Indicators in Action
Development, Use and Consequences

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Abstract

The increased attention to performance measurements is evident in both private and public sector organizations and among both academics and practitioners. Although there is a strong belief in the possibilities of using measurements for managing organizations, both academics and practitioners have questioned measurements potential. This thesis takes part in debating the potentiality of performance measurements by attending to the development, use and consequences of non-financial indicators that are considered a specific form of performance measurements.

When investigating the development of indicators, it became evident that several of the new indicators developed proved to be reformulations of non-financial measurements already used within the organizations before the development work. What had changed was primarily the meaning ascribed to the measurements. As a consequence of this ‘re-cycling’ of measurements, it is concluded that the meaning given to specific non-financial indicators change over time. The present investigation also reveals that three shifting rationales are informing the development of indicators. This finding contributes with insights into the construction of indicators and how the link between indicators and action are conceived and established in a development process.

A main finding of the investigation concerns how indicators are used. In contrast to previous studies, the results show that indicators can have a negative impact on performance unless the indicators are used in a sophisticated way. Based on these results it is argued that it is insufficient to attend solely to if indicators are used, i.e. greater attention needs to be paid to the question of how they are used. The investigation also presents evidence suggesting that the often used adage “what gets measured gets managed” needs to be revised. It is argued that measuring is not a means to activate the organization per se. Rather, measurements support those issues that are already mobilized within the organization.

In conclusion, this investigation suggests that the potentiality of indicators depends on the meaning ascribed to indicators, how indicators are assumed to link to action, how indicators are used and how indicators are related to other organizational activities.

Keywords: Performance measurements, non-financial, human resources, development, use, consequences, public sector

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Writing this thesis has been an educational and challenging experience. It has also been a highly individual journey and one that has involved many people. In writing the last lines, it has become abundantly evident that this journey would have never been accomplished without the support of a large number of people, and consequently, I owe a great deal of thanks to these people. Among these, there are some who deserve special recognition.

I have had the fortune of having outstanding supervisors. Sadly Jan-Erik Gröjer is no longer with us. However, in my mind you are still present as a source of inspiration in life. Jan-Erik, I am truly grateful for your endless support and belief in my ability. Although provided with unstructured working drafts, you always pointed out new directions and possible working paths. You have been, and still is, a great source of inspiration and without your guidance and in-depth knowledge this thesis would have never been completed. Jan-Erik, you will be missed tremendously.

Cecilia Lindholm, when stepping in as a supervisor during my second year as a PhD candidate you brought with you new perspectives and lots of encouragement, which were highly valued. Thank you for our interesting discussions, your patience, and your helpful advices, which were greatly appreciated. I have been extremely fortunate to have you by my side during the research process.

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A prerequisite for writing an empirical dissertation is the possibility of getting access to organizations, and accordingly, the provision of data. Thus, the managers that answered the questionnaires and who took part in the studied development process of new indicators have been of great importance for the writing of this thesis. Specifically, I would like to thank people working within the Swedish Social Insurance Agency, the Swedish Labor Market Administration, and those taking part in the PRISMA project. Thank you for generously sharing your views and experience and for dedicating your time to this project. You have played a major role in the data collection process and provided important insights into the issues under investigation. Furthermore, there is the inevitable issue of monetary resources. In that respect, VINNOVA has provided significant support by financing my first two and a half years.

A special thanks goes to all my colleagues and friends at the Department of Business Studies, Uppsala University for friendship and many fruitful discussions. In particular, I would like to show my gratitude to Christina Hallin for your friendship and encouragement. It has been very special to share this experience with you and our time ‘at the office’ really meant a lot to me. My gratitude also goes to Mimmi Diamant, David Sörhammar, my other fellow PhD candidates, and several persons within the E-sector.

Last but not least, I would like to send my love and to thank my family and close ones. Mom and dad, thank you for your understanding and support in every choice I have made. I would especially like to send my love to my life companion, David von Laskowski. I am endlessly grateful for having you in my life. My deepest gratitude goes to you for your love and encouragement during periods of doubt.

As this journey reaches its end, I am truly happy to be able to dedicate this book to you all!

Sofi Ersson
Stockholm, October 2007
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Catasús, Bino and Ersson, Sofi (2007) “Indicators as technology: the link between indicators and action”. Submitted to Management Accounting Research.

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Introduction

This thesis examines the development, use, and consequences of performance measurements. Performance measurements are defined as the quantification of human actions, events, or situations in financial or non-financial terms. Inherent in the concept of performance measurements is that the actions, events, or situations that are quantified are related to a given norm or target. The purpose of this thesis is to contribute to the understanding of the potentiality of measurements. The aim of this introduction is to make explicit the need for research within the area of performance measurements and to identify how this thesis contributes to the existing knowledge within the field.

A strong belief in the power of measurements

It is evident that the interest in performance measurements in organizations has witnessed a resurgence over the past two decades, both among academics and practitioners (Hood, 1995; Hopwood and Miller, 1994; Kaplan and Norton, 1996; Power, 1997; Townley et al., 2003; Vaivio, 1999b). In parallel to this development is the fact that the use of performance measurements within organizations has amplified and spread into new areas of application, including measuring customer satisfaction (Fornell, 1992; Szymanski and Henard, 2001), research and development activities (Bremser and Barsky, 2004; Chiesa and Frattini, 2007), human resources (Ahonen and Gröjer, 2005; Catasús and Gröjer, 2006; Huselid, 1995), and environmental issues (Catasús, 2001; Patten, 2002). This increased attention is evident in both private and public sector organizations (Boland and Fowler, 2000; Hood, 1995; Ittner and Larcker, 1998; Townley et al., 2003). Neely (1999) labels the recent change of performance measurements within organizations as a 'revolution'.

Moreover, a great deal of the management literature refers to measurements as an effective device for the enhancement of business performance (Kaplan and Norton, 1996; Pfeffer and Sutton, 2000).
“Everyone knows that measures focus attention on what is measured. Everyone also knows that because what is measured is presumed to be important, measures affect what people do, as well as what they notice and ignore. As a consequence, everyone knows that what gets measured gets done, and what is not measured tends to be ignored. The importance of measuring is news to virtually no one.” (Pfeffer and Sutton, 2000, p. 140)

The idea of using measurement as an effective means to manage organizations is often expressed in commonly used sayings, such as “what gets measured gets managed”, “what gets measured gets done”, “what you measure is what you get” (Kaplan and Norton, 1992), “if you want to manage it, you've got to measure” (Lyons et al., 2003), and “what you don’t measure you’ll never know until it’s too late” (Adams and Neely, 2000). These expressions are often conventional wisdoms and used to promote such contemporary performance measurement systems as the balanced scorecard (Kaplan and Norton, 1992, 1996), the performance prism (Neely et al., 2002), and the performance and assessment model (Chang et al., 2002). According to Behn (2003), the construction “what gets measured gets done” is probably the most famous aphorism of performance measurement” (p. 599). Apart from functional aspects (Ittner et al., 2003; Kaplan and Norton, 1992; Neely et al., 2002), the potentiality of measurements has been discussed in relation to social structures and practices (Miller, 1994). The idea of quantification and the importance given to the use of numbers goes way back in history and is widespread (Mårtensson, 2007). Numbers and quantification have been identified as important cornerstones in the development of Western society (Crosby, 1997), in the construction of the reality upon which individuals act (Hines, 1988; Hopwood and Miller, 1994), in the process of constructing governable individuals¹ (Miller and O'Leary, 1987), and in the governing of individuals (Rose, 1991).

¹ The point made by Miller and O'Leary (1987) is that by measuring individuals they are turned into more ‘manageable and efficient entities’.
The strong belief in the power of measurements has also made its entrance into the public sector (Boland and Fowler, 2000; Green-Pedersen, 2002; Hood, 1995; Lapsley, 1999). Within the public sector, there has been “a move towards more explicit and measurable (or at least checkable) standards of performance” and “attempts to control public sector organizations in a more 'homeostatic' style according to preset output measures” (Hood, 1995, p. 97). This extended focus on the development and use of performance measurements is associated with a greater shift in public management styles (commonly referred to as New Public Management) that has been evident in several OECD countries during the past decades (Hood, 1995; Olson et al., 1998). In turn, Boland and Fowler (2000) describe the performance measurement change within the public sector as a new ‘industry’ concerned with collecting, reporting, and appraising organizational performance. Townley et al. (2003) verify the existence of this ‘industry’ by stating that “performance measurement is a pervasive aspect of organizational life, especially in the public sector” (p. 1045).

Why are performance measurements relevant today?

Neely (1999) asks why performance measurements have become so relevant to management nowadays. Firms have used measurements as part of planning and control processes for decades, so why has it become such a hot topic now? The answer to this question can be found in various changes in business life that have contributed to a revived concern in performance measurements. Firms are competing in global markets to a greater extent and are thus exposed to tougher competition than before (Eisenhardt and Martin, 2000; Wiersema and Bowen, 2007). Because of this they have to find new dimensions to compete in and thus need to gather non-financial information within areas such as customer satisfaction (Fornell et al., 2006) and human resources (Boselie et al., 2001; Pfeffer, 2005). Thus, as the business world is being reshaped organizations are to a greater extent recognizing intangible resources as an important competitive advantage (Johanson et al., 2001). These changes in turn has brought to the fore a need for changes in performance measurements.
Private sector models for managing organizations are adopted by public sector organizations and so is the use of performance measurements (Brignall and Modell, 2000; Townley et al., 2003). Townley et al. (2003) identify two specific explanations as to why performance measurements are increasingly being used within public sector organizations. First, it is argued that performance measurements are introduced in “an attempt to shift decision-making beyond political bargaining” (p. 1045), i.e. to exchange “rationality of politics” with “rationality of planning”. The authors quote Rose (1991) who states:

“…numbers have an unmistakable power in modern culture… [they] achieve a privileged status in political decisions, [yet] they simultaneously promise a “de-politicization” of politics… by purporting to act as automatic technical mechanisms for making judgments, prioritizing problems and allocating scarce resources” (Townley et al., 2003, p. 1047).

As a second explanation for introducing performance measurements in the public sector, Townley et al. (2003) assert that performance measurements are used as “the extension of market economy and managerialism into the public sphere” (p. 1046). With this view, the explanation for introducing performance measurements is that they are used as a means for reducing the size of the public sector, to cut expenditures, to bring free-market principles and disciplines into government, to develop a more customer-oriented focus, and to allow managers to be more autonomous (Townley et al., 2003).

To conclude, the introduction and use of measurements in organizations are thus promoted by the idea that measurements can influence the conduct of individuals, which is somewhat of the holy grail of managing.

Questioning the “so called truth”

Although there is a strong belief in the possibilities of using measurements for managing organizations, both academics and practitioners have also questioned this ‘belief’. Empirical evidence shows conflicting results, and the proverb “what gets measured gets managed” has been given alternative
forms [e.g., “you get what you measure and reward” (Biddle et al., 1998; Wallace, 1997) or “you generally get what you measure” (Otley, 1999)]. The whole ‘relevance lost debate’ in the late 1980s was partly based on the questioning of the possibility to rely on financial measurements. It was argued that financial information was too aggregated, too late, and too distorted to be relevant for managers’ planning and control decisions (Johnson and Kaplan, 1987). Its relevance was later ‘regained’ by suggesting that financial measurements had to be complemented with non-financial ones (Johnson, 1992). Thus, the idea of quantification remained. Later, critical voices began to question the usefulness of non-financial measurements (Daniels, 1994; Ittner et al., 2003; Perera et al., 1997)

“A great many people in business think that measuring a problem is tantamount to solving it. But as important as measurement is, measurement alone will not change behavior. If measurement changed behavior there would be no fat people, no one would smoke, and everyone would exercise, because all of these behaviors and their results can be easily measured. Many people know exactly how much they weigh and want to weigh less; know how many cigarettes they smoke and want to smoke less. But measuring doesn’t change a thing. So what does measurement do for us?” (Daniels, 1994, p. 91-92)

Further, studies investigating the effect of using measurements in organizations have reported contradictory results (Bourne et al., 2005; Hoque, 2005; Ittner and Larcker, 1995, 1998; Wouters et al., 1999). On the one hand, there has been evidence indicating that the use of measurements matters (Banker et al., 2000; Hoque, 2005; Ittner et al., 2003; Said et al., 2003; Widener, 2006a). Banker et al. (2000) studied the relation between financial and non-financial measurements in incentive plans. The results from their study showed that both non-financial and financial performance was improved when non-financial measurements were included in the incentive plans. Said et al. (2003) found that firms using a combination of financial and non-financial measurements performed better than firms that only used financial measurements. In another study of 100 manufacturers in New Zealand, Hoque (2005) concludes that non-financial measurements
were most useful in improving organizational performance under conditions of environmental uncertainty.

However, other studies have revealed conflicting results. For instance, Young and Selto (1993) studied the relation between measurements and work group performance. Regression analysis, using six Just-in-Time (JIT) performance measurements as independent variables and work group ratings by managers as the dependent variable, was found to be non-significant. In another study Perera et al. (1997) investigated whether firms with a customer focused strategy emphasized non-financial measurements of performance and if such an emphasis was associated with enhanced performance. They found no evidence for an association between the use of non-financial measurements and organizational performance. Furthermore, Ittner et al. (2003) noted that measurements from the balanced scorecard process, economic value measurement systems, and causal business models exhibited almost no association with accounting measures (return on assets and sales growth). There has also been critique directed towards the activity of measuring in general. Measuring is often considered too complicated and too resource consuming; in addition, it is associated with the risk that the measurements get managed but not the underlying activity or situation (Emiliani, 2000).

From the discussions in this introduction, it seems reasonable to conclude that there is one group of advocates and one group of critics debating the potentiality of performance measurements. This thesis takes part in this debate by further elaborating on the possibilities of performance measurements.

One purpose of this introduction is to make explicit the need for research within the area of performance measurements. A second purpose is to identify how the essays that constitute this thesis can contribute to the existing knowledge within the field. Whereas the former purpose has been argued for hitherto, the latter requires further attention. The potentiality of

\[\text{\footnotesize \(2\) It should be noted that the authors question the results of their own study. However, the results may be used to initiate a discussion concerning the need to further elaborate on the possibilities of using measurements.}\]
measurements is subsequently investigated in four essays by attending to three specific research themes: how measurements are developed, how they are used and what consequences they might (or might not) have. By attending to these three research themes, this thesis not only attempts to investigate the potentiality of measurements but also to contribute to the understanding of why there exist contradictory standpoints.

Themes of investigation

There is a large body of knowledge on performance measurements. However, there have been calls concerning how non-financial measurements emerge and are developed over time (Lowe and Jones, 2004; Otley, 1999; Vaivio, 1999b). Knowledge about the development phase is crucial because it is during this phase that the role (and potential) of the indicators is shaped. According to Vaivio (1999b), the existing literature on non-financial performance measurements is primarily normative and thus there is a need for supplementary empirical work. Furthermore, when the organizational context changes, there is a need for changes in the measurement systems, and accordingly, the lack of knowledge of how to manage and change these measurement systems over time might result in their loss of relevance (Kennerley and Neely, 2002). Hence, the first theme in this thesis concerns the development of non-financial measurements. The development of non-financial measurements is investigated in Essays I and II.

In order to understand the potential that non-financial measurements might (or might not) have it is relevant to consider how the measurements are used (Bourne et al., 2005; Evans, 2004; Kloot and Martin, 2000). It has been suggested that measurements need to be dramatized (Catasús and Gröjer, 2006), aligned to strategy (Kaplan and Norton, 1996), have ownership (Johanson et al., 2001), and related to incentives (Banker et al., 2000). Thus, the second theme proposed for study is how measurements are used, which is investigated in Essays I, III, and IV.

When it comes to public sector organizations, there are specific problems related to the study of performance (Boland and Fowler, 2000; Jones, 2004; Wilson et al., 2006). Public sector organizations are not profit seeking, generate little or no income, and often have to account to several
stakeholders (Boland and Fowler, 2000). Public sector organizations are increasingly exposed to pressure to become more efficient and effective while still maintaining the same volume and quality of services to the public (Brignall and Modell, 2000). Such a balance of forces creates a situation with both multiple and vague goals, which end up complicating the identification and measurement of performance. In addition to this, studies of the consequences of using performance measurement have provided mixed findings. Thus, the third theme of the investigation concerns the consequences of non-financial measurements. The possible consequences are investigated in Essays III and IV.

The title of essays, research questions and themes of the investigation are summarized in Table 1.

<table>
<thead>
<tr>
<th>Essay I</th>
<th>Title of essay: Emergence of indicators: recycling metrics and negotiating meaning</th>
<th>Research question in essay: How are indicators constructed?</th>
<th>Theme of investigation: Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Essay II</td>
<td>Title of essay: Indicators as technology: the link between indicators and action</td>
<td>Research question in essay: How is the link between indicators and actions problematized?</td>
<td>Theme of investigation: Development</td>
</tr>
<tr>
<td>Essay III</td>
<td>Title of essay: What gets measured gets… on indicating, mobilizing and acting</td>
<td>Research question in essay: How are indicators and actions related?</td>
<td>Theme of investigation: Use</td>
</tr>
<tr>
<td>Essay IV</td>
<td>Title of essay: Relevance of using indicators: a move from the question of <em>if</em> to the question of <em>how</em></td>
<td>Research question in essay: If and how do indicators impact performance?</td>
<td>Theme of investigation: Use</td>
</tr>
</tbody>
</table>

The three proposed research themes will be used to structure the forthcoming analysis of the essays and thereby illustrate how the essays
relate to each other as well as to the overall research problem (i.e. contradictory standpoints concerning the potential of measurements). By discussing the essays with reference to these three research themes, it is showed how they support, contradict, and complement each other. Furthermore, this scrutiny allows examination of each essay’s strengths and weaknesses.

The conceptual separation between development, use, and consequences is mainly theoretical. It might be argued that it is not possible to separate between the development of indicators and their use or between the use of indicators and their consequences in practice. This separation may be questioned but will be used here for purely analytical purposes.

**Indicators**

This thesis primarily focuses on non-financial indicators, which might be considered as a specific area within the performance measurement literature. Non-financial measurements differ from financial ones in several aspects. First, non-financial measurements are more influential than aggregated financial measurements in that they can reach closer to actual performance (Vaivio, 1999b). Non-financial measurements are also thought to contribute to improved organizational performance by emphasizing long-term success factors, which (often short-term) financial measurements seldom do (Kaplan and Norton, 1996).

By focusing on non-financial indicators, a distinction is not only made between financial and non-financial measurements but also between measurements and indicators. Measurements have shown to have a wide area of application. Within an organizational context, measurements may be used to provide feedback and communicate with various stakeholders, to facilitate decision making, to justify decisions or actions, and to focus attention (Henri, 2006). Measurements may also be used to facilitate internal and external comparison, to implement strategies (Kaplan and Norton, 1996),

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3 Lohman et al. (2004) have a somewhat different classification where they separate between three phases labelled design, implementation, and use (p. 270). Their design and implementation phase corresponds to my ‘development phase’ (Lohman et al., 2004).
and to reward (Ittner et al., 1997; Widener, 2006b). Measurements can make events and processes visible, which can then create possibilities to detect deviations from standards and norms. By that they can be used in the process of creating accountability (Miller, 1994). Measurements can also be used in a variety of situations and by a number of organizational members. In this thesis, the concept of indicators will be used to distinguish a number that management gives interest to in its effort to manage the organization and, accordingly, is used as an input in the managerial process.

Outline of the summary

Now that the problem area and research themes have been described, the research methods, main findings, and conclusions can be presented. The remainder of the thesis is organized as follows. The next section concentrates on presenting the research methods used to investigate the possibilities of measurements. After a discussion of research design, the four essays that constitute this thesis are summarized. Each summary includes the questions examined, the methods used, the results, and the conclusions drawn. This section is followed by a concluding discussion of the essays. The discussion is structured with reference to the three proposed research themes (development, use, and consequences), where it is formulated how the essays support, contradict, and complement each other. The concluding discussion shows how the findings in each essay relate to the overall research problem and thus to the existing knowledge within the field. This section also discusses different standpoints and assumptions taken in the present essays as well as suggestions for further research.
Research design

The purpose with this section is to describe how the research has been carried out by discussing motives for the chosen methods, contextual factors influencing the research process, and limitations associated with the data collection techniques. To investigate the research theme of how non-financial indicators are developed this thesis makes use of participant observations conducted between 2003 and 2005. The other two research themes (use and consequences) are investigated using data from a survey conducted in 2003, together with archival data collected in 2006. By using several data collection techniques, the potentiality of indicators is investigated in both depth and breadth. In the following section the data collection process is divided into three phases: the survey, the participant observations, and the archival data. The order of the phases reflects the three research themes under investigation, not when the data were collected. After describing each phase of the data collection process, I attend to how the data has been analyzed as well as discuss problems relating to validity and reliability. The research questions, data collecting techniques, and method of analysis are presented in Table 2.

Before presenting how the data have been collected and analyzed a brief description of the project that has been framing a major part of the research and influenced the choice of object of study is presented. A greater portion of the data collection has been conducted within a project called “Personnel Related Indicators for Strategic Management Analysis” (PRISMA). The project was conducted in cooperation with the Social Welfare Service, the Swedish Labor Market Administration, the Federation of Social Insurance Offices, the Swedish Association of Local Authorities, and Uppsala University4. The purpose of the project work was to design and

4 Riksförsäkringsverket, Arbetsmarknadsverket, Arbetsmiljöverket, Försäkringskasseförbundet and Uppsala universitet.
TABLE 2

Summary of research questions and applied techniques for data collection and analysis.

<table>
<thead>
<tr>
<th>Essay</th>
<th>Title of essay</th>
<th>Research question</th>
<th>Data collection technique</th>
<th>Data analysis technique</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Emergence of indicators: recycling metrics and negotiating meaning</td>
<td>How are indicators constructed?</td>
<td>Observation</td>
<td>Qualitative content analysis</td>
</tr>
<tr>
<td>II</td>
<td>Indicators as technology: the link between indicators and action</td>
<td>How is the link between indicators and actions problematized?</td>
<td>Observation</td>
<td>Qualitative content analysis</td>
</tr>
<tr>
<td>III</td>
<td>What gets measured gets… on indicating, mobilizing and acting</td>
<td>How are indicators and actions related?</td>
<td>Survey</td>
<td>Path analysis and LISREL</td>
</tr>
<tr>
<td>IV</td>
<td>Relevance of using indicators: a move from the question of if to the question of how</td>
<td>If and how do indicators impact performance?</td>
<td>Survey</td>
<td>Regression analysis</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Archival data</td>
<td>Factor analysis</td>
</tr>
</tbody>
</table>

The project was mainly financed by the Swedish Governmental Agency for Innovation Systems (VINNOVA) but all the participating organizations contributed by giving their time to the project. An initial project group was formed in the spring of 2003 with representatives from all participating organizations. This initial project group was later divided into two groups, where one of the groups conducted the actual development work (the project team) and the second group served as a reference group with the purpose of supporting the project group. At the same time, several new representatives from the Regional Social Insurance Offices and County
Labor Boards entered into the project in order to take an active part in the actual development work of new structures and methods for the management of personnel and health-related issues. Their main focus was on the development and implementation of a new management accounting tool consisting of a set of non-financial indicators. This setting provided a unique opportunity to study the development, use, and consequences of non-financial indicators. In the following sections the three research phases (the survey, the observations, and the archival data) are discussed in greater detail.

Observations

Observations were conducted over a period of two years from August 2003 to September 2005 to study the development of non-financial indicators. During this period, the project group met once a month in an effort to develop ‘a new management accounting tool’ consisting of non-financial indicators (Appendix A). The two research questions being studied with participant observations concerned “how indicators were constructed” and “what rationales that guided the development process” These are research questions that are rather exploratory in nature and thus call for a qualitative approach for studying these two issues. Although observations are considered as one of the most expensive data gathering methods (Silverman, 2001), it might be worth the investment in that several methodological problems can be avoided. By observing rather than asking informants about events and behavior, it is possible to reduce problems associated with the fact that memories decay with time, that self-reports might not correspond to observations of behavior, and that responses might be given according to cultural norms (Bernard et al., 1984).

The project group included managers from headquarters and local units as well as representatives from human resource and finance. With this constellation, the development work could benefit from a wide array of competencies and at the same time be given legitimacy at different organizational levels and within diverse units. Memorandums were written for all meetings and ten of the meetings were also recorded and transcribed.
These observations generated approximately 450 pages of single spaced plain text describing the development process.

As the title of this section implies, I did more than merely observe the development work. By writing several of the protocols and occasionally summarizing the project work, I actively participated in the development work. This is why I use the term participant observation. Participant observation is based on the view that to understand a phenomenon you have to participate yourself rather than observe at a distance (Silverman, 2001). This method is commonly used by anthropologists who become a part of the phenomenon under study. Sometimes a distinction is drawn between participant and nonparticipant observation, where the former refers to observations that are carried out when the researcher is taking an established participant role in the scene that is being studied (Atkinson and Hammersley, 1994, p. 248). A typology suggested by Gold (1958) distinguishes between four roles for researchers conducting field work: complete observer, observer-as-participant, participant-as-observer and complete participant. Atkinson and Hammersley (1994) take the thought even further by stating, “in a sense all social research is a form of participant observation, because we cannot study the social world without being part of it” (Atkinson and Hammersley, 1994, p. 249). By using the term participant observation, I acknowledge that I probably have had some influence on the phenomenon that I have studied. Just having a researcher sitting at the table and taking notes might influence the actions taken during the meetings. At the same time, this close involvement has contributed to a better understanding of the project work. Thus, the risk of ‘contaminating’ the data can be weighted against the attainment of a deeper understanding of the development process.

The observations were complemented with a collection of documents and interviews to gain a deeper understanding of the organizations under study. A total of six interviews were carried out with the aim of receiving a pre-understanding of how the organizations were working with personnel issues in general. The persons interviewed were managers working at the same organizational units that took part in the development work.

The interest among the organizations to take part in this development work might have been motivated by the current societal and political climate concerning the issue of sick leave. Since the end of the 1990s, the media and
government in Sweden had given much attention to problems relating to sick leave (Ministry of Finance, 2002b; Ministry of health and social affairs, 2004). An increase in sick leave and expenditures had been identified as societal problems that had to be managed with a higher level of efficiency. In the budget proposal of 2002 the Swedish government even stated that during their term of office they intended to prioritize the problem of ill-health in working life (Ministry of Finance, 2002a). One of the actions taken at the level of the central government was the introduction of new legislation requiring public sector organizations and private companies to report employees’ sick leave in the annual report (Ministry of Finance, 2002b). Through the introduction of new legislation, the Swedish government attempted to use measurements as a means to initiate action in organizations. By measuring sick leave, organizations were assumed to begin their work with the issue of sick leave. In relation to this the government also set up a national goal of halving the amount of sick leave in 2002 by the year 2008 (Ministry of Finance, 2002a).

The data collected with participant observations were structured and coded with the use of the software ‘Atlas ti’. This reduced the text mass to a more focused and manageable amount. This procedure also made it possible to get a more profound view of the development processes of non-financial indicators, as well as the underlying ideas guiding the development work. Data from the development process are subsequently analyzed in Essays I and II with the use of qualitative content analysis, which is a systematic approach to identify themes and categories in written texts.

Surveys

To study the use and consequences of non-financial indicators (i.e. research themes two and three) survey data were used. The two organizations surveyed are The National Labor Market Administration and The Swedish Social Insurance Administration. The National Labor Market Administration is one of the largest public authorities in Sweden with about 10 000
employees. The organization consists of the National Labor Market Board, which is the central authority, 20 self governed County Labor Boards (Länsarbetsnämnder)\(^5\), and approximately 325 Local Public Employment Services (Arbetsförmedlingar). The Swedish Social Insurance Administration has about 16 000 employees and consists of 21 self governed Regional Social Insurance offices (Försäkringskassor)\(^6\) and approximately 330 Local Social Insurance offices (Försäkringskontor).

A questionnaire was sent to a sample of 63 operating managers at Local Social Insurance Offices (covering all 21 Regional Social Insurance offices) and to a sample of 60 operating managers at Local Employment Offices (covering all 20 County Labor Boards). The questionnaire (Appendix B) was sent in June 2003 and a reminder was sent in the beginning of August to those participants who did not respond to the first mailing. Cover letters (Appendix C and D) and an Appendix that explicitly explained several concepts (Appendix E) were attached to the questionnaire. All the respondents who had not answered by the end of September were contacted by phone. The questions asked concerned how the managers were working with personnel issues within their units. Because this might be a sensitive subject to investigate, all respondents were assured anonymity and only the person handling the data had access to the respondents’ answers.

The questionnaire was answered by 109 respondents, or a response rate of 89%. There are several explanations for this high response rate. First, the questions concerned a topic of great interest at the organizational and national level (Hogstedt et al., 2004; Marklund et al., 2005; Ministry of health and social affairs, 2004). This is because new policies directed the investigated organizations towards attending to the working conditions in general and sick leave in particular. Another explanation is that the two surveys were conducted within the boundaries of a development project (PRISMA) in which the organizations’ central authorities were actively participating. The survey was analyzed using Spearman rank-order

\(^5\) [http://www.ams.se/go.aspx?C=36](20060808, 10:54)
\(^6\) [http://www.forsakringskassan.se/omfk/org/](20060808, 10:50)
correlation, principal component analysis, and linear structural relations (LISREL).

To identify possible consequences of non-financial indicators the data were initially analyzed with Spearman rank-order correlation and the software SPSS. The Spearman rank-order correlation is included in the group of non-parametric statistics and is used to calculate the strength of the relationship between two continuous variables (Pallant, 2003). Non-parametric statistics are not sensitive to a non-normal distribution and it is a superior choice when the sample is quite small as in the present case (ibid). Although non-parametric statistics are less powerful than parametric statistics, the preliminary results from these statistical tests indicated some notable relations between non-financial indicators and actions (Ersson and Liew, 2004). This evoked curiosity to look deeper into the expression “what gets measured gets managed”. However, to evaluate the indicated results from this first analysis, a more robust analysis was required. Thus, such an analysis was done using path analysis and LISREL. Path analysis is a method used to test theoretical relationships and is described as “the procedure for empirical estimation of the strength of each relationship (paths) depicted in the path diagram” (Hair et al., 1998, p. 587). Because it is a method for testing theoretical relationships, the path model must be specified before the path analysis is conducted (Schumacker and Lomax, 1996, p. 39). The results of this analysis are reported in Essay III. While Essay III investigates the relationship between indicators and actions, Essay IV extends this model by investigating the association between indicators and the result of the actions taken (i.e. performance). The methods used in Essay IV are factor analysis and linear regression analysis. It can be noted that different samples are used in the two essays. In Essay III all respondents that used indicators were included in the analysis, whereas in Essay IV only data on the dependent variable (performance) for one of the public authorities surveyed could be used. This became a limiting factor and, accordingly, only half of the respondents could be included in this analysis.

There are several limitations with the data collecting method used in Essay III. First, because the data are cross sectional, establishing the direction of the relationship between the variables (i.e. between non-financial indicators and actions) is a problem. Although the direction is
argued theoretically, it would have been a more robust approach to collect the data for the dependent and independent variable at two separate points in time. This problem is avoided in Essay IV in that the dependent variable is measured with longitudinal data collected for two periods (2003 and 2004) as well as from another source (archival data). A second limitation evident in Essays III concerns that of self-reports and social desirability problems (Podsakoff and Organ, 1986). The managers answering the questions concerning their work with personnel issues might have overstated their achievements in that it was both socially and organizationally desirable to actively work with personnel issues in general and sick leave in particular at the time of the inquiry. This might have caused an upwards shift in the distribution of the responses (ibid). However, because the problem of giving socially desirable answers concerns both the independent and dependent variables, it seems probable to expect an upwards shift in the distribution of responses for all the variables included in the analysis. Thus, the total effect of receiving socially desirable answers might partly be counterbalanced when the variables are included in the same model. The problem of having socially desirability answers might also have been reduced by using anonymity.

There are also several strengths as to how the data have been collected. First, the question asked about the present situation at the time of the inquiry and not how it had been, which strengthens the possibility of obtaining valid answers. A general problem pertains to studies based on retrospective data and the fact that memory of events decreases with time (Bernard et al., 1984). To minimize these problems it is preferable to formulate questions that refer to how it is and not to how it has been. Second, the concepts were measured as a composite of several variables, a procedure that increased the possibilities of capturing the concepts under study. Third, the questionnaire was pre-tested to diminish any possibilities of misunderstanding.

Archival data

In the fall of 2006, additional data were gathered from the Swedish Labor Market Board. The purpose with this data collection was to take the analysis
of the relationship between indicators and actions one step further by investigating other possible consequences of using indicators than the ones studied in Essay III. Attention was therefore turned towards the results of individual actions (i.e. unit operational performance). The collected archival data of unit performance was based on more than 60,000 telephone interviews conducted continuously between 2003 and 2004 by a unit within The National Labor Market Administration in order to measure the level of goal achievement for each of the 325 Employment Services.

Unit performance was measured by collecting data of each unit’s level of goal achievement compared with its counterparts. The National Labor Market Administration had specified seven goals that they followed-up with telephone interviews. Some of the goals were consistent over the years, whereas others continuously changed. To find a good measure I consulted persons that were involved in the performance measurement process. First, I arranged a meeting with the person responsible for the measurement instrument at The National Labor Market Administration. I wanted to know how the questions were formulated, the method for selecting respondents, how the data were handled, and so forth. This consultation gave me information concerning if and how the goals had changed between 2003 and 2004, if and how the questions used to measure the goals had changed between the years, and if the data collection process had changed during this two-year period. These were questions that were of importance for the identification of valid and reliable measurements to include in the analysis. Because the respondent was deeply involved in the process of measuring each organizational unit’s level of goal achievement, she also knew a good deal about the unit’s own possibilities to influence its level of goal achievement. This was valuable information in that I wanted to find a measurement that was difficult to manipulate. It was also important to find a measurement of performance that was mainly influenced by the actual work performed by the employees at the unit and less influenced by external
factors such as political decisions or the current economic situation\textsuperscript{7}. To analyze this question further I decided to contact an official working at one of the units and discuss the possibilities for organizational members to influence the goals. Based on the contained information, there was one measurement that stood out as more relevant and reliable than the others. This measure was therefore incorporated into the analysis.

\textsuperscript{7} For instance, the goal relating to customer satisfaction was thus not selected because it most probably is influenced by political decisions and the current situation in the labor market.
Summary of essays

Below, each essay is summarized by describing the questions under investigation, the methods that have been used, the main findings, and the primary conclusions that are drawn.

Essay I

The first essay—Emergence of indicators: recycling metrics and negotiating meaning—explores the development of indicators. Although indicators are extensively used within organizations, there has been little attention on the process forgoing their existence. There is a paucity of information concerning how measurements are developed (Otley, 1999); more specifically, there is little knowledge of how non-financial measurements emerge and are developed over time (Lowe and Jones, 2004; Vaivio, 1999b). According to Vaivio (1999b), the existing literature on non-financial measurements is primarily normative and therefore there is a strong need for supplementary empirical work.

This essay takes a starting point in Burns and Vaivio’s (2001) discussion of three perspectives on management accounting change: the epistemological nature of change, the logic of change, and the management of change. When it comes to the epistemological nature of change, the question posed in this essay is whether the development of new, non-financial indicators brings about any technical (Sulaiman and Mitchell, 2005) or substantial changes (Vaivio, 2004, 2006). A second perspective discussed concerns the logic of change. For some authors, the development of non-financial indicators has been described as a systematic and rather linear process (Chang et al., 2002; Kaplan and Norton, 1996; Neely et al., 1995). However, others have described the process as nonlinear (Vaivio, 1999b), chaotic and unpredictable (Lowe and Jones, 2004), controversial (Vaivio, 2004), and one that includes iterations (Mettänen, 2005). The third perspective on management accounting change refers to the management of change. Is management accounting change a centrally proclaimed top-down
driven effort by organizations’ top management or is it locally initiated and driven by key actors from decentralized organizational units (Burns and Vaivio, 2001)? This study is based on longitudinal qualitative data gathered through participant observation of five units within two public sector authorities developing an accounting tool consisting of non-financial indicators.

The result of the development work was a new management accounting tool containing three specific indicators: participation, workload, and leadership. When looking at the three final indicators, the degree of novelty can be questioned and thus the degree of change in management accounting can be called into question. This is because the measurements and measurement structures used to quantify the three concepts were already in place before the development work. When analyzing the development of indicators from a point of view of technical change, there do not seem to be any major changes in the existing management accounting system. What had changed during the development work was the meaning assigned to the pre-existing measurements. Two main findings are emphasized in Essay I. First, the development of indicators includes two conceptually separable processes: one of technical change and one of substantial change. Second, the ‘same’ measurements took on diverse meanings and fulfilled different functions at varying points in time.

The development of indicators is also analyzed with reference to the discussion concerning the logic and management of change. The results support the view of the development of indicators as a nonlinear process characterized by iterations (Mettänen, 2005), as well as a process that is chaotic and unpredictable (Lowe and Jones, 2004). Furthermore, it is indicated that the actual quantification of the concepts seemed to be a minor problem and that previous measurements came to play a major role in the process of quantifying the identified concepts. This latter finding is consistent with studies of the development of non-financial measurements emphasizing the importance of existing measurements (Lohman et al., 2004; Vaivio, 1999a, 1999b; Wouters and Sportel, 2005).

The proposition that the development of indicators is a two-sided process has implications for how studies of management accounting change are designed. Based on the findings in this essay, it does not seem sufficient
to attend to technical design issues of a management accounting system as the change may have taken place in meaning systems and not at a technical design level. Furthermore, the findings in this essay may have some practical implications for the development of non-financial indicators. Several studies have reported on the difficulties associated with developing non-financial measurements (Cavalluzzo and Ittner, 2004; Vaivio, 1999b). As many of today’s organizations have a large number of measurements at their disposal, it might be more efficient to recycle than to develop completely new ones.

Essay II

The second essay—Indicators as technology: the link between indicators and action—also investigates the development of non-financial indicators with a different theoretical approach. In specific, this essay elaborates upon the underlying rationales guiding the formation of a new technology (i.e. indicators) for realizing the program of a healthier Sweden.

The theoretical backdrop of this essay is the distinction between programs and technologies suggested by e.g. Miller and Rose (1990), Rose and Miller (1992) and Power (1997). Specifically, this essay attends to the notation of technology which Miller and O’Leary (2002) denote as “devises for intervening, instruments for acting upon people, objects, and processes so as to shape and influence them” (p. 93). Inherent in the notation of technologies is the assumption that technologies influence the conduct of individuals. This implies that when indicators (as a technology) are put in place a specific action is expected. Still, during a development project, the technology is not already there. It has to be developed and, consequently, the link between the technology and action has to be established. By following a development project over a two year period this essay attempts to answer the research question: how is the link between indicators and action problematized in a development process?

The study is based on longitudinal qualitative data collected through observations of two public sector authorities developing a new technology consisting of non-financial indicators. From these observations four phases are identified in which the link had specific features. The first phase was mainly characterized by discussions of technical matters such as possibilities
to represent health as well as reliability and validity of the indicators. During this phase the focus was on the production of indicators, on measuring things the right way, discussion of relevance and on the number of indicators. In the second phase issues such as communication, internal allies and ‘creation of meaning’ surfaced as important. The third phase covered the shortest time period, only one meeting in length. However, this phase really stood out compared to all other since the idea of developing indicators was almost abandoned and accordingly the whole development project was put at risk. The last phase covered meeting thirteen to eighteen and presented the return to the idea of a link between indicators and action, and as a result, between technology and action. By that, the belief in the potentiality of indicators was still there but the rationale for why it has potentiality had shifted.

Based on these results three rationales are distinguished that are informing the development of the new technology. They are denominated by the direct, the detour and the notour rationales. Furthermore, it is concluded that the identified rationales (motivating indicators as a preferred technology) are dominating different phases of the development process. Thus, technologies, when scrutinized, have rationales (or programs of their own) that may be contested. Consequently, technologies, such as indicators, do not have one single rationale. This rationale changes over time and it is only through investigations of performative character (i.e. studying indicators in action) that it is possible to formulate the potentialities of technologies. These findings contribute with insights into the construction of technologies and how the link between technologies and action are conceived and established during a development process. If we accept that technologies have programs and that these programs may change over time we have the possibilities to make further inquiries into situations where technologies do not support the political program. Also, when choosing between different possibilities for realizing a program it might be of importance to be aware of the underlying rationales since this can influence both the possibility to realize programs as well as the resources required.
Essay III

Essay III—What gets measured gets… on indicating, mobilizing and acting—addresses the question of how we can understand the relationship between measurement and management. This is analyzed by scrutinizing the relationship inherent in the often-cited adage “what gets measured gets managed.” The saying has been a potent argument for many authors, especially those working with the balanced scorecard (Kaplan and Norton, 1992, 1996). It has also been noted in strategy discourse (Bartlett and Ghoshal, 1993; Stopford and Baden-Fuller, 1994), environmental management (Gray, 1992), and equal opportunity (Gentile, 1994). The relationship between measurement and management has thus attracted scholars from a variety of disciplines. Nevertheless, some authors question the saying “what gets measured gets managed”, suggesting that the underlying relationship needs to be scrutinized further (Emiliani, 2000; Lapsley, 1999; Williams, 1998). At the same time, whereas the critique has primarily been built on theoretical and intuitive arguments the empirical testing of the relationship has been rare. Therefore, the saying needs further study. To understand the relationship a new concept termed mobilizing is introduced as a third variable. Mobilizing is defined as the act of summoning attention, resources and strategies for acting (in addition to measurement activities). This essay is based on quantitative data collected with a survey of 41 self-governed organizational units within two public sector organizations and analyzed with LISREL.

The results indicate that many of the working conditions studied in the survey are mobilized to a greater extent than they are indicated and that the issues that are indicated are primarily those that have been frequently debated in the media. From this result, it is concluded that the issues that have internal and external political pungency are the issues that the organizations are indicating. The findings provide a first opportunity to redevelop the adage so that it reads, “what gets debated in society gets measured.” Further statistical tests of the adage (without including the variable of mobilizing) suggest that the model does not fit the data well. However, when mobilizing is included in the analysis, the model fit improves and the results indicate that the concept of indicating must exist in
the model to give the best fit. In conclusion, the one modification that seems most agreeable based on the present analysis is: “what gets mobilized gets managed, especially if it gets measured”. The main conclusion from the empirical test is that the adage needs to be revised to include the concept of mobilizing. Another conclusion is that mobilizing should be part of the discourse of measurement and management in that it enriches our understanding of how the two concepts are associated.

Essay IV

The fourth essay—Relevance of using indicators: a move from the question of *if* to the question of *how*—attends to the question of how we can understand the relationship between measurement and performance. Some authors have reasoned that traditional financial measurements are insufficient to manage organizations and that organizations need to complement with other measurements (Johnson and Kaplan, 1987). Following this line of thought, there has been a turn from a rather one-sided focus on historical, one dimensional, and short-term financial measurements (such as return on investment and net earnings) towards multi-dimensional measurement systems incorporating a wide range of non-financial measurements (Chang et al., 2002; Kaplan and Norton, 1992, 1996; Neely et al., 2002). Although organizations rely on measurements to enhance performance, previous studies have reported inconclusive or contradictory findings on the relation between the use of measurements and performance (Bourne et al., 2005; Hoque, 2005; Ittner and Larcker, 1998; Wouters et al., 1999). The use of performance measurements has also proven to be a complicated process, especially within public sector organizations. Because public sector organizations have to account to several stakeholders (Boland and Fowler, 2000), they have a situation with both multiple and vague goals, which complicate the development and use of performance measurements. Furthermore, because public sector organizations are not profit-seeking and generate little or no income, traditional financial measurements are seldom applicable. The two questions raised in this essay are *if* and *how* the use of non-financial indicators affects operational performance. To understand the relationship between indicators and performance a distinction needs to be
made between extensive and sophisticated use of indicators. The concept of ‘sophisticated use’ refers to the inclusion of indicators in models of cause and effect relationships and the communication of indicators by discussing them with employees. The essay is based on survey and archival data from two public sector authorities in Sweden and analyzed with linear regression analysis using SPSS software.

The results of the regression analysis show that 10.9% of the total variance of unit operational performance is explained by the use of indicators one year earlier. So far, the results show that indicators impact unit operational performance but it is not known how the impact is attained. Further analysis of the relationship demonstrates that extensive use of indicators has a significant negative impact on future operational performance (p<0.01), whereas sophisticated use of indicators has a tentative positive impact on future operational performance (p<0.1). These results suggest that indicators influence performance but that the use of non-financial indicators might have a negative impact unless they are used in a sophisticated way. It seems as if the use of indicators is bidimensional and therefore might have both a positive and a negative impact on operational performance. Furthermore, the results show that the use of indicators does not have any impact on current performance but does have an impact on future performance. Thus, a time lag is evident between the use of indicators and operational performance.

With reference to the present results, it is suggested that it is not sufficient to attend to the existence of measurements when investigating the relationship between measurements and performance. Furthermore, it is not enough to attend to the extensive use of measurements. To conclude, an important contribution of this essay is that it recognizes the relevance of not only attending to the question of if indicators are used but also to the question of how they are used. The research questions and conclusions from all four essays are summarized in Table 3.
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Concluding discussion

This thesis elaborates on the potentiality of non-financial indicators by investigating how indicators are developed, in which way they are used, and what consequences they may have. The four essays that make up this thesis all attend to either one of these themes and thus examine the potentiality of indicators in a variety of ways.

Development

The first theme addressed is the development of indicators. In line with the increased interest and investments in the development of new measurements, it is pivotal to understand both how and why new indicators are introduced into organizations. These two questions are addressed in Essays I and II. An important finding in Essay I is that the ‘same’ measurements can be given diverse meanings and play different roles at different points in time. Because the meaning given to measurements changes over time, the measurements fulfill different functions over time, a fact that may influence the potential of the measurement over time. The measurement’s ‘changing nature’ is thus identified as a possible explanation to the existence of contradictory standpoints concerning the potential of measurements (Bourne et al., 2005; Hoque, 2005; Ittner and Larcker, 1995, 1998; Wouters et al., 1999). Based on this finding, it is suggested that research on performance measurements and management accounting needs to pay attention to how the measurements are viewed by the users. This factor must be taken into account because it is something that might influence how the measurements are used and in prolonging what consequences they may have.

A main finding in Essay II is that the development of indicators is dominated by shifting rationales as to why indicators should be introduced into organizations. To begin with, there is a strong belief in the power of measurements and where the main emphasis is on finding the right, valid, and reliable indicator. The idea is that the right indicators will influence the conduct of individuals. Later on, this direct link is problematized and
importance is given to how the indicator is to be used in order to influence the conduct of individuals. The idea is that if indicators are used in a certain way, they will be able to influence the conduct of individuals. The finding of shifting rationales contributes to the understanding of how individuals think about the possibilities of using indicators in organizations. The results in Essay II also show that at one point, the organizational members almost lost their trust in the potentiality of numbers as such. This finding is noteworthy because their loss of trust in numbers could have resulted in the abandonment of indicators as a management tool. The findings of Essay II suggest that the potentiality of indicators depends on how organizational members think about the possibilities of indicators.

These findings have implications for research within management accounting and performance measurements. It is suggested that the role of measurements need to be taken into account. Do the measurements have a previous history within the organization? If so, what roles do these measurements have and are they ‘trusted’ by their users? For example, it is worthy to know if the measurements have been generated for the reporting to higher authorities, for learning, or if they are developed with the aim of influencing the conduct of individuals. These are factors that can influence how measurements are used and what consequences management accounting and performance measurements may (or may not) have.

Use

The second theme investigated in this thesis pertains to how indicators are used. As argued previously in this thesis, to understand the potential that indicators may have it is important to not only consider how the measurements are developed but also how they are used (Bourne et al., 2005; Evans, 2004; Kloot and Martin, 2000). The use of indicators is explicitly investigated in Essays III and IV. The evidence provided in Essay III shows that indicators do not directly influence what gets managed in an organization; however, the evidence suggest that indicators still have potentiality in that they support other activities that subsequently influence what gets managed. These results indicate that the adage of “what gets measured gets managed” needs to be reformulated to “what gets mobilized
gets managed, especially if it gets measured”. Thus, the potentiality of indicators is dependent on how organizations are mobilizing around the same issues as they are indicating. An important contribution from Essay III is that the concept of mobilizing needs to be given greater attention because it enriches our understanding of the potentiality of indicators.

The use of indicators is also investigated in Essay IV. The result from this study shows that indicators have a negative impact on operational performance, unless the indicators are used in a sophisticated manner. Based on this finding, it is suggested that the use of indicators is a bidimensional concept. This finding is noteworthy because it suggests that the potentiality of indicators depends on two factors, namely the extent of indicator use and whether the indicators are used in a sophisticated way. Another finding in Essay IV is that there exists a time lag between when the indicators are used and when consequences can be observed. What is suggested from this finding is that the potentiality of indicators depends on when the investigation of the potentiality of the indicators takes place.

Consequences

The third theme examined is the consequences of using indicators. At first, it appears as if the conclusions drawn from Essays III and IV are contradictory regarding the potential of using indicators. In Essay III it is found that indicators have a weak positive impact on performance, whereas in Essay IV the finding suggests that the impact is significant and can be either negative or positive. The contradictory findings are explained in two ways. The first explanation concerns how the potential of indicators is defined. While the third essay studies the potentiality of indicators by investigating their impact on “what managers do” the fourth essay examines the potentiality by attending to how indicators impact unit operational performance (measured as the accomplishment of customer service core activities). Thus, the two essays attend to two fundamentally distinct consequences of using indicators. Accordingly, the existence of contradictory standpoints concerning the potentiality of indicators may be because previous studies have used different approaches in studying the concept of performance.
The possible consequence of using indicators is also discussed in Essays I and II but from a different standpoint. Instead of examining the consequences at an aggregated organizational level, Essays I and II attend to how indicators are associated with social structures and practices (Dent, 1991; Miller, 1994; Vaivio, 2006). In Essay I the findings showed how indicators take part in the processes of defining what is important, what concepts (such as leadership and workload) represent, and how such issues relate to each other. The development of indicators is not only regarded as a process of generating metrics but also as a process of negotiating shared and idiosyncratic understanding (Eden et al., 1981), as well as a process that is informed by shifting rationales. Consequently, indicators take part in the processes of changing meaning systems.

When discussing the consequences of using indicators, it becomes evident that the believed potential of indicators is influenced by the current theoretical framework. Because the essays have different theoretical standpoints, they discuss the potentiality of indicators differently. Accordingly, a variety of theoretical views among advocates and critics debating the possibility of indicators may explain the existence of contradictory conclusions.

**Attempts to understand the controversy**

In the discussion of the essays attention is directed to a set of important issues that can explain the existence of contradictory conclusions concerning the potentiality of indicators. A first issue that can explain the existence of such a controversy is the diverse theoretical approaches that are used in studying the potentiality of indicators, e.g. indicators as a functional technique that impacts organizational performance (Essay IV) or indicators as having constitutive potential (Essays I and II). Different answers will emerge depending on the theoretical approach used when investigating the potentiality of indicators.

A second explanation to account for the controversy comes from assessing how indicators are developed. As maintained in the concluding discussion, it is important to pay attention to the roles or functions that indicators have and how they are perceived by organizational members. The
measurements ‘changing nature’ (Essay I) and individuals changing view on how measurements are linked to actions (Essay II) may explain why some studies have found evidence supporting a relationship between what gets measured and what gets managed while others have not. This constitutes a second explanation to the controversy.

The third explanation to the controversy is based on the notion that indicators can be used in a variety of ways. As argued previously in this study, the potential of indicators depends on how they are related to other organizational activities (Essay III), to what extent they are used (Essay IV), to what degree they are used in a sophisticated way (Essay IV), and when they have been used (Essay IV). These issues are identified as important factors influencing the potentiality of indicators and may help explain why previous studies have reported conflicting results.

The fourth explanation is deduced from the identification of the variety of possible consequences that the use of indicators can have. What becomes apparent from the concluding discussion is that conclusions drawn from different studies that initially seem contradictory can, on the contrary, be complementary. The disagreement concerning the potential of indicators can thus be explained by differences in model specification (Essay III compared with Essay IV) and inconsistencies concerning how concepts are being defined.

Contribution

This thesis contributes to research on the development, use, and consequences of non-financial indicators. Non-financial indicators play a significant role in management control systems (Ferreira and Otley, 2005; Otley, 1999; Simons, 1995), and they are one of the most important cornerstones constituting contemporary performance measurement systems such as the balanced scorecard (Kaplan and Norton, 1996), the performance prism (Neely et al., 2002), the result and determinants framework (Fitzgerald, 1991), the smart pyramid (Lynch and Cross, 1992), and the intellectual capital frameworks (Petty and Guthrie, 2000). Because indicators have a broad area of application, the findings in this thesis contribute to a host of research fields.
Models specified for investigating relationships are often simple and can therefore never capture the complex organizational world (March and Sutton, 1997). The issue of describing complex worlds with simple models is a major problem that has to be acknowledged no matter what method we choose. However, the complexity can partly be acknowledged by taking contextual factors into account. In this way, the often simplified relationships are studied in a more complex fashion. In Essay III, the concept of mobilizing is introduced as an additional variable and in Essay IV a more multifaceted approach to the use of indicators (i.e. extensive and sophisticated use) is applied. In that sense, this thesis questions the simplified relationships between what gets measured and what gets done and suggests a more comprehensive approach to the study of indicators.

This thesis also makes a theoretical contribution by studying indicators at the micro level. The findings of different rationales for introducing indicators in organizations (Essay II) and that the meaning ascribed to indicators can change over time (Essay I) have important implications for studies of management accounting systems, management control systems, and performance measurement systems. This thesis recognizes the importance of acknowledging the changing nature of the indicators that constitute these systems and the underlying rationales.

This thesis highlights a variety of theoretical approaches that can be used to investigate the potentiality of indicators. This potentiality can be discussed in relation to different definitions of organizational performance (Boland and Fowler, 2000; March and Sutton, 1997), in relation to how indicators influence operational practices, professional routines, and ways of thinking (Vaivio, 2004, 2006), or in terms of how they influence the conduct of individuals (Miller and O'Leary, 2002). Depending on the theoretical focus, different answers to the question concerning the potentiality of indicators will emerge. Furthermore, this study illustrates how the potentiality of indicators can be investigated by multiple methods and by taking different contextual factors into account. To conclude, an important contribution of this thesis is that it highlights the variety of ways that the potentiality of indicators can be studied. By investigating and discussing the potentiality of indicators in a variety of ways, conclusions that may at first seem contradictory can be complementary instead.
Managerial implications

One question that might be raised is whether the tremendous amount of resources invested in new measurement systems and measurement procedures really is worth the investment. Because both private and public organizations are increasingly introducing and using measurements (De Lancer Julnes, 2006; Hood, 1995; Ittner and Larcker, 1998; Micheli and Kennerley, 2005), this is a matter of interest for both types of organization. Although this thesis does not provide an explicit answer to this question, it implicitly attends to it in all four essays. Three specific findings relating to this question are highlighted below.

Great resources are invested in activities of collecting and distributing non-financial accounting information that later may be a management accounting failure and therefore a waste of time and money. It is shown in this thesis that the use of indicators can be counterproductive unless the indicators are used in a more complex or refined manner. In other words, it seems as if measurements can be used efficiently or poorly. This finding suggests that managers need to give more attention to how measurements are used.

Another implication of the present findings is that we need to have a more modest approach to the potentiality of indicators. Organizations should be aware that the production of measurements is not enough to fuel the organization into acting. Still, the impact of indicators should not be minimized because indicators support the relationship between what gets mobilizing and what gets done. The finding that indicators have supportive functions is important to acknowledge when developing and implementing management accounting and performance measurements systems.

A final implication of the present findings is that it is a too narrow approach to only value the potentiality of indicators with reference to how they impact performance directly. When evaluating the contribution of a management accounting system or a performance measurement system, it is essential to take into account that the indicators may influence the conduct of individuals indirectly by affecting meaning systems or supporting the issues mobilized.
Further research

An important contribution of a thesis is that it generates suggestions for further research. Because there are timeframes and other restrictions impacting on the research process, there is always room for further inquiry. The main issue of this thesis has been the potential of indicators and their possibilities to change a given state or situation. There are numerous possibilities to continue this investigation.

To begin with, the association between indicators and performance needs to be further examined. This may be done in a multitude of ways. First, there is the possibility to extend our understanding of the concept of mobilizing. Mobilizing is introduced as a new variable when scrutinizing the link between indicators and actions (Essay III). Still, there is much more to learn concerning the content of mobilizing. How do organizations mobilize? Are there differences concerning how private and public sector organizations mobilize? Are there efficient ways for organizations to mobilize a specific issue?

Apart from scrutinizing the concept of mobilizing, research needs to further differentiate the concept of indicating. In this thesis it is proposed that indictors have greater potential if they are used in an advanced manner. In conjunction with the concept of mobilizing, the idea of ‘sophisticated use’ needs to be studied further. By further investigating how organizations use indicators with greater sophistication, we can enhance our understanding of how indicators link to action and performance.

Furthermore, this thesis has a specific focus on non-financial indicators. One question that can be scrutinized to a greater extent is whether the conclusions drawn in this thesis apply to financial indicators. Do the conclusions drawn concerning the associations between the use of indicators and operational performance hold for financial indicators? Does the identified bidimensionality concerning how indicators are used (extensive and sophisticated use) apply to financial indicators?

In the investigation of the underlying ideas that guide the development of a new technology three shifting rationales were identified: the direct, the detour and the notour rationales. One question to be asked is if the suggested rationales are dominating other similar development projects? Also, do other
technologies (e.g., various forms of writing, recordings, and assessment) have shifting rationales of their own? Further, what motivates these rationales to shift? These questions may be investigated using surveys in order to reach a larger of set organizations.

To conclude, it would be of particular value to study whether the potential of using measurements differ depending on the area of application such as human resource measurements (Catásús and Gröjer, 2006), JIT measurements (Young and Selto, 1993), or customer satisfaction measurements (McColl-Kennedy and Schneider, 2000). Another worthwhile area would be to study how the consequences of using measurements differ depending on their role within the organization.

Evidently, the possibilities for further research within this field are numerous.
References


## Appendix A: Meetings

<table>
<thead>
<tr>
<th>Nr.</th>
<th>Date</th>
<th>Time</th>
<th>Number of participants</th>
<th>Data source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>2003-08-19</td>
<td>10-13 (3h)</td>
<td>-</td>
<td>Minutes</td>
</tr>
<tr>
<td>2.</td>
<td>2003-11-13</td>
<td>10-13 (3h)</td>
<td>9</td>
<td>Minutes</td>
</tr>
<tr>
<td>3.</td>
<td>2004-03-11</td>
<td>10-13 (3h)</td>
<td>7</td>
<td>Minutes</td>
</tr>
<tr>
<td>4.</td>
<td>2004-04-21</td>
<td>10-13 (3h)</td>
<td>10</td>
<td>Minutes</td>
</tr>
<tr>
<td>5.</td>
<td>2004-05-28</td>
<td>10-13 (3h)</td>
<td>7</td>
<td>Minutes</td>
</tr>
<tr>
<td>6.</td>
<td>2004-06-17</td>
<td>10-13 (3h)</td>
<td>7</td>
<td>Minutes</td>
</tr>
<tr>
<td>7.</td>
<td>2004-09-15</td>
<td>10-13 (3h)</td>
<td>12</td>
<td>Minutes and recordings</td>
</tr>
<tr>
<td>8.</td>
<td>2004-10-14</td>
<td>10-13 (3h)</td>
<td>11</td>
<td>Minutes and recordings</td>
</tr>
<tr>
<td>9.</td>
<td>2004-11-18</td>
<td>10-14 (4h)</td>
<td>7</td>
<td>Minutes and recordings</td>
</tr>
<tr>
<td>10.</td>
<td>2004-12-16</td>
<td>10-13 (3h)</td>
<td>7</td>
<td>Minutes and recordings</td>
</tr>
<tr>
<td>11.</td>
<td>2005-01-21</td>
<td>10-12 (2h)</td>
<td>9</td>
<td>Minutes and recordings</td>
</tr>
<tr>
<td>12.</td>
<td>2005-02-17</td>
<td>10-13 (3h)</td>
<td>8</td>
<td>Minutes and recordings</td>
</tr>
<tr>
<td>13.</td>
<td>2005-03-17</td>
<td>10-16 (6h)</td>
<td>7</td>
<td>Minutes and recordings</td>
</tr>
<tr>
<td>14.</td>
<td>2005-04-19</td>
<td>10-15 (5h)</td>
<td>8</td>
<td>Minutes and recordings</td>
</tr>
<tr>
<td>15.</td>
<td>2005-05-12</td>
<td>10-13 (3h)</td>
<td>7</td>
<td>Minutes and recordings</td>
</tr>
<tr>
<td>16.</td>
<td>2005-06-16</td>
<td>10-15 (5h)</td>
<td>7</td>
<td>Minutes</td>
</tr>
<tr>
<td>17.</td>
<td>2005-09-01</td>
<td>10-15 (5h)</td>
<td>6</td>
<td>Minutes and recordings</td>
</tr>
<tr>
<td>18.</td>
<td>2005-09-23</td>
<td>10-15 (5h)</td>
<td>-</td>
<td>Minutes</td>
</tr>
</tbody>
</table>
Appendix B: Questionnaire

1. Are you?  
   - Female □  
   - Male □

2. How many employees are you responsible for? ……persons

3. During how many years have you had employee responsibility? ……years

4. To what extent do you use human resource indicators concerning your unit? (Definitions of human resource indicators can be found on a separate note.)
   - Not at all □
   - To a small extent □
   - To a relatively large extent □
   - To a large extent □

If the answer is not at all, go to question 7

5. Are any of the human resource indicators that you use related to each other in a cause and effect relation?  
   - No □  
   - Yes □

6. Do you use any human resource indicators at your department to visualize the following working conditions? (Definitions of the working conditions can be found on a separate note.)
   - Job security □
   - Personnel responsibility □
   - Workload □
   - Equality between sexes □
7. During the past months, how often have you had a reason to talk to one or several of your employees about issues related to the following working conditions?

<table>
<thead>
<tr>
<th>Working Condition</th>
<th>Not at all</th>
<th>Once in a while</th>
<th>Several times</th>
<th>On a daily basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job security</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personnel responsibility</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workload</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equality between sexes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Competence development</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sick leave, short term</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sick leave, long term</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wage structure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personnel turnover</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8. How often do you bring up issues concerning any of the following working conditions at the agenda at division meetings?

<table>
<thead>
<tr>
<th>Working Condition</th>
<th>Not at all</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job security</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
9. To what extent do you actively work at your department with the following working conditions?

<table>
<thead>
<tr>
<th>Working Condition</th>
<th>Not at all</th>
<th>To a small extent</th>
<th>To a relatively large extent</th>
<th>To a large extent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job security</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personnel responsibility</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workload</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equality between sexes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Competence development</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sick leave, short term</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sick leave, long term</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wage structure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personnel turnover</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10. To what extent do you think that the budget influence the direction of the work with human resources?
11. Do you have any centrally proclaimed action plans or corresponding documents relating to the area of human resources?

<table>
<thead>
<tr>
<th>Not at all</th>
<th>To a small extent</th>
<th>To a relatively large extent</th>
<th>To a large extent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If the answer is no, go to question 13

12. If the answer is yes, to what extent do these documents influence the work with human resources?

<table>
<thead>
<tr>
<th>Not at all</th>
<th>To a small extent</th>
<th>To a relatively large extent</th>
<th>To a large extent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

13. To what extent is the personnel policy integrated with the management control system?

<table>
<thead>
<tr>
<th>Not at all</th>
<th>To a small extent</th>
<th>To a relatively large extent</th>
<th>To a large extent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

14. To what extent do you use human resource indicators in discussions concerning human resources?

<table>
<thead>
<tr>
<th>Not at all</th>
<th>To a small extent</th>
<th>To a relatively large extent</th>
<th>To a large extent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix C: Cover letter

To the operating manager with personnel responsibility (region manager or corresponding)

Project PRISMA (Personnel Related Indicators for Strategic Management Analysis) is a development work in cooperation with the National Social Insurance Board, Labour Market Board, the Swedish Work Environment Authority, the federation of Social insurance offices, the Association of Local Authorities and Uppsala University.

The aim with the project is to develop new forms and methods for constructing key ratios that are distinct, possible to follow up, and efficiently integrate strategic human resource goals into the current management control system. The development work is foremost financed by VINNOVA (The Swedish Governmental Agency for Innovation Systems).

The questionnaire foremost asks about what personnel strategic instruments that are used today but we are also interested in Your view on how personnel strategic decisions are handled in your organization. With this survey we hope to get valuable information that can be used in the forthcoming work.

Your answers are confidential. We wish to receive your answers at the latest the 13th of June 2003. Please find a pre stamped enveloped enclosed.

If You have any questions concerning the survey or the questionnaire You are welcome to contact the representative from the National Social Insurance Board XX at telephone number: xx-xxx xx xx or the PhD candidate XX at telephone number: xxx-xxx xx xx.

Many thanks!

XX
Project leader
Appendix D: Reminder

A reminder to You who are operating manager with personnel responsibility (region manager or corresponding).

We would like to welcome You back from your vacation and hope that You will have the time to answer the questionnaire that was sent to you in May. Your answers are important for the result of the study. Project PRISMA (Personnel Related Indicators for Strategic Management Analysis) is a development work in cooperation with the National Social Insurance Board, Labour Market Board, the Swedish Work Environment Authority, the federation of Social insurance offices, the Association of Local Authorities and Uppsala University.

The aim with the project is to develop the forms and methods for constructing key ratios that are distinct, possible to follow up, and efficiently integrate strategic human resource goals into the current management control system. The development work is foremost financed by VINNOVA (The Swedish Governmental Agency for Innovation Systems).

The questionnaire is foremost about what forms of personnel strategic instruments that are used today but we are also interested in receiving Your view on how personnel strategic decisions are handled in your organization.

Your answers are confidential. We wish to receive Your answers by the 11\textsuperscript{th} of August at the latest. Please find a pre stamped enveloped enclosed. If You have any questions concerning the survey or the questionnaire You are welcome to contact the representative from the National Social Insurance Board XX at telephone number: xx-xxx xx xx or the PhD candidate XX at telephone number: xxx-xxx xx xx.

Many thanks!

XX
Project leader
## Appendix E: Working conditions

<table>
<thead>
<tr>
<th>Concept</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working conditions</td>
<td>Working conditions refer to personnel-related key ratios, such as personnel turnover, sick leave, education cost per employee, number of female managers and age structure.</td>
</tr>
<tr>
<td>Job security</td>
<td>Questions concerning all forms of employment, such as full and part time jobs, temporary jobs and positions with conditional tenure.</td>
</tr>
<tr>
<td>Personnel responsibility</td>
<td>Number of employees per personnel responsible person (manager).</td>
</tr>
<tr>
<td>Workload</td>
<td>Questions concerning working pace, stress, overtime, etc.</td>
</tr>
<tr>
<td>Equality between sexes</td>
<td>Questions related to all aspects of equality.</td>
</tr>
<tr>
<td>Competence development</td>
<td>Questions concerning education and learning at work.</td>
</tr>
<tr>
<td>Sick leave, short term</td>
<td>Sick leave 1-14 days.</td>
</tr>
<tr>
<td>Sick leave, long term</td>
<td>Sick leave more than 14 days.</td>
</tr>
<tr>
<td>Wage structure</td>
<td>Questions concerning benefits, wages and other material working conditions</td>
</tr>
<tr>
<td>Personnel turnover</td>
<td>Questions concerning the number of persons newly employed and resigned, i.e. turbulence at the work place.</td>
</tr>
</tbody>
</table>