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From measuring the past to strategically framing challenges in the healthcare sector. The role of the balanced scorecard

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Abstract. New emerging needs and a decreasing set of resources are among the main challenges organizations have to face in the healthcare sector. These challenges have put *performance management* at the center stage in both the scientific and managerial debate. As far as performance management in public sector is concerned, recent research has, on the one hand, highlighted the negative effects of this increasingly diffuse management approach, on the other, it has placed more emphasis on the need to move from performance *measurement* to performance *management* and to better integrate it with strategic planning. In this vein, literature focused on the replacement of traditional accounting systems by multidimensional frameworks and more specifically by the Balanced scorecard. The paper investigates the role of balanced scorecard in the healthcare sector and how this multidimensional framework might help to effectively link strategy and performance management, for a more comprehensive and strategic management of healthcare organizations in a fast moving environment. The paper provides preliminary empirical evidence, on the role that a multidimensional approach such as the one delivered by the Balanced scorecard can have to help organization and managers to move from measuring the past to strategically framing the future challenges.

Keywords: balanced scorecard, organizational innovation, healthcare sector, performance management

JEL Classification Numbers: L25, L30

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Introduction

The accelerated pace of changes at technological, demographic, economic and societal level poses to the healthcare sector many challenges. They can be grouped mainly in the following two categories: expenditure containment and people-centeredness (Ref.). Countries are determined to cut costs by implementing different measures, from centralization, hospital consolidation and adoption of shared services centers in order to achieve economies of scale, better specialization and negotiation power; and finally to improve standardization for a better coordination and operational efficiency (Ref.). The second main challenge is putting the patient and people at the center of the healthcare system, by focusing on emerging needs to be addressed by customised solutions, and in general by investing on value-added services. This general approach, however, risks to increase expenditures at different organizational level.

The decision about which performance measurement to adopt and how to successfully implement it, to support decision making and allocate and deploy resources effectively and efficiently, requires new managerial tools at different level of the healthcare system. Performance management plays a central role due to its extended use in the public sector and the need to rethink its role and use. Indeed, research suggests that healthcare managers, in the effort to rationalize and improve healthcare services, are searching for less traditional tools to strategically represent managerial objectives, to support decision making and to monitor organizational activities.

As a consequence, research focused on the replacement of traditional accounting systems with multidimensional frameworks and more specifically with the Balanced scorecard (BSC). There is an increasing interest in the literature and among healthcare practitioners on how BSC can help to better support healthcare managers in their difficult task. This growing attention has led to investigate the implementation of the Balanced scorecard in the healthcare system, with a focus mainly on hospitals. Despite the increasing number of studies, there is still scant research on the application of BSC in the healthcare sector, in organizational contexts other than hospitals, and on the way managers, through this multidimensional framework, strategically define goals and measure performance, during organizational change processes. More specifically there is an increased implementation and rationalization effort in the health care sector, but according to our knowledge no study has investigated the role of BSC in these change processes. Thus, the research question of the paper is: how do managers, in the healthcare sector, strategically measure performance in organizational change processes using the BSC.

To address this question a case study has been developed on the reorganization of technical and administrative healthcare system in Italy. The Veneto Region, one of the most performing regions in Italy in the healthcare sector, has recently started a major process of reorganization concerning the merge of small local agencies into larger divisions and the creation of a holding structure in charge of shared services. At the inception of this change process, particular attention has been put on managerial tools to govern it and to engage managers and middle managers since the beginning. The development of a BSC as tool for performance management has been at the center of the agenda and a pilot group has been selected to investigate how the framework could represent a good link between performance management and strategy. The case of the development of HTA and how

performances can be represented by the multidimensional approach provided by the BSC, has been investigated.

The rest of the paper is organized in the following sections: theoretical background, research method, findings and conclusions.

1. Theoretical Background

1.1. Healthcare sector challenges

1.1.1 Global challenges of the Health care sector

In the last three years, international reports and outlooks have converged their opinions on the key challenges the health care sector is facing (Deloitte 2015, 2017; Morris 2016; OECD 2010; World Health Organization 2017), and these have not changed much over the last few years (Deloitte 2017).

The first main challenge concerns the rising costs of health care. Global amount of health care expenditures, \$7 trillion in 2015, is projected to reach \$8.7 trillion by 2020. Its weight on GDP will raise from an estimated 10.4 % in 2015 to 10.5 % in 2020, furthermore “the rate of growth of healthcare spend has exceeded that of GDP” (OECD 2010).

The increase is associated to a rising demand, which is mainly due to changing demographics: there is an increase in life expectancy (by one/two year by 2020) which in turn spurs new care demand, people live longer (average life expectancy in OECD countries has now reached 80 years) and present chronic diseases, due to urbanization, life style, etc. The aging population (over 65 years old) is projected to reach 604 million in 2020 (it was 559 million in 2015) a growth of 8% (Deloitte 2017).

But the problem most countries are actually facing is that, more spending does not equate to better access and service quality. This is due to spending inefficiencies and the complexity of service provision.

It is difficult, for the public health care systems, to sustain current levels of service and affordability and it requires substantial interventions on the way health care service is organized. Countries are implementing several cost-containment measures at different levels, aiming at rationalizing the delivery of healthcare to reduce production and coordination costs. Measures range from centralization and hospital consolidation, to achieve economies of scale; from regional or health system-wide strategic procurement, to increase negotiation power. The healthcare system also adopted other organizational solutions like processes standardization, for a better coordination and operational efficiency, and the adoption of shared services centers, for better organizing and scaling up back office services such as information technology, human resources management and accounting and finance” (Deloitte 2017; QIPP 2011).

A second major challenge, related in several ways to the previous one, is the focus on the value for the patient, at the heart of the future healthcare system. As OECD 2010 report highlighted “achieving value for money in the healthcare sector is an important objective in all OECD countries” (OECD 2010:3). First, value is related to easy access, both geographically and in terms of time, to health facilities and services; this is particularly difficult to guarantee while implementing a centralization of services, needed to exploit the economies of scale. Moreover, the

move to put the patients' needs at the center of the healthcare objectives makes the quality of health care increasingly relevant, and give patients negotiation power, since they begin to exercise the right to choose who will be their services provider. On the other hand, a patient – empowerment approach translates into improving the patients and their family experience and into better meeting their developing needs. On the other hand, patients are becoming better informed and more aware of preventative care and thus, they are willing to leverage on information technologies and digital services and devices (wearable etc.). This shift in focus is also changing the way health care system performance will be evaluated. As stated by the Secretary-General of the OECD (Development 2012), *“We will no longer only assess health system performance on the basis of what they do—for example, the quantity of operations or appointments—but also on whether medical care leads to people being in less pain, more mobile, and in better physical and mental health”*.

These major challenges, related to cost-reduction pressure and people-centeredness, are in some way contradictory and require innovative ways to deliver the healthcare services. Managers, in the healthcare system, have to balance competing priorities, performance targets are becoming multidimensional, for instance “maintaining high-quality healthcare is dependent on a range of dimensions, including access to care; clinical effectiveness of individual patient treatment; ensuring appropriate care; and relevance to the need of the whole community “ (Craig et al. 2008).

1.1.2 National challenges of the Healthcare sector in Italy

The Italian National Health Service is regionally organized (Servizio Sanitario Nazionale, SSN). The regions are responsible for organizing and delivering healthcare, and in each region, local health authorities (Aziende Sanitarie Locali) deliver public health, community health services and primary care directly, while secondary and specialist care is delivered either directly or through public hospitals or accredited private providers (Ferré et al. 2014).

The Italian National Health Service faces the same challenges as other national health systems globally, in the attempt to optimize quality of care whilst pursuing cost savings. On the one hand, in Italy about 70 percent of healthcare expenditure is public, and due to the public debt, still by far the largest in the European Union. Health spending containment is seen as a necessary condition for Italy to comply with the Stability and Growth Pact of the European Monetary Union. However, “despite increasing financial controls, the costs per patient treated, per service provided and per input units (e.g. costs per hospital bed) in secondary care have not decreased over the last 25 years but have actually increased and are higher than in most OECD countries”. (Ferrè et al. 2014: 24). As far as quality of services and patient empowerment are concerned, satisfaction with public health services on average has been decreasing in the last few years and it is rather low. However, there is a high heterogeneity across regions, concerning population wealth, health-care resources, efficiency of care and even patients' satisfaction.

On average the health of the population has improved over the last decades in Italy, life expectancy reached 79.4 years for men and 84.5 years for women in 2011, the second highest in Europe (compared with 77.4 years for men and 83.1 years for women for the EU as a whole) (Ferrè et al. 2014). Italy is therefore faced with the effect of longevity as a driver of an increasing demand on the healthcare services.

Recently, the Italian healthcare system has been experiencing an increase of professionalism at management level, in response to these urgent challenges. However, there is still need for new

management skills to drive the organizational and technological innovations necessary to improve the healthcare sector performance in the future.

In the last years, policies have been implemented to facilitate economy of scale and consequent cost reductions: centralization and integration of units and hospitals; closure of small local hospitals, concentration of purchasing activities in regional or supra-organizational entities and the increased size of local health authorities. Recent studies have highlighted that, while this trend is probably motivated by the need for a better coordination of care delivery, there is a call for innovation in the sector. Innovation could occur not only through top-down policies, but also through experimentation, evaluation and dissemination of good practices and new ideas developed from local experiences and contexts (Ferrè 2014: 25).

A recent reform that some Italian regions are implementing to achieve significant cost savings and service improvement, is the reorganization of back-office services, such as Accounting and balance sheet, Finance; Human Resource Management; Information Management and Technology; Procurement, through centralization and the adoption of a shared service approach. A Shared services approach is intended as a centralization into a central hub of different services scattered across different parts of a large organization. A recent report on NHS explains the driving forces behind this change, stating: “the NHS is paying a premium for its back office functions due to the fragmentation and lack of uniformity across the sector. Evidence from the private sector, central government and the NHS has shown that adopting shared services can deliver both significant cost savings and service improvement” (QIPP 2010: 14). The NHS could achieve greater efficiency and effectiveness from the simplification of processes, their standardization and the adoption of shared back office operations, without impacting on patient care (QIPP 2010).

In summary in Italy, as well as in other countries, there is a debate on how to rethink and innovate the delivery of front and back office services.

1.2 Performance management and new challenges

The compelling need to frame the health care challenges and translate them into innovative strategies, spurs a change also in the way performances are measured and managed.

The last decade has seen an increasing adoption of performance management practices in the public sector, due mainly to the growing concern for putting under control expenditure and make managers accountable for better organizational performances.

The debate on performance management in the public sector, have recently highlighted not only its positive impact, but also some drawbacks. Some concerns about performance management are related to the extensive use of indicators, also due to the growth of accreditation or quality audits. Paradoxically performance management success is the cause of its drawback, namely an increasing administrative burden of measuring and reporting. A further critique moved to these systems is the short term orientation of performance management applications in health care across different organizations and at different hierarchical levels. Research also showed the risk of path dependency, when setting objectives based on past performances improvement. Performance management risks to lead to just replicate past patterns of action, that have proved to be successful, preventing the exploration for innovative ways to conceive and design processes and services. Finally, emphasis has been recently placed on the need to move from performance measurement to performance management and to better integrate it with strategic planning (Poister 2010). From

this stand point a body of studies focused on the replacement of traditional accounting systems with multidimensional frameworks such as the Balanced scorecard.

In the healthcare sector, the demand for higher level of quality service, personalized care, technological innovations, and in general for a healthcare centered on the patient's needs, resulted in growing expenditures, as discussed in the previous paragraphs, and has placed emphasis on performance management tools able to support managers in decision making processes that are becoming increasingly complex.

Different examples, reported by recent studies, of the implementation of the Balanced scorecard in the healthcare system (Gurd and Gao 2007), mainly in hospitals, suggest that healthcare managers are searching for less traditional tools to strategically represent objectives, support decision making and organizational change.

1.3 The balanced scorecard as a multidimensional framework and a strategic mapping of priorities

Kaplan and Norton introduced the Balanced scorecard in 1992 (Robert S Kaplan and Norton n.d.), with the aim of providing organizations with a tool for linking performance measurement and management to strategy.

The four main BSC characteristics that the authors identified as most relevant for this framework are the following (Robert S Kaplan and Norton n.d.):

1. *It is a top-down reflection of the company's mission and strategy*, this avoids taking a too narrow focus just on internal processes;
2. *It is forward-looking*: it addresses current and future success, preventing looking just at past performances with a short term period approach;
3. *It integrates external and internal measures*: this helps to identify trade-offs and manage them;
4. *It helps managers focus and agree on those performances that are most critical to the success of the organization's strategy*.

According to recent research on BSC in the healthcare sector, the BSC's characteristics match the requirements of health care organizations, which are characterized by an unstable and fast changing environment (Gurd and Gao 2007).

Four main benefits are related to the BSC features just highlighted: first BSC gives a strategic vision to specialized managers, who normally are very much oriented in striving for process and unit efficiency and are less interested in coordination efforts with other activities and units. Second, the shift from measuring the past to framing future challenges, might help managers to become more able to tackle frequent and deep changes and to imagine new ways to leverage on technological changes, new patients' expectations and needs or new public policies and reforms. This is reflected in Kaplan and Norton (R S Kaplan and Norton 1993: 134) "the balanced scorecard is a management system that can motivate breakthrough improvements in such critical areas as product, process, customer, and market development". Third, it helps to be aware of trade-offs that are increasingly challenging in the healthcare sector, such as cost cuts, improve service quality, and balance targets priorities. Fourth, it helps to identify critical performances among a set of different dimensions, avoiding limitation to just a financial dimension. Indeed, as has recently suggested in the healthcare sector "non-financial indicators were widely used for operational (clinical) management, there was an undesirable dichotomy between the economic vision of the management teams and the clinical view of the health care professionals, and measurement systems were not

able to effectively integrate or build bridges between the 2 visions” (Bisbe and Barrubés 2012: 920).

The BSC presents managers with four different perspectives:

1. *Customer/patient perspective* - deliver value-adding services to end-users (on time, high quality, personalized services);
2. *Financial perspective* – deliver growth, control costs;
3. *Internal processes perspective* - deliver services in an efficient and effective way (dematerialization, transparency, productivity);
4. *Learning and growth perspective* – deliver innovation and continuous improvements (capabilities, technological growth).

Starting from a traditional accounting approach, the BSC complements the financial measures with performance measures related to the other three perspectives. Recent research on BSC in the healthcare sector, specifically in hospital and other healthcare organisations, identified some possible perspectives’ indicators (Grigoroudis, Orfanoudaki, and Zopounidis 2012):

1. *Customer/patient perspective* – quality improvement of services (i.e. average waiting time); coverage of area demand for medical services, increase the reliability of medical services, deliver services in appropriate time and place, meeting new patients’ needs;
2. *Financial perspective* – cost reduction, increase of liquidity, decrease of debts, decrease of operating expenses, system’s economic sustainability;
3. *Internal processes perspective* - reduce variability in care; no delays, effectiveness in resource utilization (i.e. bed occupation ratio);
4. *Learning and growth perspective* – technological innovation, e-health, qualified and engaged workforce, percentage of employees trained, number of projects with other organisations.

The BSC brings into healthcare organizations a multidimensional approach to performance management, consistent with the increasing pressure to improve management tools to address future trends. Moreover, as a new framework, it allows managers to better represent challenges and it gives a new language to identify and communicate new objectives.

Together with multidimensionality, BSC brings another core feature to healthcare performance management: mapping critical causal relationships among dimensions.

An advanced use of BSC allows to depict a hierarchy of perspectives, where some perspectives are considered the means to achieve goals in other perspectives and this set of relations and goals form a strategic map. Learning and growth is at the basis of the hierarchy and improvement at this level are related to changes in internal business processes. Originally strategic mapping, utilized by the private sector, sees improvements in internal processes as related to value added for customers and ultimately, to a better financial performance. However, when applied to no-profit organizations and healthcare institutions this pyramid should be reconfigured.

As Kaplan and Norton stated “Most nonprofits had difficulty with the original architecture of the Balanced Scorecard, which placed the financial perspective at the top of the hierarchy. This is a proper concern. As stated earlier in this article that achieving financial success is not the primary objective for a nonprofit. Many nonprofit organizations have rearranged the geography of their Balanced Scorecard to place the customer perspective at the top” (Kaplan and Norton 2001: 360).

We suggest that, according to the two main challenges of the healthcare sector (cost-reduction pressure and people-centeredness), at top of the strategic map there should be both perspectives: customer and financial ones.

Insert Figure 1 about here

2. Research design

Due to the research question we rely on a qualitative approach (Petrakaki and Kornelakis 2016); (Ronzani and Gatzweiler 2017), based on a case study. We present the research conducted on the changing healthcare system of an Italian region, Veneto.

Veneto Region, one of the most performing regions in Italy for healthcare services, has recently started a major process of reorganization concerning the merge of small local agencies into larger divisions and the creation of a holding structure in charge of shared services. At the inception of the changing process, particular attention has been put on managerial tools to govern the change and to engage managers and middle managers since the beginning. The development of a BSC as tool for performance management has been at the center of the agenda and a pilot case study has been selected to investigate how the framework could represent a good link between performance management and strategy.

Our data, synthetized in Table 1, were collected through three main sources: company documents, interviews and participant observation. From a methodological perspective, these three main sources are aimed to reinforce our data analysis and to constantly triangulate our coding (Cooper and Ezzamel 1996).

In analyzing the data, we used a method for case analysis (Craig et al. 2008) and for grounded theory building (Glaser and Strauss 1967). We thereby relied on an inductive approach, built on a constant comparison and repetitive checks of our sources to build more robust insights across multiple and heterogeneous cases (Glaser and Strauss, 1967).

Insert Table 1 about here

3. Findings

3.1 The reorganization process of the Veneto region healthcare system

The Healthcare sector is facing, financial and equal access, major challenges worldwide (Anish and Sreelakshmi 2013), and in particular in Europe and Italy. Italy has a population of 60 million (2017) and a National Health Service founded in 1978 that provides universal health coverage. Since the

2001 devolution reform, the nineteen Italian regions and the two autonomous provinces adopted different approaches, mainly due to the marked demographic and geographical differences. The Veneto region is one of the regions with higher performance in healthcare. Veneto is the fifth Italian region in terms of population, with more than 4.900.000 citizens. The growing demography cause and increased demand in healthcare services, public health and social care, which is exacerbated by the ageing population. As of January 2016, the Veneto region, had a percentage of citizens over 65 of 22% and the average age of the population was 44,3 (ISTAT 2016). The most recent data collected, registered in the Veneto region regarding the epidemiology, refers to January 2013, when 42.1% of the over 65 declared to suffer from at least one critical chronic disease; and this was higher in men (44,1%) than women (40.6%). Besides the ageing population in the Veneto region, there is an increase of people affected by daily function limitations (people not self-sufficient).

Finally, in the Veneto region, as in other Italian regions, the economic-financial equilibrium of the healthcare management has been affected by a resource reduction from the central Government. As a consequence, there is the need to optimize the available resources, in order to maintain the high quality level of the healthcare system reached in the last decades by the Regional healthcare system. The new institution denominated Azienda Zero foresees a centralization of technical and administrative functions, aimed at increasing coordination and efficiency, and leading to a better use of resources and a reduction of administrative and related costs for the regional health care system. The Azienda Zero will act as holding managing the technical-administrative services of planning, implementation and monitoring of regional healthcare system.

3.2 HTA in Italy: state of the art

In the last few years, to face the increasing qualitative and quantitative demand of the population, modern medicine relied increasingly on technological solutions. The advancement of scientific knowledge and the development of medical competences that drive the technological progress, prioritised the availability of useful information on the use of healthcare technology. However, the decisions related to the use of a healthcare technology (a drug, a diagnostic system, an healthcare process etc.) must be preceded by an accurate process of analysis to evaluate its efficacy. This is the context of the research defined as Health Technology Assessment (HTA) which raise from the need to bridge the gap between limited resources of the national healthcare system, the increase demand in healthcare and the process of technological innovation. In particular, the HTA is developed as the comprehensive and systematic multidisciplinary evaluation of the healthcare, economic, social and ethical consequences, in the short and long term, of the introduction of existing or innovative technologies.

According to Favaretti *et al* (Favaretti et al. 2009) there is an increasing institutionalization of Health Technology Assessment (HTA) processes in Italy, both at regional and national level; with two main concerns, firstly, the applicability of a standardised methodology in a diverse health system such as the Italian one, and secondly the institutional support to apply the ‘lesson-learned’ nation’s wide.

3.3 The redesign of the HTA - Veneto Region a simulation of BSC applied to a core back office service

Steps in redesigning HTA

In 2011 a first step has been taken in order to redesign HTA. The following example describes the main interventions and results in the imaging technology.

Efficient use of imaging technology to reduce waiting time

Equal access to health services is among the main objectives in public health. The most required health care services are the imaging diagnostic, which require the use of technology such as Computerised Axial Tomography (CAT), Magnetic Resonance Imaging (MRI), Radiology, Angiography, Ecography etc.

These are high demand services in healthcare, and when requested by a doctor or a specialist, also time sensitive (an example is the oncology diagnostic).

Healthcare demand is tightly linked with the resources available.

In case of in-house services, the resources are related to the costs of acquiring the technology, human resources (medical and technical personnel), infrastructure set up (these can be substantial due to a number of factors that can be the weight of the machinery and the need to strengthen the structural side of the building, and the health-related security due to radiation which require adequate screening), costs of information technology alignment with the booking, analysis and results systems.

In case of purchasing of services from a private recognised institution, there are predefined purchasing costs of service, standardised across the entire region.

These actions have been developed in parallel, among different actors of the health system.

a) actions related to reducing inappropriate requests

These actions are aimed at making the *gatekeeper* (general doctors and specialists) responsible of the prescription of imaging procedures. These are related to different activities, from the definition of standard request, to the governance of the objectives-reward system, to the reporting system.

The Veneto region, has therefore planned and developed a strategic line as described below.

Objectives: ensure the availability of diagnostic imaging services according to the following standards:

- a. urgent procedures: delivered within 10 days: 90%
- b. deferrable procedures: delivered within 60 days: 90%
- c. programmed procedures: delivered within 120 days: 100%

Initiative: the following plans and actions have been put in place in order to reach the objectives, these are organised for simplicity in three classes:

- a. actions related to reducing inappropriate requests
- b. actions to evaluate the technological needs, in relation to the existing or acquired instruments (substitution of obsolete equipment/ increase offer)
- c. actions aimed at an increased efficiency related to the use of technology

b) actions to evaluate the technological needs, in relation to the existing or acquired instruments (substitution of obsolete equipment/ increase offer)

While setting up this strategy, the need for a specific economic-clinical-engineering know-how to implement Health Technology Assessment (HTA) evaluations was surfaced, specifically for imaging. This specific responsibility has been assigned to the Azienda Ospedaliera of Padua, considering the level of HTA methodological competency that it has developed over the years.

As a natural consequence the *CREHTA - national Centre for the HTA* have been established, using the existing Hospital clinical know-how and integrating them with contractors: 1 pharmacist, 2 biomedical engineers, 1 management engineer, 1 computer engineer.

The *CREHTA* received the task to elaborate an assessment of the imaging technology, defining the technology allocation standard in the various public hospital institutions, in relation to their hub, decentralised or district destination.

Therefore, for efficiency reasons, and to ensure quality of services, the most important technologies had to be assured in hospital hubs, while at district level only basic technologies were guaranteed.

The allocation standard (i.e which types of technologies in which hospitals) has been developed in collaboration with a pool of clinical professionals who represent the state of the art in the specific disciplines deemed relevant.

The standards thus formulated have been compared and matched with the existing equipment. This analysis showed that the medical information system was unable to supply sufficiently detailed data. It was, therefore, necessary to develop a database for acquisition, maintenance and management of information relative to technological stocks used in hospitals across the Veneto region.

The gap between the need for standard technologies and the actual technologies available has enabled the formulation of a five-year plan for technology procurement and/or replacement: on the one hand this was aimed at providing the appropriate level of technology to each hospital, on the other hand to overcome the problem of unacceptable standards identified in some cases. Old equipment and unacceptable standards meant low quality diagnostic exams, frequently out-of-service equipment due to breakdown or repairs and high costs of scheduled or extraordinary maintenance.

It is noteworthy that the effects of substituting obsolete technologies with high maintenance costs, enabled the freeing up of financial resources for new purchases.

c) actions aimed at an increased efficiency related to the use of technology

The procurement plan of technological equipment had to be developed considering the expected production levels. Therefore, a standard of productivity – objective of every technology at every level of hospital (hub, spoke, or district) was associated with the specific hospital need, and this is dealt with through the regional tender.

It is also worth mentioning that the supporting information system activated in the meantime has highlighted differential productivity levels of the technologies already present in the hospitals; the definition of a standard is therefore facilitating the alignment of performance among the various institutions.

Finally, the new technology stocks, has to be aligned with the training of the medical and technical staff. There was therefore a need for standards of staff retention to ensure the expected levels of productivity. In this area, as well, the definition of a standard allowed an alignment of productivity levels of the personnel, which have been observed to be variable among the different hospitals and clinics.

In conclusion, the Veneto region in acquiring diagnostic imaging equipment, aimed at meeting the expected level of demand; such technologies are allocated to the hospitals following standards of pre-defined needs, which are defined by healthcare programming. The procurement plan has been

formulated according to the existing technological equipment, the expected productivity and available human resources in mind.

During the first three years, there were savings from investment in advanced technologies.

Thus, the supply commensurated with the demand, reducing citizen waiting times to access services, and thus meeting the objectives.

Use of the BSC framework in the strategy of the Veneto region to reduce waiting times.

The strategy has been achieved step by step, following the top management visions to meet the objectives set out by the Regional programmes.

However, lower levels management and other health institutions, have possibly developed the activities within their areas of competence and focused on internal processes.

We could state that, the limit of a system entirely focused on objectives, emphasizes short-term actions aimed at efficiency of single processes or services; while performance remains in the background and within the domain and capabilities of top management to assign coherent objectives and ensuring appropriate monitoring.

The BSC approach maintains the focus on the strategy results, which is considered as increased performance on the medium term rather than the short one.

Looking back, a BSC framework would have been perfectly coherent and useful in the strategies outlined above. As illustrated in the CAT and MRI example above.

Results perspective

The objective of the strategy is represented by an increase in the percentage of diagnostic services for images delivered within the times set by the programme. Specifically, this aims to increase from 90% to 100%.

The strategy aims to minimise costs and guaranteeing the modernisation of technical equipment without further burden on the Regional budget.

Internal Processes perspective

The regional strategy anticipates the need to revisit the technology stock through a plan of acquisition and / or replacement of CAT and MRI, through regional tenders.

In the regional Healthcare Service the tender is preceded by a further check by CRITE – the Regional commission for the investments in Technology and Buildings (Commissione Regionale per gli Investimenti in Tecnologia ed Edilizia) – which assesses the technical and economic rationale of the initiative, vis-à-vis the healthcare programme.

CRITE also authorises personnel recruitment plans of medical and technical staff, if these are deemed consistent with the technological stock.

The CRITE requires programme standards to assess investment initiatives. In the current strategy, three standards have been elaborated: technological allocation, staffing, and technology productivity.

With particular emphasis on the technological allocation, the focus is on the maintenance of the number of machines, following their strengthening (or up-rating) and modernisation, leading to increasing the qualitative standard.

Maintaining the technological stock results in an expected improvement in its productivity by 15%, this is aimed at increasing the level of supply. Furthermore, the analysis conducted has shown a performance growth through staff training.

Capital Perspective

The standards highlighted above follow the Health Technology Assessment evaluation processes. This has required the development of a set of clinical competences – engineering (professional capital), the hospital centralisation and the establishment of a network of scientific referees

(organisational capital), the automated acquisition of information for the management of technologies (technological capital).

Insert Figure 2 about here

4. Conclusions

The paper aimed at contributing to the debate on the major changes of the healthcare sector and the role of management tools that departs from traditional accounting performance management and are based on a multidimensional approach.

The paper provides novel thought and original empirical research on how BSC could better connect strategy and performance management, specifically along organizational change processes and concerning back office services, yet critical for patients' satisfaction and financial performances. To address this question the case of HTA, has been analysed. Veneto Region, one of the most performing regions in Italy in the health care services, has recently started a major process of reorganization. The development of a BSC as tool for performance management has been at the centre of the agenda of this process and a pilot case of change has been selected to investigate how the framework could represent a good link between performance management and strategy. The case of the development of HTA and how performances can be represented by the multidimensional approach provided by the BSC, has been investigated.

Findings show that the development of the HTA could be better represented by a multidimensional approach based on BSC .

The simulation applied to the pilot case of HTA suggests that the four main features of BSC might be in place (Kaplan and Norton 1993):

1. *It might help a top-down reflection of the company's mission and strategy*, this avoids taking a too narrow focus just on internal processes;
2. *It provides a forward-looking*: it addresses current and future success, to prevent a short term period approach and overcome inertia and barriers to change;
3. *It could integrates external and internal measures*: this helps to identify trade-offs and manage them carefully , in order to balance strong drives to efficiency with other dimensions and performance targets;
4. *It might helps managers focus and agree on those performances that are most critical* to the success of the organization's strategy, specifically during and organizational change when it is more difficult to keep priorities.

Tables

Table 1. Details on data collection

Data Source	Use in the analysis
Observations	Participation to meetings and project groups on system change
Documents	Gather information from the field on internal processes and organization's aims
Archival information on HTA	Information on HTA in Veneto
Direct Interview to key figures	Interview was conducted by two authors. Questions were mainly focused on understanding the process of performance management in the organization

Figure 1. Mapping strategic links among key performance dimensions

MAPPING STRATEGIC RELATIONS

Figure 2 Strategically mapping the reorganization of the HTA service

References

- Anish, T S, and P R Sreelakshmi. 2013. "Revisiting Public Health Challenges in the New Millennium." *Annals of Medical and Health Sciences Research* 3(3): 299–305.
- Bisbe, Josep, and Joan Barrubés. 2012. "The Balanced Scorecard as a Management Tool for Assessing and Monitoring Strategy Implementation in Health Care Organizations." *Revista Española de Cardiología (English Edition)* 65(10): 919–27.
- Cooper, David J, and Mahmoud Ezzamel. 1996. *Pioneers of Critical Accounting*.
- Craig, P et al. 2008. "Developing and Evaluating Complex Interventions: New Guidance." *Medical Research Council*: 1–39.
- Deloitte. 2015. "2015 Global Health Care Outlook Common Goals , Competing Priorities." : 1–20.
- . 2017. "2017 Global Health Care Outlook: Making Progress against Persistent Challenges." : 1–28.
- Development, The Organisation for Economic Co-operation and. 2012. "OECD Health Data 2012." *OECD Health Data Report*.
- Favaretti, Carlo et al. 2009. "Health Technology Assessment in Italy." *International Journal of Technology Assessment in Health Care* 25(S1): 127–33.
- Ferré, Francesca et al. 2014. "Italy: Health System Review." *Health Systems in Transition* 16(4): 1–166.
- Glaser, B.G.; Strauss, A.L. 1967. *The Discovery of Grounded Theory: Strategies for Quantitative Research*.
- Grigoroudis, E., E. Orfanoudaki, and C. Zopounidis. 2012. "Strategic Performance Measurement in a Healthcare Organisation: A Multiple Criteria Approach Based on Balanced Scorecard." *Omega* 40(1): 104–19.
- Gurd, Bruce, and Tian Gao. 2007. "Lives in the Balance: An Analysis of the Balanced Scorecard (BSC) in Healthcare Organizations." *International Journal of Productivity and Performance Management* 57(1): 6–21.
- ISTAT. 2016. "Indicatori Demografici - Stime per l'anno 2015." *www.istat.it*: 4–7.
- Kaplan, R S, and D P Norton. 1993. "Putting the Balanced Scorecard To Work." *Harvard Business Review* 71(5): 134–42.
- Kaplan, Robert S, and David P Norton. "To Work AT." (4118).
- Morris, Mitch. 2016. "2016 Global Health Care Outlook: Battling Costs While Improving Care." *Deloitte*: 1–28.
- OECD 2010. 2010. "Health Care Systems: Getting More Value for Money." *OECD Economics Department Policy Notes* 2(2): 10.
- Petrakaki, Dimitra, and Andreas Kornelakis. 2016. "'We Can Only Request What's in Our Protocol': Technology and Work Autonomy in Healthcare." *New Technology, Work and Employment* 31(3): 223–37.
- Poister, T.H. 2010. "The Future of Strategic Planning in the Public Sector: Linking Strategic Management and Performance." *Public Administration Review* 70.
- QIPP. 2011. "Briefing Note Contents." *Health Service Journal* (30): 1–6.
- Ronzani, Matteo, and Marian Konstantin Gatzweiler. 2017. "Accounting as a Design-Oriented Practice: Designing Accounting Visualizations in Major Program Management 33 Rd EGOS Colloquium , Copenhagen , July 2017 Sub-Theme 36: Using Design in , around and for Good Organizations." : 1–36.
- World Health Organization. 2017. World Health Organization *World Health Statistics 2017 : Monitoring Health for The SDGs*.