

Operationalizing Proper Functioning of Performance Measurement Systems in the Italian Public Healthcare Sector

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Performance measurement systems (PMSs) have had an extraordinary diffusion over the last 20 years in Western countries' public sectors, although theoretical models and empirical studies on good practices, and metrics for effectiveness and impact are not very widespread. The aim of this paper is to propose a model for measuring the proper functioning of a PMS in the public sector through the selection of dimensions and indicators on the basis of the elements that literature believes to condition the use of performance data in management. Dimensions, indicators, and scores are validated through an exploratory trial of the model in the specific context of the Italian public health care system, with reference to the health managers' evaluation models. The empirical investigation is also used to identify and discuss potential determinants of good practices. In particular, in the context under investigation, size and economic performance are found to be significant drivers of proper functioning.

Keywords: performance measurement systems (PMSs), proper functioning, healthcare sector, managers' evaluation models

Performance measurement has been one of the main tools relied upon by the reforms of Western countries' public sectors, started in the 80s in the wake of New Public Management (NPM) (Walsh, 1995). Though the principles, models, and tools utilized in the diffusion of performance measurement in the public sector have varied, the primary purpose of such a system has always been seen as giving public managers useful information to improve services (Hatry, 2002). However, in order to meet both citizens' and funders' needs to be informed about the use of resources, achieving accountability has often been the real purpose for the development of result-based management systems in the public context. The major external impetus for performance measurement in the public sector is also testified to by policy-makers' common underestimation of the effort in developing accompanying mechanisms to enhance performance management, that can be

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defined as the systematic use of performance information to affect programs, policies, or actions “aimed at maximizing the benefits of public services” (Hatry, 2002, p. 352). This paper sustains the positions asserting that the development of performance measurement and evaluation systems is worth the effort if the public officials are actually using performance data in decision-making in order to improve services.

This paper starts from the assumption that the literature on the outcomes of performance measurement and evaluation is still rather poor and unsystematic (Andersen, 2008) because of the lack of consistent and grounded theoretical models about the principles for good practice in performance measurement in the public sector. So this contribution focuses on one antecedent of performance information use in the public context that has not been properly considered: the intrinsic features, both structural and operational, of a performance management system (PMS).

The main aim of this paper is to propose a model for measuring the proper functioning of a PMS through the selection of dimensions and indicators on the basis of the elements that literature believes to condition the use of performance data in management. The second aim is that of carrying out a preliminary trial of the model by employing it on a significant sample of public local health care authorities (LHAs) of Italy in order to validate dimensions and indicators and identify some potential determinants of good practices.

The public health care sector is particularly suitable to the scope of the analysis for several reasons such as the strong multidimensionality of the activity. Additionally, in many countries, such as Italy, the health care sector was one of the most affected by managerial reforms. In Italy, in particular, LHAs are the public bodies that through organizational models that differ from region to region, are responsible for delivering to the citizens, directly or indirectly, all the basic health services, divided into the categories of hospital, district, and preventive care. Among the different PMSs developed in the health care sector, the managers’ evaluation model (MEM) was selected for analysis because of the high power and responsibility, for decision-making, resources use, and results that LHAs’ management has been given over the last two decades.

Performance Management Systems: Purpose, Limits, and Determinants

Performance measurement and evaluation is certainly one of the central themes of the reforms of public sector over the last 20 years, but still very little is known about its outcome (Andersen, 2008). In particular, in the public sector, the full exploitation of performance measurement has been hindered by some unintended consequences such as the concrete difficulty in measuring and counting outputs and the possibility of creating perverse incentives giving rise to opportunistic or dysfunctional behaviours (Broadbent, 2007). This risk can be avoided by means of operational and organizational factors which can promote the correct use of performance measurement in the public context and thus service improvement, which constitutes the main purpose for the development of any managerial tool (Bouckaert & Peters, 2002). Actually, the improvement of services in the public sector should be evaluated in relation to multiple constituencies and dimensions (Boyne, 2003, p. 368). Anyway, if some scholars claim that there is a minimal empirical support to the expectation that PMSs improve performance (Meier & O’Toole, 2002, p. 629; Boyne, Farrell, Law, Powell, & Walker, 2003, p. 2), one of the reasons is probably ascribable to the limited attention paid to the development of grounded theoretical models about the principles for good practice in performance measurement in the public sector. Definitely, some intrinsic characteristics of PMSs seem to be conducive to performance information use.

In literature, it has been noticed that despite the great deal of time, money, and energy devoted into PMSs, governments have often neglected their value in supporting management. In their analysis on the federal

employees administered by the U.S. Government Accountability Office (GAO), for instance, Moynihan and Lavertu (2012) found that managerial involvement in the results-based reforms had a direct impact on relatively few aspects of performance information use. Results seem to confirm the criticism that if PMSs have excelled at creating organizational routines for data collection and dissemination, they have not been able to create similar routines for data use. Although the issue has been one of the most understudied in performance management, understanding public employees use of performance information is still of extreme importance for scholarship (Moynihan & Pandey, 2010). The basic idea is that some organizational and technical variables of PMSs condition the quality of the information and its use in the decision-making, so promoting public services improvement.

A multitude of studies have recognized that in the public sector, the presence of structural and process factors influence organizational performance (Ashworth, Boyne, & Tom, 2010), and that the likelihood that a PMS would be used by decision-makers depends on a set of similar variables.

The choice to concentrate on the managers' evaluation models is related to the fact that reforms provided public managers with a high degree of autonomy and responsibility for resource management and results. In this regard, evaluating public managers' behaviour become more and more crucial to understanding organizational performance. A significant line of research concentrated on the role of incentives in improving public sector management (Weibel, Rost, & Osterloh, 2009). The modest success of pay for performance in the public sector, in particular, seems to be more evident in health care in relation to the high professionalism of health managers (Andersen, 2009). Greener (2008, p. 207) defines health managers as "entrepreneurs engaged in attempting to configure patterns of care delivery from the limited and constrained resources they have available". Escalating costs, pressure to control public spending and a desire to improve the quality and efficiency of care are some of the developments that Witman, Smid, Meurs, and Willems (2010, p. 478, p. 481) believe to have intensified the friction between the professional world and the managerial world. They observe that, in general, it is very difficult "to create integrated hospital organizations using the habitual management practices" like formal planning and control systems, and in particular that one of the most complicated functions is represented by performance appraisals. As noted by Modell (2001), physicians tend to strongly resist PMSs because of their inability to capture the unique and complex nature of medical operations. Furthermore, they often feel held accountable for results they cannot control since health, and thus performance, would be mainly related to demographic and social characteristics of the community they serve (Appleby & Mulligan, 2000). In general, the impact of environmental variables on organizational performance seems to affect the whole public sector (Andrews, Boyne, & Enticott, 2006).

A Model of Proper Functioning of a PMS in the Public Sector

The Dimensions

Theoretical perspectives concerning the influence that structural and process factors of a PMS exert over performance information use are now systematized in order to identify the main dimensions for the proper functioning of such a system. Consequently, following the analysis of the evolution of the Italian legislation about performance measurement in the public sector and of the managers' evaluation models in use in the public health care context, these dimensions are operationalized into a set of indicators.

First of all, despite the insufficient body of theory about the relationship between management and organizational performance, a voluminous literature agrees upon the remarkable role of managerial factors such

as organizational culture and leadership in performance information use (Moynihan & Ingraham, 2004; Melkers & Willoughby, 2005; Dull, 2009). Andrews et al. (2006) recognized that effective leadership is an essential management characteristic to improve performance that, in turn, is the final goal of every performance measurement agenda. Moynihan and Lavertu (2012) showed that supportive leadership, defined as the strong commitment of agency's top management to achieving results, is a positive predictor of performance information use. Leadership is frequently associated with developmental culture which, in turn, affects higher use (Moynihan, Wright, & Pandey, 2012). Kroll and Vogel (2013), for instance, observed higher levels of data use when managers are driven by public service motivation, which they see as a direct determinant of performance information use, and work under transformational leaders.

Broad, Goddard, and Von Alberti (2007, p. 125) noticed that organizational culture, and especially the managerial worldview of the organization, is conducive to performance management. In fact, orientation to management logic is crucial in emphasizing the importance of performance measurement and fostering the awareness of its value in the whole organization.

Leadership and organizational culture seem to be recurring and intersecting themes in academic work on the variables which impact on public sector results (Boyne, 2003). For the purpose of this paper, they are coupled as a single dimension of a PMS's proper functioning, named "leadership and organizational culture".

Technical elements of the performance evaluation process may also affect its success. Designing and implementing performance management in a less than careful manner, as noted by Bouckaert and Peters (2002, pp. 361-362), may create a lot of problems and in particular "the possibility of demoralizing personnel and having organizations focus on minutiae rather than the fundamental goals of their organizations". Bouckaert and Peters also introduce the theme of process efficiency, as they include the remarkable asymmetry of the information on costs and benefits of performance measurement and management and the considerable cost of a monitoring system in the analysis. Berman (2002) argued that the ability to track outcomes, allow adjustments, and improve productivity is directly related to the presence of some characteristics of a PMS, such as integration, updating, and timeliness. However, Leviton and Hughes (1981) stated the importance of credibility in influencing the likelihood that an evaluation would be used by decision-makers, in addition to variables as relevance, communication, and information processing. The issue of reliability emerges as a crucial aspect because evaluation information lacking in this stands little chance of fulfilling the purposes of transparency and accountability (Van Thiel & Leeuw, 2002). Strictly linked to the concept of transparency is that of the independence of evaluators (Bevan & Hood, 2005). Fair and correct evaluation, in fact, may be strongly prejudiced by inaccuracy as well as low levels of objectivity, which in turn cause skepticism and mistrust of the whole PMS (Brown & Heywood, 2005). Definitely, high trust relations seem to have a positive impact on performance management implementation (Læg Reid, Roness, & Rubecksen, 2006; Christensen, Læg Reid, & Stigen, 2006). The above mentioned technical aspects are thus aggregated in the second dimension of a PMS's good practice, named "efficiency and transparency".

Literature has also stressed the importance of organizational management of performance measures. Broad et al. (2007, p. 125) highlighted that public sector organizations should be "aware of the vital importance of context to the development of a worldview conducive to performance management". Human Resource Management constitutes a slightly different variable in respect to organizational culture (Boyne, 2003), as the former concentrates on the style used by managers to meet the needs and aspirations of individuals. Similar to

the latter, it nevertheless appears to have a crucial effect on the use of performance measures and on bettering organizational performance (Delaney & Godard, 2001).

Klay (2003, p. 232) maintained that in general, "Performance improvement is most likely where productivity initiatives encourage the development of learning-oriented organizations". Promotion of collaboration at all organizational levels and bottom-up approaches are some of the best ways to do work performance improvement schemes (Abernethy & Stoelwinder, 1990), as they foster acceptance of financial control and more widespread learning among professionals (Modell, 2004, p. 42). The development of horizontal communication and the involvement of individuals, as well as alleviating tensions between senior management and professionals interests (Broadbent, Laughlin, & Shearn, 1992; Modell, 2004, p. 45; Guven-Uslu & Conrad, 2008), enable the best design, collection, and dissemination of performance data that as noticed by Smith (2005) with reference to health systems, are essential in all the accountability relationships. Learning routines and the motivational nature of the task, in the same way, are identified as organizational factors that affect performance information use (Moynihan & Pandey, 2010; Moynihan & Lavertu, 2012).

Starting from the assumption that performance management includes the design of performance information and incentives to secure desired objectives (Smith, 2002), many recent studies have focused on the issue of public service motivation (PSM) that is a complex construct revolving around the dimensions of attraction to policy-making, commitment to public interest, compassion and self-sacrifice (Perry, 1996; Langbein, 2010). Kroll and Vogel, as mentioned above, have argued that performance information use by public managers is likely if they are driven by a public service motivation. A number of studies on PSM, in particular, have focused on understanding the effect of financial incentives (Andersen, 2009; Boyne & Hood, 2010), compared with other sources of motivation such as intrinsic motivation and professional norms, on public sector performance (Andersen, 2009; Weibel et al., 2009; Binderkrantz & Christensen, 2011). Organizational variables, for this reason, are grouped in the third dimension of PMSs' proper functioning so-called "participation and motivation".

In order to operationalize the three dimensions of PMS good practice, in the next section, the Italian context for performance measurement in the public sector and managers' evaluation models in the health care system will be primarily analyzed and a set of indicators will be consequently proposed.

The Selection of Indicators Contextualized to Managers' Evaluation Models in the Italian Health Care System

Managers' evaluation models in the Italian public sector have been introduced, as part of the internal control systems, during the deep reform process started in the 90s. One of the most important principles promoted by the reform was the distinction between political and managerial roles, established by the law No. 140/1992 that sees politicians responsible for defining long-term strategy in accordance with the organizations' institutional missions, while public managers accountable for the achievement of the objectives set by the politicians. Since new kinds of tasks and responsibilities, in terms of results, use of financial resources and accountability, are assigned to managers, evaluation becomes even more important to align individuals' behavior with the organizational objectives.

In particular, public managers' evaluation, together with provisions on management control, was first introduced with the legislative decree No. 29/1993. The same issues were then regulated, with more details, in the decree No. 286/1999 aimed at enriching the norms relating to the internal control systems in the Italian

public administration. Public managers' evaluation was one of the four types of internal controls that public bodies were obliged to develop, although with a significant degree of autonomy. So, in order to design a performance evaluation system suitable to the internal and external variables of each context, specific collective agreements (National Collective Labor Contracts) were signed to provide the systems with more details, in terms of subjects involved and procedures. Following these provisions, managers' evaluation models developed by the health care authorities consisted of a set of common features. Health managers' evaluation, first of all, was based on their skills and competencies and results were traditionally judged in relation to the objectives set in the annual budget. The evaluation process was then articulated in two consecutive steps, the first one guided by the top-manager within his or her sphere of responsibility, while the second one headed by a collegial entity called internal audit office (IAO) that guaranteed objectivity in the judgment process. Other important elements were the usual participation of the people evaluated and the linkage between evaluation and performance bonuses. As noted above, LHAs, as well as other government organizations, were free to design their own performance evaluation model within the general scheme provided by law. This autonomy also characterizes the upper levels of governance of the Italian health care sector that is basically articulated on a regional basis. In Italy, the state defines the essential levels of assistance (LEA), whose respect must be guaranteed by the regions in order to meet the citizens' health needs. Within regions, LHAs are then requested to satisfy population health need efficiently, respecting long-term economic equilibrium. Regional autonomy in the sector has caused the development of different kinds of organizational systems and also different evaluation models in terms of purposes, formalism, dimensions, and measures.

The recent legislative decree No. 150/2009, following spending review logic aimed at reducing public expenditure, has relaunched evaluation issues and equalized the internal performance evaluations models within the public sector. Performance is now assessed in relation to organization, team, and individual levels, and managers maintain the main responsibility in evaluating their subordinates and the results of the unit they head. Therefore, two main levels of evaluation are identified, the first regarding all human resources without managerial responsibilities while the second focused on managers. The latter is carried out by an independent internal audit office that formulates an evaluation proposal to the chief executive officer (CEO) that expresses the final judgment. Finally, the decree No. 150/2009 imposes the differentiation of the evaluation of all the public employees' results in three classes of performance.

Since public health was one of the sectors most affected by the significant reforms following NPM theories, and the regional autonomy in the sector gradually yielded significant differences among regional health systems' organization and managerial practices, the Italian health system appears to be particularly suitable to test the development of well functioning PMSs.

The set of indicators through which the three dimensions of a PMS good practice were operationalized is strictly related to the topic of managers' evaluation models, and their selections and scoring were based on both literature contributions and laws and the explorative application of the model. Table 1 summarizes the indicators—at least four, proposed to measure each dimension, together with their main references and meaning, which guided their preliminary choice.

As regards the ways of measurement of the indicators, they are directly shown in the section devoted to the results of the trial of the model on a significant sample of public local health care authorities in Italy. In fact, while in some cases, the determination of the scores relied on the principles set forth for the Italian health care system by legal provisions (the indicators No. 3 and No. 4 of the dimension of "leadership and organizational

culture” and the indicator No. 2 among that of “efficiency and transparency”), in other cases, such as indicator No. 4 (the dimension of “leadership and organizational culture”) and indicators No. 1, No. 3, and No. 4 (“efficiency and transparency”), the scoring was supposed to be more properly measured through the use of classes. For this reason, it was decided to validate their way of measurement only after the trial of the model, as reported in the following section.

Table 1

Dimensions and Indicators of a Managers’ Evaluation Model Proper Functioning

Dimensions	N	Indicators	References	Motivation
Leadership and organizational culture	1	Managerial education of the CEO	Moynihan and Ingraham (2004); Melkers and Willoughby (2005); Broad et al. (2007)	A strong managerial culture enhances support to MEM
	2	Link between CEO and IAO	Andrews et al. (2006); Moynihan and Pandey (2010); Moynihan and Lavertu (2012)	The link testifies for supportive leadership in evaluation
	3	IAO’s role	Decree No. 29/1993; Broad et al. (2007)	A wide range of IAO’s responsibility enhances support in the decision-making
	4	Consolidation of the MEM	Decree No. 29/1993; Moynihan and Pandey (2010); Moynihan et al. (2012)	The maturity of MEM fosters technical and organizational development
Efficiency and transparency	1	Number of IAO’s staff	Decree No. 29/1993; Decree No. 150/2009; Borgonovi (2005)	A balanced number of members fosters effectiveness, timeliness, and comparison
	2	IAO composition	Decree No. 150/2009; CIVIT Deliberation No. 4/2010; Bevan and Hood (2005); Brown and Heywood (2005)	A balanced number of external members enhances independence, innovation, and professionalism
	3	IAO annual meetings	Berman (2002); Borgonovi (2005)	A balanced number of meetings fosters communication and timely corrective action
	4	Annual cost of MEM	Bouckaert and Peters (2002); Witman (2010)	A balanced cost of evaluation promotes a good mix between efficiency and effectiveness
Participation and motivation	5	Judgement of first and second instance	Decree No. 29/1993; Leviton and Hughes (1981); Læg Reid et al. (2006); Christensen et al. (2006)	The articulation in I/II instance fosters the objectivity of the evaluation
	1	Participation in setting the objectives	Broadbent et al. (1992); Klay (2003); Modell (2004); Smith (2005); Guven-Uslu and Conrad (2006)	This kind of participation promotes the correctness and the motivation to the evaluation
	2	Other moments of participation	Abernethy and Stoelwinder (1990); Delaney and Godard (2001)	This kind of participation promotes the acceptance of the evaluation
	3	Self-evaluation	Modell (2004); Smith (2005)	Self-evaluation fosters responsibility and evaluation effectiveness
	4	Link between evaluation and wage	Læg Reid et al. (2006); Andersen (2009); Weibel, Rost, and Osterloh (2009); Binderkrantz and Christensen (2011)	A balanced reward system fosters organizational commitment

The Trial of the Model in the Public Health Care Sector of Italy

Method

The explorative application of the model was mainly aimed at validating its dimensions and indicators in

the specific context of public health care. For this reason, from a methodological point of view, the proper functioning of managers' evaluation models was tested through an empirical investigation of the entire universe of Italian LHAs. In particular, the 148 LHAs of the Italian health care system, divided between 88 LHAs belonging to the Northern Italian Regions and 60 to the Central and Southern ones, were first contacted by phone and then submitted to a semi-structured questionnaire followed up, when necessary, by phone interviews with the organisations' control managers and internal audit office. The core content of questionnaire and interviews basically reflected the specific indicators used to operationalize the dimensions of leadership and organizational culture, efficiency and transparency, participation and motivation.

The response rate was 52.03%, consisting of a total of 77 LHAs taking part in the analysis: 55 from the Northern side of Italy (response rate 62.5%) and 22 from the Central and Southern ones (response rate 36.67%). The responding LHAs' appear quite homogeneous with reference to important elements for the current study, such as the average number of health managers within LHAs (606) and the percentage of health managers with respect to total LHAs' employees (20.57%). Furthermore, the average maturity of managers' evaluation models developed in the sample was equal to nine years, with a standard deviation of 4.50.

As well as validating indicators and scoring, this trial provided the opportunity to analyze the maturity of the PMSs developed in the Italian public health care sector and identify some potential determinants of good practices. Beginning with the assumptions that performance in the health context is basically affected by a number of elements not completely controlled by health organizations and managers, a set of significant parameters was theoretically selected to interpret the evolution of such systems. In particular, five contextual variables and two organizational variables were chosen as independent variables in three stepwise multiple linear regression analyses where the dependent variable was alternatively represented by each of the dimensions believed to prove for PMS's proper functioning. A further regression analysis was then performed, considering the three dimensions together as a single dependent variable.

As the empirical investigation on the managers' evaluation models was performed over a period of six months, during the last months of 2011 and the first ones of 2012, in order to properly analyze the cause-and-effect relationship between the independent variables and the dependent ones, it was decided to select measures going back to almost three years. So, all data refer to the four-year period 2005-2008.

At the organizational level, the following parameters were selected:

(1) The economic performance of LHAs. Following a benchmarking approach, a ranking within each region was developed, adopting the criterion that the level of performance depends on the deviation, positive or negative, of each LHA's economic result from the mean economic result within its own region that is the average performance reached by all the LHAs of that region. The term "average" referred to the LHA's economic result is related to the use of data of the three-year period 2005-2007, so to lessen the short-term effects, while the benchmarking approach permitted the neutralization of some distorting effects, for instance, those related to the impact of context variables;

(2) The LHA's total revenue, averaged again over the three-year period 2005-2007. This expresses both the health need of the population (since it depends in part on the financial resources provided by the regions on a per-capita basis), and the volume of activity of the authorities.

Then, some well-established contextual parameters were included to explain differences related to the social, demographic, epidemiological, and structural conditions of the diverse regions. They are:

(1) The standardized ratio of hospitalization, a weighted average of the ratio between the number of the residents discharged from the hospital and all the residents, in relation to age. It describes the request for admissions by the citizens to the hospital of the territory, and expresses the health care demand by means of the number of hospital admissions. A value limit of 210/1,000 inhabitants was used (Ministero della Salute, 2005-2006);

(2) The health care customers' satisfaction ratio, a weighted average of the satisfaction with the medical care, the nursing care and the sanitary fittings, by sex and age groups (Istat, 2007);

(3) The synthetic index of health care quality, a weighted average of health outcomes (weight: 1/2), satisfaction with hospital services (1/6), patients mobility among regions (1/6), delivery of appropriate healthcare (1/6) (Pammolli, Papa, & Salerno, 2009; dataset 2006-2007);

(4) The per capita health care expenditure, averaged over the three-year period 2006-2008, showing the resource utilization and volume of health services at regional level;

(5) The regional health care economic loss, averaged over the three-year period 2005-2008, showing the economic performance of the regional health group (dataset 2006-2008).

Results

The trial was very useful to refine the model, as it permitted the validation of both dimensions and indicators' scores. First of all, it indicated the opportunity to adjust the second dimension of "efficiency and transparency", which presented a statistically significant correlation ($p < 0.05$) with the third dimension of "participation and motivation". Since the three dimensions of the PMS were supposed to be independent of each other in order to properly account for different aspects of good functioning of such a tool, this result suggested modifying the dimension of "efficiency and transparency" that was the only one preliminary measured by five indicators. So, by excluding the indicators one at a time in the correlation analysis, their single influence on the other dimensions was evaluated. This process led to the elimination from the second dimension of the fifth indicator named "judgement of first and second instance" that, though theoretically conceived as a way to enhance independence and objectivity in managers' evaluation, showed a dual criticality. Firstly, it was the most conducive to the correlation with the third dimension, and secondly, it was the only one among the five to be measured through a simple yes or not alternative (possible scores 0/1).

Another essential contribution was that of allowing the identification of the classes of values through which measuring the indicator No. 4 of the dimension of "leadership and organizational culture" and the indicators No. 1, No. 3, and No. 4 of that of "efficiency and transparency". A benchmarking approach, in fact, was supposed to be the best way to measure such aspects of the evaluation process.

The final proposal of dimensions and scores is shown in Table 2.

The following Table 3, on the other hand, reports the descriptive statistics related to three dimensions of proper functioning emerging from the exploratory analysis on the local health care authorities. The minimum and maximum values, as well as the means and the standard deviations proved the efficiency of the model. As regards the border values, they revealed to be separate by a significant range in all the three dimensions, while the standard deviation was always minor than the mean. The means showed, with reference to the three dimensions, a remarkable distribution of values, thus attesting the capacity of the model to get the differences among the variables.

Table 2

Final Dimensions and Scores

Dimensions	N	Indicators	Scores
Leadership and organizational culture	1	Managerial education of the CEO	Managerial education = 100%; other = 0
	2	Link between CEO and IAO	Presence of temporal link = 100%; absence of temporal link = 0
	3	IAO's role	Evaluation only = 33.33%; evaluation and support in management control = 66.67%; evaluation and support in strategic management = 100%
	4	Consolidation of the MEM	0 < age (years) ≤ 4 = 20%; 4 < age ≤ 8 = 40%; 8 < age ≤ 12 = 60%; 12 < age ≤ 16 = 80%; age > 16 years = 100%
Efficiency and transparency	1	Number of IAO's staff	0 < members < 3 = 0; 3 ≤ members ≤ 5 = 100%; members > 5 = 0
	2	IAO composition	External members < 60% = 0; 60% ≤ external members ≤ 70% = 100%; external members > 70% = 0
	3	IAO annual meetings	0 < annual meetings < 6 = 0; 6 ≤ annual meetings ≤ 10 = 50%; 10 < annual meetings ≤ 14 = 100%; 14 < annual meetings ≤ 19 = 50%; annual meetings > 19 = 0
	4	Annual cost of MEM	Annual cost < €6,000 = 0; €6,000 ≤ annual cost ≤ €10,000 = 50%; €10,000 < annual cost ≤ €14,000 = 100%; €14,000 < annual cost ≤ €18,000 = 50%; annual cost > €18,000 = 0
Participation and motivation	1	Participation in setting the objectives	Evaluated people involved in setting the objectives = 100%; Evaluated people not involved in setting the objectives = 0
	2	Other moments of participation	Presence of other moments of participation = 100%; absence of other moments of participation = 0
	3	Self-evaluation	Presence of self-evaluation = 100%; absence of self-evaluation = 0
	4	Link between evaluation and wage	Presence of a link between evaluation and wage = 100%; absence of a link between evaluation and wage = 0

Table 3

Descriptive Statistics

Variable	N	Min.	Max.	Mean	St. dev.	Correlations		
						1	2	3
1 Leadership and organizational culture	77	0	0.820	0.440	0.180	1		
2 Efficiency and transparency	77	0	0.880	0.388	0.200	-0.065	1	
3 Participation and motivation	77	0	1	0.630	0.230	-0.001	0.186	1

It is worth noting that the “leadership and organizational culture” which connotes the managers’ evaluation models in the Italian health system is slightly inferior to the average value it can achieve, while the minimum value is referred to the “efficiency and transparency” of the process. This basically means that the decisions about the composition, costs and activity volume of the internal audit offices, or similar bodies, inside the organizations, have not been sufficiently aligned to what is commonly considered as a best practice. Only dimension of “participation and motivation” is above the average score, which means that most attention has been paid so far to the involvement of health managers in the evaluation process. In general, the design of the managers’ evaluation models in the Italian health care sector seems to be more focused on the personal aspects related to the relationship with the evaluated rather than on the structural and working conditions of systems. No significant correlation was found among the variables.

The empirical investigation was used both to refine the model and understand the maturity of the PMSs developed in the health care sector, and to identify some potential determinants of good practices.

The three dimensions of proper functioning were alternatively considered as dependent variables in a stepwise multiple regression analysis. They are shown together with the seven independent variables, mentioned at the end of the previous section, in Table 4, which reports the correlation matrix among the all variables.

Table 4

Pearson Correlations

Variable	1	2	3	4	5	6	7	8	9	10
1 Leadership and organizational culture	1									
2 Efficiency and transparency	-0.065	1								
3 Participation and motivation	-0.001	0.186	1							
4 Economic performance	-0.071	-0.024	0.088	1						
5 Standardized ratio of hospitalization	0.155	-0.033	0.419**	-0.010	1					
6 Health care customers' satisfaction ratio	-0.089	0.021	-0.234*	-0.007	-0.723**	1				
7 Synthetic index of health care quality	-0.150	-0.027	-0.414**	-0.060	-0.855**	0.750**	1			
8 Per capita health care expenditure	0.044	0.292*	0.245*	0.135	0.040	0.270*	-0.029	1		
9 Regional health care economic loss	0.093	0.155	0.374**	0.137	0.628**	-0.352**	-0.647**	0.581**	1	
10 LHA's total revenue	-0.116	-0.023	0.129	-0.250*	0.217	-0.122	-0.141	-0.110	0.061	1

Notes. * $p < 0.05$; ** $p < 0.01$.

As immediately deducible, the dimension of “participation and motivation” presents the highest correlations, under a quantitative and qualitative point of view, with the independent variables, among the dependent ones. Some interesting observations emerge from the correlations among the independent variables which were partially taken into account as in many cases they reflect slight undertones of the same aspect or are mutually conditioned. For instance, the strong relationship between the “health care customers’ satisfaction ratio” and the “synthetic index of health care quality” is unsurprising, since both measure the quality of health care delivery, but in the first one a perceived quality and in the second a provided quality. In the same way, it is not unexpected the fact that these two parameters of quality are negatively related to the “standardized ratio of hospitalization”, so confirming that the higher the number of hospital admissions, the lower the quality of health care delivery. The demand for admissions by the citizens to the hospital, beyond a reasonable limit, is also associated with higher values of “regional health care economic loss”, which in turn is understandably linked to low quality. Some other correlations, in spite of their lower values, highlight a sort of trend in the sector. If a good relationship between the perceived quality of services and the “per capita health care expenditure” emerges, this last one has also a strong link to the bad economic performance at regional level. It seems to testify to a problem with efficiency that is confirmed at organizational level by the fact that the amount of total revenue of the local health care authorities is negatively related to their economic performance. The problem of “managing complexity” appears again, but also a sort of trade-off between outcome and efficiency which requires more empirical scrutiny. Anyway, in line with the purpose of this study, the correlations are not used to remove independent variables, while their mutual relationships are adequately controlled by means of collinearity diagnostics in the following regression analysis.

As reported in Table 5, the stepwise regression analyses of good practice in health managers’ evaluation revealed the significant contribution of some independent variables to the explained variance of two dimensions: that of “efficiency and transparency” and that of “participation and motivation”. In particular, the statistical

method highlighted a positive impact of the “per capita health care expenditure”, which accounts for the resource utilization and the volume of health services at regional level, on the “efficiency and transparency” level of the managers’ evaluation models. “Participation and motivation” is affected, in a stronger way than the previous case, by both the “standardized ratio of hospitalization” and by “per capita health care expenditure”. So size parameters, in terms of demand, services, and resources, seem to have oriented the local health care authorities toward the development of more efficient and participated PMSs.

Table 5

Stepwise Regression of Independent Variables on PMS’s Dimensions of Proper Functioning

Dependent variable	Efficiency and transparency			Participation and motivation		
Independent variable	β	Std. error	t-value	β	Std. error	t-value
Intercept	-0.682	0.405	-1.683	-0.896	0.441	-2.031
Economic performance	-	-	-	-	-	-
Standardized ratio of hospitalization	-	-	-	0.003***	0.001	4.013
Health care customers’ satisfaction ratio	-	-	-	-	-	-
Synthetic index of health care quality	-	-	-	-	-	-
Per capita health care expenditure	0.001**	0	2.640	0.001*	0	2.233
Regional health care economic loss	-	-	-	-	-	-
LHA’s total revenue	-	-	-	-	-	-
N	77			77		
R-squared	0.085			0.477		
Adjusted R-squared	0.073			0.207		

Notes. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

These preliminary results suggested concluding the empirical investigation with a further regression analysis which considered, as the dependent variable, the sum of the three dimensions of proper functioning. Actually, a sort of synthetic index of good practice in public managers’ evaluation was built to compare results about determinants. As shown in Table 6, only the independent variable of “regional health care economic loss” significantly contributes to the explained variance.

Table 6

Stepwise Regression of Independent Variables on the Synthetic Index of Proper Functioning

Dependent variable	Synthetic index		
Independent variable	β	Std. error	t-value
Intercept	0.5	0.014	35.481
Economic performance	-	-	-
Standardized ratio of hospitalization	-	-	-
Health care customers’ satisfaction ratio	-	-	-
Synthetic index of health care quality	-	-	-
Per capita health care expenditure	-	-	-
Regional health care economic loss	0.00002338**	0	3.171
LHA’s total revenue	-	-	-
N	77		
R-squared	0.118		
Adjusted R-squared	0.106		

Note. ** $p < 0.01$.

Concluding Remarks

Starting from the assumption that a lack of consistent and grounded frameworks about the principles of good practice in performance measurement in the public sector still exists, this paper aims to contribute to literature by proposing a new model for measuring the proper functioning of a PMS. Focusing on the intrinsic features, both structural and operational of such a system, and following indications consolidated in the literature about which elements seem to condition the use of performance data in management, the three dimensions of “leadership and organizational culture”, “efficiency and transparency”, and “participation and motivation” were selected.

The set of indicators to measure each of them was then contextualized to the managers’ evaluation models developed by the Italian public health care authorities, since this field was viewed as particularly suitable to the research purpose.

The theoretical model was employed in an exploratory trial to a significant sample of local health care authorities to validate dimensions and scores through a benchmarking approach. This empirical investigation also offered an opportunity to reflect on the maturity of the PMSs as it highlighted, for instance, little attention paid to the development of managers’ evaluation models aligned to what is commonly considered good practice.

With an exploratory approach, the trial was also used to begin to identify and discuss some potential determinants of best practices in the functioning of a PMS. It was found that “efficiency and transparency” was significantly influenced by the “per capita health care expenditure” at a regional level, while that the “standardized ratio of hospitalization” and the “per capita health care expenditure”, again at regional level, had a significant positive impact on “participation and motivation”. This highlighted the overriding importance of size, measured in terms of health demand, services, and resources, in driving the development of more efficient and participatory managers’ evaluation models. Furthermore, considering the three dimensions together, the “regional health care economic loss” appeared to contribute significantly to the proper functioning of the system. Such a result represents a critical point of the analysis which requires more empirical investigation, as the circumstance seems to suggest a stronger attention to the development of good PMSs paid by the LHAs within a regional health group characterized by low economic performance. These findings confirm the fact that the environmental variables, basically beyond health managers’ control, have an effect on the development of advanced managerial tool in the health organizations. They also highlight the importance of financial pressure and constrained resources in the implementation of PMSs.

Research evidence, nevertheless, must be interpreted with caution, as one of the unavoidable limits of such a study is the contextualization to a specific field of analysis that is the Italian public health care system with reference to the managers’ evaluation models. Further research is also needed for the final validation of the model which implies, in particular, focusing on the concept of “effectiveness”, that in literature is usually associated with the systematic use of performance information in decision-making in order to improve public services’ outcome. Future investigations, in this sense, will be devoted to understanding if a PMS with certain intrinsic features, those commonly related to good practices, is really conducive to performance information use.

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