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# Joint selection of balanced scorecard targets and weights in a collaborative setting

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### ABSTRACT

Information asymmetries may create problems in developing both the balanced scorecard (BSC) targets and weights. In practice, the process of assigning weights to performance measures can be challenging in terms of reaching a consensus between top management and divisional managers. In this research, we address the issues of target and weight selection using a collaborative decision-making model. Most of the previous research related to performance measurement has assumed self-interested agents. When weights are assigned subjectively, there is evidence in the literature of common-measure bias leading to BSC disagreement (conflict). We contribute to the literature by considering actor preferences in a novel approach that permits the parties jointly to determine optimal (or approximately optimal) BSC targets and weights.

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## 1. Introduction

The balanced scorecard (BSC) model is one of the most extensively researched topics in management accounting. The BSC provides a framework for selecting multiple performance measures related to strategic goals by integrating traditional financial measures and non-financial measures from perspectives: customer, internal process, and learning and growth. Kaplan and Norton (1992, 1996a,b) intended the BSC to be used as a tool for aligning, communicating and linking the company's strategic

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goals to managers' incentive compensation. An essential BSC concept is the articulation of hypothesized cause–effect linkages between performance measures (both financial and non-financial) and strategic objectives (Kaplan and Norton, 1993; Banker et al., 2001).

Prior literature has considered issues related to the use of BSC measures in evaluating managers (Ittner and Larcker, 1998; Lipe and Salterio, 2000; Ittner et al., 2003; Libby et al., 2004). Important issues raised in the literature are (i) the bias towards common (financial) measures and (ii) that causal linkages between driver and outcome measures are often overlooked (Lipe and Salterio, 2000; Malina and Selto, 2001; Banker et al., 2004). In a recent study, Wong-On-Wing et al. (2007) found that top management have a bias towards common measures and a tendency to overlook the validity of that causal linkages between driver and outcome measures of a BSC. This leads to disagreement (conflict) between top management and divisional managers.

Although, Kaplan and Norton (1992, 1996a,b) suggest that compensation should be tied to the BSC, they do not provide clear guidance on setting targets and assigning weights to each target. Since a scorecard-linked compensation system's effectiveness relies heavily on the targets and weights, consensus over causal linkages is important in implementing a truly successful BSC system. However, in practice, reaching a consensus on what weight and the target to assign to each performance measure can be challenging. It therefore is surprising that the issue of fairness (equity) with respect to both the BSC process and outcomes resulting from disagreements also have not been researched adequately in the literature.

In this article, we attempt to address these important gaps in the literature. We present a method for assigning weights to measures and selecting targets using a collaborative decision-making approach. More specifically, we draw upon the negotiation analysis literature to develop a BSC model to find an optimal (or approximately optimal) set of targets and weights that are expected to increase the joint value to parties with diverse preferences (signals).

We contribute to the literature in the following ways:

- We provide an analytical method for the joint selection of BSC targets and weights facilitating consensus building among the parties.
- Our approach is new to the BSC literature in the sense that it departs from self-interested behavior to cooperative behavior.
- Our method encourages greater participation through joint decision making and an environment that facilitates information sharing, thereby reducing information asymmetry and increasing perceived equity (fairness) in the BSC process.

The paper consists of six sections. Section 2 provides the motivation; Section 3 reviews the relevant literature; Section 4 provides the mathematical programming models for the joint (two-party) BSC target and weight selection problem; Section 5 provides a numerical example, and the final section discusses managerial implications, limitations and future research.

## 2. Motivation

We use the following stylized example of an incomplete BSC to motivate the target and weight selection problem. Suppose the divisional manager (party A) and CEO (party B) disagree on the following two BSC performance measure targets and weights – operating income (OI) and (order delivery time (ODT)). In order to communicate their preferences and resolve their differences, assume they have jointly designed the following incomplete BSC template. Performance measure OI has four target levels ((in \$000) \$650, \$750, \$900, and \$1000) and performance measure ODT has three target levels (5 days, 2 days, and 1 day) that satisfy the BSC hypothesized causal relationships. Multiple target levels are possible since the causal relationships are not exact due to task uncertainty, task dependence, resource constraints. Multiple target levels allow for signaling preferences.

The CEO (party B) is biased towards financial measures. Given a total preference score of 100 he assigns 80 to performance measure OI and 20 to performance measure ODT. This is similar to a teacher giving differential weights on an exam with two questions. The performance measure OI has four levels.

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