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Intellectual capital and performance measurement in healthcare organizations: An integrated new model

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An integrated new model

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Abstract

Purpose – The purpose of this paper is to define a new conceptual framework or model, to measure and manage organizational performance, both financial/non-financial and intellectual capital (IC), in a healthcare organization.

Design/methodology/approach – The integrated new model is produced by integrating the common assessment framework (CAF) model with two other frameworks representing the IC and leadership. These already existing models are originated, respectively by the Health Agency of Emilia-Romagna Region (Italy) and the National Healthcare System (NHS – UK). The integration phase is operated by comparing the CAF and IC models so as to assess the determinant factors that are present in both frameworks and eliminating such redundancies. Concerning the leadership determinant factor, the relevant conceptual framework of CAF model is substituted by the new leadership model proposed by the NHS.

Findings – A new integrated model is made available for a subsequent step of empirical implementation and validation through its application in a healthcare organization. The main advantage of this model is the ability to measure and manage IC and financial/non-financial performance. Moreover, the use of a single measurement system facilitates the interpretation and coherency assessment of measured data so originated.

Originality/value – The added value this work provides will enrich the academic literature regarding performance measurement systems in healthcare organizations, also providing an original integrated model that is able to exhibit the advantages highlighted above.

Keywords Leadership, Intellectual capital, Performance measurement system, Healthcare organizations

Paper type Research paper

1. Introduction

The economic and financial downturn induced the drastic reduction of financial resources dedicated to services for citizens and, among these, the healthcare service. In this solicitation, of a local nature, healthcare organizations are driven to the disruptive renewal caused by the introduction of new technologies on a global scale (Topol, 2012). In this scenario, it should be noted that using performance measurement systems (PMS) is widely recommended to facilitate the implementation of strategies and for the improvement of organizational performance (Davis and Albright, 2004). Furthermore, the intellectual capital (IC) is the primary source of value creation and sustainable competitive advantage for organizations (Lev, 2003).

According to Lev and Daum (2003), the internal management control and reporting systems should provide a more holistic view of organizational reality, in order to provide stakeholders and managers with a comprehensive evaluation system of value creation, of the various factors of production, assets, processes and procedures, and their different combinations.

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Ittner *et al.* (2003) sustain the need to integrate the PMS with other measurement systems in the organization, observing that little attention to the identification of ways to connect PMS with other systems of measurement was paid so far, e.g. the accounting system or that of the determination of remuneration incentives.

The main objective of this work is giving a contribution to filling the gap that could be recognized in literature on this issue. This scope is achieved proposing a conceptual model for integrating a PMS with the IC measurement functions. This model provides a holistic representation of healthcare organizations and it could be used by healthcare management in order to manage and strategically control their organizations more effectively.

Through a literature review, the two frameworks adopted as references, namely, the measurement of performance and the management of the IC, are identified. Indeed, for the PMS model the paper refers to common assessment framework (CAF) model (European CAF Resources Centre, 2013) while, for the IC model, the conceptual framework developed by the Health Agency of Emilia-Romagna Region (Italy), in collaboration with the University of Ferrara (ref. Baccarini *et al.*, 2008) is considered. The integration of the two models is made, with reference to healthcare organizations, comparing the parameters of both models in order to detect and overcome overlaps and proposing, where necessary, appropriate modifications. The organization of the work is synthetically illustrated in Figure 1.

2. Theoretical framework

2.1 IC – definitions and structure

The conceptual construct of IC has been extensively investigated. The results of this work have led to an extensive literature relating to the research, business and government. In 1969, John Kenneth Galbraith used the term IC in a letter to Michael Kalecki (Bontis, 1999). The term was used once again by Tom Stewart (1991) in an article published on *Fortune*, so as spreading the word beyond the research field.

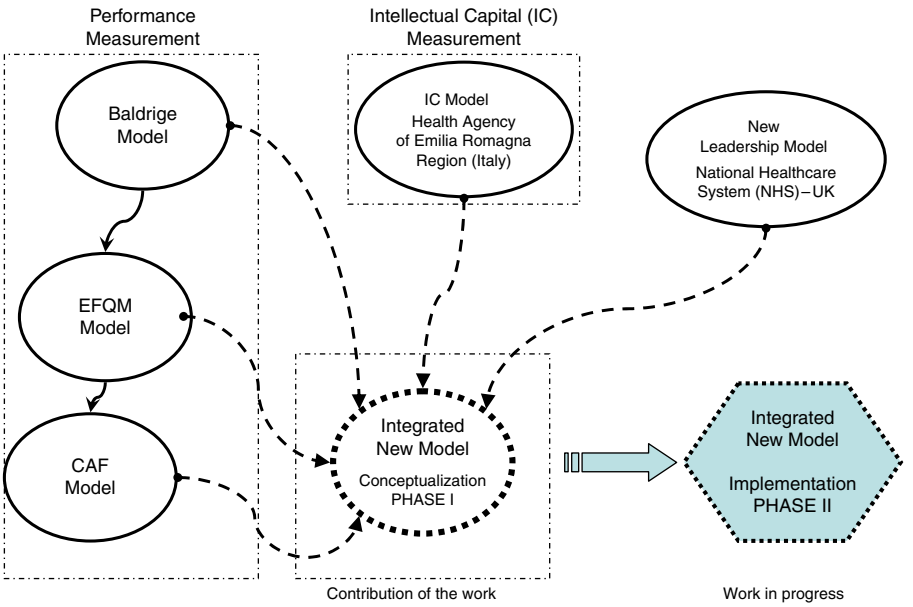


Figure 1. Conceptual organization of the work

According to Bernard Marr (2005), the origin of the term IC dates back to 1836, when the scholar Nassau William Senior (1836) pointed out the IC as an important productivity factor. In the late 1950s, Peter Drucker (1959) stigmatized the importance of knowledge as a resource of organizations, and Penrose (1959), in her important work *The Theory of the Growth of the Firm*, pointed to the business organizations as a "collection of resources, divided into physical assets and human capital, in turn, formed by skills and know-how, all tied together by an administrative framework".

In the "1980s and 1990s", a further impetus to the study of the IC took place, due to the reconsideration of the so called resources-based view. According to this theory, the firms could gain competitive advantages by using resources difficult to replicate and available within the enterprise, such as intangible assets and IC (Wernerfelt, 1984; Rumelt, 1984; Barney, 1991).

These theories of the growth of the firm were, in turn, based on the seminal works of Penrose (1959), Ricardo (1891) and Schumpeter (1934), which indicated the internal resources of organizations as prominent factors in the definition of the firm strategy (Grant, 1991).

Since the 1990's the scholars acting in IC field produced several models and as many definitions related to this conceptual construct. However, a wide consensus exists around the idea that IC is a driver of the value and performance production and it also plays a pivotal role in the definition of the strategy (Grant, 1991; Roos *et al.*, 2001).

Stewart (1997) defined the IC as the intellectual material that is formalized, captured and used to create competitive advantage. Kaplan and Norton (2004) argued that intangible assets or IC are formed by the knowledge that exists in an organization to create competitive advantage.

Bontis (1999), referring to the definition of IC proposed by himself and by other scholars (Bontis, 1998; Roos *et al.*, 1998; Sveiby, 1997; Edvinsson and Malone, 1997; Sullivan and Edvinsson, 1996), notes that IC can be considered a multidimensional second-order conceptual construct (Kogut and Zander, 1992), further divided into three sub-domains: human capital, structural capital and relational capital. In this scheme, the human capital is the "tacit knowledge" (Polanyi, 1967) embedded in the minds of the people working in the organization; the structural capital consists of the organizational routines (Nelson and Winter, 1982; Grant, 1991) of the business and, finally, the relational capital is formed by the knowledge embedded in the relationships with the external environment.

Other scholars highlighted the importance of innovation in the creation of IC, identifying a specific component, namely, the "Innovation Capital", in addition to those included in the classification as referred to above (Bounfour, 2003); others deemed necessary to spell out one more IC component relevant to the market (Brooking, 1996).

For the purposes of this paper the scheme of the IC that appears to be the most used and popular, that is the one proposed, among others scholars, by Bontis (1999), Stewart (1997) and Viedma (2001) is taken into account.

According to Guthrie *et al.* (2012), the academic literature about IC over the last two decades evolved in three different stages. The first one took place between late 1980 and 1990 with the main purpose to develop a common and shared awareness of the importance of the IC concept and its role in creating and sustaining competitive advantages. During the second stage, several approaches to measuring, managing and developing IC as a whole or some of its components were developed. By the mid 2000s more than 50 different IC methods of evaluation were created and this number is still growing (Dumay and Garanina, 2013).

More recently, the IC research efforts have been directed to the critical analysis of managerial implications about how to use IC in managing organizations. According to Guthrie *et al.* (2012) these efforts gave rise to the emergence of the so called "third stage". The same authors indicated the publishing date of the 2004 special edition of *Journal of Intellectual Capital*, entitled "IC at the crossroads – theory and research", as the year when the third stage began (Marr and Chatzkel, 2004). While the efforts spent in the second stage are mainly oriented to evaluate the relationship between the IC components and organization's financial outcomes, the studies carried out in the third stage are devoted to a deeper analysis of the managerial implications deriving from managing the IC in different organizations (Dumay and Garanina, 2013). The third stage efforts continued with other significant contributions (Mouritsen, 2006; Mouritsen and Roslender, 2009; Roslender and Stevenson, 2009; Dumay, 2009a, b; Cuganesan and Dumay, 2009; Roslender, 2009), so that Guthrie *et al.* (2012) concluded that "the third stage was starting to gain considerable impetus and it will be interesting to see how it develops over the coming years".

The dynamic dimension of IC. According to the resources-based view paradigm the competitive advantages of the firm results from the knowledge-based assets and the way they are developed. This understanding gives rise to the development of another concept in the strategic management: the dynamic capability, which is "the ability to achieve new forms of competitive advantage by appropriately adapting, integrating, and reconfiguring organizational skills, resources, and competencies to match the requirements of a changing environment" (Marr and Roos, 2005; Teece *et al.*, 1997).

Viedma (2007) pointed out that the value creation and the exploitation are both resources oriented and activity oriented. Therefore, it seems appropriate not only to focus attention on what intangible resources are important in order to achieve the success, but also what core activities must be enacted. In other words, developing "greater insights into how IC works rather than what IC is" is very important (Dumay and Garanina, 2013). Therefore, it seems not only appropriate investigating the organization's internal resources, but also how they are used within the organization itself in order to create value and obtain competitive advantages (Haanes and Fjeldstad, 2000).

According to Stam (2010), in the recent IC literature there is a shift from a predominant static identification of different types of intangibles, towards a dynamic interpretation of value creation. Stam (2010) pointed out that the dynamic character of interactions between the IC components was already identified by several authors (Brooking, 1996; Sveiby, 1997; Edvinsson and Malone, 1997; Stewart, 1997). Nevertheless, their prevailing interest was much more oriented towards the identification and the measuring of the different classes of intangibles rather than investigating their interrelationship.

Kianto (2007) sustained that there is no shared understanding of what exactly "dynamic" stands for. This author identified three different perspectives that can be used for the interpretation of the IC dynamic dimension. The first perspective interprets the IC dynamic dimension as "value creation dynamics", the second perspective considers it as "activities" so that the IC dynamic dimension is viewed as abilities instead of a codified quantum of information. The third perspective interprets the dynamic dimension as "change capabilities" required by organizations in order to adapt themselves to the ever changing environment.

Each one of the three dimensions defined by Kianto (2007) is able to highlight a specific aspect of IC dynamic dimension, so that the three dimensions could be considered not mutually exclusive.

2.2 IC in nonprofit, public and healthcare organizations

According to the International Classification of Non-Profit Organization (ICNPO), recommended by the *Handbook on Non-profit Institutions* (United Nations, 2003), the non-profit organizations (NPOs) are classified according to the primary area of activity. The ICNPO classification was implemented dividing the NPOs in 12 main different groups which, in turn, are further divided in 24 sub-groups. The 12 main groups range from the NPO sectors of "Culture and Recreation", "Education and Research", "Health", to the sectors of "Religion", "Business an professional associations, unions" and ending with the last group named "Not elsewhere classified". The characteristics of the 12 NPO groups, included in the ICNPO, are very much different in terms of the mission profile, users community target, the nature of their services and the manner in which they organize the delivery.

Furthermore, other organizations, although not operating for profit, cannot be considered strictly belonging to NPOs. This is the case of the public entities at national central level (state and government institutions), and local level (regions, provinces and others local public institutions). Moreover, there are organizations that act in the same NPO sector, for instance the healthcare sector, that although they provide similar services, remain different for the ownership, public or private, that drives their operations and establishes specific constraints for the respective management. Indeed, while the public healthcare organizations, like the Teaching Hospital Trusts, do not act for profit, those that are owned by a private entity operate in competition with other similar organizations in order to generate profits for their shareholders. That being said, the healthcare organizations, regardless of public or private ownership, are in the same way obliged by the public authorities (government, region) to comply to the general principles regulating the delivery of public services and the healthcare services.

The NPOs were traditionally considered as self-governing organizations connoted by a wide use of "voluntary" human resources. Moreover, they have an institutional presence and structure separated from the government (Kong, 2003).

In the 1980s the new management approach (new public management (NPM)) in the public sector emerged and heavily affected the NPOs. This event drastically changed the organizational culture that until then connoted the NPOs, giving rise to the private management principles and practices (Courtney, 2002) and to their consequent fast and pervasive diffusion within society and public organizations. The NPM forced most Western countries to adopt a focus on making the public sector "lean and more competitive while, at the same time, trying to make public administration more responsive to citizens' needs by offering value for money, choice flexibility, and transparency" (Organisation for Economic Cooperation and Development, 1993). This movement was referred by the academic community as "NPM" (Hood, 1991). As Hood (1991) pointed out, "Like many previous administrative philosophies, NPM was presented as a framework of general applicability, a 'public management for all seasons'". According to Hood (1991), one of the critics that was moved to NPM is that "it has damaged the public service while being ineffective in its ability to deliver on its central claim to lower costs per (constant) unit of service".

Public organizations are often knowledge intensive systems, and the assessment and the management of IC play a fundamental role in governing their value creation dynamics (Veltri *et al.*, 2011). Nevertheless, the issues relating to the measurement and the development of IC in public organizations seem to be under investigated, compared with the literature developed for private sector (Massaro *et al.*, 2015).

Bovaird and Löffler (2005), defined "public management" as an approach that "uses managerial techniques (often originating in the private sector) to increase the

value for money achieved by public services". Therefore this concept acts in two very different contexts:

(1) public sector organizations; and

(2) public services organizations, whether in public, voluntary or private sectors.

The concept of "public governance" was defined by the same authors as "the way in which stakeholders interact with each other in order to influence the outcomes of public policies".

The way the concepts highlighted above are conceived and how they change over the time imposes some constraints in the management of a public organization. Indeed, the strategic management of the public organizations is usually impacted from the political context in which the public organizations work. Among the main factors that affect the strategic management of a public organization there are the following (Bovaird and Löffler, 2005):

(1) the role of politicians, who often clash openly on major strategic issues;

(2) the interaction between politicians and other stakeholder groups; and

(3) the pressure for "short-termist" decision-making arising from regular elections.

The performance measurement can be also considered affected by the political context. Bouckaert *et al.* (1997) claimed that a public organization can be represented, in a systemic view, as a black box that, in front of a set of resources (input) provided by the government, produces a whole of services (output) that determine a set of effects on the society (intermediate outcome). These, in turn, cause a range of final results (end outcome) on society. While the management is normally focused on the measurement of input/output variables, and is guided by them (management cycle), the end outcome is evaluated by the political level (policy cycle) that generates feedback actions to guide the management cycle.

It is wise to point out that the direct effects on the society (intermediate outcome) seem not monitored either by the management cycle or by the policy cycle. This determines a very critical aspect of this organizational arrangement, consisting in the fact that a long time could elapse between the delivery of outputs and the occurrence of the end outcome, so that the causality between the output and the end outcome could be difficult to establish (Bovaird and Löffler, 2005). The scheme proposed by Bouckaert *et al.* (1997) gives some important suggestions about how to face the challenge of the integrated new model (INM) implementation. Indeed, the Phase II of INM development should consider the temporal mismatch that occurs between the delivery of healthcare services (output) and the arising of the final results (end outcome). These considerations raise the issue concerning the need for a timely detection of the "intermediate outcomes" and the subsequent activation of correction actions if necessary.

For instance, "the number of patients treated and discharged from a mental hospital (output indicator) is not the same as the percentage of discharged patients who are capable of living independently (outcome indicator)" (Hatry, 1999).

Therefore, it could be wise to set the management as accountable not only for the monitoring and the control of the input/output variables, but also for the early detection of the direct effects of services delivered by the organization (intermediate outcome). This requires specific expertises and knowledge that should be available inside the healthcare organization and maintained over time through seminar and education to the personnel involved (Figure 2).

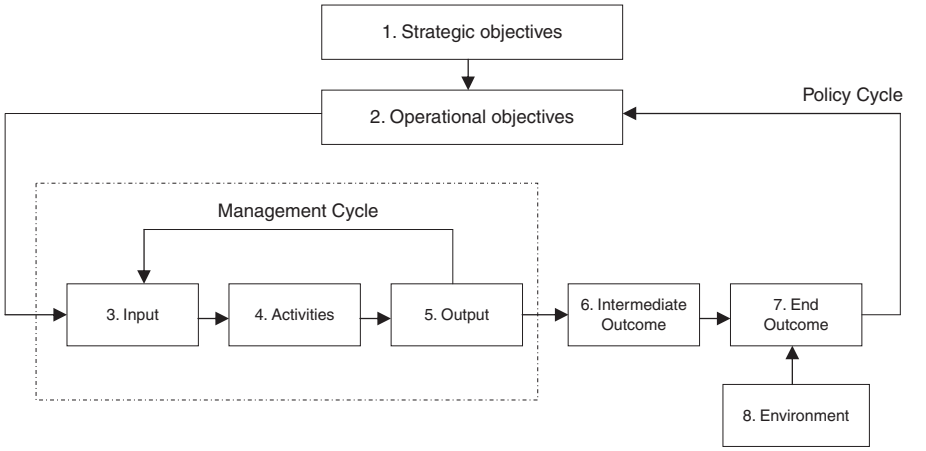


Figure 2.
The policy and management cycle

Source: Bouckaert *et al.* (1997)

In NPOs the financial aspects are not as important as the human and social aspects. Indeed, the NPOs' mission is to deliver services where keeping in touch with end-users is crucial. In such working environment, the role played by human resources in terms of skills and the personnel abilities to communicate with people and others colleagues is pivotal (Bronzetti *et al.*, 2011).

In NPOs setting up a communication path with all stakeholders, both internal and external, mediating on the several expectations expressed by them, is important. In order to implement this communication process leveraging on the organizational culture and the empowerment of personnel is necessary (Kong, 2007).

IC in healthcare and leadership. The global economic downturn and the long lasting economic stagnation due to the Eurozone crisis, placed at the centre of attention the economic and the fiscal sustainability of statutory healthcare systems. This resulted in an ever increasing solicitation towards the management of public healthcare organizations in order to obtain more value at equal, or even less, financial resources employed. This calls for the use of the components of IC in order to increase efficiency and effectiveness of the healthcare organizations through adaptive change and innovation initiatives.

The IC analysis in healthcare organizations received very little attention from researchers and experts, so that literature related to this field is therefore scarce (Baccarini *et al.*, 2008; Dumay, 2014). Among the available literature relating to this topic, the work of Habersam and Piber (2003), based on two case studies related to an Italian and Austrian hospitals; the work of Garlatti *et al.* (2015), based on a case study having as target the University Hospital of Udine (Italy) and the study conducted by the Healthcare and Social Agency of Emilia-Romagna Region with the support of the University of Ferrara, were considered. The latter study is relevant and meaningful for the information available about the empirical validation of the model proposed there, carried out on five Italian local health organizations: Local Health Units of Parma, Piacenza and Rimini, IOR of Bologna and the University Hospital of Ferrara (Baccarini *et al.*, 2008).

Nevertheless, there is no doubt that IC is an emergent topic for healthcare organizations. This is due primarily to the fact that such organizations are knowledge intensive and the austerity policies force them to use non-financial resources in order to

compensate the reduction of the public funding (Garlatti, Massaro and Bruni, 2015). Moreover, there is an increasing demand from the society for transparency and performance measurement, in order to improve the quality of services and the economic and fiscal sustainability of healthcare organizations (Thomson *et al.*, 2009).

The key drivers for success of healthcare systems are a culture of performance excellence, accountability for results and leadership execution. The lack of a uniform culture across hospitals, the internal resistance to culture change and the absence of leadership commitment all create barriers to the performance improvement (Yonek *et al.*, 2010).

Similar findings in high-performing healthcare systems (Baker *et al.*, 2008) and transformational change in healthcare systems (Lukas *et al.*, 2007) were produced. The quality of the leadership execution is critical, especially when it has to enact the trade-off between supporting consistency vs the capacity to innovate (Yonek *et al.*, 2010).

According to Kotter (1990), the management and the leadership are very different concepts. Indeed, the management is dedicated to the planning and budgeting, organizing and staffing, controlling and problem solving; vice versa, the leadership is focused on establishing direction, aligning people, motivating and inspiring them. Therefore, while the management is involved in the day-to-day operations using the traditional techniques, the leadership is in charge to lead the organization through the change and innovation.

IC in healthcare and innovation. According to Subramaniam and Youndt (2005), there is a wide consensus that the organization's capability to innovate is closely related to its IC, or its ability to utilize its knowledge resources.

Considering the nature of the "AOU Federico II", namely, a Teaching Hospital Trust, it is also important for the INM implementation considering the aspects relevant to the scientific research and the innovation and their relationship with the IC. Here, the innovation is considered in the all three forms in which it emerges, namely, product/service, technological and organizational (Edquist, 2001). The ultimate model proposed by the innovation researchers is the "Open Innovation Model" (Chesbrough, 2003). This innovation model considers the "permeability" of the organization's boundaries to the in-out flows of knowledge, both tacit and codified (Polanyi, 1967). The model mirrors how the knowledge and technology are becoming increasingly widespread so that the newly developed technologies and products benefit from integration of the knowledge and expertises coming from multiple sources, both internal and external (Melese *et al.*, 2009). The implications of such a model put some specific requirements to the INM implementation (Phase II). For instance, keeping track of the in-out flows of knowledge, both tacit and codified, is necessary. The monitoring and control of the in-out flows of the tacit knowledge involve directly the strategic human resources management (SHRM) functions. Therefore, the monitoring and control of in-out flows of the tacit knowledge should be included in the individual capital criterion integrated in the INM framework. Moreover, the follow up of the in-out flows of the codified knowledge calls for some specific provisions towards the Legal Affairs and Innovation departments, and poses the bases for a further analysis addressed to the identification of specific performance indicators for the managers appointed for these duties.

IC in healthcare and reorganization initiatives. The current trend emerging in the healthcare organizations to pursue the reduction of the fixed costs by reducing the internal staff, including doctors and nursing personnel, is also relevant to the IC. This cost reduction is implemented adopting solutions as the outsourcing, the downsizing and/or temporary job contracts. The loosing of tacit knowledge and the "hidden costs" of such policies have

been clearly identified in the literature. Companies often find that key employees and top performers leave during downsizing initiatives, stripping the firm of valuable human capital, critical skills and institutional memory (Entrekin and Court, 2001). As Pfeffer (1998) noted, the organizations that invested in their employees recruiting, selection, training and development risk losing that investment and they also put important strategic assets on the market for competitors to employ.

Taking into account the considerations highlighted above, related to change and innovation management and to their relationships with IC and leadership, the INM implementation should consider the prescriptions deriving from the theoretical framework underlying the research domains of innovation, change management and leadership.

For this reason, the present work proceeds to modify the criterion leadership of the CAF model, using a leadership model recently originated by National Healthcare System (NHS) and specifically oriented to the healthcare organizations (Storey and Holti, 2013).

2.3 Performance measurement system(PMS)

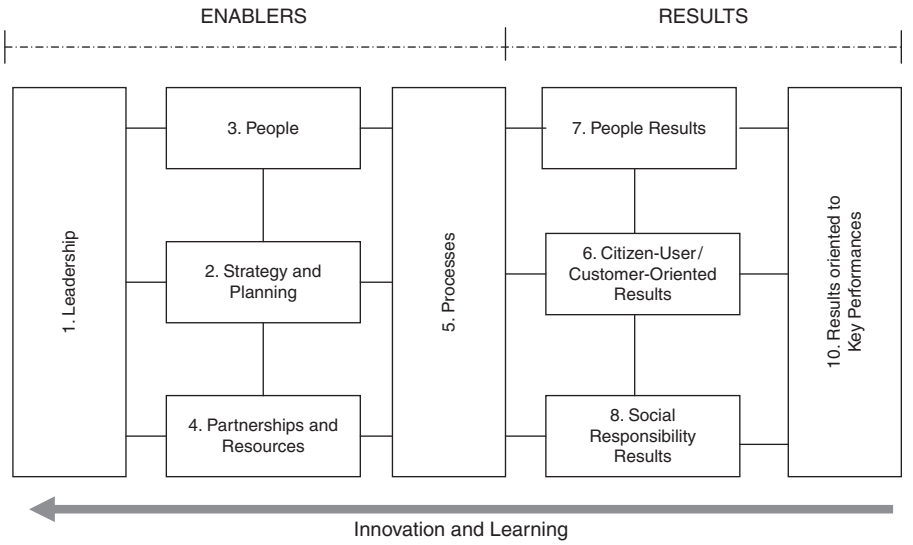
A PMS must include at least a set of financial and non-financial measures used to make operational the objectives established at strategic level (Franco-Santos *et al.*, 2012). Moreover, an organization has high performance if "achieves financial and non-financial results that are better than those of its peer group over a period of time of at least five to ten years" (de Waal, 2010).

The CAF model. The CAF was indicated by CIVIT[1] as one of the models, together with BSC and PRISM, suggested for the evaluation of the performance of healthcare organizations. The CAF model is based on the approach of total quality management, this latter in turn developed for the manufacturing industry, then moved to the service sector and subsequently to the public sector. There are mainly two models used in Europe: the Europe Foundation for Quality Management (EFQM), which was partially adapted from the Baldrige Performance Excellence Program (2010) adopted in the USA, and the CAF that is designed for public administration (Figure 3).

The CAF structure consists of nine criteria and 28 sub criteria. This scheme is based on the premise that excellent results under organizational, citizen-user, human resources and society perspectives, are assured through the leadership that effectively guides the strategy and planning, human resources and processes. The two models, EFQM and CAF, share the same scheme as it is shown in the figure above. The CAF model, compared to EFQM and Baldrige models, presents a less systematic approach and requires lower commitment for its implementation. For this reason, it is recommended for self-evaluation of those organizations of public administration that begin to approach the issue of total quality and performance evaluation (Bovaird and Löffler, 2005).

In the CAF model there are five criteria, defined as ENABLERS, that could be considered critical success factors: leadership, policy and strategy, people management, partnership and resources, processes. Four criteria, defined as RESULTS are also included, referring to different results categories, namely, people, customers, the impact on society and the core organization performance. The CAF model is a generic tool and it is recommended, therefore, its customization before its usage, but anyway leaving unchanged the structure of the nine criteria and 28 sub criteria and the scoring system (European CAF Resources Centre, 2006).

Performance measurement in healthcare. Over the past two decades, the studies related to PMS in healthcare organizations saw the emergence of a quality management issue (Nabitz *et al.*, 2000). The ExPeRT[2] research project assessed that in Western



Source: Elaborated starting from "CAF 2013 – European Resources Centre – EIPA"

Figure 3.
Common assessment framework (CAF) model

European countries four main models for the assessment of quality of healthcare services are used. These are the adoption of quality standards International Organization for Standardization (ISO), accreditation patterns healthcare specific, visits by external experts (peer assessment) and finally the EFQM approach. The latter is also the most generic among the four identified approaches. The different models reflect the original purpose from which they were generated that are, respectively: professional performance (visits of external experts), healthcare services delivery (accreditation), management systems (EFQM) and quality systems (ISO). During the last two decades, the four models have converged towards standards that include more peculiar aspects such as the organization, management and clinical performance (Shaw, 2000).

The genericity character of the EFQM model does not interfere with the dual nature of organizational culture, namely, professional and managerial, which is typical of any healthcare organization. However, the reasons that explain the popularity of EFQM in healthcare organizations in Western Europe are, at same time, its weaknesses. Its genericity nature, in fact, does not make it specific enough to address all areas of a healthcare organization, although it may represent a general conceptual framework that can be acceptable to the different existing organizational cultures: managerial, staff and professional (Nabitz *et al.*, 2000).

In literature, therefore, there is not a substantial consensus about the concepts and definitions related to the conceptual construct of PMS for healthcare organizations, while there is a shared vision on its life cycle. Indeed, this latter remains defined in four typical steps (Adair *et al.*, 2006b):

(a) conceptualization;

(b) selection and/or development of measures;

(c) data collection and processing; and

(d) reporting and results utilization.

Adair *et al.* (2006b) cautioned that the four stage process is often more dynamic and less linear than a simple set of stages implies. Therefore, during the development cycle of a PMS, some feedback and reworking usually happens.

According to Eccles (1991), a PMS must be continuously adapted, later on its operational start-up, in order to face the changes that will arise from the competitive environment in which the organization operates. Therefore, including an additional step can be assumed appropriate: (e) adaptive change of PMS. In this perspective, the life cycle of a PMS model can be considered as follows (Figure 4).

The introduction of the PMS in healthcare organizations is characterized by some key points: the complexity of this activity, the need for cooperative approaches in order to achieve improved levels of consensus within healthcare organizations and, finally, the need for a better consolidation of acquired experiences (Adair *et al.*, 2003).

The difficulties that a healthcare organization could encounter throughout the whole PMS life cycle are various and of different nature (Adair *et al.*, 2006a, b). In particular, the following difficulties could be expected by the implementation of this new integrated model:

- The step (a) "Conceptualization" is problematic due to the difficulty in finding the alignment of the PMS with the organizational strategy. This is owing to six main reasons: first, healthcare strategic objectives are difficult to translate in operation, because of the intrinsic complexity of medical treatments and patient groups diversity (Baker and Pink, 1995); second, in healthcare organizations there are two different models of management (professional and administrative) and distinct professional sub-cultures that are originated by the external occupational communities (Schein, 2003); third, complex interrelationships between multiple internal and external stakeholders, everyone with different interests (Kleinpell, 1997; Lemieux-Charles *et al.*, 2002, 2003); fourth, the fluidity of the political environment that is far greater than which affects organizations oriented to business (Smith and Goddard, 2002); fifth, the causal connections between service and health outcomes are difficult to identify clearly and definitely due to the medical and public health interventions (Williams *et al.*, 1992; Handler *et al.*, 2001); and finally, complex "customer" dynamics in healthcare (Newhouse, 2002).

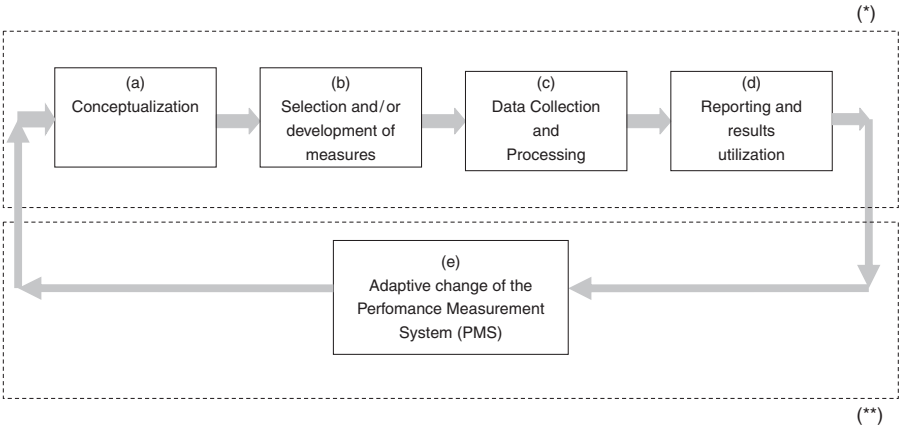


Figure 4.
Performance measurement system (PMS) life cycle

Sources: Elaborated starting from *Adair (2006b) and **Eccles (1991)

For example, in case of provider's local monopoly on a specific service, the patient is limited when judging provider's performance and looking for alternatives (Smith, 1993); furthermore, the patient is not well informed about the service content (Jennings and Staggers, 1999). Moreover, the step (a) "Conceptualization" is problematic due also to the difficulty in defining the proper scope for the system. Three dimensions, in fact, have to be taken into account: the level of the healthcare organization (vertical), the width of the continuum of care (horizontal) and temporal (longitudinal) (Collopy, 1998).

- The step (b) "Selection and/or development of measures" is problematic owing to the following reasons: first, the measures just mirror the reality; second, the process of the choice of measures is an imprecise process (van Peursem *et al.*, 1995); third, measures are numerous so that it is not possible to fully catalogue them (Nutley and Smith, 1998; Sheldon, 1998); fourth, the complexity and the internal diversity of not-for-profit organizations does not allow to predict and make generalizations about what models of performance and measures could be suitable to use (Meyer and Gupta, 1994); fifth, this step can be considered as both a search for legitimacy and for rationality. According to the institutional perspective, the organizations that share the same environment will activate similar practices. This is due to their compliance with different institutional pressures, namely, the government, the professional principles and the law (DiMaggio and Powell, 1983). In this perspective, the adoption of a specific PMS could be triggered by legitimacy reasons; sixth, the "multilevel performance measures" due to the presence, within the organization, of three levels: a "technical" level, that transforms production inputs into outputs; a "managerial" level that manages, procures key resources for the production system and has the ability to innovate and produce new capabilities (Floyd and Wooldridge, 2000); an "institutional" level that connects an organization to its environment trying to ensure its legitimacy (Parsons, 1960; Lemieux-Charles *et al.*, 2003); seventh, the different perceived value and importance of measures by physicians, clinicians, and administrators; eighth, the clear/unclear definition of the accountability structures; ninth, the presence/absence of the organizational support for measurement; and finally, the presence/absence of an organizational culture of measurement (Lemieux-Charles *et al.*, 2003).

- Concerning the step (c) "Data Collection and Processing", the following issues could affect the healthcare organization: first, costs increase due to need both for new information technology and related maintenance, and for the necessary managerial expertise; second, people working in the organization could be motivated because they have the impression that, measuring everything, nothing is significant (Johnston and Fitzgerald, 2001); third, the management turnover, problems with the information systems and the presence of budget constraints (Braun and Zibrat, 1996; Voelker *et al.*, 2001); fourth, lack of the availability of data, poor quality and reflex of performance (Kelman and Smith, 2000; Brown, 2002); and finally, the connections between the institutional, technical and managerial levels could influence the analysis and interpretation of data (Lemieux-Charles *et al.*, 2003).

- the step (d) "Reporting and results utilization" could be affected by the following difficulties: first, the need for producing valid and effective presentations/reports for different kinds of stakeholder; second, the connection between performance

measurement and performance management, related to the fact that the evidences of the analysed data should be turned into actions taken in order to improve the performance (Lebas, 1995; Neely *et al.*, 1995; Neely, 1999); and finally, necessity of the implementation of an organizational change process to improve performance (Kueng, 2000).

- Concerning the step (e) "Adaptive change of the Performance Measurement System (PMS)" and according to Eccles (1991), it could be wise to stock, within the healthcare organization, a specific set of skills and expertise in order to implement adaptive change of the INM itself. Such competences should be relevant to both IC framework and the PMS. It could be suggested to operate in order to facilitate the sedimentation of such knowledge in the organization during the implementation phase (Phase II). The stock of so created knowledge should be maintained and updated, over the time, according to the evolution of the healthcare sector strategy defined at both management and policy cycles (Bouckaert *et al.*, 1997).

3. INM – methodology

For the drawing up of an integrated model, dedicated to performance and IC measurement and control in healthcare organization, this paper considers the conceptual framework of the CAF model as starting basis. This is because this model is specially suited for public administration, it is also widely known in Europe and it is suggested by CIVIT as reference model for management and control of healthcare organization in Italy (see footnote 1). The subsequent adjustments will be carried out by doing the two following operations:

(1) integration of the two models, IC and CAF, comparing similar factors and removing redundancies; and

(2) replacement of the leadership model, described according to the CAF Criterion 1, with the conceptual structure proposed by the new leadership model for NHS (Storey and Holti, 2013).

3.1 Integration of the two models IC and CAF

Comparing the five criteria (ENABLERS) of the CAF with the components of the IC (relational, individual, internal) proposed in the model obtained as a reference, it is possible to identify a number of matches, as shown in Table I.

In order to proceed with the integration of the CAF model with the determinants of IC, it appears appropriate to eliminate the overlaps detected as shown in the following list CAF sub criteria related to:

(1) the relational capital component:
   - 1.4 relations with politicians and other stakeholders;
   - 2.1 identifying present and future stakeholders' needs;
   - 4.1 developing and implementing key partnership relations; and
   - 4.2 developing, implementing citizen/customer partnerships;

(2) the individual capital component:
   - 3.1 planning, managing and improving human resources (HR);
   - 3.2 identifying, developing and using HR competencies; and
   - 3.3 involving employees with open dialogue and empowerment;

	Intellectual capital determinants		
	Relational	Individual	Internal
CAF model ENABLERS			
1. Leadership			
1.1 Mission, vision, values			
1.2 Organization, performance, change			
1.3 Motivating people and act as a role model			
1.4 Relations with politicians and other stakeholders	☑		
2. Strategy and planning			
2.1 Identifying present and future stakeholders' needs	☑		
2.2 Developing, reviewing and updating strategy and planning			
2.3 Implementing strategy and planning in the organization			
2.4 Planning, implementing modernization and innovation			
3. People			
3.1 Planning, managing and improving human resources (HR)		☑	
3.2 Identifying, developing and using HR competencies		☑	
3.3 Involving employees with open dialogue and empowerment		☑	
4. Partnership and resources			
4.1 Developing and implementing key partnership relations	☑		
4.2 Developing, implementing citizen/customer partnerships	☑		
4.3 Managing finances			
4.4 Managing information and knowledge			☑
4.5 Managing technology			☑
4.6 Managing facilities			
5. Processes			
5.1 Identifying, designing, managing and improving processes			☑
5.2 Developing, delivering citizens/customer-oriented services			☑
5.3 Innovating processes involving citizens/customers			☑

Sources: Elaborated from European CAF Resources Centre (2013) and Baccarini *et al.* (2008)

Table I.
Matches matrix ENABLERS – CAF vs intellectual capital

(3) the internal capital component:

- 4.4 managing information and knowledge;
- 4.5 managing technology;
- 5.1 identifying, designing, managing and improving processes;
- 5.2 developing, delivering citizens/customer-oriented services; and
- 5.3 innovating processes involving citizens/customers.

Source: Elaborated from Baccarini *et al.* (2008).

After careful checking that the Determinants, as they are described in the model of IC taken as a reference, also cover aspects related to sub-criteria referred above they were eliminated. At the same time, the Determinants of IC and related descriptive variables, as shown here below, were introduced:

(1) relational capital:

- relationships with stakeholders: patients, other healthcare organizations, primary care physicians, care paediatricians, local authorities, region, research institutions, universities, trade unions, suppliers, funders, population, volunteering.

(2) individual capital:
- education and training;
- professional potential;
- career paths;
- assessment processes; and
- personnel policies.

(3) internal capital:
- managerial models and processes implemented by the organization;
- intangible assets for the production of value (patents, guidelines and so on);
- products of research (papers, concluded projects, internal seminars);
- active education and consulting; and
- technology.

Source: Elaborated from Baccarini *et al.* (2008).

3.2 Integration of new leadership model for NHS

An additional intervention for leadership is reserved (ref. CAF – Criterion 1) because it is the crucial hub through which change and innovation instances, inferred by the organizational results, are implemented and translated into modifications affecting processes and/or services. Moreover, in the leadership block the continuous trade-off conservation-innovation of organizational culture is enacted, with significant impacts on future organizational performance and strategic management. That being stated, revisiting the definition of the criterion leadership adopting a model recently prepared for the NHS, so called new leadership model, is considered appropriate. The latter was developed by the NHS Leadership Academy, specifically for healthcare organizations, operating in the UK, both public and private, funded by public funds[3]. This approach is here appreciated for the fair balance between the ethical goals, namely, the care of the citizen-users and more general interest of the civil society, and those more closely related to aspects of financial and non-financial performance. The new leadership model is structured by the following three components (Storey and Holti, 2013):

(1) "Provide and justify a clear sense of purpose and contribution". It includes behaviours and skills that enable explicit focus on the needs and experiences of service users, continuously strengthening an inspiring vision of the mission and the social contribution of the whole organization or single unit, expressed in terms of quality of service.

(2) "Motivate teams and individuals to work effectively". This is in relation to the ability to work in collaboration with other organizations, setting clear and ambitious goals for both the team and for the individuals, striving to achieve the convinced commitment of the team and to build a serene and constructive organizational climate.

(3) "Focus on improving system performance", requesting enactment and encouragement of change initiatives, the formulation of new patterns of thinking and acting, and the formulation of models of learning new forms of behaviour.

The brief description of the three elements, divided into 11 sub-elements, constitutes the new leadership model. New leadership model elements/sub-elements:

(1) leadership:

- providing and justifying a clear sense of purpose and contribution:
  - focusing explicitly on the service users' needs and experiences, continually reinforcing an inspiring vision of the mission and social contribution of the organization or unit, couched in terms of service quality; and
  - interpreting the wider environment, for example policy frameworks, systems of accountability and evidence on effective healthcare, making sense of what these require for the organizations and staff.
- motivating teams and individuals to work effectively:
  - defining clear and challenging goals with teams and individuals;
  - building team commitment and a positive emotional tone or climate, articulating that both staff and service users are valued, and attending to staff well-being;
  - encouraging high staff involvement and engagement;
  - providing and operating meaningful design for the organizations, sub-units and individual jobs, with the underpinning of human resource management (HRM) that provides relevant staff development and reward;
  - focusing on managing and improving performance rather than merely reporting it; and
  - listening to staff and responding to their voice, validating and engaging with difficulties evoked by the experience of delivering care, rather than suppress or deny them.
- focusing on improving system performance:
  - enacting and encouraging the practice of service improvement;
  - addressing system problems and pursuing innovation; and
  - model learning of new behaviours.

Source: Elaborated from Storey and Holti (2013).

Considering, therefore, the amendments to section ENABLERS of the CAF model, an integrated model for the measurement of IC and organizational performance is obtained. It is structured as shown in INM – ENABLERS section, and even better illustrated in Figure 5 – INM conceptual framework. INM – ENABLERS section:

(1) leadership:

- providing and justifying a clear sense of purpose and contribution:
  - focusing explicitly on the service users' needs and experiences, continually reinforcing an inspiring vision of the mission and social contribution of the organization or unit, couched in terms of service quality; and
  - interpreting the wider environment, for example policy frameworks, systems of accountability and evidence on effective healthcare, making sense of what these require for the organizations and staff.

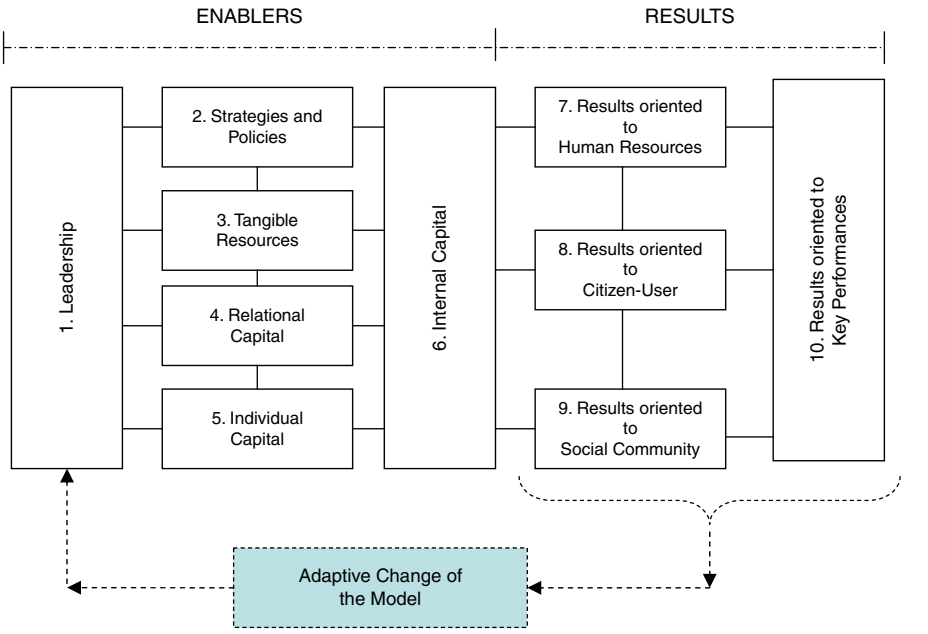


Figure 5.
Integrated new model – conceptual framework

- motivating teams and individuals to work effectively:
  - defining clear and challenging goals with teams and individuals;
  - building team commitment and a positive emotional tone or climate, articulating that both staff and service users are valued, and attending to staff well-being;
  - encouraging high staff involvement and engagement;
  - providing and operating meaningful design for organizations, sub-units and individual jobs, with the underpinning of HRM that provides relevant staff development and reward;
  - focusing on managing and improving performance rather than merely reporting it; and
  - listening to staff and responding to their voice, validating and engaging with difficulties evoked by the experience of delivering care, rather than suppress or deny them.
- focusing on improving system performance:
  - enacting and encouraging the practice of service improvement;
  - addressing system problems and pursuing innovation; and
  - model learning of new behaviours.

(2) strategy and planning:

- developing, reviewing and updating strategy and planning;

- implementing strategy and planning in the organization; and
- planning, implementing modernization and innovation.

(3) partnership and resources:
- managing finances; and
- managing facilities.

(4) relational capital:
- relationships with stakeholders: patients, other healthcare organizations, primary care physicians, care paediatricians, local authorities, region, research institutions, universities, trade unions, suppliers, funders, population, volunteering.

(5) individual capital:
- education and training;
- professional potential;
- career paths;
- assessment processes; and
- personnel policies.

(6) internal capital:
- managerial models and processes implemented by the organization;
- intangible assets for the production of value (patents, guidelines and so on);
- products of research (papers, concluded projects, internal seminars);
- active education and consulting; and
- technology.

Source: Authors' elaboration.

The conceptual framework resulting from this work is reported here below in graphical form. In this figure the ENABLERS and RESULTS factors structured in ten functional blocks can be distinguished. Moreover a feedback mechanism, through which the comparing of actual results with the predefined target objectives are performed, is also highlighted. The result of this operation is dedicated to activate the eventual correction actions. The feedback mechanism will assure the stability of the organization as a whole, while the latter pursues the objectives relevant to its mission, on one hand, and its processes on the other.

The differences between the proposed INM and the CAF model can be derived comparing the ENABLERS of the CAF model (i.e. the left column of the Table I: matches matrix ENABLERS – CAF vs IC) and the ENABLERS of INM (ref. the list above: new integrated model – ENABLERS section). Such differences are briefly highlighted here below:

(1) the ENABLERS section of the "Leadership" criterion of the CAF model is completely replaced by the determinants describing the new leadership model of NHS (Storey and Holti, 2013) that are indicated in the list above: new leadership model elements/sub-elements;

(2) the sub criteria 1.4, 2.1, 4.1 and 4.2 of the CAF model (ref. Table I: matches matrix ENABLERS CAF model vs IC) were eliminated and replaced by the determinants of "Relational Capital" criterion included in the IC model implemented by Baccarini *et al.* (2008);

(3) the "People" criterion of the CAF model was eliminated and replaced by the determinants of "Individual Capital" of the IC model implemented by Baccarini *et al.* (2008);

(4) the sub criteria 4.4, 4.5, 5.1, 5.2, 5.3 related to the CAF model were replaced by the determinants of "Internal Capital" of IC model implemented by Baccarini *et al.* (2008); and

(5) as a result of the changes referred in the points from 1 to 4 listed above, the INM model was obtained. It could be wise to note that only "Strategy and Planning" and "Partnership and Resources" criteria are those included in the CAF model. These criteria are anyway modified because their sub criteria 2.1, 4.1 and 4.2, were replaced by the determinants of the "Relational Capital".

4. Discussion

The scope of this work was to provide an alternative manner to apply the IC conceptual framework and a PMS into a healthcare organization avoiding further burdens, both financial and nonfinancial, for the organizational structure deriving from the implementation and the set-up of two distinct measurement systems. The INM conceptual framework, together with the original approach adopted in order to answer the predefined scope, seems to be able to run correctly under the conceptual perspective, while the empirical evidence is to be achieved after which the implementation phase will be fully accomplished.

The work carried out so far is related to the step (a) – conceptualization – of PMS life cycle (ref. Figure 4). For this reason the work was focused on the ENABLERS section of the model, leaving unchanged the RESULTS section, so as to postpone this task into Phase II (ref. Figure 1). In this way the assessment of measurement indicators will be shared with the personnel/management working in the healthcare organization involved in Phase II. It is useful to note that the step (e) – "Adaptive Change of the PMS" will require the assessment of specific expertises that should be made available within the healthcare organization. In the framework of Phase II the activities to be carried out are the following:

(1) literature review relating both to the regulations in force and similar experiences in the healthcare sector;

(2) identifying measurement indicators for ENABLERS and RESULTS factors;

(3) definition of the self-assessment procedure for the ENABLERS factors;

(4) definition of the procedure for preparing the "Improvement Plan"; and

(5) execution of the process of self-assessment and performance measurement in a "dry run" way in a sample organizational unit (department, hospital) in order to validate the results.

The INM implementation (Phase II) is presently ongoing at the Teaching Hospital Trust "AOU Federico II" of Naples[4].

The development of the INM, illustrated in this paper, was realized in the framework of PhD Course in "Economics and Management of Healthcare Organizations and Enterprises – XXVIII Cycle". The Steering Committee of the PhD Course found the integrated model illustrated in this paper responding to some basic strategic objectives of the AOU "Federico II" so deciding to undertake the development of the model within its organization.

The reasons for this decision are basically grounded on the following considerations:

- Innovation is one of the pivotal principles inspiring activities in the AOU "Federico II". In particular, the latter promotes the continuous boost for managerial and technological innovation, requiring a continuous analysis and assessment of the organization and its results, as well as an adjustment of innovative solutions tailored on the organizational specificities. The organizational innovation implies the constant monitoring of the level of performance and the way in which the activities are carried out (AOU "Federico II", 2013).
- The AOU "Federico II" promotes audit and self-assessment activities, namely, the assessment of the quality of medical records as well as the assessment of the appropriateness of healthcare. Therefore the EFQM model and CAF, on which the INM is also grounded, are part of the strategic objectives of this organization (AOU "Federico II", 2013).
- At present there is the need to introduce in the AOU Federico II innovative management tools for the redefinition of the criteria of its performance assessment and reporting, with the main purpose to give importance to the effectiveness of care, the appropriateness of performance and the quality of services provided (AOU "Federico II", 2013).

5. Conclusions

5.1 Brief summary of the paper's findings

This work proposed an INM that is conceptualized and, therefore, available for a subsequent implementation and validation phase (steps (b)-(e)), through its application in a healthcare organization. It is wise to point out that the INM should not be intended only as a further model added to the many models developed so far. In fact, for its conceptualization (step (a)) an original approach is subtended. It consists in the integration of an IC framework with a PMS, as the CAF, that is widely used in Europe. Indeed, the CAF was chosen because it is a reference model for the performances measurement in public organizations and the healthcare organizations in Italy and in Europe. The PMS selected for the work, namely, the CAF, has been used as an integration platform to ensure an easy and safe implementation of the INM for the application domain of healthcare organizations.

This work argues that this approach, which could be more easily referred to as "INM Approach", has the advantages and implications highlighted here below and that are related to both the application and the theoretical perspectives.

The three conceptual models (Figure 1) were used as off-the-shelf components (COTS) in order to build-up the INM. This approach avoids the wasting time in "reinventing the wheel" and also reduces the risk to fail in the INM implementation.

The INM approach seems also responding to the need "to bring academics and practitioners closer together to develop research and researchers who get their hands dirty inside organizations, implementing IC. Additionally, researchers need to be more critical, not only of IC, but also of the research methods employed" (Dumay, 2014).

5.2 Limitations of research and findings

The present work covers just the first step of the INM development and further steps (b)-(e) still remain to be accomplished. The difficulties that could arise during the actual execution of the remaining steps are also highlighted in this paper and they challenge the successful accomplishment of the INM implementation. Indeed, as Adair (2006a, b) clearly pointed out, a PMS life cycle is not to be intended as a linear process but rather a dynamic one, with feedback actions interacting between the different stages. This implies that the early results of the stage (b) could force implementation of some changes to the INM conceptual scheme that resulted from the present work.

It is wise to observe that the INM is the integration of three different frameworks, two of which, related to IC and leadership, are specifically designed and implemented for hospital organizations. The IC model was implemented by Emilia-Romagna Region (Italy) and tested in five public healthcare organizations (three Local Health Units, one University Hospital, one National Hospital for Scientific Research). The new leadership model was implemented by NHS in healthcare organizations (UK). Therefore, the application of the INM model to other kinds of NPOs is not obvious because some adaptations could be necessary. According to Ferrè *et al.* (2014), hospitals execute different kinds of services that are mainly concerned with acute diseases treatments. Other NPOs act in the healthcare sector operating in the long-term care areas (e.g. residential and semi-residential care) and in the social care services (e.g. community home care), both addressed to the elderly and people with disabilities. The delivery of such a wide range of services calls for different organizational arrangements so that an appropriate analysis is necessary, in order to adapt the INM solution to NPOs different from hospitals.

5.3 Implications for practitioners and researchers

The present work could have the following four implications for the future work of researchers and practitioners:

(1) Marketing and commercial effectiveness of INM solution

The INM represents an easy and user-friendly manner to bring the IC conceptual framework on the "accessible market" represented by the users communities of Malcom Baldrige-EFQM-CAF models. These have a wide diffusion within many sectors, public and private and, moreover, the knowledge of how to use them is already available within many organizations spread in the world. Therefore, these organizations could adopt the INM with a reasonably modest amount of adaptive changes to their organizational procedures and routines and, moreover, causing a reduced impact on the end-users within the organization. This can represent a powerful argument for practitioners to sustain their intervention proposal oriented to introduce the IC measurement, management and reporting functions inside an organization that already adopts a PMS comprised among EFQM or CAF models.

(2) "Escape way" from the "evaluatory trap"

According to Dumay and Garanina (2013), many researchers are stuck in an "evaluatory trap" (Olson *et al.*, 2001), continuing to spend efforts within the second stage, namely, "adopting a top-down ostensive IC research approach instead of adopting a critical, bottom up, third stage IC research approach". This situation, combined with "the lack of comprehensive empirical evidence to support the

impact of IC on financial performance and value creation", determined a "vicious cycle" in which some researchers continue to attempt finding the ultimate all encompassing framework for developing IC (Dumay and Garanina, 2013).

Moreover, the unabated production of the IC frameworks makes available about 100 different solutions (Pike and Roos, 2007). This situation increases uncertainty and confusion about which framework is more suitable for a given application domain because a specific framework is not applicable in all kinds of organizations (Ghemawat, 2002).

Taking into account this scenario, the work proposed a viable solution that could be able to overcome this stall situation. This solution is represented by a compromise made by choosing a PMS platform, that is widely used into the given application domain, on which integrating the IC framework specifically designed for the same domain. Therefore, the present work gives to the IC conceptual construct a wider arena in which all its potentialities may be fully activated. Indeed, linking the IC measurement, managing and reporting functions to the PMS, allows managers and practitioners to validate the IC theoretical view throughout the acquisition of empirical evidences of the real impact of the IC concept on financial and non-financial performances in the organization. The empirical evidences so produced would be meaningful either for theorists, practitioners and managers as well.

In this perspective, the INM is able either to respond to the "lack of comprehensive empirical evidence" (Dumay and Garanina, 2013) and to bypass, by means a compromise solution, the dilemma of which framework is more comprehensive and suitable to develop IC. Therefore, this work states that the INM approach can constitute an "escape way" from the "evaluatory trap", or "vicious cycle", detected by Dumay and Garanina (2013).

(3) "Managerial significance" of IC research

Ferraro *et al.* (2005) and Bazerman (2005) debated by inquiring about the reason for which the economic research is able to exert greater influence on the business reality than that obtained, vice versa, in studies carried out from other researchers in the social field. Regarding this question, Becker and Huselid (2006) agreed with the position expressed by Bazerman (2005), sustaining that the non-economist researchers are influential when they, too, define "novel prescriptions that are relevant to the marketplace", by focusing their research on "economic outcome variables". Indeed, Bazerman stated that the level of influence that research activities are able to obtain, with respect to the corporate reality, strictly depends on the level of relationship that these researches exhibit towards the variables of firm performance. This author sustained that the ability of the research to influence business realities, to a greater or lesser extent, is directly related to the significance of the empirical work contents for managers.

According to the Bazerman's position, this work suggests that, in order to gain more influence on the application domain, the IC researchers should pursue what Becker and Huselid (2006) named the "managerial significance" of research. Indeed, the objective of the "managerial significance" guided the development of the present work. From this work's point of view, the concept of "managerial significance" seems pertinent to the third stage of the IC research. Indeed, the INM and the INM approach seem responding to the "transformational IC Research" concept elaborated by Dumay and Garanina (2013).

(4) Advantages deriving for organizations from INM adoption

The introduction of performance and/or IC measurement system in organizations usually involves a significant commitment of human and material resources (Franco-Santos *et al.*, 2012). It also represents an organizational change initiative (Bourne *et al.*, 2002; Kaplan and Norton, 2001). Therefore the PMS introduction in an organization must be carefully designed and implemented. Moreover, such kind of system, once it becomes fully operational, has to be continually adapted to changes arising from the competitive environment in which the organization operates (Eccles, 1991). It is also important to note that a PMS should be integrated with any other management control system which is present in the organization (Ittner *et al.*, 2003). Using a single integrated measuring system, for the performance and the IC, represents a reduction in both the fixed costs of initial investment and those variables recurring in the operational phase. Finally it is wise to note that using a single integrated measuring system also reduces the difficulties, misunderstandings and resistances otherwise generated within the organization, related to the introduction of two different systems of measurement. Under a functional perspective, a single measurement system facilitates the contextual interpretation and the search for consistency of the amount of measurement data generated. In this way the decision-making process will be positively influenced and the eventual strategy reshaping will be facilitated.

5.4 Possible areas of future research

First, the relevance of a human resources management system (HRMS) in the framework of the strategic management is clearly stated in the literature (Boxall and Purcell, 2000). Furthermore, some scholars pointed out that the human resources are not equally considered important for the management. Indeed, they proposed to classify the human resources not only according to the absolute values of "substitutability" and "uniqueness" of the knowledge owned by them, but rather, the human resources have to be evaluated primarily considering on which business process a specific employee is allocated and the relevant strategic importance of such process for the employer (Becker and Huselid, 2006). This led to the definition of several models that capture such classification of the employees of a given organization. Among these models there are the "shamrock model" (Handy, 1989, 1995), in which the employees are divided in three categories: "Professional Core", "Flexible Labour Force", "Contractual Fringe"; the model proposed by Lepak and Snell (1999) that classifies the employees in four different categories considering the "uniqueness" and "value" of human capital; the model of Atkinson (1985), in which the employees are divided in "core" and "peripheral". Therefore, the HRMS is differentiated in several configurations that are simultaneously active, each one of them being in charge to manage a specific category of employees. Therefore, the following research question can be formulated:

RQ1. How can we shape appropriately the "Individual" and "Internal" components of the IC according to the HRM paradigms listed above?

Second, a wide consensus in literature exists about the importance and the centrality of the IC concept, as well as its management, within the competitive strategies of the organizations (Entrekin and Court, 2001). Nevertheless, covering this central role is not easy and it implies to face many issues that are very close to the organizations management. Furthermore, these issues are also the subject of study in others research fields. For instance, a strong relationship can be detected between the IC conceptual framework and specific aspects of the HRM, as it has been shown above.

Indeed, a wide consensus can be observed in the literature about the existence of a clear relationship between the IC and others research fields as the strategic management (Marr and Roos, 2005), the HRM (Johanson, 2005), the innovation (Bounfour, 2003).

In a nutshell, the IC could be considered a transversal concept that crosses other research fields that study a set of very specific organization's issues. Therefore, some intersection points can be detected and it could be interesting to investigate on them in order to verify if some kinds of conceptual integration, between the IC and the other frameworks, are feasible and how they could be conceptually shaped.

According to the contents of this work, the implementation of such research efforts could be very useful for the further development and specialization of the IC theoretical framework, so as increasing the "managerial significance" of the IC research. This paper sustains that the adoption of a procedure similar to the "INM approach" can represent one of the possible ways to implement this kind of research path.

Notes

1. Commission for the Assessment, Transparency and Integrity of Public Administration (CIVIT) Resolution No. 89/2010 – Guidelines in terms of parameters and reference models for performance measuring and evaluating systems (ref. Decree No. 150 of 27 October 2009, Article 13, paragraph 6 – lett. D, and art. 30). – see also the subsequent Resolutions CIVIT No. 104 and No. 114/2010.
2. The ExPeRT project (1996-1999 – BIOMED Research Program) was funded by the European Union in order to promote the exchange of experiences in the external systems of quality improvement in the healthcare sector, establishing mechanisms to collect and spreading know-how on this kinds of systems, and then defining a common conceptual framework and criteria for standards of healthcare services.
3. The design of the model was activated after the publication of the Francis (2013) Report, produced by the Commission of Inquiry, chaired by Robert Francis and appointed by the Ministry of Health, as a result of the scandal, in 2009, that involved the Mid Staffordshire NHS Foundation Trust Hospital. In the final report, among the main causes of the scandal, the lack of leadership suitable for health service management was included. The final report also suggested the establishment of a specific centre of expertise, with the purpose to develop knowledge on the specific topic of leadership in the health sector.
4. The "Federico II" Teaching Hospital Trust is located in Naples and it forms part of National Health Service (Servizio Sanitario Nazionale – SSN). It carries out highly specialized healthcare activities playing a prominent role at national level. The "Federico II" is the biggest and more complex University Hospital (Azienda Ospedaliera Universitaria – AOU) in the South of Italy and one of the healthcare organizations with highest qualification and specialization in Italy. At the end of the year 2012 this structure counted 936 beds and a personnel staff formed by about 2,427 units (information source: AOU "Federico II", 2014).

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