

Performance measurement design: a contingency perspective from the Italian regional healthcare services

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Abstract

Purpose – In the last few decades, the effectiveness of the evaluation of human resources and their performances has become a crucial theme in the debates of the public sector. The purpose of this paper is to analyze key design characteristics of performance management system (PMS) that may be effectively adopted and deployed by management to enable the assessment for a health system improvement.

Design/methodology/approach – This paper falls under the field of studies that focuses on the design and implementation of PMS in the healthcare sector. This research adopted a qualitative approach across the case study method to understand the role of different contextual factors and their impact upon the design of PMS. Mainly drawing on previous studies on the Italian regional health systems, a target region has been selected for these purposes.

Findings – As a result, the new PMS was effectively working and was structured with a balanced focus on the region and the single healthcare organizations. The need for improving the information systems within the healthcare organizations was strongly emphasized. The crucial element of the new PMS was the transparency about the assessment procedures.

Originality/value – This paper contributes to the debate on factors that can influence the design of PMS in healthcare. Relying on a contingent approach, the authors put forward the need of a more comprehensive and integrated frameworks encompassing organic conception of PMSs, as well as of the interdependencies among their components.

Keywords Public healthcare, Performance management system, Regional healthcare system

Paper type Research paper

Introduction and aim

Originally, performance management systems (PMS) have been observed in organizations operating in the private sector. In the last few decades, however, the effectiveness and fairness of the evaluation of human resources and their performances has become a crucial theme in the debates of the public sector.

A worldwide challenge for each healthcare system comes either from rising costs, complexity and size of this sector in the current economy, as well as scientific, political and economic changes, or ethical issues and demand for greater patient safety. As a consequence, many industrialized countries have realized the need to manage their “health production” and goals through PMS (Smith, 2002) to assess the performance of their healthcare system/organizations (Rosenthal *et al.*, 2004). In this regard, it is also worth noting that PMS issues in the healthcare sector shall be examined in light of the multiple roles of hospitals that include providing care to non-paying indigent populations, teaching and sponsoring research, as well as ensuring access to care to the community in general. In such a complex setting, the role of PMS and evaluation processes is

The authors of this paper have not made their research data set openly available. Any enquiries regarding the data set can be directed to the corresponding author.



increasingly becoming crucial to guarantee the quality and the comparability in the healthcare systems.

However, different systems place different emphasis on these desiderata (Smith, 2002). Consequently, a contingency perspective is helpful in detecting what the factors that may exert any influence on the design of either PMS, or assessment procedures are. In healthcare literature, papers find out that some external environmental factors such as normative pressures, changing in financing system and professionals' role have had a relevant impact on such processes (Preston, 1992; Jarvinen, 2006; Thorley Hill, 2000). It is important to highlight that the majority of these research works were carried out at the hospital level (Griffith *et al.*, 2006; Jacobs *et al.*, 2004; Thorley Hill, 2000; Preston, 1992; Abernethy and Stoelwinder, 1991; Abernethy and Brownell, 1999). To this extent, it could be interesting to analyze what happens at a meso-level and the Italian healthcare sector provides an ideal setting to test and develop contingency analysis, by focusing on the regional health services.

Since 1978, a reform process aiming to improve efficacy of care and efficiency of processes has characterized the Italian health system. The development of PMS can be traced back to the 1990s reforms that introduced managerial tools and devolved the organization and assessment of healthcare services to regions. The aim of the introduction of management concepts and private sector management techniques was to give public providers greater decision-making autonomy and increase their accountability. Moreover, as a consequence of the reforms, several elements differentiate the Italian regional health system (RHS), as it has been recognized by previous research works that categorized at least three different groups of regions. Specifically, these groups differ in terms of relationships between the region and the healthcare organizations, degree to which the regional goals are shared or imposed, ability to compose contrasting interests, as well as the different tools to govern the system, and the existence of inter-regional and intra-regional contracts (Formez, 2007). Apart from any categorization, Italy is nowadays characterized by 21 RHSs with significant differences from each other.

This paper aims to analyze key design characteristics of PMS that may be effectively adopted and deployed by management to enable the assessment for a health system improvement.

Consequently, the authors aim to answer the following research questions:

RQ1. What are the characteristics of PMS designed by Italian RHSs?

RQ2. What are the factors that may influence the choices relating to the design of PMS of Italian RHSs?

The remainder of the paper is organized as follows. The second section briefly reviews the existing literature on PMS in the healthcare sector. The third section describes the conceptual framework. The fourth section summarizes the research design. The fifth section presents the findings of the analysis and, finally, the sixth section discusses the implications of the study and outlines some concluding remarks.

Assessment of prior studies

This paper falls under the field of studies that focuses on the design and implementation of PMS in the healthcare sector, mainly as a consequence of the reforms that have characterized a number of countries in the wake of new public management.

Performance management is an interesting topic for scholars in management studies. The enhancement of outcomes and results with respect to objectives responds to the most modern management principles. However, the practice of performance management, and its distortive effects, (e.g. bureaucratization of measurement and conflicts dynamics), pose several questions and challenges (Canonico *et al.*, 2015).

In this sense, PMS must not only be solid (from a technical point of view) and functional, but also legitimate by the patients, physicians, providers. Therefore, PMS should be able to

allow the multidimensional facet of different expectations and to manage the influences of specific contingency factors.

In particular, literature highlights that factors, such as rising costs, technological advancements, aging population, health market failure and medical errors, led many countries to manage their health services through performance measurement systems (Smith, 2002) and performance assessment procedures (Rosenthal *et al.*, 2004). Consequently, both supranational organizations – such as the World Health Organization and the Organization for Economic Cooperation and Development – and academics, put effort in building models to re-shape private sector PMS models, in order to effectively adapt it for healthcare (Arah *et al.*, 2003; Smith, 2002; Veillard *et al.*, 2005; Chang *et al.*, 2002). It is worth noting that the issues relating to designing and implementing systems to measure and evaluate performance within the healthcare sector have been the subject of increasing attention over the years (Abernethy and Chua, 1996; Jones, 1999; Modell, 2001; Kurunmaki, 2004; Lehtonen, 2007). In general, literature agrees that healthcare sector provides a number of examples of complex organizations, characterized by difficult dialectics between two conflicting logics: the management and the professional (Jacobs *et al.*, 2004). Current studies specifically highlight that an attempt to impose controls may instigate new endeavors among professionals to evade it, thus making the implementation of PMS and management accounting systems (MAS) not effective (Jacobs *et al.*, 2004; Kurunmaki, 2004; Caldarelli *et al.*, 2012). Moreover, Gray *et al.* (2015) question how and to what extent organizations can employ measurement system as a driver of change in organizations.

From this perspective, it is also worth highlighting that the existing literature that addresses the factors which possibly influence PMS design in the healthcare sector mainly refers to the hospital level and employs both qualitative (Jarvinen, 2006; Jacobs *et al.*, 2004; Preston, 1992) and quantitative (Thorley Hill, 2000; Abernethy and Stoelwinder, 1990; Abernethy and Brownell, 1999; Abernethy and Vagnoni, 2004) approaches. More specifically, Preston (1992) warns that the emergence of accounting systems in the US healthcare context cannot be explained merely as being contingent upon changes in environmental conditions and internal structures, but also depends on medical knowledge and practice. Furthermore, focusing on the same country setting, Thorely Hill (2000) demonstrates a strong impact of institutional pressures and new regulations on the introduction of accounting systems. By referring to the Finnish hospitals, Jarvinen (2006) emphasizes that the use of innovative performance measurement tools, such as activity-based costing are mainly influenced by institutional pressures and financial constraints, but also by professionals' motivation. Finally, other studies widely recognized the key role of professionals in the healthcare sector and the crucial importance of professionals' participation in budgeting and clinicians attitudes toward accounting tools, such as PMS (Abernethy and Vagnoni, 2004; Jacobs *et al.*, 2004).

The above-cited studies report various results and put into light the potential effects of a wide range of factors – depending also on the units under investigation and on the specific country setting – that influence PMS. In this regard, literature emphasizes that, even if in this sector significant resources are devoted to the development of PMS and MAS, several questions as to the effectiveness of these systems (Chua and Degeling, 1993; Lapsley, 1994; Abernethy and Stoelwinder, 1995; Jones, 1999; Pettersen, 2001) still remain unsolved, thus emphasizing that there is still room for more investigation. Further concerns relating to PMS and MAS effectiveness are due to the possibility of measuring only some aspects of performance (Lapsley, 2008), the tendency of processes to be less transparent and more difficult to evaluate (Miller, 2002; Anthony and Young, 2005; Eeckloo *et al.*, 2007), and uncertainty relating to the lack of commonly accepted indicators (Miller, 2002).

Theoretical framework

From a theoretical perspective, this research has been conducted within the framework of the contingency theory, with the purpose of elucidating which are the characteristics of

the PMS designed by Italian RHSs and what are the factors that influenced the design of these PMS.

Literature usually categorizes four types of key factors influencing the design of PMS and MAS: environment, technology, structure and size (Waterhouse and Tiessen, 1978; Otley, 1980). However, according to Chenhall (2003), two more variables could be added to these traditional factors, that is, strategy and culture. Moreover, Chenhall (2003) gathered the results of the studies carried out within the framework of the contingency theory between 1980 and 2000 and on these basis formulated several propositions relating to how contextual factors influence management control systems. Drawing on this study, the authors propose the following adaptations of Chenhall's propositions, to render these useful to develop our analysis on PMS and evaluation processes designed by Italian RHSs. In particular, this research will focus on the impact that the external environment, the size and the structure (that will be jointly considered), the strategy, and the culture can exert on the configuration of the PMS. The authors decided to not consider technology for our analysis, by assuming that the level of technological evolution is almost the same for each of the Italian RHSs.

Environment

The external environment represents a powerful contextual variable within the contingency-based research. It is argued that there are several aspects that can be linked to the external environment, such as uncertainty, ambiguity, complexity and turbulence (Chenhall, 2003). It should be pointed out that in this research the focus of the analysis is on the same sector within the same country, therefore many external environmental variables are shared by the Italian regions. However, the impact on regions of aspects, such as the turbulence in the political spheres, and changing regulation for financial constraints may vary in their intensity. Accordingly, this research will take into account the political uncertainty in terms of changes in the regional government, and changing regulation in terms of new financial constraints imposed by central government, through the following general proposition:

- P1.* The more uncertain the political and regulatory regional environment, the more externally focused and ceremonially adopted the PMS.

Size and structure

The literature highlights that the size of organizations exerts influence on the choice of control and management tools to be adopted. Here, the authors consider as a measure of the size of the Italian RHSs the number of inhabitants that varies from 122,000 to 9,000,000. This wide variability could influence the choices and the characteristics of the PMS designed, by requiring a more participative approach to face the greater dimensions of the population more effectively. Moreover, they consider a structural dimension by taking into account the number of health authorities (ASL) and autonomous hospitals (AO) belonging to each region, to the extent that more autonomy implies more cooperation between the institutional actors to ensure effectiveness. Hence, the general proposition related to size and structure is the following one:

- P2.* The larger the region, the greater the emphasis on participative PMS.
- P3.* The more autonomous structures within the region, the more emphasis on shared PMS.

Strategy

Strategy is a variable that to a certain extent is in contrast with the general contingency position according to which managers are captured by their operating situation. Indeed, it represents a particular variable of the contingency-based research because it leads to recognize that managers have "strategic choice" whereby they can place their organizations in particular environments (Chenhall, 2003). Therefore, in a sense it is not an element of the context but it is a lever that managers may use to influence the environment, the technologies and the organization

(Chenhall, 2003). Literature emphasizes several classifications of strategy that Langfield-Smith (1997) grouped on the basis of the positioning (cost leadership–differentiation), the typology (entrepreneurial–conservative) and the mission (build–harvest). With reference to the specific Italian case, recent studies carried out highlight that regions adopt different strategies pointing on cooperation, on competition or a mix of both with different degree (Censis, 2008; Formez, 2007). Consequently, the authors will refer to strategy considering the typology classification. They will regard as entrepreneurial the regions that pursue the innovation, while conservative the regions that engage in innovation with reluctance and usually as a response to a serious challenge. The proposition related to strategy is the following one:

- P4. Entrepreneurial regions tend to give importance to thorough and shared PMS which entail a participative approach of different institutional actors, such as physicians.

Culture

Culture can be broadly defined as the sum of knowledge, beliefs, art, morals, law, customs and other capabilities and habits acquired by man as a member of society. In Italy, each region is unique because of its own dialect (somehow real language) traditions and beliefs. In addition, traditionally there has been a strong separation between the northern and the southern regions. Indeed, although the national identity partially weakened these aspects, the historical gap between northern and southern regions is still alive. The common stereotypes oppose northern regions more industrialized and where people have entrepreneurial approaches, to southern regions where criminality still affects the public services, the voice of public opinion is traditionally weaker and political patronage is strong and omnipresent. From an the organizational perspective, the Italian RHSs usually are categorized in three models (Formez, 2007): a bureaucratic model in which the region is a superior and authoritarian body, a centralized model in which the region is willing to communicate with the healthcare organizations, and a contractual model in which the region establishes relationships of cooperation with the healthcare organizations. To this extent, a new proposition related to culture has been detected:

- P5. The greater the heritage of a culture of communication and transparency, the greater the emphasis on sophisticated and innovative PMS.

Research design

This research adopted a qualitative approach across the case study method, on the grounds that it facilitates the development of a deeper understanding of the role of different contextual factors and their impact upon the design of PMS. Mainly drawing on previous studies on the Italian RHSs (Formez, 2007; Caldarelli *et al.*, 2012; Caldarelli *et al.*, 2013), a target region has been selected for these purposes.

In particular, the authors examine the PMS design with a specific regard to the level of multidimensionality, the openness to learning and cooperating either, within or outside the regional system, the degree of integration of different control tools, the procedures of communication, sharing and collaboration. Given the focus on the performance measurement tools used by senior managers and policy makers, all regional councilors and heads of health departments (including some physicians) were invited to participate in the study. In addition, also a number of chief executive officers were interviewed. In this regard, it is worth specifying that, since the process of designing and implementing the PMS has been carried out over four years (2007–2011), the authors interviewed people that were employed as councilors, CEOs or heads of health departments in 2007 and 2010. In sum, they collected three interviews with people working in 2007, and ten interviews with people operating in 2010 (Table I).

The aim of the interviews was to enucleate different perspectives on the same topic in terms of impressions and ideas about the PMS to increase the reliability of conclusions drawn by the authors. The analysis of the available documentary evidence on PMS design and evaluation procedures formed the basis for the semi-structured interviews (conducted by the fourth researcher), that were also complemented with less structured discussion, so that interviewees could highlight their meanings and perception about the PMS and the field situation. The purpose of these interviews format was to create a flexibility that enables interviewees to extend issues and “think aloud” about areas that they see as being of a particular concern.

Findings

The region examined is one of the largest regions of the South of Italy and has been classified (Formez, 2007) as a conservative and bureaucratic regional health service. Moreover, this region, between 2005 and 2010, has suffered quite turbulent regulatory and political environments, and persistent financial imbalance.

In particular, the region examined experienced in 2007 a financial and economic situation particularly critical, both in relation to financial deficit, as well as with reference to the problems of organization and management of its health service. Subsequently, in order to achieve the reduction and restructuring of healthcare expenditure, the region issued a plan for return from debt, mainly based on the introduction of constraints and spending targets toward an effective cost containment and the achievement of simultaneous economic and managerial equilibriums, both at the regional and at the organizational level, in order to assure high levels of care in a framework of compatible resources. The goals of the plan forced the adoption of new management accounting tools and performance measurement procedures.

The interviewees emphasized that when the plan was issued in 2007 the implementation of the performance measurement system was still at an early stage, and the PMS was only formally adopted. Thus, in the wake of the problematic situation, the regional council engaged actions to design a more appropriate PMS, and to implement it effectively.

The CEO interviewed critically asserted that: *for the sake of rapidity* (emphasis added), *the process undertook was carried out only at a governmental level.*

In this initial phase, there was no consultation with neither delegates of the local healthcare organizations nor representatives of different categories of healthcare professionals.

Consequently, as one the physicians interviewed highlighted: *the PMS designed was only influenced by the economic circumstances, but was unable to fully capture the essential elements relating to the quality of the health service delivered.*

Moreover, the CEO emphasized his difficulties to manage the reporting process. It is also worth noting that a further difficulty arose because CEOs were supposed to collect and consolidate the data of each health department, and afterwards to transfer these data to the regional council. However, without clear guidelines the CEOs had the problem of giving instructions to departments regarding the data to be provided. To better elucidate these aspects, the authors quote from the CEO: *We received the new “guidelines”* (emphasis added), *if you like to call it guidelines! I had chats with some colleagues and no one had any idea about the way through which we could support the introduction of the new systems. This is mainly because we did not know how the system was supposed to work, what data of the single health*

Categories of individuals interviewed	Individuals interviewed (2007)	Individuals interviewed (2010)
Councilors	1	2
CEOs	1	4
Physicians head of health departments	1	4

Table I.
Information about
interviews

departments would have been useful, and how we should report the consolidated data of our healthcare organizations to the Regional Council.

In addition as the CEO and the physician interviewed for 2007 stated, the lack of transparency about the process and the absence of instructions led the majority of the physicians to strongly oppose the requests for information about their tasks and their performance.

One of the councilors interviewed for 2010 was able to fully summarize these problematic issues: *The problem was due to the fact that the focus of the PMS was mainly at the Regional level, with a limited degree of thoroughness, shallow guidelines, and above all with no specific reference to the possible troubles of the single healthcare organizations in managing the process. When I was elected in 2010 I had meetings with a number of CEOs and physicians, and they specifically argued that the real problem with such a new system was related to the absence of instructions in terms of data to be collected and reported to the Region, and the dangerous lack of transparency on the assessment procedures.*

Moreover, another set of problems regarded the inadequacy of the criteria for the assessment procedures. Indeed, as one of the interviewees pointed out, *although the criteria considered to measure the performance were referred to appropriateness, mobility and mortality, the emphasis was mainly on the achievement of the financial balance and other relevant criteria such as efficiency and effectiveness, but above all the quality of the service and health of the population were unjustifiably neglected.*

However, the elections of 2010 resulted in a change in the regional council composition, and one of the first actions of the new regional government was to redesign the PMS that was completely useless because *only ceremonially adopted at the date* (Councilor).

It is worth noting that the new regional board demonstrated more openness towards participative approach and allowed greater autonomy for the healthcare organizations within the RHS. Moreover, the large majority within the council contributed to mitigate the characteristic turbulence of the political and normative environments. In particular, the process for redesigning the PMS was developed through a series of meetings and consultations with various parties, also by employing experts from another region that had already been successful in implementing an efficient PMS, and finally by participating to a benchmarking table with other RHSs at different stages of the PMS implementation phase. In fact, taking into account the experience of the 2007 failure, since the beginning, the management has tried to involve the employees at all levels, by using various tools. First a number of meetings were organized to share with the various subjects involved in the process the need to streamline the processes and the need to implement the PMS.

More specifically, one of the councilors clarified that *The aim of such activities was to develop a commitment for the changes in action and, more important, to embed the conception of the PMS as a means of punishment and coercion in favour of a new vision of control as an element to support the quality of the healthcare. So it was essential to clarify immediately that any type of instrument would be aimed at improving the results without any punitive or coercive intent.*

This kind of strategy was appreciated as the following quotes from one of the CEOs elucidate: *The changes are not welcomed if the motivations and the goals that lead to the introduction of new logics are not understood. The failure of the 2007, so recent, was a tangible proof. Hence, we appreciated the actions undertaken by the members of the Regional Board to build consensus before proceeding. This not only led us to feel not threatened but, also stimulated a participatory and proactive spirit.*

Moreover, this initiative was welcomed by the heads of departments that were involved, that, contrary to what happened in 2007, showed greater acceptance, as evidenced by the following quote of one physician:

I appreciate this kind of involvement as I am convinced that no one can identify the problems of a process and the possible solutions better than someone who is involved in the process every day.

Of course I recognize that I cannot replace an expert, but I think that our contribution is crucial to make sure that PMS will work in a manner adequate to the real exigencies of the health system.

In addition, during the interviews another crucial element, that of the professional ethic, came to light. In this regard, the interviewees emphasized that the participative approach during the preparatory stage was important to reassure physicians about the usefulness of the PMS toward an improved quality of the service. To clarify the authors report a quote from one of the physicians: *Being involved in this preparatory stage made me feeling part of the challenge and prompted me to question my previous conceptual schemes. I realized that the subsequent actions, even if difficult to accept at first, would have been in our favour and not against us or our ethics. I finally became aware that a small effort by everyone would have favoured, above all, the quality of our healthcare service, and this is what we all must look at.*

What should be noted is that, *although an agreement was difficult to reach, the negotiation was productive and useful because people were more opened to discussion and at the end we got a satisfactory result that accomplishes the needs of the various subjects in an reasonable way* (Councillor).

In December 2010, an agreement was reached and the regional board issued the following official documents:

- Manuals that describe the performance measurement system in terms of goals, focus, assessment procedures and criteria.
- Regional guidelines which define the essential elements of the internal regulations on the basis of which each healthcare organization should design its planning processes, documents, management, accounting and auditing.
- Regional guidelines for the definition of the plan of cost centers and centers of responsibility, the budgeting process and so on, setting out the principles for the keeping of analytical instruments to ensure the homogeneity of the detection systems of individual organizations and the comparability of data at the regional level.

As a result, the new PMS was structured with a balanced focus on the region and the single healthcare organizations and strongly emphasized the need for improving the information systems within the healthcare organizations. The crucial element of the new PMS was the transparency about the assessment procedures. Indeed, the first document cited above clearly stated how the assessment is carried out and who carries out the evaluation, who are the subjects evaluated, and what are the criteria of reference. In this regard, not only it was made clear that the main criteria considered were those relating to mobility, appropriateness, mortality, quality effectiveness and efficiency, but it was also provided an explanation about the content and the importance of each of these measures.

However, despite the positive results achieved in this phase what should be noted is that some difficult issues, especially with regard to the reluctance of some people to changes, have continued to persist. This clearly emerged also during some of the interviews that highlighted two major problems. First, some of the physicians were firmly against the changes as they thought that the new measures would have irremediably compromised the quality of the service. Therefore, they also refused resolutely to participate to any meetings for supporting the on-going process of change.

Second, often the regional board found it difficult to manage the conflicts between the different categories of individuals (e.g. between physicians and CEOs) involved in the negotiations. The following quotation from a member of the regional board elucidates this situation with more detail:

Some meetings have been postponed because of the conflicts within to the single healthcare organizations [...] We were there with our plans and our ideas, expecting difficult but productive discussion to reach an agreement, but the representatives of different categories sometimes began to

debate on their roles and responsibilities, forgetting the original intent of the meeting. Thus, in order to not compromise the whole project with a ceremonial agreement devoid of substantial bases, in several cases we could simply tell them to go back and then fix another meeting, to give them time to discuss their ideas and to develop a shared and agreed course of action (Councilor).

However, despite the above addressed problems, the interviews also clarified that the new PMS was effectively working. Furthermore, during the second half of 2011, the regional board, and the CEOs and the heads of departments willing to collaborate have continued to work together to consolidate the implemented PMS. In particular, some small changes were made to correct some of the deficiencies that arose over the time. Consequently, the attention has been devoted to the improvement of the information systems to make them user-friendlier. This has contributed, to improved results in terms of timeliness and quality of information, already in the first quarterly report of 2012:

In the first report of 2012 we realized the achievement of certain improvements. Look [...] (showing us an internal document) numbers speak by themselves! In statistical terms, there have been a reduction of 40% of the delays in updating the system; a reduction of 60% in terms of errors in the compilation of the same; and a greater accuracy in terms of compliance of the data entered into the system with respect to the set of indicators (Councilor).

Discussion and conclusions

This paper contributes to put forward the need of a more comprehensive and integrated frameworks encompassing organic conception of PMSs, as well as of the interdependencies among their components.

From a theoretical perspective, this research has been conducted within the framework of the contingency theory, with the purpose of elucidating which are the characteristics of the PMS designed by one of the Italian RHSs and what are the factors that have influenced the design of these PMS. Hence in this section the authors discuss the findings by referring to the propositions developed in the third section.

Concerning the environment, they developed the following proposition:

P1. The more uncertain the political and regulatory regional environment, the more externally focused and ceremonially adopted the PMS.

In this regard, the case study has emphasized that uncertainty related to changing regulation, financial distress and consequent lack of political stability may lead to the development of formal PMSs, not adequate to the real needs of the health service.

In fact, the region examined in 2007 was experiencing these kinds of problem, and as a result, in the wake of the emerging difficulties an inadequate PMS was introduced. Moreover, the undeniable limitations of the new tools induced the subjects affected by the changes to ceremonially conform with the new measures, but with no attempts to proactively engage with the on-going process. However, when in 2010 the regulatory and political conditions appreciably changed, also the PMS design and effectiveness have benefited from the more favorable environment. Indeed, the new circumstances fostered the creation of a PMS adequate for the specific purpose of the RHS and also posed the premises for an effective implementation of the new measures.

With reference to size and structure, they formulated two propositions:

P2. The larger the region, the greater the emphasis on participative PMS.

P3. The more autonomous structures within the region, the more emphasis on shared PMS.

In this respect, the findings show that these factors were not the determinant in shaping the PMS of the studied RHS. Indeed, the elements related to both size and structure of the system remained approximately constant from 2007, while the PMS design has changed

since 2010. Arguably, this suggests that these factors were did not affect PMS design and effectiveness.

Moreover, they developed a proposition related to strategy, as it follows:

P4. Entrepreneurial regions tend to give importance to thorough and shared PMS which entail a participative approach of different institutional actors, such as physicians.

In this regard, it is worth noting that in 2007 the RHS examined was considered a conservative one. Coherently, in this period the PMS was developed without fostering participation and resulted in a limited degree of thoroughness, shallow guidelines and lack of transparency. This affected the implementation that, as previously emphasized, was only ceremonial. However, the changes in the political environment favored also a change in the strategy toward a more entrepreneurial approach. This change influenced also the processes undertaken to develop the PMS, which were characterized by a new openness and an appreciated participative approach. As a result, the PMS design and implementation have benefited from collaboration and negotiation between various institutional actors, toward the achievement of better results.

Finally, they considered the cultural dimension and to this extent, a proposition related to culture has been detected:

P5. The greater the heritage of a culture of communication and transparency, the greater the emphasis on sophisticated and innovative PMS.

Also, this proposition seems convincing with regard to the findings. Indeed, while in 2007 the RHS observed was considered a bureaucratic one, the changes of 2010 also resulted in a strongest willingness for the RHS to be open to communication and to establish a dialog with the healthcare organizations, also allowing them greater autonomy and voice, as well as in the desire to be more transparent. Accordingly, also the PMS design and implementation have benefited from the new culture, thus leading to significant improvements.

Hence, at this stage the authors can conclude that this research, by examining the relationships between contextual factors and regional systems of performance measurement, bridges the gap in the literature on this subject and also provides interesting evidences about the on-going process of corporatization of healthcare in Italy. Indeed, focusing on the Italian healthcare sector allows us to examine the issues related to performance measurement and evaluation in an industry experiencing extensive turbulence as a consequence of changing regulation, increased competition, and pressures for more efficient performance. From this perspective, and given that under Italian law regions behave like holdings (Longo *et al.*, 2003) with the autonomous responsibility to set objectives, and to plan activities and evaluation procedures, by developing a contingency analysis at the regional level, the results of this study could contribute to the on-going debate on the factors that possibly influence the effective implementation of PMS and MAS in complex organizations. Moreover, for practitioners in healthcare, dealing with the uncertainty typical of the sector, this research can make a valid contribution in that it clarifies the influences that the context can exert on the design of PMS. In particular, from the analysis of the findings the authors can gain a deeper understanding about how and why something happens in the Italian RHSs, by contributing to detecting which are the hidden aspects of performance measurement and evaluation, and how they can be improved. That said, before concluding it is also worth noting that this research could be advanced, either by analyzing further regions or by examining the intra-regional context. Even in the sole domain of healthcare industry, future directions of this research will pursue a multiple case study, to verify how different European RHSs manage PMS, trying to find examples of a holistic approach of mutual interactions among components of PMS.

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