PerformanceMeasurement SystemsinStrategicDecision Making

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Abstract

In the current economic environment, organizations must not only cater to their clients' needs and expectations, but also face a challenge in particular, the measurement of performance management. In order to achieve that, organizations need to optimize their strategic management models of their performance management systems. This conceptual study, aims to evaluating how the performance systems contribute to the measurement and efficiency of the organizational strategic performance, through performance indicators provided from the Balanced Scorecard and Data Envelopment Analysis. It try to analyze the implications of the implementation of such measures in the strategic decision making.

Introduction

The management's key expectation concerns the measurement and management of performance (Brudan, 2010). The idea of performance is present in many activities. However, performance in itself is, probably, one of the least understood concepts though one of the most intuitively used (Folan*et al*, 2007).In Garvin's (1993) perspective, what cannot be measured cannot be managed. Lebas (1995) also points that management cannot exist when it cannot be measured. Organizations must therefore be able to measure their performance in order to manage their activities (Khan & Shah, 2011). Also, the measurement of their performance becomes fundamental in obtaining feedback from their collaborators, in their resource allocation, in the short to medium term strategy formulation, continuous improvement and human capital motivation (Sinclair &Zairi, 1995).The performance assessment measures that are most often used in the context of organizations are the ones who concern with the skill based value added, in the investment in creation and management of knowledge based systems, namely in the measurement of non-tangible resources, in light of the value creation for performance's management (Edvinsson, & Malone, 1997; Roos&Roos, 1997; Bontis, 1999; Lev, 2001).

Throughout time, many performance measurement systems were created, providing managers with a set of relevant, concise and balanced information, making decision processes more effective. Systems as the Balanced Scorecard (BSC) (Kaplan & Norton, 1996,2000), The Tableaux de Bord (Bourguignon *et al*, 2004), the performance pyramid (Lynch & Cross, 1991), The Performance Prism (Neely *et al*, 2002) and the Data Envelopment Analysis (DEA)(Charnes, 1978), contribute to performance improvements, when implemented.The BSC provides a system that allows the management of the organization's performance in areas particularly hard to control, through financial measurements complemented with non-financial ones (Kaplan & Norton, 1996). DEA is a non-parametric technique used to measure the efficiency of the Decision Making Units (DMU), considering that each DMU is involved in some process transformation. The DEA uses all the available data for the formulation of better practices, while not requiring the specification of any cost or production function. In

this way, it allows for richer measurement systems (Charnes et al, 1978).Spitzer (2007) refers that an organization cannot focus in isolated measurement systems, at least not in the long term. The emphasis is focus instead towards the integration of the different measurement systems. The emphasis and the integration are fundamental towards the organizational performance measurement. It should reflect the interconnection/integration and the holistic aspect of the measurement and integration systems of all the organization.The idea of integrating the BSC and the DEA tools is to treat all organizational information as one and transform in one single measurement model, multiple information inputs and outputs that can potentiate the future success of the organization and improve its operations (F'are*et al*, 200). The implementation of the DEA system by itself improves the supply of performance measures but can also hide critical organizational information and prevent the manager from taking needed decisions (Fitzgerald &Storbeck, 2002).

Considering that the BSC is a system that provides the accounting of how each part of the organization contributes to its success, through a series of explicit causal relations (Kaplan & Norton, 1996), it is likely that its integration with the DEA system will potentiate the several business branches inside the organization. An integrated system that analyses the information supplied by both models can offer a much richer information set concerning the organization and how it should focus its attention towards its performance improvement, as well as identify specific learning networks for each of its intern business processes, potentiating the organization's global performance (Amado, *et al*, 2012).In this context, it becomes pertinent to demonstrate that the integration of both systems, the BSC and the DEA, can translate into value added for the organization's strategic performance, since it potentiates critical information and allows for more assertive, and therefore more successful, manager decisions (Amado, *et al*,2012).

Consequently, as referred before, this study is conceptual in nature. It focuses on how performance systems, namely the BSC and DEA, contribute towards the efficiency and measurement of the organization's performance in the strategic decision making process of its managers. Thus this research aims: (i) to study the importance of performance measurement towards the efficiency of the organization's performance; (ii) to identify performance indicators that potentiates organizational performance; and (iii) to analyze the influence of the performance measurement systems in the managers' strategic decision taking.

Following this introduction, we set out a review of the literature on the development of performance management and several models of performance measurement systems with an emphasis in the integration of the Balanced Scorecard and Data Envelopment Analysis. We then present our conceptual and final considerations.

Literature Review

2.1. Performance Management and Measurement

Both at the organizational and individual level, one of the manager's main goals is to measure and manage performance. This idea is in line with the systemic vision, which assumes that each system must have a purpose. A system that achieves its own purpose it is a system that accomplishes itself. According to Brudan (2010) and Lebas (1995), the term performance is a concept hard to define. In the field of management alone, it can concern different levels, such as personal, organizational or team performance, among others.

Lebas (1995) claims that performance cannot be objectively defined even in a restricted context, it is always necessary to introduce a conceptual definition as a starting point. The author defines performance as – *the potential to implementing successful future actions, with the purpose of achieving objectives and goals*. Lebas (1995) and Wholey (1996) argue that performance needs to be measured and assessed once it concerns a non-objective

reality.For Folan*et al* (2007), the meaning and the content of performance must be analyzed by the markets where the organization is inserted, in the implementation of the internal processes that allow achieving the goals and aims that are pre-defined.According to Brudan (2010), in the field of management, performance is associated with 2 key processes: the management of performance and the measurement of performance. These two processes cannot be separated from each other.Franco-santos*et al* (2007) and Brudan (2010), defend that the management of performance is the general process that leads with performance, since it reflects processes as the definition of the strategy (planning/defining goals), the strategy of measuring, planning and executing. Hence, performance measurement is a management process that allows identifying, filtering and communicating performance results through performance indicators. Performance measurement also deals with the assessment of the outcomes, guaranteeing that once defined, they can be reached.

As a reply to the critiques of traditional performance, the measurement is an invitation to a paradigm shift in the way an organization's performance is measured, through new and more balanced models to project actual measurement sets (Khan & Shah, 2011).Performance always has a considerable influence over the activity of every organization and, as a consequence, research on topics of how to measure it accurately is an ever more pertinent issue (Basoglu, 2007; Chytas*et al*, 2011).Even though research concerning the measurement of performance has been developing throughout the last decades, it was in the last twenty years that the necessity arose to adapt the measurement of performance to the business needs (Taticchi*et al*, 2010). The measurement of performance has its origins in the Middle Age, in business transactions among traders. It followed through the Industrial Revolution until the end of the twentieth century and throughout the times, the measures of performance measurement used evolved along the needs of markets and organizations (Taticchi*et al.*, 2010; Khan & Shah, 2011).

Several researchers (Beamon, 1999;Gunasekaran, 2001;Tangen, 2005; Thakkar*et al*, 2009), characterize the performance management system with a higher efficacy when: It is simple and easy to use; has a clear purpose; gives prompt feedback; interconnects the performance improvements; reinforces the organization's strategy; relates the short term and the medium and long term organization aims; is horizontally and vertically integrated in the structure; it takes into account competitors' practices; helps to accelerate the organizational learning; established numerical measures for most goals; reflects the relevant non-financial information based on each business unit indicators; and financial and non-financial measures are aligned and complement themselves and are integrated in a pre-defined strategic framework.A performance measurement system has as a purpose to monitor and assess the organization's strategy implementation, creating incentives for the communication among the different sectors and the motivation and strategic alignment of the operational initiatives (Simons, 1995). According to Kaplan & Norton, (1996), argue that the use of performance measurement systems improves the organizational performance. The purpose of this paper is to understand how the integration of the two business systems, BSC and DEA,influence the organizational performance.

Proposition (P1): The implementation of systems of performance measurement improves the organizational performance.

2.2. Balanced Scorecard (BSC)

The BSC was created with the purpose of facilitating the integration of functional measurement and allow a better execution of the global strategy, while also aimed at describing the essential components of the business' success. According to Spitzer (2007), "there is nothing magical about BSC, since the idea of a multidimensional Scorecard had been

proposed many times before".However, it was Kaplan & Norton (1992) that popularized the concept and brought it to the mainstream. According to these two authors, the BSC is explained as the integration of organizational measures, while taking different perspectives or dimensions into account. This measurement system is popular because, in comparison with existing measurement systems, it includes three innovating principles: (1) it is a management system (not just a measurement system). The idea is to use the BSC to manage the communication and implementation of the strategy; (2) the four perspectives of the BSC should be casually related. The financial and client perspective shall describe the results that the organization aims to achieve; the learning and growth perspective describes how the organization pretends to achieve these results. On what the processes perspective is concerned, it should be aimed towards mobilizing the finances in the right direction; and (3) The BSC shall foster capacity creation in the present (through value proposals for the client and the internal circulation of processes) and in the future (through the development of non-tangibles in the learning and growth perspective).

According to Kaplan and Norton (1996), the BSC mirrors the balance between the short and medium-term goals, between financial and non-financial indicators, between the tendencies and particular events and between the internal and external perspectives of the organization. This set of measures is a starting point for the measure of the organization's strategic management, enabling the manager to have a more balanced view of the organization's performance.For Rigby (2003), the perception of several authors and managers that applied the BSC management system in their organizations, considered to be one of the main guiding tools. Several benefits are expected for organizations that adopt and implement a management system such as the BSC, such as a better understanding of the relation between organizational decisions and the pre-defined strategy, the redefinition of the customer relationships, the re-engineering of internal business processes and the emerging of a new organizational culture that potentiates team effort towards the implementation of the organization's strategy (Kaplan & Norton, 1996).

(P2): The implementation of the BSC improves the efficiency of the organizational performance.

Kaplan & Norton (1992) propose the monitoring of an organization's performance through four types of analysis, while acknowledging that all four perspectives might be adjusted according to the mission and the strategy of the organization in which the BSC is being implemented (Chytas*et al.*, 2011).The client's perspective concerns the way in which organizations generate value through the client and the understanding of how do they perceive performance becomes an important aspect of in measuring performance (Chytas*et al.*, 2011; Grigoroudis*et al.*, 2012).

(P 3): The needs of the clients influence the organizational performance.

The performance indicators described in the conceptual model (Figure 1) as 3A, 3B, 3C and 3D, correspond to the following performance indicators: <u>profitability</u> (P) (guaranteeing a client portfolio that bring forth value added to the organization), <u>satisfaction</u> (S) (to achieve highsatisfaction levels for the clients),<u>retention</u> (R) (the capacity to attract new customers) and <u>fidelization</u> (capacity of keeping clients), following (Grigoroudis*et al.*, 2012).

(P3A): The profitability (P) has a positive influence in efficiency
(P3B): The satisfaction (S) has a positive influence in efficiency
(P3C): The retention (R) has a positive influence in efficiency
(P3D): The fidelization (F) has a positive influence in efficiency

In the internal business processes perspective, managers shall identify the internal critical processes in which the organization should perform, assuring in the most effective way, the fulfillment of the purposes and needs of the client as well as financial ones (Kaplan & Norton, 2000). The improvement of internal proceedings creates and fulfills the proposition of the value for the client and consequently improves the organizational performance (Chytas*et al.*, 2011; Grigoroudis*et al.*, 2012).

(P4): The improvement of the internal business proceedings potentiates the organizational performance.

Here, the indicators described as 4A, 4B, 4C and 4D, concern organization (O) (recognize that the organization exists to assure several internal processes instead of accumulating positions), rationalization (R) (eliminate activities that do not generate value), quality (Q) (increase the product or service's acceptance rate) and the efficiency and efficacy (RO) (to optimize the resources on which the results are dependent upon), (Grigoroudis*et al.*, 2012).
(P4A): The organization (O) influences positively the efficiency.
(P4B): The rationalization (R) influences positively the efficiency.
(P4C): The quality (Q) influences positively the efficiency.
(P4D): The resource optimization (RO) influences positively the efficiency.

For Kaplan & Norton, (2000), the learn & growth perspective identifies the infrastructure that the organization needs in order to grow and improve at the medium and long run, a process only possible due to three factors, namely the collaborators, systems and organizational proceedings, fostering this way the creation of internal value for the organization.

(P5): The development of the organization has a positive influence in the organizational performance

This perspective's indicators are defined as 5A, 5B, 5C and 5D and reflect innovation (I) (ability that the collaborators have to innovate), satisfaction (S) (increase motivation and performance indices), qualification (Q) (assure that the knowledge level of the collaborators are enhancing their performance) and technology (T) (increase the technological potential), respectively (Chytas*et al.*, 2011; Grigoroudis*et al.* 2012).

(P5A): The innovation (I) influences positively the efficiency.
(P5B): The satisfaction (S) of collaborators influences positively the efficiency.
(P5C): The qualification (Q) of collaborators influences positively the efficiency.
(P5D): The technology (T) influences positively the efficiency.

The financial perspective is able to reveal if the organization's strategy, implementation and execution are potentiating increases in performance (Chytas*et al.*, 2011).
(P6): Financial results improve the organizational performance

The measured indicators in the financial perspective are three, 6A, 6B and 6C, namely profitability (P) (Asset and results management capability, growth (G) (creation of new products/services, new clients and markets), creation of value (CV) (ability of generating value for the stockholder/organization) (Grigoroudis*et al*. 2012).
(P6A): Profitability (P) improves efficiency.

(P6B): Growth (G) improves efficiency.
(P6C): The creation f value (CV) improves efficiency.

The idea behind the below model is to know, to what extent, do the indicators included in each of the four perspectives of the BSC, influence the organizational performance, with respect to the strategic decision making.

2.3. Data Envelopment Analysis (DEA)

The DEA is a non-parametric performance measurement system, used to measure the efficiency of the *Decision Making Units* (DMU's) brought forth by Charnes in 1978 for the first time. The goal is to identify the DMU's that produce a higher weighted output, with minimal input consumption (Coelli, *et al*., 1998; Cooper, *et al*., 2004, Amado, *et al.*, 2012).

The DEA uses all the data available to the organization in order to achieve the best practices, such that each DMU with insufficient performance may be improved. One of the characteristics of the DEA is that it allows each business unit to be compared to others following the same purposes and priorities and therefore optimize the operation ability and efficiency. With regard to this, the DEA aims at following each DMU priorities, allowing each to choose the ideal structure for the inputs and outputs, potentiating the benefits of each unit as well as their assessment. As a result, the DEA aims at classifying each unit as a function of the best possible practice, in comparison with other units. Another advantage of the DEA is that it does not need the specification of a cost function or production, allowing more effective models to be created (Cooper *et al*., 2004). This paper aims in using this measurement system to complement the BSC measurement system.

(P7): The application of the DEA allowsevaluating the organizational performance.

The DMUs are 7A, 7B, 7C and 7D, which reflectprofitability (P) (asset and outcomes management ability), resource rationalization (R) (eliminate activities that do not generate value), satisfaction (S) (increase collaborators and clients' motivation and effort indices) and growth (G) (creation of new services, new clients and markets), respectively (Amado *et al.*, 2012).

(P7A): The use of profitability (P) indicators is positively associated with the organizational performance.
(P7B): The resource rationalization (R) increases the efficiency of the organizational performance.
(P7C): The clients' satisfaction (S) improves the efficiency of the organizational performance.
(P7D): Growth (G) is positively associated with organizational performance.

2.4. Integration of the BSC with the DEA

The idea of integrating the DEA with BSC is to treat the organizational information as one and transform in a single measurement model, the multiple information inputs/outputs that can potentiate the future success of an organization and improve its operation ability (F'are*et* 2000). The implementation of the DEA by itself, tends to provide a good compilation of performance measures for organizations, but it can also miss critical organizational information and necessary decision making from the manager (Fitzgerald &Storbeck, 2002).Independently of how popular and effective each of these systems is, there has been few studies that have explored their integration (Table that integrates BSC and DEA) and the

emergence of a better suited system of organizational performance, making this a present and pertinent issue (Ackoff, 1979; Dyson & Shale, 2010; Amado, 2012).

To achieve and maintain success in the market these days is a challenge to any organization, given the high market complexity, the constant changing environment and very high volatility and risk. There is little room for mistakes and therefore it is fundamental that whoever operates in a global market, must have an excellent performance. For that to be attained, the ability to measure the performance is vital, such that they can manage their strategies, their organizational and system processes. This provides a great competitive advantage and excellent performance. Ironically, in order to be able to adapt to change, organizations must become ever more complex and, the higher the complexity, the hardest the management (Spitzer, 2007). The efficiency in the model represents not more than the organizational performance optimized by the performance measurement systems that potentiated the efficacy of the measured performance.

(P8): The integration of the BSC and DEA influences the efficiency of the organizational performance.

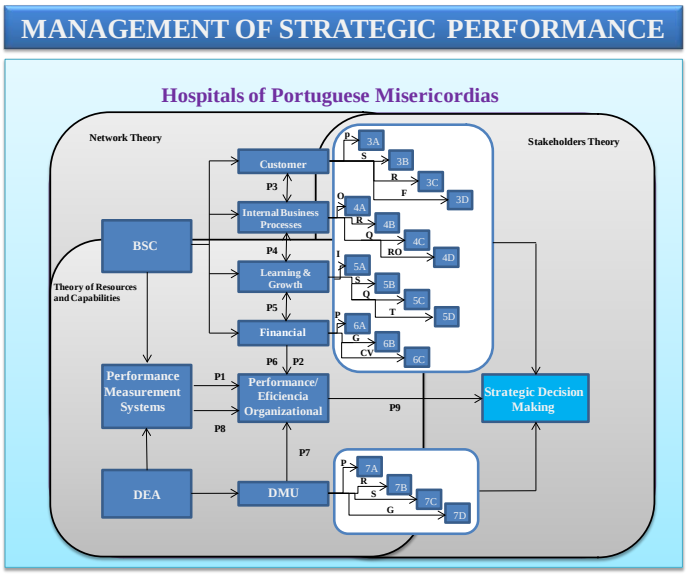
The strategic decision making is a preponderant factor with respect to the management of organizations. Therefore, managers should have performance measurement systems that allow them to measure the amplitude of their decision making, improving the organizational performance already in practice and thus obtaining a competitive edge.

(P9): The integration of the BSC and DEA has a positive effect in the strategic decision making process.

3. Conceptual Model

In light of the literature review and characterization of the previous mentioned dimensions, the conceptual model (Figure 1) proposed concerns the measurement of performance and aims in contributing to the literature to increase the conceptual framework concerning this phenomenon, especially with regard to the contribution of the integration of the DEA and BSC measurement systems, testing the strategic organizational performance's efficiency and its strategic implications in the strategic decision making process.

Figure 1: Proposed of Conceptual Model



4. Conclusion

Performance has always a considerable influence over the activity of every organization and, consequently, research concerning the ways and means of measuring it accurately is an ever more pertinent subject (Basoglu, 2007; Chytas*et al., 2011*).The main purpose of this study was to contribute to the understanding of the need of measuring performance in organizations. Though the topic is not new, there is an ever increasing necessity of measuring performance and thus this theme has assumed especial importance, given that it is an important management tool in implementing the organization's strategy and in their control.

Performance measurement is multidisciplinary in nature and the search for ever more efficient multidimensional systems, with indicators that can be better measured is a necessity, because it optimizes the operational ability and potentiates the organizations' success in the future thus creating a differentiating element with regard to competitors. Organizations manage, through effective measurement systems as the BSC and the DEA, to implement a more adequate strategy, an objective valuation of their business, provide feedback and guarantee the communication inside and outside the organization.With this in mind, a conceptual model has been conceived that integrates the different perspective of analysis in the BSC, integrated with the different DMUs generated by the application of the DEA, for obtaining a more efficient organizational performance.

The conceptual model here presented should be test in future work. In particular, researchers need to observe what indicators are used for performance measurement in strategic decision making. Furthermore, we hope that this study, contribute for further development of the measurement and efficiency of strategic organizational performance through the performance indicators of the Balance Scorecard and the Data Envelopment Analysis and to evaluating the impact on organization strategy.

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