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Management Accounting Research 16 (2005) 135–155

Management Accounting Research

www.elsevier.com/locate/mar

A multi-method approach to building causal performance maps from expert knowledge

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Received 31 December 2003; accepted 10 March 2005

Abstract

This paper describes a multi-method approach to building the foundations of a causal performance measurement model. Such models have received considerable attention in the management accounting literature in recent years. Conventional models, such as the balanced scorecard commence with the strategic understanding of top management which is then translated into operational measures at lower levels. In contrast, this study proposes methods of performance mapping that draw on the knowledge of experts who control core-operating tasks. Causal knowledge is elicited from individuals who through their experience and training have encoded relational or causal knowledge about complex systems; that is, they understand how things fit and work together, although they might not have articulated that knowledge. Because no single method for eliciting causal performance maps dominates the literature, the study triangulates three methods of deriving a map of causally linked key success factors (KSFs)—a computerized analysis, an ethnographic analysis and an interactive mapping by expert participants.

The study's primary contribution is the development and illustration of an approach to building performance models in management control settings where expert knowledge workers perform complex processes, the outcomes of which are difficult to quantify. The study's secondary contribution is the triangulation of multiple qualitative methods to enhance the validity of performance model development. This approach demonstrates (1) the use of cognitive mapping to extract tacit knowledge from employees in knowledge-intensive organizations; (2) the extensive array of performance-relevant variables that arises from such mapping, and (3) the potential to use the resulting causal performance map as a comprehensive, articulated basis for developing a performance measurement system.

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1044-5005/$ – see front matter
doi:10.1016/j.mar.2005.03.003

The approach used in this study for developing a causal performance map is adaptable to management control of other knowledge-intensive organizations.

Keywords: Causal maps; Knowledge workers; Qualitative method; Performance measurement

1. Introduction

Performance measurement systems are an integral part of an organization's management control system (Hemmer, 1998; Otley and Fakiolas, 2000). Kaplan and Norton (1996) were among the first to articulate the link between performance measurement and the firm's production function. The distinguishing characteristic of the balanced scorecard (BSC) is that it represents a model of performance. It articulates the links between leading inputs (human and physical), processes, and lagging outcomes and focuses on the importance of managing these components to achieve the organization's strategic priorities. Others also have described similar models in the management accounting literature (Otley, 1999; Epstein et al., 2000; Ittner and Larcker, 2001). A key assumption in these performance measurement models is that the production process is known and can be modeled. It is also assumed that an organization's strategy can be articulated and communicated unambiguously throughout the organization. While research has examined implementations of BSCs (Malina and Selto, 2001; Kasurinen, 2002) and assessed the causal links between leading and lagging indicators (Rucci et al., 1998; Malina and Selto, 2004) it is silent on how key success factors (KSFs) and the relations among them are articulated.

The performance measurement models reported in practice appear to be the result of (a) top-down imposition of desired KSFs and interrelations (e.g., Malina and Selto, 2001), (b) interviews of top or divisional managers (e.g., Ambrosini and Bowman, 2002), and (c) data-mining of existing archival sources (e.g., Porac et al., 2002; Rucci et al., 1998). Clearly, all are feasible methods to gather performance-relevant data, but all are somewhat flawed. Building a performance measurement model based solely on data currently available might create gaps in KSFs. Data mining relies on conveniently available data that might be unrelated to actual drivers of system performance or what should be but has not been measured. Top-down models might not reflect know-how, routines, and capabilities that really drive performance (e.g., Huff and Jenkins, 2002). Top management might understand the organization's intended strategy and policies but might be ignorant of or unwilling to discuss actual observed system behavior (e.g., Morecroft and Sterman, 1994; Forrester, 1994). An alternative approach is to build a performance model independent of current performance measurement practice, consisting of KSFs and their relationships with valued organizational outcomes. This method provides a more complete foundation for performance measurement by identifying all KSFs, some of which may not be currently captured by performance measurement protocols. Once KSFs are determined, then currently available performance measures can be compared with the identified KSFs. However, the question of how to identify the KSFs and the relations among them remains unclear.

This paper describes a multi-method approach for the derivation of a performance model consisting of KSFs and their interrelations. We use this approach in a knowledge-based organization. In such organizations performance measurement problems can be particularly acute. Management control of