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Performance Measurement Systems in Swedish Health Care Services

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ABSTRACT

In the quality management literature, measurements are attributed great importance in improving products and processes. Systems for performance measurement assessing financial and non-financial measurements were developed in the late 1980s and early 1990s. The research on performance measurement systems has mainly been focused on the design of different performance measurement systems. Many authors are occupied with the study of the constructs of measures and developing prescriptive models of performance measurement systems. There is a need in the research to shift focus from studying the construct of measurements to how they are used in real face-to-face situations in specific contexts.

The purpose of this thesis is to analyse the development, i.e. the design, implementation and use, of performance measurement systems in Swedish health care services. The study aims to increase the understanding of the role of performance measurement system in Swedish health care and thereby support health care improvements in general. Three research questions have been derived from the purpose. (1) How and why are performance measurement systems being developed in Swedish health care services? (2) What problems can be identified in the development? (3) What enabling factors can be identified in the development?

A qualitative research strategy was selected for the research. The research is based on a multiple case study design conducted within two research projects and information has been gathered through interviews, documents and observations.

The idea of performance measurement systems develops through several tracks when implemented in health care and the development follows a purposeful process of activities. The development was initiated when major changes occurred in the organisation or its environment. Performance measurement systems are primarily used to support a dialogue between management and employees regarding organisational improvement. Problems experienced are related to struggles to reach national consensus for measures, involving management, and the clarification of various end-users' needs. Enabling factors are the frequent interaction with people developing the system, management's involvement, the use of multi-skilled teams, and visual displays.

The research contributes to several insights to the research area of performance measurement system and health care practitioners. The research shows that the development process is far from straight forward and is formed by the influence of factors in the organisational context, which cannot always be predicted. By seeing the development as an innovation process, the focus is broadened from being technological towards the organisation as whole, which contribute to the existing research on performance measurement systems.

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II: DESIGN AND IMPLEMENTATION OF A PERFORMANCE MEASUREMENT SYSTEM IN Swedish Health Care Services: a Multiple Case Study of 6 Development Teams

BEATA KOLLBERG, MATTIAS ELG AND JAN LINDMARK

QUALITY MANAGEMENT IN HEALTH CARE, 2005, VOL 14-2, PP. 95-111

III: MEASURING LEAN INITIATIVES IN HEALTH CARE SERVICES: ISSUES AND FINDINGS

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IV: GOAL ORIENTATION AND CONFLICTS: MOTORS OF CHANGE IN DEVELOPMENT PROJECTS IN HEALTH CARE SERVICE

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V: CHALLENGES EXPERIENCED IN THE DEVELOPMENT OF PERFORMANCE MEASUREMENT Systems in Swedish Health Care

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CHAPTER 1

1 INTRODUCTION

This chapter gives the reader an introduction to the research area of interest, presenting a short research background based on empirical experiences. Thereafter the role of performance measurement in quality management is discussed followed by a research presentation on performance measurement systems. The application of performance measurement systems in health care settings is also discussed. The presentation of the author's background is followed by a conceptual framework defining important concepts used in the thesis. Purpose and research questions are presented and the role of the licentiate thesis.

1.1 Background

A clinical department management at a Swedish hospital decided in 1998 to introduce a Balanced Scorecard (BSC) in order to follow-up and control medical activities (see Kollberg, 2003). The reactions to the introduction of BSC varied among the employees. All interviewed employees found the new concept difficult to understand:

"When we filled out our annual reports we had to reflect on what a process is and what is meant by 'customer' or 'employee'. We had to think about the meaning of these concepts and also what they meant to each one of us. And since all the different units write their own annual reports, everyone had also to think about what should be included in it."

One employee thought the new design was hard to relate and adapt to:

"At first I thought it was a mess. It was difficult to understand what to include. You couldn't describe anything accurately since the report could only contain a few words and I am used to describe my work in several pages. It took therefore some time to get a grip on it. But when I had used it a few times it became natural."

Employees also expressed that the initial information from the management was poor leading to frustration:

"Sometimes it has been so many information meetings that I felt 'No, not that again', but it was good information. Now I feel I can manage to fill in some of it. It was quite difficult for a while. They talked about Balanced Scorecard without explaining its implications. But when they sat down and explained what it means and how it should be used, it became easier to understand."

These citations highlight some of the difficulties involved introducing performance measurement systems, such as BSC, in a health care setting. Terms and concepts in the new system are different to what people are used to, new working routines are introduced, and frustration about its meaning may affect the acceptance and use of new measurement systems in clinical departments. This story indicates that a further inquiry regarding the development of performance measurement systems in health care services should be carried out. Which challenges are experienced in the health care organisation when adopting new measurement systems? Are working routines usually affected when introducing performance measurement systems in health care? How does the measurement system development unfold over time? How could the development of performance measurements be managed in health care? This thesis tries to illuminate these inquiries.

Quality Management and Performance Measurement

In the quality management literature, measurements are attributed great importance in the improvement of products and processes. Measures are seen as important information sources on the current conditions and point out which processes to improve. In the 1930's Walter A. Shewhart introduced tools for statistical process control in manufacturing companies as a way of managing data and thereby controlling the spread of the manufacturing process (Shewhart, 1931). He argued that "human wants" should be a starting point of the standards set for the improvements. This mediates a focus on the customer when it comes to improvements and hence on the measurement process.

W. Edward Deming, who was strongly influenced by Shewhart, also advocated the need of statistical analyses of measurements, but emphasised management's role when implementing improvements in quality (Deming, 1986). He argued that measurements are not enough, but that management's action is required in order to make long-term and stable quality improvements. He also criticised the existing view on quality data neglecting the future direction of improvement and change: "It is unfortunately to be feared that quality assurance means in many places a deluge of figures that tell how many defective items or this type and that type were produced last month, with comparisons month to month and year to year. Figures like this tell the management how things have been going, but they do not point the way to improvement." (ibid, p. 15).

Joseph M. Juran also advocates the importance of a strong and actionable management in achieving breakthrough improvements in his book "Managerial Breakthrough" from 1964. Breakthrough means "change, a dynamic, decisive movement to new higher levels of performance" (Juran, 1964, p. 2). The manager's role is to create the means by which people can see the need for reaching a new performance level; i.e. to make people aware of the need of breakthrough changes, and to take initiatives to get there.

Juran has further developed the framework of breakthrough quality improvement. In "Juran on Leadership for Quality" from 1989 he argues that the improvement process rests on several basic activities, which are linked together into a structured process based on the improvement projects (Juran, 1989). The upper management has the responsibility to participate in a quality council, establish quality goals, provide sufficient resources for the projects, review the progress and give recognition. Juran also suggests that upper management should serve in some project teams in order to practice leadership by example and increase the understanding of the teams' work and their needs. Summing up, to implement measurements is not enough to achieve good quality; the management should take actions according to the data and set the direction for performance improvements through goals and targets.

Quality management philosophy of today is largely influenced by this point of view on measurements. The management principle of basing decisions on facts in the Total Quality Management movement (Hackman and Wageman, 1995; Dahlgaard, Kristensen and Kanji, 1998; Bergman and Klefsjö, 2001) has a strong connection to quality measurements. Total Quality Management is also argued to combine the classical measures on quality, such as length, width, weight etc., with measures based on people's subjective evaluations (Dahlgaard and Park Dahlgaard, 2002; Dahlgaard and Park Dahlgaard, 2006b). The seven quality control tools (Mizuno, 1988) serve as important foundation to the management principle of basing decisions on facts. The Six Sigma program, well-established as improvement tool in many contemporary companies, highlights measurements as one of the main elements in the "DMAIC" process improvement methodology (Magnusson, Kroslid and Bergman, 2003; Stephens, 2003). Thus, it is stated that measuring performance has since several decades been a necessary activity in achieving improvements and is still a fact in today's companies.

As already mentioned, an important part in quality management as to measurements is to set objectives, goals and targets to achieve the improvement. Hoshin Kanri, or Policy Deployment, is a Japanese management philosophy advocating measurements towards a certain standard or target through a participative cascading process (Akao, 1991). It promotes achieving major improvements by analysing current problems and deploying strategies that respond to external conditions. The management policies and targets are cascaded down the hierarchy and translated into targets and actions for each level down.

Performance measurements based on financial assets has its roots in early accounting systems (Johnsson, 1981; Johnson and Kaplan, 1987; Otley, 2002; Bourne, Neely, Mills et al., 2003). Also, accounting based on performance measures has mainly focused on internal activities, and concerned with local performance rather than with overall organisational performance. The emergence of the Quality Management movement together with a focus on global competitiveness during the last decade can be seen as having made companies to change focus from the traditional assets towards assets measured in non-financial terms. A more balanced approach towards performance measurement was promoted in order to capture e.g. process orientation, customer focus, supplier partnership, continuous improvement, and employee knowledge.

As a consequence, systems for performance measurement assessing both financial and non-financial measurements were developed in the late 1980s and early 1990s (Bourne et al., 2003). One of the most well-known systems is the Balanced Scorecard (Kaplan and Norton, 1992), which has been spread in both private and public industry. Other systems, such as the supportive performance measures matrix by Keegan et al. (1989), the SMART pyramid (Cross and Lynch, 1988/89), the results and determinants framework (Fitzgerald and Moon, 1996) and the Performance Prism (Neely, Adams and Kennerley, 2002) have also been developed and promoted.

Performance measurement systems

Research on performance measurement systems has mainly been focused on the design of different types of performance measurement systems (see e.g. Neely, Gregory and Platts, 1995; Kaplan and Norton, 1996a; Bititci, Carrie and McDevitt, 1997; Neely, Richards, Mills et al., 1997; Olve, Roy and Wetter, 1997). In this research area measurement frameworks are advocated to have specific key characteristics in order to help organisations to identify an appropriate set of measures to asses their performance (Kennerley and Neely, 2002). For instance, performance measures should be derived from strategy (Neely et al., 1995; Anthony and Govindarajan, 2001), monitor a "balanced" picture of the organisation (Keegan et al., 1989; Kaplan and Norton, 1992), be multi-dimensional in such that they reflect all areas of performance (Epstein and Manzoni, 1997), encourage congruence of goals and actions (Bititci et al., 1997; Epstein and Manzoni, 1997), and monitor past and future performance (Fitzgerald and Moon, 1996; Olve, Petri, Roy et al., 2003).

During the last 5-10 years there has been a growing number of publications on the implementation of performance measurement systems (Kaplan and Norton, 1996a; Bourne, Mills, Wilcox et al., 2000; Radnor and Lovell, 2003). Even more recently the

increased use of the performance measures in managerial work has led to in-depth research in how organisations deal with measurements and use the information collected (Elg, 2001; Bititci, Nudurupati, Turner et al., 2002). The attention has moved from verifying *that* measurements are used in management teams to analyse *how* measurements are being used in the organisation.

Research shows that performance measurement systems are mainly used as decision support for top management and contribute to the understanding of the organisation (Kald and Nilsson, 2000). In addition, the Balanced Scorecard (BSC) has shown to be used as an information system in managerial work and as a strategic management tool for linking performance measures to strategic goals (Malmi, 2001). The BSC has also proven to facilitate focus, resource allocation, prioritisation and comprehensive coordination of continuous improvement activities in manufacturing companies (Dahbhilakar and Bengtsson, 2002). Consequently, in terms of Simons (1994), today's performance measurement systems may be interpreted as being used as diagnostic control systems to monitor organisational outcomes and correct deviations from performance standards, and as interactive control systems to regularly involve top managers in the decision activities of subordinates.

Despite the trend shift of contemporary research, many authors still seem to be technically focused in the sense that they are occupied in the study of the measure construction and design of performance measurement systems (see e.g. Toni and Tonchia, 2001; Tangen, 2004; Courty, Heinrich and Marschke, 2006). In addition, many authors seem to focus developing and promoting prescriptive models of performance measurements (see e.g. Kaplan and Norton, 2001; Neely et al., 2002), which draw the attention from the implications of these frameworks in work practice. Hence, the overall encompassing problems for managers how to effectively realise and implement performance measurement systems in their contexts are overlooked in contemporary research. This gap in research can also be described in the terms of Otley (1999, p. 381):

"This makes it clear that management accounting and other performance measurement practices need to be evaluated not just from an economic perspective, but from a social, behavioural and managerial perspective, within an overall organizational context. It is these social, cross-national and cultural aspects that make the study of control systems such a fascinating topic for academic research and such a challenge to the practitioner."

The research on performance measurement systems may be derived from two different views on measurement. The first assumes that performance measures are objectively given, i.e. they are equivalent with truth because they comprise objective facts about reality. This view is prominent in the traditional research on performance measurement. Researchers tend to take a pro-active approach towards general measurement frameworks and promote performance measures that are seen as "perfect" or "true" in any sector, industry or company. The implementation and use of performance measurements has been given little attention as the challenge is to design and develop generally applicable frameworks.

The other view assumes that performance measurements are socially constructed by members of a specific group. Performance measures are seen as incomplete and constructed as they are being implemented and used in practice. People design performance measurements for various purposes, assign them different roles and implement them differently in their specific context. For instance, Ax and Bjornenak (2005) describe the adaptation as a bundling process, in which the performance measurement system (in this case the BSC) is supplemented together with other administrative innovations and adapted to the existing business culture to form a potentially more attractive set of elements. Compared to the former view, the research focus seems to be on issues in the design, implementation and use of performance measures in practice rather than on merely design and technical issues since these are constructed and developed in social settings.

Consequently, there is a need in the performance measurement research to shift focus from studying measurements as a technology itself to how they are used in real face-to-face situations in specific contexts.

Performance measurement systems in Swedish health care services

Performance measurements have become an important element in managing health care. Breakthrough improvements (Juran, 1964; IHI, 2003), the Balanced Scorecard (Kaplan and Norton, 1992; Aidemark, 2001b) and Lean thinking (Womack and Jones, 2003; Breyfogle and Salveker, 2004; Miller, 2005) are some models and concepts promoted in order to follow-up and improve health care performance. New management concepts to measure performance have received increased attention in Swedish health care (see e.g. Östergren and Sahlin-Andersson, 1998; Bejerot and Hasselbladh, 2003; Hallin and Siverbo, 2003; SoS, 2003; SKL, 2006). This can be seen as a result of the global movement towards a market-oriented mindset, which is often named New Public Management. It includes an orientation towards results, individual responsibility and flexible organisations, employment and personnel, and customer focus (McNulty and Ferlie, 2002; Björke, Bostedt and Johansson, 2003; Nordgren, 2003).

The increased interest for the BSC in Sweden can be seen as a result of this trend. In order to improve the follow-up process and to focus the organisation on other values than economic assets several county councils in Sweden have started implementing BSC (Aidemark, 2001b). Olve et al. (1997) also claim that the BSC is especially suitable for organisations in the public sector since it supports long-term planning and evaluation in terms of both financial and non-financial measures. As a result the BSC has become a

wide-spread and popular tool in Swedish health care. Several benefits of using this tool are reported in literature, such as reduced goal uncertainty (Aidemark, 2001a), a common language in discussions on how to improve health care (Hallin and Kastberg, 2002) and enhanced customer focus (Rahm, Henriks and Skreding, 2002). However, it has also been stated that the BSC when applied to health care differs from the original BSC framework in such that it is being adapted "bottom-up" in the local health care departments, rather than "top-down" (Rahm et al., 2002). In addition, the strategic alignment of measures in the BSC to the care process and strategic objectives is questioned when applied in a health care setting (Salmi, 2006).

Despite the increased interest for performance measurements in health care, few obstacles and issues are reported in research and literature about performance measurement implementations in this context (for an exception see Radnor and Lovell, 2003). Questions about problems occurring and how decision-makers deal with these problems are often neglected. The research presented in this thesis tries to contribute to this gap in literature by illuminating the development of performance measurement systems in Swedish health care. It includes an analysis of the problems that health care managers may face as they develop new performance measurement systems.

The author's background

In 2000, I was involved in a project in the municipality of Hässleholm in Sweden, aimed at designing an over-all BSC for their child-care and elementary school services. The project was conducted as a master thesis in the program of Industrial Engineering and Management (Kollberg and Parneborg, 2001). Designing a BSC was included into a larger quality program initiative aimed to improve the follow-up and reporting process of the child-care units and schools. The study was aimed to examine how the BSC could be adapted to the prevailing situation of the organisation.

The implementation of the BSC at the child-care and elementary school in Hässleholm involved adaptation of the BSC to the current conditions of the organisation as well as changes in the current organisational structure. The study resulted in a conceptual design of a BSC and instructions on how the municipality could continue with the implementation.

The results from the study point to some difficulties involved in the implementation of BSC. Even if the BSC should be adapted to the specific context, the organisation needed to change in order to succeed with the implementation. It was also noted that the units interpreted the goals and measures in different ways, which prevented the achievement of a common and unified vision. Hence, my experience from the study in Hässleholm woke up my interest in how the problems involved in the implementation were dealt with in practice and set the background for the focus of my licentiate thesis

My academic background as an engineer has also influenced the design of the research. The need to contribute to useful and applicable findings in practice has characterised my work. This need is also derived from the culture of my working place, the division of Quality Technology and Management. This has implied that the results from this thesis also aim to support practitioners on their future development of performance measurement systems.

1.2 Conceptual framework

In this section central concepts used in the thesis are discussed and defined. A definition of a performance measurement system is presented followed by a discussion of the dimensions included in the development of performance measurement systems.

Performance measurement systems

Although there is extensive research on performance measurement systems, there are very few definitions published on the subject. Neely et al. (1995) define performance measurement as the process of quantifying effectiveness and efficiency of action. Effectiveness is referred to the degree of which stakeholder requirements are met, while efficiency measures how the company's resources are used when providing a certain degree of stakeholder satisfaction (Neely et al., 2002). This definition highlights that there could be both internal as well as external reasons for pursuing a specific course of action in order to achieve defined objectives. The level of performance can thus be seen as a function of the efficiency and effectiveness of past actions. Based on this definition it follows that a performance measure is a parameter used to quantify the efficiency or effectiveness of undertaken actions.

Taking Neely et al's (1995) definition as a starting point a performance measurement system can be defined as a set of performance measures which are used to quantify the efficiency and effectiveness of actions. However, this definition ignores the infrastructure supporting the collection, computation, presentation and analysis of measures, which need to be considered in order to make use of the performance measurement system. If the process of collection, computation, presentation and analysis is incomplete decisions and actions can not be based on reliable facts and thereby organisational performance is not improved in the appropriate direction. Therefore, in this thesis a performance measurement system is defined as the processes of collecting, computing, analysing, and presenting a set of measures quantifying efficiency and effectiveness of past actions with the purpose to maintain or improve organisational performance.

This definition indicates that a performance measurement system has three constituent parts: (1) measures to quantify the efficiency and effectiveness of past actions, (2) a set of

measures that assess the organisational performance as a whole, (3) a supporting infrastructure that facilitates data to be collected, computed, analysed and presented.

The development process

The development of performance measurement systems refers to an on-going evolution process of the set of metrics. In this thesis the development process is described with respect to three dimensions: design, implementation and use of measurements. One way of describing the distinction between these dimensions is to view them from David Marr's Levels of Description (Marr, 1982). Marr's framework was developed as a way to understand an information-processing system, and focused on cognitive processes that take place inside individuals. However, the framework may be applied to other information systems as well (Hutchins, 1995).

The framework encompasses three levels that are important to consider in an information system. Firstly, the computational theory of the task that the system performs is taken into account. This level focuses on what the system does, and why it does it. Secondly, the choice of representation and the transformation by which the information is propagated through the system is focused. How the information is transformed in the system is thus considered in this level. Thirdly, the details on how the system is physically realised in the organisation are considered.

In this thesis, the design dimension corresponds to the first level of description and investigates what the system does and why. The design dimension includes the contents of the system, what kind of measures the system emphasises and why it points to the things it does.

The implementation reflects the second level of description and focuses on how the performance measurement system is transformed in the organisation. The choices of representations are illuminated through describing how the system is deployed and disseminated throughout the organisation. The focus is on how the system is transformed from the initial introduction to the fully integration into the organisation.

The use dimension focuses on the physical realisation of the system in the organisation and it thus represents the third level of description. It explores activities, such as reconstruction of strategy, reporting of results and communication within units, dissemination of information, and strategic planning all related to the system realisation. Thus, the use dimension focuses on how people make use of the system in work practices.

There are many possible choices at each level of description presented by Marr (1982), and the choices made at one level may constrain what will work at other levels (Hutchins 1995). Thus, there is a close interrelation between the levels of description. A basic assumption in this thesis is that the design, implementation and use dimensions are

strongly interrelated in the process of development. In other words, what measures emphasised in the performance measurement system, why these choices were made, and how the system was transformed in the organisation influence how people use it in practice. In order to understand the application of performance measurement systems it is thus important to investigate the entire development process including the design, implementation and use dimensions.

1.3 Purpose and research questions

The previous discussion points to several gaps in literature. Firstly, there is a need to change focus from studying the constructs of measurements to the development of performance measurement systems in specific social settings. The view advocated in this thesis is that measures are being designed and formed as the system is being implemented and used in work practice. Hence, measures are seen as socially constructed in specific contexts.

A second gap identified, which is closely related to the previous one, is the need to investigate the entire development process of performance measurement systems including the design, implementation and use dimension. As discussed, many authors tend to investigate these dimensions separately with the main focus on the design dimension. Based on the belief that the dimensions are closely interrelated it is argued in this thesis that the dimensions should not be investigated separately. How performance measurement systems are being formed and used by organisational members affect how they are designed and constructed, and vice versa. This perspective advocates a study of performance measurement systems as open systems (Bertalanffy, 1968). The development of performance measurement systems is seen as a process of complex of elements standing in interaction, which engage and change in transactions with the environment. Hence, apart from other studies, the research presented in this thesis focuses on the pattern of relationships in the development of performance measurement systems and its relation to the environment in order to understand the way in which the system operates.

Thirdly, few empirical studies investigate the implications of performance measurement systems in health care. Benefits of using performance measurement systems are emphasised in research ignoring the practical implications and issues that organisational members experience. The view promoted in this thesis is that the understanding of the obstacles in the development may well support health care managers in their pursuit for health care improvements. Hence the present research focuses on understanding the challenges as well as the enabling factors that managers face as performance measurement systems are being developed in Swedish health care. With respect to the previous discussion, the purpose of this thesis is to analyse the development, i.e. the design, implementation and use, of performance measurement systems in Swedish health care services. By describing and explaining the development process the study aims to increase the understanding of the role of performance measurement system in Swedish health care and thereby support health care improvements in general.

Three research questions have been derived from the purpose. Due to the fact that the health care context is a rather unexplored environment for performance measurement researchers, the initial research question is primarily explorative in nature and aims to investigate different performance measurement systems in the Swedish health care. The question aims to describe what characterises the development process and reasons for developing performance measurement systems in Swedish health care.

1. How and why are performance measurement systems being developed in Swedish health care services?

The second research question focuses on elucidating the problems occurring in the development process. Prior research on performance measurement systems has primarily been interested in suggesting frameworks for successful performance measurement design, and has ignored the difficulties experienced when organisations adapt and implement a performance measurement system.

2. What problems can be identified in the development of performance measurement systems in Swedish health care services?

The third research question aims to identify factors that enable the development of performance measurement systems in the Swedish health care. This question is primarily interesting for health care practitioners, since it provides them with fruitful insights on how to manage development of performance measurement systems.

3. What enabling factors can be identified in the development of performance measurement systems in Swedish health care services?

The research questions are discussed in relation to the empirical findings in Chapter 5.

Appended papers

The research questions presented above are elaborated in the appended papers. Hence all papers take the research questions presented above as a starting point. The papers however differ with respect to what development dimension is investigated, methods used and if the paper is empirically or conceptually focused. Table 1 depicts the included papers with respect to these categories.

TAULT IT ALGOR	m main (stadad mannain	the purpose and the second			a unu ey per
	Paper I	Paper II	Paper III	Paper IV	Paper V
Title	Exploring the Use of Balanced Scorecards in	Design and Implementation of a Performance	Measuring Lean Initiatives in Health Care Services: Issues	Goal Orientation and Conflicts: Motors of Change	Challenges Experienced in the Development of
	Swedish Health Care	Measurement Systems in	and Findings	in Development Projects in	Performance Measurement
	Organizations	Swedish Health Care		Health Care Service	Systems in Swedish Health
		Services: A Multiple Case			Care
		Study of 6 Development			
		Teams			
Purpose	To increase the	To increase the	To discuss how the Flow	To contribute to the	To investigate challenges
	understanding of how the	understanding of how	model is designed to measure	understanding of how	experienced in the
	Balanced Scorecard is used in	performance measurement	changes towards lean	process-oriented innovations,	development of a
	three Swedish health care	systems are designed and	thinking in health care	such as the Flow model,	performance measurement
	organisations.	implemented by local	services.	unfold and develop over time	system in Swedish health care
		development teams in		within health care contexts.	services.
		Swedish health care			
		organisations.			
Development	Design, implementation and	Design and implementation	Design	Design and implementation	Design and implementation
dimensions	use				
Research	Case study in three health	Case study in six teams	Literature review	Case study in one team	Case study in six teams
methods	care organisations using	developing the Flow model	Data collection through	developing the Flow model	developing the Flow model
	Balanced Scorecards	Data collection through	documents of projects	Data collection through	Data collection through
	Data collection through	interviews, documents and	developing the Flow model	interviews, documents and	interviews, documents and
	interviews and documents	observations		observations	observations
Type of paper	Empirical	Empirical	Conceptual development	Empirical	Empirical
			with empirical findings as		
			examples		

Table 1: The included papers, their title, purposes and relationship to development dimensions, research methods and type.

Co-author statement

The papers in this thesis are part of the results of an extensive investigation of performance measurement systems in Swedish health care. As a five year research project, several researchers are involved, primarily the project manager of the two research projects, Assistant Professor Mattias Elg.

The case study conducted for Paper I was jointly conceived and designed together with Mattias Elg. I have been responsible for data collection and analyses in Cases 1 and 3, as well as the over-all analysis of the three cases. We jointly edited the paper and commented on each other's contribution.

Paper II is co-authored with Mattias Elg and Jan Lindmark, and Paper IV is co-authored with Mattias Elg, Jan Lindmark and Jesper Olsson. The basic scientific idea of the research was initially introduced by Mattias Elg. Data collection was conducted by me, Mattias and Jan. I have been responsible for collecting data in three of the six cases investigated. I have also been responsible for the analysis of data in Paper II, and contributed to the case descriptions and analyses in Paper IV. All authors have jointly discussed the research design, analyses and results presented in the papers and commented on each other's contribution.

In Paper III, which is co-authored with Professor Jens J. Dahlgaard and Assistant Professor Per-Olof Brehmer, I have been responsible for the theoretical presentation, discussions and analyses. Jens introduced the basic scientific idea of the paper, and both he and Per-Olof have contributed to the paper through comments and discussions. I have been responsible for writing the paper.

Paper V is co-authored with Mattias Elg. I have been responsible for the analyses and writing of Paper V, and we have jointly developed the analyses, findings and conclusions through discussions. I introduced the basic scientific idea of Paper V.

1.4 The licentiate thesis

In autumn 2003 I presented a licentiate thesis, which focused on the use of BSC in a health care organisation in the county council of Östergötland, Sweden (Kollberg, 2003). The research study presented in the licentiate thesis is a part of the first study about the BSC included in this thesis. The study was conducted on the commission from the Swedish Association of Local Authorities and Regions (SALAR).

It was concluded that the BSC was primarily used as an important information system that aims to communicate measurable information within and outside the organisational boundaries when applied in the health care organisation. The findings showed that it was used in the annual planning, in reporting measures to superiors and in following up the activities in the health care organisation. The BSC was also used in discussions between employees, to disseminate information within and outside the organisation, to create orderliness and understanding of the annual activities, and in developmental activities. The findings indicated that the BSC has been adapted to the current conditions of the organisation with regard to the existing terminology and organisational structures. The BSC was not primarily used as a strategic management system, but rather as an information system that aimed to communicate measurable information within and outside the organisation.

Several categories of factors that enable or constrain the use of the BSC in a health care organisation were also identified. The autonomy of the department and units enabled people to develop their own scorecards without influence from superiors. The emphasis on employees' participation was also identified as an important aspect in making people accept the new concept. The way the introduction of the BSC was dealt with and the department's prior experiences with the Swedish Quality Award influenced the acceptance and use of the BSC. In addition, the study showed that change agents played a major role in how the BSC was used in the organisation. Several adaptations were made to current conditions that both enabled and constrained the use of the BSC in the health care organisation.

After the licentiate thesis, two more case studies were conducted (Elg and Persson, 2003; Kollberg, 2004) in order to investigate how other health care organisations had implemented and used the BSC. The experience from the licentiate study together with the other two case studies provided me with an important foundation for the second research study included in this thesis. My interest for how other measurement systems were used in health care was triggered, and especially how new systems were implemented and developed in a health care context. During the same time the SALAR started a national initiative aiming to develop a process-oriented measurement system. This initiative aligned with my interest and thereby I became involved in the second research study.

1.5 Outline of the thesis

In Chapter 2 the theoretical frame of reference of the thesis is presented. The development process of performance measurement systems is discussed with respect to the design, implementation and use dimensions. The BSC framework and the Flow model are discussed in detail because they are the focus of the empirical investigation in this thesis.

The empirical context is elaborated in Chapter 3. Key characteristics of the Swedish health care services are presented followed by a section discussing management control in

health care organisations. The influence of quality management on health care is also discussed.

In Chapter 4 methodological considerations are discussed. Research strategy, case selection, collection of data and how the data was analysed is described. The quality of the research is also discussed.

The research findings are presented in Chapter 5 starting with a summary of the appended papers. The findings are then discussed with respect to the research questions. Finally, Chapter 6 presents the main conclusions drawn from the research and their contribution to the research area. Finally, suggestions for future research are presented.

CHAPTER 2

2 THEORETICAL FRAMEWORK

The following chapter presents an overview of literature about performance measurement systems. The discussion is divided into the development dimensions of design, implementation and use. The design dimension deals with what the system does and why. The implementation dimension deals with the processes occurring when the system is transformed into the organisation. The use dimension deals with activities occurring when the system is being applied and used in the organisation by e.g. management. The purpose of this section is to make the reader acquainted with the field of performance measurement system and identify the gaps in research. In the first section the design of the Balanced Scorecard and the Flow model are presented and discussed from several performance measurement system criteria. Thereafter, the implementation is being elucidated. The final section discusses different views on the use of performance measurement systems and factors that influence how measurements are used in organisations.

2.1 Design of performance measurement systems

During the last decade performance measurement systems have gained great attention in research. Several authors prescribe how to best design a performance measurement system. For instance, measures should be derived from strategy (Keegan et al., 1989; Kaplan and Norton, 1992; Anthony and Govindarajan, 2001), should represent different dimensions of an organisation (Keegan et al., 1989; Kaplan and Norton, 1992; Simons, 1995), and should consider all stakeholders of the company (Neely et al., 2002; Kanji and Moura e Sá, 2003). There are several performance measurements frameworks proposed in management literature, which present and visualise different aspects of an organisation (Cross and Lynch, 1988/89; Kaplan and Norton, 1992; Fitzgerald and Moon, 1996; Neely et al., 2002). Two measurement frameworks are primarily discussed in this section, namely

the Balanced Scorecard (BSC) originating from the work of Kaplan and Norton (1992) and the Flow model initially designed by the Swedish Association of Local Authorities and Regions, the Regional Health Services Board in Southern Sweden and county councils in the southern region of Sweden to be used in Swedish health care. While the BSC is company-wide performance measurement system capturing the organisation's performance from different angles, the Flow model is a process-oriented system primarily focusing to capture cycle times in the patient's care chain. These are the frameworks empirically studied in this thesis and therefore discussed more in detail.

The Balanced Scorecard

The strategic point of view is emphasised by Kaplan and Norton (1996b) as they present the Balanced Scorecard. A strategic management process is linked to this framework, in which vision, strategic goals, performance measurements and action plans are linked in a coherent and consistent way. Through this process, measurements are put in a strategic context and, thus, viewed considering the overall picture.

According to Kaplan and Norton (1993), the BSC is designed to support and fulfil the company's overall vision and strategies. Their version of the BSC presented in 1992 contains four perspectives: the financial, the customer, the internal business process, and the learning and growth perspective. These perspectives represent how the company is viewed by shareholders, management, customers and employees. Critical success factors are developed within each perspective. Performance measurements are chosen in order to support the critical success factors. The factors are the bridge between the vision, strategy, perspectives and the performance measurements, and are crucial for the company's future success. Finally, the BSC includes action plans, describing how the company should act to achieve its vision.

BSC serves as a strategic management system in an organisation, according to Kaplan and Norton (1996b), since it encourages managers at all levels to make strategic decisions based on the company's common strategies. Several managerial benefits using the BSC are highlighted, such as clarification and gaining strategy consensus, communication of strategy throughout the organisation, goal congruence, performing periodic and systematic strategic reviews, and obtain feedback to learn about and improve strategy.

In 2001 Kaplan and Norton (2001) proposed the strategy map for a BSC in order to make explicit the companies' strategies by presenting every measure in a chain of cause-and-effect logic that links the desired strategy outcomes with the performance drivers that attain the strategic outcomes. "The strategy map describes the process for transforming intangible assets into tangible customer and financial outcomes" (Kaplan and Norton 2001, p. 69).

As the interest in the Balanced Scorecard has increased over the last decade several authors have questioned its contributions both in theory and practice. For instance, Johnsen (2001), who compares the BSC and Management By Objectives (MBO) introduced by Drucker in 1954, claims that the basic elements in the BSC are consistent with the elements in MBO. Further examination of the BSC and the MBO respectively indicates that both models point out the need to focus on both tangible and intangible assets and to balance the different efforts in order to achieve management control (Drucker, 1955; Kaplan and Norton, 1996a). While the MBO is presented as a tool designed especially to make lower managers heard (Drucker, 1955, p. 112), the BSC claims to be a system for organising managerial work at all levels in an organisation (Kaplan and Norton, 1996a, p. ix). A major difference between the BSC and MBO might be found in the BSC's division of measures into 'perspectives'. However, the idea of perspectives might also be derived from the MBO since Drucker claims that every manager should "spell out his contribution to the attainment of company goals in all areas of the business." (Drucker 1955, p. 109)

In addition to Johnsen (2001), Liukkonen (2000) claims that the ideas in this "new" philosophy are consistent with old management control theories regarding how to implement visions and strategies. She describes the BSC as one of today's management control philosophies and claims that the new is seldom purely new, but rather a classic theory in a new package. Liukkonen (2000) also argues that there is a lack of theoretical foundation and empirical evidence of the practical application of this and other new philosophies, which make them difficult to understand and use in practice (Liukkonen, 2000). Johanson et al. (2001) and Otley (1999) also criticise the lack of empirical evidence, and advocate the need for investigations in organisations using performance measurement systems.

The Flow model

Recent developments within the management of healthcare organisations emphasise the importance to organising healthcare from a process perspective (Kazandijan, 1999). Even if there are many different ways to perform healthcare processes, several steps have been carried out to represent the patient's course of action (Horbrook, Hurtardo and Johnson, 1985; Wingert, 1995/96; Spritryck, 1996; Lindmark and Elg, 2004, 2005). The Flow model is a process orientated measurement system initially designed by the Swedish Association of Local Authorities and Regions, the Regional Health Services Board in Southern Sweden and county councils in the southern region of Sweden in order to be implemented and used in the Swedish health care to follow-up lead-times, delays and waiting times (Landstingsförbundet, 1998). The framework consists of eight measures, all of which assess a certain date and time in the patient care chain (see Figure 1).



Figure 1: The Flow model (from Paper III)

The care process starts with a demand for care (Measure 1). This is assessed when the referral from e.g. a primary care centre arrives to a clinical department. Thereafter the referral is evaluated and the patient is booked for a visit (Measure 2). The time for the first contact is measured when the patient meets with the physician for the first time (Measure 3a and 3b). Both the expected time (3a) and the actual time for the visit (3b) are measured. After the diagnosis is made (Measure 4) the treatment is decided (Measure 5), and the treatment starts when the patient is registered for the operation (Measure 6a and 6b). The time between the expected time (6a) and the actual time (6b) is measured. The time for control (Measure 7) is measured and if the patient has recovered or the care goal has been achieved the care chain is completed and the case is closed (Measure 8).

The Flow model aims to prevent long waiting times and delays and to make comparisons between units also over time. It is assumed to be used in managerial work to plan and control the flow of patients in clinical departments. Flow measurements from each county council are reported to a national database administrated by the SALAR in order to review the national status of waiting times. These are compared to the requirements of the national care guarantee and then presented to the population through the Internet. Due to its ability to measure both efficiency and effectiveness and aims to be used in managerial work (see Paper III), the Flow model can be seen as a performance measurement system mainly focusing on process measurements. It provides managers direct indicators on the accessibility of health care through the specification of lead-time measures. Indirectly, the Flow model provides indicators to the managers, such as quality of medical care and booking procedures, which are important measures to achieve improvements of health care performance (Paper III).

Criteria for performance measurement systems

It was stated in the introduction that performance measurement system is defined as the process of collecting, computing, analysing, and presenting a set of data quantifying efficiency and effectiveness of past actions with the purpose to maintain or improve organisational performance. According to Bourne et al. (2005) there are several criteria for what is being labelled as performance measurement in literature. Performance measurement refers to the use of a multi-dimensional set of performance measures, which means that they may include both financial and non-financial measures, both internal and external performance measures and measures that reflect past and future actions.

Performance measurement includes also a standard on which the efficiency and effectiveness can be judged. Also, performance measurement is an integral part of the management planning and control system of the organisation being measured as measurement has an impact on the environment in which it operates. Starting to measure, deciding what to measure, how to measure and setting targets influence individuals and groups of individuals within the organisation.

Both the BSC and the Flow model encompass a multidimensional set of measures. The BSC includes both financial and non-financial measures, reflects external and internal measures in terms of a customer perspective and an internal process perspective. It is also assumed to be used to follow up past events as well as predicting and planning future actions. The Flow model includes a multi-dimensional set of time measures in the patient's care process, which are indicators of both the efficiency (e.g. delay, booking procedures and process control) and the effectiveness (accessibility and quality of medical care) of health care performance (see Paper III for further discussion).

Regarding the standards against which performance is evaluated, the BSC framework advocates that measures should be derived from strategy and overall objectives with respect to different perspectives. The Flow model, on the other hand, does not explicitly mediate that the measures derive from strategy. However, the requirements of the national care guarantee serve as important national standards against which the Flow model performance is being evaluated (see Chapter 3). Individual clinical departments are also obliged to set their own standards for planning and controlling the flow of patients in order to decrease waiting times and delays, although this is not an explicit requirement in the model (Landstingsförbundet, 1998).

Both frameworks are assumed to be used as management control and planning systems. Since the BSC should be periodically reviewed and updated by management the measurements influence how people behave and act. The Flow model is suggested to be used in health care to follow up, control and decrease waiting times and other lead times in the patient's care chain. Thus the aim is to plan for future improvements in the health care process as well as to control the flow of patients. Since Flow model measurements are periodically reviewed on a national level by the Swedish Association of Local Authorities and Regions and assessed against the national care guarantee, the measurements are assumed to lead to actions in the individual county councils. Table 2 depicts the discussion above.

	Balanced Scorecard	Flow model
Context	Primarily designed for private industry	Designed for the Swedish health care services
Multi-dimensional	Financial and non-financial measures, external and internal measures, measures reflecting past and future actions	Measures efficiency and effectiveness of health care performance
Standards	Strategies	National Care Guarantee
	Objectives and targets	Targets for individual clinical departments
Consequences of measurement	Periodical review and update by upper management	Reviewed by SALAR and compared to the national care guarantee
	Supports four management process that aims to control and plan businesses	Aimed to be used for planning improvement activities and control the flow of patients.

Table 2: Summary of features of the BSC and the Flow model.

Summarising, the BSC may be seen as a company-wide performance measurement system reflecting different perspectives or dimensions of the organisation, while the Flow model is a quite simple process-oriented performance measurement system reflecting patients' flow in health care. The BSC emphasise the alignment of measures as to strategic goals and overall vision, while this alignment is partly ignored in the Flow model. One observation is that the Flow model might be viewed as a complement to the BSC model. It reflects measures which are encompassed in the process and customer perspective in the BSC, such as lead times and patients' needs and requirement on waiting time, which are regulated in the national care guarantee.

2.2 Implementation of performance measurement systems

The implementation of performance measurement systems comprises the activities involved in transforming the system into work practice, from the initial introduction to the fully integration in the organisation. Examples of activities related to implementation are motivating people to measure, introducing new registration routines, constructing action plans that align with strategy etc. Bourne et al (2003) present, based on a literature review, several implementation processes for performance measurement systems originating from the BSC design (Kaplan and Norton, 1993), a performance measurement questionnaire (Dixon, Nanni and Vollmann, 1990), and Performance Prism (Neely et al., 2002) amongst others. They show that there are differences in the approaches with respect to the underlying implementation procedure, and identify a need of studying the design and implementation from the perspective of change management in order to move the attention from the technology of measurement design to changes and influences on

the organisational environment. Since the BSC is of interest in the study of this thesis, Kaplan and Norton's model for implementation will be further elucidated.

The BSC implementation process

Kaplan and Norton (1993) present an implementation process of the BSC which aims at securing the strategic link of each performance measure. The process is consultant-led in the sense that the work is undertaken by individuals or groups of individuals who work in almost total isolation from the rest of the management group (Bourne et al., 2003). The process is characterised by interviews and workshops with managers whereby strategies are anchored and measures are developed. Kaplan and Norton (2001) claim that every BSC-program needs to be started with the identification of an intended change. The implementation should not be seen as a performance measurement project but rather a project leading to real, concrete changes in the organisation. The measures are in such a process viewed as a means to an end rather than the final product. Kaplan and Norton (2001) claim that the strategy should be discussed at all levels of the organisation and performance measurement should be linked to that strategy.

Information technology support is viewed as a central part in the implementation of the BSC and many organisations see it as the first step to a functioning system. Olve et al. (2003), however, propose that information technology support should be introduced as a final step in the implementation in order to avoid taking time and resources from the strategic dialogue and discussions.

Olve et al. (2003) present several design issues that scorecard projects need to address. The authors suggest that the project should be started by building strategy maps in order to illustrate the strategy and linkages between objectives and measures. The authors further argue that the scorecard should be communicated throughout the organisation. They claim that the scorecard "has often been welcomed when similar metrics are perceived as part of a living dialogue about what is worth doing and how performance relates to organisational progress" (Olve et al. 2003, p. 35). They argue that this dialogue requires that management is able to engage people in the dialogue and have enough knowledge about the organisation's possible future. Compared to Kaplan and Norton (2001), the authors emphasise the need of creating a dialogue on the future statement instead of a "top-down" communication in which employees have a minor role in the discussions.

Olve et al. (2003) further advocate the need to assign responsibility in a BSC project. The design of the BSC technology, training and promoting are some areas that need to be assigned to various people in the organisation. The authors argue that the company then should deal with how the different scorecards should be related. Should the measures be the same throughout the organisation, or should each unit determine their own measures? Next, incentives to make the scorecard work and to ensure that measures are competitive

need to be considered. The authors discard the idea that incentives or rewards are generic success factors in a BSC project and point out that incentives, and mainly financial incentives, need to be implemented with great care. Finally, the authors present the issue of implementing an IT support for the BSC. They claim that most organisations benefit from having BSC on the intranet since measures become easily accessible to the organisation.

Empirical research on the implementation processes

The prescribed implementation process presented above might mediate that the implementation is straightforward and without complications. However, experiences show that it takes several years to implement (Kaplan and Norton, 1996a) and that the process encompasses drawbacks and difficulties that need to be managed (Bourne et al., 2000; Olve et al., 2003). Many of the experiences are reported from consultant work (see e.g. McCunn, 1998; Symons and Brown, 2005; Heinen, 2006) but some empirical research studies have been presented.

Based on an action research approach in three companies, Bourne et al. (2000) observe primarily three obstacles to the implementation of a performance measurement system. Resistance to measurement, occurring during design and use phases; computer systems issues occurring during implementation of the measures; and top management commitment being distracted, occurring between the design and implementation phase. Because the implementation is based on a mechanistic exercise, they claim that the process should be susceptible of being managed by classic project management tools. The authors further suggest that the progress can be speeded up by early involvement of IT specialists, application of data retrieval and manipulation tools, and allocation of resources.

In an intervention study of success and failure of performance measurement systems in ten companies in the UK, Bourne et al. (2002) identify three factors that differentiated between the successful companies (those companies that made use of the performance measures in managerial work) and unsuccessful companies. The expression of the purpose of the implementation was identified as an important factor. The senior directors of the successful companies tended to express the purpose for undertaking the project in terms of managing the business in a better way. These companies were interpreted as having a higher level of top management commitment than the unsuccessful companies, which expressed just wanting to improve the measurement system. Another factor identified was related to the structure of the organisation. The findings showed that parent company interventions, such as changes in strategies and requirements on what should be reported and measured, interrupted the implementation of the performance measurement system in the unsuccessful companies. Finally, Bourne et al. (2002) identified a fear of measurement derived from the expected consequences for individuals of performance measurement. For instance, there was a fear of being personally attacked due to the measurement and problems experienced by exposing negative outcomes. The authors argued for a paternalistic culture dealing with this challenge. The findings from both studies are summarised in Bourne (2005).

McAdam, Hazlett and Casey (2005) showed in a study of the development of a performance measurement approach in a large UK public sector department that despite the broad acceptance among organisational members at all levels the system failed to become a continuously used management system and instead became an annual event. They explain the failure due to lack of follow up of training or test for effectiveness during the implementation. Continuous review and improvement processes are recommended to be built in the performance measurement system in order to succeed with implementations.

In an article by Radnor and Lovell (2003), factors for success of implementation of BSC in health care organisations are presented. Eight focus groups comprising 46 persons were carried out. The authors emphasise the importance of creating a culture for performance measurement before the implementation starts, that BSC should include measurements and goals, which are useful in the daily work, that communication is reciprocal between management and employees and that the BSC is utilised in the whole organisation. Further they point out that BSC should replace the existing information system and that sufficient resources are designated for the implementation efforts. Training is another important issue which needs attention and that there is an infrastructure which supports the changes. Within the healthcare context it is central to consider the benefits from the patient's perspective when employees make use of the scorecard. Finally, Radnor and Lovell (2003) claim that the organisation's history in terms of performance measurement may have influence of the outcome of the implementation.

Despite the organisation's recognition of the BSC potentials, the implementation of BSC involved several difficulties (ibid). The inhibiting factors were related to existing performance measurement systems (e.g. existing system is being improved, existing system is flexible etc.), alternative performance measurement systems (e.g. competition with the 'Value compass', 'European Excellence Model' etc.), the underlying need for a BSC is questioned (e.g. just a package framework, the organisation does not have the ability to eliminate imbalances), the ability of BSC delivering performance improvement is doubted (e.g. still focus on financial measures, doubtful if the BSC can deliver evidence-based benefits and keep up with changes in the NHS), other practical factors such as the organisational structure not being able to mirror the BSC structure, obtaining voluntary support from all partner organisations being unrealistic etc.

2.3 Use of performance measurement systems

In the use dimension of performance measurement systems the attention is drawn to the actual use of measurements in everyday work. Neely et al. (1997) point out that measurement is a quantification process, but that it stimulates action. These actions are generated from activities in management teams or by single managers. The understanding of how decisions and activities are related to performance measurement has been identified to be an important issue for further studies of performance measurement (Otley, 1999; Liukkonen, 2000; Elg, 2001). Performance measurement systems may have different functions in an organisation, and some of them are discussed below. Empirical research bringing out some factors that influence the use is further presented.

Using performance measurement systems in managerial work

According to Mintzberg (1993) the purpose of using performance measurement systems (which he calls performance control systems) is to regulate the overall results of a given unit. The performance is measured in terms of general standards, such as objectives, budgets and operating plans. He further claims that performance control systems serve the purposes to measure and to motivate. They can be used on one hand to signal when the performance of a unit has deteriorated; top management can then take action to correct the mistakes. The system can on the other hand be used to elicit higher performance by providing the unit manager motivating drivers in terms of performance standards. These are carrots that should motivate the manager to achieve better results. Mintzberg further claims that performance control systems might not only be top down, meaning that objectives are decided on a top management level and become more detailed as they pass down the hierarchy, but also "bottom-up" where organisational units establish performance standards on their own, which then are aggregated up the hierarchy unit by unit.

Simons (1994) defines management control systems as the formal, information-based routines and procedures used by managers to maintain or alter patterns in organisational activities. Hence, performance measurement systems can be seen as important elements establishing a management control system. Simons identifies four categories of management control systems, namely: beliefs systems, boundary systems, diagnostic control systems, and interactive control systems (see Figure 2). Belief systems are used by top managers to define, communicate, and reinforce basic values, purpose, and direction for the organisation; the purpose is to provide momentum and guidance to opportunity-seeking behaviour. The boundary system is used by top managers to establish limits and rules which must be respected; the purpose of using a boundary systems are used as feedback systems to monitor organisational outcomes and correct faults from standards of performance; the purpose is to provide motivation, resources, and information to

ensure that organisational strategies and goals are achieved. Finally, interactive control systems are used to regularly and personally involve top managers in the decision activities of subordinates. It is argued that the diagnostic control system can be made interactive by continuous top management attention and interest. The purpose is to focus organisational attention on strategic uncertainties and thereby provoke emergence of new initiatives and strategies.



Figure 2: Framework of analysing management control systems (Source: Simons, 1994, p. 173)

Kald and Nilsson (2000) show in a survey of 236 Nordic companies that performance measurement systems mainly are used as decision support for top management. The study also shows that performance measurements contribute to the understanding of the organisation. A major critique made by the respondents was that measurements are retrospective and only give a historical view. Malmi (2001) shows that Finnish organisations tend to use BSC as an information system in their managerial work and as a strategic management tool linking performance measures to strategic goals. Gosselin (2005) shows, based on a survey in Canadian manufacturing companies, that the firms mainly focus on using financial performance measures despite the fact that the implementation of the BSC and other integrated performance measurements systems have been highly recommended in the literature. He further claims that there is a need for increased understanding on how organisations design and implement their performance measurement system and how they manage to enhance the competence in performance measurement.

In a study of five Swedish county councils using the BSC, Aidemark (2001b) shows that BSC contributed to reduce goal uncertainty, communicate the complex work of the professionals to management and politicians and stimulate a dialogue on the vision and strategy. He claims that the BSC gives emphasis to patients, health care processes and professional staff learning, which reinforces a move from the traditional, bureaucratic control. The multi-dimensional thinking promoted in the BSC is also emphasised by Andersson, Persson and Ramberg (2000), who analyse the experiences from twelve BSC projects in a Swedish region.

Aidemark (2001a) shows that the BSC is not a way of controlling goal congruence when applied to a health care context, but provides a language in a dialogue leading to collaboration and increased consensus about the health care goals. Hallin and Kastberg (2002) also show that the BSC is a new way of describing health care, which provides a foundation for discussions about the activities and how to improve it. However, they further show that the application of BSC in health care is different from the original BSC model advocated by Kaplan and Norton. The goals are ambiguous, the strategies can not be classified as strategies, and measures are not related to strategies and lacks in relevance.

Similar experiences are presented in Rahm, Henriks and Skreding (2002), who report from a network point of view about the BSC in Swedish health care. The purpose of introducing the BSC was primarily to change focus from the economic measures to the entire value of the organisation. It was also stated that the BSC was a pedagogical tool to communicate the vision and strategy in the organisation and to encourage politicians, professionals and administrators to focus on the whole organisation instead of only its parts. The customers, in terms of patients and relatives, were also becoming more on focus as the BSC was introduced. The patients' needs and demands became the starting point of the health care provided instead of the professionals' needs, which traditionally have had the main control of health care. It was also emphasised that the BSC should be developed and adapted in local departments in order to make the department's own BSC.

This adaptation process is analysed in more detail by Käll (2005). He shows in his BSC study in a Swedish county council that the implementation may be explained through a translation process, similar to the one presented by Ax and Bjørnenak (2005). He shows that the original BSC promoted by Kaplan and Norton changes as it is being implemented in the county council. It is described as a translation process in which the county council's structure in terms of bureaucratic and professional control, consultancy reports and other sources in the supply, all have an influence on the outcome.

Factors influencing the use

Another study investigating the use of performance measurement is presented by Elg (2001). The research focuses upon the kind of significance performance measures have in their usage in managerial work. The study brings attention to the various social, material, temporal and spatial resources of usage of performance measures; the activities taking place within meetings during which performance measures are being used; and the significance of performance measures in coordination of units within a hierarchical organisation. Some of the themes highlighted in this study were: 1) the social, material and
temporal environment of managerial work influencing the usage; 2) the usage of performance measures mainly is a reflective activity emerging from the organisational history; 3) linkages between hierarchical levels, such as leadership and population overlapping as well as performance measures overlapping, limit and enable coordination; and 4) performance measures within the studied context constitute an important role creating knowledge about organisational activity.

Kennerley and Neely (2002) investigated empirically the evaluation and refinement of measurements. They observe several barriers that prevent the organisation from starting reflecting upon the implemented measurements. The absence of effective process of reflection, lack of the necessary skills and human resources to analyse and identify incorrect measures, and inflexible systems were highlighted. Finally, they observed inappropriate culture due to resistance to reflection and change and lack of incentives as a significant barrier to a measurement evolution. Based on his experiences Eccles (1991) proposed similar important factors for the successful updating of a performance measurement system. Developing information architecture with supporting technology, aligning incentives with the new measurement system and the lead given by the CEO were emphasised elements.

Based on a national survey Julnes and Holzer (2001) identify factors that prevent management from using performance measurements in state and local government officials in the US. They conclude that it is important to conduct an assessment of the organisation's readiness to develop and implement performance measures in order to reveal the level of knowledge of the use of the information. They further claim that the level of support for performance measurement and the condition of the organisation as it relates to culture, resources and expertise are important factors to consider. In addition, they advocate the need to identify and involve internal and external interest groups as well as involving the employee unions. Finally, they claim it is important to adopt performance measurement even if the organisation is not implementing or using the measures in a period of time, and thus develop a performance improvement culture.

CHAPTER 3

3 THE EMPIRICAL CONTEXT

The empirical studies presented in this thesis were conducted in the Swedish health care. In order make the reader familiar with the empirical context and to enable generalisations to one's own context this chapter describes the Swedish health care system in more detail. First, the Swedish health care system is described with respect to some key characteristics. Second, management control in health care organisations is discussed followed by a presentation of quality management in health care.

3.1 The Swedish health care system

The health care system in Sweden is highly decentralised compared to other countries (SKL, 2005). The health services are financed and managed by the 20 county councils and 290 municipalities within their respective areas. Moreover, the Swedish Government and Parliament have the main responsibility for health policy on a national level. The Swedish Health Services Act (1982:763) states that the main goal of health care is to offer the population a good health care based on equal terms. Patients that have greatest health care need shall have health care priority.

Over the years the State has gradually shifted financial and provider responsibilities to the county councils and the municipalities resulting in a reinforcement of the decentralisation (SKL, 2005). The Ädel Reform (1992), which can be seen as a major step towards decentralisation, gave the municipalities the statutory responsibility for elder and disabled citizens (Henriksen, 2002). Today, services related to residential care, excluding physician services, are managed by the municipalities. Also, the municipalities can enter contracts with the county councils to provide home care.

The Swedish health care services are mainly tax-financed, through county and municipal taxes. The county councils also charge patient fees accounting for 2.7% of the revenues (SKL, 2005). The county councils and municipalities are the main providers of health care; private providers deliver approximately 10% of all health services. All counties can contract with private providers, and this is mainly done within primary care. The Swedish health care is relatively unified compared to other countries, with county councils and municipalities serving as financiers and dominant providers. Summary of key characteristics, see Table I in Paper III.

Strömberg (2004) presents a description of the development of the Swedish health care from the 1960's until today from an economic-historically perspective. She shows that most changes have occurred in the framework of three over-all institutional changes. The first change occurred 1962 when county councils received increased responsibility for health care, concerning both health care initiatives and finances, through the Swedish Health Care Act. The second change occurred 1983 when the health care purpose was broadened from only focusing on treatment to also focus on preventing diseases among the population. The Dagmar Reforms were introduced during this time and implied extensively that hospitals got a new way of prioritising patients. The focus of health care activities and which patients to prioritise became more distinct. According to Strömberg (2004), the third institutional reform occurred between 1992 and 1995 in relation to the Ädel Reform.

Within the framework of the Dagmar Reform, a national care guarantee was introduced 1992 aiming to reduce the waiting times for 12 procedures with special problems (Landstingsförbundet, 2002; Hanning, 2005). The guarantee is based on the agreement between the Ministry of Health and Social Affairs and the Swedish Association of Local Authorities and Regions. The national care guarantee has since 1997 regulated waiting times for visits to primary and specialist care. It is stated that primary care is responsible for the first contact and help should be offered the same day the care service is contacted. The patient should be offered a doctor appointment in primary care within eight days. Specialised care visit should be offered within 90 days. The patient is otherwise entitled to choose, at no additional cost, to visit care providers in another county council. If treatment is required it should be initiated without delay in accordance to priority guidelines and in consultation with the patient. The guarantee was extended, from 1 November 2005, to include time limits also for regular treatment. It states that a treatment, when needed, should be started within 90 days from the treatment decision has been taken. The elective care service is included into the national treatment guarantee.

3.2 Management control in health care organisations

The health care organisation can be described on the basis of three domains (Kouzes and Mico, 1979). These are the policy domain, the management domain and the service domain. The domains operate on different and contrasting principles, success measures, structural arrangements, and work modes, and can be seen as conflicting. Östergren and Sahlin-Andersson (1998) take a similar approach and describe the health care organisation as three separate worlds, namely the professional, the administrative and the political. Furthermore, Wikström (2006) describes the complex leadership in health care services as separate and hierarchical logics including the administrative logic, strategic logic and the employee logic.

This view on the health care organisation as separated, hierarchical domains, worlds or logics is influenced by the acute care model originally introduced by Gardell and Gustafsson in 1979. The model describes the inherent management complexity of the Swedish health care organisation, and comprises two hierarchies, the administrative "control and coordination" hierarchy and the medical "care and production" hierarchy (Gardell and Gustafsson, 1979). In a hospital the physician controls the medical hierarchy, while the hospital manager has the overall responsibility of the administrative hierarchy. According to Gustafsson (1987) the Swedish health care is characterised by an inherent conflict derived from the meeting between the strong, traditional control of the professional hierarchy and the relatively new administrative management. These three domains or worlds have different demands when it comes to management control and how to measure and follow-up.

The medical profession

The medical hierarchy is primarily controlled by the doctors and then by others having professions with shorter education and status. Status also differs between doctors, thus, surgeons have higher rank than general practitioners (Hallin and Siverbo, 2003). The control of the medical hierarchy is mainly based on the doctors' values. The individual patient is focused into the medical work, and it is the doctor's responsibility to assure that the patient obtains the best treatment. Control within the professional hierarchy means that doctors work independent from colleagues, but close to the patients that he or she serves (Mintzberg, 1993). The performance standards are set in association with colleagues, and mainly focused on the care process rather than on result (Kouzes and Mico, 1979). This means that diagnoses and treatment should be based both on science and reliable experience. Consequently, natural science indicators are often used as performance measures, such as number of diagnosis, operations and treatments, time for care and the patient's physical status. Hence, controlling the medical hierarchy the professionals' loyalty to patients and the professional association is the base for

performance standards rather than standards set by the own organisation and its management.

The administrative management

The administrative hierarchy is focused on coordination, planning and control of health care. According to Gustafsson (1987) the administrative management emerged from a need for coordination, planning and financial control in the 1930's. Mindsets from market and business corporations were transferred to the health care sector implying that efficiency, rationality, productivity, conformity and shorter care times became the framework standards in the new hierarchy. Administrators in health care rely on new management ideas, such as Total Quality Management and market-driven controlling mechanisms when following-up and controlling health care. Relating to performance measurements, the administrative hierarchy has traditionally been focused on business economic measures, such as patient turn over, cost per patient, expenditures for salaries to care personnel etc. (Etzioni, 1966; Gustafsson, 1987). However, since the mid-1990's the Swedish health care has been extensively influenced by new management tools in order to develop and improve health care (Östergren and Sahlin-Andersson, 1998; Henriksen, 2002; Bejerot and Hasselbladh, 2003; Hallin and Siverbo, 2003; Landstingförbundet, 2003). The introduction of new management tools resulted into the questioning of the professionals' strong influence managing health care (Östergren and Sahlin-Andersson, 1998). The BSC can be seen as a new management concept, which has shown that the financial focus in the administrative domain in health care can be changed with other aspects of the organisation (Aidemark, 2001a). A visualisation of the needs of the different domains may provide an explanation to the increased interest of the BSC within the health care organisations.

The political management

The political domain formally controls Swedish health care. Its politics represent different political parties and represent the citizens in the health care organisation. They are responsible for health care accessibility, quality and costs (Hallin and Siverbo, 2003). The politicians control the Swedish health care at different levels. The national level controls health care through laws and regulations; the regional level controls health care through goals and guidelines for the approach and extension of health care and decides also the structural changes in the production; the local level is responsible of controlling the operative processes. The political management control is characterised by a distance between the political decisions and the care process, but have limited influence over the care process (ibid).

Health care organisations are often described as professional organisations in which the medical profession has the main influence on health care (Etzioni, 1966; Mintzberg, 1993). The power of expertise is highlighted in the professional organisation meaning that people with higher education and skills control the ones with lower education. In Weber's (1964) terms, the health care organisation can be described as a bureaucratic organisation, controlled by highly educated specialists (see also Aron, 1999):

"The question is always who controls the existing bureaucratic machinery. And such control is possible only in a very limited degree to persons who are not technical specialists. Generally speaking, the trained permanent official is more likely to get his way in the long run than his nominal superior, the Cabinet minister, who is not a specialist." (Weber 1964, sid. 338)

Most of today's personnel within Swedish health care have an academic background, which supports the fact that contemporary health care organisations may be seen as professional organisations. Doctors have longest academic education and are seen as specialists in the organisation. During the last twenty years nurses have received increased academic status in the organisation due to the development of the nurses' university education (Gustafsson, 1987; Thunborg, 1999). Also, most administrators in staff functions, human resource departments and financial departments have academic background, which strengthens their academic status and competence in the health care organisation.

Even if the political domain has the formal responsibility of controlling health care the professionals practically control the care process. This can be explained by the doctor's traditional control of health care and their control of the decisions related to the core process. The inherent conflict between the different domains can be understood based on the different role distributions (Hallin and Siverbo, 2003). The doctors see to their independency and the values that are set by the professional association. In the same spirit, they feel that political management interferes with their operative work, which threatens their autonomy and medical expertise. The political management on the other hand accuses the professionals not respecting political decisions. Between them the administrative management is responsible implementing changes and new decisions in the organisation. These may not always be on line with the professionals' values, which lead to resistance in the medical profession and also that changes do not have the intended effects on clinical processes. Hence, controlling health care can be seen as a constant battle of power within the organisation.

3.3 Quality management in health care

Since the mid-1990's the Swedish health care has extensively been influenced by new management tools in order to develop and improve health care accessibility and quality (Östergren and Sahlin-Andersson, 1998; Henriksen, 2002; Bejerot and Hasselbladh, 2003; Hallin and Siverbo, 2003; Landstingförbundet, 2003). However, there are few research studies on the effects of the quality initiatives in health care and therefore it is difficult to proof if the new management principles have had a negative or positive effect on health care quality (for an exception, see Olsson, 2005). This is supported by Øvretveit (1997), who claims that only a few quality programs have been evaluated and the effects of modern quality methods in public health care need to be grasped in future research.

Quality has traditionally been an issue for the professional domain (Gustafsson, 1987; Omachonu, 1991; Øvretveit, 1997). The professionals set the medical quality standards in the professional association, educate people and create ethical codes and supportive research. According to Øvretveit (1997) this is called "the traditional professional association approach to quality". The background is the professional's traditional ownership of the health care quality. The old health care system was built on quality inspections implying that the doctor controlled and inspected the nurses' work; the nurses inspected the work of the assistant nurses and so on. Besides the professionals' interest for health care quality, the political and administrative management controls health care quality by laws, regulations, infection control standards, documentation, incident reporting etc.

The Quality Management movement introduced in the 1990's can be seen as threatening the traditional way of following-up and controlling health care quality (Øvretveit, 1997). Other quality measures were being introduced to not only focus on the medical quality of diagnosis and treatments, but in order to make the health care processes more transparent to management. Øvretveit means that there is a battle between the ownership of the quality and definition of quality in many health care organisations. In some cases it has implied a redistribution of the power and control from the professionals to the administrative and political domain. Östergren and Sahlin-Andersson (1998) take a similar approach saying that the introduction of new management tools have resulted in questioning the professionals' strong influence on the managing of health care.

In an international comparison of the incentives introducing quality programmes in European and US public health care organisations Øvretveit (1997) presents several similarities between the organisations in their way of approaching quality programmes. Many employees experienced quality work as separated from the everyday work, which is explained through the ineffective application of the quality methods. Similar findings are found in a study by Book, Hellström and Olsson (2003). They show that there is a

conflict between improvement work and the health care organisation, and that difficulties are experienced in the use of improvement practices and techniques.

Another characteristic presented by Øvretveit (1997) was the lack of performance orientation of quality activities. There were no measures or feedback required from the performance. The management claimed that they wanted each profession to find its own way forward. The management's new role as empowering employees, which is advocated in TQM, was also seen as lacking in the health care organisations. The prominent role of professions, the lack of management competence to pursue a TQM strategy and political changes were drawing attention from the programme. There was also a common lack of attention to the cost of quality measures and resource utilisation measurement, which reflected a wish to keep quality concerns separated from cost concerns. Systems thinking (Senge, 1990) was not applied leading to a lack of self-reflection on the cause and effects of the undertaken quality initiatives. One of the most prominent characteristics in the study was the importance to involve physicians in the quality programme. This was also experienced as difficult to achieve.

The Swedish researcher Olsson (2005) developed and tested a model that specifies factors for successful quality improvement of the Swedish health care, resembling to many of the findings presented by Øvretveit (1997). He concludes that the Organisation Change Manager – the OCM model - is suitable for health care managers, to increase the chances of successful quality improvement change in projects. The model comprises 11 factors, which includes 44 statements (Olsson, 2003). The successful organisations had sufficient resources for the improvement projects, illuminated the importance of the improvement project through a distinct problem analysis, and developed and communicated a project plan with a clear purpose derived within the management team. There was also feedback on the improvement and time for learning and reflection of the work. Persons with a contrasting opinion were seen as assets, and experimenting was encouraged as a way of learning. Employees' participation was incited and a shared platform about how to work with improvements was initiated. The leadership had the ability to prioritise and show interest for the improvement work. A dissatisfaction of the performance of the system was also stated, indicating a clear improvement potential.

In a study of a Swedish clinical department, Lagrosen, Lagrosen and Bäckström (2006) emphasise, in accordance to other studies, that the management's commitment, participation among employees and communication of a clear vision of the improvement work are significant in successful implementation of TQM.

Open and comparative measurement of health care performance is a popular tool for quality improvement of health care (SoS, 2003). Swedish health care has, however, had little experience from national measurements. An initial comparison between Swedish county councils was conducted in 2006 by the Swedish Association for Local Authorities

and Regions and the National Board of Health and Welfare (SKL, 2006). 57 performance indicators were measured in every county council and categorised into four major areas: medical quality, accessibility, patients' perceptions of health care and costs. The measures were collected from existing databases and information sources. The intention of this report is to regularly start measuring the quality and productivity of health care performance in order to make health care transparent to society and thereby stimulate improvements of Swedish health care. Several factors facilitate the development of a national, comparative measurement system in the Swedish health care services (SoS, 2003). The users of the measurement system are suggested to be involved in the development of the measurement system. In Sweden this would imply that the county council management and the different professions in health care are actively involved in this development. Another important factor for legitimacy is to use data that is viewed as trustworthy and reliable and to create national standards for measurements for justified comparisons.

CHAPTER 4

4 THE RESEARCH PROCESS

This chapter presents the methods used in the research study. The intention is to give the reader a presentation of how the research was conducted, the choices that were made and the rationale behind decisions. A short introduction is followed by a presentation of the research strategy and design. Thereafter, the two research studies are described with respect to unit of analysis, data collection, and analysis of data. The chapter ends with a discussion on how the findings from both research studies were compiled and presented. Finally, the quality of the research and reflections on the research process are discussed.

4.1 Introduction

My interest in studying the development of performance measurement systems was triggered off while writing my master thesis. The thesis focused on the implementation of a BSC in a municipality, and I became interested in how the BSC was actually integrated in the organisation and used by organisational members. During my first year as a doctoral student I attended courses and studied literature about the BSC in order to formulate a research topic. I found that empirical studies about the practical development and use of the BSC were few in number and that the focus was primarily on finding appropriate measures. The development of the measures in organisations and the use in managerial work was ignored. I recognised a need for inside knowledge in how the BSC and other performance measurement systems were being developed in organisations. The research presented in this thesis aims to analyse and thereby increase the understanding of the development of performance measurement systems in organisational practice.

The understanding of human behaviour is concerned with the empathic understanding of human action (Bryman, 2001). The researcher thereby interprets and understands the world by taking the social participants' perceptions as a starting point since reality consists

of interpretations of the people involved. However, there is a dissonance among social sciences of how to encounter social participants' descriptions of themselves and their actions (Gilje and Grimen, 1992; Denzin and Lincoln, 1994, 2001). One tradition argues that the participants' descriptions should not be included since these are often wrong and they involve concepts that are unscientific. The other tradition argues that social action is created through the participant's view of human behaviour, and therefore individual's descriptions play a major role in understanding reality.

In this thesis, understanding the development of performance measurement systems means to take peoples' own descriptions and actions as a starting point. The thesis thus aims to describe and explain peoples' descriptions of the performance measurement system through the terms and concepts used by the participants. However, in order to give people another picture of the phenomena that is somewhat different from the participants' experience I also aim to make use of theoretical concepts and statements stemming from theory. In addition, using a theoretical framework to describe and reconstruct the stories of the participants also aims to develop new questions for inquiry in future research. This is done by identifying differences between work practice and existing theories.

4.2 Research design

Due to the interpretive character of the research with focus on understanding, a qualitative research strategy was selected. According to Denzin and Lincoln (2001, p. 3) "...qualitative researchers study things in their natural settings, attempting to make sense of, or to interpret, phenomena in terms of the meanings people bring to them". Hence, the focus in qualitative research is on individuals' perceptions and interpretations of the social reality, which is seen as a continuously changing entity and is constructed through individuals' perception of it. In addition, qualitative research involves a special interest for understanding the contextual factors influencing the social behaviour (Bryman, 2001).

The research presented in this thesis aims to explore and explain a contemporary phenomenon in a real-life setting. It aims primarily to answer 'how' and 'why' questions and therefore the case study design was selected (Yin, 1994). Yin (1994) defines a case study as "an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomena and context are not clearly evident" (Yin 1994, p. 13). He further emphasises that the inquiry copes with situations, in which there are many more variables of interest than data points, relies on multiple sources of evidence, and benefits from the prior development of theoretical propositions.

Familiarity with the field

According to Stake (1994, p. 445), qualitative case study is characterised by "researchers spending expended time, on site, personally in contact with activities and operations of the case, reflecting, revising meanings of what is going on". This means the researcher has to be more or less involved in the case, leading to a certain degree of familiarity. Gummesson (2000) claims it is vital to a researcher to become familiar with the processes of change, implementation and decision-making in the organisation in order to develop a pre-understanding of the phenomenon at hand. He further argues that the best way to increase one's pre-understanding is to work as an active participant in the processes being investigated.

However, Morse (1994) argues that an investigator conducting a qualitative study in a setting, in which he or she is employed, may lead to complications. The dual roles of investigator and employee are incompatible, and may place the researcher in an untenable position. For instance, the investigator may influence the information the actors are focusing on by acting as an employee wearing the same clothing, introducing herself as an employee etc. According to Morse (1994), the investigator may avoid such signals, focusing instead on collecting data and not to act as an employee.

I had no prior professional experience with the field of interest before the research commenced. However, in order to receive a better understanding of Swedish health care, I visited three health care organisations before I started the studies: the Women's Health Clinic in Motala for two days, the Department of Pulmonary Medicine in Linköping for two days, and the Heart and Lung Center in Lund for half a day.

The visits in different health care organisations helped me in the planning and preparation of the research design and made me familiar to the health care context. I learned about the health care services in general, its mission, goals and structures and received insight into the terminology that is used in general.

Single or multiple cases

A case study may either include a single case or multiple cases, depending on the researcher's purpose with the study. According to Stake (1994) a single case provides the researcher with knowledge about that particular case, its complexities, and uniqueness. On the other hand, multiple cases provide the researcher with more compelling evidence, and thus the study is regarded as being more robust (Yin 1994). A single case study is preferred when it represents a critical case in testing a well-formulated theory and enables the researcher to dig deeper into its complexity and uniqueness. In multiple case studies the underlying logic is based on replication. Each case has to be selected so that it either predicts similar results or produces contrasting results but for predictable reasons. The analysis is primarily concerned with comparisons between the cases. The researcher can

either choose to bring out factors to compare from the description or to leave the comparison to the reader.

The research presented in this thesis is primarily based on a multiple case study design. The phenomenon was initially investigated in a single case study in the licentiate thesis (Kollberg, 2003). In order to replicate the findings and test the propositions drawn from the study in similar health care organisations, multiple cases were selected for this thesis.

The research process can be divided into two parts. The first part involved a research project studying the BSC in three health care organisations in Sweden. Findings from one of these cases were reported in the licentiate thesis. The second part started in 2004 and involved a research project focusing on the development of the Flow model in six project teams (see Figure 3). The two research studies are described below.



Figure 3: An overview of the research process.

4.3 Study 1: BSC in three health care organisations

This research project started in autumn 2001 when the SALAR requested the division of Quality Technology and Management to do research on the use of BSC in Swedish health care services. The aim of the commission was to increase the knowledge of how the BSC was used in the organisations developing and using BSC in their work places. Thereby, health care organisations planning to implement the BSC can use the knowledge as support in their decisions.

Unit of analysis

The unit of analysis refers to how the case is defined (Yin, 1994). The definition of the unit of analysis is related to the way the initial research questions have been defined. The case may represent a single unit of analysis or include multiple or embedded unit of analysis representing subunits within the current case (Yin, 1998, p. 41). Figure 4 illustrates the different types of case studies. Type 1 focuses on a single case, and has a single unit of analysis. Type 2 is an embedded single case study, in which the analysis of

the case includes the outcome of the subunits. Type 3 involves multiple cases, which are analysed from a holistic viewpoint respectively. Type 4 focuses on the analysis of multiple cases through the outcome of subunits of analysis within each case.

	Single-case	Multiple-case
Holistic	TYPE 1	TYPE 3
Embedded	TYPE 2	TYPE 4

Figure 4: Different types of design for case studies (Source: Yin 1994, p. 39)

In the BSC research study, a multiple and embedded case study design was selected, i.e. a Type 4 design. The analysis unit was identified as a 'hierarchical branch' expecting to strive towards one vision in the investigated organisation. The rationale was primarily to investigate the assumption of strategic alignment and application of scorecards in different business units in a hierarchy, which is advocated in BSC literature. The use of the BSC was therefore studied with respect to the management levels in each health care organisation.

Case selection

The selection of suitable cases was primarily based on what can be learnt in compliance with the purpose (Stake, 1994). In addition, other criteria were considered in the selection process:

- 1. The design of the BSC includes financial and non-financial measures that are derived from a vision and strategy and are categorised into perspectives originating from the framework by Kaplan and Norton (1992).
- 2. According to people familiar with the health care context, the BSC is being used in the organisations.
- 3. The organisations belong to different county councils in Sweden

The first criterion concerns the fact that the organisation has really implemented a BSC. According to the advocates, the original BSC framework proposed by Kaplan and Norton

(1992) contains four perspectives encompassing goals and measures. Since the BSC in practice is being changed and adapted to the organisation's conditions, the original framework has been used to judge if the organisation has implemented a BSC or not. According to Malmi (2001), for a measurement system to be a BSC, it should contain financial and non-financial measures, which should be derived from strategy and the measurement framework should contain perspectives derived from the original four. Thus, the number of perspectives does not matter, but should derive from the original framework.

The second criterion concerns the use of the BSC in the organisations. Kaplan and Norton (1996b) suggest that it takes about 25-26 months for a company to make BSC a routine part within the management process. However, the time schedule depends very much on the organisation's background, history and current situation. Therefore, people from the county councils of Linköping and Jönköping, and the SALAR, who are familiar with the health care context, were questioned about organisations that have implemented the BSC. In addition, before selecting a case, managers in the organisations were asked if they made use of the BSC in their work.

In order to facilitate the prediction of results in the comparative analysis organisations with focus on the elective care were selected. The selected organisations were the Department of Pulmonary Medicine in Linköping, the Department of Internal Medicine in Eksjö, and the Heart and Lung Center in Lund.

Information gathering

Case 1 was conducted in Spring 2002, Case 2 in Autumn 2003, and Case 3 in Spring 2004. I collected and analysed data from Case 1 and 3 while two other investigators were responsible for Case 2. I conducted interviews in Case 2 at one occasion and was responsible for the cross case analysis. Interviews and documents were the major sources for data collection. These are described in more detail below.

Interviews

According to Kvale (1997), the research interview is defined as "an interview whose purpose is to receive descriptions from the interviewed person's world view with the intention to interpret the meaning of the described phenomenon." (Kvale 1997, p. 13). The intention of the interview methodology is thus not to force the respondent to accept the view of the researcher, but rather to get the respondent's view on the phenomena.

The BSC case study was based on 34 interviews, which lasted 1-1.5 hours. A tape recorder was used in most interviews and the investigator also took notes. The interview guide used during the interviews included several themes: (1) interviewee's professional

background, (2) design of the scorecard, (3) implementation of the scorecard and (4) the practical use of the scorecard. See Appendix.

The interviewees were free to describe the BSC with respect to the themes during the interview. In order to make the interviewee focus on the subject, key questions were stressed within each theme. A model of the BSC used in the organisation was used during the interviews.

The interviewees were selected on the basis of the person's position in the organisation. The interviewees were also selected on the basis that they had been working in the organisation since the introduction of the BSC. Table 3 shows the number of interviews and the positions of the interviewees.

	Case 1	Case 2	Case 3
Interviews	14 interviews	12 interviews	8 interviews
	1 head of center	1 head of center	1 head of center
	1 head of department	1 county director of finance	2 coordinators
	2 quality coordinators	1 head of hospital	1 head of department
Position	1 county director of finance	1 hospital controller	1 head of unit
	1 head of care unit	2 administrators	3 employees
	7 employees	2 head of care unit	
		3 employees	

Table 3: Interviews in the BSC study.

Documents

According to Yin (1994), documents play an important role in data collection in case studies as they can provide the researcher with corroborating information for the evidence selected. The documents can also generate new insights and inferences, which can lead to new lines of inquiry.

Before the interviews began, documents from each case were selected for the study. The questions within each theme were then formulated with respect to the specific organisation. The most important documentation has been the BSC models. These have been used as artefacts in interview situations to focus the discussion and clarify any obscurities. Other documents used in the case study were the annual reports of the county councils, a measurement document, budget plans, and the Swedish Quality Award's assessment report (Department of Pulmonary Medicine).

Analysis of information

In order to make the material accessible to others, the interviews were reprinted in full. The reprinted material was also useful in the later stage of the analysis since it was possible to go back to the source of information if any ambiguity arose.

The material from the interviews in Case 1 and 3 was coded by dividing it into different units that were denoted with codes derived from the core of the unit. The units were categorised in each interview into the themes that were used in the interview guide, such as, background, design, implementation and use. Thereafter the units were categorised into sub-themes. A tree structure was developed for each interview (see Figure 5).

	A	8	0	D	E	F	G	1.1-1
3	Huvudtema	Tema		Käma	Bakerund			-
4	Bakgrund	Bakgrund	81	los Bakorund	Jag är siuks	köterska	sedan 19	72 oc
5	Implementation	Ledningsgruppens arbete	B4	Diskussion under hösten om styrkort med gamla chefer	I vilket ske	de i styr	kortsarb	etet k
			85	Var med i styrkortsarbetet i den nva ledningsgruppen	Sen boriade	vár uva	organisat	ion 1
1			86	Skrev definitioner utifrån diskussionerna	Hur sick d	et till? D	et var my	cket
1			87	Lämnade förslag på mätetal till ledningsgruppen	Vi avslutad	e môtet n	ned att di	dute
			BB	Brainstormade fram mått	Hur fick ni	tao nà n	nitten? I	Det v
0		Sulirinhet i implementaring	83	Förstod incention i början	När hörde	du talas	om styrk	ort f
1		or any next any intrometing	89	Svårt att ta fram data	Och då kom	ju saker f	fram som	kan v
2			B10	Svårt att göra diagram på intranätet	Och sen pål	oriades	ett mätart	ete e
3			B14	I början svärt att förstä, men sedan bättre diskussioner	1 början var	det väld	ligt myck	et va
			821	Terminologisvårigheter som i de flesta fall blev positivt	Sàg du nàg	ra probl	em med i	intro
5			823	Svärt att få fram styrkort på vissa verksamhetsområden	Det var svi	irt att få	till styrk	ort r
5			B24	Vet inte vad det beror på	Vad beror de	et på dá?	Jag vet in	te rik
7		Förankring av styrkortsiden	B11	Dolphin kom upp som ett sätt att förankra styrkortet	Hur fick ni	nys om	Dolphin's	Det
3			B12	Kranskärl påbörjade styrkortsarbete och efterfrågar gen	Och vi hade	ju olika	tankar or	n hu
ŝ			B13	Halvdagsseminarier	Det var så	det kom	upp och t	està
)			B15	Samlade in synpunkter och reviderade	Vi samlade	âxă în de	synpunkte	er so
			B16	En ur ledningsgruppen gav tyngd	Finns den t	exten at	t tillgå? \	/isst
2			B17	Syftet med träffarna var att förankra det övergripande st	Syftet med	träffarn	a var att	fà d
5			B18	Tanke att ta fram styrkort på verksamhetsområde och e	r Och sen var	ju tanken	ākā att m	an si
ŧ,			B19	Allmäna termer i styrkortet ledde till påtryckningar under	i SOm ju var	lite ludd	igt formul	erad
5			B20	Träffama riktade sig till all personal, även läkare	Träffarna i	iktade s	ig till alla	i? Ja
8	Design	BSC innebörd	82	BSC är en struktur som ger en gemensam bild	Kan du bes	skriva va	ad styrko	rt in
ľ	and a second	Styrkor med Dolphin	B42	I Dolphin kan man se inloggningar , antal inloggningar o	Gàr man lư	ı på varı	indras st	vrko
8			B43	Inga direkta begränsningar med systemet	Finns det n	iágra beg	gränsning	gar i
1			B44	Alla har tilgång till nästan allt	Vilka är de	främsta	styrkorn	a? /
	7	Oplanarada starkort	839	Styrkort för funktion, team och stödorocesser	Och sen har	vi in flar	Ationesty	rkort

Figure 5: Analysis of interviews.

As all interviews were categorised into different sub-themes, they were grouped into one common structure. Sub-themes that were interpreted as similar were merged together. Thereafter the units were scanned using content analysis to look for patterns and differences between units. If there was any ambiguity I went back to the information source.

During the coding of the data collected from Case 1 I noticed differences in how people at different organisational levels described the BSC. As the material was written down according to the tree structure, I therefore read the material based on these groups of interviewees and started to identify similarities and differences in how the BSC was designed, implemented and used between the groups.

Since the scorecard documents were used during the interviews, these were reviewed and analysed as the interviews commenced. The scorecards were firstly analysed by using the theoretical framework. Vision, strategic goals, critical success factors, goals, measures, targets, and action plans were identified as factors included in the BSC literature, and these factors were used when reviewing the documents. Since the documents were used during the interviews, I complemented my own review with the interviewees' stories in order to conduct further analysis. I could then critically review the material by emphasising differences between my own presentation based on theory and literature, and the comments from the interviewees.

Other documents were reviewed to obtain information about the organisation and the county council. These were continuously reviewed to receive input for interviews and confirm the interviewees' stories.

The cases were analysed separately and reported in the licentiate thesis and research reports (Elg and Persson, 2003; Kollberg, 2003, 2004). The cross case analysis aimed to compare the results from the three cases. Five factors were then analysed: the purpose of the BSC, visualisation of measurements, the implementation process, actions taken upon the BSC information and experienced contribution. These were derived from the performance measurement literature. The analysis is presented in Paper I.

4.4 Study 2: Development of the Flow model

SALAR has been following up expected and real waiting time measurements in health care services in a national database since April 2000. The measurements are based on the Flow model representing the medical decision process. Even if every county council in Sweden is obliged to report waiting time measurements, far from all have had sufficient information systems to conduct measurements according to the Flow model. In 2002, ten county councils were given financial support to speed up the development of the Flow model. SALAR arranged national network meetings with all development teams in which local work was followed up and new ideas discussed and related to other national projects. These started January 2003. To increase the development knowledge, the Division of Quality Technology and Management was assigned to investigate how the work in the development teams proceeded.

Unit of analysis

In this study a holistic, multiple case study design was selected, i.e. a Type 3 design in Figure 4. The case was identified to be the development team in each county council

developing the Flow model in their local context. These teams participated in the national network arranged by SALAR. The rationale behind was to investigate the relation between the development work in the local context and the national level.

Case selection

The study investigated six development teams with focus on development of the Flow model. Teams within the national network were invited to participate in the research and six of the ten participating projects reported their interest. The projects belong to different county councils or regions in Sweden.

Information gathering

Information has primarily been collected through interviews and documents. Observations have also been an important source of information for this research study. The author of this thesis collected data from three of the six cases investigated and was responsible for the cross case analysis presented in Paper II and V.

Interviews

The interviews were conducted at two occasions. First round of interviews was conducted January to March 2004 and encompassed 25 interviews. The second round of interviews was conducted September to November 2004 and encompassed 13 interviews.

The interviews included a retrospective as well as a prospective part in order to outline the entire project process from its start. The interviews were semi-structured including the following themes:

- 1. Personal background
- 2. Background to project initiation
- 3. The project's characteristics, objectives, and structure
- 4. Commitment and motivation
- 5. The project's relation to national initiatives (for project managers and project members)
- 6. The project's chance to succeed
- 7. Final questions

Questions for each theme were specified in order to guide the interviewee through the interview (see Appendix). The interview guides were developed through reviews of performance measurement system literature, innovation literature and discussions with the project manager of the national network. The interview themes were discussed in both rounds of interviews, apart from the background to project initiation, which was only asked during the first round of interviews.

People interviewed during the second round of interviews were also interviewed during the first round. The second round of interviews primarily served as a way to detect changes in the development work.

In cases where the interviewe agreed to taping, the interviews were recorded and thereafter fully reprinted. Three of the interviews were documented with the interviewer's notes that were directly reprinted afterwards.

The number of interviews conducted in each case varied from team to team— between 2 and 7 interviews depending on the extent of the team's commission. In some cases group interviews were also conducted with up to 4 team members to save time and obtain a broader picture of the characteristics of the project (see Table 4).

	Interviews	Position
Case 1	5 interviews (2 group interviews, 3 first round,	1 project manager
	2 second round)	3 project members
		2 organisational members
Case 2	13 interviews (1 group interview, 7 first round,	1 project managers
	6 second round)	1 project member
		5 organisational members
Case 3	4 interviews (3 first round, 1 second round)	1 project manager
		1 project member
		1 organisational member
Case 4	2 interviews (2 first round, 0 second round)	1 project manager
		1 organisational member
Case 5	9 interviews (6 first round, 3 second round)	1 project manager
		5 project members
		1 organisational member
Case 6	5 interviews (4 group interviews, 4 first round,	1 project manager
	1 second round)	10 organisational members
Total	38 interviews (7 group interviews, 25 first	6 project managers
	round, 13 second round)	10 project members
		20 organisational members

 Table 4: Interviews in the Flow model study.

In order to receive a picture of the local development of the Flow model, interviews were conducted with people in the development team and the local county council. In the development team, project manager and members were selected for interviews. People working in clinical departments in which the Flow model was being implemented or tested were selected for interviews.

Documents

Documents have also been an important source of information during the research. National description of the Flow model (Landstingsförbundet, 1998), national meetings protocols, project plans for each development teams, follow-up reports of the projects and project meeting protocols were selected and analysed. The applications for financial

support from SALAR were used as an important source for the initial understanding of the projects. They were also used as input for the interview guide and selection of interviewees.

Observations

Apart from interviews and document reviews the author participated every second month at the national network meetings arranged by SALAR. During these meetings the project teams discussed the local development of the Flow model and clarified interpretations and definitions of the measures and related concepts. In addition, the project teams had to report their status in the local development. Notes were taken during these meetings in order to achieve an understanding of the relation between the national discussions and the local development.

In order to obtain additional knowledge about the local development, the author participated at several project group meetings in three of the six county councils.

Analysis of information

The analysis was conducted in three stages. (1) Analysis of data from the first round of interviews and documents of all cases, (2) analysis of data from the first round of interviews, documents and observations in one of the cases and the national network, (3) analysis of data from both rounds of interviews and documents of all cases.

Stage 1

In the first stage the interviews from the first round of interviews were analysed together with a document review. The interview data was analysed with respect to seven analytical questions derived from innovation theory (Schroeder, Van de Ven, Scudder et al., 2000):

- 1. What has initiated the design and implementation of the Flow model?
- 2. In what way is the Flow model concept proliferated into other ideas?
- 3. What problems occur and how are they dealt with as the Flow model is being designed and implemented?
- 4. In what way does the old exist concurrently with the new?
- 5. How is the organisation changed as the Flow model is being designed and implemented?
- 6. To what extent is the top management involved in the design and implementation?
- 7. What strategies are used in the development teams to design and implement the Flow model?

All interviews were transcribed word-for-word and coded with respect to the analytical questions. Coded statements were reduced to a few words using primarily the interviewee's own words. These units were transferred to a MS Excel file, to categorise them into cases and analytical question (see Figure 6).



Figure 6: Coding of interviews from the Flow model study.

The codes for each question were briefly read in order to identify patterns in the material. Thereafter the units were systematically categorised into sub-groups using an 'affinity approach' (see Figure 7). Thereby patterns for all cases in each theoretical question were identified. Using this technique, I got an overview of the interviews and could easily identify the common features in the collected data.



Figure 7: Analysis of interviews from the Flow model study. The number in the brackets indicates the number of cases included in the units and sub-group.

In order to validate the results, the findings were presented during a national network meeting. Results from the interviews conducted by the author of this thesis were also presented and validated by the individual development teams. The findings from the first stage of the data analysis are presented in Paper II.

Stage 2

In the second stage of the analysis, the focus was set on analysing the development of the Flow model over time. In order to avoid drowning in data, which is a common issue in longitudinal case studies (Huber and Ven, 1995), an individual case was selected for this mission. The national network development process was also analysed in order to investigate the relation between the local and national development. The development team of Case 5 was selected for the longitudinal analysis as the data selected through interviews, documents and observations was judged to be extensive enough to present a 'thick' description.

The information collected was documented in chronological order in so-called 'event schemes' (Van de Ven & Poole, 1995). The event scheme showed the important events that have had, according to the local development team, an impact on the development of the Flow model. A similar event scheme was built for the national network.

The event schemes were revised and validated by the project teams and national network manager. An example of an event scheme is presented in Table 5.

		1		
Time	Event	Source		
1998	Presentation of a common model for follow-up time in the care process in the Regional Health Services Board in Southern Sweden.			
13/09/02	Application for financial support for development of the flow model (VKM) submitted to SALAR. The County Council and the Regional Hospital were positive regarding participation in the national network for further development of the model.	Document		
13/09/02	The Orthopedic department was engaged and worked actively with measurement for the waiting time database. They were positive about participating in the project when it was presented for the department management.	Interview Document		

 Table 5: Excerpt of an event scheme.

For each event scheme, the events with similar content were identified as an activity. For instance, events related to process mapping in an event scheme were identified as one unified activity. Each activity had a starting point and was closed in some cases. In order to analyse the occurrence of activities over time, the activities were visualised in a DuPont diagram indicating the starting point and length of each activity. Then an activity-based time schedule (ABTS) was designed, showing the tracks of development in each project. The ABTS was validated with the development team manager and used to identify phases in the development process. Findings from the analysis are presented in Paper IV.

The analysis was conducted together with Mattias Elg. First, each investigator interpreted the findings separately. Second, the individual interpretations were presented and discussed in order to reach a consensus on the final analysis of the findings. Receiving separate perspectives and interpretations of the findings decreased the risk for misinterpretations and enhanced the trustworthiness of the findings.

Stage 3

The third stage of the analysis involved data collected in all six cases and from both rounds of interviews. Project plans from each team were also used as important sources of information. After a discussion with the project manager in Case 4 it was decided to use the up-graded project plan as the primary source of information for the second occasion.

The purpose of the analysis was to identify the main problem areas that the teams experienced in the development. Hence, the third analytical question in the first stage of the analysis (What problems occur and how are they dealt with as the Flow model is designed and implemented?) was investigated more in detail. The same coding procedure as for the first stage of the analysis was applied on the second round of data.

Based on the experience gained so far in the research project, it was possible to categorise the cases into different phases of the development process (Neely et al., 2002). Case 1 and 2 were identified as being in the implementation phase, i.e. the performance measurement system was tested and implemented in the local counties and was evaluated in practice, during the study period. Case 4, 5 and 6 were identified as being in the design phase during the study period, i.e. a prototype was developed and guidelines for the implementation actions were established. Case 3 did not show a complete prototype in the final part of the study, and was identified as being in the idea phase during the study period.

After coding the interviews and categorising the cases, the analysis was conducted in three steps. Firstly, problem areas were identified individually in each case. Problems occurring in both rounds and in the first or second round of interviews were identified and categorised into five analytical themes; structures, technologies, processes, culture and environment (Harrison, 1994). Secondly, the problem areas identified for each case were categorised and compared within each phase of the development (i.e. comparison between Case 4, 5 and 6, and between Case 1 and 2). Thirdly, a pattern-matching of all three phases was made in order to pin point the main problem areas identified in the development. The findings are presented in Paper V.

4.5 Presentation of findings

The findings from the studies are presented in the appended papers to this thesis. The research questions of the thesis provided a basis for the summarising of the findings. The papers were read through and the findings were categorised with respect to the research questions. Thereafter several sub-categories were identified in each research question which derived from a pattern-matching between the empirical findings in the papers. These are presented in Chapter 5.

A reflection related to the presentation of findings has to do with the comparison of the results from the two research studies. The studies resembled in the sense that they focus on analysing the development of performance measurement systems in Swedish health care. Therefore, it would be possible for the reader to equally compare the results from the studies. However, since the research studies were conducted in different periods of time and that the author's pre-knowledge changed from one period to another, the studies differ in some aspects, which influence how readers should interpret the findings presented in Chapter 6.

Firstly, the unit of analysis in the two studies are different. In the BSC study the unit of analysis is a "branch hierarchy" in a health care organisation, while the Flow model study focuses on the work in individual development teams. Secondly, the performance measurement frameworks differ with respect to the contextual focus, dimensions

presented, standards used and consequences of measurements (see Chapter 2). Thirdly, the development of the two systems was initiated and managed at different levels. While the BSC was developed at a local hospital, the Flow model was initiated and developed at a national level. I have tried to consider these differences by referring to the two research studies respectively in the presentation of the findings in Chapter 5.

4.6 Quality of research

There are different tactics testing the quality of case study research. Yin (1994) proposes four tests concerning the construct validity, internal validity, external validity, and reliability. Guba and Lincoln (1994) argue the need for an alternative way of assessing the quality of qualitative research since validity and reliability are criteria mainly suitable for quantitative research. They propose that qualitative research should be evaluated assessing its trustworthiness. Trustworthiness is divided into four criteria: credibility, transferability, dependability and confirmability, which have equivalent criteria in quantitative research (Bryman, 2001). Because the research presented in this thesis is based on qualitative research the quality of the study will be discussed with respect to its trustworthiness.

Credibility

The credibility deals with the question how believable the results are and correspond to the internal validity of the study. Credibility has to do with the question if the researcher has conducted the study in accordance to research praxis and if the researcher has given the respondents feedback on the results in order to assure that the researcher's interpretation of reality resembles to the respondent's view. One way of increasing the credibility is to use the technique of respondent validity (Bryman, 2001). The investigator gets feedback on his or her interpretation of the reality from the respondents by e.g. discussing the researcher's interpretation, letting the respondents read and comment the presentation of the findings or of the interview print-out. Another technique to increase credibility is to use triangulation, i.e. the use of several observers, theoretical perspectives, data sources and methodologies when gathering information. According to Fishman (1999) the credibility can be further enhanced by prolonged engagement in the case organisation and persistent observation.

In the present research I have tried to increase the credibility of the findings by letting people from the studied cases review and comment on the presentation of the interviews. In the BSC research study respondents in the management group read the case descriptions in the research reports and commented on its content. Since the analysis provides the reader the researcher's interpretation on the data from a theoretical perspective, this part was left out in the respondent validation. In the Flow model research study a synthesis of the interviews in each case was presented to the development team followed by a discussion on the correspondence to their interpretations. If there was any ambiguity in interpretations the reasons were highlighted and discussed in order to decide on changes in the author's presentation.

Triangulation was used as technique gathering information. Several respondents were interviewed in order to obtain different perspectives on the phenomenon and thereby enrich the reality description. In both research studies several investigators were involved collecting the information providing additional insights in the study object. The investigators continuously discussed the findings and reviewed each others' work in order to enhance the understanding of how the performance measurement system was operated. Several methods were also used gathering information, such as interviews, documents and observations, which further enhanced the credibility of the findings.

During both research studies I was also engaged during a longer period of time in the cases in order to attain more understanding of the health care context and how the performance measurement system worked in practice. At the beginning of the BSC study I visited several health care departments that used the BSC and during the data collection I visited the case organisations several times. I also participated as an external observer at a management meeting in Case 1. At one occasion, I participated at interviews in Case 2. In the Flow model study I followed the teams' work during a prolonged period of time, which also had a positive impact on the credibility of the study. I attended national meetings every second month, visited the county councils in which the development teams operated several times, and had regular contact with the teams between the meetings. I also attended several project meetings in order to attain understanding of how the work proceeded.

During the entire research process conclusions and findings were reviewed and discussed with researchers and colleagues. This enhanced the chances to conduct research in accordance to existing research praxis. The fact that I wrote papers with other researchers has contributed to develop a critical discussion and review of results during the entire research process. During the investigation of Case 1 in the BSC study I received input and ideas from a Scientific Reference Group with experts from different fields of research, which has further enhanced the credibility.

Transferability

The transferability deals with the question if the results are applicable to other contexts than the one investigated. This quality criterion corresponds to the external validity in quantitative research testing the generalisation of the findings. Compared to quantitative research, qualitative research tends to focus on the uniqueness in a specific context and the meaning of a specific aspect of social reality, which often is seen as a major barrier for generalising. Yin (1998) argues that case study research does not aim to contribute to a statistical generalisation (generalising from a sample to a universe), but to make analytical generalisation by generalising a particular set of result to some broader theory. Based on this statement, the analytical generalisation on case study findings may be enhanced by thoroughly describing how cases were selected with respect to a rich, theoretical framework and specify how typical this case is compared to prior studies. Another way to increase the transferability is to provide the reader with a "thick description" (Guba and Lincoln, 1994), from which the reader can make interpretations on how to transfer the results to his or her own context. Finally, the investigation of several cases makes the study more robust than just studying a single case, and enhances the chances to generalise the results to other cases (Yin, 1998).

I have tried to increase the transferability of the findings in the present thesis by specifying the context of the empirical investigation (see Chapter 3). Since multiple cases have been investigated I haven't had the ability to provide the reader with a thick description of every single case in this thesis. Instead, I have selected specific aspects for the presentation of the cases depending on the theoretical focus in the analysis. In the BSC research study three reports were written, which provides the reader with "thick descriptions" from which he or she can generalise the results to other contexts (Elg and Persson, 2003; Kollberg, 2003, 2004). However, these are not included in this thesis.

The fact that I have chosen a multiple case study design may further enhance the transferability of results to other cases. In each research study, the cases were selected on the basis to predict similar results (a literal replication in Yin's (1998) terms). The analytical generalisation of the results is supported by placing the results from the case studies into the context of other theories and research. This provides the basis for theory development.

Dependability

The dependability deals with the question if the results are likely to be applied to other times. This criterion corresponds to the reliability in traditional research. Since qualitative research is based on the belief that the results are based on the investigator's interpretations of reality, which changes over time, it is unrealistic to expect that results from a qualitative research study will be exactly the same when conducted other times.

However, there are several ways to enhance the possibility to replicate the research study and thereby increase the dependability. According to Guba and Lincoln (1994) the investigator should provide the reader with a clear description of the steps and decisions taken in the research process in order to facilitate that the study can be replicated by other researchers at other times. Fishman (1999) states that the researcher should establish that the process of how the study was conducted is documented in such a way that the process can be tracked and reconstructed by research auditors. The dependability may increase by clearly explaining underlying theories and assumptions to the research, the rationale behind choices and the social context in which the study was conducted. Triangulation by using several methods and sources for the gathering and analysis of information is another technique to increase the study's dependability.

During the beginning of my research process I documented the research topic, planned time schedule, methodology and preliminary results in a thesis proposal, which was continuously updated. As I entered the field I started to document thoughts and rationale behind choices in a "research diary", which was used writing the methodology chapter in this thesis. I have also described the empirical context of the research study in order to provide the reader with an understanding of the requisites of the study and of the used techniques for triangulation when gathering information.

By describing the specific steps of the research in detail, choices made, methods used, and the empirical context I hope to have increased the ability for other researchers to repeat the study in the future. However, since the case and reality are not static in time, it is unlikely that another researcher conducting the same study at a different time will come up with exactly the same results. The new, and somewhat similar results are useful in the sense that they emphasise another perspective of the phenomenon.

Confirmability

The confirmability deals with if the investigator has let his or her values influence the findings and represents the criterion of objectivity in quantitative research. Since complete objectivity is impossible in social research, confirmability deals to ensure that the researcher can be shown to have acted in good faith (Bryman 2001). According to Fishman (1999) the researcher can increase the confirmability by assuring that data, interpretations and outcomes of the research are rooted in specific contexts and persons of the case apart from the researcher, e.g. by the use of a research auditor's assessment of the content of the research.

In this thesis, I have tried to put aside my personal values during the investigation and primarily focused on the interviewees' perceptions of the performance measurement system. In the analysis of the interviews I tried to take a step back from the interviewees' stories and instead view the findings from a theoretical perspective, using my own and other researchers' concepts in the analysis.

Other researchers have continuously reviewed the analysis and we have together discussed and designed the research strategy. I have also tried to describe my personal background and how this has influenced the choice of research topic in the introduction of this thesis in order to provide the reader with additional information to evaluate the quality of the research.

I have also tried to take a step back regarding the research process in order to take a more critical attitude to my results. This discussion is presented in the following section. However, it is impossible to totally prevent my prior experiences and values to influence

my findings since I am the interpreter of peoples' perceptions and my choices, which are partly based on my values and prior experiences, influence all the stages in the research process.

4.7 Reflections on the research process

In order to give the reader an additional base to evaluate the results in this thesis I would like to point out some critical aspects identified during the process.

The study of the performance measurement systems partly involved a retrospective analysis of peoples' stories of the development. During the interviews people were asked to remember their first contact with the performance measurement system, which in some cases was approximately ten years ago. There is always a problem conducting retrospective analysis since people tend to reconstruct their memories in order to make them logical or suitable to themselves and the researcher. This leads to an impending risk that valuable information from the interviewe never reaches the investigator or that the researcher never receives the information on how events actually happened.

In the Flow model research study interviews were conducted at two separate occasions. People interviewed the second round were also interviewed the first round. The intention of the interviews was to investigate changes in peoples' perception of the performance measurement system. However, there is a risk that the questions asked during the first round of interviews influenced the answers in the second round of interviews. This is always a risk when conducting interviews, when there are two occasions of interviews, as the interviewees have time to reflect and change their behaviour in accordance to the questions before the second round of interviews is conducted.

In order to increase the credibility of the study the investigator is recommended to be engaged for a longer period of time in the case organisation and to conduct persistent observation. However, there is risk that the investigator gets too involved in the study object, and thus affects the outcome of the study through actions that the researcher is not aware of. I have tried to increase the field familiarity by visiting different clinical departments, participate at national meetings and project meetings. During these occasions I have tried to take the role of an external observer, i.e. I have intentionally involved myself to a minor degree in the discussions in order to minimise my influence on the study object. However, the fact that I presented the research from the interviews both in the national group and individual projects in order to receive feedback on the interpretations, and visited the project groups several times, increases the risk of affecting the results of the study.

Using a tape recorder during the interviews may also be identified as a hindrance in the research process. In order to make the interviewee comfortable with the situation, I

presented the purpose of the project, myself and asked if the interviewee had any questions before I started the tape recorder. Anonymity was also emphasised for those interviewees it concerned. Thereafter, I asked if the interviewee agreed to have a tape recorder during the interview. Although there is a risk that the use of the tape recorder has made people withhold valuable information during the interviews I experienced that people were open with their perceptions and thoughts.

The reduction of the data in coding and analysis always leads to a loss of information. Even printing the taped interview afterwards involves a loss of information. In order to ensure that no important information was lost, the transcribed interview material was used during coding and analysis. When analysing Case 1 in the BSC study, the transcribed interviews were first reduced into summaries, which were then used in coding and analyses. However, statements in the summary were referred to the lines in the transcribed interview text, which enabled the linkage between the documents.

Another critical aspect in the research is the fact that the interview findings have been translated into English. This means that statements from the interviews presented in the thesis can be interpreted in a different way than if the statements were presented in the interviewee's own language, Swedish. This is important to consider when evaluating the results.

CHAPTER 5

5 Research Findings

The following chapter summarises and discusses the research findings from the two research studies. A summary of the appended papers is presented followed by a discussion of the findings having the research questions of the thesis as a starting point.

5.1 Summary of papers

Paper I: Exploring the Use of Balanced Scorecards in Swedish Health Care Organizations

The paper aims to increase the understanding of how BSC is used in Swedish health care. The use of BSC was studied from different angles; the purpose of the BSC, the actions taken on the information from BSC, visualisation, implementation and the experienced contribution of the use. 34 interviews were conducted in three health care organisations from Spring 2002 to Spring 2004. These were primarily selected on what can be learnt in compliance with the purpose of the study. Other selection criteria were: the design of BSC including financial and non-financial measures deriving from vision and strategy and categorised into perspectives originating from the framework by Kaplan and Norton (1992); according to people familiar with the health care context, the BSC is implemented and used in the organisations; the organisations belong to different county councils in Sweden. Findings from each case study are presented in detail in Elg and Persson (2003), Kollberg (2003), and Kollberg (2004).

It is concluded that BSC is used as a tool to improve internal capabilities and support organisational development. More specific, BSC is used as a tool by management and

employees in discussions, information dissemination, knowledge creation, follow-up and reporting processes. It provides the organisation with a structure that increases the understanding and meaning of improvements within the organisation. Hence it is suggested that the BSC can be viewed as a quality management tool when used in Swedish health care. It is not a tool delimited to the management group, but to also be used for improvements and knowledge creation at an operational level. The BSC in this study is used as a tool for "opening up" the organisation providing a base for an improvement dialogue.

The study shows that it is important to have people committed and full-time involved in the implementation. It is also essential to have a high involvement of the employees at an early implementation stage. Without involving employees using BSC, the quality in the measures reported can be questioned since the employees don't know why the measurement system is implemented. Finally, we bring out the role of visualisation techniques when using BSC. The study shows that visual designs have an effect on how BSC is perceived and used in organisations. Using techniques, which people recognise and can deal with, facilitates the implementation and thus the use of BSC.

Paper II: Design and Implementation of a Performance Measurement System in Swedish Health Care Services: A Multiple Case Study of 6 Development Teams

The purpose is to increase the understanding of how a process-oriented performance measurement system - the Flow model - is designed and implemented by development teams in Swedish health care. The research is based on a multiple case study of 6 development teams from different Swedish county councils. Evidence has primarily been collected through interviews with team members and people outside the team working in clinical departments. 25 interviews were conducted during the period January to March 2004.

The development is viewed in this paper as an innovation process in order to comprise the entire process from idea initiation to the implementation in daily practice. Seven factors are investigated with respect to this perspective: initiation of the development, proliferation of ideas, problems occurring, the old compared to the new, changes in the organisation due to the development, top management involvement and strategies applied.

From the case study it is concluded that the performance measurement system of the Flow model is developed through three tracks; technical system development, development of terms and concepts, and registration routines. These are proliferated in close interaction between a local development team and people in clinical departments. Moreover, it is concluded that the development is not triggered by a single event or person, but is a result of several activities in a gestation phase.

Important factors that might enable the design and implementation of the performance measurement system in the development teams are (1) the recognition of a need to change the current situation in the gestation phase, (2) the teams' interaction with people in the clinical departments, (3) the national network meetings arranged by the financier, (4) the struggle to motivate and inform top management, and (5) the establishment of contact with other development teams and ongoing projects.

Paper III: Measuring Lean Initiatives in Health Care Services: Issues and Findings

The purpose is to discuss how the Flow model is designed to measure changes towards lean thinking in health care services. Literature from the health care sector and the lean production movement are integrated in order to understand whether lean thinking is applicable in healthcare. Based on the lean thinking principles a 'lean' measurement framework is presented that measure changes towards lean thinking in health care services. Examples from 6 development teams implementing the Flow model are presented to illustrate how the Flow model is related to this measurement framework.

It is concluded that lean thinking is applicable in health care services. A measurement framework indicating changes in lean initiatives, which reflects efficiency and effectiveness of health care performance, is suggested. The comparison between this framework and the Flow model shows that the rather simple process model is a suitable model to indicate changes towards lean thinking. However, it is argued that the Flow model needs to be used in parallel to other measurement systems indicating for instance patient satisfaction, referral management, process mapping and fulfilment of targets and policies.

Some issues in the implementation are emphasised. Implementing a performance measurement system requires a new way of thinking on how to manage health care. Process orientation and patient focus are some concepts in the new public management philosophy needing clarification. It is also important to see lean thinking as a part of the larger management shift in order to plan for changes in mindset and work places. Local departments have also different requisites to plan and predict their demands which might complicate the application of the Just-in-Time principle when adopting the lean concept to health care. Finally, patients' demands may change during the care process, putting further restrictions on the adaptation.

Paper IV: Goal Orientation and Conflicts: Motors of Change in Development Projects in Health Care Service

The purpose is to contribute to the understanding of how process-oriented innovations, such as the Flow model, unfold and develop over time within health care contexts. The article illuminates how development projects within Swedish health care services may be

explained by several change motors proposed in the process theories of organisational development and change. Through a longitudinal field study, the development of the Flow model is analysed in one of the ten participating local development projects and in the national network organisation organised by SALAR.

Empirical evidence was collected from January 2003 to November 2004. Information was collected through interviews, observations, and documents and stored in chronological order in 'event schemes'. For each event scheme, the events with similar content were identified as an activity. In order to analyse the occurrence of activities over time, the activities were visualised in a DuPont diagram indicating the starting point and length of each activity. Then an activity-based time schedule (ABTS) was designed, showing the tracks of development in each project.

The development of the Flow model has been based on a purposeful engagement of the development teams, and the agenda and goals have been formulated along the way when people involved in the development came up with solutions to different problems. The phases in the development projects were not predefined, nor were logical pre-defined rules followed on how the Flow model should be adapted. The main goal or mission of the national and local project had, however, been set from the beginning, which supports the fact that the projects are goal-oriented and not driven by a predetermined action program.

Since the development team was not isolated from the outside world, disagreements occurred as a natural part when meeting people outside the project community. Hence, confrontations with people in the national project and between the local development project and people in the local departments became natural parts of the development and reinforced new ideas for the development of the Flow model.

Paper V: Challenges Experienced in the Development of Performance Measurement Systems in Swedish Health Care

The purpose is to investigate challenges experienced in the development of a performance measurement system – the Flow model - in Swedish health care services. Case studies were conducted in six development teams in Swedish health care services. The cases were studied during a 2-year period using interviews, observations, and documents as information sources. The theoretical framework encompasses change literature from the quality management and performance measurement field.

The analysis was conducted in three steps. First, challenges were identified in each project individually. These were identified by focusing on the problems experienced by the projects during the development. The challenges were categorised with respect to the five elements: structure, process, technology, culture and environment (Harrison, 1994). In the second step, the similarities and differences in challenges were identified in each phase of
the development (Neely et al., 2002). The third step of the analysis included an investigation of all phases collectively in order to identify the main challenges experienced in the development.

Four main challenges were identified in the development of the Flow model. Firstly, the findings indicated that all projects struggled to reach national consensus for measures and concepts in the Flow model when implementing the new system in the local organisation. One explanation to this observation is that people understand the Flow model and its use in different ways depending on their personal interpretations, use of technical administrative systems and previous experiences and skills. Another identified challenge is to maintain competence at a wide range of fields within the project team for an extended period of time. Thirdly, accepting that the project is scrutinised by top management was identified as a main challenge in the development. The findings showed that the projects were controlled by two different assigners with deficient overlapping connections and insufficient support from county council management. This forced the project teams to play double role, as the two assigners in some cases had different focuses. Fourthly, another main challenge in the development was identified as the clarification of who the end-users of the system are and considering his or her needs in the development. The empirical findings showed that project teams focused on the end-users that conduct the registrations ignoring the other end-users' needs in the development.

In conclusion, a need exists to create a constructive dialogue about the meaning of measures and terms when developing performance measurement systems like the Flow model in health care contexts. It is also suggested to create a clear management structure with top management engagement and involvement in order to decrease confusion about the project's role and mission. It also seems important to have multi-skilled teams with competence in system technology and clinical work, as well as with managerial skills in order to be able to deal with the challenges along the way. Finally, all different users to the measurement system should be analysed in order to ensure that their needs are considered in the development process.

	raperi	Paper II	Paper III	Paper IV	Paper V
Title	Exploring the Use of	Design and Implementation	Measuring Lean Initiatives	Goal Orientation and	Challenges Experienced in
	Balanced Scorecards in	of a Performance	in Health Care Services:	Conflicts: Motors of Change	the Development of
	Swedish Health Care	Measurement Systems in	Issues and Findings	in Development Projects in	Performance Measurement
	Organizations	Swedish Health Care		Health Care Services	Systems in Swedish Health
		Services: A Multiple Case			Care
		Study of 6 Development			
		Teams			
Results	BSC is used as a tool for	The Flow model is	Lean thinking is applicable	Development of the Flow	Major challenges: (1)
	improving internal	developed through 3 tracks	in health care services and a	model is based on a	reaching national consensus
	capabilities and supporting	in close interaction between	measurement framework	purposeful engagement of	for measures and concepts
	organisational development.	a local development team	indicating changes in lean	the development teams and	in the Flow model when
	Important to have people	and people in clinical	initiatives is suggested.	the agenda and goals have	implementing the new
	committed and full-time	departments.	The Flow model can be a	been formulated along the	system in local context, (2)
	involved in the	Important factors that	suitable model for indicating	way.	maintaining competence on
	implementation, involving	enable the design and	changes towards lean	Confrontations with people	a wide range of fields in the
	employees and using well-	implementation: (1) the	thinking when used in	in the national project, and	project team for an
	known techniques for visual	recognition of a need to	parallel with other	between the local	extended time period, (3)
	display of measurement	change, (2) the teams'	measurement systems.	development project and	accepting scrutiny of the
		interaction with people in	Some issues: To see lean	people in the local	project by top management
		the clinical departments, (3)	thinking as a part of the	departments, became	even when it conflicts with
		the national network	larger management shift in	natural parts of the	other assigners'
		meetings arranged by the	health care. Departments	development and reinforced	requirements (4) clarifying
		financier, (4) the struggle to	have different requisites to	new ideas to the	the various end users and
		motivate and inform top	plan and predict their	development of the Flow	distinguishing between their
		management, and (5) the	demands and patients'	model	needs.
		establishment of contact	demands may change during		
		with other ongoing projects.	the care process.		

Table 6: Appended papers and the results from each paper.

5.2 Discussion of findings

This section discusses the empirical findings with respect to the research questions presented in Chapter 1.

How and why are performance measurement systems being developed in Swedish health care?

The empirical findings bring out several characteristics of the development of performance measurement systems in Swedish health care. These are presented below. First, the initiation of performance measurement systems and the rationale behind is highlighted. Second, it is shown that the development encompassed several development tracks with relation to other on-going projects and conceptual ideas. Third, unpredictable events occurred as the performance measurement system was being developed and these are dealt with through a goal-oriented development. Finally, it is observed that performance measurement systems are developed for different purposes and that this has an impact on the use.

Performance measurement system initiation

An overall finding from both research studies is that the development of the performance measurement system was initiated when some major change occurred in the organisation or its environment (Paper I, II).

Paper I shows that in all cases a new manager was the trigger required to initiate the BSC. Case 1 had experienced a turbulent situation partly due to economic cutbacks and restructuring in the county council. This required a new management structure and the new head of department saw the BSC as a part of this new structure. In addition, the newly employed manager in Case 3 was commissioned from the hospital management to build a decentralised process organisation leading to the decision to introduce the BSC. In Case 2 the head of department saw the BSC as a new and reforming way of leading health care and hence introduced it due to his interest and leadership style.

In Paper II it is concluded that the development of the Flow model was accelerated by financial and developmental support from SALAR. The application for support from SALAR was derived from an external need to fulfil the national care guarantee and by an internal need to change the organisation from inside (see Table 2, Paper II). In three cases, people working in the departments showed interest in the new model due to their own expected gains, and in other three cases people experienced difficulties with the former measurement system and required a new measurement model.

Consequently, the findings indicate that people working in health care need to reach a threshold of dissatisfaction with the current situation (e.g. need for new management

structure, economic drawbacks, long waiting times, or need to change measurement systems) in order to take action and introduce new performance measurement systems. One observation is that these thresholds serve as important action stimulators and are a result of a prolonged process of activities. This is consistent with the belief that dissatisfaction with existing conditions stimulates people to search for improvement solutions and will continue to do so until a satisfactory solution is reached (Schroeder et al., 2000). This finding is also supported by Olsson (2005), who investigated factors for successful improvement initiatives in Swedish health care. Organisations that succeeded with the improvement projects experienced a dissatisfaction of the performance of the system indicating a clear improvement potential.

It is also interesting to note that the initiation was triggered both by internal and external needs. This indicates that the change was not only initiated by a political decision, which can be seen as a "top-down" driver to the change, but also from inside the local organisations indicating that the change was initiated from the "bottom-up". Hence, this resembles to findings presented in other studies of health care organisations (e.g. Aidemark, 2001a; Rahm et al., 2002; Käll, 2005) showing that management concepts and methods in health care often are adapted and translated to local department conditions instead of pushed down the organisation from a political level. One explanation to the local adaptation is that the medical professions need to accept the new management concept, which is initially an initiative aimed for the administrative organisation, and be part of the implementation in order to succeed with the changes (Øvretveit, 1997; Aidemark, 2001b). Due to the inherent conflict between the different domains in health care (Kouzes and Mico, 1979), this adaptation may take time, but seems to be needed in order to make the performance measurement system work in practice.

However, this leads to the question about goal congruence and strategic alignment promoted in performance measurement systems literature. When applied to a health care context there seems to be a risk that the performance measurement system lacks in goal congruence since each clinical department develops its own framework of measures without using the unified strategy or vision of the hospital as a starting point. So-called "islands of measures" are developed and thus are not aligned to the over-all strategy. Consequently, it seems as the strategic role of performance measurement systems to align the organisation's change initiatives towards a unified vision and direction is not the dominated benefit of using performance measurement systems in a health care context. This supports the findings presented in Aidemark (2001a) and Hallin and Kastberg (2002).

The findings discussed above primarily contribute to new knowledge in the research field of performance measurement systems. Few authors have paid attention to the initiation of performance measurement systems and the reasons for implementation. As discussed earlier the focus has primarily been on the issues experienced during the design and implementation. The activities and decisions underpinning the initiation have not been investigated, although authors claim that the purpose of using performance measurement systems has an impact on the success of implementation (Bourne et al., 2002). However, how this purpose was built up and spread in the organisation is not paid much attention. By viewing the development of performance measurement systems as an innovation process as proposed by Schroeder et al (2000), this gap in present literature was grasped in this study. In addition, the findings point to some interesting issues experienced in the health care context, which provide new insights into the role of performance measurement systems.

Several development tracks related to other projects and concepts

Another empirical observation is that the idea of performance measurement system develops through several tracks when implemented in health care and thereby the work is characterised by many-sidedness. Paper II shows that the Flow model as an idea was developed along three main tracks: (1) technical system development, (2) development of concepts, and (3) registration routines. The results from the interviews show that the design and implementation included new technical systems to support the registration routines and new presentation techniques, to register new measures, and to make people in the teams share new conceptual definitions and terms used in and related to the Flow model. It is also shown that the teams worked with all three tracks simultaneously, although they differently emphasised the importance of the tracks depending on their prior experience of the development (see Paper V). The development teams followed closely the work activities and made changes to the existing conditions and routines along the three tracks (Paper II). This observation indicates that the development of performance measurement systems in health care is characterised by several tracks requiring multiple competences in order to manage the project. This has also been shown in longitudinal research of innovations (Schroeder et al., 2000) in which innovative ideas are shown to proliferate into several ideas.

It may not be surprising to find that the existing administrative systems and registration routines are adapted and changed during the implementation of the performance measurement system. Changing technical systems have been highlighted as a main challenge in prior research (Bourne et al., 2000), although some claim that the development of IT-support for measurement should be considered to take place late in the process (Olve et al., 2003).

An interesting finding is that an extended amount of time was spent on the development of concepts and terms related to the performance measurement system. The projects struggled to develop shared conceptual definitions and terms used in and related to the Flow model both at a national and local level. This can be interpreted as a way of creating a 'measurement culture', which is promoted by several authors (Julnes and Holzer, 2001; Bourne et al., 2002; Kennerley and Neely, 2002; Radnor and Lovell, 2003). Moreover, it may also reflect the inherent difference between the professional, administrative and political domains' view on health care. Each domain uses its own language and terminology depending on the interest and focus in the health care organisation. When implementing performance measurement systems in a health care organisation these worlds are confronted and need to be considered in order to make the system work in practice. The system may have been introduced by the administrative or political management, and as it is being developed in the organisation the terminology is being adapted to the professionals' needs and demands. Hence, stimulating a discussion about terms and concepts seems to be an important activity when developing performance measurement systems in a health care context.

Another characteristic of the development process identified in the empirical findings is that the idea of performance measurement systems was often related to other ongoing projects and existing concepts. The case study in Paper II shows that some development teams work with the national model concerning costs per patient and its relation to the Flow model. The implementation of computer-based journals is mentioned in some cases as a project relating to the development of the Flow model. Thus the Flow model is not perceived as an isolated concept but is related to other ongoing activities in the health care organisations.

Viewing the performance measurement system as an essential part of a larger management structure by relating it to other systems rather than seeing it as another set of measures is supported by other authors in the field of performance measurement and management control (Kaplan and Norton, 1996b; Anthony and Govindarajan, 2001). In an organisation that has been regularly influenced by new management concepts and methods this may be even more important to emphasise. It is also important in order to prioritise between projects. Otherwise there is a risk that the performance measurement system is seen as a threat to other existing systems (Radnor and Lovell, 2003).

A goal-oriented development process

The empirical findings indicate that the development of performance measurement systems in health care follows a purposeful process of activities. In Paper IV it is shown that the development team was focused on the goals, sub-goals and functions that are needed to reach the main goal rather than on the pre-determined project plan. The phases in the development project were not predefined, nor were logical pre-defined rules followed for how the Flow model should be changed. The development was based on the purposeful engagement of the development teams and the agenda and goals were formulated along the way as people involved in the development came up with solutions to problems. This observation may be further supported in the empirical reasoning presented in Paper V, which shows that all projects experienced a delay of the initial project plan due to different unexpected events, such as extended technical integration work or training issues.

These findings indicate that the development of performance measurement systems in health care is characterised by unpredictable events in the local departments which cannot always be planned for (see also Paper II). This may be interpreted as a further support to the observation that the development of performance measurement systems in health care is characterised by adaptation of the system to local conditions (see discussion above). This also resembles to the conclusions drawn in the study of innovations by Schroeder et al (2000), who argue that innovations are difficult to plan for since they often proliferate into several ideas and meet unpredictable setbacks and surprises along the way. It may also be seen as a complement to previous research of performance measurement systems in private industry showing that the purpose or goals of the performance measurement system are important drivers for the progress of the work (Neely et al., 2002; Bourne, 2005). Moreover, it shows that there is not only one sequential order of activities implementing performance measurement systems, which is suggested by several authors (Dixon et al., 1990; Kaplan and Norton, 1993; Hallgårde, 1997), but that the development process is shaped and adopted into the current situation of the working place.

Purposes of using performance measurement systems

The empirical findings show that performance measurement systems in Swedish health care services are developed and used for different purposes. It is concluded in Paper I that the BSC is primarily used for the purpose to develop and improve organisational capabilities, in terms of improving internal processes with focus on the patients' wellbeing, which is identified as the primary health care customer (Paper III). The most prominent application area of the BSC for managers is also to disseminate information to people both outside and inside the organisation (Paper I). The structure divided into perspectives is easy to understand and recognise, and provides people with a unified idea of the organisation. The BSC is also used as a foundation in discussions between management and employees, between people with different professions and within teams in the three studied organisations. It provides the foundation for a dialogue between management and employees regarding improvement efforts, which is also identified as an important requisite for the use of the BSC in other sectors (Kaplan and Norton, 2001; Olve et al., 2003).

Due to the fact that the BSC helps to focus the organisation on improvements, both with respect to the purpose and actions taken, it is suggested that the BSC can be viewed as a quality management tool to be used in health care. It is not a tool delimited to the management group, which is emphasised in management literature (Kaplan and Norton, 1996a), but also a tool for improvements and knowledge creation at the operational level. This increases the openness since knowledge of the activities is disseminated throughout

the organisation. Thus instead of using the BSC as a tool to implement and communicate strategy formulated by management as suggested by its advocates, the BSC is shown to be used as a tool for opening up the organisation and providing a foundation for an improvement dialogue, which consequently increases the demands on management.

Considering the second empirical study in this thesis it is shown in Paper II that the Flow model was developed in six projects as a way of following up waiting time measures at a national level as well as for local improvement purposes. The main purpose was to use the Flow model to decrease waiting times and delays in the patient's care chain. At the time of writing, the Flow model was still being designed and implemented and few changes in how the medical work was performed and organised were identified (Paper II). However, it is interesting to reflect on the potential improvement actions based on the information from the Flow model. In Paper III it is argued that the Flow model may be seen as an important tool to measure lean thinking initiatives in health care services (Womack and Jones, 2003). In order to fully capture lean changes it is suggested that the Flow model is used in parallel with other measurement systems indicating for instance patient satisfaction, referral management, process mapping and fulfilment of targets and policies. The fact that the Flow model lacks in its relation to goals, over-all strategies and vision leads to the questioning of the role of the system as a tool for communicating strategy and achieving goal congruence. Paper II shows that the Flow model is developed according to the local conditions of the individual clinical department indicating further that the over-all strategic direction of the hospital and county council is disregarded in the development work. The Flow model seems to play an important role in improving care processes in local departments, but has a minor role as a tool to align initiatives towards unified strategies and vision at a hospital or county council level.

The discussion above shows that performance measurement systems are being used for different purposes when implemented into Swedish health care. The BSC has a broad application area and creates a legible structure for dialogue and discussion between management and employees about improvement work in general. The Flow model, on the other hand, is a quite simple process model with the main purpose to follow up and provide managers with information on how to decrease waiting times and other lead time measures. However, the use of the two performance measurement systems in health care resemble in that they seem to lack in the requirement of strategic alignment of measures. As discussed in previous section this may lead to the development of "islands of measures", which focus on other improvements than are advocated on a strategic level. Consequently, it seems that when performance measurement systems are applied to a health care context they are primarily used as an interactive control system (Simons, 1994), which is regularly used to involve managers in the decision activities of employees by creating a dialogue and communication regarding organisational improvements, rather

than a diagnostic control system, which is used as a feedback system to monitor outcomes in order to correct deviations from standards of performance.

This observation supports the findings by Aidemark (2001) showing that the BSC in health care is not a way of controlling goal congruence, but provides a language in a dialogue leading to collaboration and increased consensus about the health care goals (Aidemark, 2001a). Hallin and Siverbo (2003) came to a similar conclusion saying that the BSC has shown to be a new way to describe health care, which provides a foundation for discussions on the activities and how to improve them. An explanation to the difference between the theoretical and practical application of the BSC is that the system is undergoing a translation process, such as the one described by Käll (2005) and Ax and Bjørnenak (2005). This may be seen as necessary in order to make the professional domain use the system, and thereby secure a long-term survival.

What problems can be identified in the development of performance measurement systems in Swedish health care services?

Several problems have been identified in the research studies of this thesis. In this section three main problem areas are discussed and presented. First, the issue to reach national consensus when developing performance measurement systems in a health care context is discussed. Second, the involvement of management in the development has been identified as a major issue. Third, difficulties related to the end-user of the measurements are finally discussed.

National consensus

The empirical findings presented in Paper V indicate that all development projects struggled to reach national consensus for measures and concepts in the Flow model when implementing the new system in the local organisation. All six projects experienced issues with the national network to reach consensus about the Flow model measures and concepts. Lack of management control, not living up to expectations, too much focus on technical solutions rather than implementation issues, and too different requisites in the projects were criticisms mentioned. This issue can be understood as a 'sense-making' process, in which the project teams understand the national guidelines by transforming them into something sensible and meaningful in their own context. During the process, the national guidelines of the Flow model were related to the specific context of each project by e.g. technically integrating the Flow model into existing care administrative system, or coordinating the Flow model with other systems. All projects experienced also conceptual differences related to the measurement system, and project members had different experiences and skills, which influenced their personal interpretation. These findings can also serve as an explanation to the difficulties to follow the national standards set for the Flow model. People seem to understand performance measurement systems in different ways depending on their personal interpretations, use of technical administrative systems in their local context and previous experiences and skills.

This discussion leads to the question if it is possible to nationally adopt a standardised performance measurement system, or if the local contexts of the Swedish health care are so different that national standardisation of measures is impossible? Authors tend to emphasise the importance of creating a 'measurement culture' in which people share a common conceptual framework (Bourne et al., 2002; Radnor and Lovell, 2003). However, few authors discuss what a measurement culture really means in practice and the studies are delimited to units or companies with clear management structures and responsibilities. The findings presented above indicate that the local contexts in Swedish health care differs with respect to technical administrative systems, and individual interpretations etc., which can be seen as barriers building a national 'measurement culture' encompassing a unified interpretation of measures and concepts. The fact that Swedish health care is largely decentralised to the county councils (SKL, 2005), and is characterised by an inherent conflict between the professional, administrative and political domains (see also Gustafsson, 1987) may also be seen as barriers to a national consensus on the measurement system.

On the other hand, the fact that the Swedish health care is decentralised may be viewed as an argument *for* a national measurement system in order to control and improve, and make health care transparent to patients. One may further argue that national standards for performance measurement are necessary in order to live up to the national care guarantee encompassing that patients can select care providers if the own county council is not able to provide health care within certain time limits. A first attempt to a national measurement system in Sweden was conducted in 2006 (SKL, 2006), which makes the health care transparent to society and will set future pressure on health care quality. However, as discussed above it is still important to discuss terms and concepts of the measurement systems both at a local and a national level and consider the differences in local contexts when developing the measurement systems. There is otherwise a risk that the legitimacy of the system will be questioned and the trustworthiness of the measurements is at stake.

Management involvement

A problem area, which is prominent in the study of the Flow model, is related to the fact of involving management, in terms of county council, hospital and department management, in the development of the performance measurement system. It is shown in Paper II that the lack of management's involvement makes the development teams play a double role. First, they are assigned to make employees accept the Flow model and to make departments start measuring. Second, the teams are struggling to get the county council and hospital management, and the heads of clinical departments committed to ensure that the implementation will survive in the future (Paper II).

The lack of management's involvement and support of the development can be derived from the findings presented in Paper V which shows that the local projects were controlled by both the local county council and the national network organisation. While top management, i.e. county council management, region management and hospital management, were partly involved in the county management structure (e.g. in a steering group), there were no top management attending nor participating in the national network. The lack of top management support was also experienced as a problem area within several projects. Furthermore, at budget times the projects were scrutinised and examined by the top managers and then competing with other projects to obtain further financial support. Several projects were then nearly terminated due to constraints in county council finances.

Hence, the projects had mandate to run in the county council, but lacked in the commitment of the political and administrative management. It seemed as the management saw no initial use or benefit of using the system in managerial work but let the local departments implement the system anyway. The lack of management's commitment has also shown to be an issue when implementing TQM programmes in health care settings (Øvretveit, 1997).

One way of dealing with this issue is to create a unified project organisation with members from top management and to have a clear commission statement (Juran, 1989; Olsson, 2005). By letting top managers take an active part in e.g. training sessions, project meetings and development initiatives, the managers' understanding and attitude towards improvement work may change, and thereby the managements' commitment for the project may increase

Considering various end-users' needs

Considering stakeholders' needs is emphasised in quality management literature to be an important factor to achieve quality improvements (Hackman and Wageman, 1995; Dahlgaard et al., 1998; Bergman and Klefsjö, 2001; Dahlgaard and Park Dahlgaard, 2006a). The needs of the user, or preferably the customer, of services or products are brought out as important also in performance measurement literature (see e.g. Neely et al., 2002). Shewhart (1931) can be seen as the first 'guru' in the quality management field to argue to set the focus on the customer when it comes to improvements.

Relating to the development of performance measurement systems in health care the findings indicated that the development projects lacked in clarifying who the end-users of the system were and to consider these needs in the development. In Paper II the empirical findings indicated that the development teams primarily were focused on

technical systems development, concept development, and registration routines at a department level. The use of the measurements in managerial work seems to be placed secondly, which also is reflected in the low involvement of the managers in the development team (see prior section). It is also shown that the county council and hospital management mainly took a passive role in decision making and supporting the development process. Only a few department managers were part of the project organisation indicating also a passive role from this management level, even if the development teams assigned the heads of department great importance to facilitate the implementation.

The empirical findings in Paper V confirm this picture and show further that other endusers' needs than management needs were ignored in the development of the Flow model. The development teams primarily focused on issues related to the registration routines, e.g. integration of new measurement routines, finding appropriate codes and groups for measures and inconsistent registrations. This indicates that the end-users of the Flow model identified by the project teams were people working with the registration of the measures. For instance, health care personnel provides the system information when the patient comes to the clinic; when the patient is diagnosed, treated and followedup and finally when he or she steps out of the clinical department. The involved personnel have specific needs for how registration should be performed.

Another end-user identified is people or groups of people using the information from the Flow model for e.g. analysing, controlling or planning future activities. Several different potential users of the information are identified in Paper V: top managers and clinical department managers analysing aggregated data, doctors using information on single patients, and patients. However, the needs of these end-users were not considered in the cases studied.

In performance measurement literature the users of performance measurements are rarely discussed and emphasised although the managers' role as drivers to the implementation is identified as an important factor. The findings presented above together with support from quality management literature bring out the need to focus on the various users of the measures and to take consideration to their requirements in the development of performance measurement system in health care.

What enabling factors can be identified in the development of performance measurement systems in Swedish health care services?

Several enabling factors were identified in the development of performance measurement systems in Swedish health care. First, the interaction frequency between the individuals developing the system and the rest of the organisation is identified as enabler to make the measurements used in the organisation. Second, it is important to involve management at different organisational levels in order to assure that the measurements are actually being used for managerial purposes. Multi-skilled teams are emphasised as an important factor. Techniques for visual displays also play an important role for the development.

Interaction with the development team

A central factor that seems to enable the development of performance measurement systems in health care is the interaction between people developing the system and actors working in the organisation as well as outside the boundary of the organisation. The findings addressed in Paper II show that the development teams working with the Flow model are engaged in and dependent of a wide variety of networks. The actors include other county councils, system suppliers, consultants, and other clinical departments that all develop and implement the Flow model in their contexts. The findings show also that maintaining the networks constitutes a major part of the teams' work; this is done through meetings, training sessions, telephone contacts, and conferences. This maintenance provides the teams with an insight into how the work is proceeding at different places and with different developers. It is further concluded that the teams' interaction with people within the clinical departments, the national network meetings arranged by the financier, the teams' struggle to motivate and inform the top management, and the establishment of contact with other development teams and ongoing projects are identified as important for the progress of the project.

In Paper I the relation between people developing the BSC and employees working in the organisation is addressed as an important factor for the outcome of the BSC implementation. The involvement of employees in the implementation was established through informing employees at an early stage of the implementation, and letting all sections design their own scorecards. However, the latter may lead to the development of islands of measurements with no relation to the over-all strategies and objectives and inability to compare and compile the sections' performance. The top management arranged seminars with all employees and the department management asked people to come up with improvement suggestions and encouraged feedback loops. The importance of interaction is also shown in the empirical findings in Paper IV. Based on the single case study it is confirmed that interaction between the development team, the local departments and other development projects became natural parts of the development and reinforced new ideas for the development of the Flow model.

Interaction with the development team is identified as an important factor in order to adapt the performance measurement system to the current situation of the organisation. In Paper II it is suggested that the development teams' interactions with the people executing the measurements makes the Flow model change and adapts it to current needs of the local organisation. Moreover, the findings indicate that concept development during the national network meetings, arranged and controlled by SALAR, has helped and supported many teams' understanding of the Flow model even if the project members experienced problems to reach a national consensus of the concepts and measures (Paper V).

The strategic discussion and dialogue between the management and the employees is highlighted in the literature for performance measurement systems (Keegan et al., 1989; Kaplan and Norton, 1992; Anthony and Govindarajan, 2001; Olve et al., 2003). However, few investigations point to the significance of networks and interaction building for the outcome of performance measurement systems. This study shows that the dialogue and interaction between people driving the development is important to consider when implementing performance measurement systems in health care settings. It provides the projects with new knowledge and understanding of peoples' demands of the system. This may be seen as a significant activity in health care due to its complex management structure and the existence of different views and concerns for health care (Östergren and Sahlin-Andersson, 1998; Hallin and Siverbo, 2003).

Management involvement

It was argued, based on the findings from the case study of the Flow model, that the management involvement implied several difficulties, due to the complexity of the management structure. However, the empirical findings from the case study of the BSC identify management involvement as an enabling factor in the development. The study focusing on organisations using the BSC shows that change agents with a management position played an important role enabling the design and implementation process (Paper I). The management was represented in the development team and actively involved in the implementation through personal engagement and interest in the model. The managers of the health care organisations also initiated the idea of the BSC and aimed to use the tool for the managing of the organisations. Hence, compared to the Flow model, the BSC was initially introduced by the administrative management in the local organisation and thereby the development was characterised by an inherent involvement and interest from the management for the project.

In quality management literature management's commitment and support is addressed as a prerequisite for implementing quality management and to working with continuous improvements (Juran, 1964; Deming, 1986; Hackman and Wageman, 1995). The managers' involvement and support for the performance measurement system is also identified as an enabling factor in other studies within the private industry. Bourne et al. (2000) observed that top management commitment, being distracted during the design and implementation of performance measurement system, may hinder the system from being used and applied in practice. In addition, Bourne et al. (2002) showed that implementation is enabled through a high level of management commitment, which is practiced by expressing a clear and ambitious purpose for the implementation. This study confirms that management's involvement in the development is important also in a health care context.

Multi-skilled teams

Another identified factor to enable the development of performance measurement systems in Swedish health care is the use of multi-skilled development teams or change agents. The findings presented in Paper V show that the development projects deal with a wide range of challenges, which required specific skills in different areas. The findings show that the project members were recruited from different areas of the organisation, such as Orthopaedic department, IT department or administrative functions, and most project members had technical skills and had worked or were still working in clinical practice at the time for the development (see also Paper II). The findings indicate that most Flow model projects had well-functioning project groups with clear role assignments and coordination responsibilities. Thereby, technical and clinical skills and experiences seemed important in order to deal with the several development tracks evolving during the process.

The findings from the BSC study support this inference (Paper I). The change agents identified in the cases had a management position and had a professional background in the clinical activity. They also showed a genuine interest and knowledge in BSC techniques, which was either received through education, self-studies or relations with other clinical organisations. Consequently, people or projects driving the development of performance measurement systems are suggested to have multiple skills, such as clinical experience, technical skills about how the measurement system should be integrated in existing systems and have a linkage to management.

The findings support the statement of having multi-skilled teams from different areas of the organisation when working with improvement projects (Juran, 1989). However, having people with clinical experience and skills driving the development seems to characterise the work in health care organisations. This may be explained through the high status of the profession in the organisation and their strong influence on change initiatives in general (Øvretveit, 1997). In order to understand the values of the professions and consider these in the development, the project members or change agents need to be familiar with the clinical processes. Otherwise, the project could fail as the changes may not be aligned with the values of the professionals.

Techniques for visual displays

The findings further indicate that visual displays and applications for data retrieval play an important role in the development of performance measurement systems in health care. Several visual designs for the BSC were shown in Paper I. Although the frameworks were similar in the three cases the techniques presenting measures differed. While Case 1 and 2

present their measures in a cob-web diagram designed manually in Excel, Case 3 uses ITsupport to design and display visual diagrams. In Case 3 the IT-support has enabled the implementation of the BSC by fastening and increasing the information exchange, facilitating the overview of activities and creating an openness in the organisation. In addition to the IT-support, Case 1 and 2 show that there are several benefits by applying well-known techniques when visualising and spreading measures to staff and top management. The cobweb diagram is a familiar illustration in hospitals and using such technique in the BSC might facilitate the understanding of the measures among people in the organisation (see also Elg 2001).

Visual displays can also play an important role in development teams to control unplanned events, which seems to occur as the development proceeds (see discussion above). Consequently, continuous display of measurements through well-known information technology is not only an important element for management control in general, but it also enables the use of the performance measurement system itself. The visualisation aspect has only been investigated in few research studies and further research is suggested in order to enhance the knowledge of which role the visual design actually plays for performance measurement development.

CHAPTER 6

6 FINAL DISCUSSION

This chapter presents the conclusions drawn from the empirical studies of this thesis. Thereafter the research contribution of the findings is discussed. The chapter ends with suggestions for future research.

6.1 Conclusions

The purpose of this thesis is to analyse the development, i.e. the design, implementation and use, of performance measurement systems, in Swedish health care services. Three research questions provided guidelines for the empirical investigations presented in the thesis: How and why are performance measurement systems being developed in Swedish health care services? What problems can be identified in the development of performance measurement systems in Swedish health care services? What enabling factors can be identified in the development of performance measurement systems in Swedish health care services? Several conclusions can be drawn based on multiple case studies of two performance measurement systems that are being developed in Swedish health care (the BSC and the Flow model).

Performance measurement systems in health care are initiated through a need to change the current condition and is characterised by a goal-oriented process, which cannot always be planned for.

When initiated, the idea of performance measurement system is developed primarily through three tracks: adaptation of terminology, technical systems and registration routines. The performance measurement system is related to other ongoing projects and existing concepts in the organisational context. Hence, the application of performance measurement systems in Swedish health care is characterised by many-sidedness and events that can not always be planned for. This may be explained by the fact that the process follows a purposeful process of activities in which the performance measurement system is being adapted to local conditions. This adaptation process seems to be necessary in order to make people use the system. Based on this statement it follows that the goal of using performance measurement systems becomes an important driver of the development.

For health care managers implementing performance measurement systems it is important to reflect on and identify the need to develop a performance measurement system since it influences the initiation of the system. In order to enable the use of the system in the entire organisation, and hence enable the development process, the goal to develop the performance measurement system need to be clearly identified and communicated in the organisation. Understanding and accepting that the process is characterised by many-sidedness and unpredictable events is probably the most important experience for health care managers.

Performance measurement systems can be used for different purposes, but when applied to a health care context it primarily serves as a tool to involve management and employees in a dialogue and communication on organisational improvements.

The strategic alignment of measures in the performance measurement systems is rarely emphasised in health care partly due to the adaptations of the measures to the needs of the clinical processes. Hence, it seems as the role of performance measurement systems in health care is to involve management and employees in a dialogue on which aspects of the clinical organisation should be improved, rather than a feedback system to correct deviations from strategic objectives. Difficulties to create national consensus about measures and concepts can be seen as a result of this adaptation. National guidelines for the measurement system serve instead as a tool to increase individual project's understanding of the performance measurement system.

From a health care management perspective, it is important to accept that local adaptation is necessary to assure that the performance measurement system is being used by the local health care organisation. Different administrative systems, people with different backgrounds and professions, and departments with different medical approach are influencing and forming the performance measurement system according to their specific needs and requests.

The end-users of the performance measurement system are important to identify and their needs specified in order to assure that the performance measurement system is being correctly adapted to and used in the health care organisation.

In order to assure that the performance measurement system is being used in the organisation it is necessary to consider various end-users' needs in the development. This has been identified as a problem area in the present study. Important end-users are department, hospital and county council management, which need a valid base for

decision making. In addition, patients may need information of e.g. waiting times in order to make the correct decisions on what county council to choose for a treatment or an operation. Employees may also need information from the system in order to plan the daily activities. By identifying the different end-users and their needs of information and build these into the performance measurement system, increases the transparency of the health care services to different stakeholders. This in turn is an important requisite for supporting quality improvements in care processes.

For health care managers it is hence important to clearly specify what kind of information is requested and communicate this to the development team. In parallel to this is a reflection on the type of situations the information will be used in order to increase the possibilities of accessing the system.

The involvement of management (department, hospital and county council management) in the development is necessary in order to create legitimacy for the system and to assure its long-term survival.

For health care managers initiating performance measurement systems it is important to take an active part in the development. Understanding the need of a performance measurements system in the organisation may be seen as a first step towards an involvement. In cases there are multiple assigners or financiers there is a need for a project organisation with collaboration between assigners in order to communicate a unified mission of the assignment and thus prevent conflicting signals and confusion in the projects.

Multi-skilled teams have the ability to deal with the wide range of challenges that the group face during the development and their clinical experience creates a legitimacy of the system among the professions.

Another important conclusion drawn from the research studies is that development teams, which include members with different skills and background, enable the development of performance measurement systems in Swedish health care. People or projects driving the development of performance measurement systems have clinical experience, technical skills about how the measurement system should be integrated in existing systems and have a linkage to management. The members' experience in clinical work is an important requisite for creating legitimacy among professions. In addition, the groups' relation to the management is important in order to decrease the risk terminating the project and to improve the system's chances of being used in managerial work.

A frequent interaction between the development team, the organisation, and external networks provides the team with an understanding of peoples' demands on the system, and is significant in health care organisations characterised by a complex management structure and a wide range of views and concerns for health care.

The interaction between people developing the system and actors working in the organisation as well as outside the boundary of the organisation is important to consider for maintaining the control and reinforcing new ideas to the development of performance measurement systems. It is also central for adapting the performance measurement system to the current situation of the organisation. This may be even more central in health care organisations, which encompasses different domains having different needs and demands for controlling health care processes.

Hence, for health care management there is a need to support the development teams in establishing effective communication channels with organisational members as well as networks outside its boundaries in order to increase the chances of making the performance measurement system a useful tool in the organisation.

6.2 Research contribution

In the introduction of this thesis three gaps in existing research on performance measurement systems were highlighted. First, the empirical studies that exist focus mainly on only one of the development dimensions of design, implementation and use. Moreover, the focus has primarily been on the design dimension, i.e. on the technical issues related to the constructs of measurement. Finally, the empirical studies on the development of performance measurement systems in a health care context are few in number, making this research area of special interest for exploration. The research presented in this thesis has tried to bridge the gap between the three dimensions of development by studying two or three dimensions simultaneously. Moreover, by studying the development in the context of health care services, the research contributes to broaden the research field further which will support health care managers in their development of performance measurement systems.

The focus in prior research has mainly been on proposing performance measurement system framework designs and prescribed models for implementation. The weaknesses of these studies are that they tend to ignore the complexity and difficulties involved in the development. Authors also mediate that these events, if they occur, should be managed in a specific order. This thesis shows that the development process is far from straight forward. The performance measurement system is formed and designed by the influence of factors in the organisational context, which cannot always be predicted.

In order to capture the complexity of the development process, performance measurement systems have in this thesis been studied as an innovation process derived from the Minnesota Innovation Research Program presented in Van de Ven et al. (2000). This perspective was applied to the empirical findings presented in Paper II, IV and V and has contributed to an additional understanding of how performance measurement systems unfold over time. By viewing the development of performance measurement

systems as an innovation process as proposed by Van de Ven et al. (2000) the obstacles and challenges occurring in the processes were traced and explained. This perspective also helps to take a broad view on the development process since it considers both administrative and technological ideas in the refinement of performance measurement systems. It also considers the whole chain of activities in the development process from initiation of an idea to the final use of performance measurements in work practices. More specifically, by seeing the development as an innovation process, the focus is broadened from being technological towards the organisation as whole, which may contribute to the existing research on performance measurement systems.

For practitioners in health care this thesis contributes to several insights. At a national level it is important to realise that national consensus of the interpretation of measures and terminology related to the performance measurement system is difficult to achieve, and that local adaptation of the system is necessary for the use of the measurements in the local improvement work. However, discussions and exchange at a national level contribute to create knowledge and to increased understanding of the system and its relation to other projects and concepts in the projects driving the development.

For management at a local level it seems important to create requisites for local adaptation of performance measurement systems by e.g. using existing techniques for visual displays of measurements and letting units develop their own scorecards. However, in order to decrease the risk of developing "islands of measures" without any connection to strategic decisions the local management is suggested to be actively involved in the development work. Participation in project meetings, creating forums on how to use the system, and discussing the performance measurement system at management meetings may increase management's understanding and interest for the project. Another important activity is to formulate and communicate a clear goal for the development since it sets the direction of the teams' or change agents' work. In order to support the local adaptation of the system, the goal should be broadly formulated.

For local development projects or individuals driving the development it is important to assemble people from different competence areas. Central is to have experience from clinical work since this creates legitimacy among the professions. Skills in administrative systems and relation to management are also valuable competences. Social skills should not be underestimated since the development work is characterised by networking and interaction with different actors within and outside the boundary of the organisation. It is also important to recognise the different end-users of the performance measurement system, their needs and desires of the system.

6.3 Future research

There are several topics that need further exploration in the field of performance measurement systems.

It is interesting to further investigate how performance measurement systems are developed in specific management settings. The research presented in this thesis states that performance measurement systems are being developed and used in different management forums in order to improve the organisation. However, there is still a need to dig deeper into the specific activities involved when developing performance measurement systems. What kind of activities are identified when measures are developed by managers? In what way are these activities leading to maintain or improve organisational performance? What specific type of management settings are related to development of performance measurements?

As shortly emphasised in this thesis, visual displays of measurements play an important role developing performance measurement systems in health care. However, further research is needed in this area in order to grasp how different displays in different contexts affect the development process.

Furthermore, investigations are needed in the area of performance measurement systems and its relation to other existing measurement systems. This may be especially interesting in health care services due to the extensive use of different measurement systems. How are new performance measurement systems related to computerised journal systems and default reporting systems? How does the new measurement system resemble to other systems? How is the development process influenced by other systems?

A hot topic in today's health care services is performance measurement and quality improvements. It is a fact that measurements do not lead to improvement, but need to be used in management settings in order to lead to improvements. Thus, it is interesting to further study the relation between the development of performance measurement systems and improvement and changes made in the health care organisation. Are the performance measurement systems leading to changes in work places? In what way are performance measurement systems supporting continuous improvement of work processes? What parts of the organisation are being changed as the performance measurement system is introduced and developed?

Regarding the Flow model studied in this thesis, it is interesting to dig deeper into how the Flow model may be further refined and developed to support process improvements. There is a need to continue to study the Flow model and its development in work places in order to evaluate its potential as a tool for eliminating waste and increasing efficiency and effectiveness of health care. There is much left to do regarding the relation between the performance measurement system and different domains in the health care organisation. To what extent are the performance measurement systems influencing and being influenced by professions, administration managers and political management? In what way is the behaviour of different groups of people being affected by the performance measurement system? What is the role of the performance measurement systems for different domains of people in health care services?

The research presented in this thesis focuses on how performance measurement systems are developed in Swedish health care system. However, it is interesting to study how health care in other countries work with performance measurement systems in order to create new knowledge for improving Swedish health care.

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