Design issues in Balanced Scorecards: The ‘‘what’’ and ‘‘how’’ of control

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Summary The design and use of Performance Measurement Systems (PMS) have been widely investigated in management studies. However, recent work has highlighted the potential importance of treating design and use not as separate dimensions, but rather as mutually entangled features, calling for further research into their interaction. Focusing on a specific, widely adopted performance technique, the Balanced Scorecard (BSC), this study explores how use of the PMS is interrelated with its design dimension. In investigating PMS use, a distinction between diagnostic and interactive control is adopted as a framework of analysis. At the empirical level, the research is based on a two year multiple case study of seven Italian companies.

Introduction

Both the design and use dimensions of Performance Measurement Systems (PMSs) have been widely explored by managerial and accounting scholars (Broadbent & Laughlin, 2009; Ferreira & Otley, 2009a; Li & Tang, 2009; Otley, 1999). A PMS is defined as a set of mechanisms and processes used by an organisation to identify key objectives and support the implementation of actions, planning, measurement, control, rewarding and learning (Ferreira & Otley, 2009a). Research on PMS design has mainly sought to investigate how to define the PMS best suited to an organisation’s characteristics, with a view to augmenting performance effectiveness (see Chenhall, 2003 for a review). To this end, such studies have analysed the impact of organisational and contextual variables on the design of the PMS, and its effects on performance outcomes. More recently, the attention of scholars has been catalysed by the topic of PMS use, with researchers striving to understand how managers use, or might use, the information provided by a PMS (Nilsson & Kald, 2002; Tuomela, 2005; Wouters, 2009), and the determinants of these different uses (Henri, 2006a; Hoques & James, 2000; van Veen-Dirks, 2010; Verbeeten & Boons, 2009).

The above studies have investigated the determinants of PMS design and use separately, finding evidence that both these dimensions, here conceptualised as ‘‘what’’ and ‘‘how’’, influence the operation of the PMS. Yet, though it is recognised that the diversity of measurement and their use are ‘‘two closely intertwined dimensions of PMSs that must be examined specifically’’ (Henri, 2006a, p. 97), research to date has overlooked the interaction between them. PMS design has recently been investigated jointly with its use (see for example Ahrens & Chapman, 2004; de...
These contributions indirectly tackled the issue of interaction between design and use, but with mixed findings. For example, de Haas and Kleingeld (1999) propose a normative framework for designing a PMS that enables a specific type of use, namely interactive. Using a longitudinal case study in a restaurant chain, Ahrens and Chapman (2004) show how specific design principles foster an enabling PMS use, allowing managers to simultaneously pursue efficiency and flexibility. These studies suggest that the "design of organisational controls play a crucial role in fitting organisational behaviour to organisational goals" (de Haas & Kleingeld, 1999, p. 234), thereby treating design as the predominant factor shaping the appropriateness of a PMS. In contrast, other case studies acknowledge that "the use of the Management Control System (MCS) has the ability to counteract issues with MCS design" (Ferreira & Otley, 2009b, p. 35). For instance, Henri (2006a) found that the way in which a PMS is used entrains differences in performance measures. More specifically, a monitoring use is associated with a predominance of financial measures, while a strategic use is mainly characterised by a predominance of non-financial measures. Ferreira and Otley (2009b) instead emphasise the prominent role of use, highlighting how intensity of PMS use can counterbalance misfits in PMS design. These mixed findings might be explained by the fact that the studies in question simultaneously investigated PMS design and use, but overlooked their interaction.

Building upon "loose" contingency (Chapman, 1997), the present work has the objective of theoretically and empirically assessing how the aspects of PMS design and use are interrelated, through a focus on a well-known performance measurement technique, the BSC (Kaplan & Norton, 1992). Use is specifically investigated by adopting Simons' (1995) distinction between diagnostic and interactive control, while the design dimension is analysed with reference to four attributes emerging from the previous BSC literature (e.g., Malmi, 2001; Speckbacher, Bischof, & Pfeiffer, 2003). The balance between financial and non-financial performance measures, the cascading of the BSC, the determination of target levels and the reward system associated with BSC measures are here related to how the PMS is used, whether diagnostically or interactively. The choice of a "loose" contingency approach was driven by the need for more accurate results than those obtainable from "hard" contingency testing (Chapman, 1997), thanks to a closer contact between the organisation and the researcher (Otley, 1980). Accordingly, the research question investigated in this study is the following: how is the type of use, characterised as diagnostic or interactive, related to the BSC design? We empirically address this question in seven non-financial firms that had been using a BSC for at least three years. Through an in-depth investigation, we identify two distinct types of Balanced Scorecards, which we call Diag-BSC and Int-BSC, associated with different styles of use (diagnostic or interactive), and different design features.

The results of our research are discussed in the remainder of this paper. First, we present previous studies on the design and use of PMSs; we then go onto operationalise the concepts of design and use specifically for the BSC, with the purpose of explaining how we detected these dimensions in the field. Next, the research methodology is explained, followed by a discussion of the results of the case studies. Finally we draw some conclusions.

**Theoretical background and conceptual perspective**

This study explores the interaction between PMS design and use, focusing specifically on a widely adopted technique: the Balanced Scorecard (Kaplan & Norton, 1992). Previous studies on PMS design or use have employed a variety of perspectives of analysis, ranging from stakeholder theory (Atkinson, 1998; Li & Tang, 2009), to behavioural theory (Lipe & Salterio, 2000), institutional theory (Brignall & Modell, 2000; Modell, 2003), and resource based view theory (Fink, Marr, Siebe, & Kuhle, 2005; Li & Tang, 2009). When the aim is to investigate the factors that drive PMS design or use, the majority of contributions draw on contingency theory (see Chenhall, 2003 for a review), which is based on the notion that PMSs are not invariant, and are instead shaped by the individual circumstances of each organisation. Earlier studies adopting this perspective indicate that organisational and contextual factors, such as environment, size, technology, culture and strategy do matter in PMS design, and give rise to heterogeneity in how the PMS is implemented in practice (Chenhall, 2003; Otley, 2018; Waterhouse & Tissen, 1978). These findings have been complemented by other contingency studies (Gerding & Greve, 2004; Otley, 1980), investigating the association between contextual factors, design choices and performance effectiveness. These contributions have enriched the previous literature with the concept of contingency fit (Van de Ven & Drazin, 1985), providing an explanation of how different contingencies affect the PMS design and its ensuing performance outcomes.

For what concerns PMS use, the topic has been widely investigated, beginning with Hopwood's (1972) seminal work on budgeting, in which he recognised that:

[...] even standard accounting reports can be used in many different ways in performance evaluation. Within the human consciousness, while the accounting data are given, their interpretation and precise use is the outcome of a personal, and social process which is sustained by the meanings, systems of belief, pressures and purposes that are brought to bear by the managers using data (Hopwood, 1972, p. 159).

This early contribution stimulated greater attention to use (Otley, 1980), which was then brought to a wider audience by Simons (1995), who conceptualised the style of control relating to data use, distinguishing between diagnostic and interactive styles. Diagnostic control corresponds to a control framework based on a cybernetic model. Objectives are set, plans implemented, and, at the end of a given period, results are measured and any needed corrective actions taken. This approach is also known as management-by-exception control (Simons, 1991), because top managers are involved only when results deviate from the established targets. Interactive systems instead support double-loop learning (Argyris, 1977), providing assistance in identifying emerging strategies. They call for active participation of
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senior managers in managerial control, and their regular involvement in face-to-face dialogue with subordinates. More recently, Ahrens and Chapman (2004) have proposed another classification of uses, distinguishing between coercive and enabling styles of use. “Coercive use refers to the stereotypical top-down control” (Ahrens & Chapman, 2004, p. 271), with detailed organisational rules that leave workers only limited scope for action. Enabling use instead puts the emphasis on employees, giving them the opportunity “to deal more effectively with the inevitable contingencies in their work” (Ahrens & Chapman, 2004, p. 271).

Alongside these different conceptualisations of PMS use, several researchers have focused on investigating its determinants, enlarging the spectrum of contingency variables. Hoques and James (2000) searched for the contextual factors which impact on BSC use, operationalised as the extent to which BSC measures are used within the organisation. They provide evidence that organisational size, early product lifecycle stage and weak market position are associated with greater usage of the BSC. Henri (2006a) investigated the contingent role of organisational culture, distinguishing between control values, based on predictability, formality and rigidity, and flexible values, based on spontaneity, openness and adaptability. When flexible values predominate, PMSs are used to focus organisational attention, support strategic decision making, and legitimize actions to a greater extent than when control values predominate. Wouters (2009) instead focused on the process for implementing a specific type of use-termed enabling use-in operational settings, highlighting the developmental principles which foster this type of use: experience-based, allowing experimentation, building on employees’ professionalism, transparency and employee ownership, and outside facilitators. Verbeeten and Booms (2009) empirically demonstrate that strategic priorities (e.g. market/customer orientation or innovation) are associated with the use of non-financial performance measures, such as employee, customer or processes measures. Focusing on performance measures in a production setting, van Veen-Dirks (2010) found evidence that contingency variables, namely production strategy, departmental interdependence and technological complexity, drive the importance of financial and non-financial measures associated with two different uses: periodic evaluation and reward.

The increased attention given to understanding the determinants and consequences of PMS design and use has yielded a broad picture, which allows several contextual dimensions to be linked to different aspects of PMS design and use. Nonetheless, there is a recognised need to better understand the interaction between design and use (Henri, 2006b; Ferreira & Otley, 2009b), also with a view to providing a holistic perspective for the study of PMSs. To our knowledge, this question has been addressed by few studies, and only indirectly: Ahrens and Chapman (2004), in the wider context of organisational structures, and Ferreira and Otley (2009b) in the field of performance effectiveness.

Adopting a wider perspective aimed at exploring the role of management control systems (MCSs) in organisations that pursue both flexibility and efficiency, Ahrens and Chapman (2004) discuss the concept of enabling use, identifying the design principles that foster this type of use. They suggest that MCSs can be used not only in a coercive manner, to constrain operational managers, but also in an enabling manner to support them, if four design characteristics are adopted: repair, internal transparency, global transparency and flexibility.

Drawing on the notion of contingency fit, Ferreira and Otley (2009b) have investigated how management control system design and use both impact on effectiveness. They introduce the concept of design misfit to describe a Management Control System (MCS) which has limitations with respect to the quality, scope, aggregation and presentation of information to decision makers. They provide evidence that MCSs with design misfits can still deliver high performance thanks to their intensity of use, suggesting that the way in which MCSs are used may counterbalance limitations in the MCS design.

The above studies represent preliminary contributions that underscore the importance of investigating PMS design in conjunction with use. Expanding upon these views, and adopting a “loose” contingency (Chapman, 1997) approach, the present work focuses on the interaction between diagnostic and interactive use with reference to four design attributes: financial and non-financial measures, cascading, targets, and reward system.

Though there are no holistic investigations of this problem in the literature, we can draw some useful suggestions from Simons’ (1995) framework of diagnostic and interactive use, and from previous studies more specifically focused on each individual design attribute. In investigating the relationship between strategic learning and PMS, Fried (2010) found evidence that non-financial performance measures for evaluating intangible resources have an enabling effect on organisational learning, enacting an interactive style of strategic control. Kaplan and Norton (2001) advocate cascading the BSC down to individual business units, in order to facilitate dialogue among executives and managers about the scorecard, thus hinting at an interactive use. Simons (1995), in describing the diagnostic style of use, suggests associating performance measures with the reward system, in order to give managers more time to focus on their strategic priorities. Furthermore, he associates the diagnostic control style with an explicit definition of goals, strategy and critical success factors, thereby also implying an explicit approach to target setting. Other researchers (e.g. Libby, 1999; Magner, Welker, & Campbell, 1995; Shields & Shields, 1998) have instead discussed the participative approach to budget setting as a way of involving employees in the target-setting process, thereby enhancing dialogue and improving organisational performance. These contributions take some steps toward exploring the interactions between the design elements of a PMS and its diagnostic or interactive use. We expand upon this by investigating four

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1 Repair is associated with the breakdown of control processes, providing capabilities for fixing them; internal transparency is related to understanding working procedures; global transparency means understanding where and how the local processes fit into the organization as a whole; flexibility denotes organizational members’ discretion over the use of control processes (Ahrens & Chapman, 2004, p. 276).
attributes of PMS design, and their interactions with the style of use.

**BSC design and use**

Our empirical investigation of the relationship between PMS design and use is grounded in the research perspective of contingency literature. To conduct the analysis and derive insights, we focused on the performance framework of the BSC. The BSC is considered a significant technique to investigate PMSs at two levels. First, it has been widely adopted by companies of different size and industry around the world (Gautreau & Kleiner, 2001; Ittner, Larcker, & Randall, 2003; Kald & Nilsson, 2000; Nielsen & Sorensen, 2004; Speckbacher et al., 2003). Second, its wide scope entails a potential company-wide use at different organisational levels and with different purposes of use (Malmi, 2001; Speckbacher et al., 2003), providing an ideal field for the research at issue. The following section accordingly seeks to operationalise the BSC design and use dimensions, in order to help us capture these two dimensions in the field.

**BSC design**

BSC design refers here to structural characteristics, which answer the question: “What are the relevant technical features managers have to consider when introducing a BSC in their organisation?” We can thus define this first area of investigation as embracing the “what”: what choices managers have to make when implementing the technology? More specifically, drawing upon previous empirical studies (e.g. Speckbacher et al., 2003), the BSC design covers all the design decisions that occur at the time of the BSC implementation. Four design features emerge as recurrent and leading to heterogeneous results: Key Performance Indicators (KPIs), cascading, target setting and reward systems. The link with the reward system is sometimes referred to as an attribute of PMS use (e.g. Malmi, 2001; Speckbacher et al., 2003), but according to our definition of design it represents a decision about the BSC structure, and as such falls within the “what” dimension. Below, we illustrate the components of the BSC design, and their potential heterogeneity when enacted in practice.

The first design choice concerns KPI selection. The innovative element introduced by the BSC is the incorporation, into a single template, of both financial and non-financial measures. Kaplan and Norton are not prescriptive in defining the number of measures to include, and the balance between financial and non-financial KPIs. Consequently, the practice is characterised by wide variability in both the number of performance indicators and the balance between financial and non-financial measures. Finnish companies have BSCs with a number of performance measures ranging from 4 to 25 (Malmi, 2001); BSC applications in healthcare organisations include between 13 and 44 measures (Gurd & Gao, 2007); the implementation of the BSC in a small to medium-sized manufacturing company was found to be characterised by 21 KPIs (Fernandes, Raja, & Whalley, 2006).

The second design choice relates to cascading, which is the approach suggested by Kaplan and Norton (1996) for deploying the scorecard across the whole of the organisational hierarchy. According to the authors, implementation of the BSC at different levels of the organisation, down to that of personal scorecards, ensures alignment and communication of the strategy throughout the entire organisation. A variety of cascading design choices are observed in practice. Some companies develop a single BSC at the organisational or business unit level (Decoene & Bruggeman, 2006). Others instead adopt a cascading approach, developing organisational, business unit and personal BSC that are interlinked with each other (Speckbacher et al., 2003).

The third design choice concerns target setting, which relates to defining the performance goals to be achieved and associating them with BSC measures. Empirical studies reveal different positions in the types of targets that should be set, whether explicit or implicit. For instance, Ahn (2001), in analysing the BSC adopted by a company, emphasised the benefit of explicit targets: the exact values to achieve were defined for each performance measure. Tuomela (2005) instead, provides contrasting evidence: defining targets for non-financial measures was seen as problematic due to the unavailability of past data for those performance metrics. Given the difficulties in establishing the exact value to achieve, the author recognised the importance of setting implicit targets to be subsequently discussed with employees.

The last design choice involves the link between the BSC measures and the reward system. Extant literature shows different positions with respect to this aspect. The importance of linking the PMS with a system of reward is long recognised as fundamental to increase the motivation of employees (Hopwood, 1972). At the same time, other authors (Bonner & Sprinkle, 2002; Ittner, Larcker, & Meyer, 2003; Malina & Selto, 2001) highlighted controversial effects and dysfunctional behaviours associated with this linkage, which can lead to internal conflicts (Wong-On-Wing, Guo, Li, & Yang, 2007). Focusing specifically on the BSC, Kaplan and Norton (1996) suggest establishing an incentive system associated with performance measures in order to ensure alignment between the strategy and managerial actions, but the practice is characterised by heterogeneous situations. Some companies link the scorecard to the reward system (e.g. Epstein & Manzoni, 1998), while others do not (see the surveys by Malmi, 2001 and Speckbacher et al., 2003).

**BSC use**

The concept of BSC use is analysed here placing emphasis on the communication process associated with the technique. Operationally, we answer the question: “how does the communication process - and consequently the control - associated with the BSC take place within the organisation?” On the strength of this definition, we label BSC use the “how” dimension: describing how the control style is enacted in practice.

Simons’ (1995) distinction between interactive and diagnostic use is adopted to frame the “how” dimension, because it emphasises the intensity of the communication process and the style of control adopted by managers (Abernethy, Bouwens, & van Lent, 2010). The choice of this distinction is justified by the recognition that communication
aspects are today “critical in increasing understanding of how managers use accounting information in performing their activities” (Hall, 2010, p. 311).

To practically capture these two styles of use in the field, we rely on Simons (1995), and the subsequent studies adopting his framework (e.g. Tuomela, 2005). These studies identify some aspects of the communication that are useful for distinguishing between a diagnostic and interactive use: intensiveness of use by top managers, intensiveness of use by operational managers, and engagement in face-to-face dialogue.

The first element is the attention the BSC receives from top managers. An interactive system is characterised by frequent personal attention from top management levels. Conversely, a diagnostic use is characterised by control on an exception basis (Simons, 1991), which means that senior managers intervene only when measures deviate from the expected targets. The second element is the attention the BSC receives from operational managers. For a control system to be defined as interactive, it must not only command frequent involvement of senior managers, but also active participation of operational managers across lower levels of the organisation (Simons, 1991). The third element is the presence of face-to-face dialogue. The attention that interactive systems require from both senior and middle managers leads to frequent face-to-face meetings to discuss results, problems and opportunities, also during informal occasions. In contrast, the diagnostic style of control only calls for face-to-face dialogue when results deviate from the established targets. Simons specifies that diagnostic and interactive uses are not mutually exclusive; rather, “any diagnostic control system can be made interactive by continuing and frequent top management attention and interests” (Simons, 1994, p. 171).

**Research design**

Relatively little is known about the interaction between design and use, so an exploratory case-study approach was chosen as the most suitable research method. At a first glance, it might seem odd to use a case-study methodology in contingency research, which has traditionally been strongly rooted in hypothesis testing. However, the mixed findings of previous studies on PMS design and use have led us to ground our research in “loose” contingency (Chapman, 1997), which acknowledges the benefits of gaining more in-depth and accurate results from a qualitative methodology. Furthermore, the case-study approach is considered to be a powerful tool for in-depth exploration of practices in use, and for deriving comparative explanations for complex phenomena (Eisenhardt & Graebner, 2007; Yin, 2003). It also has the advantage of allowing data from different sources, such as interviews, observations and archives, to be combined, achieving triangulation (Denzin, 1978). Data collected from interviews were continuously cross-referenced with data from other sources, and cross-checked against insights from similar cases in the sample. In this way, the internal validity and reliability of the case-study material was enhanced; moreover, the decision to derive insights from multiple case studies serves to make the results even more robust and compelling (Yin, 2003).

Specifically, we conducted a two year study (2007–2008) of seven Italian non-financial firms operating in different industries, and characterised by different ownership structures and sizes (see Table 1).

We deliberately chose companies of different sizes, and operating in different industries, in order to investigate a heterogeneous array of BSC design and use settings.

In each company, we began by interviewing the Chief Financial Officer (CFO), with the purpose of understanding the main characteristics of the BSC, and the manner in which it is used, with particular attention to how information derived from the scorecard is used, communicated and disseminated throughout the organisation. This initial interview gave us preliminary insights into the design and use characteristics, and allowed us to access BSC reports. We then further investigated these issues by interviewing at least one of the senior managers charged with use of the BSC, and thus involved in the communication process associated with the control tool. The decision to also include users of the technique was made to obtain a more comprehensive picture of the phenomenon under investigation, and to explore in-depth how the communication process associated with the BSC takes place. This was useful, in particular, for fully capturing the interactive style of control, since it is characterised by involvement of managers at different levels. We conducted a total of 22 interviews with CFOs and senior managers, having an average duration of one and a half hours each. Table 2 lists the key informants in the seven companies; some of them were interviewed twice to further explore interesting issues emerging from analysis of the data from the first meeting.

A semi-structured interview approach was adopted, using a check-list as a reference. Outlines of the interviews were sent to each company in advance, and a follow up summary of the discussion was then sent to the interviewees in order to avoid misunderstandings and obtain further clarifications.

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**Table 1** Description of the seven companies.

<table>
<thead>
<tr>
<th>Name</th>
<th>Industry</th>
<th>Revenue 2007 (in mille)</th>
<th>No. of employees</th>
<th>Holding nation</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEL</td>
<td>Telecommunications</td>
<td>723</td>
<td>4800</td>
<td>Italy</td>
</tr>
<tr>
<td>SEMIC</td>
<td>Semiconductors and other electronic components</td>
<td>321</td>
<td>1200</td>
<td>USA</td>
</tr>
<tr>
<td>PHARMA</td>
<td>Pharmaceutical</td>
<td>1400</td>
<td>3500</td>
<td>France</td>
</tr>
<tr>
<td>ELECT_1</td>
<td>Electronics, electrical equipment</td>
<td>900</td>
<td>850</td>
<td>Germany</td>
</tr>
<tr>
<td>ELECT_2</td>
<td>Electronics, electrical equipment</td>
<td>2920</td>
<td>14000</td>
<td>USA</td>
</tr>
<tr>
<td>MOTOR</td>
<td>Motor vehicles and parts</td>
<td>11196</td>
<td>26461</td>
<td>Italy</td>
</tr>
<tr>
<td>IND</td>
<td>Industrial and farm equipment</td>
<td>350</td>
<td>1245</td>
<td>Italy</td>
</tr>
</tbody>
</table>

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Results

This section presents the findings from the seven case studies, illustrating how the BSC is used, and the relationship with its design features. In order to permit a thorough discussion and establish links between the theoretical framework and the empirical data, insights from the cases are structured around the “how” dimension and then linked to the “what” dimension, which provides evidence of their interaction. By organising the analysis in this manner, it is possible to highlight specific links to the cases, and also illustrate the breadth of the gathered data.

The Balanced Scorecard: how

Following Simons’ (1995) framework, we clustered the BSCs of the case studies based on whether they were diagnostic or interactive, obtaining four BSCs associated with a prevalently diagnostic control style, and the remaining three associated with a predominantly interactive control style.

A typical example of diagnostic BSC use is provided by PHARMA, where the Italian CFO clarified:

“I greatly appreciate the BSC because it is concise and succinct: it is able to provide me with key essential data. But we only prepare it once a year! So I’m not continuously involved with it.

Though reflection about the data is thorough, this process only happens once a year, and does not give rise to internal discussion. This situation was also confirmed by the cost controller and the marketing manager, who explained that meetings are organised only when the BSC annual report signals an exception.

The companies TEL, ELECT_1 and SEMIC were also classified as having a diagnostic BSC style. In all three cases, the CFOs receive the report on a quarterly basis, and use it to control the progress of the business by comparing the current value with the pre-defined target. In particular, the CFO at TEL was appreciative of the instrument:

Three years after the BSC introduction, I can say that it is a precious tool for me. It is just a 3-page report highlighting the results in different colours, depending on the degree of achievement of the target, and is thus immediately easy to understand. It takes just a few minutes to get a clear and concise overview of multiple aspects of the business.

When asked about how often they discuss the BSC results, his answer was clear: the BSC receives the attention of operational or human resource managers only when a performance measure is highlighted in red, indicating failure to achieve a target. In fact, the report is not distributed to departmental managers: it is a tool solely in the hands of the CEO and CFO. Other senior managers are involved only when problems arise; discussions with them have so far occurred just two times, when team productivity and customer satisfaction respectively fell below the established target values.

Of the three companies classified as having an interactive system, IND best exemplifies the category. The CFO

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Table 2 Interviews.

<table>
<thead>
<tr>
<th>Company</th>
<th>Position</th>
<th>No. of interviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEL</td>
<td>Chief financial officer</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Performance controller</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Director in investor relation department</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Operation manager</td>
<td>1</td>
</tr>
<tr>
<td>SEMIC</td>
<td>Chief financial officer</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Operation manager</td>
<td>1</td>
</tr>
<tr>
<td>PHARMA</td>
<td>Chief financial officer</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Cost controller</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Marketing manager</td>
<td>1</td>
</tr>
<tr>
<td>ELECT_1</td>
<td>BU director</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>BU Chief financial controller</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>BU performance controller</td>
<td>1</td>
</tr>
<tr>
<td>ELECT_2</td>
<td>Chief financial officer</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Commercial manager</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Operation manager</td>
<td>1</td>
</tr>
<tr>
<td>MOTOR</td>
<td>Chief financial officer</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Commercial manager</td>
<td>1</td>
</tr>
<tr>
<td>IND</td>
<td>Chief financial officer</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Sales manager</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Business analyst</td>
<td>1</td>
</tr>
</tbody>
</table>

All the companies had declared they were using a BSC. Given that BSC design features may differ, as discussed in the previous section and subsequently confirmed by our empirical evidence, we adopted three further criteria to determine whether the selected organisations complied with the BSC technique. First of all, the presence of financial and non-financial measures; second, the clustering of such measures under at least three perspectives, and their collection in a single report. Third, the BSC had to have been introduced at least three years previously, in order for its use to be sufficiently well established within the company.

In analysing the data, we followed the guidelines suggested by Eisenhardt (1989) and Yin (2003). All seven individual cases were written out as stand-alone histories. After that, the unique patterns of each case were identified, and similar patterns were categorised under common themes. This approach helped us to organise and summarise the collected data. Specifically, we clustered the seven companies according to the BSC style of control, whether diagnostic or interactive, and then we searched for common patterns in the BSC design associated with these distinctive styles of use. It is important to note that a given control tool can be used either diagnostically or interactively within the same organisation (e.g. Tuomela, 2005), and that a diagnostic use may switch to an interactive use (Simons, 1995). However, for the purposes of our study, we drew a clear distinction between diagnostic and interactive styles of use in order to identify patterns of influence between the “what” and the “how”.

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Insert Table 2 here
pays continuous attention to the BSC measures, and not just when he receives the monthly report:

Measures in the scorecard and target levels to achieve are discussed on a continuous basis with senior managers. We decide together what the feasible and ambitious targets are.

It follows that face-to-face discussions, as well as informal communications, not only played a central role during the BSC design phase, but continue to do so now during its day-to-day use. Furthermore, the report is distributed to senior managers throughout the organisation; in this way, everyone is aware of the overall situation of the business. The interaction process associated with the BSC clearly emerges from the words of the sales manager:

When a new KPI is introduced to control the sales activities of our employees, we are like baby sitters. We try to support them every day; in this way, we help them to shift from being threatened by the KPIs to actively participating in their management. And this emerges from their ideas and proposals for improvements.

The BSC is used interactively also at ELECT_2 and at MOTOR. At ELECT_2, it has the objective of focusing the attention of the entire organisation on the product technology, which is recognised as a critical success factor. In fact, the company produces and sells premium home appliances characterised by high technological content and the BSC has the purpose of catalysing the attention of the entire organisation around this aspect. The report is prepared quarterly (as in the cases of TEL, ELECT_1 and SEMIC); however, in this case the communication generated by the BSC goes beyond formal delivery of the document. As the CFO of ELECT_2 specified:

I often discuss the progress of the BSC measures with senior managers in the production or commercial areas. I think it is important to share what we are doing and how.

Moreover, he noted that proposals about how to improve attainment of targets or new measures to include have often emerged from informal discussions. He gave the example of the cost of quality:

It was as a result of discussions among us that, last year, we decided to introduce this new KPI in the BSC. This measure is extremely useful, as it gives us an idea of how much it costs for us to maintain high quality products.

At MOTOR, the CFO receives the BSC quarterly, but the report includes monthly data for the three-month period covered by the document. Hence, their BSC has three columns, one for each month, showing the corresponding deviations from one month to the next. Every month, formal meetings between the CFO, CEO and the first line managers of each business unit are organised to discuss the BSC results, identify potential problems and, if necessary, update the long term plans. The controller clearly stated:

We do not wait until the report is complete to take action, but rather try to control the progress of the business at least once a week. We are rarely surprised when we receive the report, since we already know its contents.

The interaction between the “how” and the “what”

In analysing the BSC design features in the seven case studies, we found certain recurring dimensions of the “what” associated respectively with diagnostic and interactive control styles. Accordingly, we label the BSC types associated with diagnostic use Diag-BSC, and those associated with interactive use Int-BSC (see Table 3). Below, we describe the interaction between BSC use and design, and the effects of the style of use on heterogeneity in the “what” dimensions.

<table>
<thead>
<tr>
<th>“What” controlling</th>
<th>“How” controlling</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Diagnostic</td>
</tr>
<tr>
<td><strong>KPI balance</strong></td>
<td></td>
</tr>
<tr>
<td>Especially financial</td>
<td>SEMIC, PHARMA, ELECT_1, TEL</td>
</tr>
<tr>
<td>Financial + non-financial objective</td>
<td>TEL</td>
</tr>
<tr>
<td>Financial + non-financial subjective</td>
<td>SEMIC, PHARMA, ELECT_1</td>
</tr>
<tr>
<td><strong>BSC cascading</strong></td>
<td></td>
</tr>
<tr>
<td>Corporate only</td>
<td>TEL</td>
</tr>
<tr>
<td>Corporate + depart not linked</td>
<td>SEMIC, PHARMA, ELECT_1</td>
</tr>
<tr>
<td>Corporate + depart linked</td>
<td></td>
</tr>
<tr>
<td><strong>Target definition</strong></td>
<td></td>
</tr>
<tr>
<td>Explicit</td>
<td>TEL, SEMIC, PHARMA, ELECT_1</td>
</tr>
<tr>
<td>Implicit</td>
<td></td>
</tr>
<tr>
<td><strong>Link reward system</strong></td>
<td></td>
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<tr>
<td>No link</td>
<td>TEL, SEMIC, PHARMA, ELECT_1</td>
</tr>
<tr>
<td>Yes, without negotiation</td>
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<tr>
<td>Yes, with negotiation</td>
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</table>
We found that BSCs used diagnostically, here termed Diag-BSC, were associated with four design features: the predominance of financial KPIs, no cascading of BSCs from the corporate report, explicit targets, and absence of links with the reward system. In terms of KPIs, analysing the BSC template of the four diagnostic companies, we found that financial indicators tend to predominate and that non-financial measures are few, typically accounting for just two or three out of a total of 20 or 25 KPIs included in the report. The BSC of TEL exemplifies this situation, with non-financial measures accounting for just three out of a total of 15 KPIs: number of orders acquired, percentage of occupational accidents, and learning hours. Financial measures also predominate when the four traditional BSC areas are modified, as typified by ELECT_1 and SEMIC. At ELECT_1 the ”production” area was replaced by a ”‘global competitiveness’” area, which consists mostly of financial measures, relating mainly to sales figures or cost savings. There are only a few non-financial KPIs: number of orders issued by e-mail, number of items per employee, and number of employees in the distribution team. At SEMIC, the report does not include the ”‘innovation and learning’” area, and in its place contains a large number of measures pertaining to production, that are mainly financial and objective. This imbalance in favour of financial measures can be ascribed to the prevalently exception-based communication process surrounding the BSC. Diagnostic companies prefer measures which are easily quantifiable, since the need for interaction is reduced if the selected measures are objective, as confirmed by the controller at PHARMA:

Measures included in the BSC are easily quantifiable. That’s a good point because this facilitates benchmarking of BSCs for different subsidiaries. The selection of more subjective or customised performance measures might have been problematic, providing us with data that would not have been comparable. By selecting financial measures that everyone knows we can avoid this problem.

The absence of local BSCs cascaded down from the corporate report, or the lack of a link between the corporate and departmental BSCs, is another feature of diagnostic use. At TEL and SEMIC, the report is designed for the corporate level only, and consists of aggregate measures relating to the organisation as a whole. The reason for this choice was clarified by the manager responsible for the BSC implementation at TEL:

The decision to introduce the BSC was driven by a specific objective: to have a report that is able to summarise the overall business situation on a single page. Achieving this objective did not require cascading the scorecard to the lower levels: we need aggregate values!

The remaining two companies instead employ both corporate and departmental reports; however, these documents are not related to each other. This means that the measures in departmental BSCs are not derived from those defined at the corporate level. The controller at PHARMA was clear on this point:

The corporate BSC is the document we use to control and monitor the overall business. It is derived from our strategic guidelines, but it is not extended across the organisation. Instead, departmental BSCs are voluntarily developed by functional managers who like the instrument and wish to control their own specific activities. I don’t know what the contents are because I don’t check that report.

During the interview with the marketing manager of the pharmaceutical department, he then clarified that he adopts the BSC to monitor his own activities, collecting detailed measures such as the number of patients or the number of prescriptions for each of six therapeutic areas. He further explained that these figures are not delivered to top managers, unless they request them; instead, they are used by departmental managers as a tool for controlling departmental activities. Cascading is defined as deployment of the BSC throughout the organisation, which allows strategic measures to be translated into objectives and measures appropriate to each particular group (Kaplan & Norton, 1996). Given this conceptualisation, the existence of these corporate and departmental BSCs cannot be regarded as cascading, since they are stand-alone reports and not linked to each other.

With respect to target setting, we found diagnostic use to be associated with explicit targets. This means that for each performance measure in the BSC there is a detailed statement of the exact value to be achieved in a given period. This finding is aligned with Simons’ description of a diagnostic control system: ”‘measures should be objective, complete and responsive’” (Simons, 1995, p. 90). All four case-study companies were found to adopt three columns: the first giving the explicit value of the target, the second filled in with the actual value, and a third ”‘status’” column containing red, yellow or green bullet points, indicating the level of target achievement. At ELECT_1, all the measures in the corporate BSC are associated with specific targets determined by top management. For example in the case of customer perspective, there is a 10% target value for new customer, while for the market share indicator there is a target of 3% market share gained from a specific competitor (name omitted for confidentiality reasons). The CFO explained that this approach is extremely useful for keeping the business under control:

By setting our desired objective for each performance measure, we can exactly know our ability to reach the target. Not only this: we can also assess how much we are under- or over-performing.

The controller at SEMIC emphasised the importance of setting explicit targets. During the interview, he noted how defining clear targets fosters control at distance, providing top management with a precious end-of-quarter snapshot of the entire business, that highlights areas of weakness or improvement.

The CFO at TEL likewise recognised the extreme importance of the BSC, and specified that the exact value of each performance measure is explicitly defined in order to closely monitor attainment of strategic objectives. Among the advantages of the BSC, he mentioned the possibility of immediately evaluating critical measures by checking the difference between actual and target values. By taking this approach, he explained, top management can simply set the targets and then come back to the BSC measures at end-of-
quarter, because first line managers know what it is expected of them. A diagnostic approach to targets is apparent from the amount of time top managers spend on them. Targets elicit the attention of top managers during the planning phase, when the value for each measure is defined, and during the control phase, when actual results are compared with the previously established objectives. Discussions are initiated only on an exception-basis, whenever a measure is highlighted in red. It follows that all the objectives have to be clearly set out, defining the value to achieve for each performance measure.

The lack of links with the reward system is another characteristic of the diagnostic style, which is instead counter-intuitive with respect to the Simons’ explanation of the importance of linking target with compensation system in order to provide clear direction for effort. The BSCs here investigated were found not used for compensating managers when they meet their targets; rather, it is regarded by the CFOs of diagnostic companies as a tool for summarising the overall situation of the business from various perspectives: it provides a snapshot of the company at a precise moment in time. This advantage of conciseness is however offset by the inclusion of information that is too generic for employee bonuses to be linked to such measures. The CFO at TEL explained to us that there is no association between BSC measures and the reward system:

Managers’ objectives are determined by the budget. There are a few indicators in the BSC which coincide with those we have in the budget, and these are used to set incentives; however their objectives remain centred on the budget, not on the BSC.

The CFO at PHARMA likewise specified that they do not set incentives based on BSC measures. He explained that they specifically want aggregate measures to track the business and compare the results of different subsidiaries. However these are insufficiently detailed for isolating the contribution of individual managers from them, and this is the reason why they lack this link. At ELECT_1 there is likewise no association between the BSC measures and the reward system because, as they explained, each manager is evaluated on the basis of Economic Value Added (EVA):

During the budget definition process managers pay a great deal of attention to the EVA measure and how it is defined, because everything is evaluated on the basis of it. (Vice-director at ELECT_1)

Finally, the finding is also confirmed by the SEMIC case, where performance measures are not used for compensating managers because, as was explained during the meeting, BSC measures are too aggregated and fall outside the scope for which this PMS is currently intended. The informant further clarified that the purpose of the report is to monitor the progress of their business.

This association between design and use appears to be in contrast with Simons’ (1995) depiction of a diagnostic control system. From our empirical evidence, the lack of a reward system associated with BSC measures was bound up with two factors: the dissemination of BSCs at different levels throughout the organisation, and the purpose of use. In the first place, a Diag-BSC is not cascaded throughout the organisation; rather, it is designed for the corporate level only. This means it is not extended across the hierarchy, and features aggregate performance measures that make it difficult to base managers’ rewards on them. The second explanatory factor is purpose of use. Diag-BSCs are instruments for controlling the business; they are implemented with the goal of monitoring performance over time. This specific purpose of use does not elicit a need to create a system of incentives based on BSC measures.

An interactive use of the BSC instead implies different traits, which result in an Int-BSC: a better balance between financial and non-financial performance measures, the cascading of departmental BSCs from the corporate document, implicit targets, and links with the reward system. The frequent discussions between top managers and lower levels might explain the adoption of both financial and non-financial measures, including subjective ones. For example, the BSC at IND includes financial KPIs in the financial area of the report only; the BSC in ELECT_2 includes a set of subjective measures which are related to employee satisfaction, talent growth and effectiveness of learning programs; the BSC at MOTOR contains measures related to customer satisfaction and brand image. The CFO of ELECT_2 explained the process of selecting BSC measures, highlighting the interactive dynamics:

When something is not clear, or when we need to define some new measures, a discussion with the managers of the areas involved is organised, and they provide us with their direct experience in the field.

The cascading of departmental BSCs starting from the corporate report is another design dimension we found to be associated with an interactive use. This cascading is facilitated by the dialogue which managers promote surrounding the control tool. According to the CFO of IND:

The discussion of strategy with senior managers helps us to translate the corporate performance measures into departmental measures. The managers of the areas involved play a crucial role in this process, and this helps us in defining departmental BSCs. For example, within the commercial department we were developing KPIs associated with service level. We sat around a table with the employees close to the business, discussing together which measures might be useful.

Within this company, strategy in fact drives the definition of the corporate document, which is then used to derive BSCs for departmental units. At ELECT_2 they cascade the BSC down to the level of personal scorecards, which contain measures each manager is directly able to influence. This means that the KPIs in the personal scorecards can be traced back to the initial strategic lever. The commercial manager gave us an example: she is the coordinator of a group of people; therefore her document contains a measure associated with overall employee satisfaction in the innovation area of the corporate report, intended to foster the well-being of people inside the organisation.

The adoption of implicit targets is also linked to an interactive approach to the BSC. The subjectivity in performance measures is highlighted in the interactive companies, where targets are defined in terms of the desired variation — positive or negative — to be achieved, and are arrived at...
through a negotiation process between the CFO and other senior managers. This situation was clear at IND, where top managers discussed with subordinates both which measures to include in the BSC and the respective target levels.

We need a talking number! BSC measures are useful if they can represent aspects of company performance which are dependent upon people. This means that we need to involve employees who contribute to that measure, discussing with them what to measure, how to measure it, and the result.

He went on to explain that they do not set the exact target value; rather, they negotiate improvements in the measure in order not to limit the scope for action within the organisation. A similar approach to targets is adopted at MOTOR. Targets are negotiated for the corporate BSC as well as for departmental scorecards during meetings with first line managers. They are set as percentage improvements in BSC measures, for example a four per cent reduction in spare part delivery times. After this, discussions and meetings take place to understand the result achieved, irrespective the percentage variation. The reasons for the actual values achieved are discussed to detect changes in the market, as well as to identify internal problems or opportunities.

This relationship between the "how" and the "what" can again be ascribed to the communication process adopted: the ability to discuss results, problems and opportunities makes it easier to also define the desired targets in broader terms, because control is assured by the constant attention devoted to the BSC measures.

Finally, the link between BSC measures and the reward system is another design dimension associated with an interactive use. The CFO at MOTOR made this clear when he explained the configuration of the reward system:

**BSC measures are used to define the rewarding of first line managers and lower levels: we call them professional experts. The approach we use to define incentives is quite demanding because it is directly negotiated with the people involved. Usually each person is evaluated on the basis of a set of measures in the BSC, each of which has a relative weight depending on the relevance of that measure for the company and the influence of that person on the measure. Once it is negotiated, it is consolidated and enters the system.**

Another particularly interesting comment emerged during an interview at IND, in which the CFO stated that "BSC measures are not merely tools for measuring, but also tools for incentivising actions". This quote is significant in that it reveals a dynamic philosophy behind the process of selecting measures, negotiating incentives and discussing results with the employees who are directly involved.

**The misalignment between the "how" and the "what": the SEMIC case**

SEMIC was included among the companies that have a diagnostic style of use and a corresponding Diag-BSC, because this is the PMS currently in place. However, when the BSC was introduced in 2002 it was initially used interactively, in association with interactive design traits. When the company shifted to a diagnostic style of use, it did not change the BSC design features, but retained its original interactive structure. This situation created problems of misalignment between the Int-BSC design and its diagnostic use, underscoring how these two dimensions are closely intertwined and need to be managed in concert. Specifically, the presence of non-financial measures, cascading of the BSC, and the reward system were found to be unsuited for the diagnostic approach adopted.

The first cause of misalignment was related to the types of measures in the corporate BSC. The inclusion of financial and non-financial measures was found to be incompatible with the new diagnostic use, as a comment by the CFO demonstrates:

> We needed something clear and simple that everybody could understand, without fuzzy interpretations. Our specific objectives were centred on production costs and the quality of the silicon wafer produced. (CFO at SEMIC)

The inadequacy of the types of measures in the scorecard can be ascribed to a shift in priorities at the top level. The company’s board was interested in controlling organisational activities at distance, based on a few key variables: the costs and quality of the production. This different style of use thus called for simpler and more objective measures. SEMIC progressively abandoned the non-financial measures previously included in the report, such as level of innovation or talent growth, arriving at a BSC with a predominance of financial measures. The one exception was customer satisfaction, which was considered relevant given the company’s goal of achieving lower costs without compromising the quality of the silicon wafers produced.

The second cause of misalignment concerned the cascading of the BSC measures, as noted by the cost controller of the plant:

> The centralisation of decision making and the exclusion of all departments from strategy definition created problems in deploying the BSC at lower levels: how could we define measures to include in our departmental scorecard without knowing the overall strategy? It was impossible because we didn’t know the strategic guidelines!

During the first year following the shift to a diagnostic style of use, the new corporate BSC coexisted with the pre-existing Int-BSC at the departmental level. However the two documents were no longer related, since the measures of the departmental reports were not linked to the new financial measures of the corporate BSC. The attention given by top management to departmental reports progressively diminished because, as the cost controller clearly explained, the measures were useful when delivered and discussed with the top management team. During such occasions, they had the opportunity to share ideas about strategic priorities and potential problems signalled by weak measures. The result was that, one year after the transition to a diagnostic use, cascading of corporate measures was abandoned, and only a corporate BSC retained.

The third cause of misalignment was the link between BSC measures and the reward system, which proved to be difficult to establish with a diagnostic style of use. The
reduction in dialogue surrounding the corporate report, and the abandonment of the cascading approach, resulted in a single corporate BSC containing mostly financial measures. The diagnostic style of use, based on controlling a few key measures at distance, without generating discussions between top and middle-level management, made it very difficult to set incentives for managers:

How could we be evaluated on the basis of measures that were no longer discussed and negotiated with our bosses?'' (cost controller at SEMIC)

This quote underlines the difficulties of reconciling the interactive design features of the reward with a diagnostic approach to BSC use, arising from both a shift in type of use and the withdrawal of BSC cascading. The end result was that top management decided not to use BSC measures to reward managers.

These misalignments between a diagnostic style of use and interactive design features led to a progressive change in the BSC design features which, entrained by the style of use, took on a diagnostic character: predominance of financial KPIs, lack of BSC cascading and absence of links between BSC measures and the reward system.

Discussion and conclusions

The antecedents and the effects of PMS design and use have been receiving continued attention in managerial research, but recent contributions suggest a need to explore how these two concepts are interrelated (e.g. Henri, 2006b). Drawing on a multiple case study, this work explores the interaction between BSC design and use, conceptualising PMS design as the ‘‘what’’ dimension and PMS use as the ‘‘how’’ dimension. The ‘‘what’’ embraces the technical features managers choose when implementing a PMS, while the ‘‘how’’ concerns the control style associated with the information provided by the PMS. Our findings indicate that such an interaction indeed exists: BSCs used diagnostically are characterised by a prevalence of financial measures, absence of cascading, explicit targets, and no link with the reward system. Int-BSCs instead have the opposite traits: an evenly balanced set of financial and non-financial measures, cascading of the BSC, implicit targets, and a link to the reward system.

These results offer some useful insights for both academics and practitioners. From an academic perspective, we answer the call for investigating design jointly with use (Henri, 2006a; Ferreira & Otley, 2009b), highlighting the interaction between the ‘‘what’’ and the ‘‘how’’, and responding to the more general call for bringing a holistic perspective to the study of PMS (Ferreira & Otley, 2009a). Focusing specifically on the BSC, our study shows that its design features differ depending on the specific style of control, whether diagnostic or interactive. This finding supports the claim that design and use are closely intertwined (Henri, 2006a), but more specifically it provides insights on how the characteristics of design are associated with an interactive or diagnostic control style, suggesting a set of hypotheses for ‘‘hard’’ contingency and testing. The first hypothesis predicts that BSCs characterised by a predominance of non-financial KPIs will be associated with a more interactive style of control, as advanced by previous work (e.g. Fried, 2010). The second hypothesis suggests that there is a relationship between implicit targets and an interactive control style, as advocated by Simons (1995) and by other scholars investigating the participative approach to budget setting (Libby, 1999). The third hypothesis is that an interactive style of use will feature links with the reward system, which runs counter to the existing literature. Following Simons’ (1995) thinking, one would expect the opposite: for the adoption of reward systems to be associated with diagnostic use. Diagnostic use is recognised as a mechanistic tool that enables operation at a distance (Simons, 1995). Since managers are given specific metrics on which they are evaluated, there is limited need for intervention by top managers. From 1995 onwards, the approach to reward systems has evolved being associated with multiple subjective measures in a compensation formula (Ittner, Larcker, & Meyer, 2003) and being complemented by dialogue among executives and managers (Kaplan & Norton, 1996). Unlike the features associated with a diagnostic control system (Simons, 1995), our results reveal the difficulties of setting incentives based on a Diag-BSC, since the measures included in the corporate report — though valuable for monitoring the overall business — are too generic to be used for setting individual objectives. This can be explained in terms of both the level of BSC dissemination within the organisation, and the purpose for which the BSC is used, which differ for the two types. First of all, the absence of cascading in a Diag-BSC means that the scorecard is not disseminated across the organisation; rather, it is a tool in the hands of senior managers. Conversely, an Int-BSC is widely disseminated throughout the organisation, since it adopts a cascading approach. The dissemination of an Int-BSC across multiple hierarchical levels makes it easier to set target for managers, because the measures are closer to the managerial activities. This is instead more difficult with a single corporate report, which includes measures that are relevant, but not readily traceable to the contributions of individual managers. Second, the purpose of use is different. A Diag-BSC represents a tool for making decisions and monitoring the overall conduct of the business — what Malmi (2001) terms an information purposes role. Given this purpose, there is no need to set incentives based on BSC measures. On the other hand, an Int-BSC, with its reports spanning all levels of the organisation, is used not only for decision making, but also to motivate managers: what Malmi (2001) terms the management-by-objective-function of the BSC. ‘‘Hard’’ contingency testing could prove particularly fruitful for verifying this association between the reward system and the interactive style of use.

The investigation of the specific relationships between design characteristics and PMS use indicates the existence of a reciprocal interaction between the ‘‘what’’ and the ‘‘how’’. The misalignment problems that emerged in the SEMIC case give evidence that design and use are both equally relevant for a PMS to work. Though some previous contributions (e.g. Ferreira & Otley, 2009b) have found that style of use plays a prominent role in shaping PMS appropriateness, we did not observe this to be the case. Any changes to either the design attributes or style of use must be aligned with each other.
From a practical point of view, the misalignments emerged from the SEMIC case alert managers to ensure coherence between PMS design and use to let the system work properly, as evinced by the misalignments in the SEMIC case. Furthermore, we provide indications on how to design a BSC that encourages an interactive use. This aspect is particularly useful if managers want to enhance dialogue, learning and idea creation (Burchell, Clubb, Hopwood, & Hughes, 1980) centring around performance measures.

Finally, we point out the limitations of our case studies, and suggest some avenues for future research. First, the study suffers from the constraints inherent in the case-study methodology. The findings are theoretically grounded and internally valid, but they cannot be considered generalisable elsewhere (Yin, 2003). Second, the conceptualisation of use is based on Simons’ (1995) framework of diagnostic versus interactive. Other distinctions could have been adopted, such as Malmi’s (2001) differentiation between information purposes and management-by-objective use. However, the discrimination between diagnostic and interactive is based on the intensity of the communication process associated with the PMS, which has been recognised as relevant for assessing PMS use (Abernethy et al., 2010; Hall, 2010).

The study points to some avenues for future research. First of all, a quantitative methodological approach could be used to test the generalisability of our findings on a wider sample. Second, it might be interesting to further explore the association we found between an interactive approach and links to the reward system, while a diagnostic use appears to lack such a link. Here, we have ascribed this result to the level of BSC dissemination and the purpose of BSC use; but additional research might detect other contingencies, or confirm our results by corroborating the same association.

References
Design issues in Balanced Scorecards: The “what” and “how” of control


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