

Intellectual Structure of Human Resources Management Research: A Bibliometric Analysis of the Journal *Human Resource Management*, 1985–2005

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The multidisciplinary character of the theories supporting research in the discipline of human resources management (HRM), the increasing importance of a more rigorous approach to HRM studies by academics, and the impact of HRM on the competitive advantage of firms are just some of the indicators demonstrating the relevance of this discipline in the broader field of the social sciences. These developments explain why a quantitative analysis of HRM studies based on bibliometric techniques is particularly opportune. The general objective of this article is to analyze the intellectual structure of the HRM discipline; this can be divided into two specific objectives. The first is to identify the most frequently cited studies, with the purpose of identifying the key topics of research in the HRM discipline. The second objective is to represent the networks of relationships between the most-cited studies, grouping them under common themes, with the object of providing a diagrammatic description of the knowledge base constituted by accumulated works of research in the HRM field. The methodology utilized is based on the bibliometric techniques of citation analysis.

Introduction

The first scientific studies concerning work and employees appeared in the first decade of the 20th century, and since then the discipline that currently deals with these topics, human resources management (HRM), has undergone considerable development. The creation of associations, publications, and conferences interested in human resources (HR), in the academic field, and the importance of HR departments and specialists in business are just some of the indicators demonstrating the relevance of this discipline in the social sciences (Marciano, 1995). The importance of HRM has become even more striking in the last 25 years, as employees have come to

be considered as strategic resources, and this has led to HRM taking on a strategic responsibility; this in turn has stimulated further interest in research analyzing the process that leads to enhanced competitive advantage (Barney, 1991; McMahān & McWilliams, 1992; Pfeffer, 1994; Schuler, Galante, & Jackson, 1987; Schuler & Jackson, 1987; Schuler & MacMillan, 1984; Ulrich, 1991; Wright & Snell, 1991).

It is evident, therefore, that HRM is a hot topic for educational institutions, for academic research, and for society as a whole; for this reason, it is worth analyzing in depth the roots from which this discipline has grown.

As in all disciplines that reach a certain degree of maturity, a new branch of research usually appears that takes the discipline itself as the object of study (Ramos & Ruiz, 2004). Within this branch, two different approaches can often be found: one qualitative, centered on the traditional theoretical review of the literature, and other, more novel, is the quantitative or bibliometric approach. Since every scientific discipline is developed on the basis of a collection of relevant studies that become acknowledged as the foundations for further investigations, it is considered useful and interesting to analyze the most influential studies and authors in this area, with the object of tracing how the HRM discipline has grown and changed, identifying the key topics of research and determining different streams of research.

In bibliometric studies, mathematical and statistical techniques are applied to the analysis of large volumes of documentation (Diodato, 1994). These studies are usually performed to reconstruct the history of various sciences and to question traditional dogmas; their results allow researchers of the discipline studied to correct any errors of perception (Callon, Courtial, & Penen, 1993). Within the field of the sociology of science, bibliometric studies provide valuable data on scientific communication. The study of references can highlight whether a discipline has an inward- or outward-looking approach (from both the thematic and geographic perspectives); the circulation of new ideas; and the existence of barriers between the applied and basic sciences,

Received January 14, 2008; revised June 26, 2008; accepted July 22, 2008

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and between the specialists and the scientific community to which they belong (Ferreiro, 1993). However, bibliometric methods, and in particular citation analysis, are not exempt from certain limitations. They are restricted to the analysis of documents stored in databases with a citation index, as well as to the usual limitations on the use of these databases. In this context, the unit of analysis for this study is the journal article, and in the journal selected, the use of citations is a generally serious and responsible practice and is also submitted to the critical analysis of the reviewers of the journals; hence, the above-mentioned disadvantage is partially resolved, and consequently the reliability of the results obtained is increased.

The application of this quantitative approach and the utilization of bibliometric techniques in the discipline of HRM is a novelty in itself, and can therefore be considered a useful contribution to the field. Most of the studies published in this area have been undertaken within the qualitative approach, with the object of explaining aspects such as the evolutionary process that the HRM function has undergone in companies (Ferris, Hall, Royle, & Martocchio, 2004; Mahoney & Deckop, 1986), or the design of HR practices and strategies that may lead to enhanced organizational performance (Arthur, 1994; Becker & Gerhart, 1996; Delaney & Huselid, 1996; Delery & Doty, 1996; Ferris et al., 1998). However, studies conducted using the quantitative approach are almost nonexistent, and those identified have been disseminated to the scientific community through conferences, not by publication in journals or books. Paradoxically, the weakness of existing research in this discipline under the quantitative approach contrasts with the strength of research in other areas of management, where several studies have used bibliometric techniques.

Therefore, the goal of this article is to obtain a general picture of HRM research using a quantitative approach based on bibliometric methods. As White and McCain (1998) state, the object is to get a picture of the research done in the discipline by analyzing the "reflection in its rear window." This general objective translates into two more specific ones. The first is to identify the most-cited studies, and subsequently to associate them with the subjects discussed or theories put forward in them; this will allow us to describe the range of theoretical ideas that form the discipline's intellectual support. The second objective is to describe the networks of relationships between studies, which should enable us to visualize the nucleus of the intellectual structure of the discipline by indicating the critical research topics in the area. Given the diversity of HRM aspects that the discipline covers, bibliometric analysis will help to distinguish the boundaries between HRM and other disciplines, like industrial relations and organizational behavior, with which it has shared its beginnings (Marciano, 1995).

The novel contribution of the article is the application of bibliometric methods to characterize the HRM discipline, and the main conclusion is that the results are complementary to those obtained by other researchers using a traditional qualitative approach.

The authors hope that this vision of the discipline will help those in positions of political and professional responsibility to take note of a fast-growing body of research, and to find ways of securing commitment to the topics comprising the field of HRM. However, the principal contribution of this work is its academic relevance: The results obtained should be useful to both new and established researchers, in that we identify and describe the most influential studies and authors that currently embody the intellectual structure of the discipline and indicate theoretical and methodological issues that are stimulating work in the field of HRM. The main target audience for this article, therefore, is the "invisible school" of researchers in HRM.

The article is divided into four parts. The first is a review of the literature, in which the predominant approach is that of qualitative rather than quantitative analysis. It is this situation that makes the bibliometric analysis presented here very opportune and potentially interesting. In the second part, the research methodology utilized is described in detail, and in the third, the results of the bibliometric analysis are presented and discussed. Finally, the conclusions and limitations of the work are summarized, together with a proposal for future lines of research.

Human Resources Management: Contribution of the Quantitative Approach

The increase in the size of organizations and their greater structural complexity, together with advances in studies conducted on the organization and its employees, have given rise to the transformation and growing importance of the social function in companies. The effect of these changes is that employee management grew in importance and status, from being the "mere" administration of personnel, where the main objectives were to achieve higher levels of coordination, control and efficiency, to the more active and complex management of HR, in support of the firm's objectives to obtain and maintain competitive advantage by applying these strategic resources as effectively as possible. A review of the existing literature indicates that, at that time of transition, the studies of Fombrun, Tichy, and Devanna (1984) and of Beer, Spector, Lawrence, Quinas Mills, and Walton (1985) are those that contributed to putting the newly focused field of study on a sound theoretical foundation. Since then, the new macro approach has endowed HRM with a more strategic character. In the academic world, this has led to the discipline borrowing, from the strategy field, the theoretical foundations supporting the empirical evidence that a firm's human resources are key factors for its performance and competitive advantage (Wright & McMahan, 1992). The changes of approach that have taken place in research studies, which over time have acquired a more strategic dimension, are therefore in accordance with the new nature and responsibilities of the HRM function in firms.

On the other hand, the eminently empirical development of this discipline and, initially, the almost total absence of theoretical foundations, aroused numerous criticisms in

the scientific community (Mahoney & Deckop, 1986). The effect of this was that HRM research adopted arguments from various organizational theories. Key studies in this line of research are the theoretical reviews of Wright and McMahan (1992); Jackson and Schuler (1995); Delery and Doty (1996); and Snell, Youndt, and Wright (1996), which identified up to nine different approaches that have stimulated the theoretical modeling of this discipline. The result is a multidisciplinary field that borrows arguments from other areas like finance, psychology, economics, and strategy (Becker & Gerhart, 1996). Currently, the proliferation of theoretical studies analyzing the importance of HR in organizations calls for a parallel effort in empirical research to support their contributions. The need to find an equilibrium between the conceptual claims, originating from the classic theories of the organization, and empirical investigations characterizes the current state of research in this discipline.

In summary, the new strategic dimension of HRM, the multitude of theoretical and empirical studies carried out under the umbrella of HRM, and the claims that the studies considered to be significant in its development lack the necessary rigorous statistical backing all demonstrate the need for a comprehensive study of the intellectual structure of the HRM discipline from a quantitative perspective. Thus, all the findings that emerge from a qualitative review of the literature may or may not find firmer support in the results of the bibliometric analysis.

As has been stated, most of the studies published in this discipline have been carried out using the qualitative approach. Very few studies undertaken from the quantitative perspective have been found, and those that do exist are open to criticism: some are characterized by the weakness of the bibliometric technique employed, some have been centered exclusively on studies conducted in a Spanish context (Perez & Garrido, 2005), and others have focused on the international dimension of HRM (Ozbilgin, 2004). This contrasts with what has happened in other disciplines of the social sciences, where many studies have already been carried out from a quantitative approach (Table 1).

TABLE 1. Bibliometric studies conducted in other social research areas.

Studies	Area analyzed
Neeley (1981)	Management and social sciences
Culnan (1986, 1987)	Information systems management
Culnan, O'Reilly, & Chatman (1990)	Organizational behavior
Hoffman & Holbrook (1993)	Consumer research
Üsdiken & Pasadeos (1995)	Organization studies
Pasadeos, Phelps, & Kim (1998)	Advertising
White & McCain (1998)	Information science
Tahai & Meyer (1999)	Management
Pilkington & Liston-Heyes (1999)	Production and operations management
Ramos & Ruiz (2000)	Strategic change
Ramos & Ruiz (2001, 2004)	Strategic management
Ponzi (2002)	Knowledge management
Medina & Ramos (2004)	Organizational relationships

From the review made in this study, it seems timely and appropriate for the discipline that a quantitative study of this nature should be conducted, to complement and substantiate or question the conclusions of the qualitative approach.

Methodology

Instead of using books, doctoral theses, or scientific conference papers as our source of scientific documents for the purposes of this study, we have chosen to use articles published in a journal, because these can be considered "certified knowledge." This is the term commonly used to describe knowledge that has been submitted to the critical review of fellow researchers and has succeeded in gaining their approval. Research articles play a fundamental role in the certification process (Callon et al., 1993). The use of citations from articles in research journals, moreover, is a standard practice that enhances the reliability of results.

To obtain a representative sample of research articles on HR, the decision was made to take all the articles published in the journal *Human Resource Management* from 1985 through 2005. The reasoning behind this choice can be summarized as follows: (a) By their nature, and according to the Journal of Quality List¹ (JQL), all the published articles in this journal address issues related to HR, organization behavior, and industrial relations; this saves us the arduous task of sifting through other journals in search of articles relating to the discipline that concerns us. (b) This publication enjoys a reputation as a leader among management journals, a view endorsed by its inclusion in the Journal Citation Report of the Social Science Citation Index (SSCI),² with a high impact factor in 2005 (2.378) in comparison with other indexed journals specifically dealing with HR; in 2005, this journal occupied fourth place in the ranking by impact factor in the category of management. (c) The journal is highly regarded by researchers in the field; several JQL indicators also endorse the assessment of this journal as an international reference. (d) The articles published in the journal give a faithful reflection of the HRM discipline, since its editorial board puts no restrictions on the topics that it publishes. (e) The journal's entire contents can be found in databases of the type required for applying citation-analysis techniques.

There is, however, some bias involved in this choice. Many journals publish articles dealing with issues of HR but,

¹The Journal Quality List is a collation of journal rankings from more than 15 diverse sources. Among these are other rankings, prestigious publications of relevant universities and other bodies, of international scope. The list was originally collated while the editor was associated with the Bradford University School of Management (1997–2001). Since then, the list has been updated and extended periodically to keep it current. It is now in its 28th edition and the current version of the JQL contains 20 different rankings of 851 journals.

²Social Science Citation Index (SSCI) is a database that records not only the title, authors, source, keywords, and other data relating to each article, but also the bibliographic references contained in it. It is, an index of citations managed by the U.S. Institute for Scientific Information (ISI), which has recorded the contents of approximately 4100 journals of worldwide distribution dating back to 1972.

because they do not specialize in HR, a laborious selection process would be required in order to find articles dealing exclusively or mainly with HRM. Nor have all of these journals been copied onto databases of the type required for citation-analysis research. We are, however, reasonably confident that the HRM articles from the selected publication constitute a representative sample of all HRM research.

With respect to the period of analysis, our study covers the period during which the discipline achieved its full development, 1985–2005. As Schuler and Jackson (2005) state, from this date, businesses have changed from being mainly domestic in character to being more international and global, and the rate of change has accelerated, with the result that many companies are aware that competitive advantage can be created and sustained by their HR. Furthermore, the journal *HRM* begins to figure in the SSCI in that same year (1985), so for methodological reasons, the research could not consider years before 1985.

To construct our database, we retrieved all the articles published in the *Journal of Human Resource Management* from 1985 to 2005 from the SSCI via the CICA (Andalusian Center for Scientific Data). We then created a file with all the bibliographic references cited in said articles. There are, however, certain inconsistencies in the coding used in the database. Because the bibliometric software employed in this study recognizes only exactly coinciding strings of characters, a manual normalization process is needed to obtain complete bibliographic information to guarantee accuracy, especially in the spelling of authors' names, the journals in which the articles appear, and the date of the first edition of each book cited.

Bibliometric analyses have traditionally been divided into two categories, according to whether they yield activity indicators or relationship indicators. The first category, citation analysis, provides data relating to the impact or influence of research efforts, while the second, co-citation analysis, traces the links and interactions between different researchers and different fields of research. Citation and co-citation analyses, respectively, provide a full description of the content and development of the research in a field, and together they are the most sophisticated, in methodological terms, and the method most frequently utilized in bibliometrics (Callon et al., 1993; Ding, Gobinda, Schubert, & Weizhong, 2000). These reasons explain why it was appropriate to carry out this study in three stages.

The first stage was a citation analysis to compute the frequency of citation of the bibliographic references used, in all the articles published in the journal selected, from 1985 up to and including those from 2005, in order to identify the most-cited works, which are therefore the documents with highest impact on the scientific community. In this first stage we undertook a descriptive analysis of the most-cited studies, making a distinction in the ranking of these documents between journal articles and publications in book form. The second stage was the performance of a documents co-citation analysis (DCA), which includes a graphical presentation of results that enriches and complements previous results.

Document co-citation analysis was introduced by Small (1973) and developed by Small and Griffith (1974), Small, Sweeney, and Greenlee (1985), and Braam, Moed, and Van Raan (1991). Co-citation is a measure of the association between pairs of frequently cited documents (Small, 1973). The strength of co-citation is defined as the number of times two documents have been cited together: It provides a natural and quantitative way to group or cluster the cited documents (Small & Griffith, 1974). DCA starts with the distribution frequencies obtained from the citations, and a count is made of all the possible pairs formed from the most frequently cited documents, counting all the articles that cite both documents (Figure 1).

Because a large number of references usually have to be handled in this procedure, there must be a cutoff point, or citation threshold, which is applied to the references that exceed a preset number of citations. Specifically, in this study the correlation matrix constructed contained the measurements of proximity among the studies that exceeded a citation threshold of 1.45% of the citing sample. Thus, for a citing sample size equal to 551 articles, a citation threshold of 1.45% translates to the analysis of the joint citations among those references cited in 8 or more of the 551 articles analyzed. The establishment of a citation threshold represents a compromise design decision because it does influence the results obtained. To date, no previously published work has established a methodological guide on this point; therefore, our decision was made after several tests from which we obtained matrices of joint citations of a size suitable for computer treatment.

These counts were then arranged in a 74×74 square symmetrical matrix, in which the main diagonal remains

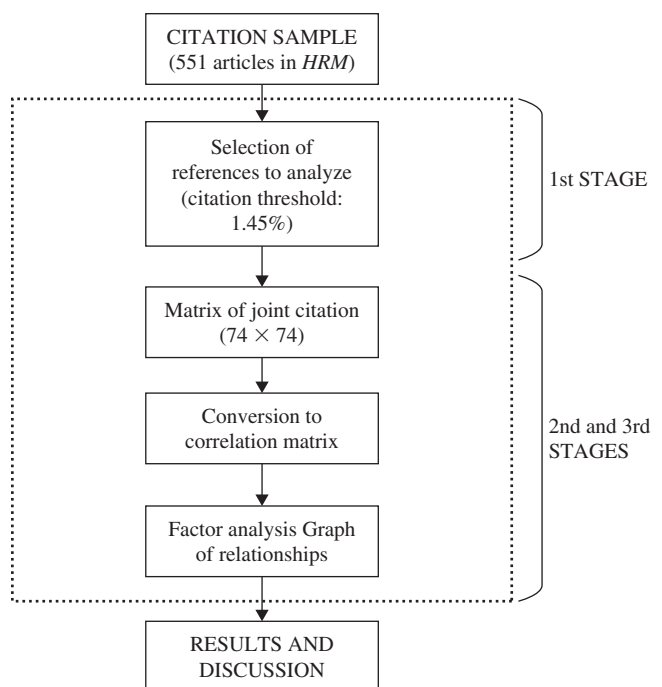


FIG. 1. Stages of the research process.

undefined because it does not make sense to count the co-citation of a document with itself.

Once the co-citation counts were obtained, we used the computer techniques developed by White and Griffith (1981) who introduced author co-citation analysis (ACA), and by others like McCain (1990) and White and McCain (1998), who developed the method further. According to this technique, the closeness of document points on such maps is algorithmically related to their similarity as perceived by the citers. We use r -Pearson as a measure of similarity between document pairs because it records the similarity in shape of their co-citation count profiles over all the other documents in the set (White & McCain; White, 2003). The use of r -Pearson as a measure of similarity rather than the raw co-citation frequency offers at least two advantages (White, 2003). First, for any given pair of documents, Pearson's correlation coefficient serves as a measure not of the frequency with which the two documents were cited (raw citation frequency), but of the degree of similarity between their co-citation profiles and those of the rest of the works considered: Two works that are always co-cited along with a third, but rarely with any others, will have strong positive correlation and can be said to be considered by the citing population to have some relationship or similarity to one another. Secondly, the correlation coefficient also overcomes differences of scale between a document that is very frequently cited and others very similar but cited less frequently, because this difference would limit the possibilities of being co-cited (Kerlinger, 1973; White & McCain, 1998).

There are two ways to treat the main diagonal when calculating correlation coefficients. The first of these (White & Griffith, 1981) involves taking the sum of the three highest scores and dividing them by two, which gives an overall indication of the relative importance of a given work within the field; the other option (McCain, 1990) is simply to consider it as missing data and to apply the criterion of omitting the two cases (pairwise deletion). For the purposes of this study, after trying both these methods, the second option was taken because nonsignificant differences were seen in the resulting configurations. For this reason and for the sake of simplicity, we decided to ignore the scores on the main diagonal when calculating the correlation coefficients for the pairs of documents.

The matrix obtained with this procedure is adequate for applying traditional multivariate statistical techniques, and thus for analyzing the underlying structure in the data. Normally, factor analysis, cluster analysis, and multidimensional scaling are utilized either jointly or separately. On this occasion, following the methodological recommendations in the studies of White and Griffith (1981), McCain (1990), and White and McCain (1998), we decided to perform a factor analysis, with varimax rotation, of the correlation matrices, and to utilize an algorithm based on a layout with node repulsion and equal-edge-length bias for the spatial representation. The citation maps corresponding to the matrix with coefficients of correlation higher or equal than 0.65, 0.75, and 0.85 respectively, were represented. These cutoff points were

established after several trials and because we considered that the homogeneous research topics identified facilitated the interpretation of the factors found in the factor analysis.

Specialist software for bibliometry has been utilized for processing the data. The principal application used is Bibexcel, developed by Professor Olle Persson in the Institute of Information Sciences of the Swedish University of Umeå. Bibexcel was used in checking files, counting frequencies and co-occurrences, and generating the raw co-citation matrix. Ucinet, Version VI, was used to obtain and format the correlation matrix, and the application Netdraw was used for the graphical representations. Version 11.5 of SPSS was utilized to perform the factor analysis.

Results and Discussion

Following the various stages in which this study has been carried out, we have obtained the following results from the bibliometric analysis performed on 551 studies written by a total of 851 authors.

First, the citation analysis provides a list with the most-cited references on HRM research published in the journal *HRM*. A total of 74 documents were identified, which gives us an idea of the most visible studies in the HRM discipline (Table 2).

Our descriptive analysis of these documents takes the form of the following reflections. Huselid (1995) and Peters and Waterman (1982) head the ranking of the most outstanding documents. It is notable that the top ten most-cited studies, with the exception of those of Huselid (1995) and Barney (1991), are books that deal with generalist topics like corporate culture and competitive advantage. It is also striking that the authors of the most-cited documents are all from U.S. universities, except for one who is from a Swedish university. With respect to the most-cited studies, previous findings such as those of Wright and Boswell (2002) corroborate our findings. These authors state that Huselid "serves as probably the seminal, and definitely most-cited work in this area," (p. 251), a claim also supported by Ferris et al. (2004). Wright and Boswell (2002) also state that from their study, the paper by Delaney and Huselid of 1996, that of Delery and Doty of 1996, and that of MacDuffie of 1995 would follow Huselid (1995) closely, which tends to corroborate our findings, since all of these are included in the 23 most-cited journal articles. Ferris et al. (2004) state that Pfeffer (1994) has been of great importance for the development of the HRM discipline, fundamentally for the stronger macro approach that it brought to research in HR. Further, the work of Fombrun et al. (1984) appears to be a key contribution in this discipline, as already stated in the qualitative review of the literature. Therefore, we can conclude that the discipline of HRM appears to sit firmly on the knowledge base that emerges out of the North American school, whose authors have written original work on competitive advantage, the strategic management of HR, and the resources-dependence theory. As to the nature of these studies, they are both theoretical and practical.

TABLE 2. Most-cited documents on HRM research published in the journal *Human Resource Management*.

Ranking	Most-cited documents	Number of citations	Ranking	Most-cited documents	Number of citations
1	Huselid (1995)	34	38	Ulrich et al. (1995)	11
2	Peters & Waterman (1982)	33	39	Hall (1976)	10
3	Hofstede (1980)	29	40	Peters (1987)	10
4	Barney (1991)	25	41	Prahalad & Hamel (1990)	10
5	Ulrich & Lake (1990)	24	42	Rousseau (1989)	10
6	Ulrich (1997)	22	43	Schein (1978)	10
7	Kanter (1983)	21	44	Tichy (1983)	10
8	Pfeffer (1994)	19	45	Vroom (1964)	10
9	Schuler & Jackson (1987)	18	46	Yin (1984)	10
10	Porter (1985)	18	47	Buono & Bowditch (1989)	9
11	Porter (1980)	17	48	Delaney & Huselid (1996)	9
12	Deal & Kennedy (1982)	16	49	Dyer (1984)	9
13	Delery & Doty (1996)	16	50	Hamel & Prahalad (1994)	9
14	Kanter (1977)	16	51	Katz & Kahn (1966)	9
15	Arthur (1994)	15	52	Miles & Snow (1984)	9
16	Bartlett & Ghoshal (1989)	14	53	Pfeffer & Salancik (1978)	9
17	Fombrun, Tichy, & Devanna (1984)	14	54	Pfeffer (1998)	9
18	Ouchi (1981)	14	55	Schuler (1992)	9
19	Schein (1985)	14	56	Stewart (1996)	9
20	Senge (1990)	14	57	Terpstra & Rozell (1993)	9
21	Cascio (1982)	13	58	Bennis & Nanus (1985)	8
22	Lawler (1981)	13	59	Edstrom & Galbraith (1977)	8
23	Tichy et al. (1982)	13	60	Fitzenz (1984)	8
24	Wright & McMahan (1992)	13	61	Friedman (1986)	8
25	Becker & Gerhart (1996)	12	62	Galbraith (1973)	8
26	Chandler (1962)	12	63	Goleman (1998)	8
27	March & Simon (1958)	12	64	Hackman & Oldham (1980)	8
28	Adler (1986)	11	65	Harris & Schaubroeck (1988)	8
29	Dowling & Schuler (1990)	11	66	Lawler (1986)	8
30	Kotter (1982)	11	67	Miles & Snow (1978)	8
31	Lado & Wilson (1994)	11	68	Quinn (1988)	8
32	McCall, Lombardo, & Morrison (1988)	11	69	Rynes et al. (2002)	8
33	Nunnally (1978)	11	70	Tung (1988)	8
34	Quinn & Rohrbaugh (1983)	11	71	Lawrence & Lorsch (1967)	8
35	Schuler & MacMillan (1984)	11	72	MacDuffie (1995)	8
36	Thompson (1967)	11	73	Podsakoff & Organ (1986)	8
37	Tichy & Devanna (1986)	11	74	Pascale & Athos (1981)	8

A more detailed discussion of the results is presented in two parts, the first dealing with the articles published in journals, and the second covering the books.

Of the 74 most-cited studies, 28 are journal articles and 46 are books. This may be indicative of the youth of this discipline, since it appears that when an area of knowledge is supported more in books than in articles, it is because the area is still in the early stages of growth. However, this is a tendency that appears to be changing; judging from the most-cited work ranking by dates, the earliest dated works are articles. On the other hand, given that most of the articles that appear in the journal considered in this study are American in origin, this indicates a contrast with the findings of Üsdiken and Pasadeos (1995) regarding the tendency among U.S. authors to use articles published in journals as their source of data for research work.

The analysis of these journal articles leads us to the following conclusions. First, from the nature of the journal in which the article is published, the most-cited articles can

be grouped under three distinctive headings. The first corresponds to articles published in general management journals, all included in the database of the SSCI and therefore with impact factors; these are the three journals of the Academy of Management, mainly the *Academy of Management Journal*; and others like the *Journal of Management*, and *Management Science*, as well as the *Harvard Business Review*, *Administrative Science Quarterly*, and *Organizational Dynamics*. The articles in the second group have a profile more focused on HR and industrial relations, appearing in journals such as *Human Resource Management*, *Industrial Relations*, and *Industrial Relations Labour Review*, as the most notable. Finally, a third and different position is represented by papers published in *Personnel Psychology*, which has a psychological perspective. We believe this analysis reinforces the argument presented by Mahoney and Deckop (1986), Wright and McMahan (1992), and Ferris et al. (2004) that the HRM discipline has been, since its origins, in a very fragmented state, precisely because both the theoretical and empirical

work in HRM have been drawing largely on lines of thinking originating from a variety of different areas of knowledge: organizational management, industrial relations, and psychology. Second, concerning the nationality of the journals in which the most-cited articles have been published, it is significant that all are North American, and the publications appearing with the most frequency are those of the State University of New York, Texas A&M, Michigan and Iowa. Third, with respect to the date of publication of these journal articles, it is notable that most correspond to the second half of the 1980s and to the decade of the 1990s, showing this period of some 15 years to be the most fruitful period and one in which the discipline became consolidated. Only two articles, one from 1977 (Edstrom & Galbraith) and another from 2002 (Rynes, Colbert, & Brown), appear in this list but fall outside this period of predominance. The appearance of the article of Rynes et al. (2002) among the 28 most-cited articles is particularly interesting because relatively little time has elapsed since its publication. This result further strengthens the argument that the discipline is still in the stage of growth and consolidation. Fourth, with respect to the number of authors who are usually responsible for the most-cited articles, most papers are the work of either a single author or of two authors; the articles published with three or more authors are relatively few in number. Finally, with respect to the topics dealt with in these articles, their diversity is the most notable feature, and this is considered in detail in the second stage of the analysis.

From the analysis of the most-cited books, the following main conclusions can be drawn. First, with respect to the publishers, all are North American, with the exception of one European. Among the leading publishers are Addison-Wesley and Wiley. The rest of the most-cited publications come from a variety of other publishers. Second, with respect

to the date of publication of books, it is notable that most correspond to the 1960s, '70s, and '80s. The oldest published book cited is March and Simon (1958); by virtue of longevity, it has had the most opportunity to be cited. In contrast, the book with the most recent date is Hamel and Prahalad (1994); this work has had less time for exposure to the scientific community, and yet appears in the ranking of most-cited books. Third, several common themes can be identified among the topics covered by these books: analysis of competitive advantage, international HRM, and other aspects of general management and corporate culture that are obligatory references when dealing with these subjects. It is significant that, among these most-cited books, there are three publications with methodological content, indicating the bibliographic sources or methodology most utilized in the research work undertaken in this field: the case study, meta-analysis, and psychometrics.

The second stage of our research comprises co-citation analysis, in which we have performed a principal components or factor analysis. The results of this analysis (7 factors) generate information about the main areas of study on which research in the discipline has been focusing; these allow us to identify how the most-cited studies have contributed to the construction of the discipline of HRM (Table 3).

Seven components were extracted from this analysis. The first of these has the most weight due to having the most authors and studies represented in it; this predominant factor or study area can therefore be considered the intellectual core of the discipline. Our efforts have been directed toward matching each of the factors identified with a specific area of study that is relevant in the discipline. Thus the first component can be given the generic name of "HR and performance." The most notable studies in this component are those concerned with the relationships between HRM in all

TABLE 3. Factor analysis.

Matrix of rotated components (a)	Factors					Factors 6 and 7
	HR and performance	Culture and motivation	International management of HR	Strategy, structure, and environment	Strategic management of HR	
Becker & Gerhart (1996)	0.95					
Delaney & Huselid (1996)	0.94					
Ulrich (1997)	0.94					
Stewart (1996)	0.93					
Huselid (1995)	0.93					
Delery & Doty (1996)	0.93					
Ulrich, Brockbank, Yeung, & Lake (1995)	0.93					
Terpstra & Rozell (1993)	0.93					
MacDuffie (1995)	0.92					
Arthur (1994)	0.92					
Fitzenz (1984)	0.92					
Wright & McMahan (1992)	0.91					
Barney (1991)	0.91					
Schuler (1992)	0.91					
Lado & Wilson (1994)	0.91					

(Continued)

TABLE 3. (Continued)

Matrix of rotated components (a)	Factors					Factors 6 and 7
	HR and performance	Culture and motivation	International management of HR	Strategy, structure, and environment	Strategic management of HR	
Senge (1990)	0.90					
Prahalad & Hamel (1990)	0.90					
Pfeffer (1998)	0.89					
Yin (1984)	0.89					
Cascio (1982)	0.89					
Pfeffer (1994)	0.88					
Lawler (1986)	0.85					
Goleman (1998)	0.82					
Ulrich & Lake (1990)	0.78					
Schuler & Jackson (1987)	0.76					
Quinn & Rohrbaugh (1983)	0.73			0.53		
Kotter (1982)	-0.72					
Schuler & MacMillan (1984)	0.72				0.56	
Hall (1976)	-0.7					
Friedman (1986)	-0.68					
Kanter (1977)	-0.67					
Miles & Snow (1984)	0.67				0.56	
Lawler (1981)	-0.64	0.55				
Hamel & Prahalad (1994)	0.64		0.59			
Schein (1978)	-0.62					
McCall, Lombardo, & Morrison (1988)	-0.61					
Rynes, Colbert, & Brown (2002)	0.61					
Tichy (1983)	-0.59					
Bennis & Nanus (1985)	-0.58		0.52			
Quinn (1988)	-0.58	0.53				
March & Simon (1958)	-0.57					
Rousseau (1989)	-0.5					
Schein (1985)		0.81				
Pascale & Athos (1981)		0.79				
Ouchi (1981)		0.78				
Peters & Waterman (1982)	-0.51	0.77				
Vroom (1964)		0.77				
Deal & Kennedy (1982)	-0.51	0.77				
Edstrom & Galbraith (1977)		0.71				
Buono & Bowditch (1989)		0.67				
Kanter (1983)		0.58				
Tung (1988)			0.9			
Adler (1986)			0.86			
Dowling & Schuler (1990)			0.86			
Bartlett & Ghoshal (1989)			0.85			
Hackman & Oldham (1980)			-0.69			
Katz & Kahn (1966)			-0.67			
Hofstede (1980)		0.64	0.65			
Tichy & Devanna (1986)	-0.56		0.61			
Porter (1985)			0.61	0.5		
Galbraith (1973)				0.88		
Thompson (1967)				0.88		
Chandler (1962)				0.85		
Lawrence & Lorsch (1967)				0.83		
Miles & Snow (1978)				0.83		
Pfeffer & Salancik (1978)				0.82		
Porter (1980)			0.52	0.73		
Dyer (1984)					0.89	
Tichy, Fombrun, & Devanna (1982)					0.85	
Fombrun, Tichy, & Devanna (1984)					0.74	
Nunnally (1978)					0.69	
Peters (1987)						0.67
Podsakoff & Organ (1986)						0.69
Harris & Schaubroeck (1988)						0.6

Method of extraction: Principal components analysis. Method of rotation: Varimax normalization with Kaiser.

TABLE 4. Variance explained by the components in the factor analysis.

Component	Initial eigenvalues			Sums of the squared saturations of the extraction			Sum of the squared saturations of the rotation		
	Total	% of total variance	Cumulative %	Total	% of total variance	Cumulative %	Total	% of total variance	Cumulative %
1	34,741	46.948	46.948	34,741	46.948	46.948	30,465	41.169	41.169
2	10,375	14.020	60.968	10,375	14.020	60.968	9,001	12.164	53.333
3	7,231	9.771	70.740	7,231	9.771	70.740	8,104	10.951	64.285
4	5,922	8.003	78.743	5,922	8.003	78.743	7,315	9.885	74.170
5	3,091	4.178	82.920	3,091	4.178	82.920	5,262	7.110	81.281
6	1,235	1.669	84.590	1,235	1.669	84.590	1,932	2.611	83.892
7	1,142	1.544	86.134	1,142	1.544	86.134	1,659	2.241	86.134

its facets (HR practices, management, and executives), and the performance of the company, especially with respect to its competitive advantage. It is interesting to note that, within this component, there is an influential book on the methodology of case studies (Yin, 1984), which suggests to us that this is the methodology most often utilized for the analysis of this relationship.

The second component can be labeled as “culture and motivation.” This component comprises studies of a more psychological orientation, and deals with particular topics like the Japanese style of management (Ouchi, 1981; Pascale & Athos, 1981), as well the themes of culture and motivation in new organizational contexts marked by innovation (Kanter, 1983) and the processes of organizational restructuring by way of mergers and acquisitions (Buono & Bowditch, 1989).

The third component, termed “international management of HR,” brings together those studies relevant for the discipline of HRM in its international dimension, and includes two key references for understanding the competitive advantage of firms: Porter (1985) and Hamel and Prahalad (1994). Notable among the studies grouped under this third factor are several that analyze the challenges facing new leaders who compete in an international context where cultural differences and the management of expatriates on foreign assignments are increasingly significant.

The fourth component includes those HRM studies associated with strategy, organizational structure, and context. Among this group are studies making classic contributions related to organization design and the context of the organization, like those of Chandler (1962), Lawrence and Lorsch (1967), Galbraith (1973), and Miles and Snow (1978). We have named this factor “strategy, structure, and context.”

The fifth component has been designated “strategic human resource management,” and includes classic works on the strategic dimension of the management of human resources, that is, the contribution of the strategy adopted with respect to human resources to the competitive advantage of an organization, and the consideration of human resources as strategic resources. Notable among this group are specific studies of the strategic management of human resources, like those of Tichy, Fombrun, and Devanna (1982) and Fombrun et al.

(1984), who can be considered the pioneer authors in the study of the human resources of companies from a strategic perspective.

The first five factors alone explain 81.3% of the variance (Table 4).

To complete this analysis, we found two other factors, the sixth and seventh, of minor weight and comprised of three studies. Since these had very little explanatory power, and add no significant value to the results, they have been discounted. Thus we report the factor analysis as producing the five factors, as described and discussed above.

The central research themes identified above through factor analysis coincide exactly with those reported by Schuler and Jackson (2005) to be the key topics in HRM research, which those authors divide into two generic groupings: strategic management and international management of HR, and more specifically into the five themes that emerge from our study.

The preceding two stages of analysis are completed and taken further with the third stage of our research, the graphs of relationships, which facilitate the visual identification of the main lines of research in the discipline and therefore depict its intellectual structure. As Small (1999, p. 799) states, “a spatial representation can facilitate our understanding of conceptual relationships and developments.” By presenting citation maps in three stages, successively increasing the value of the correlation index, we analyze the network of correlations between studies from a denser level to one less dense; we thus reach our conclusions on which are the most relevant authors and studies, and thus which themes constitute the nucleus of the HRM discipline.

In the first stage ($r \geq 0.65$), we are able to identify six distinct groups of studies, although what is clearly seen at first glance is the existence of a central and dense nucleus of research that constitutes the intellectual base of the HRM discipline (represented with circles in Figure 2). This line of research incorporates numerous studies of various kinds, which will be more clearly identified in the second and third stages as the index of correlation is increased. However, what can be seen is that the studies highlighted here are included in the first component identified in the factor analysis, which we have labeled “HR and performance.” The other five groups

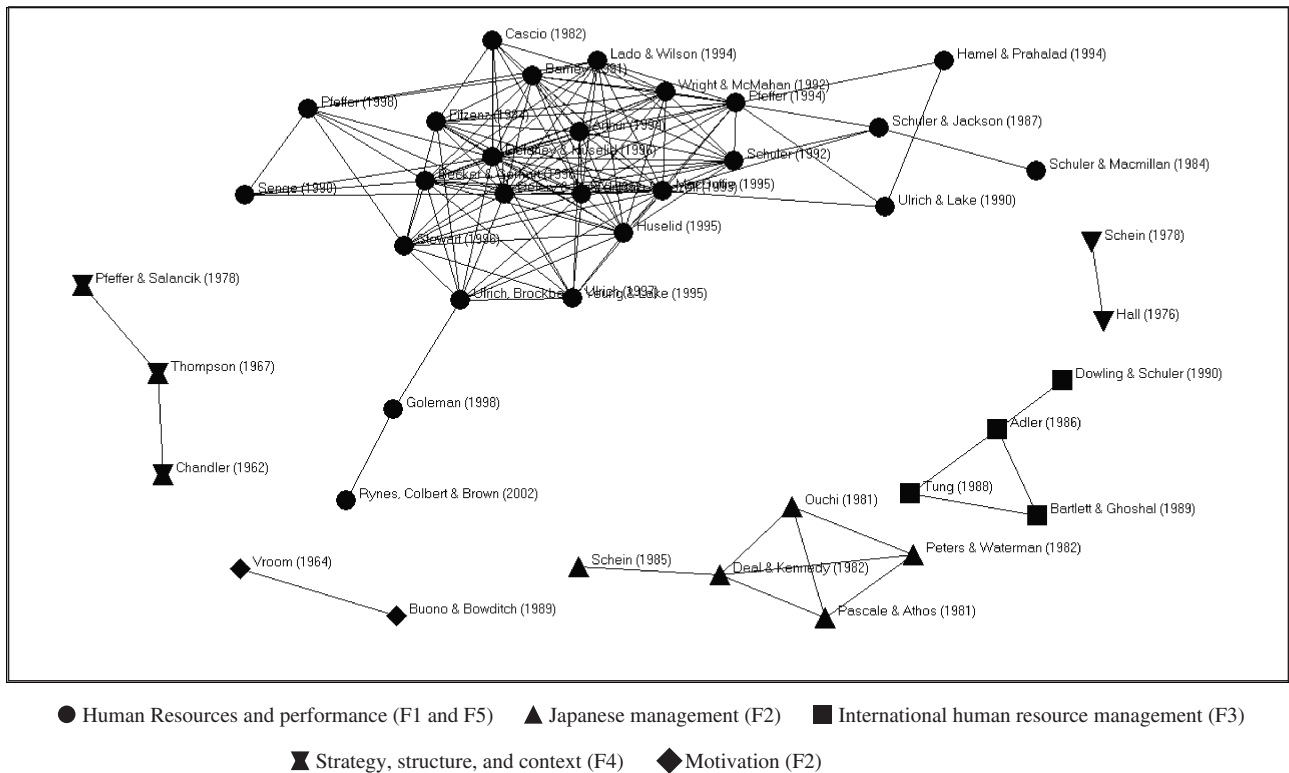


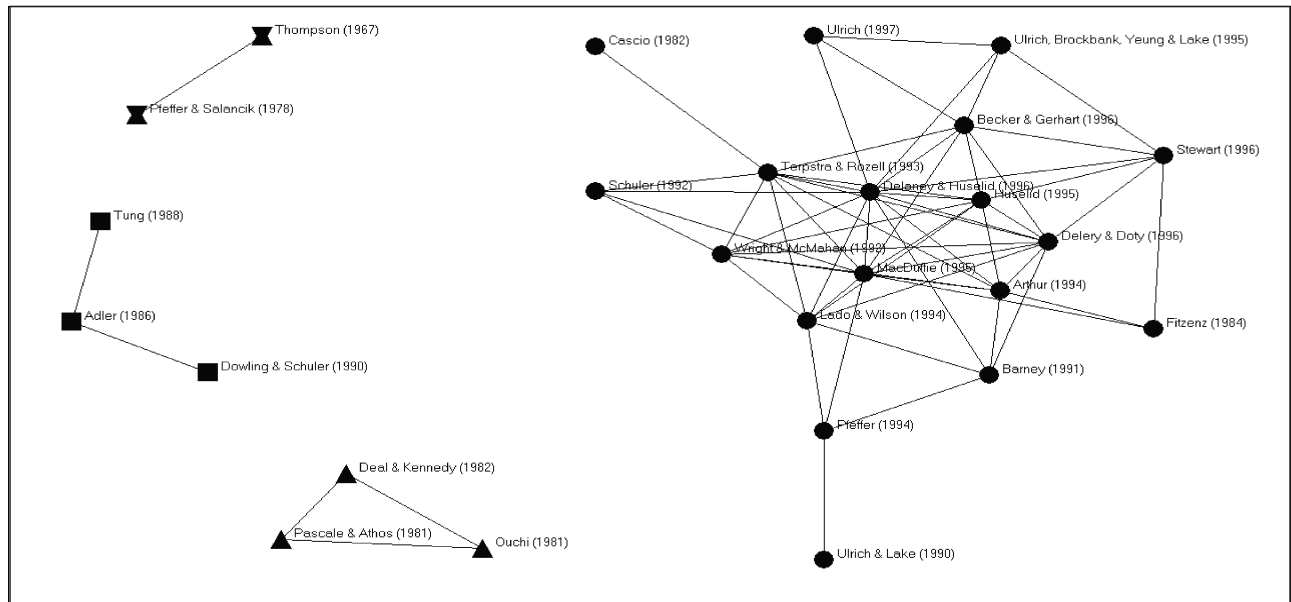
FIG. 2. Intellectual structure of the discipline of HRM: 1st stage, ($r \geq 0.65$).

correspond to the following themes. One group, represented by two triangles, apex to apex, reveals the existence of classic works on strategy, structure, and the role of the context in the competitive advantage of organizations. This line of research corresponds to the fourth component of the factor analysis. A second group, represented with diamonds, includes two studies that analyze the human aspects of mergers and acquisitions, focusing especially on the motivation of the employees. A third group, with upward triangles, identifies a line of research analyzing the role of the organization culture in a company's success, focusing especially on the Japanese style of management that transformed the way North American companies conceive of management. These two groups described above are included together in Factor 2. A fourth group of studies, indicated with squares, demonstrates a line of thinking that considers HRM in its international dimension; this corresponds to Factor 3. Finally, and represented with downward triangles, is a small group of studies analyzing HRM in the context of the career paths of individuals in the company. Both studies are included in the first factor, but their common theme related to the perspective of careers in companies appears separately in this graph.

In the second stage ($r \geq 0.75$), the six groups that appeared in the first stage are now indicated as four distinct areas of research; these four match exactly the top four components produced by the factor analysis (Figure 3). This is now giving us a clearer picture of which studies constitute the central core of the HRM discipline. As can be observed, a dominant area of research continues to emerge visually; important in this area

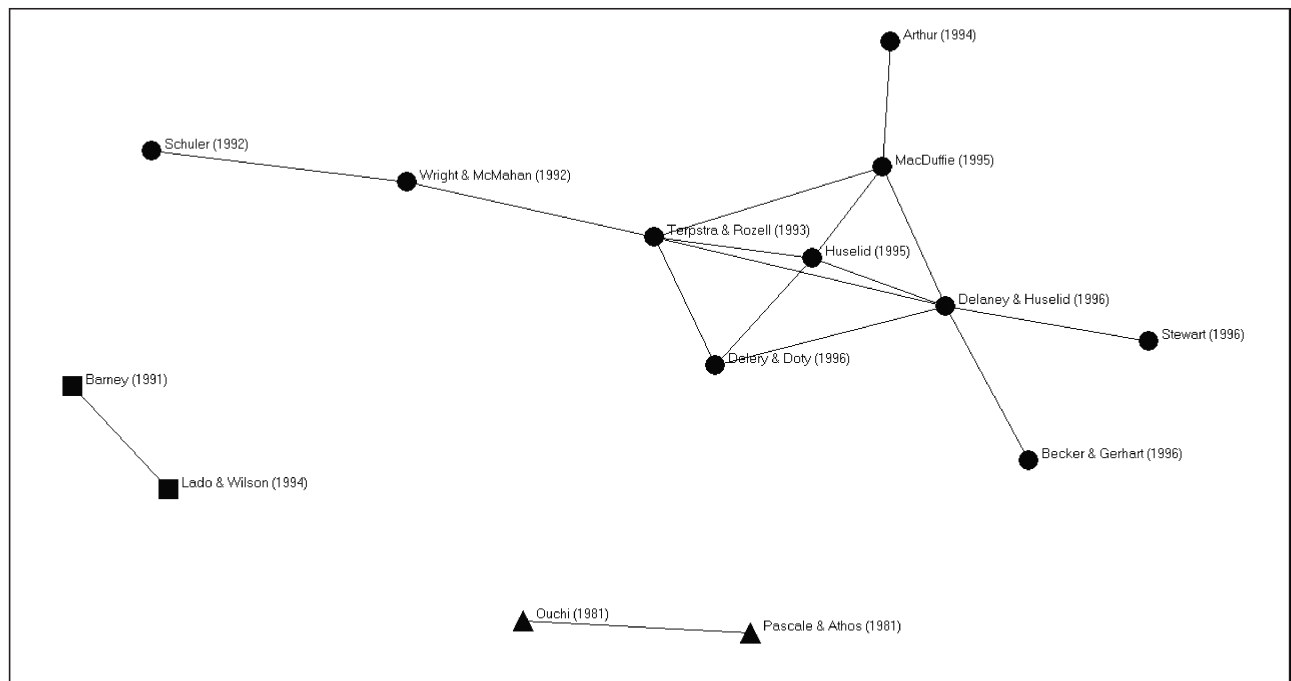
are key studies related to the strategic management of human resources and the contribution of the human resources to the performance of the company (Factor 1). Three other groups that appeared in the first stage remain. One group includes studies analyzing the international management of human resources, represented with squares, and corresponding to Factor 3. The subject of another group is the Japanese cultures and styles of people management, shown with upward triangles and corresponding to Factor 2. Lastly, this stage identifies a fourth group, represented with two triangles, apex to apex, containing the classic studies on strategy, structure, and context; this corresponds to Factor 4. However, the main effect of increasing the correlation index is to reveal which are the most outstanding studies in each distinctive line of research. Therefore, comparing the first and second stages, it can be seen that the groups of studies on career paths and on motivation do not appear when the higher degree of correlation between the cited studies is considered.

In the third stage of the analysis, corresponding to a correlation index equal to or higher than 0.85, three broad lines of research can be identified (Figure 4). In Figure 4, represented with circles, the main grouping contains those studies that constitute the first and principal line of research identified in the two previous stages. These studies can be considered to constitute the basic core of the intellectual structure of the discipline. It is comprised of studies investigating the incidence of HR practices on the firm's performance. This result is consistent with those presented by Wright and Boswell (2002), who find that research with respect to this relationship has



● Human Resources and performance (F1 and F5) ▲ Japanese management (F2) ■ International human resource management (F3)
 ▼ Strategy, structure, and context (F4)

FIG. 3. Intellectual structure of the discipline of HRM: 2nd stage ($r \geq 0.75$).



● Human Resources and performance (F1) ▲ Japanese management (F2) ■ Resources based view (F1)

FIG. 4. Intellectual structure of the discipline of HRM: 3rd stage ($r \geq 0.85$).

dominated work in the field of HR. Interestingly, two of the studies that are included in this line are theoretical, and constitute two essential references in the study of the theories and thinking that explain the relationships between HRM practices and the performance of the firm: Delery and Doty (1996) and Wright and McMahan (1992). If this evidence

is compared with the results of our factor analysis, we can see that the studies represented by circles in the graphs of relationships are included in the first component. As already stated, this was the most representative and dominant factor. There are another two important lines of work represented in this network of relationships. The first, shown with squares,

consists of two classic studies under the resources-based view of this relationship. The more notable is the work of Barney (1991), which considers HR as the strategic resource necessary for creating competitive advantages for a company. This result indicates which theoretical approach has been utilized in support of the studies previously mentioned, and therefore reveals the theoretical foundations on which the discipline of HRM has been built: the resources-based view. Both studies that comprise this line of research (Barney; Lado & Wilson, 1994) are included in the first factor, human resource management and performance, since the relationships between HRM and the performance of the company are found to be most firmly supported by this theoretical approach. The third line of research, shown with upward triangles, also comprises two studies; these collect and present the evidence for the Japanese case, and their object is to develop "Theory Z." As Mahoney and Deckop (1986) state, HRM has been designed to put this theory into practice. These studies are included in the second factor, which we designate "culture and motivation." From this last stage, we can conclude that the most influential investigations in the area of HR have been those emphasizing the strategic character of HR, whose essential function lies in improving the organizational performance and ultimately in optimizing this essential element in the competitive advantage of a company.

Conclusions, Limitations, and Future Lines of Research

The intellectual basis upon which a discipline develops is largely revealed in the citations that researchers include in their writings. The citations made in the articles published over a given period of time and in a given area of research make up what has come to be termed the *literature in active circulation* (Sáez, Gómez, Ramirez, & Valera, 1999). This term is used to refer to the literature containing the live data in use at a particular time and reveals the intellectual structure from which the discipline is evolving. A study of the references that appear in HRM research articles is a key to exploring and understanding the origins of scientific data accepted and utilized by the community of specialists in the discipline. Although numerous studies have described the state and evolution of HRM and have identified several broad but distinctive lines of research, there are no bibliometric studies that attempt to quantify and address the intellectual structure of research in this field. This article, therefore, identifies the most influential published sources and explores the changes that have come about in the intellectual structure of research on HRM using the bibliographic references cited by a significant group of authors active in the discipline. This analysis is conducted under the bibliometric hypothesis that these references will be a reliable indication of the influence of certain sources of data in the works of these authors. The findings presented and discussed in the previous section lead to the following conclusions:

Of the 74 most influential research studies, those presented in book form are more numerous than those in the

form of journal articles. We interpret this as indicating that scientific research in the discipline needs to continue growing and maturing, as others have also concluded (Ferris et al., 2004).

The authors who are most notable for having more than one study among the most-cited references in the area are Porter, Tichy, Pfeffer, Huselid, and Schuler. A review of the work published by these researchers demonstrates the importance of considering the human resource as a key factor in the firms's competitive advantage.

The theoretical approach under which most of the studies have been structured is strongly linked to the resource-based view of the firm, and this tends to strengthen even more the previous arguments discussed. In addition, this result can be seen as supporting the criticism traditionally made of this discipline: that it lacks its own solid and specific body of theory, which has led writers on HRM to rely on the theoretical bases of related disciplines like strategic management (Wright & McMahan, 1992; Delery & Doty, 1996; Snell et al., 1996).

The most-cited studies within the area adopt a clear macroeconomic approach, centered on the analysis of organizational performance, which is consistent with the conclusion, put forward by Wright and Boswell (2002) and Ferris et al. (2004), that most of the research carried out on HRM has this orientation. In this context, Wright and Boswell (p. 250) state, "in the upper left-hand quadrant, we see research examining systems of HR practices at the organizational level of analysis . . . a number of studies fall here, and the number of studies focused here seems to be increasing exponentially."

With respect to the period in which the most-cited studies have been published, the years from 1985 to 2000 for articles, and the 1960–1990 period for books, we can state that this coincides with the period in which the strategic dimension of HRM has become prominent, as also stated by Wright and Boswell (2002). Therefore, the HRM discipline can be considered to have achieved its most rigorous scientific foundations concurrently with acquiring this strategic dimension.

Finally, the particular topics on which research in the discipline has been focused are HRM and its contribution to the performance and especially the competitive advantage of organizations; the management of HR at the international scale; and the empirical evidence provided by the various analyses of the Japanese case, and which are aimed at giving American companies examples of how success can be achieved by effective HRM.

Regrettably, however, this study has its limitations, some resulting from the research design and others a direct consequence of the bibliometric techniques that were employed. Among the main drawbacks with the research design is the selection of one single journal. By selecting only one journal, we inevitably place a limit on the potential scope of our results, since the documents that were analyzed were a mere fraction of all research papers dealing with HRM. However, we are reasonably confident that the literature that was analyzed is representative of the major research efforts that have been made in this subject area.

Meanwhile, this study is also subject to the limitations that are inherent in bibliometric techniques. Thus, for example, when compiling citations, it is impossible to distinguish the motives for which they were made: whether the author's intention was to use previous works to help build up a theoretical framework, or to criticize the document cited, to display the author's knowledge, to adorn the text, to include references from the particular journal in which publication was sought as a strategy to secure the article's publication, or simply to mention one of the author's own previous studies. In contrast to this, missing references to certain works may be a result of obliteration; in other words, the omission of references to works that have become taken for granted to such a degree by the scientific community that they are not longer expressly cited, or, worse still, are for some obscure reason deliberately omitted. These limitations are compensated to some degree by the strict blind-review process to which the journal in question subjects articles before their publication.

Further, since the citations used for the purposes of this study are taken from a given period, works published toward the end of this period have not been exposed to the scientific community as long as those published earlier and are therefore less likely to be cited. This is an undeniable fact but, since we consider the number of citations not so much as a sign of quality but rather of influence, it is fair to acknowledge that more recent works may not have had sufficient time to influence the literature in this subject area.

Co-citation analysis also has its drawbacks. This technique permits the classification of only a very small fraction of the documents cited and interpretation of the resulting maps is inevitably subjective. However, although some documents are omitted, the clusters that emerge indirectly reveal the existence of a group of scientists who share the same interests and coincide in citing the same references (Callon et al., 1993).

Some of the limitations we have mentioned are without solution; these, however, are not exclusive to bibliometrics but are present in any nonexperimental discipline. Other limitations, however, can be addressed and should provide an incentive to improve on the techniques used in this study. In this respect, we intend, in future research, to enlarge the sample to include other journals. Thus, since the publication in which this bibliometric analysis has been undertaken belongs to an American publisher, Wiley InterScience, the results and conclusions of the work can be enhanced by introducing citations of articles from another publication of reference in the field of HR with a high index of impact, such as the *International Journal of Human Resource Management*, which is published in Europe. By introducing another publication, a more comprehensive descriptive analysis of the evolution of the discipline over time could be provided, not based on just one journal and one geographic orientation.

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