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Management Accounting Research 16 (2005) 293–320

Management Accounting Research

www.elsevier.com/locate/mar

The interplay of different levers of control: A case study of introducing a new performance measurement system

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Received 13 April 2005; accepted 21 June 2005

Abstract

In this paper, different notions of control are investigated in the context of a longitudinal field study dealing with the introduction and use of a new performance measurement system at one case company. The control framework of Simons [Simons, R., 1995a. Control in an age of empowerment. Harvard Bus. Rev., 67(2), 80–88; Simons, R., 1995b. Levers of Control: How Managers Use Innovative Control Systems to Drive Strategic Renewal. Harvard Business School Press] is used as a theoretical frame of reference. In earlier studies, differences between diagnostic control and interactive control have been frequently addressed [e.g. Abernethy, M.A., Brownell, P., 1999. The role of budgets in organizations facing strategic change: an exploratory study. Account. Organ. Soc., 24, 189–204; Bisbe, J., Otley, D., 2004. The effects of the interactive use of management control systems on product innovation. Account. Organ. Soc., 29, 709–737; Vaivio, J., 2004. Mobilizing local knowledge with 'provocative' non-financial measures. Eur. Account. Rev., 13, 39–71]. In our paper, it is shown that strategic performance measurement systems can be used both diagnostically and interactively, but such systems have implications for beliefs control and boundary control as well. Interactive use of performance measures is apt to improve the quality of strategic management and to increase commitment to strategic targets. On the other hand, interactive discussion of specific performance metrics increases the visibility of actions which may initiate resistance. In addition, interactive use of performance measures may be costly in terms of time consumption both when collecting the data and when discussing the results. Two major differences were found in the actual use of strategic performance measures when compared to the normative literature. First, in contrast to ascertaining certain cause-and-effect relationships before implementing new measures, it was perceived that the measures themselves would be used over time to confirm or reject alleged relationships. Second, no tight connections between the new measurement system and managerial bonuses were

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1044-5005/$ – see front matter
doi:10.1016/j.mar.2005.06.003

made. This was mostly due to the development process, during which the top managers themselves developed the measures to reflect their belief about the best way of achieving the ultimate financial targets.

Keywords: Strategic control systems; Performance measurement; Balanced scorecard

1. Introduction

Discussion of strategy, management accounting systems and their relationship has intensified after the introduction of strategic performance measurement systems like the Balanced Scorecard (Kaplan and Norton, 1992, 1993, 1996a, 1996b) and Performance Pyramid (Cross and Lynch, 1989; McNair et al., 1990; Lynch and Cross, 1991). But even though these well-promoted strategic control systems have rapidly diffused to several (big) companies (Ittner and Larcker, 1998; Malmi, 2001), there are numerous hints of potential problems and challenges. A number of case studies have pointed out the persistence of management accounting systems (e.g. Granlund, 1998, 2001; Burns, 1996; cf. Burns and Scapens, 2000). It might not be that easy to engage in using a new performance measurement model, since several controllable or uncontrollable factors can act as barriers to full implementation of such systems (Kasurinen, 1999, 2002). In addition, Ittner and Larcker (1997) have suggested that the benefits from new performance measurement systems could be outweighed by increased bureaucracy. Implementation of complex measurement systems is costly and evidence on economic benefits of these systems is thus far limited. Detailed approaches to strategic performance measurement systems could induce inflexibility into strategic thinking (see Mintzberg, 1987; Hamel, 2000).

According to the normative literature, the construction of strategic performance measurement systems starts from the (vision and) strategy of the organization in question (Kaplan and Norton, 1993). But even the objectives behind the strategy are far from clear-cut. Different coalitions or stakeholder groups may dominate in goal setting (Ezzamel and Hart, 1987). The ultimate objectives of a company can be associated with, for example, creating shareholder value (Rappaport, 1998) but has also been argued that a company should satisfy the needs of all relevant stakeholders (Emmanuel et al., 1990). The Balanced Scorecard, for instance, has been perceived both as a tool for creating shareholder value (Kaplan and Norton, 1996a) and as a stakeholder model (Otley, 1999; Ax and Bjornenak, 2000). In addition, the objectives of the performance measurement system itself can be unclear. Contradictory views of control purposes may lead to a rejection of a proposed new strategic control system (Kasurinen, 1999).

The Balanced Scorecard is typically presented as a tool for introducing a new strategy to a business unit, and hence, it is logical that the Balanced Scorecard should be constructed in accordance with the new strategy. It has also been claimed that one major benefit from the Balanced Scorecard stems from the construction phase as it indeed helps in specifying the strategy (e.g. Kaplan and Norton, 1996a; Epstein and Manzoni, 1997; Tuomela, 2000). While it is important to explicate strategy-based assumptions of means-end relationships, mapping such chains of events is by no means simple (Otley, 1999; Norreklit, 2000, 2003; Wenisch, 2004). As a matter of fact, recent research suggests that a seemingly clear and uniform strategy can turn out to be much more complicated during the development of a new performance measurement system and consequently undermine the entire project (Kasurinen, 1999). Since it is likely that a realized strategy is a combination of both intended and emergent ingredients (Mintzberg, 1978), capturing the essence of strategy to a performance measurement system is quite a challenge (cf. Lipe and Salterio, 2002).

Given the fuzziness of goals and problems with defining and implementing a successful strategy, one might claim that strategic performance management has more to do with randomness and retrospective sense-making than with rational decision making. Based on the work of March (1971) and March and Olsen (1976), Cooper et al. (1981) use the garbage-can metaphor and the concept of "technology of foolishness" to illustrate the potential and actual role of accounting systems in, what they call, organized anarchies. The garbage-can view postulates that organizational action and decision-making is a mixture of problems, solutions, participants and choice opportunities that come together, often by chance. Decisions are often based on imitation and coercion. The goals may be unclear when making decisions and they are uncovered only after ex post rationalization. Instead of consistency, technology of foolishness prefers creativity and playfulness in the decision-making process (Cooper et al., 1981).

But even if one adopts a more traditional or rational stance, a multitude of challenges are encountered. Several authors have, for instance, suggested that strategic performance measurement systems should be altered if the strategy is changed (e.g. Eccles, 1991; Sellenheim, 1991; Grady, 1991). Giving credit to the continuously changing environment and emergent strategies, it is likely that strategic performance measurement systems should be refined quite often (Otley, 1999). This is, however, problematic from the measurement continuity point of view, and it also raises questions like how and when should strategic performance measurement systems be changed. Lack of proper mechanisms for improving and updating the measurement system is one potential problem with regard to strategic performance measurement systems (Anthony and Govindarajan, 1998; see also Kasurinen, 1999).

Even if the goals and strategies can be agreed upon, defining the measures, setting appropriate targets and altering reward systems can be problematic. The use of non-financial measures poses special challenges. Non-existent or short measurement tradition reduces confidence in non-financial measures. Lacking knowledge of appropriate performance levels may lead to too low or high performance targets with decreased motivation (Vaivio, 1995). It may also be difficult to estimate the tradeoffs between non-financial measures (Anthony and Govindarajan, 1998; Otley, 1999; Fisher, 1992).

While strategic performance measurement systems tend to balance financial and non-financial measures, the idea is typically that non-financial measures are leading indicators of financial performance (Kaplan and Norton, 1996a). The problem is that it is difficult to explicate the impact of particular non-financial measures to financial results (Anthony and Govindarajan, 1998). In the short term, it might be that results from financial and non-financial measures contradict (Fisher, 1992; Ittner and Larcker, 1998). While lack of measurement history and poor understanding of tradeoffs make it difficult to set targets for non-financial measures and to change incentive systems, it has been claimed that measuring non-financial parameters is meaningless if rewards are not attributed to them (Eccles, 1991). But in addition to difficulties in determining challenging target levels, it should be acknowledged that non-financial measures are not free from gaming possibilities either[1] (Fisher, 1992).

2. The objectives of the study

Despite widespread practitioner interest, especially in the Balanced Scorecard, only a limited number of academic studies on the implementation and consequences of using this concept has been published

[1] Gaming with regard to financial management, e.g. budgeting and capital budgeting, has been thoroughly documented in earlier case studies (see e.g. Lukka, 1988; Lumijärvi, 1990).

(Ittner and Larcker, 1998; Wenisch, 2004; for a summary of conducted empirical research see Chenhall, 2003; Luft and Shields, 2003). The "evidence" in books and articles is typically anecdotal and references to research are seldom made. In other words, critical analysis of the Balanced Scorecard and other similar constructs is, for the time being, rather limited. One explanation for the current situation could stem from the fact that the novelty and short history of these constructions has not made "strong market tests" (Kasanen et al., 1993) possible, i.e. to test with large samples whether companies using the Balanced Scorecard achieve better performance than non-users.

Foster and Gupta (1997) emphasize the need for additional evidence on the linkages (and their timing) between non-financial and financial performance measures within the Balanced Scorecards. Otley, (1999, p. 377) points out several deficiencies in our current knowledge:

> "The balanced scorecard literature also indicates that it [is] as much the process of establishing a scorecard that yields benefit as the resultant measurement schema. However, the literature is remarkably silent on this point. Procedures for mapping means-end relationships are not explicated. In addition and surprisingly, target-setting is not mentioned despite its central role; the links with regard to reward structures are neglected; and the establishment of information systems and feedback loops are taken for granted. All of these neglected areas provide opportunities for further research."

Several field studies imply that in examining the relationship between strategy and management accounting systems it might be more relevant to investigate *how* management accounting systems are used rather than whether these systems *are* used. Archer and Otley (1991) describe how managerial meetings and frequent informal discussions are used to balance formal accounting control systems (cf. Chenhall and Morris, 1995). Every firm adopts a mix of formal and informal controls that are highly interdependent. The whole system should be perceived rather than merely looking at accounting controls. Based on his case findings, Simons (1987a, 1987b, 1990, 1991, 1994, 1995a, 1995b) posits a new framework with four levers of strategic control: beliefs systems, boundary systems, interactive control systems and diagnostic control systems. Abernethy and Brownell (1999) have provided preliminary evidence that interactive use of budgets is effective during strategic change. Vaivio (2004) argues that interactive use of non-financial measures can lead to discovering tacit knowledge and making it explicit.

In this paper, the role of performance measurement systems is considered in relation to Simons's (1995a, 1995b) strategic control framework. While previous literature, either explicitly or implicitly, has typically assumed the use of performance measures in a diagnostic manner, the main objective of this study is to elaborate the design and use of performance measures for *interactive* control and the consequences of using strategic performance measurement systems in this particular manner. In addition, the connections between performance measures and the other two levers of control, beliefs systems and boundary systems, will be highlighted. In line with suggestions of Dent (1990), Langfield-Smith (1997) and Otley (1999) a longitudinal case study, covering a period of 4 years in the field, was carried out in order to understand the complex nature of interaction between management control systems and strategy.

In addition to Simons's "theory" of strategic control, Otley's (1999) classification will be used to categorize the case findings. In this framework, five aspects of management control systems are addressed in order to achieve a comprehensive view (see also Otley, 1994; Fitzgerald and Moon, 1996). First, it is necessary to take a look at the *goals* of the organization. Second, the *strategies and plans* for achieving the objectives need to be addressed. How to assess and measure performance of those activities that are carried out in order to implement strategies and action plans, is also an important aspect. Third, the determination of appropriate *target levels* is an issue of specific concern. Fourth, what kind of *remuneration*

systems should be established is an important question when considering management control systems. Establishing sufficient *feedback and feed-forward loops* is the final element of performance management systems. Otley's framework is not prescriptive, but it provides a structure for examining extant practice in a holistic manner (Otley, 1999).

The rest of the paper is organized as follows. First, the role of performance measurement with regard to Simons's (1995a, 1995b) typology of strategic control is examined. Differences in the potential of financial and non-financial measures are conceptually analyzed and the most essential features of interactive control will be briefly discussed. We then proceed to the description and results from a 4-year long case study. It is argued that using performance measurement systems interactively has several previously omitted implications for the design and use of these systems. The paper ends with a summary of the major conclusions.

3. The role of performance measurement in strategic control

Traditional top-down view of strategy implies that strategic control essentially means ensuring that the behavior of people is consistent with the predetermined strategy (cf. Merchant, 1985). The acknowledgement of gradually evolving strategies leads, however, to a more complex view. Both the intended strategies preset by managers and unintentionally, incrementally emerging strategies (Mintzberg, 1978) should be controlled. Simons (1995a, 1995b) has developed a framework for strategic control that addresses multiple definitions of strategy and the intended and emergent aspects of strategy development. This framework has been used by subsequent researchers in the context of performance measurement (e.g. Kasurinen, 1998; Puolamäki, 2004) and its particular focus on *strategic* control is important for the purposes of this study. Simons defines management control systems as follows:

> "[M]anagement control systems are the formal, information-based routines and procedures managers use to maintain or alter patterns in organizational activities." (Simons, 1995b, p. 5)

His framework is based on four levers of control: beliefs systems, boundary systems, diagnostic control systems, and interactive control systems. These four control levers are nested as they are working simultaneously even though for different purposes. A core idea in this strategic control framework is that it balances needs for innovation and constraints. *Beliefs systems* are used to enhance core values related to business strategy and to inspire search for new opportunities in line with these values. *Boundary systems* reduce risks by setting limits to strategically undesirable behaviors. Through *diagnostic control systems* critical success factors are communicated and monitored. Finally, *interactive control systems* are used to discuss strategic uncertainties and to learn novel strategic responses to a changing environment. While beliefs systems and interactive control systems are used to encourage innovative behavior, boundary systems and diagnostic control systems are used to ascertain that people behave according to pre-established rules and plans (Simons, 1995a, 1995b).

As one basic premise of diagnostic controls is that the outputs of a process are measurable (Simons, 1995b), performance measurement falls naturally to the category of diagnostic control systems. *Performance measurement systems* are collections of financial and/or non-financial performance indicators that managers use to evaluate their own or their unit's performance or the performance of their subordinates.[2]

[2] While these systems are diagnostic in their basic nature, they do not represent the only mode of diagnostic control. Project monitoring and human resource plans, for instance, can also be used diagnostically (Simons, 1995b, p. 61). These diagnostic

Information derived from performance measurement systems can also be used for resource allocation, coordination, business evaluation, and early warning identification (Simons, 1995b). In *strategic* performance measurement systems, performance indicators describe either the critical success factors with regard to strategy implementation or to the outcomes that the strategy is expected to yield.[3]

In the performance measurement literature, the debate has been about whether performance measurement systems are diagnostic or interactive control systems (Kaplan and Norton, 1996a, 2001; cf. Simons, 1999). While it is nowadays widely acknowledged that strategic performance measurement systems can be used either diagnostically or interactively, it is suggested here that *performance measurement systems are connected to all the four levers of strategic control*. In other words, it is possible to use performance measurement systems to support control through beliefs systems and boundary systems in addition to diagnostic or interactive use (cf. Kasurinen, 1998). Performance measures are an effective means for communicating on which dimensions performance is desired and also in drawing the line of acceptable behavior (Merchant, 1985). When introducing strategic change, accounting controls have been shown to be capable of providing the required changes in attitudes and behavior[4] (Knight and Willmott, 1993; see also Dent, 1991). The impact of performance measurement on strategy and on the four levers of control is illustrated in Fig. 1.

The relationship between strategic performance measurement systems and different levers of strategic control is dynamic and often reciprocal. Performance measurement systems can be used diagnostically, like traffic lights, in order to signal success in the most critical factors of the intended strategy (Simons, 1995b). Critical success factors may relate to strategic boundaries and beliefs within the organization and these can serve as one basis for measurement needs. Most importantly, selected performance measures strengthen (weaken) the establishment of beliefs and strategic boundaries when the measures are set in line (contradiction) with the intended strategy. When performance measures are used interactively, they are likely to have similar reciprocal relationships with other levers of control. The distinguishing advantage of interactive control is its support for double-loop learning. In other words, interactively used strategic performance measurement systems can assist in identifying emerging strategies and they can lead to the reformation of the existing modes of control (Kaplan and Norton, 2000, 2001; cf. Dent, 1991). At the same time as strategy is altered, the existence of prevailing beliefs and boundaries are also questioned. Interactive debate that stems from strategic performance measurement reports could, in fact, reshape the strategy, and hence, also induce change in *all* the four levers of strategic control.

4. Financial versus non-financial measures of performance in strategic control

Financial performance measures have traditionally been used to control managers, and budgets are the most widely used form of diagnostic controls (Horngren et al., 1997). Accounting-based

control systems involve performance measurement in broad terms (e.g. keeping time schedules in projects), but they are not the "performance measurement systems" that are referred to here.

[3] Kaplan and Norton (1996) use the terms of 'leading' and 'lagging indicators' and Fitzgerald et al. (1991) talk about 'determinants' and 'results'.

[4] There is, however, also evidence that accounting controls could actually impede strategic change (e.g. Archer and Otley, 1991).

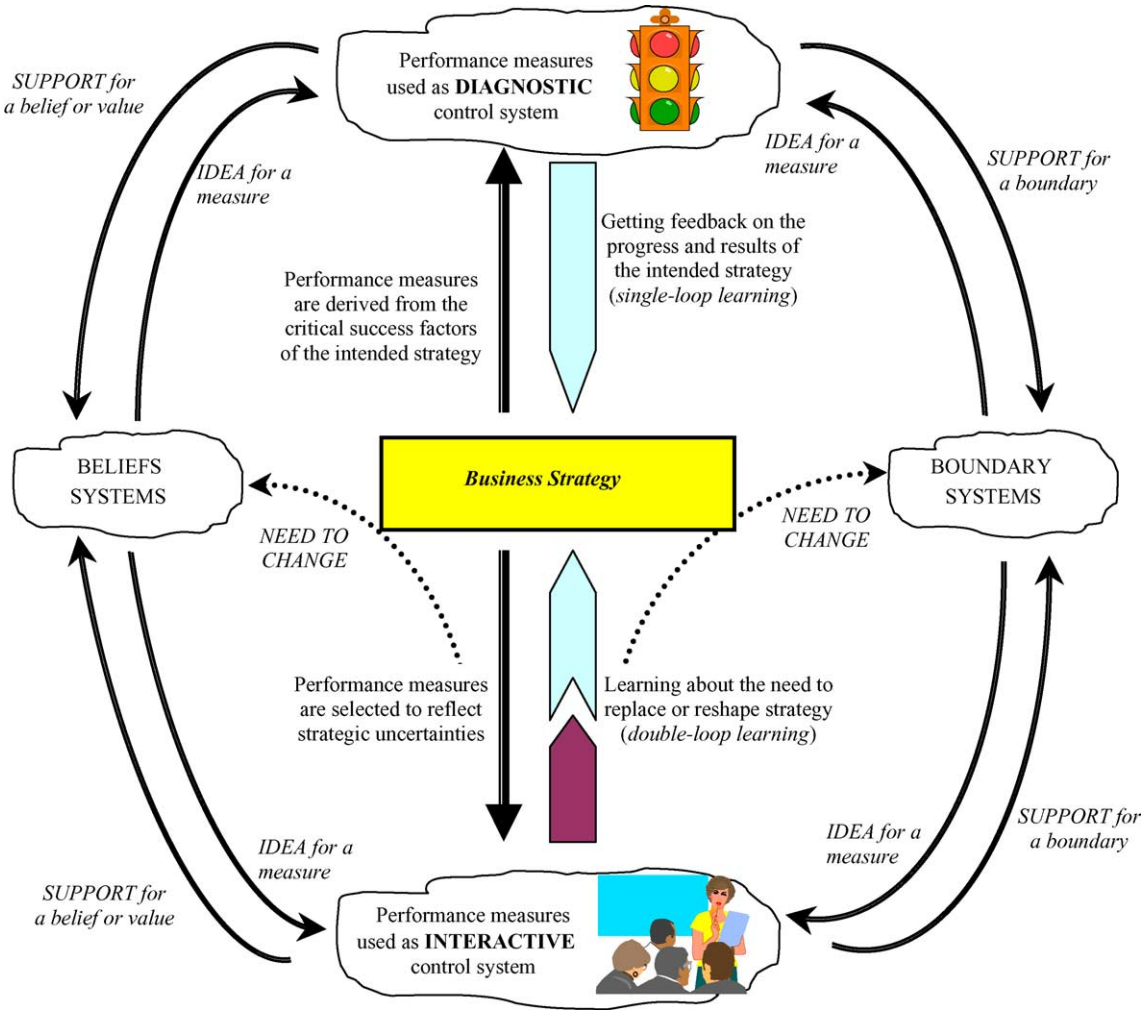


Fig. 1. The role of performance measurement systems in the control of business strategy.

performance measures are predominant because they are relatively objective, reliable and verifiable (Ijiri, 1975). It is quite natural to measure performance in financial terms as strategy typically aims at financial success. The cost of implementing financial indicators is low, because they (or their raw data) are produced for external reporting purposes anyway. Financial controls are rather unobtrusive allowing a significant amount of autonomy and stimulating creative thinking (Merchant, 1985).

But the shortcomings of financial performance measures are also well documented. Merchant (1985, pp. 93–102) lists myopia, excessive risk aversion, and gamesmanship as potential problems with the use of financial performance measures (see also Simons, 1995b). Johnson and Kaplan (1987) argue that the management accounting information that derives from financial accounting systems cannot provide basis for sound decision making, since it is too late, too aggregated, and too distorted. As a result, excellent

Table 1
The role of financial and non-financial measures from the perspective of different strategic control levers

Financial measures	Non-financial measures
Diagnostic control	
To control that the selected strategy leads to the achievement of financial goals	To control that performance in critical success factors of strategy is acceptable
Interactive control	
To capture the whole breadth of uncertainties	To pinpoint problems with specific uncertainties
Beliefs systems	
To strengthen financial values related to shareholders' interest	To strengthen multiple values (related to customers, employees, society etc.)
Boundary systems	
To address financial risks	To emphasize strategic boundaries

financial results in the short term can be achieved through means that are detrimental in the long term (Kaplan and Norton, 1996a, p. 23). While many of these problems can be alleviated, financial measures will remain historical and internally oriented (Johnson, 1992) giving no indications on how the critical success factors of strategy are developing (Kaplan and Norton, 1993).

Merchant (1985) proposes the use of non-financial measures as one possibility to avoid the shortcomings of financial controls (cf. Kaplan, 1984). While discussion around non-financial measures has become prevalent in the past decade or so, the use of non-financial measures is not a recent idea. Unofficial summary reports of non-financial measures have been used by operational people to supplement accounting information for several decades (see e.g. Simon et al., 1954, 34–35; Hopwood, 1973, 123–136). The first official report on non-financial measures by the accounting profession was prepared almost three decades ago (AAA, 1971). Furthermore, in France, the *Tableau de Bord* has a history of decades (Chiapello and Lebas, 1996; Lebas, 1996).

Even though recent commentaries have emphasized the pros of non-financial measures and the cons of financial measures, both types of performance measures have advantages and disadvantages (Kaplan and Norton, 1996a). As performance measures are intertwined with all the four levers of strategic control, it is possible to compare financial and non-financial measures in terms of their usability and role with regard to the overall control system.

Table 1 summarizes the potential of financial and non-financial performance measures with regard to different levers of strategic control. Financial measures are used to assess whether the intended strategy leads to the attainment of financial goals. In uncertain environments financial measures are well suited for interactive use to stimulate discussion about different strategic uncertainties and how to deal with them. Financial measures can be used to enhance the momentum for shareholder value and to strengthen strategic boundaries that have been set with regard to financial risks. Non-financial performance measures make it possible to follow progress in key strategic success factors. Interactive analysis and discussion of the most critical success factors in management meetings could be enhanced with this information. In addition, non-financial measures can be used to support core values and to accentuate the strategic boundaries. While financial measures address the importance to create value for owners and to avoid excessive financial risks, non-financial measures could be used to emphasize a wide range of values and to strengthen different kinds of strategic boundaries.

5. Interactive use of performance measures

According to Simons (1995a, 1995b), there are several particularities with regard to diagnostic control systems. One specific characteristic of interactive control is that top management is heavily involved in using this control system. But interactive control systems are not exclusively used by higher level managers. A second important feature of interactive control is that these systems are used throughout the organization. Third, interactive control systems are used to promote and provoke discussion and the emphasis is on learning. Fourth, interactive systems deal with strategic uncertainties that may initiate the need for strategic change. In principle, almost any control system can be used interactively but in normal circumstances only one system can serve as an interactive control system at one point of time.

Even though Simons (1995a, 1995b) seems to have adopted a rather conventional conception of rationality, it would appear that the notion of interactive control is rather well aligned with more relaxed views of rationality. The idea of interactive control has been quite explicit when the "theory of learning" has been discussed in the accounting context (Argyris, 1990; Jönsson, 1996). With respect to the roles of accounting, the interactive use of accounting systems can be considered especially useful when accounting is used as an idea or a learning machine (Burchell et al., 1980). Moreover, it is possible to see certain similarities with interactive control and the garbage-can model or managing the organized anarchy (see Cooper et al., 1981).

Argyris (1990, 1991; see also Argyris and Schön, 1978) argues that accounting systems should be used in a manner that promotes learning in order to overcome the adoption of defensive routines. He claims that bypassing potential or actual embarrassment and threat, and covering it up, can be avoided while acknowledging the intrinsic motivation of human beings and implementing accounting controls in congruence with this view. In line with this, interactive control emphasizes learning rather than control.

Jönsson (1996) provides a rich description of how experiential learning in conjunction with local planning and problem solving is implicated in using accounting for improvement. Jönsson shows how control through words and dialogue can assist organizational actors to determine what conditions are "true" and valid. In a similar vein, Vaivio (2004) highlights the focus potential of non-financial measures and argues that their use interactively provokes discussions that may consequently lead to more effective knowledge management by making tacit knowledge more explicit and manageable.

6. Using a strategic performance measurement system at *FinABB*

The findings in this paper are premised on research co-operation between the researcher and representatives of the case organization from March 1996 to December 2000 (see Appendix A). The case company, "*FinABB*", was a subsidiary of ABB Finland at the time of the study and the researcher was an active – intervening – participant in the "measurement team"[5] that developed a new strategic control

[5] The measurement first comprised of all three divisional managers. Each division had two profit centers within it. One of these managers was also the Manager for Domestic Sales. One of the divisional managers was appointed to be the CEO of *FinABB* later in 1999, but he also continued to manage his division. The financial manager and two business controllers were asked to join the team, as they had special expertise in reporting and financial issues. The researcher acted as an informal chairman in the first couple of meetings. Later in the process, the role of the informal chairman was shifted to one of the divisional managers, as it was necessary to have an internal champion for the project. Since then the task of the researcher was to be an active participant and a secretary of the team.

tool. This performance measurement system, called the *3K Scorecard*[6] (see Appendix B), was adopted at the case firm from the beginning of 1999. After the implementation phase, the measurement team continued meeting to discuss the implications of the *3K Scorecard* measures and potential development needs for almost 2 years. Interviews, and especially participant observations, were used to understand and analyze different modes and implications of using this new strategic performance measurement system.

The measurement team was established by the management group of *FinABB* in August 1998, after the researcher had proposed the implementation of a customer-oriented performance measurement system. The original aim was to deploy a new performance measurement system as a means to communicate customer focus and enhance strategic control at the case organization. This selected emphasis was due to the fact that Customer Focus had been a major objective at ABB throughout the 1990s:

> "ABB launched Customer Focus in 1990 as a guiding principle to the way we do business. It is an attitude about everything we do that prompts us to constantly ask ourselves, "How can I add value for the customer?" . . .. Our commitment to Customer Focus has been reinforced by the measurable impacts it has had on employee morale and the bottom line. Workers and managers are taking greater responsibility for ABB's business success and, in the process, developing new ways of working that tap much more of their creative and problem-solving talents. In some cases, Customer Focus has also contributed directly to higher market share and higher revenues. Savings have also been significant in lower costs for inventory, repair and rework, floor space, and material, as well as much higher labor productivity. ABB intends to keep its customers competitive, taking advantage along the way of the rapidly changing global business environment to find opportunities for further growth."[7]

Customer perspective had also been selected to perform a key role in the Balanced Scorecard of Swedish ABB[8] (see Ewing, 1995; Ewing and Lundahl, 1996a, 1996b). It was, however, possible to recognize a shift on the emphasis of different goals, perhaps even a cultural change, at the time of the study. While customer focus had been promoted for several years, shareholder value was increasingly accentuated by the ABB Group. In other words, the need for profitable growth was more heavily emphasized by top management. This change was perhaps most bluntly uttered by the Domestic Sales Manager:

> "We are not here to make satisfied customers. It's the money that matters." (Manager for Domestic Sales in a measurement team meeting, 22.9.1998)

This change of goals (or at least altered priority communication) also affected the process of developing performance measures: customer focus was to be balanced with more emphasis on the owners' perspective.

The measurement team started its work by discussing the strategy of the firm. While the researcher brought forward various theoretical and managerial constructions of strategy, the main foundation for strategic considerations came from the company's official strategy documents. The official strategy documents had been written down by the CEO. In these documents, certain rather general propositions with

[6] The three K's stand for Finnish words Kehitys (development or improvement), Kasvu (growth), and Kannattavuus (profitability).

[7] http://www.abb.com/abbgroup/app5.htm, 14.10.1996.

[8] The Swedish development projects at ABB were completely unrelated to this research project except that these published studies were use as a background material (no internal ABB material was available).

regard to core competencies and process-based organization were made but the emphasis was mainly on financial and other targets rather than on the strategy itself. It was surprising that the customer point of view was almost negligent. Moreover, because of a strong results orientation, strategy documents gave only limited guidance on the means to achieve the ends, i.e. actual strategy. So the first task of the measurement team was defining a more specific strategy of *FinABB*.

The strategy of *FinABB* was not so easy to spell out. In the interviews, characteristics of a differentiation strategy were evident:

> "It is obvious that ABB will never be the supplier with lowest prices. It is not a successful concept and it is not sensible. We are actually suppliers in the middle or upper class [in the market] with regard to prices." (Profit Center Manager "A" in an interview, 23.10.1996)

> "[As] we benchmark ourselves with our competitors in a national study . . . we find that the offering improves our ranking, quality yes, reliability yes, delivery accuracy yes . . . but especially the price level affects negatively to our total rank. But I think this is the way it should be that we are leaders of quality and price in the market place. If we would also have the lowest prices in the market it would look very odd . . .."

> If our operations are effective and we satisfy the needs of our customers, then we have a possibility to get a better price. [Willingness to pay price premiums] reflects also customer satisfaction." (Manager for Domestic Sales in an interview, 23.10.1996)

The official strategy documents, however, gave more emphasis to the outcomes of the strategy than the strategy itself. General notions of organizational learning and a process-based organization were intertwined with the aims of achieving profitable growth. Customers and a clear idea of how the strategic objectives would be achieved seemed to be lacking.

A uniform basis for creating a strategic framework for performance measurement started finally to evolve from the discussions amongst the measurement team. In this regard, the earliest measurement team meetings played a critical role in giving the strategy a more specific content and to make it possible to hypothesize and describe assumptions behind the strategy. In a way, the development and use of the *3K Scorecard* can be perceived as a continuous learning process that started well before the implementation phase. Managers' learning from strategy can be regarded as one the most important consequences of the *3K Scorecard*:

> "We are learning about developing competencies, providing deliveries correctly already in the first time, [etc.]. Let's say the foreign language skills, for example, we are starting to identify and taste what this kind of measurement means and what are its implications . . .. It is important that we have these measures. We are so good at bluffing ourselves. (Divisional Manager "C" in a measurement team meeting, 11.4.2000)

Within the selected pool of measures two specific cause-and-effect relationships were assumed. First, it was reasoned that the increase in the number of employee initiatives and the improvement in time-to-market estimations for new products would lead to increased sales from new products. Second, it was believed that suppliers' delivery reliability was a key determinant of the delivery reliability of *FinABB*. In turn, improved delivery reliability was assumed to lead to higher customer satisfaction that would filter through to increased orders received per person and higher sales from key customers. These two results of improved delivery reliability and customer satisfaction were then expected to be major determinants of

residual income and growth in the number of orders received. Such alleged cause-and-effect relationships were considered to be an especially important feature of the *3K Scorecard*:

> "I think that especially the cause-and-effect links are of special importance. They make the system very different from the previous measurement system." (Financial Manager in a measurement team meeting, 16.2.2000)

One crucial institution in facilitating learning was the measurement team. While the original purpose of the team was only to construct the new measurement system, this team still met regularly throughout 1999 and early 2000. In these meetings, the results of the measures and their implications, as well as issues related to different aspects of implementation and the future development of the *3K Scorecard*, were in focus. As such, the measurement team meetings served an important purpose by providing a discussion forum for considering the connections and relevance of different measures from the point of view of strategy. In the beginning of 2000, it was also perceived by the measurement team members that new kinds of information would be needed to further improve the control of strategic uncertainties. The measurement team decided to start developing a coherent system for anticipating changes in the market place (i.e. early warnings system). The ultimate aim of this new development exercise was to construct a collection of market indicators that would capture significant changes in the national and international economy, as well as in particular market segments.

One important milestone in the use of the *3K Scorecard* occurred in February 2000, when the profit centers submitted their first full-year reports along with written commentaries for the overall results of 1999. Action plans for the year 2000 were also presented. These reports and presentations were then discussed within the measurement team. With regard to the perspective of core competence development, a typical finding was that performance appraisal discussions and individual education plans had not been implemented as targeted. Better planning, higher commitment, and a more strict approach were presented as a means to improve these measures. Measures in the internal effectiveness perspective revealed poor performance, especially in the suppliers' delivery performance. In the case of delivery speed and cycle time, it turned out that there were different views on their relevance, appropriate target levels, and the means of improvement. Customer satisfaction measures pointed out shortcomings in providing on-time deliveries. Several action plans were presented to solve the problems. The final outcomes of strategy, profitability and growth were tightly connected to each other. Falling short in growth targets also meant that profitability was not totally satisfactory from the point of view of *FinABB* management. Better-targeted marketing and sales activities, with specific action plans, were offered to the year 2000. In sum, the *3K Scorecard* provided a useful basis not only for evaluating strategic progress but also for taking concrete action.

Monthly *FinABB* management group meetings were used to study the results of the *3K Scorecard* measures and their implications within a larger group of *FinABB* managers and employee representatives. As the reports of the *3K Scorecard* measures were distributed to all profit center managers, the *3K Scorecard* provided a means for continuous strategic discourse also within the management groups of these business units. While the agendas of measurement team meetings also included discussion about the fundamentals of the scorecard, emphasis within the management groups was on the results and their implications.

When the *3K Scorecard* reports were discussed within management groups, the role of business controllers was very critical, both at the *FinABB* and at the profit center level. This was due to the fact that business controllers were usually responsible for presenting the results of the *3K Scorecard*. With

33 measures in total it was not possible to go through all the measures in depth. Business controllers sometimes themselves decided what measures were looked at more thoroughly. The way in which the results were discussed at the profit center level typically differed according to the business controller in question. Some controllers liked to flip through all the measures and briefly highlight the main exceptions from target. One business controller, however, explained that she presented only a few measures in one meeting. Moreover, these measures normally varied month by month. And, in this way, she was able to emphasize particular problem areas, and analyze the development challenges in greater depth.

Delegating some definition tasks and reporting responsibilities to the middle management was considered to be a way of filtering the principles of strategy down through the organization. Measures of growth, for instance, forced profit center management teams to define their "key customers" and "new products". The measurement of the fulfillment of education plans accentuated the role of performance appraisal discussions and systematic planning of individual competence development.[9]

Within the profit centers, reporting responsibilities of certain measures or their raw data were delegated to business unit and functional managers. On the one hand, there was some resistance towards increased reporting. In other words, some managers tended to ignore the deadlines for providing the required information. But on the other hand, some functional managers started to use these measures in their own departmental meetings. Quality managers, for example, started to use specific measures to pinpoint problem areas. In addition, supplier delivery reliability measures were used to communicate problems to suppliers.

In general, *3K Scorecard* was assumed to possess important communicative power. Customer focus served as one guiding principle in the development, and customer-related measures were expected to support other actions aimed at establishing customer focus as a fundamental organizational value. In addition, taking the development of core competencies as a specific measurement dimension was considered to have an important communicative task – organizational learning and creative personnel play a crucial role in strategic success. This was also reflected in the selection and definition of certain measures. "Number of employee initiatives", for example, was adopted rather than "Percentage of useful initiatives" in order to enhance a positive atmosphere that could encourage creativity rather than stressing efficiency.

Communication of the *3K Scorecard* to the employees via TV monitors on the factory floor and Lotus Notes via the intranet was decided. Nevertheless, systematic deployment of the scorecard to the lowest levels of the organization, via integrating it to the team-level performance measurement, was still to be made. One explanation for limiting the use of the *3K Scorecard* primarily to the managerial levels was that learning from strategic interdependencies was only in its infancy. The management considered it important that a half-ready solution was not integrated in the performance measurement and compensation systems at the lower levels of the organization. It was important to avoid the impression of being "just another fad". This was also the reason for naming the construction as the *3K Scorecard* rather than a "Balanced Scorecard". As a result, it was regarded as being important to become convinced that the selected measures are the "right" ones and to understand what are the acceptable or good performance levels in relation to each new measure until entering into full implementation. But while the emphasis in using the *3K Scorecard* had been, thus far, on managerial learning about strategy, the future directions for development were clear:

[9] Competence development within the finance function of Finnish ABB companies has been studied by Tuomela and Partanen (2001, 2002) who found that performance appraisal discussions indeed play an important role in competence development.

> "Learning from the new measures is increasing all the time. Measuring the number of accepted ideas, for instance, has provided a shared understanding that a reasonable amount of new ideas and feasibility studies has to be on the "bookshelf" all the time. Overall, the phase of implementation is still in its infancy. In order to facilitate wider learning, it would first be important to make people understand the logic of the scorecard (cause-and-effect relationships) and the purpose of individual measures. The meaning of the measures could be turned into verbal communication through writings in the [personnel magazine] . . .. Another way of enhancing organizational learning is to take the measures to lower levels by connecting them to core processes [at the operational level]." (A memo of the measurement team meeting, 25.1.2000)

In the start-up phase, targets for the *3K Scorecard* measures were usually established from bottom-up. In other words, profit center managers set their own targets with the help of their business controllers. Some of the (profitability) measures were, however, identical to those followed up at the business area level of ABB. Targets for these measures had been agreed upon between business area management and *FinABB* top management. In respect of these measures, targets for profit centers were agreed in management meetings, when profit center managers were able to influence their target levels. But, in the end, the targets of individual profit centers had to consolidate in line with the company level targets. Setting targets for some non-financial measures was quite ambiguous since historical data was typically not available. This was not, however, seen as a major problem. Rather, it was considered more like an integral and important part of the learning process:

> "The aim is that the measures for core processes are defined and understanding is increased during the year 2000 and that better usage will be learned in the years 2001–2002." (A memo of the measurement team meeting, 25.1.2000)

Managerial bonus systems at *FinABB* were gradually changed to take into account non-financial measures and the implementation of particular actions, in addition to traditional financial performance measures. While managerial incentives were not connected to any overall index based on the *3K Scorecard*, but to some individual measures of the scorecard, it was noteworthy that the financial measures were balanced with non-financial measures. On the other hand, the choice not to completely rely on the *3K Scorecard* was also influenced by its infancy stage of development. As already mentioned, it was initially considered important to decipher first whether all measures are relevant and useful in relation to the achievement of strategic objectives, as well as the appropriate performance and target levels of the measures.

The measurement team covered all three divisional managers and the current CEO, and hence, were all committed to the *3K Scorecard* – even without explicit bonuses.[10] As non-financial measures of the *3K Scorecard* express their perceptions of the leading indicators of financial performance, there is an incentive to follow these measures up and take action as suggested by the results. At the operative level, the *3K Scorecard* was not yet connected to the team-level performance measures or to the compensation systems. Some specific measures (e.g. delivery reliability) were, however, already utilized as part of the compensation systems of several production teams.

The potential problem of an unclear mechanism to update measures in the scorecard was resolved by including the analysis of the *3K Scorecard* development needs to the formal annual control cycle

[10] The Manager for Domestic Sales is probably an exception in this respect as he has not been actively participating in the development work in the later phases of the process (see discussion below).

of *FinABB*. Consequently, any requirement to change the measures in the *3K Scorecard* are annually discussed in August or September after the business strategy has been updated.

Developing and using the *3K Scorecard* was not an outright success nor was it problem-free. Even though a specific purpose of the measurement system was to leverage managers' understanding of strategic issues, the practical impact was constrained because the measures were not systematically communicated and integrated to the performance measurement and reward systems at all organizational levels. In other words, the strategy was not enforced at the operative level.

There was also resistance against the *3K Scorecard*. Interestingly, the Manager for Domestic Sales was reluctant to engage in a more customer focused performance measurement system. There were several implications of this. First, while being a member of the measurement team, the Manager for Domestic Sales stopped attending the meetings of this group at an early stage. Second, when presenting the first-year *3K Scorecard* results of his division and making conclusions, the Manager for Domestic Sales mostly wanted to discuss the specifics of the measurement system rather than the results and future action plans. He concentrated on evaluating the measures and their (in)applicability to this particular division, while the other profit centers reported on their evaluations of the results and the means for improvement for the on-going year. Third, measures for marketing effectiveness remained undefined for the first 2 years. The Manager for Domestic Sales had principal responsibility for this area, but even the use of an external consultant did not lead to defining the marketing process in such a way that it would have been possible to assign measures for it.

Some resistance of the *3K Scorecard* was also reflected in the lower level managers' reluctance to report the required figures. Top managers of *FinABB* decided not to locate the reporting responsibility solely with the finance department, because they believed that by forcing managers to collect the data those managers would get familiar with the measures and learn to use and interpret them. Such an approach did, however, increase the tasks of busy managers. In addition, some managers' reluctance to do the reporting added to the workload of controllers who needed to constantly remind the managers to submit the information so that they could prepare *3K Scorecard* reports. Finally, the selected discussion-based style of reviewing the reports further added to the number (and length) of meetings.

7. Analysis of the case findings

In the case firm, the developed strategic performance measurement system was used both in a diagnostic and an interactive manner. In the firm-level management group meetings and in some profit center management meetings, all 33 measures were reported and reviewed – thus making it possible to detect notable variances from targets. This was performed in a rather straightforward manner without much discussion. Such a use indicates *diagnostic control*.

In the measurement team meetings, the focus was on making sense of strategy, measures and measurement results. The measurement team included the CEO,[11] all three divisional managers, the CFO, two business controllers and the researcher. In these meetings all top managers were involved in thorough discussions about strategic metrics, assumed cause-and-effect relationships and strategic uncertainties underlying these. In some profit center and functional meetings, certain measures of the *3K Scorecard*

[11] The first CEO was not a member of the measurement team, but as he was promoted to the global organization of ABB, one of the divisional managers was appointed to be the CEO in 1999.

Table 2
3K Scorecard's links to the four levers of controlling strategy

Diagnostic control
Thirty-three measures are reported monthly/quarterly/annually that makes it possible to detect notable variances from the goals
Interactive control
Making sense of the goals and strategy through dialogue
Discussing the results within the measurement team and management groups of *FinABB* and individual profit centers
Focus on particular measures at one point of time
Trying to capture alleged cause-and-effect relationships into the presentation form
Beliefs systems
Customer focus and the importance of competent personnel gets communicated through the customer satisfaction and core competence development perspectives
Boundary systems
Addressing "key" customers and "accepted" suppliers particularly gives a sense of certain boundaries of action

were also discussed. This represents a very *interactive use* of performance measures where the emphasis is on discussion and learning.

In addition to diagnostic and interactive control, the *3K Scorecard* also supported control *via beliefs systems*. In the current measurement system, core competencies and customer relationships are visible, and hence, respect for individuals and customers get accentuated. Finally, *boundary systems* are touched upon via those strategic constrains that get reflected in the selected measures. Addressing the role of selected suppliers and preferring key customers imply a strategic constrain to focus on particular partnerships. The links of the *3K Scorecard* to different levers of strategic control are highlighted in Table 2.

The main role of the *3K Scorecard* was to facilitate organizational dialogue amongst top managers through which strategic learning can emerge. In this sense, the use of the *3K Scorecard* as an interactive control system played a pivotal role in the case firm. The attitude towards *3K Scorecard* as a continuous learning process emphasizes the possibility of emergent strategies even though the measurement system was built to comply mainly with the intended strategy. In the following, the interactive use of performance measures will be considered from the perspectives of objectives, strategies and their measurement, information feedback loops, incentive and reward structures, and target setting. These aspects of performance management are typically crucial in relation to effective control (see Otley, 1999). In addition, certain challenges of interactive control will be discussed.

7.1. Objectives

Two types of objective are important here. First, the ultimate *goal of ABB and the case company* can be expressed in terms of profitable growth. Within the ABB Group there has been intensive top management training, including the CEO of our case company, on how to create shareholder value. The prominent objective of owners, profitable growth, served as a critical guideline when the *3K Scorecard* was constructed. In other words, the *3K Scorecard* was not used to promote the goals of all stakeholder groups on equal basis as has sometimes been suggested with the Balanced Scorecard (Ax and Bjornenak,

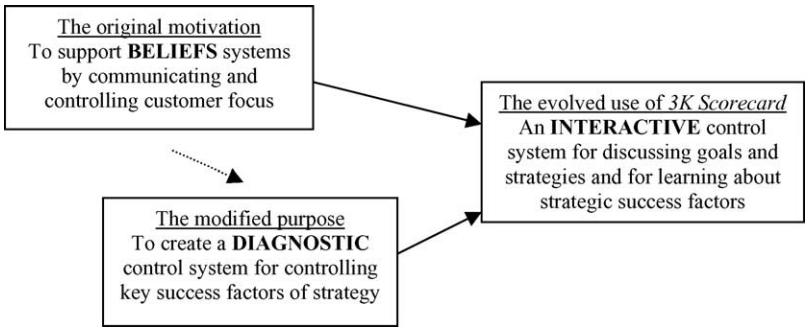


Fig. 2. The evolution of the main control form during the development of *3K Scorecard*.

2000; see also Otley, 1999). This is not to say that the role of stakeholders other than owners were ignored. On the contrary, the importance of the core competence development dimension in the *3K Scorecard* was considered to be paramount since it highlights the importance of personnel. Similarly, the introduction of a customer satisfaction dimension signals the high priority of customer needs. But ultimately the role of employees and customers is to create shareholder value – i.e. their needs are addressed most of all instrumentally (see Goodpaster, 1991; Ogden and Watson, 1999).

Second, in the very beginning of the development process, the main *objective of the new performance measurement system* seemed to relate to promoting customer focus. This view was based on the official "Customer Focus Agenda" and to the interviews made by the researcher. The degree of emphasis within the strategy and goals of ABB was, however, in a phase of transformation. Shareholders' perspective had started to gain dominant attention. Moreover, in the strategy documents, special attention was paid on process management and skillful personnel. A uniform view of the management group members of *FinABB* was that all key success factors of competitive strategy should be addressed. But when the measurement team started its work, it soon discovered that the strategy of *FinABB* and its critical success factors were not so straightforward. The focus of the new strategic performance measurement system gradually (and somewhat unintentionally) shifted towards making sense of strategic uncertainties and trying to capture cause-and-effect relationships assumed to be inherent within the strategy. Altogether, the goal of the new performance measurement system evolved during the construction process from the support of beliefs systems (customer focus) via establishing a diagnostic control system to interactive control system in order to learn about strategy and related factors (see Fig. 2).

In the case study of Kasurinen (2002), it was claimed that different perceptions of the purpose of a scorecard could undermine the entire project. However, this was not the situation in our case study, which we explain with the observation that different perceptions evolved amongst the same group of people, over time, and not by different people at the same time.

7.2. Strategy

In the early stages of our study, the researcher determined through interviews and archival documents that the case company was engaging in a differentiation (Porter, 1980) or prospector (Miles and Snow, 1978) strategy. Langfield-Smith (1997), however, points out that although strategic typologies may be useful for researchers, they might lack relevance to practitioners (see also Snow and Hambrick, 1980).

In fact, seemingly clear strategies in terms of strategic typologies may turn out to be quite controversial when implementing performance measures based on such a strategy (Kasurinen, 1999). In this study, the managers of *FinABB* defined their strategy mostly in terms of the objectives to be achieved via the strategy rather than the strategy per se. In perusing *FinABB's* strategy documents, it was possible to extract certain cause-and-effect relationships, but it was difficult to precisely define *the* strategy. Another problem with respect to defining the strategy of *FinABB* stemmed from the fact that while *FinABB* is considered by ABB to be a strategic business unit, each of the profit centers of *FinABB* have somewhat individual business strategies. Hence, it might not be possible to define a homogeneous competitive strategy at the company (*FinABB*) level.

On the one hand, the development process was very much about making sense of the strategy documents – the intended strategy (see Mintzberg, 1978) – that had been written down by the (previous) CEO. While divisional managers had participated in the discussions on which the documents were based, the strategy turned out to be not so straightforward. While strategy documents were very much results-oriented, the discussions held by the measurement team also dealt with the way strategic objectives would be met. It became evident that certain assumptions (cf. Burns and Scapens, 2000) had evolved over time and it was important to capture such features – the emergent strategy (see Mintzberg, 1978) – into the measurement system as well.

The interactive way of using the *3K Scorecard* provides a forum for continually questioning underlying goals and strategies. In the informal measurement team and formal management group meetings – both at company and profit center level – continuous dialogue of strategic uncertainties was promoted by the new performance measurement system. The findings in this study thus support the claims of Archer and Otley (1991) that managers' perceptions about the strategy can intervene in the selection and development of control systems. In addition, it may be that the goals of the organization are also (re)constructed during this process, thus having potentially important implications for the outcome. With regard to strategic development work at *FinABB* it was possible to detect a reasonable amount of ex-post rationalization and retrospective sense-making (Cooper et al., 1981). But this was mostly functional in terms of increased self-respect and motivation.

7.3. Feedback loops

The use of the *3K Scorecard* resembles the characteristics of both diagnostic control systems and interactive control systems (Simons, 1995a, 1995b), suggesting *feedback loops* for both single-loop and double-loop learning. Distributing the bunch of *3K Scorecard* reports to members of the management group of *FinABB* and individual profit centers serves mainly diagnostic control purposes. Viewing all of the reports makes it possible to speedily detect if there are notable variances in performance over time or across profit centers.

Interactive-type control is employed when managers select only a few measures to be discussed. By focusing on these measures managers get personally involved in finding out the strategic meaning and consequences of these measures. A particularly important role in interactive control was played by the measurement team meetings – making it possible to consider the measures, cause-and-effect relationships, and underlying strategic uncertainties in greater depth. One important outcome was recognition of a need to address strategic uncertainties in the form of other market indicators in addition to performance measures.

Probably the most important consequence of developing and using the *3K Scorecard* has been its contribution to managerial learning concerning the fundaments of the business strategy. Making cause-

and-effect relationships visible in the *3K Scorecard*, via arrows, was one elementary factor in this respect. A cockpit-like model (see e.g. Kaplan and Norton, 1992; Chiapello and Lebas, 1996) would not allow double-loop learning from strategy, and bringing the assumed cause-and-effect relationships up-front is an issue of paramount importance from the strategic learning perspective. This has also recently been addressed by the developers of the Balanced Scorecard (see Kaplan and Norton, 2000, 2001) and a similar conclusion has been drawn based on another case study (see Wenisch, 2004).

7.4. Target setting and reward systems

Emphasizing managerial learning and using the *3K Scorecard* especially as an interactive control system has important implications for both target setting and reward systems. Target setting has been carried out mostly with the bottom-up method. Reward systems have been altered alongside changes in performance measurement systems. Managerial rewards are tied to certain measures that are included in the *3K Scorecard*, but these measures have not been balanced according to the performance dimensions of the scorecard.[12] It seems that *the importance of rewards is not so relevant if managers have themselves created the measures to assist themselves in learning and strategic decision-making*. If rewards are tied to financial results it would still be in the (long-term) interests of managers to address measures in the *3K Scorecard*, since the scorecard is assumed to represent the best path towards improving the financial results in the future. In this sense, gaming is also less likely to occur.

Prior literature has suggested that strategic performance measures should be altered if the underlying strategy changes (Eccles, 1991; Grady, 1991; Sellenheim, 1991; Otley, 1999). But novel performance measures are problematic as the lack of measurement tradition decreases confidence and makes it difficult to set targets (Vaivio, 1995). In addition, tradeoffs between non-financial measures and the links between non-financial results and financial outcomes are not clear-cut (Fisher, 1992; Anthony and Govindarajan, 1998). The findings in this case study suggest that such problems are alleviated when using a measurement system interactively to learn about the strategy rather than to evaluate diagnostically the performance of subordinates. Diagnostic control requires that goals, strategies, and critical success factors are explicit enough to make the selection of appropriate measures straightforward. But, with interactive control, measures are used to learn about the goals, strategies and relevant key success factors. Moreover, it is suggested here that one of the main benefits from using the *3K Scorecard* is in the way that it assists in learning about the links between non-financial and financial measures. It is used to understand time lags and good performance levels. There is uncertainty about the validity of cause-and-effect relationships, but the need to test the assumptions is exactly the *reason for using the measures*. In other words, measures should not be discarded as being too ambiguous just because the connections of measures are not verified beforehand.

7.5. Resistance to change

While an interactive use of performance measures for strategic learning may solve certain problems, other problems are likely to emerge. Epstein and Manzoni, (1997, p. 35) argue that there is certain "opaque-

[12] Thirty-three percent of companies using the Balanced Scorecard in the survey of Towers & Perrin (see Ittner and Larcker, 1998, p. 122) indicated that they use a mixture of operational and financial measures as a basis for rewards even though they do not use the Balanced Scorecard as such for this purpose.

ness by design" in the absence of performance measurement systems that try to capture all relevant aspects of strategy. Consequently, it has been suggested that resistance to new strategic performance measurement systems may arise from the increased visibility of actions. In the process of implementing new performance measures some managers may feel threatened, since balanced performance measurement systems limit possibilities to protect themselves from scrutiny and questioning (Vaivio, 1995, 1999a, 1999b). In the case firm, the resistance on behalf of the Domestic Sales Manager was quite evident. Among peers he was known to be a successful budget "player" and he was not enthusiastic about a new performance measurement system that placed more emphasis on his area of responsibility, i.e. the customer.

According to Argyris (1990) performance measurement systems should be used in a manner that promotes learning and thus helps to avoid the deployment of defensive routines. The findings of our study, however, suggest that the interactive use of performance measures may actually be viewed as *even more* threatening by certain individuals. Interactive discussion of strategic problem areas increase the visibility of actions, and strengthen accountability to peers – even more than in diagnostic control. In respect of the latter, it is more likely that external factors smooth the results so that prevailing problems are ignored and/or poor actions are not perceived by others. As a consequence, it is likely that resistance against interactive control systems, grounded in detailed non-financial information, is higher than towards diagnostic control systems for some individuals. At *FinABB*, the Domestic Sales Manager tried to avoid having his actions put under critical scrutiny through skipping meetings and criticizing the selected measures.

7.6. Operating the 3K Scorecard: some implications for workloads

The introduction of the *3K Scorecard* implied significant costs in terms of additional workload. New performance measures required new reporting procedures. For certain measures, reporting responsibility was assigned to functional and business unit managers. The reason for not automating this procedure, nor to pass the responsibility to controllers, was that an objective was making responsible managers verify the data[13] and, most importantly, to increase these managers' awareness of how certain measures were originated and how they could initiate actions to improve results.

It is argued elsewhere that developments in information technology have not considerably altered management accounting reporting (Granlund and Malmi, 2002). Thus, collecting information for strategic performance measurement systems is likely to increase the reporting tasks of accountants (Epstein and Manzoni, 1997, 1998). We found this to be the case at *FinABB*. Certain data-reporting, as well as the refinement of raw data provided by the managers, was undertaken by the business controllers, extending their workload. Furthermore, since the managers were always busy and seldom pleased about increased reporting requirements, the business controllers often found themselves making subsequent requests to the managers with respect to the data provided.

Finally, an interactive use of performance measures increases the time spent in meetings. Constructive dialogue concerning strategic matters is of prime importance, but also entails costs. In general, the business managers appeared to be frustrated at "sitting in all of these meetings and not doing what they are expected to do". The measurement team meetings were clearly an exception in this

[13] In this way, the manager in question was expected to check that the data provided by the information system was correct and no errors were corrupting the data.

regard – managers were enthusiastic about such meetings (with the exception of the Domestic Sales Manager).

8. Summary and conclusions

This study investigated the role of strategic performance measurement systems in respect of the interplay between different control levers. The *3K Scorecard* was used for both diagnostic and interactive control purposes at the case company. Furthermore, the *3K Scorecard* had specific implications for both beliefs systems and boundary systems (see Table 2). In the course of the development process, the main objective of the performance measurement system evolved from communicating customer focus (i.e. support to beliefs system) via strict strategic control (i.e. diagnostic control) finally to making sense of strategy and learning about strategic interdependencies (i.e. interactive control).

The emphasis on an interactive (rather than diagnostic) use of the *3K Scorecard* for strategic learning purposes has several implications. Already in the construction phase, managers frequently praised how enlightening the measurement team meetings were, giving strategy documents a specific content and nurturing intellectual discussion of underlying cause-and-effect relationships. When using the scorecard, it is possible to look at trends and evaluate the validity of anticipated relationships. This in turn accentuates the need to formulate and describe the measures in a way that the assumed cause-and-effect relationships are visible, and hence, it is possible to evaluate or question the validity of those assumptions. Our findings strongly support the use of strategic maps (Kaplan and Norton, 2000, 2001) and the definition of at least tentative cause-and-effect relationships as presented in other recent case studies (e.g. Wenisch, 2004).

Two of the most intriguing findings in our case study relate to normative prescriptions that are commonly associated with the use of non-financial measures in such systems as the Balanced Scorecard, namely: (1) ex ante cause-and-effect verification; and (2) tight connections to managerial bonus systems. In our case study neither of these prescriptions held which could be explained by the bottom-up development process and interactive use of the measures.

First, the connection between different measurement perspectives and two specific cause-and-effect relationship paths were not tested before the system was implemented. These relationships were based solely on managerial reasoning. But, ambiguity concerning the balance between different non-financial measures and the links between non-financial and financial measures was not considered to be a measurement problem per se. Rather, this was exactly the reason for using a balanced performance measurement system – i.e. to learn about potential cause-and-effect relationships, and the relative importance of different measures. Similarly, target setting was perceived as a challenge, and any meaningful target setting was only expected to follow the use of the system. Having said this, tentative target levels were set initially.

Second, at the end of our research period only minimal changes had been made to the managers' remuneration systems. Some non-financial aspects had been added to bonus contracts, but this was not necessarily directly linked to the use of the *3K Scorecard*. One important explanation for this stems from the development process and the way in which the system was used. From the perspective of global ABB, managers of *FinABB* could be considered as middle management. The impetus for adopting a new performance measurement system did not come top-down, but rather it was *FinABB*'s management's own idea to develop a scorecard that would assist them to improve strategic

management. Thus, there was consistent belief that the new system would eventually lead to improved financial performance and there was strong commitment towards using the system (perhaps with the exception of the Domestic Sales Manager). In addition, the focus was on discussion and learning – interactive use – and there was no interest in creating a reward or punishment atmosphere. Finally, it was perceived that reward systems should not be tightly linked to the bonus systems when ambiguity about measures and appropriate target levels prevails. But, as suggested above, such a connection might be less important if the managers have themselves developed the system for their own learning purposes.

While interactive use of performance measures sheds a little different light on performance management, it can also be problematized. At least two problems remain with performance measurement and possibly even worsen when strategic performance measurement systems are primarily used for interactive controlling. First, the introduction of new non-financial performance measures may initiate rather strong resistance. Non-financial measures improve the visibility of actions. Since interactive control initiates discussions about strategic uncertainties, it is likely that more information about subordinates' and peers' actions is disclosed when compared to diagnostic control. This is likely to intensify resistance to change. The introduction of new non-financial measures is also likely to disrupt the power structures within an organization. An in-depth knowledge of customers, for example, implies an informal power dimension which might result in those who possess such knowledge being reluctant to share it (Vaivio, 2001; Tuomela, 2001; see also Markus and Pfeffer, 1983).

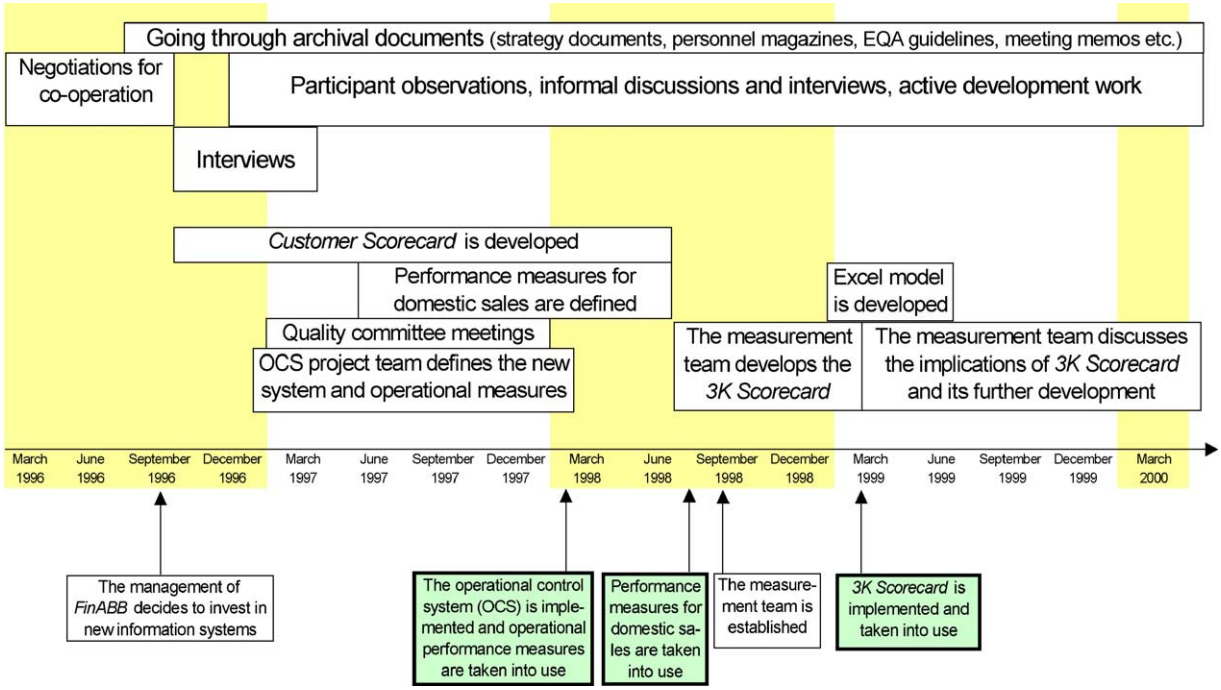
The additional time spent on data-gathering and the actual use of information creates further problems. In relation to the interactive use of strategic performance information, middle managers and functional managers were instructed to collect some of the data required for the *3K Scorecard*. While these reporting requirements were perceived as an important means of communication, it added to these managers' workload. In addition, the business controllers at *FinABB* saw their workloads increase as a result of the *3K Scorecard* – partly due to a need to continually remind and instruct middle managers and functional managers about their new reporting responsibilities. An interactive control, with its emphasis on discussion, also increased the number and length of meetings, consuming much managerial time.

To conclude, the way in which strategic performance measurement systems are used has several implications for the benefits and problems related to its use. This finding is consistent with earlier results (Langfield-Smith, 1997; Abernethy and Brownell, 1999; Vaivio, 2001; Bisbe and Otley, 2004) that it is not only the specific control tools (like the Balanced Scorecard) that are used but also the way they are applied that should be taken into account. Moreover, it should be taken into account that performance measurement systems have implications for all levers of controls and that the interactive use of performance management systems has some special benefits and challenges when compared to diagnostic controlling.

Acknowledgements

I am grateful for the helpful comments provided by John Burns, Markus Granlund, Kari Lukka, Vesa Partanen, Pekka Pihlanto, Esa Puolamäki, Erkki Vuorenmaa and the two anonymous reviewers. I would also like to thank the participants of the 24th Annual Congress of the European Accounting Association (Athens, 2001) and the Fifth International Management Control Systems Research Conference (London, 2001) for their comments on an early draft of this paper.

Appendix A. An overview of the field work



A.1. A detailed description of the field work

SEMI-STRUCTURED INTERVIEWS:

23.10.1996: Profit Center Manager "A" 2 h 25 min
23.10.1996: Domestic Sales Manager 1 h 30 min
29.1.1997: Profit Center Manager "B" 1 h
10.2.1997: Commercial Manager of a customer company 1 h 15 min

CONSTRUCTIVE WORK:

Customer Scorecard
October 1996 - August 1998
--> researcher responsible for the development work
--> interviews
--> written comments from *FinABB* managers
--> comments from the OCS project group
NOT IMPLEMENTED

Individual measures for the OCS
January 1997 - January 1998
--> the project group responsible for developing measures for operative purposes
--> the researcher gives comments to some measures and has a big influence on those measures that are also of strategic importance
IMPLEMENTED IN JANUARY 1998

Performance measures for Domestic Sales
July 1997 - April 1998
--> the Manager for Domestic Sales is responsible for developing new measures of customer satisfaction
--> the researcher participates in a team of four members (Manager for Domestic Sales, Quality Manager, Division Manager and the reseracher) and plays an active role in defining these measures
IMPLEMENTED IN AUGUST 1998

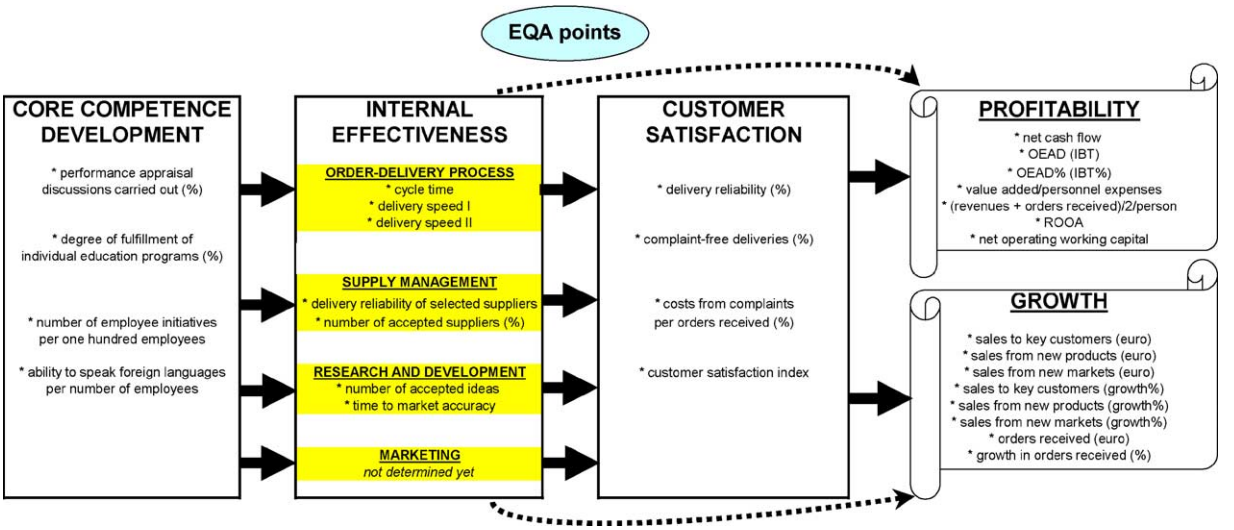
3K Scorecard
August 1998 - April 2000
--> the measurement team established by the management group of *FinABB* is responsible for developing a new performance measurement system
--> the researcher acts as an informal chairman and later as an active secretary in the measurement team that also involves three divisional managers, the financial manager and two business controllers
IMPLEMENTED IN JANUARY-MARCH 1999
--> the measurement team continues to meet to discuss the implications of the *3K Scorecard* results and the needs to develop the model further

PARTICIPANT OBSERVATIONS:

November 1996:	1 kick-off meeting for the OCS project[1]
January 1997:	5 days in the OCS project team 2 quality committee meetings
February 1997:	4 days in the OCS project team 1 quality committee meeting
March 1997:	3 days in the OCS project team 1 quality committee meeting
April 1997:	1 day in the OCS project team
May 1997:	1 day in the OCS project team[1]
June 1997:	1 day in the OCS project team
July 1997:	1 Domestic Sales meeting
August 1997:	2 days in the OCS project team
September 1997:	2 days in the OCS project team
October 1997:	1 day in the OCS project team 1 Domestic Sales meeting
November 1997:	3 days in the OCS project team
December 1997:	3 days in the OCS project team 1 quality committee meeting
January 1998:	2 days in the OCS project team
March 1998:	1 Domestic Sales meeting
April 1998:	1 Domestic Sales meeting
August 1998:	1 meeting of the management group of *FinABB*[1]
September 1998:	2 meetings of the measurement team 1 meeting of the management group of *FinABB*[1]
October 1998:	2 meetings of the measurement team
November 1998:	1 meeting of the management group of *FinABB*[1] 1 meeting of the measurement team
December 1998:	1 meeting of the management group of *FinABB*[1] 1 meeting of the measurement team
January 1999:	1 meeting of the management group of *FinABB*[1]
March 1999:	1 meeting of the measurement team
May 1999:	1 meeting of the measurement team
June 1999:	1 meeting of the measurement team
September 1999:	1 meeting of the measurement team
November 1999:	1 meeting of the measurement team
January 2000:	1 meeting of the measurement team
February 2000:	2 meetings of the measurement team
April 2000:	2 meetings of the measurement team
June 2000:	1 meeting with the financial manager[2]
August 2000:	1 meeting with the CEO and financial manager[2]
December 2000:	1 meeting of an expanded management group

[1] Includes a formal presentation given by the researcher
[2] discussion for discussing the results and verifying the interpretations of the researcher

Appendix B. The *3K Scorecard* for the year 1999



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