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Foundations and trends in performance management. A twenty-five years bibliometric analysis in business and public administration domains

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Abstract Our paper analyses 25 years of performance management research published in the English-language journals, included in SSCI database, separating the business domain from public sector one. We used a content analysis for showing the relationships between the subfields of performance management and the time evolution. Through a multiple correspondence analysis based on keywords we provide a framework to track this literature over the 25-year period. We conclude the paper with a discussion on future pathways in the performance management literature.

Keywords Performance management · Multiple correspondence analysis · Historiograph · Scientometrics

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Introduction

Scholars' interest to performance management has dramatically grown in the last two decades. The development has been raging also in the practice. Today performance management practices are widespread in all industries and for all kind of organizations (Bititci et al. 2012; Neely 2005).

In this paper we analyze the evolution of the performance management literature based on the analysis of the content of the past 25 years of performance management research published in the scientific journals in two different subfields, namely, *Business and Public Administration*. Our aim is to map the conceptual structure and evolution of the performance management in both of them for addressing scholars in positioning their future research work. Our paper can be contributive because in the field there is little consensus among scholars who come from many different disciplines (Franco-Santos et al. 2007; Taticchi et al. 2010; Bititci et al. 2012; Neely 2005; Neely et al. 2004; Neely 2002; Marr and Schiuma 2003). Scholars' background heterogeneity brings different research questions, theoretical bases and methodological approaches that impede to have a shared body of knowledge. Understanding deeply the conceptual structure of the field and its evolution has an added value for scholars, also for reducing the gap with the practice that often considers performance management dysfunctional (Richard et al. 2009; Ridgway 1956).

Other bibliometric studies on performance measurement were published (Bititci et al. 2012; Taticchi et al. 2010; Neely 2005; Marr and Schiuma 2003). Similarly to them, our analysis is based on quantitative data, but differently we did not use citations and co-citations analysis. According to Furrer et al. (2008), we classified selected articles through macro-keywords. Furthermore, unlike Bititci et al.' (2012) and Neely' (2005) papers, we did not select articles published in a small set of journals, but we use all the papers published in English and included in Social Science Citation Index (SSCI) of Thomson Reuters extracted through two all-inclusive keywords. Finally, differently from other bibliometric articles on performance management, we perform our analysis distinguishing business subfield and public administration subfield in order to understand whether the developmental trajectories are similar or different and which direction they are taking.

The paper is structured as follows. First, a brief overview of the development of performance measurement and management is provided. This is followed by a description of the methods employed in the study. Then we present the results of the analysis of the content of the performance management literature and its evolution over time. In this section we present also the most published authors and the most influential papers. Finally, in the conclusions we discuss about the future trajectories of the performance management literature and provide some insights into the possible future development of the field.

Development of performance management: an overview

We provide a historical perspective on the evolution of the performance management field. It is a broad but non-exhaustive overview. Some textbooks have also synthesized the field's development (Bourne 2001). Also various articles have showed the historical path of the discipline (Bititci et al. 2012; Taticchi et al. 2010; Johnson 1981). They are very diverse and distinguish various development phases.

The "prehistory" of performance measurement

We start presenting the historical development of the field until the end of '80. We divided this period into four stages: (1) the origin in the eighteenth century; (2) the almost 200 years among the Industrial Revolution and the II World War; (3) the decade of '50; and (4) the 2 decades between '60 and '80.

The origins of performance measurement can be traced back to the thirteenth century (Johnson 1981). The Florentine merchants created a double entry accounting system, which contributed to a more efficient conduct of business activity. At the beginning, it measured the owner's capital investments and monitored changes in that investment. Over time, the double entry accounting became a system for measuring profitability and changes in financial position and for assisting management by numbers (Edwards et al. 2009).

Until the industrial revolution the bookkeeping was the only performance measurement technique. Industrialization changed the business features with mass production and work specialization. The focus of measuring becomes employee productivity until the end of World War II. During '20 and '30s, under the "scientific management" umbrella, the practice of engineering merges with the principles of economics, which has the origins of modern management consulting (Cody 1986: 11).

The U.S. victory in war allows American company to grow fast through internationalization. Big business adopted the divisional model as organizational form (Chandler 1962). During the '50s, performance measurement shifted to growth, risk and financial indicators (Johnson and Kaplan 1987; Kaplan 1983; Keegan et al. 1989; Neely et al. 1995). While between 1960 and 1980 the growing relevance of marketing and consumers' preferences developed an interest in measures of quality, customer satisfaction, time, flexibility (Hayes and Abernathy 1980; Kaplan 1984; Slack 1983).

The "prehistory" shows that in a first long developmental phase the main requirement was performance measurement. The spectrum of measurement has expanded over time, from finance to productivity and marketing in a progressive acceleration.

The performance management "r-evolution"

The development of research in performance management has been speeded up over the past 25 years (Bititci et al. 2012; Neely 2005). Neely (1999) named "performance management revolution" the explosion of research between 1994 and 1996. It occurred after the appearance of two cornerstones: the Johnson and Kaplan's book entitled *Relevance Lost—The Rise and Fall of Management Accounting* (1987) and the Eccles' article *The performance measurement manifesto* on Harvard Business Review (1991). These two contributions are a turning point. With Johnson and Kaplan (1987) performance measurement has gained increasing popularity in both practice and research. According to the authors, the beginning of '80 determined the obsolescence of management accounting systems. These tools failed to provide relevant information for management decision making and for measuring firm performance in new organizational contexts, shaped by globalization, market volatility, significant IT advances, firm collaboration, innovative organizational structures and management practices. All organizations needed to reexamine the design and use of management accounting system in order to fit to the external and internal changes. So, Johnson and Kaplan called for an evolution of theory to fill the gap among research, education and practice. Eccles (1991) gave voice to these ambitions that grew in the academic world and in organizations through his manifesto where he

called for a paradigm shift away from conventional financial measures of performance to a broader set.

The '80s marked the definitive consecration of strategy as a discipline (Nerur et al. 2007). Michael E. Porter published his seminal books, which still form the cornerstones of the discipline (Ramos-Rodriguez and Ruiz-Navarro 2004). Strategic Management Journal appeared since 1980 to become the most regarded by researchers in the field (Ramos-Rodriguez and Ruiz-Navarro 2004). This marked a crucial turning point also for performance management research with an increasing strategic emphasis. First, academia and practice were directed to a long-term period to avoid the dominant tendency to result in short-termist and consequent dysfunctional implications (Neely 2005). Second, academia started providing management with intelligible frameworks (Taticchi et al. 2010). Among these, the Balanced Scorecard proposed by Kaplan and Norton (1992, 1996a, b) is certainly the most well-known and widespread. Third, integrated and balanced set of key measures were used (Bititci et al. 2012; Neely 2005).

This cross-discipline fertilization had two consequences. First, measurement was no longer the heart of the discipline, but only a key phase. The management oriented to and by results became an ongoing process to align strategies, structures and people (Kaplan and Norton 1996a, b). Performance measurement concerns the measurement of performance indicators while performance management is the way of using the results of performance measurement for managerial purposes (Lebas 1995). Performance management precedes and follows performance measurement in a virtuous spiral and creates the context for measurement. Second, research has become more heterogeneous because it soon spreads also to the public sector (see for on overview, Williams 2002, 2003, 2004), across boundaries entities and small and medium enterprises (SMEs). So the entire field has developed and specific subfields emerged, but we do not still have a good understanding of the recent evolution—since the '90s up to date—and future directions. Furthermore, while there is a large amount of studies about the relevance of organizational dimension (SMEs vs large organizations), the majority of works does not take into consideration the differences between private and public sector. Our study aims to fill these gaps.

Method

To examine the structure and the evolution of performance management literature, our research design was divided in 4 steps: papers selection, historiographic analysis, keywords coding process and multiple correspondence analysis.

Selection

We extracted 1378 papers for Business Administration (BA) and 156 for Public Administration (PA) from *Social Science Citation Index* (SSCI) using only these two generic keywords "Performance Management" and "Performance Evaluations" as all-inclusive terms because our research has an explorative nature (Neely 2005; Taticchi et al. 2010; Bititci et al. 2012). We attributed the articles to the two subsets, BA and PA, considering the aim of the journal in which they were published.

We chose SSCI database incorporated in Web of Science Internet library source as it is the most widespread in these studies (Ramos-Rodriguez and Ruiz-Navarro 2004; Furrer et al. 2008). We extracted only research articles in English on this topic published from

1991 to 2015 on international journals (Fetscherin et al. 2010). We decided to extract these documents type as they are considered "certified knowledge" with peer review (Fernandez-Alles and Ramos-Rodríguez 2009). Moreover we followed Charvet et al. (2008) approach and we didn't previously choose a sample of journals. Performance management research is multidisciplinary field (Holloway 2009) and we had to collect articles from different research areas (Uysal 2010).

Historiographic analysis

We portioned our collections in two sub-groups according to SSCI subject areas: Business (Business; Business and Finance; Management Operations Research; Management Sciences) and Public administration. According to papers citations and author appearances, we identified the most contributing authors and the most influential articles and then drew the historiographic map. Following Fetscherin et al. (2010), the bibliographic collection was processed by HistCite software (Thomson Reuters company). This citation analysis allows to study most-cited works in and outside the collection and to investigate and visualize direct citation linkages. This permit to understand the genealogic antecedents and descendants of performance management research.

Coding

In order to map the structure of research we recoded all the papers through macro-keywords. We first developed an initial list of major keywords by iteratively sorting the individual keywords and regrouping them into coherent categories (Rugg and McGeorge 1997; Furrer et al. 2008); then three independent academic experts reviewed this initial list (Milne and Adler 1999; Caldarelli et al. 2013). After several rounds of discussion among these experts, also by mail, a final list of 25 macro-keywords was obtained. This process makes oneself indispensable for large number of idiosyncratic keywords provided by authors. We chose to allocate each paper to one or more keywords to catch the field interdisciplinary (Inkpen and Beamish 1994; Furrer et al. 2008).

Two coders independently reviewed all the papers and matched them with the macro keywords. We used a reliability test to assess the extent to which the coding overlapped together with the robustness of our findings. We measured the response matching level made by the coders and calculated the mean values of inter-rater reliability π Scott's index. It was equal to 0.77 that is considered as a satisfying level in literature (Fleiss 1981). We performed also Bhapkar's test (1966). It assesses the coherence in codify and considers at the same time the two researchers' activities. The analysis tests marginal homogeneity for all keywords-variables simultaneously. Results are not statistical significant (considering a threshold 0.1 of I-type test error). All tests confirm coding made by the researchers is concordant.

Multiple correspondence analysis

The fourth and last step of analysis was the multiple correspondence analysis (MCA) to examine the relationship between keywords papers, i.e. the conceptual structure of the field (Cobo et al. 2011; Batagelj and Cerinsek 2013; Borner et al. 2003). MCA is an exploratory data analysis without any restrictive assumption (Abdi and Valentin 2007). It examines the interdependence among a set of categorical variables, aiming to identify new latent

variables, i.e. factors. They are a combination of the original variables and explain information not directly observable (Greenacre and Blasius 2006). To perform MCA first, we carried out a complete disjunctive coding of our variables and then we built a Burt Matrix, composed of qualitative variables and organized into "individuals *x* variables". This means that variables are dichotomous, assuming value "1" if should the keyword be associated to the paper, and "0" if not. While variables are keywords, the individuals observed are the papers. Keywords represent active variables in the model. We performed our MCA using also a set of illustrative variables, i.e. papers publication periods, to analyze the field evolution. Assuming that the most cited papers are more representative of the structure of the field, we performed MCA considering the weight (citations per year) assigned to the papers.

MCA was performed using the statistical software SPAD (version 5.5). The output was a map, according to number of factorial axes selected. Given the different approaches used for the selection of factors in literature (prefixed number between 2 and 4; eigenvalue method; screen test), we finally agreed on the choice of the first factorial plan (Axis 1 and Axis 2). The resulting map, according to Benzecrì correction formula, summarizes 53.6 % for Business domain and 54.1 % for PA domain of overall inertia. Within the MCA these values can be considered very satisfactory, given the binary nature of the data (Lebart et al. 1984).

To interpret factors, it was necessary consider different indicators, as absolute and relative contributions of each variable category. The former measures the extent to which one modality variable contributes to the determination of a specific factor. The latter is instead a quality indicator as it measures how much each factor contributes to the reproduction of the variable dispersion. Particularly we interpreted each factor taking into account variables with a high absolute and relative contribution, considering a value test >2.

Analyses and results

A preliminary analysis showed that the research on performance management is dramatically grown, especially in the business area. Its growth average rate starts from 10.35 % and reaches 42.60 % in the business domain, while in the public administration domain in the late '90 s, the growth rate achieves a peak of 48.33 % and then is quite stable around 10 % (Table 1).

Moreover, the frequency distribution on geographic bases of first author affiliation reveals that the most part of articles comes from USA. Business area prevails for American authors, while for European and Commonwealth scholars the main area is Public Administration. This difference depends on the bigger dimension of public sector in these

Table 1 Yearly average growth rate for sub-period

Sub-period	BA (%)	PA (%)
1990–1995	10.35	4.17
1996–2000	12.84	48.33
2001–2005	10.85	12.48
2005–2010	28.46	12.79
2011–2015	42.60	9.48
Total papers	1.378	156

countries and on the new public management reforms they introduced in '90 and 2000, wherein performance management is one of the main managerial tool (Fig. 1).

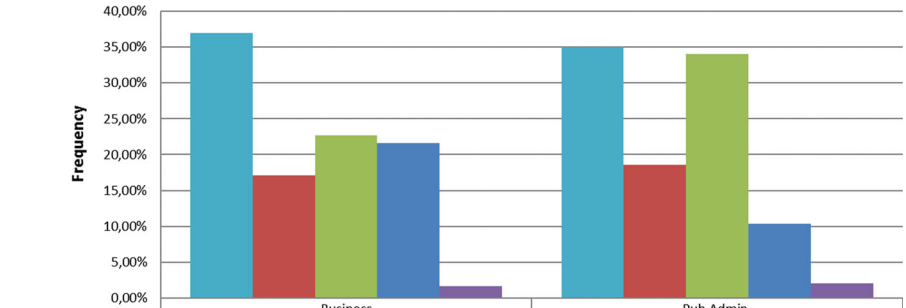
Contributing authors

Key authors are one of the most important factors which contributed to the field's structure and growth (Berry and Parasuraman 1993; Ramos-Rodriguez and Ruiz-Navarro 2004; Nerur et al. 2007). The author's characteristics have the most explanatory power on an article's impact (Furrer et al. 2008). The individuals who most published have a strong impact on the themes studied during the following periods (Bergh et al. 2006). It is therefore useful in identifying the most published authors in performance management in order to better understand the past evolution of the field and the likely future directions of its evolution.

Authors whose works are included most frequently in our collection were also identified and ranked. For BA, the 1378 articles have been written by 2.724 different authors. Among these authors 14 (0.51 %) published 5 articles or more, 17 (0.62 %) published 4 articles, 62 (2.27 %) published 3 articles, 234 (8.59 %) published 2, and 2156 (87.99 %) published only 1 article. The ranking of the authors is based also on the fractionalized frequency. The fractionalized frequency for the top ten authors is equal to 3.2. The number of fractionalized frequency reflects multiple authored articles. If an article was published by two authors, each received half a credit; in the case of three authors, one-third of a credit; and so on. 17.95 % papers were single authored, 42.34 % have 2 authors, 27.67 % have 3 authors, 8.79 % have 4 authors, 3.25 % have 5 or more authors. For PA, the 156 articles have been written by 792 different authors. Among these authors 18 (2.27 %) published 2 articles or more. The top ten authors have a fractionalized frequency equal to 2.2.

Table 2 provides a list of the top ten most-published authors based on adjusted and total appearances.

The top four most prolific authors for BA are: Reilchelstein, with 5.1 fractionalized frequency and ten total appearances; Zhu, with 3.4 adjusted appearances and 8 total appearances; Wilson, with 3 adjusted appearances and 8 total appearances; Ferris and



	Business	Pub.Admin.
USA	36,96%	35,05%
Commonwealth Area	17,10%	18,56%
Europe	22,71%	34,02%
Asia	21,59%	10,31%
South America & Africa	1,64%	2,06%

Fig. 1 Geographic distribution of first authors' affiliation

Table 2 Most contributing authors

Business			Public administration		
Authors	Frequ.	Frequ. Fracti.	Authors	Frequ.	Frequ. Fracti.
Reichelstein S	10	5.1	Radnor Z	9	5.0
Zhu J	8	3.4	Bovaird T	5	2.5
Wilson JR	8	2.9	Heinrich CJ	4	3.0
Chen EJ	7	3.5	Laegreid P	4	2.0
Ferris GR	7	2.8	Cutler T	3	1.5
Cook WD	6	2.6	Waine B	3	1.5
Joo, H	6	1.9	Hope KR	2	2.0
Aguinis, H	6	1.7	Norman R	2	1.5
Gottfredson, RK	6	4.2	Snape S	2	1.5
Rajan MV	6	3.5	Christensen T	2	1.0
Average value	7.0	3.2	Average value	3.6	2.2

Chen, with 2.8 and 3.5 adjusted appearances and 7 total appearances. For the authors in this domain, the Pearson correlation between total and fractionalized frequency equals 0.721. This correlation coefficient implies a strong relationship between total and adjusted appearances. This means that the most prolific authors tend to write with the same number of co-authors.

The top four most prolific authors for PA are: Radnor with 5.0 adjusted appearances and 9 total appearances; Bovaird, with 52.5 adjusted appearances and 5 total appearances; Heinrich, with 3.0 adjusted appearances and 4 total appearances; Laegreid, with 2.0 adjusted appearances and 4 total appearances. For the authors in these domain, the Pearson correlation between total and fractionalized frequency equals 0.634. Unlike their colleagues who study the performance management in business sector, scholar of PA domain do not frequently write with the same number of co-authors.

Most influential papers

In every scientific field, some publications assume seminal roles in the evolution of the field. These articles, for their impact, are accelerating factors to the development of the field (Berry and Parasuraman 1993).

It is therefore important to identify what are the most influential performance management articles published between 1991 and 2015, in order to understand better the state of art and discover the linkages among authors.

In our set, the average number of global citations score (GCS), for each article, is 8.73 with a standard deviation of 22.36, the median is 2 and inter-quartile range is [0–8]. The top 10 % has a GCS $\geq$ 20 and the top 5 % has a GCS $\geq$ 40.

To define and measure the influence or impact of a research article, we used a historiographic map of the papers. Although a large literature on mapping and visualizing the scholarly literature exists, we created historical displays through the HistCite software (Garfield et al. 2002). Once a historiograph is created, it is intuitive to understand the key authors and papers, the key subjects, their chronology and relative influence.

With the HistCite, we created Local Citation Score. It is based on the number of times a paper is cited by other papers in our (local) collection. Nodes identify specific articles in

the collection and sort the main bibliography in ascending order by year. The circles represent papers. Their size is relative to that paper's LCS score. Number inside the circle is the node number, linked to the detailed source record of that paper in our collection. We map the top 30 articles in terms of LCS (For BA–LCS range: minimum 6 and maximum 25; for PA LCS maximum 3). We selected the top 30 articles because this is usually the best way, proposed as default parameter by the software, to show the most important

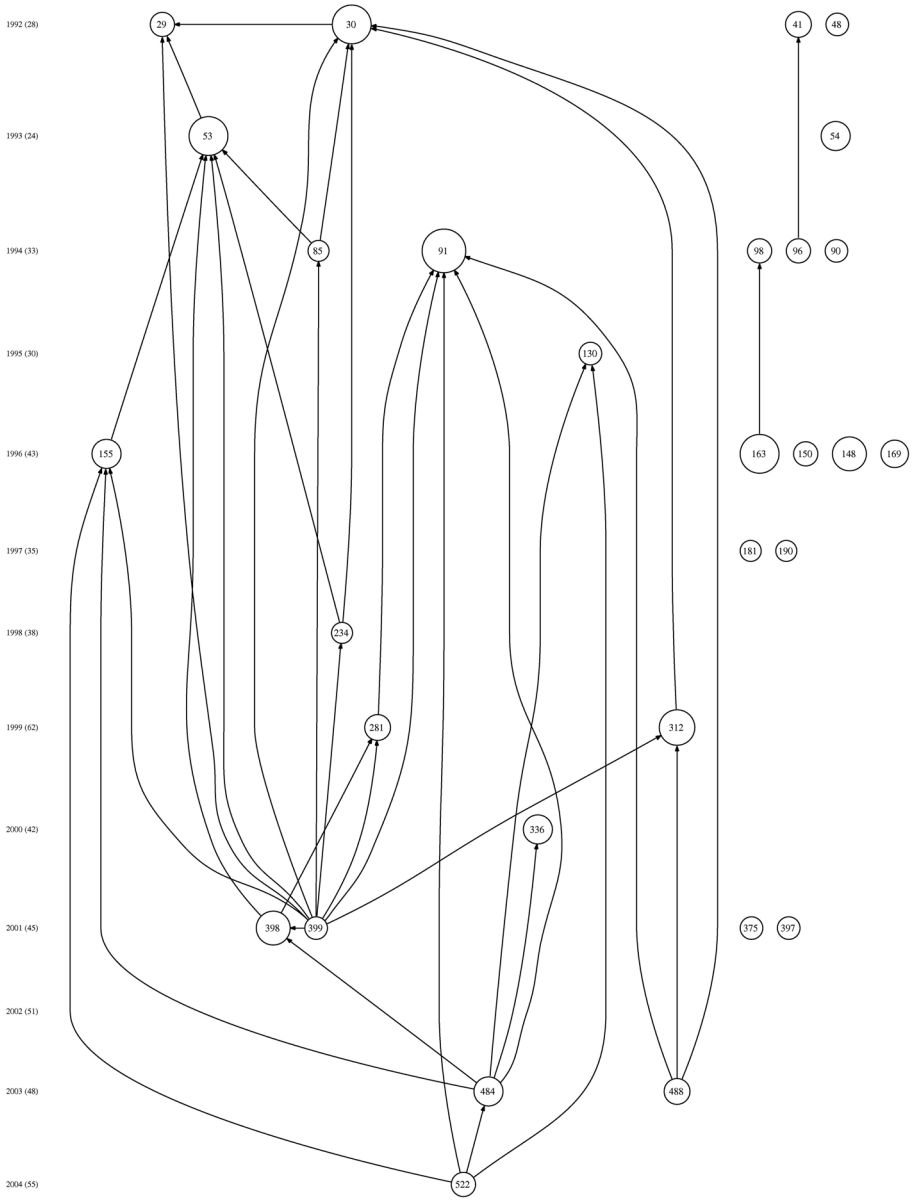


Fig. 2 Historiograph for BA

citation links within the collection, maintaining at the same time a good readability of the graph. Considering the GCS distribution, the local citations values can be considered substantial for identifying the most influential papers in our collection.

The number in parenthesis beside the year indicates the number of nodes in the main bibliography that were published in that year. An arrow pointing from one node to the next, usually to an older paper, indicates the citation relationship between papers.

Figure 2 and Table 3 show the historiograph map of research in BA based on the 30 most highly cited papers in our collection according their LCS.

In this historiograph, the story begins with a paper by Dye (1992) and Janakiraman et al. (1992). Both were published in 1992 year and on Journal of Accounting Research. Both of them adopted the agency theory to analyze the management relative performance evaluation (RPE). RPE occurs when one person's compensation depends on the relation of his output (performance based contracts) to that one of others. The first paper has received 8 citations, the second 21. These works give rise to a dominant line of research among 1992

Table 3 Top 30 articles plotted in historiograph for BA

Node—Article	*LCS*
29—Dye RA, 1992, J ACCOUNT RES, V30, P27	8
30—Janakiraman SN, 1992, J ACCOUNT RES, V30, P53	21
53—Sloan RG, 1993, J ACCOUNT ECON, V16, P55	20
54—Judge TA, 1993, ACAD MANAGE J, V36, P80	12
85—Blackwell DW, 1994, J ACCOUNT ECON, V17, P331	6
90—Waldman DA, 1994, ACAD MANAGE REV, V19, P510	7
91—Feltham GA, 1994, ACCOUNT REV, V69, P429	25
98 - Grinblatt M, 1994, J FINAN QUANT ANAL, V29, P419	8
130—BAIMAN S, 1995, ACCOUNT REV, V70, P557	7
148—DiMascolo M, 1996, OPER RES, V44, P50	16
150—DiMascolo M, 1996, EUR J OPER RES, V89, P147	8
155—Bushman RM, 1996, J ACCOUNT ECON, V21, P161	12
163—Ferson WE, 1996, J FINAN, V51, P425	21
169—Chen 2 W, 1996, REV FINANC STUD, V9, P511	10
181—Bititci US, 1997, INT J OPER PROD MANAGE, V17, P522	6
190—Langfield-Smith K, 1997, ACCOUNT ORGAN SOC, V22, P207	6
234—Baber WR, 1998, J ACCOUNT ECON, V25, P169	6
281—Indjejikian R, 1999, J ACCOUNT ECON, V27, P177	9
312—Aggarwal RK, 1999, J FINAN, V54, P1999	17
336—Lipe MG, 2000, ACCOUNT REV, V75, P283	11
375—Tempelmeier H, 2001, IIE TRANSACTIONS, V33, P293	7
397—Fletcher C, 2001, J OCCUP ORGAN PSYCHOL, V74, P473	7
398—Lambert RA, 2001, J ACCOUNT ECON, V32, P3	15
399—Bushman RM, 2001, J ACCOUNT ECON, V32, P237	7
484—Ittner CD, 2003, ACCOUNT REV, V78, P725	12
488—Garvey G, 2003, J FINAN, V58, P1557	9
522—Gibbs M, 2004, ACCOUNT REV, V79, P409	8

and 2001. It is grounded in the accounting discipline (Sloan 1993; Blackwell et al. 1994; Baiman and Rajan 1995; Baber et al. 1998; Bushman and Smith 2001); has a dominant theme in the incentive compensation (Sloan 1993; Bushman et al. 1996; Baber et al. 1998; Indjejikian and Nanda 1999; Garvey and Milbourn 2003) and adopt the agency theory as theoretical paradigm (Feltham and Xie 1994; Indjejikian and Nanda 1999; Lambert 2001). From this flow of research departs the research line of subjectivity in 2003 and 2004 (Ittner et al. 2003; Gibbs et al. 2004). Other research lines start to appear since 1992. They did not became prevalent since the beginnings. Seminal articles were published on job satisfaction (Judge and Ferris 1993), total quality management (Waldman 1994), operations research (DiMascolo 1996; DiMascolo et al. 1996), social and motivational aspects of appraisal (Langfield-Smith 1997); strategy integration (Bititci et al. 1997); balanced scorecard (Lipe and Salterio 2000).

Concerning PA domain, the historiograph does not show any tightly-coupled link among papers. So we do not report the figure. Anyway, 90 s are characterized by changes in the practices of performance management in the public sector and lessons from the first experiences (Stewart and Walsh 1992; Schay 1993). Between 2000 and 2005 the major references concern job training (Barnow 2000), leadership (Grote 2000), human resources practices (Selden et al. 2001) and the experiences of New Zealand and Hollande (Norman and Gregory 2003; Mol and de Kruijf 2004). More recently: citizen-driven government performance (Heikkila and Isett 2007), evidence-based policy and performance management (Heinrich 2007); legislative influences on performance management reform (Bourdeaux and Chikoto 2008); the importance of subjective data for public agency performance evaluation (Shingler et al. 2008).

MCA: the evolution maps

MCA maps are reported in Figs. 3 and 4.

1. The *point-size* is proportional to the macro keyword absolute contribution.
2. The *proximity* between keywords corresponds to shared-substance: keywords are close to each other because a large proportion of articles treat them together; they are distant from each other when only a small fraction of articles discusses these keywords

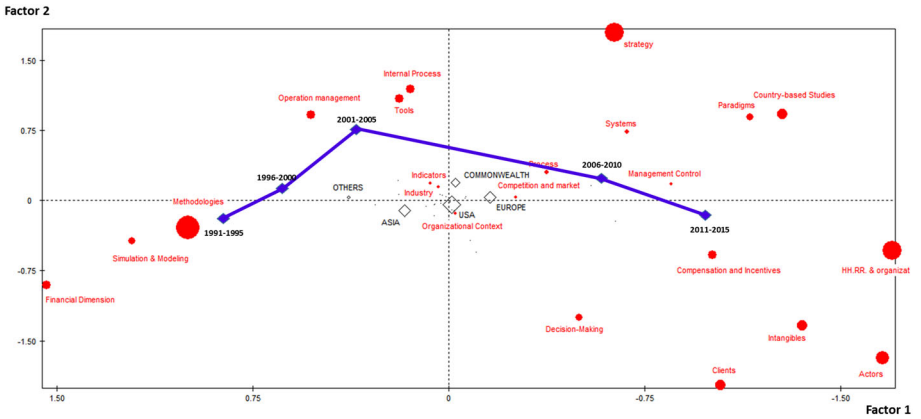


Fig. 3 Factorial Map of Business Administration domain keywords

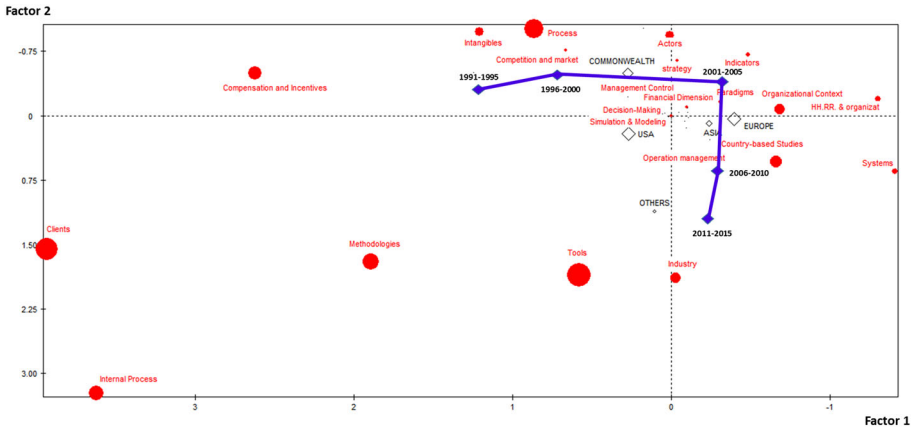


Fig. 4 Factorial Map of Public Administration domain keywords

together. For example, in the case of business domain, the keywords "simulation and modeling" and "financial dimension" are close to each other because many articles on financial performance also involve simulation and modelling. However, the keywords "operations" and "compensation" are far from each other, because only a few articles on operations also discuss the issue of compensation.

3. The *middle of the map* represents the average position of all the articles and therefore represents the centre of the research field. For example, the keyword "indicators" is close to the centre, as a large number of articles in performance management focus on indicators. Around the middle of the map, we find close enough also the different geographical regions related to the papers' first author. This information tells us that studies from different regions tend to resemble each other, although slight variations in the behaviors can be noted by the attraction to the poles.

The *two dimensions of the maps* which emerged from the MCA can be interpreted as follows. The first, horizontal, dimension separates keywords emphasizing one-dimensional measurement and evaluation (on the left) from those concerned with the multidimensional ones (on the right). The second, vertical dimension separates keywords focusing on organizational performance (at the top) from those focusing on individual performance (at the bottom). The dimensions of the map reflect characteristic 'poles' of topical orientation within performance management.

As already mentioned, the position of each of the keywords on the map represents the average position of the articles included in this keyword. Therefore, positions on the map represent articles' content and can be interpreted as such.

- On the left-hand side of the map for business area (BA), we find articles dealing with the study of financial dimension, as well as articles dealing with models. For Public Administration area (PA) we find articles on internal processes, clients and tools.
- On the top of the map are located articles focusing on operations management, tools and internal processes (BA). Indeed, the top of the PA map is fully populated.
- On the right-hand side of the BA map are located articles related to the concept of performance management as multidimensional evaluation. On this side of the map for both domains, we find studies about strategy, human resources.

- Finally, at the bottom of the map, for BA we find articles related to the individual performance measurement, with keywords related to compensation and decision making, while for PA the quadrant is quite empty.

The *combination of the two dimensions* also provides interesting information about the relationships between the keywords. For example in the *BA domain*,

1. On the bottom left-hand part of the map are located articles related to financial indicators.
2. On the top left-hand part of the map are located articles on internal processes and operations management, as these studies are dealing with organizational performance.
3. On the top right-hand part of the map, we find articles focusing on performance management as a process, which focus on the building and use of systems, and paradigms.
4. Finally, on the bottom right-hand part of the map are located articles anchored in the human resources strategy and management in which compensation and intangibles play an important role.

PA studies on performance management have their own peculiarities. There is an evident polarization towards the multidimensional measurement. In fact, the most densely populate quadrants are on the right of the map.

- On the top left-hand part of the map, we find articles focusing on compensation and incentives and quasi-markets.
- On the top right-hand part of the map are located articles oriented to individual performance in which human resources, indicators and organizational context play an important role.
- The two quadrants on the bottom are sparsely populated. The main reason is that it is difficult and improper assess the performance of a government-owned organization exclusively in financial terms. On the bottom left-hand part of the map are located articles related to internal process or clients.

To study *the evolution of the literature* on performance management, the 25-year period of publication between 1991 and 2015 was divided into five periods of 5 years. The evolution is shown by the line within the 2 maps. During the 25 years of performance management research, we observe an increased interest in the multidimensional measurement for BA. While for PA we note an asymptotic development to multidimensional performance since 2000. In the case of BA, this is explained by the increased awareness that the financial performance has its determinants in other dimensions (Kaplan and Norton 1996a; Copeland et al. 2000). In the case of PA, it is obvious that performance must be measured through multidimensional indicators. The financial dimension s a constraint but not a goal.

Unlike domain BA, the evolution of PA studies moves towards individual performance dimension faster since year 2000. In the previous 5 years, scholars were attentive to the issue of quasi-market introduced by the new public management paradigm. A similar trend starts for BA only in 2005. In the previous 5 years (2001–05) authors in BA were focused more on operations management and internal processes. Anyway both domains will notice a similar and clear evolution towards the area of multi-dimensional and individual performance. This evolution corresponds not only to the evolution of the topics studied in the papers, but also to the evolution of relationships between the keywords. This means that the research topics represented by the keywords are actually more and more studied

through a multidimensional measurement or an individual lens, and less and less through organizational or financial lens. The question that should then be asked is in which direction the performance management field is likely to move in the near future. Interestingly, the evolution identified shows a move in the direction of a conjunction between multidimensional performance and individual performance. Based on this evolution, important research questions in performance management in the near future are likely to be related to the notion of alignment between actors and non-financial metrics and its implication for management compensation.

Discussion and conclusions

Our paper presents more findings on 25 years of research on performance management but the main result is the identification of a clear path of evolution in both sub-domains.

Bititci et al. (2012) described the evolution of research in performance management from the beginnings of XX century to date as a process inducted by external trends and pressure. In this study focusing only on the last 25 years, we observed an almost linear evolution of research in both domains. Moreover, while the origin of development is different, both domains show the same evolution towards a multidimensional measurement and individual performance assessment. Therefore, future research questions should be related to the integration of multidimensional measurement and individual performance evaluation and its implication for the overall organizational performance.

Moving from measurement to performance management, the influence of the strategy studies is prevailing over the other disciplines from which come scholars. However, the field remains interdisciplinary and instead it could benefit from a series of greater cross-fertilization with emerging approaches in strategy discipline such as strategy as practice (Ferlie and Ongaro 2015). For example, the need to link multidimensional measurement and individual performance offers new opportunities to bring more sociological theory into the performance management domain to help disentangle the practice. In particular socially complex contexts, like professional organizations in highly regulated industries, could be excellent laboratories to explore this link and find managerial implications also for private companies. In this way cross-fertilization could bridge the two sub-domains (BA and PA) for analyzing multidimensional measurement and individual appraisal. A "strategy as practice" approach could be a great theoretical framework to explore these challenging research path in the way Bititci et al. (2012) have well argued.

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