions, organizational structure, and the technology used. Within such multiplicity, the impact of the strategy formulated or followed by the company obviously carries less weight (Jackson/Schuler/Rivero 1989; Kane/Palmer 1995).

There are also those who advocate mixed positioning, proposing approaches that combine more than one perspective: configurational and contingent. For example, Macduffie (1995) speaks of different "organizational logic" depending on the system of production used. This author's work strengthens the idea that for each type of system, there exist differentiated HRM practices that show interrelationships and internal consistency, resulting in higher levels of productivity. Arthur (1992, 1994) sees the difference between strategies of cost and innovation reflected in the differences between mass and flexible manufacturing. For each alternative strategy and system, he identifies corresponding systems of industrial relations.

In summary, the literature suggests that there are distinct strategic orientations bearing on an organization's policy towards HR practices, and that it should be coherent with the business strategy and conditioned by the nature of the work process and the environment. The study proposed herewith will explore the validity of the configurational model for firms in Spain operating in diverse industrial sectors.

The Conceptual Model

According to Delery (1998) the methods used by an organization to manage its human resources can have a substantial impact on many relevant outcomes. For instance, Human Resource Management has been linked with turnover (Arthur 1994), productivity (Ichniowski/Shaw/Prennushi 1997; MacDuffie 1995), financial returns (Delery/Doty 1996), survival (Welbourne/Andrews 1996) and firm value (Huselid 1995).

Figure 1: The Working Model[1]
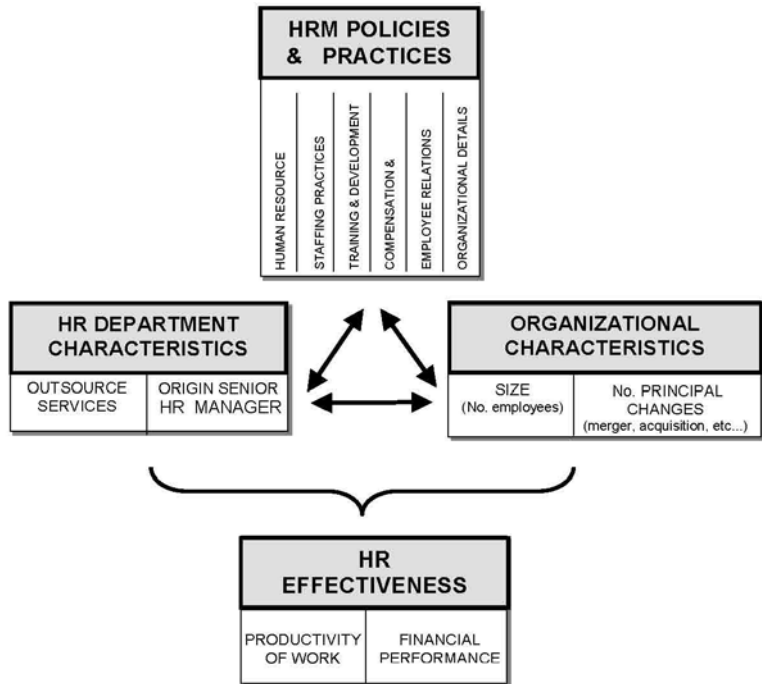
Thus, the links between HR effectiveness and organizational effectiveness could be explored, as suggested above, from different conceptual angles. In this particular study, the focus is on the multiple linkages that exist between certain HR policies and practices (e.g., staffing, compensation, training), characteristics of the HR Department (e.g., ratio of professionals, average level of education), some organizational characteristics (e.g., size, sector, involvement in mergers or acquisitions, gender distribution, age distribution) and the overall economic performance of the firm. The conceptual model is schematically presented in Figure 1, and more details about the operational model and the particular variables are described in the methodology section.

The conceptual framework presented in Figure 1 has multiple elements borrowed from the general configurational concepts and should be considered exploratory. It is for this reason that we avoided using a specific set of hypotheses and chose to explore the configurations that may be linked to poor or excellent economic performance of the firm. Within the various configurations, it will be assumed (and empirically tested) that the HR practices and policies play a more important role than other organizational characteristics or HR Department characteristics. It is also assumed that different configurations may be present for organizations operating in different sectors, and thus the latter will be used as a control variable.

Methods and procedures

Sample and Sampling Considerations

For the purpose of greater reliability, data were sought from multiple sources. HRM data and firm performance data were collected in two different years (i.e. time intervals) and – from two different sources: (1) HR managers responding to a questionnaire and (2) financial statements of the firms obtained through publicly available documents.

The target respondents for this study were the senior HR officers of some of Spain's largest firms. The Cranfield Network (hereafter CRANET) questionnaire from the 1999 survey on strategic HRM was used. By and large, data on all independent variables were collected through standardized postal questionnaires, which were sent to 1460 senior HR officers in firms with a minimum of 200 employees operating in the private sector to eliminate the possibility of including very small organizations which might not have formal HR procedures installed (e.g. following the advice proposed by Huselid and Becker 1996). The sample was drawn from the Fomento Data Bank, a comprehensive listing of Spanish firms maintained and updated by the principal Spanish employers' association. A total of 197 questionnaires were returned, giving a response rate of 13.5%. This survey mainly included questions on a variety of HR issues. (For further information on the CRANET questionnaire and its characteristics, see: Brewster et al. 2000; Brewster et al. 1994).

The CRANET instrument was developed cooperatively by researchers from the network of business schools and universities in 34 countries coordinated by the Cranfield School of Management. Data were collected early in 1999.

Data on the criteria (the economic dependent variables) were collected in 2002 and 2003 using the SABI data bank for year-end financial statements. A first measure

of performance was calculated by computing the mean of ratios for years 1999 2000 and 2001. In attempting to achieve longitudinal data and consistency over time, the results reflect data compiled for three successive years. Upon finding no statistically significant differences among the three years, it was decided to use the mean of those years as an index of the total performance of the company.

It is worthwhile noting that data were collected using a combination of cross-sectional and longitudinal designs. Data on the independent measures were collected in early 1999 (February-May), and data on the criteria measures (performance indicators) were collected retrospectively for a successive three-year period in 2003. By assessing performance for later years (e.g. 2001), and then including prior performance (e.g., 1999 and 2000), the study provides an additional logic for arguing that HR practices predict present and future performance.

In order to create a rectangular file for subsequent analyses, only firms for which public financial information was available were finally used. Also, firms without HR departments were excluded. Due to uneven distribution of the firms in various economic sectors, this variable was used as a control variable for inclusion criteria. Subsequently, the final sample size was reduced to 180 firms and included the following sectors: "Chemical, energy and water", "metal manufacturing and engineering firms", "other industries", "building and civil engineering", "retail and distribution", and "transport and communication". Following this step, the percentage of the sample used for this study was reduced to 12.3 %. (See Table 1)

Table 1: Freqencies by Economic Sector

	Frequency	Percent	Cumulative Percent
Metal manufacture	54	27.4	30.0
Other manufacturing	59	29.9	62.8
Building & civil engineering	6	3.0	66.1
Distributive trades	19	9.6	76.7
Transport & communication	17	8.6	86.1
Chemicals, energy & water	25	12.7	100.0
Total	180	91.4	
Missing Cases	17	8.6	
Total	197	100.0	

Measures

The Questionnaire. The CRANET survey instrument is organized around six sections covering the following human resources functions: staffing, employee development, compensation and benefits, employee relations and communications, and organizational characteristics.

Respondents were asked to answer 70 questions about their respective HRM policies and strategies, such as: *"Do you use external providers in any of the following areas? (Check if your answer is* yes*)";* or *"Has the responsibility of line management changed over the last*

3 years for any of the following issues? (increase, decrease or same)"; or *"Please indicate the approximate proportion of your workforce who are on the following working arrangements: A.-Part-time; B.-Temporary-casual; C.-Fixed-term; D.-Home-based; E.-Tele-working; F.-Shift work; G-Annual hours contract: (Not used, Fewer than 1%, 1-5%, 6-10%, 11-20%, More than 20%)".*

The objective of this instrument was to identify, wherever possible, hard data rather than attitudinal information that would enable cross-country (and cross-sector) comparisons. The vast majority of the questions were organized along a dichotomy (yes or no), or other types of categories or nominal scales. No rating scales were employed in this study although this also created a limitation for the subsequent data analysis.

Performance Measures. Two different measures of firm performance were used for this study, following a factorial analysis from a linear combination of 4 economic parameters. All indicators are represented in the form of ratios, therefore enabling inter-company comparisons. Drawing from the literature in accounting and financial economics, these represent standard measures of firm efficiency and resources utilization.

By and large the performance measures had the following two characteristics: 1) general agreement among financial experts as to their validity for use in comparing firms; 2) only indicators less subject to exogenous speculations (such as the value of company stocks) were used. Similar measures have been reported by Huselid (1995), Snell and Youndt (1995), Keats (1988), Becker and Olson (1987) and Chakravarthy (1986).

More specifically, the following global financial performance indicators were used: a) Net Assets Turnover (captures operational aspects of firm resource utilization); b) Return On Capital; c) Employee Costs / Operating Revenue (%); and d) Operating Revenue per Employee (Th), as a measure of company efficiency and resource utilization.

In more concrete terms, each of the above indicators was calculated using the following algorithms:

a) *Net Assets Turnover:* Operating revenue-turnover / (Shareholders' funds + Non-current liabilities)

b) *Return on Capital Employed (%):* ((P/L before tax + Interest paid) / (Shareholders' funds + Non-current liabilities)) x 100

c) *Employee Costs / Oper. Rev. (%):* (Personnel expenses / Operating revenue-turnover) x 100;

d) *Oper. Rev. per Employee (Th):* Operating revenue-turnover / Number of employees.

Using principal components factor analysis with Varimax rotation for the four parameters, two factors emerged, and were labelled: 1) Productivity of Work, and 2) Financial Performance. These two factors explain 68.02% of total variance.

Statistical Treatment

Data were analyzed through different stages and employing different techniques including bivariate analysis (i.e., correlation and ANOVAs) as a first stage, and a "Decision Tree Method" in combination with a regression and classification algorithm

(C&RT) for the multivariate analyses in the final stages. The SPSS/PC (version 12.0.1) statistical package and Answer Tree (version 3) software were used in combination.

The Classification and Regression Trees (C&RT) method of Breiman, Freidman, Olshen, and Stone (1984) generates binary decision trees. The C&RT tree is constructed by splitting subsets of the data set using all predictor variables to create two child nodes repeatedly, beginning with the entire data set. The best predictor is chosen using an index of "impurity" as a measure of variability in each partition. The goal is to produce subsets of the data that are as homogeneous as possible with respect to the target variable (SPSS 2003).

Classification trees are being extensively used in applied fields as diverse as medicine (diagnosis), computer science (data structures), botany (classification), psychology and management (decision theory). They readily lend themselves to being displayed graphically, which facilitates their interpretation. The construction of the "Decision Tree" considers assessing each attribute that is included in a saturated model, and examining its relative importance as best predictor/splitter. In order to identify the splitters for the purpose of "Tree" construction, the method uses an index of "impurity" as a measure of variability in each partition. The "impurity" identifies the best partition, which reduces the diversity in the different sequence of partitions. That is to suggest that the C&R Tree implies selecting the variables that divide the sample into two branches, of which the combination of variables selected within each branch maximizes the differences between the different branches. An algorithm is computed when it meets a set of criteria for which a branch is stopped or another branch is added to the tree. The branch addition is stopped when it reaches a point of minimum change in impurity; this happens when a minimum criterion is specified. In this study, the minimum N has been set to 9, and the impurity level was set to $>= 0.0001$. More information about this technique can be found in Breiman et al. (1984) and (SPSS 2003).

Results

Similar to the logic stated by Delery (1998), itself based on earlier writings of Meyer, Tsui and Hinings (1993), an attempt was made to identify HRM system configurations connected with firm performance. The methods employed made it possible to identify the underlying patterns or systems of HRM practices that firms have adopted along with other organizational characteristics and HR departmental characteristics. The question then became: which of the HRM systems are more effective than the others? The system patterns permit the identification of a hierarchy of importance, determining which independent variable explains relatively more variance than the others. Thus, one is able to identify the particular HR policies and practices that are more important than others and to compare the subset of HR Policies in its relative importance compared to the organizational and HR Department characteristics.

A configuration analysis using "Firm Performance" as criteria

Tables 2 and 3 display the distribution of the criteria (economic dependent variables) by size of the firm and industrial sector.

Table 2: Distribution of the Economic dependent variables by Firms' size

Number of employees (Size Companies)		Productivity of work	Financial Performance
200 - 499	n	57	57
	Mean	-.052	.011
	Std. Deviation	1.128	.961
500 - 999]	n	35	35
	Mean	-.096	.125
	Std. Deviation	.756	1.011
1000 - 1999	n	34	34
	Mean	-.041	-.185
	Std. Deviation	.769	.866
2000 - 4999	n	17	17
	Mean	-.058	.241
	Std. Deviation	1.044	1.219
5000 -	n	7	7
	Mean	.529	-.157
	Std. Deviation	1.347	.586
Total	n	150	150
	Mean	-.033	.011
	Std. Deviation	.973	.969

Table 3: Distribution of the Economic dependent variables by sector

Economic Sector		Productivity of work	Financial Performance
Metal manufacture	n	52	52
	Mean	-.261	.035
	Std. Deviation	.961	.980
Other manufacturing	n	51	51
	Mean	.192	-.116
	Std. Deviation	1.022	.870
Building & civil engineering	n	5	5
	Mean	-.334	.542
	Std. Deviation	.887	.573
Distributive trades	n	14	14
	Mean	-.315	.635
	Std. Deviation	1.004	1.244
Transport & communication	n	13	13
	Mean	-.003	.214
	Std. Deviation	1.003	1.316
Chemicals, energy & water	n	21	21
	Mean	.463	-.354
	Std. Deviation	.900	.841
Total	n	156	156
	Mean	-.001	.019
	Std. Deviation	1.002	.997

Because the literature suggests that these variables may impact firms' performance, and because they were used as a control variable in this study, analysis of variance was performed. Tables 4 and 5 show the ANOVA results. The tables show that while firm's size is not significant in explaining firm performance (Table 4), the industrial sector of activity is significant (Table 5). More specifically, however, because of the small number of cases and the uneven distribution of cases in the latter variable, a posteriori decision was made based on post hoc group comparisons to eliminate from subsequent analyses the Chemical, Energy and Water sector. Thus, the possibilities exist that configurations reported in the next section might be a little different for various sectors. For that reason results should be treated with caution.

Table 4: ANOVAs – Results pertaining to Economic dependent variables by Firms' Size

		Sum of Squares	df	Mean Square	F	Sig.
Productivity of work	Between Groups	.060	3	.020	.022	.996
	Within Groups	127.664	139	.918		
	Total	127.724	142			
Financial Performance	Between Groups	2.655	3	.885	.911	.437
	Within Groups	134.990	139	.971		
	Total	137.645	142			

Table 5: ANOVAs – Results pertaining to Economic dependent variables by Economic Sector

		Sum of Squares	df	Mean Square	F	Sig.
Productivity of work	Between Groups	11.304	4	2.826	2.932	.023
	Within Groups	140.708	146	.964		
	Total	152.012	150			
Financial Performance	Between Groups	9.616	4	2.404	2.474	.047
	Within Groups	141.857	146	.972		
	Total	151.473	150			

The principal significant relationships between HRM and *Productivity of Work Factor were tested via ANOVA. The* results show that several HRM policies and practices are related significantly to the productivity of work. Some of the main findings include the following: Firm that has a written policy for executive development has a higher mean for the work productivity factor. In the same vein, firms that have a performance assessment system for managers and an appraisal system which determines "career development" and "promotion potential", or firms that use monetary and non-monetary benefits, show significantly higher means in productivity of work than firms not having these practices. These findings are consistent with previous empirical works (Huselid 1995; Ichnioeski et al. 1997; Schuler/Jackson 2001; Wright et al. 2002) especially in the field of compensation and performance appraisal, where a call is made to increase the usage of various performance-based schemes.

Another finding is that when the responsibility of the line management is increased for "Training & Development", "Recruitment & Selection", and "Workforce

Expansion / Reduction", the productivity of work factor is significantly higher. A similar pattern appears in the methods used by businesses to reduce the number of employees. While in the majority of cases productivity is greater (compulsory redundancy, redeployment, subcontracting – outsourcing, and outplacement), this is not the case with early retirement plans: organizations not having this practice have higher means on productivity of work factor.

Finally, organizations that have been involved in only one change –or no change– (i.e., mergers and acquisitions) have higher means on the productivity of work factor than firms that report two or more such changes in the last three years.

Another series of ANOVAs was performed within the context of the *Financial Performance Factor,* as the dependent variable. Results, in a capsule, suggest the following: First, firms that have a written policy for "Recruitment and Selection" and "Equal Opportunities / Diversity" achieve higher financial performance than firms that report not having such policies, or having unwritten policies.

Second, if firms do not use one of the various forms of employee reduction practices (i.e., downsizing) via early retirement or voluntary redundancies, their financial performance is enhanced.

Third, flexible working arrangements for part-time employees in the magnitude of less than 1% or more than 5% of the workforce have higher means on the financial performance factor than firms that use flexible working arrangements for only 1 to 5% of their workforce. Similar (though not identical) trends are reported for "shift working" and "fixed term" employees.

Fourth, firms that have a performance-assessment system for professional, clerical and manual employees show significantly higher means on financial performance and – as is the case for the "productivity of work" factor – firms that employ an appraisal system for determining the "promotion potential" show higher financial performance.

In addition, firms that experienced growth in number of employees show significantly higher financial performance than firms that remained the same or downsized, and firms that increase the use of external providers show a higher level of financial performance than firms that do not outsource this function.

The aim of the next series of analyses was to identify a configuration or a profile for predicting productivity of work and financial performance in a multivariate fashion. Results of these analyses are shown in *Figures 2* through *4*. For the purpose of efficiency, only profiles with end poles will be presented.

Figure 2 shows the tree that explains the different means of productivity of work. That is, the firms that have a configuration of HR practices as shown in the successive branches of the tree achieve a level of productivity represented by the mean; either positive --- thereby producing an increase in the overall performance of the firm --- or negative, showing a decrease in performance.

The implicit assumption is that the greater the mean on the configuration, the higher the firm performance will be. Observing the two end branches, we can identify the following "best fit" combination in terms of their relative order of importance:

Figure 2: Configurations - Productivity of Work Factor
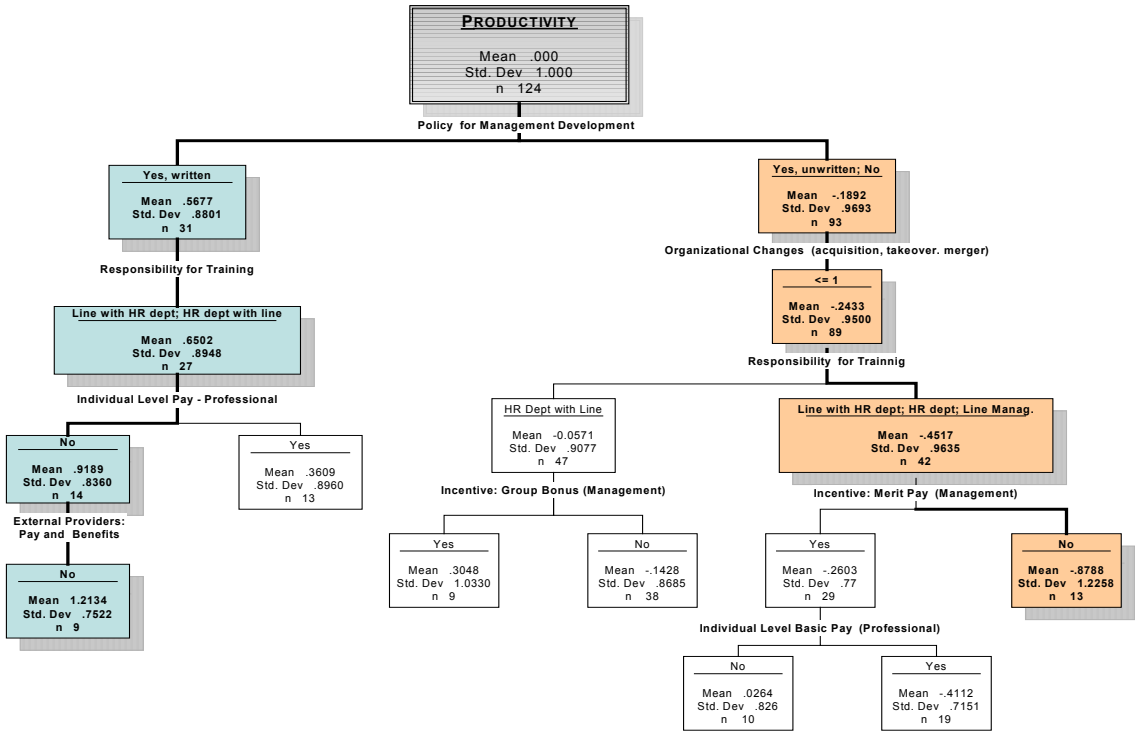
Configuration "A" on explaining maximum Productivity of Work – These are the firms with these HRM configurational policies and practices: First, firms with a written policy for management development. Second, firms in which the HR department shares responsibility for training and development with line managers. Third, firms that do not have individualized-level pay for professional employees. And fourth, firms that do not outsource the pay and benefits function. The combination of these variables improves the mean of the total productivity of work by 121% (Mean = 1.213).

Configuration "B" on explaining minimum Productivity of Work – On the other hand, a totally different configuration emerges from the B profile. When firms have a policy for management development, though unwritten, and they were not involved in any organizational structural change (or a maximum of one important change in the last 3 years, such as a merger or an acquisition), and, at the same time, their HR department shares responsibility for training and development with line managers, and, finally, they do not have a merit pay policy for their managers, then these combined variables have a reverse effect on overall performance. The combination of variables decreases the mean of the total productivity of work by 88% (Mean = – 0.879).

With regard to the second factor, *Figure 3* shows the tree model for the Financial Performance factor.

Configuration "C" on explaining maximum Financial Performance – Another configuration emerges for firms which increased their number of employees by more than 5% in the last 3 years, and have a proportional number of union employees not exceeding 25%, and do not use early retirement as a downsizing strategy. This combination of variables improves the mean of the total financial performance by 85% (Mean = +0.846). The combination of these practices allows this profile to achieve optimal impact on financial performance.

Configuration "D" on explaining minimum Financial Performance – Configuration D emerges when the combination of organizational practices is as follows: 1) Firms in which the number of employees remained the same or decreased more than 5% in the last 3 years; 2) Firms which do not have a performance appraisal system for their clerical employees; 3) The proportional number of union employees exceeds 25%; and 4) Firms in which the proportion of fixed-term contracts does not exceed 20%. This set of combined variables decreases the mean of the total financial performance by 69% (Mean = –0.687).

Figure 3: Configurations - Financial Performance Factor
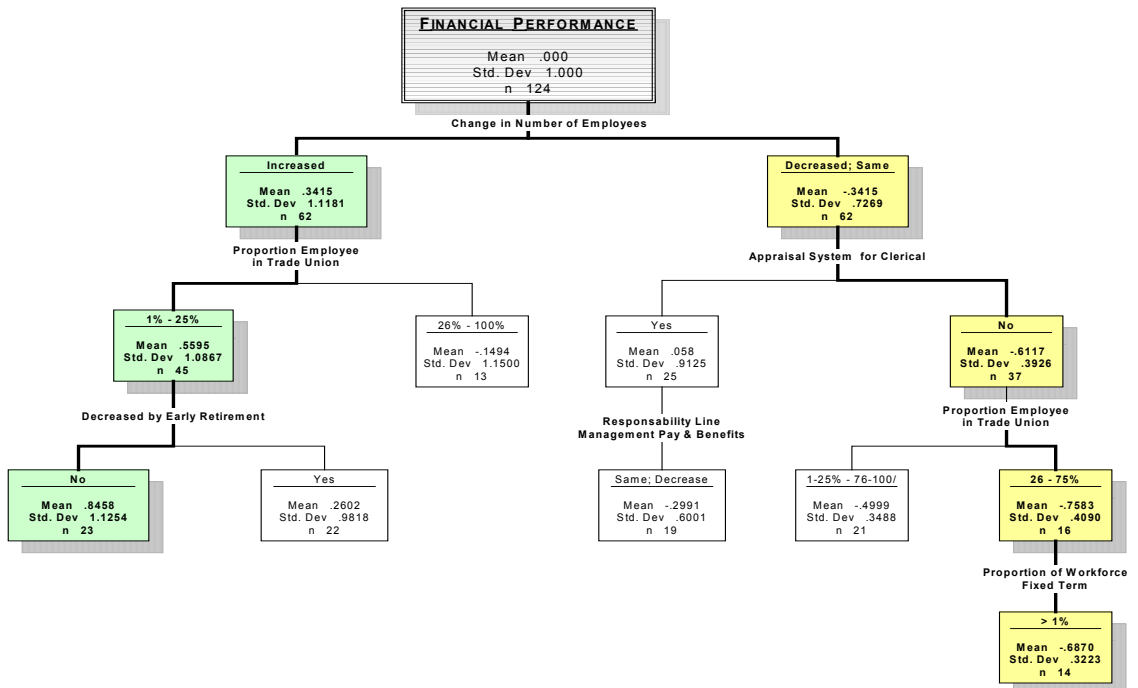
To summarize, a graphical presentation of the multiple profiles (the various means resulting from the C&RT regression and classification analyses) is presented in *Figure 4*. These histograms for each performance factor (work and economic) show how different configurations yield different results for effectiveness. That is, with other configurations we can also achieve more or less significant levels of organizational effectiveness.

Figure 4: Different Profiles – Means of 'Productivity of Work' Factor & Means of 'Financial Performance' Factor
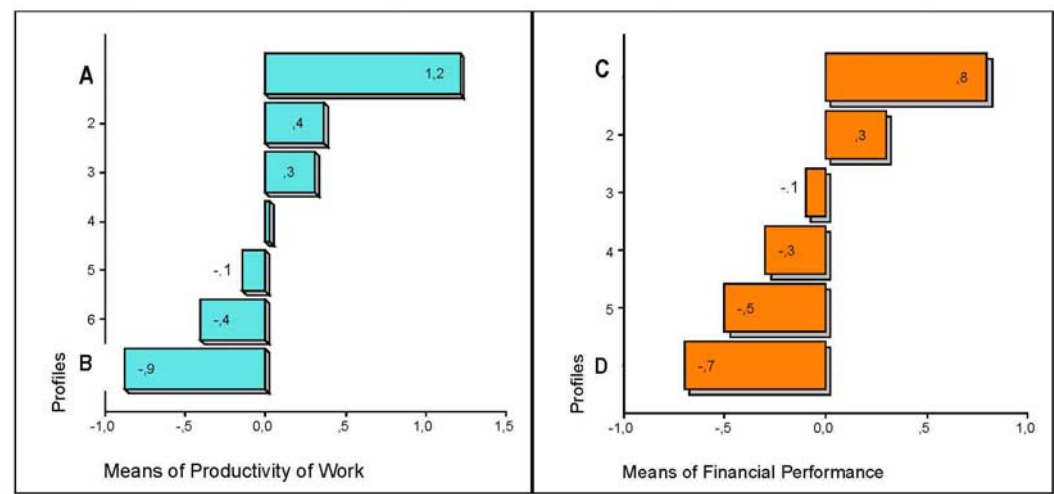
Discussion and conclusions

As Becker and Gerhart (1996) noted, much of the research to date has focused solely on HRM practices, but it may be equally important to focus on HRM policies and what they termed the HRM system architecture (Purcell 1999). Our findings focus on the links between human resources strategies and practices and organizational effectiveness. It is likely that bundles of, or configurations of, activities are more important in enhancing labour productivity than any single activity.

The configurational predictions are based on the assumption that implementing some employment systems will result in higher organizational performance (Delerey/ Doty: 1996).

Overall, the ANOVA results show very clearly that from among the multiple blocks of possible independent variables that might affect firm performance (see Figure 1 and Table 2), HRM policies and practices play a major role. These trends are sustained through the subsequent analyses and the regression and classification methods shown in Figures 2 and 3. In relative terms, the variables connected with HRM policies and practices add significantly to the profiles which explain good or poor economic performance of the firm. An obvious conclusion is that the HR System plays an important strategic and operational role in adding value to the firm's performance and cannot be discounted. Furthermore, the results show that when some HR policies and practices are absent or poorly implemented, the detrimental consequences for a firm's economic performance can be noted.

In more concrete terms, and despite the use of somewhat different operational economic criteria to measure firm performance, some of our findings corroborate previous results reported in the literature. For example, the relationships between performance-related pay and firm performance reported in this study have also been found to affect productivity positively (Lazear 1996). Moreover, flexible rewarding is

positively related to profit, and profit-related pay and performance-related pay are positively related to financial performance (McNabb and Whitfied 2000).

The study found that a policy regarding management development, as well as policies towards training in general, if developed jointly by the HR Department and line managers, adds significant value to firm performance. This parallels that also reported by Kalleberg and Moody (1994), who show that the training function in its generic fashion has a positive impact upon some dimensions of the firm's performance.

In addition to HRM policies and practices, other organizational and HR department characteristics can also have an impact on the economic performance of the firm. For example, as with the arguments and findings by Arthur (1994) and Huselid (1995), we also found the degree of unionization to be related to productivity: the higher the unionization rate, the lower the financial performance of the firm.

Numerous researchers have suggested that HRM practices may bear some relationship to firm performance (Snell/Youndt 1995). However, since these functions do not operate independently from one another, the research reported here examines the net effect on the two facets of firm performance using an array of HRM practices. The method used to examine this net effect was borrowed from the data-mining field and helped to detect various profiles (i.e. "best performance" and "worst performance") containing different configurations of HR practices, organizational characteristics and HR department characteristics. Within these configurations, the high-performing organizations use advanced human resource management strategies and practices in order to affect the bottom line.

Along this line of thought, and in concurrence with the findings reported in prior research (Wright/Boswell 2002; Delery 1998), we can affirm that a fundamental aspect of strategic human resource management is that which attempts to create an internal alignment or horizontal fit among various HR practices. Thus, we can conclude that a proper configuration of human resources practices creates a synergy that multiplies the impact of individual HR practices, and significantly contributes to firm performance.

The concept of a bundle of HR policies and practices is helpful here, not in defining a precise list of items, but in pointing to the search for an architecture of HR processes which contribute to organizational performance and which positively contribute to the achievement of organizational effectiveness (Purcell 1999).

Financial performance and work productivity are certainly not the only criteria by which to judge the value of an approach to HRM (Tsui 1990). To the extent that we can learn more about how HRM influences firm performance, we may be able to develop more elaborate models of organizational effectiveness. The potential effects of these decisions on firm performance appear to be substantial (Snell/Youndt 1995).

In conclusion, results are in line with the conceptual model where multiple blocks of variables including HR practices, HR department characteristics, and organizational parameters, play a significant role in explaining firm's performance. The ANOVA results, however, show very clearly that from among the latter, HRM policies and practices play the most important role. These trends are sustained through the subsequent analysis and use of multiple regression and classification methods. In relative terms,

the variables connected with HRM policies and practices significantly add to the profile that explains good or poor economic performance of the firm. An obvious conclusion is that the HR Department plays an important strategic and operational role in adding value to the firm's performance and cannot be discounted. Furthermore, the results show that when some HR policies and practices are absent or poorly implemented, detrimental consequences for firms' economic performance result. The 4 profiles show different configurations that can be linked to the firm's economic success.

Study strengths, limitations and future research

Despite an interesting conceptual model and innovative techniques in the data analyses borrowed from data mining methodologies, this study has its limitations and strengths. For example, Boselie, Paauwe and Jansen (2001) observed "One of the problems of nearly all of the existing work is reliance on cross-sectional work, which makes it virtually impossible to be confident of the causal relationship linking HRM and outcomes" (p. 1114). In order to avoid this shortcoming, this study used a 'quasi-longitudinal design', where data on the dependent variables come from objective sources collected retrospectively for the same financial year. Three consecutive years were included and, by calculating the mean, some special company contingencies were allowed.

Two clear limitations of the study are the relatively small sample size, and the non-stratified sampling strategy by sector (e.g., variables like sector and technology can explain a great amount of variance). These issues need to be controlled in future research. Finally, the fact that most of the independent variables were of a categorical nature limited the use of traditional parametric analyses in this study.

Clearly, more research is needed in order to analyze the robustness of the configurations found in Spanish firms, but the findings of this study highlight the importance of addressing the analysis of HRM policies and practices by a more sophisticated configurational approach.

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