

Balanced Scorecard Design and Performance Impacts: Some Australian Evidence

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Abstract

Academic literature is giving increased consideration to the use of performance measurement systems, notably the Balanced Scorecard (BSC). However, there has been limited empirical investigation into the particular benefits that result from the use of the BSC (Ittner and Larcker, 1998). This study empirically examines how the BSC has been applied in practice and whether different BSC designs result in varying performance outcomes. Data is from a cross sectional survey, which provided a sample of 92 Australian firms using BSC. It is hypothesised that the BSC provides greater benefits when 1) cause and effect logic is used between measures 2) non-financial measures are tied to compensation and 3) implemented at multiple levels within the organisation. Results support the first proposition, although cause and effect logic appears to be more important if the BSC is tied to compensation. These results are discussed, and implications for practice and future research are presented.

Keywords

**Balanced Scorecard
Performance Measurement
Causal Links
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Introduction

Since its popularisation by Kaplan and Norton (1992, 1993), the concept of the Balanced Scorecard (BSC) has seen an evolutionary development in practitioner based literature. Originally conceived as a diagnostic tool that provided managers with a comprehensive assessment of organisational performance, Kaplan & Norton (1996a) soon reported that organisations had begun to experiment with the use of the BSC as a management by objectives type system as well as integration of the BSC as a central feature of strategic management processes.

Key aspects of the BSC to emerge in this development were an emphasis on cause and effect relationships between perspectives and measures, interactive communication throughout organisational hierarchies and use of BSC metrics in compensation contracts (Kaplan and Norton, 1996a, 1996b). Later writings suggested that the BSC may also facilitate the management of intangibles and serve as the basis of managing competing stakeholder objectives (Kaplan and Norton, 2001, 2004). Central to each stage of this normative development has been the argument that the BSC will provide performance benefits to the organisation.

In the academic literature there has been a developing stream of research that has responded to calls for the investigation of BSC performance impacts (Ittner and Larcker, 1998). To date empirical inquiry has considered issues of performance variation between BSC and non-BSC adopting firms (Ittner, Larcker and Randall, 2003; Davis and Albright, 2004), managerial perceptions of the general performance outcomes of BSC implementation and use (Malmi, 2001; Malina and Selto, 2001) and the

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association between non-financial performance measures and financial outcomes (Said, et.al, 2003; Bryant, Jones and Widener, 2004). These initial investigations, however, have provided less than definitive findings as to the particular performance benefits that may result from BSC application.

While most of these studies have been confined to small samples or single firm case studies, or have used external data sources that may not appropriately proxy for BSC design and use, a more fundamental issue exists in the study of BSC performance impacts. In view of the evolutionary development of the BSC, organisations can develop scorecards that have a range of different technical designs and styles of use. Two descriptive studies have considered this issue thus far (Malmi, 2001; Speckbacher, Bischof and Pfeiffer, 2003).

These studies suggest that common to all BSCs is the inclusion of both financial and non-financial indicators grouped around a number of key organisational perspectives, but that beyond this baseline BSC a range of design choices exists. These include the extent to which cause and effect logic is built into the BSC design, the extent to which compensation is tied to non-financial measures, and the extent to which it has been implemented on multiple levels of the organisational hierarchy (Kaplan and Norton 1996a, 1996b, 2001, 2004; Malmi, 2001; Speckbacher, et.al, 2003). Given these alternatives in design, performance outcomes are likely to vary contingent upon the stage of development adopted, however there is little evidence of this (Chenhall, 2005).

This paper considers whether different BSC design choices, reflected in normative and academic literature, impact upon the types of benefits and overall outcomes derived by organisations. This is an important research question for a number of reasons. First, BSC adoption rates have been comparatively high relative to other management innovations (Speckbacher, et.al, 2003). With many organisations investing in the BSC, its usefulness and

impacts on performance is a particularly salient issue (Atkinson, et.al, 1997; Ittner & Larcker, 1998; Chenhall, 2005).

Second, criticisms of the BSC (Norreklit 2000, 2003) and uncertainty surrounding the extent to which firms achieve real benefits from implementation and use (Malmi 2001; Malina and Selto 2001; Ittner and Larcker, 2003) may be at least partially attributable to sub-optimal design and application in practice (Kaplan and Norton, 1996b; Ittner and Larcker, 2005).

Third, as the BSC is largely a practice derived innovation, theoretical arguments explaining how and why particular outcomes are realised are still at the developmental stage in academic literature. Empirical examination of these issues will contribute to the emerging stream of literature considering the design and use of contemporary performance measurement systems and add to the development of a more grounded theoretical framework explaining how these systems act to drive organisational outcomes (Malmi, 2001; Malina and Selto, 2001; Ittner, et.al, 2003; Speckbacher, et.al, 2003; Davis and Albright, 2004; Tuomela, 2005; Chenhall, 2005).

To examine this research question, data from a cross sectional survey of 92 Australian organisations were considered.

The first part of the data analysis tests propositions relating to three key characteristics of BSC design and use and their impacts on benefits. Results show that the use of cause and effect logic between measures was associated with the 11 BSC related benefits identified and with two of the three overall success outcomes. The tying of compensation to non-financial measures of BSC was associated with only four of the 11 benefits and did not impact any of the overall success outcomes. Finally, the extent to which the BSC had been implemented throughout the organisational hierarchy had no significant impact on benefits or success outcomes.

Further sensitivity tests were then undertaken to understand how the

combination of cause and effect along with compensation impacted upon BSC benefits. The analysis found that when compensation was linked to non-financial indicators, greater benefits were achieved when cause and effect was also included as a BSC characteristic, suggesting that an interaction effect exists between these design choices.

The paper is organised into the following four sections. The first section reviews the relevant BSC literature and outlines propositions concerning the three key design characteristics and associated organisational benefits and outcomes. The second section considers the research method and design. The third section presents the findings from proposition testing and further sensitivity analyses with the final section providing a discussion of these results and their implications for research and practice.

Literature Review and Proposition Development

Kaplan and Norton (1992, 1993, 1996a, 1996b, 2001) decompose the strategic benefits of the BSC into a number of components. The first is that management will be able to clarify and gain consensus about strategy. This is through the process of senior managers working together to 'translate its business units strategy into specific strategic objectives' (Kaplan and Norton, 1996b: 10). Kaplan and Norton (2001) argue that the BSC will facilitate the communication of strategy throughout the organisation, enabling the alignment of personal and departmental goals. As part of this strategic process, long term strategic initiatives will be identified and aligned through a reduced emphasis on short term financial measures, and a greater focus upon drivers of long term success (Kaplan and Norton, 1996b, 2001).

One of the most innovative aspects of the BSC (as argued by Kaplan and Norton, 1996b) is that the BSC provides a strategic learning framework where the capability for organisational learning is able to take place at an executive level. It is argued that by creating a feedback loop around the strategic process, managers will be able

question strategic priorities and the assumptions made, leading to a realignment of strategy and organisational objectives where necessary. Central to all of this is that through the implementation of the BSC, organisations will gain superior performance (Kaplan and Norton, 1992, 1993, 1996a, 1996b, 2001). However, as argued above, the extent to which organisations gain these benefits and performance outcomes may be impacted by the design and use characteristics of the BSC.

Cause and Effect Logic

Kaplan and Norton (1996a, 1996b, 2000) argue that one of the distinguishing features of the Balanced Scorecard, relative to other systems of performance evaluation, is the use of cause and effect logic to clearly identify the critical drivers of strategic outcomes. They write that identification, and subsequent measurement, of these drivers allows managers to effectively map strategy through a causal model of key performance indicators. From this it is argued that management will benefit from a greater understanding and consensus of the activities required to drive future performance. Theoretically at least, this model also provides a basis for feed-forward control, where managers are able to detect and attempt to correct the underlying sources of negative deviations in leading indicators, which ultimately results in superior long term financial performance. While the idea of cause and effect is intuitively appealing there has been some discussion about what cause and effect actually means. Norreklit (2000) argues that the relationship between the four perspectives of the BSC is not causal but logical. Norreklit (2000) argues from a philosophy of science perspective that the BSC makes invalid assumptions about the causal relationships between performance indicators. Furthermore, these invalid assumptions may actually result in dysfunctional behaviour in organisations and as a consequence lower organisational performance.

Bukh and Malmi (2005) take a more pragmatic approach to the issue and argue

that if establishing significant correlations between measures and causal chains was immediately obvious and easy then the need for strategy or even management is diminished. They argue that establishing associations between outcomes and inputs that are assumed to have the greatest impact on these outcomes is what developing cause and effect is about; and in many organisations these relationships can be discovered and attuned through a process of learning and experimentation over time (see also Tuomela, 2005).

Empirical research is also somewhat unclear on the benefits of using the cause and effect characteristic in BSC design. Malina and Selto (2001), Malmi (2001) and Ittner, et.al. (2003) all found very little application of the cause and effect principle in the companies they considered, and as such were only suggestive in their discussions of the usefulness of cause and effect logic.

Davis and Albright (2004), in their study of bank branches, found that the organisational units that used the BSC had better financial performance than those that had not implemented the BSC. Notably, the BSC implementing units had designed them with cause and effect logic, although this does not allow isolation of the effects of cause and effect logic itself. Malina and Selto (2004) anecdotally observed the existence of logic and finality in the perceptions of managers in their case study, yet observed little evidence of causality when measuring the relationship between metrics contained in the BSC of their case organisation. Bryant, et.al. (2004) also examined the idea of causality between financial and non-financial performance measures. While they were able to provide some empirical evidence of associations, the data used was from external sources and hence proxied, rather than directly measured, elements of the BSC.

Furthermore, associations between financial and non-financial measures may exist without cause and effect logic being purposefully implemented into BSC design. Although both the empirical and theoretical evidence surrounding the

usefulness and applicability of cause and effect logic is inconclusive, from a pragmatic perspective the notion remains appealing. Given the normative assertions of Kaplan and Norton concerning its effectiveness and centrality to the BSC as a distinctive strategic management system, the *ex ante* expectation is that BSCs that are designed with causal links between measures or between measures and perspectives will enable greater performance outcomes. This is formally stated as the following proposition:

PI: Organisations that have cause and effect relationships between measures in their BSC will gain more benefits from their BSC than those without cause and effect relationships in their BSC.

Compensation Link to BSC Non-Financial Measures

Kaplan and Norton (1996b, 2001b) argue that attaching incentives to measures is a potentially powerful mechanism to align the efforts of individuals to the achievement of organisational strategy, and to create a more balanced focus between short and long term objectives. They also suggest that a strategically linked scorecard with a compensation element included in the design will create the sense that the achievement of strategy is everyone's responsibility, motivating individuals to consciously consider the relationships between their activities and strategic outcomes.

The BSC research literature to date has presented limited evidence on the benefits of incorporating reward and compensation into BSC design. Malmi (2001) found 13 of the 17 organisations he interviewed had incentives attached to their BSC, although he did not provide any evidence on whether impacted BSC effectiveness. Speckbacher, et.al (2003) also examined the extent to which incentives were linked to the BSC. Out of 38 organisations, 27 had incentives tied to the BSC, however the extent to which this impacted either benefits of the BSC or organisational performance is not considered.

Tuomela (2005), in the analysis of his case company, found that compensation was not linked to BSC measures as staff in the organisation felt that attaching bonuses to measures reduced the power of the BSC to be used interactively as a learning vehicle, at least in the early stages of implementation. Although not studying the BSC directly, Bryant, et.al (2004) argued that the right focus on non-financial performance measures will improve organisational performance. They found some empirical evidence to support this, and also suggested that the associations between non-financial indicators and financial outcomes are stronger in those organisations that link executive compensation to non-financial performance indicators relative to those that don't.

Despite the limited empirical evidence, the assertions of Kaplan and Norton are well grounded in theory. Bonner and Sprinkle (2002), in reviewing the theoretical perspectives of expectancy, agency, goal-setting and social-cognitive, argues each shares essentially the same underlying proposition - that the presence of 'incentives increase(s) effort and increased effort leads to improvements in performance' (Bonner and Sprinkle, 2002: 310). They consider that this relationship is principally due to three characteristics of effort: direction, which is the tasks that the individuals focuses on; duration, which is how long individuals devotes themselves to the task; and intensity, which is the amount of attention individuals devote to the task.

Hence attaching incentives to desired outcomes will motivate high levels of effort direction, duration and intensity. In addition to providing increased motivation, under situations in which multiple dimensions of performance exist, the provision of incentives may also serve an informational role (Holmstrom and Milgrom, 1991; Merchant, 1998).

The informativeness principle contends that any measures of performance that provide information on effort levels of the agent should be included in the compensation contract (Holmstrom, 1979; Prendergast, 1999). Increasing the scope of the

compensation contract enables greater capture of an agent's private information, limiting information rents and allowing for greater management coordination of employee's effort allocations (Bonner and Sprinkle, 2002). By comprising multiple indicators and dimensions of performance, the BSC provides an opportunity to broaden the compensation contract, acting to direct the effort direction, duration and intensity towards those activities that are believed to drive the long-term performance of the organisation.

Traditionally, compensation has been tied to financial measures (Widener, 2006). As the BSC contains both financial and non-financial measures, many BSC organisations may have compensation tied to financial measures that are part of the BSC by default rather than by design. Consequently, the impact of compensation on BSC design has greater discriminate validity when compensation is tied to non-financial measures. Based on the above argument, the ex ante expectation is that organisations that attach incentives to non-financial BSC measures yield greater benefits. This is stated formally as the following proposition:

P2: Organisations that have compensation tied to the non-financial measures in their BSC will gain more benefits than those without compensation tied to the non-financial measures in their BSC.

Extent of Implementation

Kaplan and Norton (1996a, 1996b, 2001a) argue that a number of the key strengths of the BSC devolve from the ability of the BSC to cascade the organisations' strategy, and provide feedback loops, through the organisational hierarchy. In order to do this the BSC would need to be implemented at more than just the SBU level. Kaplan and Norton (1996) argue that the design of a corporate BSC enables a common framework for the themes and vision of the organisation. This provides a platform for the SBUs to develop their BSCs, which should be aligned to a well defined strategy. Based on the SBU BSC, functional units,

departments, and individuals are able to develop BSCs that are congruent with the SBU, and in this way 'the SBU scorecard is cascaded down to local responsibility centres' (Kaplan and Norton, 1996: 36).

Very little BSC research literature has considered the issue of the extent of BSC implementation throughout an organisations hierarchy and its related benefits, with the major focus being on BSC use at the SBU level. Davis and Albright (2004) found that the BSC had been implemented from an individual level through to a branch level. While the financial performance of BSC branches was better than non-BSC branches, no insights are provided as to whether a BSC implemented at more hierarchical levels gives greater benefits. Speckbacher, et.al. (2003) found that the majority of the organisations in their survey had implemented the BSC at a business unit level, with few firms implementing down to the individual level. This finding is consistent with Malmi's (2001) study, where the majority of BSC applications existed at a business unit level.

Kaplan and Norton (2001) argue that the BSC facilitates the process of making sure that employees understand what the strategy is, in order to increase the probability that they conduct their activities towards the achievement of the strategy. This is an essential component of the communication process in an organisation. Malina and Selto (2001), drawing on communication research (e.g. Tucker, et.al, 1996; Goodman, 1998; Barker and Camarata, 1998; de Hass and Kleingeld, 1999) argue that communication is enabled through three aspects; processes and messages, support of organisational culture, and creation and exchange of knowledge.

First, they argue that the BSC provides processes and messages that are understandable as the BSC creates a common 'language' through the organisation to describe phenomena. Second, the BSC supports the organisational culture through communicating clearly the established goals, values and behaviour patterns. This is manifest through goals that are shared

between the organisation, managers and employees which can be reflected in metrics implemented through the organisation. Third, the BSC converts some of the strategic tacit and objective knowledge of senior management into metrics which is then communicated to lower levels of the organisation through the cascading of the BSC. In the same manner, at lower levels of the organisation, knowledge of how activities are linked to organisational strategy is also created by the systematic process of considering metric design and its impact on higher levels of the BSC.

Related to this is the operational linking of objectives of departments and individuals to the SBU and corporate BSCs. It would seem that unless the lower level activities in the organisation are overtly linked to the BSC the benefits of the BSC that depend on lower level activities are unlikely to be manifest. The progressive cascading down of BSCs which are linked are more likely to produce activities at lower levels in the organisation that are congruent with higher level BSCs than a more ad hoc design of measures through the aligning of accountabilities.

Based on the normative arguments of Kaplan and Norton (1996a, 1996b) and the limited research literature, the ex ante expectation is that the more organisations implement the BSC through their hierarchical levels the greater the benefits obtained will be. This is stated formally as the following proposition:

P3: Organisations that have implemented the BSC throughout the organisation to team and/or individual levels will gain more benefits than those that have implemented it only at higher organisational levels.

Research Method

Sample and Survey Response

The data for this study were obtained from a cross-sectional survey. The sample for this study was obtained from the CPA Australia (Certified Practising Accountants of Australia) database. The CPA Australia

is the largest professional accounting body in Australia, with the majority of its members working in industry and commerce. Their database, which is regularly updated, provided an appropriate source from which to draw the sample for this study.

The survey sample was randomly selected, but was representative of the population sample in terms of size and industry. The mail-out to 2400 members was conducted between October, 2004 and March, 2005 in two stages. The unit of analysis was the strategic business unit (SBU), which includes single business organisations (Chenhall and Langfield Smith, 1998).

Each respondent represented a unique SBU in the survey sample. Respondents were classified as having 'financial control' as their primary job function, with job titles such as Chief Financial Officer, Chief Accountant and Financial Controller, and are thus likely to have sufficient knowledge of the BSC in their firm. Questionnaires were personally addressed to these members, although all responses are anonymous. The package included the questionnaire and a cover letter, which offered a benchmark report and invitation to an industry seminar as incentives to respond.

From this, a total of 426 surveys were returned, representing an initial response rate of 17.8%. Given that the mail-out process followed many of the suggestions by Dillman (2000), including a follow-up postcard two weeks after each stage, the moderate response rate is likely to be attributable to the length of the survey (15 pages, due to requirements additional to this study). However, this response rate is still comparable to those obtained elsewhere in the management accounting literature (see the review of Young, 1996).

The survey asked respondents to indicate their level of consideration/adoption of the BSC. 18 firms (4%) stated that the BSC had been 'implemented then abandoned', while 311 (73%) indicated that the BSC had not

been considered. Firms stating that the BSC was either 'gaining acceptance' (58 firms, 14%) or 'used extensively' (39 firms, 9%), were included in the study. The average time of implementation for firms that used the BSC extensively was 4.5 years, with 84% reporting that the BSC has been implemented for 2 years or more. From this sample of 97 firms, five additional firms had to be removed. When asked about the particular perspectives included in the BSC, four indicated that they only had the financial perspective. The last firm had significant missing data. The authors were unable to determine whether these firms had, in fact, implemented a BSC, and thus they were removed from the analysis. This left a usable sample size of 92 firms (21.6%) that were using a BSC.

Visual inspection of the remaining 92 cases revealed that there were a small number of responses with some missing values. To maintain sample size, missing values were imputed. Little's MCAR test showed that the data was missing completely at random (Chi-square=451.625, DF=441, $p > 0.10$), meaning that any imputation method can be used reliably (Hair, et.al 1998). The expectation-maximisation (E-M) was used to impute the missing data. E-M is an iterative process in which mean, covariance and correlation parameters of the sample are protected (Hair, et.al, 1998). Lastly, non-response bias was tested by comparing the first 20% of the BSC sample with the last 20%. Analysis of categorical and scale data indicated no significant differences.

Industry and Size

Industry classification and size of organisations is outlined in Table One. T-tests between company and SBU size show a significant difference between BSC adopters and non-adopters in terms of company size ($p=0.013$), but not SBU size ($p=0.854$). The result of company size is consistent with previous literature (Hoque and James, 2000; Speckbacher, et.al, 2003). Visual inspection of industry classification indicates few notable trends.

Table One : Industry (GICS) and Size

	Non-BSC Users		BSC Users	
	#	%	#	%
Energy	4	1.3	2	2.4
Materials	27	9.1	7	8.2
Industrials	99	33.3	23	27.1
Consumer discretionary	64	21.5	12	14.1
Consumer staples	32	10.8	10	11.8
Health care	17	5.7	5	5.9
Financials	35	11.8	15	17.6
Information technology	8	2.7	7	8.2
Telecommunications	8	2.7	1	1.2
Utilities	3	1.0	3	3.5
Total Firms	297		85	
Size (average employees)				
Company	6,797		17,296	
SBU	564		627	

Note: 33 non-BSC users and 7 BSC users did not fill in GICS codes

Variable Measurement and Descriptive Data

Respondents were asked about three characteristics of their BSC design (the use of cause and effect logic in the development of the BSC, the linking of compensation to non-financial measures and the extent that the BSC has been implemented throughout the organisational hierarchy), as well as eleven benefits and three outcome indicators measuring various aspects of the success of the BSC. Prior to sending out the survey, the items were pilot tested with two senior accounting managers at a division of a large international consumer goods company, with students in an accounting MBA class and academic staff. Piloting of the survey instrument resulted in a number of minor changes, mainly to the wording of questions in the survey. As most of the data is either categorical or single item measures, pilot testing focused on the convergent understanding of the survey items. It is this convergence between pilot test subjects, particularly in cases where little theory exists to guide development, that essentially determines the validity of the items or constructs used (Rossiter,

2002; see also Bergkvist and Rossiter, 2007). Furthermore, as the two multiple item measures in this study (link to compensation and extent of implementation) are indices or 'formative' constructs (as opposed to reflective – see Bisbe, Batista-Foguet and Chenhall, 2007), the use of traditional validation techniques, such as confirmatory factor analysis and Cronbach's Alpha, are inappropriate (Rossiter, 2002). Descriptive data is shown for each of the three aspects of BSC design in Tables Two, Three and Four, and for benefits and outcomes in Table Five.

As shown in Table Two, a large number of organisations do not use cause and effect logic (43.5%), despite this being considered a central tenet of BSC design in practitioner literature. Some organisations also indicated that they only used cause and effect logic between perspectives. Given the simplicity of this type of logic, it is likely to have few beneficial outcomes unless measures within and between perspectives are also linked together. These seven firms were not considered as having used cause and effect logic in testing the first proposition.

Table Two: Use of Cause and Effect Logic

	#	%
Between perspectives	7	7.6%
Between measures	13	14.1%
Both perspectives and measures	32	34.8%
Not used	40	43.5%

Respondents were asked to indicate the extent to which they agree with the statement that ‘non-financial data is used for management (staff) compensation’ on two seven point Likert-type scales, one for management and one for staff. The scale was anchored with ‘strongly disagree’ (1), ‘strongly agree’ (7) and ‘neutral’ (4). The breakdown of the responses is shown in

Table 3. 52.2% of firms agree (a response of five or greater) with the statement for management compensation, and 41.3% for staff. Firms in either of these categories were classed as having compensation tied to the BSC (a total of 51 firms, with 35 of these compensating both management and staff based on BSC measures).

Table Three: Compensation Link to Non-Financial Measures

	Management		Staff	
	#	%	#	%
1 = Strongly Disagree	7	7.6	13	14.1
2	8	8.7	11	12.0
3	10	10.9	11	12.0
4 = Neutral	19	20.7	19	20.7
5	16	17.4	15	16.3
6	22	23.9	15	16.3
7 = Strongly Agree	10	10.9	8	8.7

Table Four displays the levels that the BSC has been implemented. The BSC was considered implemented at a particular organisational level if measures for that level had been defined, and targets had been set for those measures. Respondents answered questions separately for measures and targets, respectively. The finding that most firms have implemented the BSC at the SBU level (91.2%) is consistent with

both normative suggestions and previous empirical work. Kaplan and Norton (1996b) argue that the SBU level is the principle level of implementation as the BSC is primarily a mechanism to translate strategy into quantifiable measures. The studies of Malmi (2001) and Speckbacher, et.al (2003) both observe that this is being mirrored in practice.

Table Four: Extent of Implementation

<i>Organisation Level</i>	Corporate	SBU	Unit	Department	Team	Individual
# Firms	88	83	76	68	66	57
% Firms	96.7	91.2	83.5	74.7	72.5	62.6

Note: One firm did not complete this section (total of 91 firms included)

However other findings regarding implementation throughout the hierarchy

are somewhat surprising. For instance, Speckbacher, et.al (2003) reported 55%

implementation at the corporate level, 23% implementation at plant and department levels, 10% in teams and 3% at the employee level. The current study reports that the BSC has been implemented at the corporate level in almost all firms (96.7%), and to a far greater extent at lower levels of the organisational hierarchy. Of particular note is that 72.5% and 62.6% of firms have implemented at the team and individual levels respectively. As suggested in proposition 3, this cascading of the scorecard to lower levels might reflect potential performance benefits from doing so. Kaplan and Norton (1996b, 2001) write that the BSC can be used as a mechanism to communicate strategy throughout the organisation, with such communication facilitating the alignment of individual action to strategic goals.

The questionnaire included a list of 11 benefits and three outcomes. While the

benefits included were identified from previous literature, they centred on the fundamental purpose of the BSC as a device used to develop, communicate and implement strategy (Kaplan and Norton, 1992, 1993, 1996a, 1996b, 2001). Benefits and outcomes were measured on seven point Likert-type scales. Respondents were asked to indicate the extent to which the BSC has helped achieve each benefit. Scales were anchored with ‘strongly agree’ and ‘strongly disagree’, with the middle response labelled as ‘undecided’. Outcomes were anchored as ‘very successful’ and ‘very unsuccessful’ for overall success, ‘no dollar improvements’ and ‘significant dollar improvements’ for dollar improvements from BSC implementation, and ‘not at all’ and ‘fully’ for meeting strategic objectives. The average response of benefits and outcomes for all BSC users is outlined in Table Five in descending order (with regards to average benefits).

Table Five: Average Responses to BSC Benefits and Outcomes

	Average response (descending order)
Benefits	
Stronger consideration for non-financial performance drivers	5.35
More focus on our strategy	5.15
Clarifying and communicating strategy	4.99
Link long term strategic planning to short term activities/actions	4.84
Provide a common language for staff to communicate	4.83
Better consideration to stakeholders	4.82
Developing strategy	4.78
Enable managers to question the relevance of strategic objectives	4.47
Provide a forum for individuals to share specific knowledge	4.29
Reduce management focus on short term financial measures	4.12
Enhance the investment in intangibles	4.00
Outcomes	
Ability to meet strategic objectives of the organisation	4.23
Overall success of BSC initiative	4.01
Dollar improvements from BSC implementation	3.91
<i>Note: Total Sample = 92</i>	

The descriptive data suggests that on average the BSC is providing a number of benefits to Australian firms, particularly in terms of developing, communicating and directing focus on strategy. It appears,

though, that while the BSC has helped managers place greater attention on non-financial drivers, it has not reduced the focus on short-term financial measures. This is an unusual finding considering that

the BSC was initially developed on the basis of considerable critique over the inadequacy of financial measures (Kaplan and Norton, 1993; Speckbacher, et.al, 2003). The result may indicate, however, that non-financial measures are complementing, rather than substituting for, financial measures. This is also supported by reports that a very high percentage of firms continue to use budgets (Ekholm and Wallin, 2001; Sivabalan, et.al, 2005).

In contrast to Speckbacher, et.al (2003), the study here provides some evidence that the BSC provides greater consideration to stakeholders. This result is not surprising in light of the extent of use of non-traditional perspectives. In another section of the survey, respondents were asked to indicate what perspectives they included in their BSC. While the traditional perspectives of financial, customer, internal process and learning and growth, recorded the highest use, a significant number of organisations included non-traditional perspectives, such as environment (50%), community (53%), supplier (47%) and government (49%). Consistent with Speckbacher, et.al (2003), though, is that the BSC is providing little enhancement in the investment of intangibles.

Finally, while on average respondents agreed that the BSC has helped in achieving most of the benefits at least to some extent, outcomes from BSC implementation, in terms of overall success, dollar improvements and meeting strategic objectives, were fairly low. This suggests that on the whole, the success of the BSC has only been moderate in Australia, despite the scorecard fulfilling many of its normative claims.

Results

To test the three propositions, Mann-Whitney U tests were conducted to test whether a significant difference exists between the inclusion or exclusion of each of the three design elements (cause and effect, link to compensation and high implementation). The Mann-Whitney U-test is the non-parametric equivalent of a two-sample *t*-test, but is appropriate when data

are not continuous, such as in the present study. Results for all three propositions are contained in Table Six

Proposition 1 – Cause and Effect Logic

The results for the first proposition show significant differences for all benefits, and for two of the outcome measures (the only non-significant result being the overall success of the initiative). These results support Kaplan and Norton's claim that cause and effect is a central and necessary component of the BSC in order for an organisation to achieve high levels of benefits from its usage.

Proposition 2 – Link to Compensation

There is inconclusive support for the second proposition. Although ten of the 11 benefits and all three of the outcome measures had higher averages for the group that linked compensation to BSC non-financial measures, only four of these benefits were significantly higher, with none of the outcomes statistically different. It should be noted that there is little reason that benefits such as developing strategy or providing a common language should differ because of a compensation linkage to non-financials. However two in particular, reducing management focus on short term financials and linking long term plans to short term actions, would seem likely benefits received by firms that designed a BSC with a compensation element, however these were insignificant.

Proposition 3 – Extent of Implementation

For the third proposition, organisations were grouped as either having high or low levels of implementation. Organisations were included in the high implementation group if they had implemented the BSC at the team or individual level (68 firms). The remaining organisations were placed in the low implementation group (24 firms).¹

¹ As this classification is inherently subjective, a number of alternative coding schemes were used, including the use of another set of data items (not listed here). The categorisation chosen appeared the most logical. However, none of the other categorisations attempted resulted in any different statistical outcomes.

Table Six: Tests of Propositions									
	Proposition 1 Cause and Effect			Proposition 2 Compensation Linkage			Proposition 3 Implementation		
	<i>No C&E (#47)</i>	<i>C&E (#45)</i>	<i>Sig.</i>	<i>No Link (#41)</i>	<i>Link (#51)</i>	<i>Sig.</i>	<i>Low Imp (#24)</i>	<i>High Imp (#68)</i>	<i>Sig.</i>
<i>Benefits</i>									
Developing strategy	4.43	5.16	0.005**	4.61	4.92	0.234	4.54	4.87	0.432
More focus on our strategy	4.83	5.49	0.004**	5.07	5.22	0.370	5.04	5.19	0.827
Clarifying and communicating strategy	4.60	5.40	0.001**	4.80	5.14	0.105	4.83	5.04	0.602
Reduce management focus on short term financial measures	3.81	4.44	0.047*	4.05	4.18	0.681	3.88	4.21	0.373
Link long term strategic planning to short term actions	4.53	5.16	0.015*	4.76	4.90	0.360	4.54	4.94	0.140
Provide a common language for staff to communicate	4.51	5.16	0.010**	4.85	4.80	0.961	4.75	4.85	0.808
Provide a forum for individuals to share specific knowledge	3.98	4.62	0.055^	4.24	4.33	0.840	4.25	4.31	0.711
Stronger consideration for non-financial performance drivers	5.04	5.67	0.004**	5.00	5.63	0.007**	5.17	5.51	0.598
Better consideration to stakeholders	4.40	5.24	0.001**	4.41	5.15	0.004**	4.96	4.76	0.470
Enhance the investment in intangibles	3.62	4.40	0.002**	3.68	4.25	0.070^	3.71	4.10	0.317
Enable managers to question the relevance of strategic objs.	3.94	5.02	0.000**	4.12	4.75	0.014*	4.29	4.53	0.479
<i>Outcomes</i>									
Overall success of BSC initiative	3.76	4.23	0.137	3.73	4.20	0.176	3.95	4.03	0.973
Dollar improvements from BSC implementation	3.55	4.22	0.030*	3.67	4.05	0.210	4.29	3.81	0.224
Ability to meet strategic objectives of the organisation	3.92	4.51	0.018*	4.13	4.31	0.396	4.11	4.27	0.576
^ $p < .10$, * $p < 0.05$, ** $p < 0.01$									

Table Seven: Additional Test of Cause and Effect and Compensation Link in BSC

	No Compensation Link			Compensation Link				
	No C&E (G1)	C&E (G2)	G1 v G2	No C&E (G3)	C&E (G4)	G3 v G4	G1 v G3	G2 v G4
	#26	#15	Sig.	#21	#30	Sig.	Sig.	Sig.
<i>Benefits</i>								
Developing strategy	4.42	4.93	.185	4.43	5.27	.026*	.965	.454
More focus on our strategy	4.85	5.47	.023*	4.81	5.50	.105	.526	.870
Clarifying and communicating strategy	4.62	5.13	.106	4.57	5.53	.008**	.719	.353
Reduce management focus on short term financial measures	3.92	4.27	.517	3.67	4.53	.050*	.570	.677
Link long term strategic planning to short term activities/actions	4.54	5.13	.132	4.52	5.17	.085^	.823	.774
Provide a common language for staff to communicate	4.58	5.33	.036*	4.43	5.07	.079^	.824	.823
Provide a forum for individuals to share specific knowledge	4.00	4.67	.186	3.95	4.60	.146	.838	.903
Stronger consideration for non-financial performance drivers	4.81	5.33	.138	5.33	5.83	.070^	.110	.158
Better consideration to stakeholders	4.19	4.80	.079^	4.67	5.47	.026*	.104	.163
Enhance the investment in intangibles	3.42	4.13	.053^	3.86	4.53	.051^	.416	.376
Enable managers to question the relevance of strategic objectives	3.88	4.53	.143	4.00	5.27	.000**	.808	.016*
<i>Outcomes</i>								
Overall success of BSC initiative	3.84	3.57	.203	3.68	4.53	.028**	.350	.067^
Dollar improvements from BSC implementation	3.53	3.89	.404	3.56	4.32	.082^	.983	.382
Ability to meet strategic objectives of the organisation	3.89	4.46	.175	3.95	4.53	.073^	.796	.784
^ $p < .10$, * $p < 0.05$, ** $p < 0.01$								

The averages reported in Table 6 for the organisations that have implemented at the team and individual levels are higher for all but one outcome and one benefit measure however there are no statistically significant differences. A number of other bases were also used for categorising firms as high and low implementers, but these had no notable impact on results. While no support is provided for the third proposition as the majority of firms have implemented the BSC to lower levels of the organisation it is likely that there is some benefit to doing so, although it has not been captured in this study.

Additional Test on Cause and Effect and Compensation

With strong support for proposition one and some support for proposition two, additional tests were run. These additional tests consider whether compensation and cause and effect characteristics contributed to BSC effects independently, or if there was some form of interaction effect between the two. Firms were partitioned into four groups based on the existence or absence of cause and effect and link from non-financial measures to compensation. The results of Mann-Whitney *U*-tests between groups are shown in Table 7.

The tests demonstrate that the compensation characteristic has little independent effect on BSC benefits and outcomes (group one v three). When cause and effect is not part of the BSC design, the inclusion of compensation provides no significant difference in benefits. The results do provide evidence that the use of cause and effect logic has an independent effect on BSC benefits, although it appears to be more important when compensation is also included.

All of the outcome measures and nine of the 11 benefits were significantly higher when cause and effect logic was used with a BSC tied to compensation (group three v four). When the compensation link was absent, four of the benefit measures were significantly higher with the use of cause and effect, although all of the reported averages for benefits and two of the

outcome measures were higher (group one v two). In comparing a BSC design with both compensation and cause and effect to one that only includes the latter (group two v four), only one benefit is significantly higher, although the outcome of 'overall success' is moderately significant.

The additional tests, in conjunction with the initial proposition tests, suggest that linking non-financial BSC measures to compensation may not be a requisite for successful use of the BSC, and that cause and effect is the dominant characteristic considered in this study of BSC design. However, if compensation is included as part of BSC design, there appears to be an interaction effect with cause and effect. Whether the compensation characteristic is included or not may relate to the role that the BSC plays in the control package mix, or upon other contingent circumstances.

Discussion and Conclusion

This study was designed to find out how Balanced Scorecards have been applied in practice and whether different BSC designs result in varying benefits and performance outcomes. A number of interesting findings emerged. First, deriving measures using cause and effect logic seem to enhance perceived benefits and performance outcomes from the BSC. Given the wide range of benefits received, it is difficult to point out any single underlying factor driving these results. However, as cause and effect logic seemed to bring more benefits for firms that linked compensation to non-financials, benefits could partly be due to this type of BSC making management by objectives based control system reflect what is truly believed to be of strategic importance in the organisation.

The reliance on cause and effect may help to reduce and prioritise objectives, providing more focused target setting and accountabilities, compared to a BSC where objectives are grouped into perspectives but no clear understanding exists on their interdependencies. Balancing various outcome measures with drivers of those measures in management by objectives systems may bring many of these benefits.

On the other hand, benefits may also be due to increased communication and understanding of aims and means in these organisations, with greater consensus leading to a closer alignment of behaviour and the achievement of strategic priorities.

These results also suggest that firms are able to utilise the concept of cause and effect in practice despite criticism presented in the accounting literature towards the concept (e.g. Norreklit 2000). Further research could assess the exact mechanisms that lead cause and effect logic to be beneficial for designers and users of performance management systems, and how theoretical inconsistencies in the concept are overcome in practice. In studying cause and effect, it was also observed that strategy maps are not used extensively in Australia (only 17% of respondents). Moreover, there seemed to be a lack of knowledge about this concept in practice (40% of respondents had not heard of the concept). Additional research could consider the alternative methods used by practitioners and their related outcomes, including modelling based on statistical associations (e.g. Bryant, et.al, 2004), adaptations of the DuPont formula tree, or other practice derived processes.

Second, linking compensation to non-financial measures of the BSC seemed not to be a prerequisite for the BSC to be beneficial. This result is more easily understood when various alternative ways of using the BSC are considered. Malmi (2001) found that some organisations used the BSC mainly to provide information for managerial decision making. This type of use does not require compensation to be linked to measures. Tuomela (2005) discussed an organization which used BSC for strategic learning. For such use linking compensation to measures may not be the best approach. Similarly, the research by Chenhall (2005) suggests that in an uncertain external environment links to compensation may limit the extent to which the BSC can be used for strategic learning as compensation links reduce flexibility and interactive use.

Other firms use the BSC as a basis for management by objectives (see Malmi, 2001 and Speckbacher, et.al, 2003). Organisations applying this type of use are more likely to benefit from linking compensation to measures. However, it may be that linking compensation to only financial outcome measures of BSC is sufficient. The results may also reflect difficulties in using often less than precise non-financial measures as a basis for compensation². Furthermore, even if non-financial measures are used as a basis for compensation, the relative weight of them in incentive schemes may be low. If that is the case, we should not expect to see major differences in benefits received.

An additional explanation of these results may be that in many organisations the BSC is not linked to activities that actually drive strategic outcomes. If that is the case, then providing a link between compensation and non-financial measures will have no effect on strategic outcomes. The outcomes produced will be the ones that the measures capture. This could explain why compensation does not have a great effect on its own, but seems to be beneficial when cause and effect is matched with compensation. Further, the analysis found that certain benefits (stronger consideration for non-financial performance drivers, better consideration of stakeholders, enhanced investment in intangibles and enabling managers to question the relevance of strategic objectives) were more often present in companies linking compensation to non-financial measures than in those that did not. A company seeking such outcomes through the BSC use may benefit from linking compensation to non-financials, with these linkages based on cause and effect logic.

² Economic theory suggests that in situations where the accuracy of measuring a dimension of performance is diminished, the costs of tying compensation to those measures may outweigh any benefits gained (Bonner and Sprinkle, 2002, pp331-2). However, the literature still suggests that it is beneficial to link monetary incentives to at least one dimension. The logical default is likely to be the financial dimension of the BSC.

Future research on the compensation link should control for the particular purposes the BSC is used for. When used for managerial control, researchers should assess the role of the BSC as part of the wider organisational control package. Is it more beneficial, *ceteris paribus*, to tie compensation to BSC measures only, or should BSC measures be only a part of the total compensation package? How this is different in various levels of the organisational hierarchy? With further regard to the hierarchy, should compensation be linked to the BSC of the particular level or unit in question, or should part of the compensation be based on aggregate corporate or SBU level measures? Do these compensation decisions depend on the how BSC is cascaded down?

Another set of questions relate to how measures within a BSC are tied to compensation. Should all measures of the BSC be reflected in a compensation scheme as the informativeness principle (Holmström, 1979; Prendergast, 1999) seems to suggest? Or would this cause problems e.g. in terms information overload, confusion between conflicting measures and the need for weighting or costs of maintaining measures? If only a few indicators are selected as a basis for compensation, is it only financial measures or some mix of financial and non-financials of BSC that should be included? (see e.g. Widener, 2006). What is the weighting of financial and non-financial measures in the incentive system that produces the best outcomes in a given circumstance?

Third, our study suggests that the majority of Australian organizations have implemented the BSC through out the whole organisation, but this does not seem to be related to any benefits. This result is hard to interpret. As the majority of firms have cascaded the BSC to lower levels of the organisation, there is likely to be some benefit in doing so. It may be that the study has not been able to capture these benefits properly with the measurement instruments used. Furthermore, organizational structure, size and the type of activities are likely to have an impact on whether cascading to team or individual level is appropriate.

Comparing two groups of firms which have selected an optimal extent of their application should not yield differences in benefits. This question is also related to the type of BSC use. Proper cascading is thought to be crucial for management by objectives type of use and therefore the further down you cascade, the greater the influence on day-to-day activities you should expect.

On the other hand, using BSC for decision-making at executive levels requires data to be collected throughout the organisation, but does not necessarily require scorecards to be applied at lower levels. Respondents might, however, consider the production of measurement information for corporate reporting purposes as BSC use at lower levels. High corporate level use and the large extent of implementation may suggest that the BSC is used as a corporate reporting mechanism in Australian organisations. Further research should consider the nature of use of BSC in Australia and seek to explain why there is a high extent of implementation throughout the hierarchy in Australia and not in other countries.

Finally, compared to studies in many other regions, the adoption rate of the BSC appears to be low in Australia. Is it that Australians are more sceptical towards management fashions or is the structure of the supply-side of management innovations somehow different from other western countries? This might provide an interesting avenue of further research for those interested in innovation diffusion.

The primary implication for practitioners considering implementation of a Balanced Scorecard are the benefits and performance outcomes gained from considering cause and effect relationships. While an initial advantage of the BSC over more traditional measurement systems was to focus managers' attention on a restricted, but broad, set of critical performance measures, the results of this study suggest that higher performance outcomes will be achieved only if the measures selected are tied together in a causal framework. Including cause and effect in the design of the BSC is

likely to demand greater communication between organisational levels, transparency of accountabilities, more focused attention on long-term strategic goals and a better understanding of the leading, and actionable, drivers of performance.

Although these reasons are speculative, these processes may account for the differences in BSC benefits and performance outcomes. A second key implication is that the BSC is not a “one size fits all” system. It is clear that there is significant variation in the way in which the BSC has been implemented in organisations. In particular, it appears that the BSC may be used equally well as a management by objectives system, where managers are held accountable for outcomes and have compensation tied to Scorecard measures, or as a strategic information tool, where the emphasis is placed on learning and problem solving. Reasons for adoption, and desired benefits, will dictate how the BSC is implemented and constructed. Following from this, firms that consider their current BSC ineffective should review the design elements of the BSC to see whether these match the desired purpose, rather than discarding the system altogether.

This study, like any empirical research, has its limitations. First, as only a limited number of design and use characteristics were considered, this leaves the potential for omitted correlated variables. This might be of some concern for the first proposition relating to cause and effect logic. Given the criticism of this concept, it may be the processes, communication patterns or some other mechanisms that are driving the results, rather than just the existence of cause and effect logic in BSC design. Second, it may be considered that the use of single item constructs is too simplistic to capture the variables of analysis. This is not necessarily the case, as it has been shown empirically in other academic disciplines that single-item measures are appropriate in circumstances where items are well understood by survey respondents (see for instance Bergkvist and Rossiter, 2007), although a deeper analysis of the use of the BSC, as suggested above, would likely

require the use of multiple-item constructs. Finally, generalisation of the findings to other settings must be done with caution, particularly given the unique findings concerning adoption and extent of implementation in Australian firms that suggests the use of the BSC in this context differs to that in other national settings. Despite these limitations, the study provides a number of interesting findings that have both academic and practical relevance, and provides a strong impetus for future research on the design and use of the BSC.

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