

Strategic performance in hospitals: The use of the balanced scorecard by nurse managers

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Background: The competitive and dynamic health care sector has spurred hospitals into delivering greater flexibility and quality of services while cutting the hospital cost at the same time. However, hospitals differ in the extent to which they achieve these strategic goals.

Purposes: This article explores the use of a new management tool—the balanced scorecard—which facilitates managers to meet multiple strategic goals. It also analyzes how nurse managers use the balanced scorecard in an interactive or diagnostic way and its subsequent effect on strategic goal achievement (cost reduction and flexibility). It also examines how “balanced” is the balanced scorecard in terms of financial versus nonfinancial measures.

Methodology: Data were collected from a mail survey sent to 218 nurse managers in Spanish public hospitals. A satisfactory response rate was achieved, with 114 (52.29%) useful answered questionnaires.

Findings: The results show that younger, more tenured, and clinically trained nurse managers would be more likely to use the balanced scorecard in an interactive way. Conversely, older, less tenured, and administratively trained managers would use it diagnostically. The results also indicate that the balanced scorecard facilitates the cost reduction and flexibility in hospitals only when it is used interactively.

Practice Implications: This article provides evidence that not only the technical design of the balanced scorecard matters, but also an appropriate use of the balanced scorecard is paramount for achievement of multiple strategic goals. An effective use of the balanced scorecard requires managers to actively stimulate dialogue and agreement among hospital's staff about desirable financial and nonfinancial performance measures in alignment with multiple strategic goals.

The health care industry currently faces considerable strategic challenges and strong pressure to become more responsive to customers' demands by simultaneously improving quality and efficiency (Chow, Ganuliri, & Williamson, 1998; Lorden, Coustasse, & Singh, 2008). This situation imposes additional de-

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mands on a hospital's information-processing capabilities (Chow et al., 1998) because traditional performance measurement and management control systems are insufficient guides for achieving multiple strategic objectives (Lorden et al., 2008; Zinn, Mor, Feng, & Intrator, 2006). As a consequence, hospitals increasingly adopt sophisticated and comprehensive management information systems, such as the balanced scorecard, to achieve their strategic goals (Fottler, Erickson, & Rivers, 2006; Yang & Tung, 2006). The balanced scorecard is a customer-based planning and control system that helps managers to translate strategy into an integrated set of financial and nonfinancial measures (Kaplan & Norton, 1996, 2001). Recent studies illustrated the adoption of the balanced scorecard by a broad range of health care organizations (e.g., Fottler et al., 2006; Huang & Chang, 2004; Lorden et al., 2008; Pieper, 2005; Yang & Tung, 2006).

The successful application of balanced scorecards in hospital organizations is difficult to understand because of the complexity of the measurement and control mechanisms associated with this novel management tool (cf. Aidemark, 2001; Chang, 2007). In a hospital, all efforts to achieve balanced accountability for cost and care quality are more dependent on professionals' attitudes and behaviors than are the efforts in other industries (Inamdar, Kaplan, Helfrich Jones, & Menitoff, 2000; Fottler et al., 2006). Most literature prescribed the adoption of the balanced scorecard and illustrated the advantages of its application in other sectors (e.g., Inamdar & Kaplan, 2002; Pink et al., 2001; Voelker, Rakich, & French, 2001), whereas conclusive empirical evidence about its successful implementation is still lacking (cf. Lorden et al., 2008; Zelman, Pink, & Matthias, 2003).

This article provides insights on the use of the balanced scorecard by nurse managers. It is well recognized that nurse administrators are in a critical position to lead the implementation of a balanced scorecard because they operate at the interface between care processes and organizational goals. Moreover, nurse managers are heavily involved with outcome evaluation and are familiar with a variety of clinical and financial data (Lawson & Rotem, 2004). This article is based on the upper echelon theory of organizations, which recognizes the impact of managers' backgrounds on their subsequent choices and behavior. The objective of this study was twofold. First, this study examined the relationship between nurse managers' characteristics (e.g., age, tenure, education, and experience) and alternative uses of the balanced scorecard (Kaplan & Norton, 1996; Kleinman, 2003; Lindholm & Uden, 1999; Simons, 1995). Second, this study analyzed how different uses of the balanced scorecard eventually impact the ability of a hospital to achieve its strategic performances.

The remainder of this article is structured as follows. The Design and Use of the Balanced Scorecard section describes the design and use of the balanced scorecard and presents the hypotheses of this study. The Research Method section describes the empirical study and the measurement of variables. The sections that follow are Results and Discussion and Conclusions.

■ Design and Use of the Balanced Scorecard

Traditional management control systems induce managers to focus on financial performance and make short-run decisions. This may work against strategies based on quality and flexibility (Sims, 2003; Zelman et al., 2003). The balanced scorecard was developed to provide top managers with a set of measures that give a fast but

comprehensive view of the organization (Kaplan & Norton, 1996). The balanced scorecard considers information beyond the classical narrow definition around financial performance measures (Forgione, 1997). In hospitals, even more than in other service organizations, the need for a balanced set of financial and nonfinancial performance measures is paramount, provided that hospitals have to perform an additional set of public sector values, such as equity and fairness (Forgione, 1997; Porter & Olmsted Teisberg, 2006). In this line, the balanced scorecard complements financial measures with operational measures on three dimensions: customer satisfaction, internal processes, and organization's innovation and learning (Chow et al., 1998; Lorden et al., 2008). Thus, the balanced scorecard is considered a management system rather than a simple measurement system because it provides strategic guidance toward strategy implementation (Kaplan & Norton, 1996; Zelman et al., 2003).

Hospital administrators and medical professionals need to design and use a range of performance measures which cover clinical resource (monetary and nonmonetary) and strategic effectiveness (Moody, 2004; Zelman et al., 2003). They have to use measures in all four areas of the balanced scorecard to monitor and encourage actions appropriate to organizational strategy. Despite the increasing trend of adoption of the balanced scorecard, current evidence documents extreme variation about the type and number of specific performance measures to include in every area of the balanced scorecard. It appears that several organizational variables, such as managers' characteristics (Kleinman, 2003; Lindholm & Uden, 1999) and hospital's strategic performance (Chow et al., 1998; Kaplan & Norton, 1996), affect the design and implementation of balanced scorecard in hospitals.

Several researchers have noted that the style of use of management control systems (rather than how they are designed) affects organizational performance and strategy (Kleinman, 2003; Porter & Olmsted Teisberg, 2006; Simons, 1995). In this vein, the changing environment in which hospitals operate has triggered a radical shift in the role of top managers from the traditional hierarchical authoritarian style with centralized control to a more open, democratic, and participative control style. With regard to the style of use of the balanced scorecard, this study follows the distinction between diagnostic and interactive use of management control systems developed in "levers of control" of Simons (1995, 2000). The diagnostic use emphasizes the traditional top-down control focused on standard setting, measuring, comparing, and taking corrective actions. The diagnostic control allows managers to manage results on an exception basis, with little discussion of data with subordinates (Henri, 2006; Widener, 2007). Managers adopting a

diagnostic control view management information systems as a tool that provides diagnoses and information to pursue intended strategies but do not consider new opportunities (Kober, Ng, & Paul, 2007, p. 428). On the contrary, an interactive control is forward looking and characterized by active and frequent dialogue among top managers (Widener, 2007, p. 760). An interactive use of management control system stimulates opportunity seeking and encourages the emergence of new initiatives (Henri, 2006; Simons, 1995, p. 93). Managers adopting an interactive control view management information systems as a learning machine rather than an answering machine because an interactive use stimulates continuous challenge and debate concerning data, assumptions, and action plans (Henri, 2006; Widener, 2007). Thus, an interactive use of management information system is a trigger for dialogue rather than the conclusion of a dialogue (Kober et al., 2007; Simons, 2000).

This study focuses on the use of the balanced scorecard in Spanish hospitals by nurse managers because they are in a crucial position to lead the implementation of this tool as a strategic performance measurement system. The Spanish health care authorities encouraged hospitals to adopt and implement new management information systems, such as the balanced scorecard (Meneu, Ortún, & Rodríguez, 2005). They published some guidelines of how to design a balanced scorecard and provided resource to hospitals to fund the upgrading of their systems. The guidelines listed measures commonly reported by hospitals through the Spanish Inter-Hospital Information System,¹ which ensured that managers were familiar with the type of information. Managers in hospitals had large degrees of freedom in introducing such new systems (e.g., Carretero, 2000).

Nurse managers are empowered to integrate the scorecard into their institutional performance improvement activities (McNeese-Smith, 2001). If nurse executives fail to ensure the required balance between quality of care and financial benefits, their decision for improvement in one area may compromise other areas and produce adverse results. For instance, the launch of the balanced scorecard at Duke's Children's Hospital in North Carolina in 1996 generated an increase in nursing productivity of 71% during the same period. This beneficial effect was accompanied by improved net margin, decrease of cost per case, and higher patient and staff satisfaction with the hospital care system (Meliones, Ballard, Liekweg, & Burton, 2001).

This study is the first one to investigate the relationship between the background of nurse managers and their use of the balanced scorecard. In addition, it is documented whether different uses are in turn associated with the achievement of hospital strategic performances. Two different strategic goals will be analyzed, which emphasize cost control and organizational flexibility (Porter, 1985). Cost-focused strategic performance emphasizes standardization and the efficiency of existing operations and services of the organization (Porter, 1985). In contrast, flexibility-focused strategic goals require control systems that facilitate product customization rather than standardization (Naranjo-Gil & Hartmann, 2006; Porter 1985). Furthermore, flexibility-focused strategic performances attempt to maximize differentiation, emphasizing autonomy and decentralization within the organization (Porter, 1985). Strategic management literature suggests a relationship between the use of management control systems and strategic goals achievement (see Porter & Olmsted Teisberg, 2006). Thus, the achievement of cost-focused strategy goals seems to benefit more from centralized and tight control, in which work rules are transmitted through prescriptive guidance (Langfield-Smith, 1997). In contrast, strategic goals focused on flexibility will benefit more from management information systems that encourage discussion and stimulate fluent working relationships and interaction in the organization (Naranjo-Gil & Hartmann, 2007).

This study follows the upper echelon theory to analyze how nurse managers use the balanced scorecard. Upper echelon theory proposes that observable demographic characteristics of managers determine managers' decision making and organizational outcomes (Finkelstein & Hambrick, 1996; Hambrick & Mason, 1984). As upper echelon literature showed, differences in demographic characteristics are likely to cause managers to interpret management information in different ways. Recently, Naranjo-Gil and Hartmann (2007) showed that one important determinant of managers' ability to process information and to use management control systems is the managers' characteristics in terms of age, tenure, experience, and education (Hambrick, 2007).

Regarding age and tenure, Finkelstein and Hambrick (1996) argued that younger and less tenured managers prefer to take risks, participate proactively, and initiate new projects, whereas older and more tenured managers like security and generally follow established plans and work routines in their organizations. Regarding education and experience, the upper echelon research asserted that for hospitals the clinical and administrative backgrounds of managers may be good proxies of subsequent choices and behavior (Naranjo-Gil & Hartmann, 2007; Peirce, 2000). Managers with a clinical background

¹This system provides financial and nonfinancial indicators that cover use of resources, productivity, and health care performance. It is used for measuring, comparing, and evaluating health care performance among hospitals.

have been primarily educated and trained in nursing, pharmacy, or medicine, which are areas that are related to the core operational processes in the hospital. Managers with an administrative background have been primarily educated and trained in business or management, that is, in areas that are related to a larger range of organizations (Finkelstein & Hambrick, 1996). Abernethy and Vagnoni (2004) showed that managers with an operation-oriented background used the management information systems as a technique for communication and dialogue with their professional peers and for stimulation of coordination and motivation, which aligns with a more interactive use of management information systems (Abernethy & Vagnoni, 2004; Simons, 1995, 2000). In another study, Naranjo-Gil and Hartmann (2006) showed that managers with an administrative background are more inclined to use management information systems as a device for traditional top-down control. This type of control requires less knowledge on the specifics of the primary process and emphasizes the measurement of performance against preset targets, which are constitutive elements of a diagnostic control (Henri, 2006; Widener, 2007).

Figure 1 displays the overall model examined. This model allows us to analyze the relationship between nurse managers' characteristics and the use of the balanced scorecard and subsequent effect on hospitals' strategic performances. With these observations in mind, the following hypotheses are formulated:

H1: The interactive use of the balanced scorecard is related to the nurse managers' characteristics, such as age, tenure, education, and experience.

H2: The diagnostic use of the balanced scorecard is related to the nurse managers' characteristics, such as age, tenure, education, and experience.

H3: The interactive use of the balanced scorecard is related to the achievement of hospitals' strategic performances focused on cost reduction and organizational flexibility.

H4: The diagnostic use of the balanced scorecard is related to the achievement of hospitals' strategic performances focused on cost reduction and organizational flexibility.

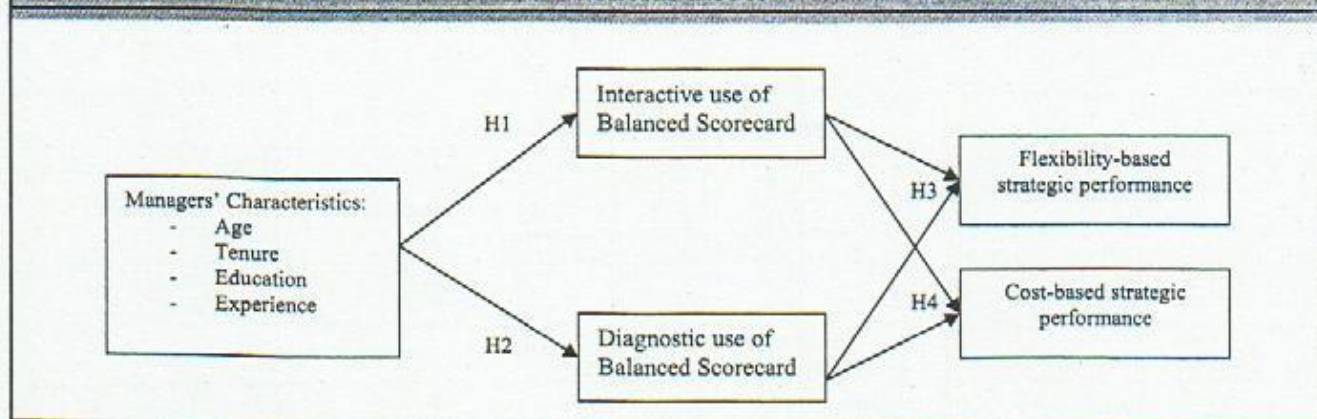
Research Method

Data were collected in a survey study among nurse managers in Spanish public hospitals. The Spanish health system has a strong public provision sector that provides equal and universal health coverage for the whole population (Carretero, 2000; Rodriguez, Gallo de Puelles, & Jovell, 1999). The Spanish health system operates through 17 regions, where the public sector holds approximately 65% of the total hospital. The Spanish health care system is a mixed financed system (75% public and 25% private), with four main sources of funding: taxes, social security contributions, out-of-pocket payments, and private insurance premiums (Ribera, Gutiérrez, & Rosenmöller, 2005; Rodriguez et al., 1999, p. 167). The Spanish public sector is undergoing rapid change in its management tools to be able to deliver higher quality services in a more efficient way (Ribera et al., 2005). Spanish health care authorities are encouraging hospitals to adopt new management and information systems, such as the balanced scorecard (Meneu et al., 2005). However, the choice to actually adopt such new systems is left to the hospitals' managers.

The research method used for data collection was a mail questionnaire, in which a detailed survey procedure

Figure 1

General model



was followed (Dillman, 2000). First, the instruments from extant literature in management and strategy were selected. Second, the draft version of the questionnaire in interviews with members of the target population was tested. Through these interviews, the design of the study and the measurement of the variables were refined.² Finally, the distribution and recollection procedures involved (1) sending a prenotice letter announcing the survey and subsequently (2) sending the survey package containing the survey, a cover letter, a prepaid self-addressed envelope, and a pen with the names of the universities carrying out the project, then (3) a follow-up letter was sent to all respondents, reminding them of the survey and the importance of participating. Three weeks later, (4) a second copy of the survey was sent to nonrespondents. Finally, (5) 2 weeks later, contact was made by telephone to all nonrespondents, who were personally invited to respond to the questionnaire. All initial and follow-up letters contained handwritten signatures and personalized names and addresses. A total of 218 questionnaires were sent to nurse managers employed in public hospitals in Spain. Of these, 126 responses were received. A satisfactory response rate was achieved, with 114 useful questionnaires of managers using the balanced scorecard (52.29%).

Measurement of Variables

Nurse managers' characteristics were measured following the upper echelons tradition (see Carpenter, Geletkanycz, & Sanders, 2004), which focuses on demographic characteristic, such as age, tenure, experience, and educational background. Age and tenure refer to the manager's age and tenure in the organization, respectively. Manager's background was measured with factual questions about managers' years of educational and functional experience in the clinical field and the management field.³

The diagnostic and interactive styles of balanced scorecard were measured using a Likert-type instrument developed by Simons (1995) and subsequently used by several other studies in management accounting and control (see Kober et al., 2007 for a review). Exploratory factor analysis revealed two factors for the use of the balanced scorecard, with all items loading higher than

.50 on the expected factor. The interactive use factor explained 31.51% of variance and had a Cronbach's alpha of .81. The diagnostic-style factor explained 27.28% of variance, with a Cronbach's alpha of .76. Both alpha values thus exceeded the recommended .70 level (Nunnally, 1978).

The strategic performance variables were measured with eight-item Likert instrument, which were based on the strategic plans formulated by Spanish health care authorities (Insalud, 2004; Servicio Andaluz de Salud, 2003). The exploratory factor analysis revealed two factors, flexibility-based strategic performances and cost-based strategic performances, explaining 31.26% and 56.22% of the variance, respectively. Cronbach's alpha values of the two factors were .77 and .71, respectively. Two control variables were included, hospital size and hospital region. Hospital size was measured by the number of beds. Hospital region was a dummy variable that distinguished hospitals in regions with a relatively long history of health care management autonomy from hospitals in regions with a more recent autonomy in health care management.⁴

Average scores on hospital size and hospital region were compared to test for potential nonresponse bias involved in comparing survey respondents with those in the original mailing list and comparing early and late respondents.

The test for potential nonresponse bias involved comparing survey respondents with those in the original mailing list and comparing early and late respondents. Differences between adopters and nonadopters of balanced scorecard based on hospital size and region were tested. Results of chi-square tests and independent-samples *t* tests did not reveal any sign of nonresponse bias, and no differences between adopters and nonadopters of balanced scorecard were found.⁵

The hypotheses were tested using partial least squares (PLS), which is a second-generation statistical technique for the estimation of path models involving latent constructs indirectly measured by several indicators (Chin, Marcolin, & Newsted, 2003). Different from covariance-based structural models, PLS explains variance and resembles ordinary least squares regression with regard to output and assumptions (Chin et al., 2003). The assessment of the measurement model in PLS is comparable with that in principle components

²The interviews were conducted before developing the questionnaire to enrich our knowledge of the institutional setting and the design of the balanced scorecards in Spanish hospitals. The interviews showed that all managers had at least a similar design of the balanced scorecard.

³Managers were asked to indicate their educational degrees, both regular university degrees and postgraduate programs. Because nearly 90% of managers indicated to have a degree related to either business economics or nursing, these were translated into years of education in one of two directions: business oriented or clinical oriented.

⁴A 2002 health care reform in Spain ensured that every region obtained the same health care management autonomy. Before that time, only 7 of 17 regions had autonomy and independence for managing health care issues.

⁵For example, the results of the chi-square (*p*) test for the hospital size and region comparing adopters and nonadopters of balanced scorecard were, respectively, 1.624 (.517) and 7.011 (.403).

Table 1

Descriptive statistics (n = 114)

Demographics	M	SD	Actual range
Age (years)	44.8	3.97	30-60
Tenure (years)	4.1	2.9	1-15
Clinical background	3.21	0.49	1.00-5.00
Administrative background	2.79	0.53	1.00-5.00
Interactive use of balanced scorecard	3.87	0.51	2.00-5.00
Diagnostic use of balanced scorecard	2.91	0.64	1.00-4.00
Flexibility-based strategic performance	3.46	0.53	1.00-5.00
Cost-based strategic performance	2.84	0.58	1.00-4.00

analysis, whereas the path coefficients in the PLS structural model are interpretable as β statistics from ordinary least squares regression.

Results

Table 1 shows the descriptive statistics of the sample. Figure 2 displays the PLS model tested. Table 2 contains the detailed output statistics of the analysis of the path coefficients in the structural model and reports the

significance of the standardized β values that resulted from this analysis, based on a bootstrapping procedure that used 500 samples with replacement.

The analyses in Table 2 provide general support for H1 and H2 because results show that younger and more tenured nurse managers would be more likely to use the balanced scorecard in an interactive way. Conversely, older and less tenured managers would use the balanced scorecard diagnostically. Table 2 also shows that the administrative background of managers is positively related to a diagnostic use of the balanced scorecard. However, the clinical background of nurse managers is positively related to an interactive use of the balanced scorecard.

Regarding the relationship between the different uses of the balanced scorecard and the hospital strategic goals, results reported in Table 2 provide general support for H3 and H4. Results indicate that the interactive use of the balanced scorecard facilitates managers to achieve not only cost-based strategy performances but also strategy objectives focused on quality and flexibility. However, results in Table 2 indicate that the diagnostic use of the balanced scorecard facilitates nurse managers to achieve only cost-based strategic performances.

One of the main characteristics of the balanced scorecard is that it is a balanced approach; in an attempt to provide further insights, it was examined how "balanced" is the balanced scorecard in terms of financial

Figure 2

Manager's characteristics, uses of BSC, and strategic performances in the PLS model.
BSC = balanced scorecard; PLS = partial least squares.

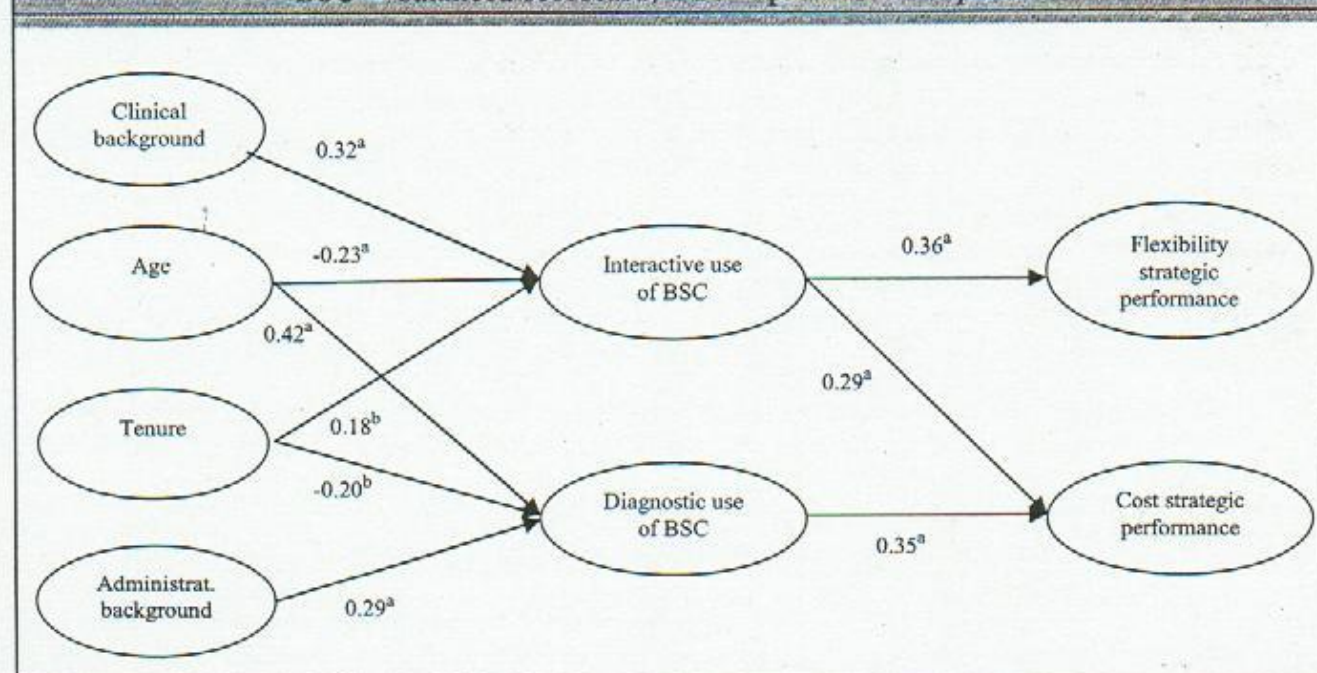


Table 2Results from partial least square analysis (path coefficients, $n = 114$)

From	To interactive use of BSC	To diagnostic use of BSC	To flexibility-based strategic goals	To cost-based strategic goals
Age	-.23 ^a	.42 ^a	—	—
Tenure	.18 ^b	-.20 ^b	—	—
Clinical background	.32 ^a	-.08	—	—
Administrative background	.10	.29 ^a	—	—
Interactive use of BSC	—	—	.36 ^a	.29 ^a
Diagnostic use of BSC	—	—	.16	.35 ^a

Note. BSC = balanced scorecard.

^aSignificant at .01 level (two tailed).^bSignificant at .05 level (two tailed).

and nonfinancial indicators. Table 3 shows that 28.95% of managers use a financial unbalanced scorecard, meaning that they use more financial performance measures of the balanced scorecard than nonfinancial indicators. On the other hand, 66.67% of nurse managers use a nonfinancial unbalanced scorecard.

Table 4 shows the effect on strategic goals of the use of an unbalanced scorecard. Results show that a financial unbalanced scorecard is positively related to cost-based strategic performances, whereas a nonfinancial unbalanced scorecard is positively related to flexibility-based strategic performances. However, Table 5 documents that a financial unbalanced scorecard is positively related to cost-based strategic performances when used diagnostically. Table 6 shows that a nonfinancial unbalanced scorecard is positively related to both cost-

based and flexibility-based strategic performances only when it is used interactively.

Discussion and Conclusions

The objective of this study was to provide evidence on the use of the balanced scorecard by nurse managers and to subsequently analyze the effect of different uses of the balanced scorecard on strategic performances. The provision of health care is a complex activity requiring new management tools, such as the balanced scorecard, and multitude of skills and experience from managers. The results of this study extend the health care management literature by showing that the use of the balanced scorecard in hospitals crucially depends on the characteristics of managers. The empirical results provide evidence that the younger and more tenured nurse managers are more likely to use the balanced scorecard interactively rather than diagnostically. The results also show that nurse managers' background is related to an interactive use of the balanced scorecard. These results support the study by Schultz, Pal, and Swan (2004), who

Table 3

Focus on balanced scorecard dimensions (financial vs. nonfinancial)

Use of balanced scorecard	Frequency	%	% Cumulative
Unbalanced to financial (focus on the financial measures)	33	28.95	28.95
Unbalanced to nonfinancial (focus on more operational measures)	76	66.67	95.62
Balanced (same use)	5	4.38	100
Total	114	100	

Table 4Relationship between strategic performances and unbalanced scorecards (Pearson correlation coefficients, $n = 108$)

Strategic performances	Financial unbalanced	Nonfinancial unbalanced
Focused on cost	.39 ^a	.21 ^b
Focused on flexibility	-.18 ^b	.34 ^a

^aSignificant at .01 level (two tailed).^bSignificant at .05 level (two tailed).

Table 5

Relationship between strategic performances and uses of financial unbalanced scorecards (Pearson correlation coefficients, $n = 33$)

Strategic performances	Diagnostic use	Interactive use
Focused on cost	.40 ^a	.14
Focused on flexibility	-.15	-.022 ^b

^aSignificant at .01 level (two-tailed).

^bSignificant at .05 level (two-tailed).

argued that hospitals are demanding the new role of managers to be increasingly proactive and participative. In this vein, Kaplan and Norton (2001) suggested that managers should use balanced scorecard to communicate and discuss strategic issues of the organization across different levels and functions (Henri, 2006; Widener, 2007). The results are also in line with the management tradition that asserts that training in management leads clinician to use new management control systems, such as the balanced scorecard (Kaplan & Norton, 1996; Simons, 1995).

This article shows evidence that adopting a balanced scorecard does not guarantee that managers will use all of the indicators. Although the balanced scorecard may be effective at showing managers a broad range of information for strategic decision making, the results suggest that exposure does not mean that managers use that information set in a balanced way when making strategic decisions (Chow et al., 1998). Managers can focus on information according to their dominant functional background, which may prevent the best decision for the hospital.

Regarding the effect of the balanced scorecard use on strategic performances, the results show that the style of use of the balanced scorecard is paramount. An interactive use of the balanced scorecard facilitates managers to achieve strategic goals focused on cost and quality or flexibility. Thus, it can be concluded that a participative management style of nurse managers in hospitals appears beneficial in controlling costs, maintaining quality, and bringing about organizational flexibility and change (Simons, 1995; Sims, 2003). Moreover, this article shows that, for an effective management, nurse managers have to know how to use management techniques more effectively and thus drive more value to the organization. In this line, future research could analyze how the use of the objective versus subjective performance measures in the balanced scorecard contributes to work-related managerial attitudes, such as fairness, goal clarity, and equity in organization. Furthermore, future research could also

examine how the balance between internal and external constituents of the organization affects equity.

Practice Implications

This article provides evidence that not only the technical design of the balanced scorecard matters, but more importantly an appropriate use of the balanced scorecard is paramount for achievement of multiple strategic performances in a hospital setting. An effective use of the balanced scorecard requires managers to actively stimulate dialogue and agreement among hospital's staff about desirable financial and nonfinancial performance measures in alignment with multiple strategic goals.

The results of this article show that nursing managers use the balanced scorecard according to their background rather than their position. Training nurse managers in the administrative side of management may allow them to use typical management information in broader ways rather than just determining through their education and functional experience alone. Nurse managers with a wide set of skills, perspectives, and background will optimize the effect of the balanced scorecard on strategic performances. Thus, hospitals should design their balanced scorecards to cater for individual differences of managers, specially educational, training, and functional backgrounds.

Finally, as the managers' background has such different implications for using management control techniques, nurse managers with a balanced background may be most effective to confront pressures toward both cost control and care quality in hospitals.

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Table 6

Relationship between strategic performances and uses of nonfinancial unbalanced scorecards (Pearson correlation coefficients, $n = 76$)

Strategic performances	Diagnostic use	Interactive use
Focused on cost	.13	.30 ^a
Focused on flexibility	.15	.47 ^a

^aSignificant at .01 level (two-tailed).

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