ABSTRACT

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The research around performance measurement and management has focused mainly on the design, implementation and use of performance measurement systems. However, there is little evidence about the actual impacts of performance measurement on the different levels of business and operations of organisations, as well as the underlying factors that lead to a positive impact of performance measurement. The study thus focuses on this research gap, which can be considered both important and challenging to cover.

The first objective of the study was to examine the impacts of performance measurement on different aspects of management, leadership and the quality of working life, after which the factors that facilitate and improve performance and performance measurement at the operative level of an organisation were examined. The second objective was to study how these factors operate in practice. The third objective focused on the construction of a framework for successful operative level performance measurement and the utilisation of the factors in the organisations. The research objectives have been studied through six research papers utilising empirical data from three separate studies, including two sets of interview data and one of quantitative data. The study applies mainly the hermeneutical research approach.

As a contribution of the study, a framework for successful operative level performance measurement was formed by matching the findings of the current study and performance measurement theory. The study extents the prior research regarding the impacts of performance measurement and the factors that have a positive effect on operative level performance and performance measurement. The results indicate that under suitable circumstances, performance measurement has positive impacts on different aspects of management, leadership, and the quality of working life. The results reveal that for example the perception of the employees and the management of the impacts of performance measurement on leadership style differ considerably. Furthermore, the fragmented literature has been reorganised into six factors that facilitate and improve the performance of the operations and employees, and the use of performance measurement at the operative level of an organisation. Regarding the managerial implications of the study, managers who operate around performance measurement can utilise the framework for example by putting the different phases of the framework into practice.

Keywords: performance management, performance measurement, performance measurement impact, operative level, framework, factor, leadership

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When I for the first time stepped into the academic world as a research assistant in spring 2000, I had no clue about what a company’s performance or measurement might be about. Unambitiously, my first task was to create a novel performance measurement system that all the Finnish small and medium-sized manufacturing companies could utilise. This was the starting point towards doctoral studies and this thesis. Little by little I have learned more about performance measurement and research, but most of all about myself. Today I am a little tired but very happy.

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Lahti, August 6th, 2009

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PART I: INTRODUCTORY SECTION
1 INTRODUCTION

1.1 Motivation

Management accounting practices can be extended to several areas. An essential area of management accounting is performance management with the intention of developing the practice of business decision-making and managing the performance of the organisation. According to Hannula and Lönnqvist (2002), performance management is management based on the information produced by performance measurement. They continue that the term performance management implies that measurement is used systematically and actively to manage and develop the performance of various business activities.

Traditionally, performance measurement has based on financial information mainly utilised by managers. Ever since the importance of non-financial performance measurement was recognised in the 1980’s, performance measurement has come closer to the employees (e.g. Johnson and Kaplan, 1987; Kaplan, 1984; Kaplan and Norton, 1992). However, a common interest around business performance measurement rose in the late 1990’s, although the limitations of traditional financial measures had been known for some time (Neely, 1999). Neely (1999) suggests seven main reasons for this progress: the changing nature of work, increasing competition, specific improvement initiatives, national and international awards, changing organisational roles, changing external demands, and the power of information technology. Nowadays, many organisations have adopted performance measurement on unit, team and individual levels, which can be conceptualised as operative level performance measurement. For example, Lönnqvist (2002) highlights that employees use measurement for a great diversity in the development of the results of their work. Although performance measurement systems have been implemented in many organisations through different organisational levels, there is a lack of empirical studies concerning the impacts of performance measurement on financial performance, different areas of business performance, and other aspects of performance (e.g. Kennerley and Bourne, 2003; Martinez and Kennerley, 2005a; Martinez et al., 2004). There is also a lack of studies regarding the...
identification of actual factors that facilitate the process of managing through measures (e.g. Bourne et al., 2003a; Franco and Bourne, 2003; Franco-Santos and Bourne, 2005). In general, it can be stated that there is a need for empirical studies concerning the impacts of performance measurement, as well as the factors that facilitate and improve performance measurement in different organisational levels, which makes them relevant and interesting research topics. The motivation of this thesis is to provide new information to the research gap described above, as well as and for the management of the organisation.

The thesis is formed of an introductory section and six scientific publications, enclosed at the end of the thesis. The introductory part consists of four chapters. In chapter 1, the key concepts and the different aspects of research area concerning the entire research are presented. Chapter 2 contains the definition of the research problem, questions, scope and structure, followed by the research approach and methodological settings. In chapter 3, results related to the posed research questions are presented. Chapter 4 consists of the discussion and conclusions of the results and summarises the contribution of the thesis. This chapter also contains the assessment of the research and suggestions for future research.

The primary objective of the study is to construct a framework for successful operative level performance measurement. The term successful operative level performance measurement refers in this study to an interactive use of performance measurement as an integral part of a management process that is realised as a better performance of operations and employees in some period of time (cf. Bourne et al., 2005; Lönnqvist, 2004). The purpose of the framework is to help managers to focus on the factors that are important for a higher performance of the operations and the employees, and for successful use of performance measurement. First, the study focuses on the impacts of performance measurement on different aspects of management, leadership, and the quality of working life. The study continues by examining the factors that facilitate and improve the performance of the operations and employees, and the use of performance measurement. Next it is examined how the underlying factors operate in practice. Finally, based on
matching the findings of the current study and the performance measurement theory, a framework for successful operative level performance measurement is constructed. The main contribution of the study is a framework for successful operative level performance measurement. Based on the empirical evidence, the fragmented literature has been reorganised and compiled into six factors that facilitate and improve the performance of the operations and employees, and the use of performance measurement on the operative level of an organisation. These six factors form a basis for utilising the framework. As regards managerial implications of the research, the framework provides a starting point for the development and improvement of operative level performance measurement in organisations.

1.2 Key concepts

In this chapter, the key concepts concerning the entire research are presented. Other terms essential for the study have been defined in the original publications enclosed.

1.2.1 Performance

The performance of an organisation is a complex phenomenon, and a diversity of meanings can be found for the term performance (Lebas and Euske, 2002; Lönnqvist, 2004). According to Lebas and Euske (2002), performance is:

- measurable by either a number or an expression that allows communication (e.g. performance in management is a multi-person concept)
- accomplishing something with specific intention (e.g. create value)
- the result of an action (the value created, however measured)
- the ability to accomplish or the potential for creating a result (e.g. customer satisfaction seen as a measure of the potential of the organisation for future sales)
- comparison of a result with some benchmark or reference selected – or imposed – either internally or externally
- a surprising result compared to expectation
- acting, in psychology
Lönnqvist (2004) presents that performance can be understood in several ways. First, performance refers to the actual results or outputs of certain activities. Second, performance refers to how an activity is carried out, i.e. how something is being performed. Third, performance may also refer to the ability to achieve results. Hence, performance may relate to actual results, activities, or the potential for results.

Venkatraman and Ramanujam (1986) divide (business) performance into three domains: financial performance, business performance and organisational effectiveness. Financial performance centres on the use of simple outcome-based financial indicators, whereas business performance includes emphasis on indicators of operational performance (i.e. nonfinancial) in addition to indicators on financial performance. Performance can also be identified and equated with effectiveness and efficiency (Neely et al., 1995, 1996; Rantanen and Holtari, 2000) or examined through the perspectives presented in different frameworks, such as the Balanced Scorecard (financial, customer, process, and learning/growth) or Performance Prism (stakeholder satisfaction, strategies, processes, capabilities and stakeholder contribution) (Kaplan and Norton, 1996; Neely et al., 2002).

According to Lönnqvist (2004), performance may be different depending on the perspectives it is examined from. Therefore a practical and versatile definition is needed. Lönnqvist (2004) defines performance as the ability of the measurement object to achieve results in relation to goals. Quite similar definitions have been presented by Hannula and Lönnqvist (2002) and Laitinen (1998). The definition of Lönnqvist (2004) is measurement-oriented, but in the context of measuring performance that seems acceptable. In this study, the term _performance_ mainly refers to the definition presented by Lönnqvist (2004).
1.2.2 Performance management

Performance management has a variety of different applications, depending for example on the purpose of its use or the level of the organisation where it is utilised. For that reason, there is no single established definition for the term performance management (e.g. Hannula and Lönnqvist, 2002). Business performance management is one of the aspects of performance management. According to the BPM Magazine (Business Performance Management Magazine, 2009), business performance management is a set of management and analytic processes, supported by technology, that enable businesses to define strategic goals and then measure and manage performance against those goals. Performance management is also a term widely used within human resources, and has a specific meaning associated with reviewing and managing individuals' performance (Bourne et al., 2003a; Torrington et al., 2005).

An unambiguous definition by Hannula and Lönnqvist (2002) suggests that performance management is management based on the information produced by performance measurement. They continue that in this connection the term performance management emphasises a systematic and active use of measurement in managing and developing the performance of various business activities. Bititci et al. (1997) consider performance management as a process by which the company manages its performance in line with its corporate and functional strategies and objectives. According to them, the objective of the process is to provide a proactive closed loop control system, where the corporate and functional strategies are deployed to all business processes, activities, tasks and personnel, and feedback is obtained through the performance measurement system to enable appropriate management decisions. The current study focuses on the different aspects around performance measurement in relation for example to the utilisation of the factors that facilitate the performance measurement and performance of the employees, tasks and actions. Therefore, concerning the present study, the term performance management mainly refers to the definition of Bititci et al. (1997).
1.2.3 Performance measurement

One of the most highly acknowledged definitions for performance measurement has been presented by Neely et al. (1995). They define performance measurement as the process of quantifying the efficiency and effectiveness of action. Effectiveness refers to the extent to which customer requirements are met, while efficiency is a measure of how economically the firm’s resources are utilised when providing a given level of customer satisfaction. Marshall et al. (1999) provide a wider frame for the description of performance measurement. They define performance measurement as the development of indicators and collection of data to describe, report on, and analyse performance.

Hannula and Lönnqvist (2002) define performance measurement as a process used to determine the status of an attribute relevant to the performance of the measurement object. In a latter conceptual analysis, Lönnqvist (2004) states that performance measurement can be an integral part of the management process, or it can be used to determine the results of some individual factors without any linkage to some specific managerial processes. Therefore performance measurement can be defined so that it suits all different purposes of measurement. Lönnqvist (2004) defines performance measurement as a process used to determine the status of an attribute or attributes of the measurement object. In the present study, the term performance measurement mainly refers to the definition of Lönnqvist (2004).

1.2.4 Performance measurement system

The current literature presents a large variety of different definitions for performance measurement systems. Franco-Santos et al. (2007) have reviewed different definitions for a business performance measurement system and state that there is only little agreement concerning the characteristics of such a system. Franco-Santos et al. (2007) also state that because of the recent emphasis on strategic performance measurement systems, it is not surprising that many of the definitions talk about linking measures to strategy or strategic
objectives. They continue that there are, however, measurement systems within businesses that will only have operational goals, which may or may not be implicitly or explicitly linked to strategy. According to Lönnqvist (2004), performance measurement systems can be constructed on the basis of specific measurement frameworks (such as the Balanced Scorecard, the Performance Pyramid or the Performance Prism), or it is also possible to design them without any specific model. Further, performance measurement systems can be used at different organisational levels, for example company, business unit, team and individual levels (Bititci et al., 1997; Lönnqvist, 2004).

As performance measurement systems are used for different purposes at different organisational levels, a wide enough definition is suitable. For example, Franco-Santos et al. (2007) argue that the only necessary role is the use of business performance measurement systems to “measure performance”. Neely et al. (1995) present a commonly acknowledged definition suggesting that a performance measurement system is a set of metrics used to quantify the efficiency and effectiveness of actions. Hannula and Lönnqvist (2002) define a performance measurement system as a collection of measures which are essential from the viewpoint of the performance of the measured object. According to Lönnqvist (2004), a performance measurement system is a set of measures which are used to determine the status of attributes of the measurement objects. In this study, the term performance measurement system mainly refers to the definition presented by Lönnqvist (2004).

On the whole, concerning the definition of the concept of performance management, the extensive definition of Bititci et al. (1997) has been used in the present study. Their definition covers all business processes, activities, tasks and personnel with a linkage to performance measurement. Regarding the definitions of the concepts of performance, performance measurement and performance measurement systems, the definitions of Lönnqvist (2004) has been utilised in this study. The study of Lönnqvist (2004) provides a wide and versatile, but also coherent frame for the definition of performance, performance measurement and performance measurement system. In the current study, performance,
performance measurement and performance measurement systems have been examined from a variety of aspects, which justifies the utilisation of the definitions of Lönnqvist (2004).

1.3 Perspectives of using performance measurement

Traditionally, performance measurement has been seen as a management tool mainly utilised by managers (e.g. Lönnqvist, 2002). Since the importance of nonfinancial performance measurement was recognised in the 1980’s, performance measurement can be seen to have come closer to the employees (see e.g. Johnson and Kaplan, 1987; Kaplan, 1984). Neely et al. (2000) have also emphasised the role of people in designing, implementing and using a performance measurement system and measures (see also Kennerley and Neely, 2002). It seems that nowadays performance measurement is utilised both for strategic and operating purposes (Lönnqvist, 2002). Marr et al. (2003) present three general reasons why organisations use business performance measurement: implementing and validating their strategy, influencing employees’ behaviour, and reporting externally on performance and corporate governance. Also Kaplan and Norton (1996) state that the main purpose of performance measurement is to translate the strategy into action. This can be achieved by developing personal and team objectives derived from the strategy (Kaplan and Norton, 2001). According to Rantanen and Holtari (1999), performance measurement can be used for many different purposes. They continue that especially when focusing on the internal performance measurement of the company, the possibilities of defining the measures are quite extensive. Internal performance measurement focuses on the management of important assets, for example job satisfaction, quality, technology, productivity and efficiency (Rantanen, 2005). It can be stated that nowadays performance measurement seems to meet employees at all levels of organisations. Thus, the purpose of using performance measurement can be examined from different perspectives, for example from the perspectives of the management and the employees. In the next paragraphs, the
central literature and studies with regard to different purposes of using performance measurement are presented.

The literature suggests a great variety of different purposes for using performance measurement. Uusi-Rauva (1996) states that in general, performance measurement motivates, emphasises the value of the factor that is measured, directs employees to do the right things, clarifies targets, and creates a base for rewarding. He summarises that performance measurement can be used for:

- directing
- planning
- controlling
- alarming
- diagnosing
- learning
- informing
- rewarding.

Also Simons (2000) presents that management information can be used for a variety of purposes, like planning, coordination, motivation, evaluation, and education. He continues by categorising these different uses into five broad categories:

- decision-making
- control
- signalling
- education and learning
- external communication.

Neely (1998) suggests that when asking five different managers why they measure performance, one will receive ten different answers. He continues that despite of the diversity of opinion, each of the reasons offered will fall into one of four generic categories: check position, communicate position, confirm priorities, and compel progress.

As can be seen above, the literature presents a great variety of different purposes for using performance measurement. The needs for measuring performance differ in different organisations, and the purposes of use depend for example on the strategy, organisational
culture, and other characteristics of the organisation (e.g. Lönnqvist, 2002). This may be one reason why the purposes of using performance measurement have not been studied very extensively (e.g. Neely et al., 2000). However, some quite comprehensive studies concerning the purpose of using performance measurement have been conducted from different viewpoints. In the study of Lönnqvist (2002), the purposes of using performance measurement have been studied from the perspectives of management and employees. The study focuses on what kind of purposes the employees and the management use performance measurement for. Lönnqvist (2002) concludes that the six most important purposes of using performance measurement from the management’s perspective are (in order of importance):

- leading employees’ activities
- communicating about important targets
- evaluating the current situation of activities
- concretising the company strategy to attainable targets
- detection of problems
- motivating the employees

The five most important purposes of using performance measurement from the employees’ perspective are (in order of importance):

- monitoring the results of personal/team measures
- concentrating on the issues that are most in need of improvement
- gathering information to support decision-making
- recognising the lynchpins in one’s own job with regard to management opinion
- recognising on how one’s own work contribution is linked to the company’s business

In the study of Rantanen and Holtari (2000), owners/management of companies were asked about the purposes of using performance measurement. The four most clearly important purposes were (in order of importance):

- development of activities
- evaluating the efficiency of different perspectives of activities
- directing the activities
- motivating the employees
Kald and Nilsson (2000) have examined different dimensions of performance measurement from the perspective of business unit controllers. Their study reveals that there are two purposes of using performance measurement above others. The most important purpose of using performance measurement is to support the decisions at the top-management level, and the next most important one is to support the decisions at the operating level. Kald and Nilsson (2000) state that the importance of performance measurement for decision support is interesting in the light of the criticism of traditional management control, presented for example by Johnson and Kaplan (1987). Kald and Nilsson (2000) also highlight that the respondents in their study downplayed responsibility accounting and external reporting, while stressing the value of performance measurement for decision support and as an aid in formulating and implementing the strategy. According to the survey of Marr (2004), the primary reason for having a performance measurement system is control (30 percent of responses) followed by strategic planning (19 percent), everyday decision-making (18 percent), and strategy validation (12 percent). The least common primary usages are for communication, motivation and reward, relationship management, or regulatory reporting.

As a summary of this section, it can be stated that there is a great diversity of different purposes for using performance measurement. The findings from the literature seem to some extent be even contradictory, especially what comes to the priority of different purposes. However, performance measurement focuses more and more on operative level activities, which means that it covers most of the employees at different levels of organisations. The managers use performance measurement for example for communicating and for leading, motivating and rewarding the employees. The employees use measurement variably for the development of the results of their work. The employees’ role both as an object and user of performance measurement has increased. Therefore it is topical and essential to study how to make the best use of performance measurement at the operative level of an organisation.
1.4 Different perspectives in performance measurement research

Performance measurement and performance measurement systems can be examined from many different perspectives. For example, Garenko et al. (2005) compare different performance measurement systems by using nine different dimensions:

- strategy alignment
- strategy development
- focus on stakeholder
- balance
- dynamic adaptability
- process orientation
- depth and breadth
- causal relationships
- clarity and simplicity.

There are also various possibilities to investigate these dimensions. For example, balance can be examined between internal and external measures (e.g., Keegan et al., 1989), related to all different organisational levels (e.g., Lynch and Cross, 1995), or between financial and nonfinancial measures (e.g., Kaplan and Norton, 1992). Performance measurement research has also focused on the design, implementation and use of performance measurement. Especially the phases of design and implementation have been very popular among researchers (e.g., Bititci et al., 1997; Bourne et al., 2003b; Gooderham, 2001; Letza, 1996; Malmi et al., 2002; Mettänen, 2005; Olve et al., 1998; Tenhunen et al., 2001; Toivanen, 2001). In recent years, the research around performance management and measurement has extended to more specific issues, for example to the management and measurement of intellectual capital and intangible assets (see e.g., Kujansivu, 2008; Lönnqvist, 2004). Additionally, management accounting including for example performance measurement and cost accounting has also been studied in the network context (see e.g., Kulmala, 2003; Tenhunen, 2006; Varamäki et al., 2003, 2008).

Although it is essential to investigate performance measurement from different perspectives, the variety of approaches can also be seen as problematic. For example, Franco and Bourne (2003) state that the broad range of approaches is a problem for
attaining a consensus on the actual factors that facilitate the process of managing through measures. They continue that very few authors focus on the overall use of a strategic performance measurement system. In the next paragraphs the relevant perspectives of performance measurement in regard to the present research are presented.

1.4.1 Aligning strategy with operative level performance measurement

There is common consensus among researchers that performance measurement should be derived from the strategy of the company (Kaplan and Norton, 1996; Keegan et al., 1989, Lynch and Cross, 1995). The lack of alignment between performance measurement and business strategy has been found to be one of the main obstacles to achieving the expected results from performance measurement system (Bourne et al., 2000; Kaplan and Norton, 1992, 1996; Keegan et al., 1989; Lynch and Cross, 1995; Neely et al., 1994). Furthermore, Bourne et al. (2000) conclude that if strategy and measures are to remain in alignment, processes are required to regularly review the measures against the strategy (see also Martinez and Kennerley, 2006).

Performance measurement must also be designed and implemented to link the strategy to the objectives of functions, groups of people and individuals, as well as to operational aspects (Bierbusse and Siesfeld, 1997; Hannula et al., 2002; Kaplan and Norton, 1992, 1996, 2001; Lynch and Cross, 1995; Meekings, 1995; Melnyk et al., 2004; Mettänen, 2005; Nanni et al., 1992; Neely et al., 2002; Robson, 2005; Schneiderman, 1999; Sneyd and Rowley, 2004). For example, Kaplan and Norton (2001) present that one of the main reasons for the failure of Balanced Scorecard projects is keeping the scorecard on the top.

Lynch and Cross (1995) strongly emphasise the role of employees in implementing strategy and acting as boosters for a better performance of the company. They state that performance does not change without people and continue that nurturing, developing and rewarding of human resources has more to do with world-class performance than computers and robots. They also claim that a significant business strategy requires the
commitment of the entire organisation – one stream of activities in day-to-day operations that will have to be managed in order to implement the strategy successfully. According to Melnyk et al. (2004), the performance measurement system is ultimately responsible for maintaining alignment and coordination. Alignment means the maintenance of consistency between the strategic goals and metrics when plans are implemented and restarted as they move from the strategic through the tactical and operational stages of the planning process. Alignment ensures that at every stage the objectives set at the higher levels are consistent with and supported by the metrics and activities of the lower levels. Robson (2005) says that in order to encourage the perceptions that are required for a culture of high performance, measurement systems have to provide relevant, local, team level, and graphical information. He continues that this information has to be in a form that can assist in the process of enabling people to perceive an important part of their job as being in control of the performance of the systems in which they are involved. Sneyd and Rowley (2004) present some learning points that can enhance the design and implementation of a performance measurement system. These learning points are for example linking strategy to the operational work processes, allowing employees to understand the connection, and ensuring that the measures cover the full range of operations.

As most of the earlier studies suggest, performance measurement should be aligned with the strategy. There should be measures and objectives for operative level, that is teams and individuals, of organisations, as well as for operational actions derived from the strategy. The performance of teams and individuals, and the performance of different operational actions are in a strong linkage to each other, as the actions of employees usually affect the performance of operations and vice versa. For example, Martinez and Kennerley (2006) present that operational business performance reviews include both individual employees’ reviews as well as tactical and operational reviews. The performance measures and objectives of teams and employees must be in line with the measures of operations in order to achieve the best use of performance measurement at the operative level of the organisation.
1.4.2 Balanced, hierarchical, horizontal and vertical performance measurement

Performance measurement can also be examined through balanced, horizontal and vertical aspects (De Toni and Tonchia, 2001). Balanced architectures like the Balanced Scorecard (Kaplan and Norton, 1992) are models where several separate types of performance are considered independently. These types of performance correspond to diverse perspectives (e.g. financial, internal business processes, customers, learning/growth) of analysis, which, however, remain substantially separate and whose links are defined only in a general way (De Toni and Tonchia, 2001; Garenko et al., 2005). Later, the model of Kaplan and Norton (1996) has been integrated with some vertical linkages, from operational measures up to financial ones (Brown, 1996).

Many researchers in the area of performance measurement emphasise the point that performance measurement frameworks should tie together the hierarchical view of business performance measurement with the business process view (Brown, 1996; Kald and Nilsson, 2000; Keegan et al., 1989; Letza, 1996; Lynch and Cross, 1995; Neely et al., 2000). For example, Kald and Nilsson (2000) conclude that there is a need to extend the scope of performance measurement vertically both upward and downward. The downward extension will mean that measures directly relevant to operations are accepted and widely used at the operating level. They continue that there is also a pressing need to extend the scope of performance measurement horizontally: in other words, to design measures that support a process orientation. In addition, De Toni and Tonchia (1996) present that the synthesis of single performances can be:

- **Horizontal.** Cost, quality and time performance, transversely considered along all the phases that make up the process, are analysed separately (e.g. cost performance of all the phases versus quality performance of all the phases).

- **Vertical.** All the cost (or quality or time) performance of a single phase, or some individual performance (relative to a same dimension-cost, quality or time) of the phases of different processes are analysed at the same time.
It seems that there is still a need to integrate the performance measurement systems at least hierarchically (by linking operational measures to financial and strategic ones) and horizontally (process orientation) by defining the causalities more carefully than formerly.

### 1.4.3 Internal and external performance measurement

A common way of examining performance measurement is to focus on internal and external performance measurement. There are many different propositions and definitions in the current literature about the contents of internal and external performance measurement. The basic idea is that by managing important internal process and assets it is possible to achieve better external performance, for financial performance or customer satisfaction (Martinez et al., 2004).

Keegan et al. (1989) claim that performance measurement must support the company’s multidimensional environment and present a performance measurement matrix that classifies the measures as internal or external, cost-based, or non-cost-based. However, they highlight the understanding of cost relationship and cost behavior and continue that cost is the most important basis for performance measurement. Laitinen (1996, 2002) divides performance factors to internal and external ones as follows:

**Internal performance factors**
- elementary cost allocation
- production factors
- efficiency of activities
- properties of products
- product and customer profitability

**External performance factors**
- competitiveness
- financial performance

Lynch and Cross (1995) and Rantanen (2005) have also presented quite a similar approach by providing a set of internal factors and dimensions that affect external factors, for example customer satisfaction and market share.
In the study of Martinez and Kennerley (2006), different definitions of performance reviews are analysed to get a better understanding of their use and classification. The classification of performance reviews presented in table 1, provides a comprehensive picture of performance reviews by classifying them according to the “content” of the review, the “context” and the analysis “process” (Martinez and Kennerley, 2006). This classification is based on the idea that performance reviews could have a different meaning, depending on whether the evaluator is i.e. inside or outside the organisation (Lebas and Euske, 2002; Rantanen, 2005). In the field of performance measurement and management systems, the most common differentiation of performance reviews are the strategic and operational reviews (Martinez and Kennerley, 2006). Operational performance reviews include operations control, productivity, quality and employee reviews, among others. The present study focuses on operational performance measurement, especially the underlying factors behind successful operative level performance measurement.
### Table 1. Classification of performance reviews (adapted from Martinez and Kennerley, 2006)

<table>
<thead>
<tr>
<th>CONTEXT (In/Out Organisation)</th>
<th>CONTENT</th>
<th>Field</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Objective/purpose</td>
<td>Performance measurement and management</td>
</tr>
<tr>
<td>Internal</td>
<td>Strategic business performance review (a) Compensations and rewards</td>
<td>HR linked to organisational aspirations</td>
</tr>
<tr>
<td></td>
<td>Operational business performance Review e.g.: (a) Individual employees’ reviews (b) Tactical and operational reviews</td>
<td>Strategy management (deployment)</td>
</tr>
<tr>
<td></td>
<td>Quality audit (e.g. ISO)</td>
<td>Operations management</td>
</tr>
<tr>
<td></td>
<td>Annual financial review</td>
<td>Management</td>
</tr>
<tr>
<td></td>
<td>Corporate social responsibility review</td>
<td>Management</td>
</tr>
<tr>
<td></td>
<td>Intellectual capital assessment</td>
<td>Management</td>
</tr>
<tr>
<td></td>
<td>Regulators</td>
<td>Government regulations</td>
</tr>
<tr>
<td></td>
<td>Management awards (a) EFQM (b) BSC, etc.</td>
<td>Management</td>
</tr>
</tbody>
</table>

### PROCESS

<table>
<thead>
<tr>
<th>Fundamental analysis</th>
<th>Meta analysis</th>
<th>Process enablers</th>
</tr>
</thead>
<tbody>
<tr>
<td>At data level</td>
<td>at macro level</td>
<td></td>
</tr>
<tr>
<td>Follows a systematic process-based view analysis. Described by the process of: (1) gathering data (2) interpreting data (3) informing and communicating (4) making decisions (5) planning actions</td>
<td>Follows a meta-process review analysis. “The meta-management review” is described as the assessment of the effectiveness of the overall review process. This is also called the healthy check.</td>
<td>• Information systems • Review policies</td>
</tr>
</tbody>
</table>

#### 1.4.4 Impacts of performance measurement

The impacts of performance measurement can be examined by focusing on the impacts on business performance or the impacts on financial performance. Improvements in business performance should lead to higher financial performance in some period of time.
There is little evidence of the impacts of performance measurement on financial performance, and the results of studies are somewhat contradictory. For example the findings of the studies of Bourne et al. (2005), Braam and Nijssen (2004), Davis and Albright (2004) and Evans (2004) indicate positive impacts of a performance measurement system on financial performance, whereas the studies of Ittner and Larcker (2003), Ittner et al. (2003b), Martinez and Kennerley (2005a) and Neely (2008) provide only little or no evidence of the financial impacts of performance measurement. Although some researchers have found evidence about positive impacts of performance measurement on financial perspectives, the underlying factors have been considered quite different. Bourne et al. (2005) highlight the interactive nature of the use of a performance measurement system; Davis and Albright (2004) highlight the use of non-financial measures; Evans (2004) highlights the maturity of the system; and Braam and Nijssen (2004) highlight the linkage of performance measurement to strategy. It seems that there is a need for further research before it is possible to gain a common view about the factors that enable a positive impact of performance measurement on financial performance.

Even less investigation has been done on the identification of the factors that lead to a positive impact of performance measurement and management systems on business performance (e.g. de Waal, 2003; Martinez and Kennerley, 2005a, Martinez et al., 2004). According to Martinez et al. (2004), this little body of research, mainly performed by consultancies and commercial research companies, lacks a strong methodological basis and has generally a quantitative approach, with little explanation behind the impact and factors and how they can be used. Kennerley and Bourne (2003) state that despite all interest and investment, little attention and still less empirical research has been dedicated to two key questions: what the impact of a performance measurement system is on the way that organisations are managed and how organisations can maximise the positive impact of such systems.

According to the findings of Dumond (1994), the performance measurement system has a positive impact on an individual’s performance, decision-making and job satisfaction. The
provision of no direction or numerous measures that are not mutually reinforced makes it more difficult to control or guide performance. Also Lawson et al. (2003) state that the performance measurement system resulted in a significant improvement in employee satisfaction. Their study highlights that along with the implementation of the performance measurement system and the linkage to the reward system, the employees throughout the organisation became more aware of the goals and objectives of the business plan and strove for higher performance. Martinez (2005) and Martinez and Kennerley (2005a) present positive effects from a case study where the performance measurement system was implemented at the executive, business unit, team, and individual levels. They list top eight positive effects of performance measurement system:

- focusing people’s attention on what is important to the company
- gaining business improvement
- improving customer satisfaction
- increasing productivity
- aligning operational performance with strategic objectives
- improving people’s satisfaction
- aligning people’s behaviour towards continuous improvement
- improving the company’s reputation

In a study of Kennerley and Bourne (2003), the case company identified a need to change the performance measurement and bonus systems in line with a new strategy. Interviews with the managers showed that the change in performance measurement systems resulted in:

- improved customer service
- increased efficiency
- broader focus on performance
- focus of attention on improving key issues
- instant feedback
- greater staff engagement in performance improvement and motivation
- improved communication

The studies of Kennerley and Bourne (2003) and Martinez (2005) demonstrate that, if designed and used appropriately, performance measurement systems can significantly
change the way in which an organisation is managed, as well as change the behaviour of employees, aligning actions to the strategic objectives of the organisation.

As a whole, concerning the studies on the impacts of performance measurement, the researchers should be more meticulous in defining the area of performance which their studies focus on. There is also a common consensus among researchers that the studies should be focused more on understanding the impacts of performance measurement and factors that improve business performance (Bourne et al., 2003a; Franco and Bourne, 2003; Franco-Santos and Bourne, 2005; Martinez et al., 2004). For example, Bourne et al. (2003a) state that there is a growing trend towards managing performance improvement through focusing on the underlying drivers of performance, whether improvements in the processes or the underlying resources that give these processes capability. According to the studies of Franco and Bourne (2003) and Franco-Santos and Bourne (2005), one problem in identifying actual factors that facilitate the process of managing through measures is the lack of empirical studies in the performance measurement literature.

1.5 Factors having a positive effect on performance and operative level performance measurement

There is a lack of studies concerning the factors that have a positive impact on the way organisations are managed through measures, and more specifically, factors that facilitate and improve the performance of operations and employees, and the use of performance measurement at the operative level of the organisation. For example, Franco and Bourne (2003) found only seven relevant studies regarding the actual factors that facilitate the process of managing through measures. This study focuses on the factors that have a positive and direct influence on the performance of operations, the actions of the employees, and the use of performance measurement at the operative level of an organisation. The study could have been focused also on the factors that have a negative or both a negative and a positive impact on operative level performance measurement.
However, the researchers in the area of performance measurement highlight more the research gap related to the factors that facilitate and improve performance measurement and performance (e.g. Bourne et al., 2003a; Franco and Bourne, 2003; Franco-Santos and Bourne, 2005) than the research gap related to factors behind negative impacts. The current study thus focuses on the factors related to positive impacts. In this chapter, a compact literature review concerning the factors that have a positive impact on operative level performance measurement and performance is presented.

1.5.1 Factors that facilitate the process of managing through measurement

Generally, the factors related to the development of performance measurement and further on performance have been studied by focusing on the work and actions of managers (e.g. Bourne et al., 2005; de Waal, 2003; Franco and Bourne, 2003; Franco-Santos and Bourne, 2005). Many of these studies focus on the factors that enable a more effective use of performance measurement from the viewpoint of managers. In the framework of Bourne et al. (2005) the factors have been divided into internal and external context factors, content factors and process factors. They suggest that the studied factors will impact also the outcome. This is reasonable and indicates that many of the factors affect both the use of the performance measurement system and the performance of individuals and organisations. The contents of the factors utilised by Bourne et al. (2005) are illustrated in detail in table 2.
Table 2. Categorisation of factors that impact performance (adapted from Bourne et al., 2005)

<table>
<thead>
<tr>
<th>Factors</th>
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<tbody>
<tr>
<td><strong>External context</strong></td>
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<tr>
<td>• Industry competitiveness</td>
<td></td>
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<tr>
<td>• Economy</td>
<td></td>
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<tr>
<td>• Political environment</td>
<td></td>
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<tr>
<td><strong>Internal context</strong></td>
<td></td>
</tr>
<tr>
<td>• System maturity</td>
<td></td>
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<tr>
<td>• Organisational structure</td>
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<tr>
<td>• Organisational size</td>
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<tr>
<td>• Organisational culture</td>
<td></td>
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<tr>
<td>• Management style</td>
<td></td>
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<tr>
<td>• Competitive strategy</td>
<td></td>
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<tr>
<td>• Resources and capability</td>
<td></td>
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<tr>
<td>• Information systems infrastructure</td>
<td></td>
</tr>
<tr>
<td>• Other practices and systems</td>
<td></td>
</tr>
<tr>
<td><strong>Processes</strong></td>
<td></td>
</tr>
<tr>
<td>• Alignment with objectives</td>
<td></td>
</tr>
<tr>
<td>• Data capture</td>
<td></td>
</tr>
<tr>
<td>• Data analysis</td>
<td></td>
</tr>
<tr>
<td>• Interpretation and evaluation</td>
<td></td>
</tr>
<tr>
<td>• Decision-making</td>
<td></td>
</tr>
<tr>
<td>• Communication and information provision</td>
<td></td>
</tr>
<tr>
<td>• Decision-making and taking action</td>
<td></td>
</tr>
<tr>
<td><strong>Content</strong></td>
<td></td>
</tr>
<tr>
<td>• Definition of performance measures</td>
<td></td>
</tr>
<tr>
<td>• Dimensions measured</td>
<td></td>
</tr>
<tr>
<td>• Structure and presentation</td>
<td></td>
</tr>
</tbody>
</table>

The approach presented in table 2 has been introduced by Pettigrew (1985) and Pettigrew et al. (1989), after which it has been utilised by various researchers (e.g. Bourne et al., 2002; Bourne et al., 2005; Franco-Santos and Bourne, 2005; Martinez and Kennerley, 2006). This kind of an approach allows the research to focus on the process, content and outputs by stabilising the contextual factors. However, many of the studies around the factors that impact performance measurement and performance, for example Bourne et al. (2005), are associated with the work and actions of managers. Thus, the findings are not applicable when focusing on the factors that concern the employees and their actions in the performance measurement context. In the next section, the most often highlighted factors in the fragmented literature concerning successful operative level performance measurement and performance are presented.
1.5.2 Factors related to successful operative level performance measurement

There is a common view among researchers that the linkage of performance measurement to reward will lead to higher performance of individuals and organisations (Banker et al., 2000; Cameron, 1995; Franco-Santos and Bourne, 2005; Franco-Santos et al., 2007; Kaplan and Atkinson, 1998; Kauhanen and Piekkola, 2006; Levinson, 2003; Simons, 2000; Torrington et al., 2005). This view is mainly based on the belief that performance-related rewarding is an appropriate way of motivating people (e.g. Kaplan and Atkinson, 1998; Kauhanen and Piekkola, 2006; Simons, 2000; Van Herpen et al., 2005). Contrary to this belief, some findings present only a limited (Franco-Santos et al., 2004; McCausland et al., 2005; Piekkola, 2005) or even a negative (Ho and McKay, 2002; Ittner et al., 2003a; Kohn, 1993) effect of performance-related pay on performance. Hence, it seems that the linkage of performance measurement to rewards is an important issue that must be carried out carefully. The existing literature suggests that performance-related pay should be perceived at least as fair, equitable, and timely, and the individuals have to feel that they are able to affect the outcomes (e.g. Kaplan and Atkinson, 1998; Kauhanen and Piekkola, 2006).

Another important factor that facilitates and improves operative level performance measurement is the communication of measurement information (e.g. Bourne et al., 2005; Dhavale, 1996; Franco and Bourne, 2003; Franco-Santos and Bourne, 2005; Levinson, 2003; Lönnqvist, 2002; Turner et al., 2005). Organisational communication can be divided to internal and external communication (Kreps, 1990), and the communication of measurement information usually refers to internal communication. Furthermore, internal communication can be divided to face-to-face communication and system communication (e.g. Åberg, 2002), of which the findings of many studies indicate that the different channels of face-to-face communication, like foreman-employee interaction or team meetings, are the most appropriate ways to communicate for example measurement information (Bourne et al., 2005; Daft et al., 1987; Hewitt, 2006; Smidts et al., 2001). In contrast, there can also be found positive implications in using system communication, such as e-mail, intranet or web-enabled performance measurement systems (Bititci et al.,
Other important issues in the communication of measurement information are the quality of information (e.g. data gathering and analysis) and the form of presentation (Evans, 2004; Franco-Santos and Bourne, 2005; Ittner and Larcker, 2003; Lönnqvist and Mättänen, 2003; Robson, 2005). Hence, when the measurement information is supposed to be used or utilised at the individual or team level, it should be at least understandable and available, as well as local or team level information.

The possibility of the employees to participate in the decision-making is an essential issue in many research areas and also in the situation, where performance measurement has been launched at the operative level of an organisation. In general, the findings of earlier studies suggest that the possibility of the employees to participate in decision-making has had a positive impact on, for example, the knowledge of the employees about the organisation, understanding one’s own role in the organisation, job satisfaction and productivity (Miller and Monge, 1986; Monge and Miller, 1988; Yammarino and Naughton, 1992), as well as on task variety, identity, autonomy, effectiveness, gains, rewards and performance (Cotton et al., 1988; Scott-Ladd and Marshall, 2004; Scully et al., 1995). The performance measurement literature highlights the employees’ possibility to participate in decision-making, especially when the measurement concerns an individual’s own job, measures and targets (Johnston et al., 2002; Kaplan and Norton, 1996; Laitinen, 1998; Lingle and Schiemann, 1996; Simons, 2000; Suliman, 2007; Turner et al., 2005). For example, Simons (2000) states that a participative style is appropriate, if the information for the target setting is dispersed widely throughout the organisation. It seems that employees should be involved in decision-making, at least in the situations where performance measurement has been mobilised close to the employees.

Additionally, the existing literature suggests a number of other factors that may affect operative level performance measurement positively. The study of Hoque and James (2000) highlights the structure and size of the organisation, whereas Kaplan and Norton (1992, 1996, 2001) emphasise the organisational strategy as an important factor in successful
performance measurement. The findings of Bititci et al. (2004, 2006), Bourne et al. (2005) and Franco-Santos and Bourne (2005) present organisational culture and management style as important factors in operative level performance measurement. For example, Bititci et al. (2006) suggest that if successfully implemented and used, performance measurement systems, will, through cultural change, lead to a more participative and consultative management style. Also the clarification of job description (Levinson, 2003; Torrington et al., 2005), as well as the education and understanding (Franco-Santos and Bourne, 2005; Kaplan and Norton, 2001) around performance measurement have been seen to have a positive effect on operative level performance measurement. On the whole, it seems that the existing literature suggests plenty of factors that may have a positive effect on operative level performance measurement and performance.
2 RESEARCH DESIGN

2.1 Objective, scope and structure of the study

Many organisations utilise performance measurement as a management tool at strategic, tactical and operational levels of management. Performance measurement has been introduced more and more at the operative levels, that is team and individual levels, of organisations. There are measures for operational actions, as well as appraisals of individual and team performance. Employees utilise performance measurement in many ways in their own work (e.g. Lönnqvist, 2002). However, there is a lack of empirical evidence on what impacts performance measurement has on the way that organisations are managed and how organisations can achieve positive impacts of performance measurement (e.g. Kennerley and Bourne, 2003). There is also a lack of empirical evidence concerning the identification of actual factors that facilitate the process of managing through measures (e.g. Franco and Bourne, 2003). As many organisations have adopted performance measurement at the team and individual levels, and the organisations put a lot of effort and resources to the development of performance measurement, it is relevant to focus on the impacts of performance measurement and on the factors that facilitate and improve the performance of the operations and the employees, and the use of performance measurement at the operative level of the organisation. In the following sections, these factors are also called factors behind successful operative level performance measurement.

Based on the research gap above, the primary objective of the study is to construct a framework for successful operative level performance measurement. The purpose of the framework is to help managers to focus on the factors that are important for a higher performance of the operations and employees, and for successful use of performance measurement. By utilising the framework, managers will be able to carry out development actions that will facilitate and improve performance measurement at the operative level of the organisation. The first phase of the study focuses on the impacts of performance measurement on different aspects of management, leadership, and the quality of working
life. In the second phase of the study, the underlying factors behind the positive impacts of performance measurement and the factors that facilitate and improve the performance of the operations and employees, as well as the use of performance measurement are examined. In the third phase, the study is continued by focusing on the question of how the underlying factors behind successful operative level performance measurement operate in practice. The construction of the framework is based on matching the findings of the three phases and performance measurement theory. The research questions are:

1. What kinds of impacts does performance measurement have and what are the underlying factors behind successful operative level performance measurement?
2. How do the underlying factors operate in practice?
3. How to manage performance by utilising the underlying factors behind successful operative level performance measurement?

As a whole, the study focuses on operative level performance measurement. An alternative possibility could have been for example strategic level performance measurement. However, strategic level performance measurement has received more comprehensive attention in earlier studies. The present study does not focus on any specific model of performance measurement, such as the Balanced Scorecard or Performance Prism. The use of a specific model can not be seen as an important issue when the focus of the study is at the operative level of an organisation. At the operative level, the teams and individuals have usually few measures and it is thus more important to examine what makes them work than to what framework they are based on. In strategic level performance measurement studies it is more important to know, if the starting point of the performance measurement was for example the satisfaction of the stakeholders, as the Performance Prism proposes. Regarding the current research, one of the main criteria in the selection of the organisations was that the organisation must measure performance with some formal or informal performance measurement system. A more specific criterion was that the organisations must measure performance at team or individual levels. Although the study is to some extent related to the use of performance measurement, it does not particularly focus on some specific phase like design, implementation, use or maintenance of the performance measurement system (e.g. Neely et al., 2000). Instead, the study examines the impacts of performance measurement
on different aspects of management, leadership and quality of working life, as well as the underlying factors that provide a solid base for operative level performance measurement. The study focuses mainly on the positive impacts of performance measurement, as well as factors that facilitate and improve operative level performance measurement. The study could have also been focused on the negative impacts of performance measurement and the factors that hinder operative level performance measurement. However, the researchers in the area of performance measurement emphasise the research gap related to the factors that facilitate and improve performance measurement, which justifies the scope of the current study (e.g. Bourne et al., 2003a; Franco and Bourne, 2003; Franco-Santos and Bourne, 2005). The study thus seeks a holistic view for successful operative performance measurement. In this study, successful operative level performance measurement is mainly related to factors that facilitate and improve the performance of the operations and employees, and the use of performance measurement at the operative level of an organisation.

The study consists of two sections: an introductory section and a section containing six scientific publications. In the introductory section, an overview of the study is presented. First, the motivation, relevant literature and earlier studies in regard to the current research are discussed. Next, the research objectives and the structure of the study are presented. At the end of the introductory section, the findings and conclusions from the publications are summarised.

The study consists of six research papers including empirical data from three separate studies. The three sub-studies (A, B, C) are presented in a chronological order and they can be seen as a further study to each other. The first and third sub-studies utilise interview data, whereas the second sub-study utilises quantitative data collected by a structured survey. The research papers form an entity that enables the author to answer the three research questions of the thesis. The primary relationships between the research questions and research papers are presented in figure 1.
The findings and conclusions of this thesis are based on the findings of the six research papers at the end of the thesis. Summaries of the publications are presented below:
I Performance measurement impacts on management and leadership: perspectives of management and employees
Ukko, J., Tenhunen, J. and Rantanen, H.

The aim of the study was to examine what impacts performance measurement has on management and leadership. The empirical part of the study is based on 24 interviews in eight case organisations that have applied a performance measurement system. Representatives of both management and employees were interviewed in each case organisation. The impacts on management were examined through eight dimensions of management, and the impacts on leadership through four dimensions of leadership. The study concludes that performance measurement can only support, not replace managers in leading people. The study also suggests that performance measurement has positive impacts on different areas of management under suitable circumstances. For example interactive communication between the management and the employees and a linkage between performance measurement and reward system are seen as facilitators for higher performance. The study also presents how the perceptions of management and employees differ from each other.

II The impacts of performance measurement on the quality of working life
Ukko, J., Tenhunen, J. and Rantanen, H.

This paper focuses on the impacts that performance measurement has had on the quality of the working life of employees. The quality of working life is examined through work motivation, learning opportunities, job satisfaction, work atmosphere, health and safety, participation in decision-making, realisation of targets, and the reward system. The empirical data is based on the same interviews as in publication I. The findings suggest that performance measurement has had a positive impact on employees’ motivation, learning opportunities, participation in decision-making, and achievement of goals. The paper
concludes with the underlying factors behind the positive impacts of performance measurement on the quality of working life. Furthermore, the paper presents how the perceptions of management and employees differ from each other. For example the employees felt more than the management that their possibilities to participate in decision-making were on a higher level after launching the performance measurement system.

### III Performance measurement and employees: knowledge, understanding and opportunities to participate in decision-making

Karhu, J., Ukko, J. and Rantanen, H.


The aim of the study was to find out how the employees at different organisational levels understand their targets, what is their level of knowledge concerning performance measurement, and how they perceive their possibilities to participate in decision-making. The empirical data was gathered from eight manufacturing companies with the help of a structured survey. To achieve an overall view of the participating companies, all employees were asked to fill in the questionnaire. The total number of valid responses was 210, and the response rate was 69 percent. The study revealed significant differences between the different groups of employees. For example, the blue-collar workers had poor possibilities to participate in decision-making in comparison to the white-collar workers and managers. This may decrease the work motivation and commitment in the long run.
IV How to communicate measurement information successfully in small and medium-sized enterprises: a regression model
Ukko, J., Karhu, J. and Rantanen, H.

The paper focuses on the predictors that explain the success of internal communication of measurement information. The empirical data was gathered with the same structured survey as in publications III and V. The results showed that the information of targets and target realisation was communicated through face-to-face communication by a foreman, or in team and company meetings. These channels were also perceived as the most desirable way of communication in the future. As a result of regression analysis, it can be stated that the quality of information and face-to-face communication are the main predictors of the success of measurement information communication. In the future, the companies should invest in the quality aspects of measurement information, in its exactness, reliability, intelligibility and usefulness.

V Employees satisfied with performance measurement and rewards: is it even possible?
Ukko, J., Karhu, J. and Pekkola, S.

The motivational influence of performance-related rewards has been highlighted in the earlier literature on performance measurement. The paper focuses on the linkage between participation in decision-making and success of rewarding. The quantitative data is based on the same structured survey as in publications III and IV. The findings suggest that the more autonomy in work people have, the more successful they perceive the motivational influence of rewarding. One remarkable result is that the blue-collar workers had really low level of satisfaction in regard to the different success factors of rewarding. The differences between the blue-collar workers and managers were significant in all questions of success
factors of rewarding, except the question “the reward policy of our company is motivating and incentive”.

VI A framework to support performance measurement at the operative level of an organisation
Ukko, J., Pekkola, S., and Rantanen, H.
*International Journal of Business Performance Management (accepted for publication)*

In this paper the underlying factors behind successful operative level performance measurement were examined. One objective of the study was to strengthen and review the findings presented in papers I and II. The empirical evidence of the study is based on interviews in eight organisations. The findings indicate that there are six factors that have a direct and positive influence on the performance of operations, the actions of the employees, and the use of performance measurement at the operative level of the organisation. The three most important factors are the linkage of performance measurement and rewards, interactive communication, and understanding the linkage between an individual’s and the organisation’s targets. The study concludes by presenting a framework that the managers can utilise in developing operative level performance measurement. The basic idea of the framework is to evaluate and analyse the factors behind successful operative level performance measurement, after which the organisation should choose the most important factors for further development. The study also provides examples of the important issues that should be taken care of when developing the selected factors, and performance measurement in general.

All the six papers have been written in cooperation with other researchers. The role of the present author in the co-authored papers is illustrated in table 3.
Table 3. Role of the author in the co-authored papers

<table>
<thead>
<tr>
<th>Paper</th>
<th>Role of the author</th>
</tr>
</thead>
</table>
| I Performance measurement impacts on management and leadership: perspectives of management and employees | • Designed the study  
• Conducted the interviews  
• Analysed the data with the first co-author  
• Coordinated the writing of the paper  
• Main author of the paper with the assistance of the co-authors  
• Reviewed the paper |
| II The impacts of performance measurement on the quality of working life | • Designed the study  
• Conducted the interviews  
• Analysed the data with the first co-author  
• Coordinated the writing of the paper  
• Main author of the paper with the assistance of the co-authors  
• Reviewed the paper |
| III Performance measurement and employees: knowledge, understanding and opportunities to participate in decision-making | • Designed the study with the first co-author  
• Gathered the survey data with the first co-author  
• Analysed the data with the first co-author  
• Wrote the paper with the co-authors |
| IV How to communicate measurement information successfully in small and medium-sized enterprises: a regression model | • Designed the study  
• Gathered the survey data with the first co-author  
• Analysed the data with the first co-author  
• Coordinated the writing of the paper  
• Main author of the paper with the assistance of the co-authors  
• Reviewed the paper with the first co-author |
| V Employees satisfied with performance measurement and rewards: Is it even possible? | • Designed the study  
• Gathered the survey data with the first co-author  
• Analysed the data  
• Coordinated the writing of the paper  
• Main author of the paper with the assistance of the co-authors  
• Reviewed the paper with the second co-author |
| VI A framework to support performance measurement at the operative level of an organisation | • Designed the study  
• Analysed the data with the first co-author  
• Coordinated the writing of the paper  
• Main author of the paper with the assistance of the co-authors  
• Reviewed the paper |

2.2 Research approach

The subject of paradigms is often discussed in terms of an antithesis between two schools of philosophy; the positivistic, traditional natural science school and the humanistic school,
which can be referred to as hermeneutics (Gummesson, 2000). Hirsjärvi et al. (2007) state that in social science there is an antithesis between the positivistic and phenomenological (or post positivistic research), whereas Kasanen et al. (1991) present that in the area of business economics the question usually concerns a collision between the traditional positivistic research and its alternatives. However, both post positivism and positivism seek for objectivity. The difference is that in post positivism there is no need to achieve pure objectivity (Metsämuuronen, 2005). When focusing on a positivistic and hermeneutic paradigm, it can be said that for the positivistic paradigm it is typical for example that the research concentrates on description and explanation, and it seeks to maintain a clear distinction between facts and value judgements; a search for objectivity. Statistical and mathematical techniques for quantitative processing of the data are central. For the hermeneutic paradigm it is typical for example that the research concentrates on understanding and interpretation as well as on the specific and concrete (“local theory”), but also attempts generalisations. The distinction between facts and value judgement is less clear; a recognition of subjectivity. In hermeneutics, preunderstanding that often cannot be articulated in words or is not entirely conscious, has an important role. The researchers accept influence from both science and personal experience, and the data are primarily nonquantitative (Gummesson, 2000; cf. Neilimo and Näsi, 1980; Olkkonen, 1994). In addition, Gummesson (2000) relates hermeneutics to phenomenology. He clarifies the difference between phenomenology and hermeneutics as follows (originally presented by Odman): “whereas phenomenology is primarily oriented toward the immediate phenomena of human experience, such as thinking and feeling, hermeneutics is more context directed. In interpreting human “traces”, hermeneutics often tries to go beyond the observable in order to “read between the lines.” It can therefore be characterised as more transphenomenal”.

Despite the antithesis presented above, for example Metsämuuronen (2005; cf. Eskola and Suoranta, 2001) states that it is actually the research object and research problem that should provide a decision of what is the most applicable way of searching the understanding and facts. Metsämuuronen (2005) continues that the more different research
methods are used, the more accurate facts and level of understanding will be achieved. This is called triangulation. Thus, it is possible to study the same issue from the perspectives of positivism, hermeneutics or phenomenology; only the quality of information makes a difference.

The research approach can also be categorised as qualitative research and quantitative research. Quantitative research is usually related to positivism and qualitative research to hermeneutics. According to Hirsjärvi et al. (2007), the starting point in qualitative research is describing real life, including the idea of the variety of reality and the real world. Different occurrences influence each other and there are possibilities to find a variety of relationships between these occurrences. The purpose of qualitative research is to examine the object as comprehensively as possible. Hirsjärvi et al. (2007) also emphasise the importance of the value basis, as it influences how we understand the phenomenon under examination. In qualitative research the researcher and prior understanding are related to each other, which means that it is not possible to achieve pure objectivity. In qualitative research the main purpose is to explore the facts instead of verifying the hypotheses. There are lots of different possibilities to conduct qualitative research and analyse qualitative data (see e.g. Hirsjärvi et al., 2007). There are some challenges regarding qualitative research. For example Gummesson (2000) presents three challenges that should be taken into consideration in qualitative research: access to reality, preunderstanding and understanding, and the quality of the research. In quantitative research the laws of cause and effect are emphasised (Hirsjärvi et al., 2007). Quantitative research emphasises testing and verifying the hypothesis rather than understanding. Other typical characteristics of quantitative research are for example: earlier theories, hypotheses, focus on facts, logical and critical approach, controlled measurement, objective distant from the data, result orientation, statistical analysis and generalisation by population membership (Ghauri and Grønhaug, 2002; Hirsjärvi et al., 2007).

Research can also be classified as exploratory, descriptive and explanatory research. According to Emory (1985), the classical concept of pure research does call for a
hypothesis, but in applied research such a narrow definition omits at least two types of investigations that are highly valued. The first is the exploratory study in which the investigators know so little about the area of study that hypotheses have not yet emerged. An equally, if not more, important area of study is what purists call “merely descriptive”. It deals with the discovery of answers to who, what, when, where, how questions rather than why questions. In explanatory research one tries to account for the forces that caused a certain phenomenon to occur. Theories, or at least hypotheses, are advanced and tested. An explanatory research often calls for higher order of inference and may also include prediction (Emory, 1985; cf. Ghauri and Grønhaug, 2002; Yin, 2003).

There are a variety of approaches and strategies for doing research. Case study is a research strategy which focuses on understanding the dynamics present within single settings. Case studies can involve single or multiple cases and numerous levels of analysis, and they typically combine data collection methods such as archives, interviews, questionnaires and observations (Eisenhardt, 1989). As a research strategy, case study is used in many situations to contribute to our knowledge of individual, group, organisational, social, political, and related phenomena. The case study method allows investigators to retain the holistic and meaningful characteristics of real-life events, for example organisational and managerial processes. In general, case studies are the preferred strategy when how or why questions are being posed, when the investigator has little control over events, and when the focus is on a contemporary phenomenon within some real-life context. Such explanatory case studies can also be complemented by exploratory and descriptive case studies (Yin, 2003).

A primary distinction in designing case studies is between single- and multiple-case designs. Single cases are a common design for doing case studies, and two variants have been described: those using holistic design and those using embedded units of analysis. Overall, the single-case design is eminently justifiable under certain conditions – when the case represents a critical test of existing theory, a rare or unique circumstance, is a representative or typical case, or when the case serves a revelatory or longitudinal purpose.
(Yin, 2003; cf. Eisenhardt, 1989). In the multiple-case design, the individual cases may be either holistic or embedded. Any use of multiple-case design should follow a replication, not a sampling logic, and the investigator must choose each case carefully. These cases should serve in a manner similar to multiple experiments, with similar results (a literal replication) or contrasting results (a theoretical replication) predicted explicitly at the outset of the investigation (Yin, 2003).

The current study focuses on operative level performance measurement. Performance measurement can to some extent be seen as a complex phenomenon, for various reasons. First, there are technical characteristics associated with performance measurement, for example the purpose of use, the number of metrics, the framework and the reporting. Second, there are organisational characteristics associated with performance measurement, for example the size of the organisation, the branch and the number of hierarchy levels. Third, there can be found individual characteristics associated with performance measurement. People in different positions may have different perceptions regarding for example the business of company, the success of the company, the success of communication, as well as performance measurement in general. These differences may exist even if the people operate at the same level of organisation. When studying operative level performance measurement, it is difficult to take into account all the characteristics that are related to performance measurement. However, many of the characteristics presented above are paid attention to in the current study.

As a whole, the study can be seen as hermeneutical. It searches for deeper understanding about the phenomenon under discussion. Papers I and II focus on the impacts of performance measurement and the underlying factors of these impacts. To get a deeper understanding of the underlying factors behind the positive impacts of performance measurement, interviews were seen to be the best method for the data gathering (e.g. Martinez et al., 2004). The data was collected by interviews in eight organisations. The main criteria in the selection of organisations were that the organisations had to measure performance with some formal or informal performance measurement system and the
measurement had to have been launched at the team or individual levels. Based on this, the primary expectation was that the organisations should provide similar results. Papers I and II can be characterised as qualitative multiple-case studies, in which each organisation forms a case. The nature of these studies is explorative; they are based to some extent on earlier literature, but not on any specific model.

In papers III, IV and V the underlying factors behind the positive impacts of performance measurement are examined in eight small and medium-sized manufacturing companies. The study is based on the findings of papers I and II, and the main focus was to examine how the underlying factors operate in practice. Manufacturing companies have long tradition in performance measurement, and many of them have launched performance measurement at the team or individual levels of organisation, which was one main criterion in the selection of the participating companies. To achieve an overall view of how the underlying factors behind the positive impacts of performance measurement operate in practice, a survey was seen to be the most suitable method for the data gathering. Hence, the quantitative data was gathered by a survey from the whole personnel of the companies. The findings are based on statistical analysis and can thus be considered as objective. The studies presented in papers III, IV and V can be characterised to some extent as exploratory, but mainly as descriptive and explanatory.

The study presented in paper VI tries both to strengthen and complement the findings of papers I and II and to utilise the findings of papers III, IV and V in the construction of a framework for successful operative level performance measurement. Interviews were seen to be the most suitable way of investigating the factors that facilitate and improve the performance of the operations and employees, and the use of performance measurement at the operative level of organisations. The case organisations were selected to represent different kinds of organisations, that is small, medium-sized, large, public and private organisations. One objective was to examine how the factors that facilitate and improve operative level performance measurement differ in different types of organisations. Totally nine interviews were conducted in eight case organisations. The study can be characterised
as a qualitative multiple-case study. Further, the study presented in paper VI also includes some normative aspects concerning successful operative level performance measurement. The selection criteria for the participating organisations, as well as the data collection and analyses have been presented in detail in the research papers at the end of the thesis.
3 RESULTS

3.1 What kinds of impacts does performance measurement have and what are the underlying factors behind successful operative level performance measurement?

The first stage of the study focused on the impacts of performance measurement on management, leadership, and the quality of working life. These issues were examined through selected aspects on the basis of current literature. The findings have been presented in detail in papers I and II. Also the factors behind the positive impacts of performance measurement and the factors that facilitate and improve the performance of the operations and employees, as well as the use of performance measurement at the operative level of organisations were studied. The findings concerning the factors are presented in detail in papers I, II, and VI.

MANAGEMENT

The findings indicate a variety of positive impacts of performance measurement on the management of different areas of business. Decision-making has become faster and more confident along with performance measurement. A careful definition of measurement objects and useful information about targets have enabled the organisations to allocate the resources, like money and workforce to the right places. This is seen to advance the quality of activities and processes of the organisations. The improvements in the quality of activities and processes together with regularly collected and analysed information from production have increased productivity and efficiency. Furthermore, regularly collected information about customers’ satisfaction and needs, as well as products and reclamations, has facilitated the customer orientation. The management’s opinion was that the impact of performance measurement on the financial performance had been realised mainly by improving productivity and efficiency. The improvements were reached mainly by organising the resources in a new way, and the role of measurement information was
significant in this process. The role of measurement information is also highlighted in the study of Bourne et al. (2005). They present that in order to find the true drivers of business unit performance, the managers of the high performing business units had developed their own indicators (in addition to formal scorecard measures) that were often based on unofficial data sources. Bourne et al. (2005) continue that many managers revolved around managing volume effectively and efficiently, but others focused on the development of individual skills and team working – aspects absent from the business unit level scorecard. The results of the present study support the findings of Bourne et al. (2005). To get the best use of performance measurement, it should be enabled at the operational level, and the information should be gathered from a variety of sources, in addition to a formal scorecard. This way it is possible to find the right targets, drivers and data for the development of business performance, which will eventually lead to a higher financial performance.

As presented above, the study indicates some evidence between performance measurement and higher financial performance. For example, the CEO of one case company describes the relationship between performance measurement and financial performance as follows:

“This decade has actually gone so well financially and it seems that the measurement system has had a certain impact. The goals have been mainly achieved in all these years the measurement system has been in use. So, it's hardly a coincidence.”

The results show that performance measurement had helped the companies to follow their strategies and achieve their strategic goals better than before. A successful association between the strategic and operative goals were seen as a main reason for this. The alignment of operational performance with strategic objectives can be seen as a result (Martinez and Kennerley, 2005a) as well as an underlying factor (Bourne et al., 2005) of successful performance measurement. For example, Bourne et al. (2005) state that in situations where the connection between financial performance and scorecard results was not perfect, the scorecard was being used as a means of controlling standards and not for maximising performance. Hence, it can be stated that if the purpose of using performance
measurement is to maximise performance, the strategic and operative level measures should be aligned.

The results of the study also indicate that the proactive aspect of performance measurement emerged for example in planning the education of employees in regard to their skills, capabilities and know-how. The management and the employees were quite unanimous as regards the impacts of performance measurement on different aspects of management. Only the impact of performance measurement on proactivity was perceived stronger by the managers than by the employees. Employees usually operate with daily and short term targets, which may explain the difference.

**LEADERSHIP**

Although the opinions of management and employees about the impacts of performance measurement on management were quite similar, their opinions concerning the impacts of performance measurement on the aspects of leadership differed quite strongly. According to management, communication between the management and employees had increased and improved. They stated that along with explicit goals and accurate information, the processing of different issues together with the employees had become easier. Performance measurement had also brought new routines to the case companies. The management stated that there were many different meetings at different organisational levels, where the participants analysed and presented measurement information and tried to solve detected problems. The companies had also developed instructions related to situations where some metrics gave an impulse. In addition, the companies had established for example analysis groups and development groups. The management highlighted that there was much more information available than before performance measurement implementation, and the information was shared in various forms and channels, for example department, personnel and team meetings, newsletters, notice boards, and the intranet.
The employees stated that along with performance measurement, there had been some positive changes in the conversation between the management and the employees, and contradictory issues had to some extent become easier to talk through. However, the employees highlighted that the successful leading of people depends much more on the organisational culture and individual characteristics of the manager than on performance measurement. The results are somewhat contradictory with the findings of Bititci et al. (2004, 2006). They studied the interplay between performance measurement, organisational culture and management styles. According to them, successfully implemented and used performance measurement systems lead to a more participative and consultative management style and vice versa. According to Martinez and Kennerley (2005a), the performance measurement system has an impact on leadership at senior level, but at operational level, leadership becomes a factor that affects the performance measurement system. The findings of Bourne et al. (2002) and Franco and Bourne (2003) highlight that a paternalistic culture that encourages actions and improvement and does not punish for errors will lead to a successful implementation and use of a performance measurement system. In the current study, an impact of performance measurement on the leadership style was not found. Instead, the study provides some evidence concerning the effect of leadership on the implementation and use of performance measurement. Although the current study focuses on the impacts of performance measurement on leadership, it reveals that the organisational culture affects leadership and may in that way affect positively or negatively the implementation and use of the performance measurement system.

As regards new routines, the employees did not recognise them as clearly as the management. The new routines did not meet all the groups of employees, and also the diffusion of information was perceived problematic. Although the employees perceived that there was more information available than before, the information was not always understandable, it was separated in different systems, and joint meetings concerning the measurement were organised too seldom. The gaining of information depended too much on the employees’ own activity and skills of using different systems. According to the employees, the performance measurement information should be more understandable, the
report system should be open and easy to use, and discussion between the management and employees should be increased. As regards the perception of the employees, the study does not support the earlier findings of Martinez and Kennerley (2005a, 2005b). According to them, the performance measurement system has had a positive effect on communication at all levels of an organisation. However, interactive communication of measurement information has an important role in successful performance measurement and should thus be emphasised at every opportunity, as for example the findings of Bourne et al. (2005) suggest.

**QUALITY OF WORKING LIFE**

The representatives of the management and the employees shared the view that the employees’ work motivation had increased along with the performance measurement system. Team and individual metrics and goals, together with the fact that the measures are visible and the employees recognise their team-level targets are seen to have a positive effect on work motivation. The employees also stated that after the launching of performance measurement, the job contents and descriptions were clarified, as well as the awareness of what the company expected them to do. In this context, it was considered extremely important that the employees were able to participate in defining their own metrics and goals. Understanding the connection between individual goals and the company’s business activities, and especially the linkage of the measurement system to the rewarding were other factors behind the increasing motivation. The management and the employees were quite unanimous about the impacts of performance measurement on the employees’ motivation and the factors behind these impacts.

The findings also indicate positive impacts of performance measurement on training and learning opportunities. Performance measurement has helped the companies to find the actual needs for the training and learning of employees. Performance measurement has facilitated the reorganising and centralisation of the supply of training and learning and brought a proactive aspect to it. Performance measurement has also enabled the employees
to get involved in the decision-making concerning their own learning plans and goals. In addition, performance measurement has intrinsically advanced the employees’ understanding about the company’s business and performance.

It was a common view that after the launching of the performance measurement system, the employees’ possibilities to participate in the decision-making had increased mainly through the advanced communication and the employees’ better understanding of the company’s business. The employees stated that they could affect individual and team level decisions more than before, but to some extent on the company level as well. The employees perceived these possibilities stronger than the managers, which indicates that even a small but genuine improvement in the possibilities to participate in decision-making has a positive effect on the employees.

According to the management and the employees, the team and personal goals were reached better with performance measurement. This was seen as a result of the careful definition of the measures and goals and their logical connection to the entire performance measurement system. Some of the managers held the view that a self-controlling effect could be seen when extending the measuring to the team and personal level. The background factors for the employees’ higher performance were similar to those of work motivation.

Both the management and the employees highlighted the importance of the connection of performance measurement to the reward system in regard to employees’ commitment to performance measurement. In one out of eight case companies, which operates without a reward system, the impact of performance measurement was perceived much slighter both from the management’s and the employees’ perspective, compared to the other companies. When the performance measurement system was connected to the rewarding, the transparency of the measures and reward criteria was emphasised.
The impacts of performance measurement on job satisfaction and the work atmosphere were not remarkable. Although some representatives saw some positive impacts, the common opinion was that job satisfaction and work atmosphere depend much more on the organisational culture, individual characteristics of the manager, and the whole management system. Hence, if the organisational culture does not support continuous improvement, performance measurement has little possibilities to improve job satisfaction or work atmosphere. The impacts of performance measurement on the health and safety depend on the branch where the companies operate. For example in manufacturing companies, where the accident risk and physical strain are on a high level, the measurement of different issues around health and safety were seen to have a positive impact. Otherwise health and safety issues were considered as separated from the performance measurement system.

As mentioned in section 1.4.4, there is a lack of studies concerning the impacts of performance measurement. However, the studies of Martinez and Kennerley (2005a, 2005b) provide some parallel and some contradictory findings in comparison to the current study. They studied the effects of a performance measurement system in a large energy company. The list below contains some effects of a performance measurement system, based on the findings of Martinez and Kennerley (2005a, 2005b):

- improves the motivation of employees by allowing them to take part in the decisions of new projects or action plans
- increases employees’ understanding of the fact that their actions affect the business
- focuses people’s attention on what is important for the firm
- improves the identification of training needs
- improves employee performance and productivity
- increases a sense of achievement

These findings are quite well in line with the findings of the current study. Martinez and Kennerley (2005a, 2005b) also found that the performance measurement system had positive impacts on job satisfaction, as well as health and safety. In the current study the impact of performance measurement on job satisfaction and health and safety was limited. The impact on health and safety was perceived to depend more on the branch of the
organisation, whereas the impact on job satisfaction was perceived to depend more on issues like organisational culture or characteristics of managers. According to Martinez and Kennerley (2005a), both the employees’ and senior managers’ attitudes concerning the linkage of the scorecard to rewards were sceptical, since it was seen to focus only on rewarded measures, not on improvements. They also state that at the business unit level, the scorecard did not improve the quality of the decisions, although it is a good feedback mechanism to inform about decisions. In this study the association of performance measurement to rewarding, as well as the possibilities of employees to participate in decision-making were seen to have many positive effects for example on work motivation and the realisation of targets.

**UNDERLYING FACTORS**

As presented above, performance measurement has a number of positive impacts on different aspects of management, leadership and the quality of working life. The improvements in management, leadership and the quality of working life will lead to a higher performance of the employees, as well as different areas of business in the course of time. There can also be found many factors behind the positive impacts that provide suitable circumstances and a solid base for successful operative level performance measurement. Based on the findings of papers I and II, the most important factors behind the positive impacts of performance measurement on management, leadership and the quality of working life are:

- the linkage of performance measurement to rewards
- possibilities to participate in decision-making
- understanding the linkage between the individual’s and organisation’s targets
- clarification of job description
- interactive communication

Interactivity in communication, including information diffusion, and the linkage of performance measurement to rewarding were seen to be the key factors behind successful operative level performance measurement. Furthermore, all the above factors have a
positive impact on employees’ work motivation, as well as the achievement of team and personal goals in the performance measurement context. Also the maturity of the performance measurement system, the level of education of the employees, and early information and powerful marketing of the new system are factors that were seen to some extent facilitate performance measurement at the operative level of an organisation.

Paper VI focuses on the factors that have a positive and a direct influence on the performance of operations, the actions of the employees, and the use of performance measurement at the operative level. One objective of the study was to review and strengthen the findings of papers I and II as regards the factors behind successful operative level performance measurement. A total of nine development and general managers, who operated with the development of operative level performance measurement, were interviewed in eight organisations.

The findings of paper VI indicate that there are six factors that facilitate and improve the performance of the operations and employees, and the use of performance measurement at the operative level of an organisation. The three most important factors behind successful operative level performance measurement are:

- the linkage of performance measurement to rewards
- understanding the linkage between an individual’s and the organisation’s targets
- interactive communication

Rewarding and interactive communication were perceived as a starting point for successful operative level performance measurement. Communication is a necessity for all actions around performance measurement. Through rewarding the measurement appears to be more than a required routine. Understanding the linkage between an individual’s and the organisation’s targets was perceived as important in regard to the wholeness of performance measurement practises. Performance measurement is more justifiable for the employees when they understand their part in the big picture.
The following three factors were also perceived important for the successful operative level performance measurement:

- employees’ possibilities to participate in decision-making
- clarification of job description
- training

The interviewees emphasised that when performance measurement is implemented at the team or individual levels, the employees should have possibilities to be involved in the decision-making, at least with regard to their own measures and targets. In the performance measurement context, training and education were seen to have multiple roles: the interviewees saw it as a way to enhance the capability and understanding of the employees, to reward and to motivate the employees. The size and sector of the organisation did not seem to make a remarkable difference on what the most important factors behind successful operative level performance measurement were. For example, the linkage of performance measurement to rewards, understanding the linkage between the individual’s and the organisation’s targets, and interactive communication were perceived to have a positive effect on the measured performance of employees and operations both in small, medium-sized and large organisations, as well as in public and private sector organisations.

As a whole, the factors behind the positive impacts of performance measurement on the management, leadership and quality of working life (papers I and II) were perceived quite similarly in comparison to the factors that have a positive and a direct influence on the operations, actions of the employees and the use of performance measurement at the operative level (paper VI). The findings of paper VI complement the findings of papers I and II by emphasising the role of training as an important factor behind successful operative level performance measurement. The findings of paper VI also suggest that the six identified factors can be categorised to three most important factors and three important factors.
Performance measurement has a range of positive impacts on different aspects of management and the quality of working life. The management’s and the employees’ perceptions of these impacts are quite well in line. On the other hand, the opinions of the management and employees concerning the impacts of performance measurement on different aspects of leadership differ considerably. According to the management, performance measurement has brought a new aspect to the leadership. The conversation between the management and employees has been improved and the processing of different issues of work has become easier with explicit goals. The employees do not see that performance measurement can provide new elements for example to the leadership style, as it is seen to depend much more on the organisational culture and the individual characteristics of the managers. Hence, it can be stated that performance measurement can only support, not replace the managers in leading people. Performance measurement will not solve or fix problems of organisational culture or leading people. Furthermore, the findings indicate six factors that have a direct and positive impact on operative level performance measurement.

3.2 How do the underlying factors operate in practice?

In this section the study focuses on how the underlying factors behind successful operative level performance measurement operate in practise. The role of knowledge, understanding, participation in decision-making, communication and rewards are examined in the performance measurement context. The findings are based on empirical survey data from eight companies, and they are presented in detail in papers III-V.
In this section, questions concerning the understanding of targets and business at different levels of organisation; possibilities to participate in decision-making at different levels of organisation; the future aspects of decision-making at different levels of organisation; and the level of knowledge of performance measurement are analysed. The findings are based on the study presented in paper III. Including the answers of all respondents, the question “I understand my job description and targets” and the questions concerning the understanding of the linkage between one’s own targets and the company’s business and targets reached the highest means. The lowest means were achieved with the questions concerning the possibilities to participate in decision-making. However, this does not tell about differences between different personnel groups.

To confirm the associations between the research questions, principal component analysis was conducted. The principal component analysis produced four factors with an eigenvalue over 1.00. The first factor includes five main loadings and explains 32.8 percent of the variance. The question “I can participate in decision-making concerning my job content and targets” had the highest loading. The other four loadings were in questions that also encompass certain autonomy in one’s work; the present situation of participation in decision-making. Thus, the first factor was labelled as the autonomy in work factor.

The second factor captured 17.5 percent of the variance and included four loadings. The question “In the future, I want to participate in decision-making more than now concerning my team or work group” had the highest loading. Also the other questions concerning future willingness of participation in decision-making reached high loadings. The factor was associated with the future willingness of autonomy and was, for this reason, labelled as the future autonomy in work factor.

The third factor had four main loadings and it explained 12.1 percent of the variance. The question “I understand my job description and targets” reached the highest loading. The
other main loadings also encompassed the understanding of targets and their linkage to the company’s business and targets. Therefore, the factor was labelled as the *understanding of targets* factor.

The fourth factor explained 6.7 percent of the variance. Three main loadings were received by questions “I know how performance is measured in our company”, “I know what performance measurement is”, and “I understand how measuring results are utilised”. The setting suggested that the factor was associated with high knowledge of performance measurement and can be therefore named as the *knowledge of performance measurement* factor.

Based on the factor model, the knowledge, understanding and opportunities to participate in decision-making can be examined through the factors: autonomy in work, future autonomy in work, understanding of targets, and knowledge of performance measurement. The study was continued by comparison of the means of the sum measures between blue- and white-collar workers and managers. Three significant differences were found. The findings indicate differences between blue- and white-collars and managers concerning autonomy in work, knowledge of performance measurement and understanding of targets. In regard to autonomy in work, significant differences were found between every personnel group. The blue-collar workers had quite poor possibilities to participate in decision-making even when it concerned their own or team issues. White-collars perceived the level of autonomy quite neutral in their work, while the managers seemed to have lot of autonomy at all the levels of organisation. The differences between the blue-collars and managers, as well as white-collars and managers were significant as regards knowledge of performance measurement. The blue-collar workers’ and white collar workers’ knowledge of performance measurement was on an average level. The managers’ knowledge of performance measurement and its utilisation were on an outstanding level. Although significant differences between the groups of blue-collar workers and managers, and white-collar workers and managers were found as regards the understanding of targets, it was on a very good level in every personnel group. The findings indicate that the white- and blue-
Blue-collar workers want more autonomy in work in the future than the managers. This is quite reasonable, because the present situation of autonomy in work is rather poor for the blue-collar and white-collar workers.

As a whole, it can be stated that the understanding of targets is on a good level throughout the organisation. This is essential for the company, because it indicates that the employees know what they are expected to do. The workers’ common knowledge of performance measurement was only on an average level. It seems that when performance measurement has been implemented to the operative level with a connection to personal or team targets, the workers may need more information on the performance measurement and its utilisation. For example, the study of Franco and Bourne (2003) highlights the role of education and understanding as a critical factor that has a great impact on the way organisations manage through measures. 67 per cent of the respondents of their study called for people to have a good understanding of the measures (what they meant and how they were calculated), and of the strategic performance measurement system itself (understanding what is it and how to use it). However, regarding the current study, the good knowledge of managers shows that the companies are really putting an effort to performance measurement. The most important finding was the poor possibilities of the blue-collar workers to participate in decision-making even when it concerned their own job or team. There is a danger that even if the workers recognise and understand their targets, the lack of autonomy in work may decrease their work motivation and commitment. For example, the study of Scott-Ladd and Marshall (2004) indicate that participation in decision-making has a direct influence on for example employee perception of performance effectiveness and job satisfaction, and an indirect influence on affective commitment through job satisfaction. It can be stated that if the employees are allowed more autonomy in work and more chances to participate in decision-making, it will make them more motivated and enhance their knowledge of performance measurement. This should be taken into account when applying performance measurement at the operative level of an organisation.
In this part of the study, the communication practices of performance measurement information, the quality and form of measurement information, and the predictors behind successful communication of measurement information are examined. The findings are presented in detail in paper IV. Based on the means of the research questions of these issues it can be stated that the information about the measurement targets and their realisation is communicated mainly in team meetings, by a foreman, and in company meetings. The other information channels, such as noticeboards, intranet, handouts, and e-mail were not perceived as a typical way of communicating performance measurement information. Hence, it can be concluded that communication based on face-to-face interaction is the most common and trusted way to communicate measurement information, whereas electronic communication channels are less used.

On the basis of the means, it can be stated that the quality of measurement information including reliability, intelligibility, usability and exactness were perceived to be on a quite average level and the information was presented quite equally in verbal, numeric and graphic form. The study also indicates that face-to-face communication is the most desirable way in the future, just as it was also the most common at the moment. Electronic communication did not receive much support.

The study continued with factor analysis, in which questions about communication channels, and the quality and form of information were included. The principal component analysis produced four factors with an eigenvalue over 1.00. The model explains a total of 63.2% of the variance. The four factors were labelled as information quality, system communication, face-to-face communication and quantitative information. Sum measures for further analysis were formulated on the basis of these final factors.

The comparison of the means between the companies indicates that company 5 has the best organised internal communication of measurement information. Companies 2 and 3 also
succeed quite well concerning communication of measurement information. System communication is emphasised in companies 2, 3 and 5 in comparison to the other companies. These companies are bigger than the others and they operate in a more decentralised environment, which may explain the more common use of different channels of system communication. Although face-to-face communication is the most common at the moment and the most desirable in the future, the successful communication of measurement information may need support from system communication. Although there were interesting differences between the companies, they do not tell how to succeed in the communication of measurement information. For that purpose, regression analysis of the sum measures was performed.

The aim of the regression analysis was to find out the predictors for success in the communication of measurement information. The regression analysis was conducted with the help of the sum measures formulated on the basis of final factors. Because the purpose of the analysis was to investigate how to succeed in the communication of measurement information, the question “I think that the internal communication of target information is successful” was set as the dependent variable and the sum measures as independent variables. The regression analysis was conducted with the stepwise procedure. It started with the best single predictor in the specified group of independent variables, which included four sum measures: information quality, system communication, face-to-face communication and quantitative information. The stepwise procedure achieves the final model when the specified group of independent variables does not contain any statistically significant variable to be included into the model. Using this procedure, a regression model, which included two predictors (information quality and face-to-face communication) and a constant, was reached. 61.9 per cent of the variance of the dependent variable can be explained by the variations of the predictors. Thus, it can be argued that information quality and face-to-face communication explain the success in communication of measurement information very well. The excluded variables are system communication and quantitative information. A closer look at the statistics of the excluded variables shows that system information was actually quite close to being entered into the equation.
As a whole, the study shows evidence of the importance of the quality of information and face-to-face methods in the successful communication of measurement information. The quality of information, including exactness, reliability, intelligibility and usefulness could not be considered good, except in company 5. Furthermore, the mean of the question “I think that the internal communication of target information is successful” was 2.91, which indicates that the companies have not succeeded in it. The study suggests that companies should invest in the quality aspects of measurement information, in its exactness, reliability, intelligibility, and usefulness. The findings of the study support the findings presented by Ittner and Larcker (2003). They present that even companies that have built a valid causal model and track the right elements can fall down when determining how to measure them. At least 70 per cent of companies, they found, had employed metrics that lacked statistical validity and reliability. According to Ittner and Larcker (2003), validity refers to the extent to which a metric succeeds in capturing what it is supposed to capture, while reliability refers to the degree to which measurement techniques reveal actual performance changes and do not introduce errors of their own. They suggest that companies should inventory all their databases, not only performance measurement systems, to get all the useful data for key performance drivers. Both the findings of Evans (2004), and Ittner and Larcker (2003) call for more sophisticated analysing techniques for turning data into useful information. According to Bititci et al. (2002), Nudurupati and Bititci (2005), and Turner et al. (2004), IT-supported and web-enabled performance measurement systems might be a solution for the issue around the quality of measurement information. They present that web-enabled performance measurement systems have resulted in significant benefits for example by improving the accuracy, reliability and credibility of performance information.

In addition to information quality, face-to-face communication is the lynchpin of internal communication of measurement information, and it has a significant contribution in the regression model. Face-to-face communication enables direct and interactive discussion around performance measurement information, which can be mainly considered as a good matter. Face-to-face communication was also seen to be the best way to communicate measurement information in the future. The findings of the current study differ somewhat
from the findings of Bititci et al. (2002), and Nudurupati and Bititci (2005). They present that web-enabled and IT-supported performance measurement systems improve communication of measurement information by automation and simplification of communication, whereas the current study and for example the study of Bourne et al. (2005) highlight interactivity and the face-to-face method in the communication of measurement information. Finally, the study indicates that the best success in the communication of measurement information will be achieved, when the quality of the information is good and it is communicated face-to-face and maybe supported by some system communication. The system communication is usually emphasised in large organisations, where the employees operate in different locations.

**PERFORMANCE MEASUREMENT AND REWARDING**

In this paragraph, the study focuses on performance measurement and rewarding. The objective was to examine how different personnel groups perceived the success factors of rewarding and how autonomy in work affects these perceptions. The findings are presented in detail in paper V. The results concerning the success factors of rewarding, such as motivation, fairness, equitableness and criteria of rewarding, indicate that the companies have not succeeded in their reward policy. When including the answers of the whole personnel of the companies, the only question that was considered even neutral was “the reward policy of our company is motivating and incentive”. All the other answers regarding the success factors of rewarding were more or less negative.

The next step of the analysis was to identify the possible differences regarding the success factors of rewarding between different personnel groups. The comparison of the means was conducted with an analysis of variance. One remarkable result of the analysis was that the blue-collar workers had really low satisfaction with regard to the success factors of rewarding. The differences between the blue-collar workers and the managers were significant in all questions, except the question “the reward policy of our company is motivating and incentive”. The mean comparison of the question “the reward policy of our
company is fair” showed that there was a significant difference between the blue-collar workers and the white-collar workers, as well as between the blue-collar workers and the managers. As a whole, the managers were slightly satisfied with the different elements of rewarding. There were no significant differences in the mean comparison of any question between the white-collar workers and the managers. The question “the reward policy of our company is motivating and incentive” was perceived similarly and neutrally in all personnel groups.

Based on the factor analysis of the research questions concerning the possibilities of the employees to participate in decision-making, the factor autonomy in work was formed. The next stage of the analysis was to examine the connection between autonomy in work and the different elements of rewarding. On this basis, the respondents were divided into two groups. The group “non-autonomy in work” included the respondents whose means of sum measures (from the factor autonomy in work) were three or less, and the group “autonomy in work” included the respondents whose means of sum measures were over three. The results of the mean comparison indicate significant differences in all of the five success factors of rewarding between the respondent group of “non-autonomy in work” and the group of “autonomy in work”. The results show that the more satisfied people are regarding participation in decision-making, the more satisfied they are with the different elements of rewarding. The results support the findings of Kauhanen and Piekkola (2006), and Scott-Ladd and Marshall (2004). Kauhanen and Piekkola (2006) suggest for example that for a successful performance-related pay, employees should participate in the design of a performance-related pay scheme. Scott-Ladd and Marshall (2004) state that participation in decision-making influences the perception of rewards positively. Finally, one of the most striking results was that the respondents without autonomy in work considered the reward policy of their company, as well as the criteria of rewarding, particularly unfair. An interesting result was also that there was a significant difference regarding the question “the reward policy of our company is motivating and incentive” between the respondents of “non-autonomy in work” and “autonomy in work”, but not between the different personnel groups.
As a whole, the motivational influences of rewarding were perceived as quite neutral, and there were no significant differences between the different groups of personnel. Instead, our study strongly indicates that the people who have more autonomy and possibilities to participate in decision-making perceive the motivational influence of rewarding much stronger than others. The perception of the fairness, equitableness and criteria of rewards, excluding the motivational aspect, is strongly dependent on the organisational position of the respondent. The managers perceived the different elements of rewarding as somewhat successful, but the blue-collar workers were not satisfied with any of them. Although it may be difficult to design a reward system that can be considered as successful from the viewpoint of all employees, the organisations should ensure that employees are able to affect the outcomes, the compensation policies are equitable enough, and the employees have possibilities to participate in decision-making, as suggested for example by Kaplan and Atkinson (1998), and Kauhanen and Piekkola (2006). In addition, when comparing the perceptions of the success of rewarding between the groups of “non-autonomy in work” and “autonomy in work”, the findings were significant in all the questions. Employees who did not have possibilities to participate in decision-making perceived the reward policy of their company as unsuccessful. This result also emphasises the role of autonomy in successful rewarding. Finally, autonomy in work had a positive correlation on the perceptions of successful rewarding in all personnel groups.

**SUMMARY**

In section 3.2, the findings concerning the state of the practise of the underlying factors behind successful operative level performance measurement in the companies were presented. The results indicate that the understanding of targets of different levels of organisation, as well as the understanding of the job descriptions and the company’s business are on a good level in all personnel groups. The blue-collar worker’s and white-collar worker’s knowledge regarding the performance measurement and its utilisation in the companies is on an average level. A remarkable result is the poor possibilities of the blue-collar workers to participate in decision-making even when it concerns their own job or
team. Furthermore, the blue-collar workers and white-collar workers want more autonomy in work in the future than the managers. The results of the study also indicate that the quality of information and face-to-face methods are the most important predictors in regard to successful communication of measurement information. Despite of the importance of the quality of information, the exactness, reliability, intelligibility and usefulness of the measurement information can not be considered as good. Also the low mean of the question “I think that the internal communication of target information is successful” indicates that the companies have not succeeded in the communication of measurement information. The results concerning the performance measurement and rewarding show that the employees who have more autonomy and possibilities to participate in decision-making perceive the motivational influence of rewarding much stronger than others in all personnel groups. On the other hand, the perception of the fairness, equitableness and criteria of rewarding, excluding the motivational aspect, is strongly dependent on the organisational position of the respondent. The managers perceive the different elements of rewarding as very successful, but the blue-collar workers are not satisfied with any of them.

3.3 How to manage performance by utilising the underlying factors behind successful operative level performance measurement?

The main objective of the study was to create a framework for successful operative level performance measurement. The managerial purpose of the framework is to help managers to focus on the factors that are important for a higher performance of the operations and the employees, and for a successful use of performance measurement at the operative level of the organisation. By utilising the framework, the managers will be able to carry out development actions that will facilitate and improve performance measurement at the operative level of an organisation. The framework has been constructed by matching the findings presented in research question one (section 3.1) and the current theory of performance measurement. The findings of research question two (section 3.2) and paper
VI have also been included in the entire framework for successful operative level performance measurement.

The construction of the framework was started on the basis of research question one (section 3.1), in which the findings indicated six factors essential for successful operative level performance measurement. The linkage of performance measurement to rewards, understanding the linkage between an individual’s and the organisation’s targets, and interactive communication are the three most important factors that facilitate and improve the performance of the operations and the employees, and the use of performance measurement at the operative level of the organisation. In addition, the employees’ possibilities to participate in decision-making, clarification of job description, and training are also perceived as important factors behind successful operative level performance measurement. All the above factors can be seen to have a direct and positive impact on operative level performance measurement and performance.

Furthermore, it is possible to find many other factors that may have an impact on operative level performance measurement in a wider frame. As presented in section 1.5.1, many researchers have utilised the framework of Pettigrew (1985) and Pettigrew et al. (1989), when studying the factors that facilitate the process of managing through measurement (e.g. Bourne et al., 2002; Boume et al., 2005; Franco-Santos and Bourne, 2005; Martinez and Kennerley, 2006). In the framework of Pettigrew et al. (1985), the factors have been categorised into context factors and process factors, where the process factors are grouped into the categories of design, implementation and use factors, and the context factors are classified into internal and external factors. Although the studies mentioned above have mainly focused on the factors related to the role and actions of managers, this type of categorisation can also be seen as appropriate, when focusing on the factors related to the role and actions of employees. To allow a wider perspective of the factors that may affect operative level performance measurement positively, the context factors and system factors are included in the framework. The context factors include internal and external factors, and the system factors include design, implementation and use factors. Finally, the six
factors behind successful operative level performance measurement, together with the context and system factors form the main elements of the framework for successful operative level performance measurement.

Although the matching of the fragmented literature and the findings of the current study into a compact framework is valuable per se, it is also interesting to consider, how managers could utilise the framework in the development of their own work, as well as in the work of employees. Thus, the main idea of the framework, regarding the practical viewpoint, is that a good state of the factors enables a higher performance of the employees and operations, and a successful use of performance measurement. The clarification and analysis of the current state of the factors reveal the most important issues around the factors for further development. On this basis, organisations can implement development projects, after which it is possible to reanalyse the current state of the factors and clarify whether the development projects have had desired results. The better condition of the underlying factors should be realised as a higher output of the measures of the employees and the operations, and finally as a higher performance of the whole organisation. The framework for successful operative level performance measurement is illustrated in figure 2.
Factors affecting performance measurement
(wide perspective)

Factors affecting operative level performance measurement

Factors affecting performance measurement

Context factors
- Internal (e.g. firm strategy, culture)
- External (e.g. industry, environment)

System factors
- Design (e.g. measurement and targets)
- Implementation (e.g. top management commitment, communication)
- Use (e.g. review and update measures, rewards)

Factors affecting operative level performance measurement

Understanding the linkage between individual’s and organisation’s targets

Performance measurement linkage to reward

Interactive communication

Possibilities of participating in decision-making

Clarification of job description

Training

Evaluation/Analysis of factors
- Survey, interviews etc.

Development actions around factors
- Workshops, new operational models etc.

Measurement of employees’ actions and operations
- Appraisal of employees, measurement of operations and processes, development discussions etc.

Performance of employees and operations

Figure 2. Framework for successful operative level performance measurement
Figure 2 presents the idea and the phases of the framework. The starting point is an evaluation and analysis of the six factors behind successful operative level performance measurement. Next, the organisation should choose the most important factors for further development. These development actions should lead to better results of operative level performance measurement. The current study does not provide guidance for the analysis of the factors. However, the analysis can be based for example on the results of the survey concerning the factors behind successful operative level performance measurement. To achieve an overall view of the current situation, the survey can cover all the employees of the organisation or a selected department. To ensure the influences of the development actions, the survey can be repeated after finishing those actions. To get the best use and benefits of the framework, the essential findings of papers I to V can also be taken into consideration. Hence, the key lessons that should be borne in mind when utilising the framework are the following:

- performance measurement can only support, not replace managers in leading people
- the autonomy of employees regarding the decision-making, especially at individual and team level performance measurement should be on a satisfactory level
- the employees’ knowledge of performance measurement should be on a satisfactory level
- in communication, the quality of information, including exactness, reliability, intelligibility and usefulness should be on a satisfactory level
- in communication, interactivity and face-to-face communication are the best ways in the communication of performance measurement information
- when linking performance measurement to rewarding, autonomy in work has an important role regarding the motivation of both employees and managers
- in performance-related rewarding of the employees, fairness, equitableness and the criteria of rewards should be on a satisfactory level.

As a summary of this section, it can be stated that the framework is a starting point for the development and improvement of operative level performance measurement. The framework includes the factors that have a direct and positive influence on operative level performance measurement. On a wider perspective there are many other elements, for example leadership and organisational culture that influence performance measurement. Managers who utilise the framework should also note that the factors are linked to each other. For example training opportunities can be seen as a part of non-financial rewarding,
but they may also increase the understanding of the linkage between one’s own and the company’s targets. Participation in decision-making increases the communication between the managers and the employees and also clarifies the job descriptions and targets. Interactive communication has a positive influence on the other factors, and further on, a higher performance of the organisation. Although the study indicates that three out of the six most important factors have a positive influence on successful operative level performance measurement, the priority between these six factors may be different, depending on the needs of the organisation. It can be stated that the priority of the factors, together with the condition of the factors, should guide the decision-making regarding the development actions.
4 DISCUSSION AND CONCLUSIONS

4.1 Contribution to prior research

The prior research concerning performance measurement provides a broad range of approaches, including for example the designing, implementation and use of a performance measurement system. However, there is little empirical evidence on the identification of factors that lead to positive impacts of performance measurement, factors that facilitate the process of managing through measures, and factors that improve operative level performance measurement. Today, many organisations have adopted performance measurement at the team and individual level, and many employees utilise and operate with performance measurement daily. Hence, the study has focused on the research gap mentioned above in the context of operative level performance measurement.

As a main contribution of the study, a framework for successful operative level performance measurement has been formed. The study extents the earlier research concerning the impacts of performance measurement and the factors that positively influence operative level performance measurement. Based on the empirical evidence, the fragmented literature has been reorganised and complemented into six factors that facilitate and improve the performance of the operations and employees, and the use of performance measurement at the operative level of an organisation. These six factors form a basis for utilising of the framework. The study suggests that the linkage of performance measurement to rewards, understanding the linkage between an individual’s and the organisation’s targets, and interactive communication are the most important factors behind successful operative level performance measurement. In addition, the employees’ possibilities to participate in decision-making, clarification of job description, and training concerning performance measurement are perceived as important. The framework enhances the understanding concerning the development actions around the factors that facilitate and improve operative level performance measurement. The purpose of the framework is to describe that by taking care of the factors that have a positive effect at the operative level,
that is individual and team level, performance measurement, as well as the performance of the employees and operations will improve. This enables higher financial performance of the organisation in the long run.

Since there has been a lack of the research regarding the actual factors that facilitate the process of managing through measures, this type of empirical research provides essential and useful insights into the research gap. Although some of the themes that have been included in the current research have been studied earlier, the approach of the research has not been utilised earlier in the context of operative level performance measurement. In most of the earlier studies regarding the factors that facilitate the process of managing through measures, the studied factors have been related to the role and actions of managers, whereas the current study focuses on factors related to the role and actions of employees. The research provides a holistic picture concerning the development of operative level performance measurement and the factors that facilitate and improve the performance of employees and operations. Furthermore, the research can be included in the operations business performance review based on the classification of the performance reviews presented by Martinez and Kennerley (2006). They state that in the field of performance measurement and management systems, the most common differentiation of performance review are the strategic and operational reviews. They also present that performance reviews have been seen as a key mechanism to control operational performance and direct people’s efforts towards the achievement of organisational aspirations.

The research also improves the understanding concerning the current state of the factors that facilitate and improve operative level performance measurement, at least regarding small and medium-sized manufacturing companies in Finland. For example, the understanding of targets seemed to be on a good level throughout the organisations, but the common knowledge of performance measurement of the blue-collar workers was only on an adequate level. The blue-collar workers’ possibilities to participate in decision-making were on a poor level and they wanted more autonomy in their work in the future. The study highlights the importance of the quality of information and face-to-face methods in the
successful communication of measurement information. Face-to-face methods were the most common way in the communication of measurement information and they were also the most wanted communication channels in the future. In common, the quality of information, including exactness, reliability, intelligibility and usefulness was not considered as good. Regarding the motivational influences of the linkage of performance measurement to rewarding, significant differences were not found between the different groups of personnel. Instead, the study indicates that people who have more autonomy and possibilities to participate in decision-making perceive the motivational influence of rewarding as much stronger than the others. The perception of the fairness, equitableness and criteria of rewards is strongly dependent on the organisational position of the respondent. The managers perceived the different elements of rewarding more successful than the blue-collar workers.

In addition, the study contributes to the research area concerning the impacts of performance measurement. The findings indicate evidence for example about the impacts of performance measurement on leadership. According to the interviewees, more specific and exploitable information provides a more solid base for management-employee communication. Although the management and the employees did not share the opinion about the success of performance measurement information diffusion, they were unanimous that discussions, information diffusion and interactivity between the management and the employees should be emphasised at every opportunity. The perception of the employees and the management of the impacts of performance measurement on leadership style differed considerably. The employees did not see that performance measurement could provide new elements to the leadership style, as it was seen to depend much more on the organisational culture and the individual characteristics of the managers. Hence, it can be stated that performance measurement can only support, not replace the managers in leading people. Performance measurement will not solve or fix problems of organisational culture or in leading people. The study also emphasises the fact that under suitable circumstances, performance measurement has had a positive impact on the employees’ motivation, learning opportunities, decision-making opportunities, achievement of goals, as well as on
different areas of management. This indicates that the organisations have focused on the six above mentioned factors that facilitate and improve operative level performance measurement.

Finally, the research provides knowledge and understanding as regards the success of operative level performance measurement from the viewpoint of managers and employees. When many of the studies in the area of performance measurement have focused on narrowly outlined issues, the current research presents a holistic picture of operative level performance measurement, which is a key issue in the achievement of strategic goals. The research can be seen as a starting point for the review and the development of operative level performance measurement.

### 4.2 Managerial implications

As a main contribution regarding the managerial implications of the research, the framework provides a starting point for the development and improvement of operative level performance measurement in organisations. The framework can be used to facilitate and improve the process of managing through measurement by focusing on the six factors behind successful the operative level performance measurement. Although the priority and the state of the factors may differ, depending on the needs of the organisation, the evaluation of the factors provides a basis for decision-making regarding the development actions. Managers can utilise the framework by conducting the different phases of the framework presented in figure 2 and by taking into account the lessons presented in the end of section 3.3.

The framework for successful operative level performance measurement can also be utilised in the design and implementation of a performance measurement system. The analysis and the development actions around the factors can be carried out before the design and implementation of the performance measurement system. This enables an early
reaction to the important issues related to the factors that facilitate operative level performance measurement, emphasising the bottom-up perspective during the design and implementation phases, which can be seen as an essential element when performance measurement is launched at the team and individual levels. The research highlights that even a little possibility to take part in the decision-making process improves employees’ work motivation, which is a key element for any organisation’s success. This way the current research can be seen to provide a new aspect to operative level performance measurement. However, there is a danger to fail, if the opinions of the employees have been asked for but not included in the practical solution of the performance measurement system. In this case, the extended bottom-up approach goes from bad to worse in comparison to the traditional top-down approach.

The study suggests that the managers could put more effort on employees’ possibilities to participate in decision-making regarding team and individual levels, as well as the knowledge and understanding of the performance measurement of the employees. The study also suggests that organisations should emphasise face-to-face methods in the communication of measurement information and invest in the quality aspects of measurement information, in its exactness, reliability, intelligibility and usefulness. This enhances the understanding of measurement information and will thus provide a more solid base for the decision-making. In addition, autonomy in work plays an important role in successful performance-related rewarding in all personnel groups. Hence, an interesting challenge for organisations and managers is to specify what the correct level of autonomy should be. Another important issue is to keep the focus on fairness, equitableness and other criteria of rewards to ensure the motivational aspect of performance-related rewarding. Finally, it can be stated that although performance measurement can only support the managers in leading people, the framework can be utilised by the managers in the development of their own work, as well as in the work of employees, for example as a guide in the development discussions.
4.3 Assessment of the research

4.3.1 Relevance

The research focuses on operative level performance measurement, which can be seen as a relevant research area for several reasons. While performance measurement has been traditionally seen as a management tool utilised by managers, it is today used for strategic, managerial and operational purposes. Many organisations have launched performance measurement at unit, team and individual levels and the employees use measurement for a great diversity of the development of the results of their work. One of the main issues in making the employees interested in putting the strategy into action is the implementation of personal and team level targets with a linkage to the strategy. However, there is little evidence of the impacts of performance measurement on financial performance, and even less on business performance. To get the best use of operative level performance measurement it is important to know what positive impacts performance measurement can provide for business performance. An at least equally important issue is the identification of the factors that lead to a positive impact of performance measurement on business performance. According to earlier studies, one problem in identifying the actual factors that facilitate and improve the process of managing through measures is the lack of empirical studies in the performance measurement literature. As a whole, there seem to be a common consensus among researchers that the studies should be focused more on the impacts of performance measurement, as well as the underlying factors that facilitate and improve performance measurement and performance. Performance measurement can be seen as one of the most important areas in the management accounting of organisations, which also justifies the relevancy of the current research.

4.3.2 Validity

The validity of research describes the extent to which researchers are able to use their method to study what they have sought to study rather than studying something else
(Gummesson, 2000). Ghauri and Grønhaug (2002) state that so far we have dealt with one aspect of validity, more precisely, construct validity that can be defined as the extent to which an operationalisation measures the concept which it purports to measure. According to Olkkonen (1994), the evidence of the study is based on a results and the way they have been achieved so that the correctness of the results can be ascertained. As regards the validity of a case study, Lukka and Kasanen (1995) present that a successful case study makes a fascinating read – offering new and fresh perspectives, observations and thorough interpretations of a single or a few research objects – thereby increasing the understanding of the studied field in the research community. They continue that one of the most important characteristics of a successful case study is that it can convince the reader of the validity of the case description and analysis. Maxwell (1996) presents three types of understanding, description, interpretation and theory, which are involved in qualitative research and have distinct threats to its validity. The main threat to a valid description, in the sense of describing what you saw and heard, is the inaccuracy or incompleteness of the data. For this reason, the researcher should always record and transcribe the interviews. The main threat to valid interpretation is imposing one’s own framework or meaning, rather than understand the perspective of the people studied and the meanings they attach to their words and actions. The most serious threat to the theoretical validity of an account is not collecting or paying attention to discrepant data, or not considering alternative explanations or understandings of the phenomena you are studying.

In the current research the criteria for the selection of the case organisations and interviewees, as well as the descriptions of the cases have been presented carefully. Also the collecting and analysis of the research data have been described carefully. All the interviews have been recorded and transcribed before the analysis. In most cases, regarding the analysing of different parts of the study, a second researcher besides the author has been involved. This should provide a positive effect on the way the reader experiences the validity aspects of the research.
The impacts of performance measurement were investigated through different aspects of management, leadership and the quality of working life of the employees. There can be found many other interesting aspects to study the impacts of performance measurement on business performance. However, the aspects mentioned above can be considered as essential areas of business performance when the measurement focuses on the operative level of organisations. The interviews concerning the impacts of performance measurement included the perceptions of the representatives of the management and the employees. It is important to gain the perceptions of both the management and the employees to get an overall view of the impacts of performance measurement at the operative level of organisations. In addition, it is reasonable to use interviews when investigating the underlying factors that have a positive influence on operative level performance measurement. By interviews it is possible to achieve a deeper understanding of the phenomena under discussion. In the second part of the research, the aim was to investigate the current state of the underlying factors behind successful operative level performance measurement in practice. To achieve an overall view, all employees of the organisations were asked to fill in the questionnaire. This enabled a statistical comparison of the perceptions of the different personnel groups. In the third part of the research, the factors that facilitate and improve the operative level performance measurement and the utilisation of these factors were examined. Interviews were seen to be a suitable method when seeking a deep understanding about the phenomena under investigation. The representatives of the management with an active role in the development of operative level performance measurement were included in the interviews. They were also seen as possible users of the framework.

4.3.3 Reliability

In regard to the reliability of the research, the objective is to be sure that if a later investigator followed the same procedures as described by an earlier investigator and conducted the same case study or some other type of study all over again, the later investigator should arrive at the same findings and conclusions (Yin, 2003; see also
Good reliability means that random error should be avoided. This is challenging especially in qualitative research, in which the number of cases and interviews is usually limited for practical reasons. Furthermore, qualitative research, for example interviews, usually includes individual interpretations from both the respondents and the researcher. When applying open-ended questions, multiple answers are often reported. The respondents may give one or more answers, and the combination of answers may vary across the respondents (Ghauri and Grønhaug, 2002). Thus, the reliability of coding is important in the evaluation of the reliability of the research. In order to examine to what extent this is the case, two (or more) individuals should do the coding of the same data independently. The degree of agreement between the coders is a measure of reliability in coding (Ghauri and Grønhaug, 2002).

In the first part of the study, 24 interviews were conducted in eight organisations. The research questions were open-ended and semi-structured. The analysis and coding of the data were carried out from the basis of selected factors and themes. The analysis and coding of the interviews were conducted by two researchers independently, after which a common view was discussed. This procedure was followed to ascertain the reliability of the analysis. In the last part of the study, nine interviews were carried out in eight organisations. The interviews focused around the theme of successful operative level performance measurement, and open-ended questions were asked. Also in this part of the study, the analysis and coding of the interviews were conducted by two researchers independently. Although the research procedure and the questions differed slightly from the first part of the study, these new findings strengthened and specified the earlier ones. For the reasons mentioned above, the reliability of the findings of the interviews is on an adequate level. In the second part of the study, quantitative data was gathered from eight manufacturing companies. The total number of responses was 210, and the response rate was 69 %, which can be seen to be on an adequate level. Although the data was collected only from the eight companies, the whole personnel of the companies were asked to fill in the questionnaire. This provides an overall view of the personnel of the companies and will thus enhance the
reliability of the results. The data were analysed with SPSS software. The results are based on statistical methods and can therefore be considered as objective.

4.3.4 Generalisability

According to Yin (2003), a fatal flaw in doing case studies is to use statistical generalisation as the method of generalising the results of the case study. He presents that cases are not sampling units, and continues that individual case studies are to be selected as a laboratory investigator selects the topic of a new experiment. Maxwell (1996) divides the generalisability in qualitative research to internal and external, where internal generalisability refers to the generalisability of a conclusion within the setting or group studied, whereas external generalisability refers to its generalisability beyond that setting or group. According to Lukka and Kasanen (1995), the rhetoric of contextual generalisation provides a way to move from isolated observations to results of a more general status. Therefore the researcher has to understand and communicate the real business context and uncover deeper general structural relationships.

The results of the current research are applicable in situations where organisations have enabled performance measurement at the operative levels, that is team and individual levels, of organisations. The six factors behind successful operative level performance measurement seem to have a positive effect on performance measurement and the performance of employees and operations both in small, medium-sized and large organisations, as well as in public and private sector organisations. Many studies (e.g. Rantanen et al., 2007a, 2007b) have reported problems, like employees’ resistance to measurement and lack of common sense of the objective of the measurement, in public sector performance measurement in comparison to the private sector. However, the factors that facilitate operative level performance measurement are similar both in the private and public sector, which indicates that the needs of the individuals are very much the same, no matter where they work. The generalisation of the findings regarding large organisations should be done cautiously. In large companies it is not always possible to take into account
the detailed viewpoint of the whole personnel concerning different issues around performance measurement. Also the use of face-to-face methods in the communication of measurement information is not always possible in large organisations. The generalisation of the findings concerning other countries than Finland should also be done cautiously. For example, the leadership and management culture may differ considerably in different countries and therefore limit the applicability of the findings.

4.4 Suggestions for further research

The literature highlights that one of the main issues in making the employees interested in putting the strategy into action is the implementation of personal and team level targets. However, the measurement itself is not enough. The measurement should provide a motivational influence that enables the direction of the actions towards a high performance and the realisation of strategic targets. The current research focused on successful operative performance measurement and different features around it. However, there is still a need for further study to examine how operative level performance measurement should be carried out to ensure a higher performance and motivation of employees. Based on the process, findings and conclusions of this research, a number of issues for further research can be raised. Below, issues concerning the current study are presented first, after which more general issues around performance measurement will follow.

First, the framework for successful operative level performance measurement needs to be tested in practice. A longitudinal study in a few organisations could be an appropriate approach. The study could be carried out by examining the current state of the factors that facilitate and improve operative level performance measurement, after which the development actions would follow. When the development actions have been conducted, the state of the factors should be improved and the performance of teams and individuals should be on a higher level. Second, it is essential and interesting to study what kinds of tools are suitable for analysing and evaluating the factors behind successful operative level
performance measurement. For that purpose, new and innovative tools can be studied and constructed. One possibility could be a structured questionnaire that could cover the whole personnel of the organisation or department. Third, the reliability and priority of the factors that facilitate and improve operative level performance measurement can be tested and improved. For example, a survey study concerning the factors of successful operative level performance measurement can be conducted. Fourth, an interesting research issue is to examine how the framework can be utilised in the design and implementation phases of a performance measurement system, and how it is related to the existing design and implementation processes. A comparative case study could be an appropriate method to examine whether the framework can facilitate the design and implementation of the performance measurement system.

In this research the positive impacts of performance measurement on management, leadership and the quality of working life were studied. However, there is still a need for further evidence as regards the positive and negative impacts of performance measurement on the different areas of business performance and financial performance. Also the factors that facilitate the process of managing through measures, and further the factors that facilitate operative level performance measurement need to be investigated more thoroughly. For example, the quality of information, communication methods, rewarding criteria and their connection to the possibility of employees to participate in decision-making are interesting research topics in the performance measurement context.

As a whole, a more holistic approach concerning operative level performance measurement research is needed. It can be stated that although organisations have adopted performance measurement at the team and individual levels and the employees use performance measurement for a variety of purposes, the role of these issues as research topics have not been emphasised enough. It can never be stressed too much that it is not worth measuring and rewarding the performance of individuals and teams, if they decrease the motivation instead of increasing it. This makes the issue of operative level performance measurement as an essential research subject.
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PAPER I

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Performance measurement impacts on management and leadership: Perspectives of management and employees

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Abstract

The study focuses on the impacts of performance measurement (PM) on management and leadership—a research area that has not received much attention in the literature. The empirical part of the study is based on 24 interviews from eight case organizations applying the Balanced Scorecard (BSC). Representatives of both management and employees were interviewed in each case organization. The study concludes that performance measurement can only support, not replace managers in leading people. The study shows that when operating with a performance measurement system (PMS), the increased interactivity between the management and the employees leads to higher performance.

Keywords: Performance measurement; Management; Leadership; Balanced Scorecard; Impact

1. Introduction

One of the main purposes of performance measurement (PM) is to deliver reliable information to support decision-making. In the field of performance measurement, mainly the strategic purposes have been under focus. Usually, strategic performance measurement refers to the monitoring of companies’ long-range plans and success. However, quite often companies have applied PM on lower levels of organization, such as departments, units, teams, and even individuals. The measures are often operative and close to the employees. In this case, PM has behaviorist impacts as well.

A system measuring human behavior will eventually change the behavior—often positively (Neely et al., 1997). It is most important for the employees to understand why something is or is not measured. Furthermore, the employees ought to know how personal or team objectives are related to the objectives and goals of the whole company. When measuring peoples’ activities, the role of leadership is emphasized. For that reason, it is important and relevant to explore performance measurement from the different aspects of leadership, in addition to the strategic perspective.

When operative-level decisions are based on information aggregated by the performance measurement system (PMS), the system may have effects on leadership and furthermore on the management. Martinez (2005) suggests that PMSs focus the employees’ attention on issues that are important to the company, by linking key objectives...
to the employees’ jobs and continuous reviews. In this case, the motivation and commitment of people as well as communication between the management and the employees should be highlighted. These are also essential elements of leadership. Hence, it is possible to find a clear connection between performance measurement and leadership.

The aim of this article is to contribute to the research area of performance measurement by reporting a study of eight cases concerning the impacts of performance measurement on management and leadership. In the earlier literature of performance measurement, the focus has been on the development of a measurement system and the measures (Bititci et al., 1997; Kaplan and Norton, 1996; Neely et al., 2000), the implementation phase (Bourne et al., 2003; Goocherham, 2001; Letza, 1996), or promoting systems and platforms (Kaplan and Norton, 1992; Lynch and Cross, 1995; Mettiänen et al., 2004; Neely and Adams, 2001; Tenhunen et al., 2003). However, the impacts of operative-level performance measurement have not received much attention, and the research findings have been contradictory as regards the impact on business performance (Bourne et al., 2005). In Finland, Lönnqvist (2002) has touched the issue when studying the use of performance measurement from the perspectives of management and shop stewards. Rautajoki (1995) has studied the management–employee juxtaposition in the field of productivity measurement. These studies will be discussed below.

The study reported here is a qualitative and explorative case study of eight Finnish organizations operating with the Balanced Scorecard (BSC). The empirical data have been gathered by interviewing the management and the employees of the case organizations. The aim of the study is to find answers to the following questions:

1. What impacts does performance measurement have on the leadership?
2. What impacts does performance measurement have on the management?
3. How do the management’s and employees’ perceptions differ from each other?

The study brings out the impact of performance measurement by focusing on two aspects: Its impact on management and leadership. The purpose is to highlight the fact that the management and the employees may see performance measurement from different perspectives, which should be considered when designing, implementing and using a PMS.

2. Literature review

2.1. Leadership and management

Stogdill (1950) defines the term leadership as a process or action that affects the actions of an organized group when it is heading for goal setting and goals. According to Ruth (1996), the main qualities of leadership are abilities for long-term strategic thinking, communication skills, integrity and ambition. In popular language, leadership usually refers to motivating and committing people—in short, leading people. Westley and Mintzberg (1989) discuss the term visionary leadership in their article and define it as a process, as described in Fig. 1.

As shown in Fig. 1, performance measurement could be seen as a way to communicate the company’s vision to the whole organization (e.g. Kaplan and Norton, 1996). In this perspective, PMSs are related to the leading process of Westley and Mintzberg, especially when: (1) we consider a strategic PMS, (2) one of the measurement objectives is to clarify the company’s vision and its

Fig. 1. Visionary leadership as a process. Revised from Westley and Mintzberg (1989).
implications to the whole organization, and (3) the measurement system and its results are open to the whole personnel.

The term management can be defined functionally as the action in measuring a quantity on a regular basis and adjusting an initial plan and the actions taken to reach one’s intended goal (Wor-dQ). Management and leadership describe different sides of the same coin, but it is neither necessary nor possible to draw an exact line between them.

2.2. Impacts of PM on leadership and management

When applying a PMS to the operative level, it can be assumed that the new system has some influence on leadership. On the other hand, it can be stated that the leadership style will affect the implementation of the PMS. Bititci et al. (2004) conclude that organizational culture, management styles and performance measurement are related to each other; companies need an organizational culture that focuses on continuous improvement and strategic performance measurement. They also state that a successfully implemented and used PMS will lead to a more participative and consultative management style and may lead to significant performance improvements. Hence, the PMS is not only about what is measured but also how it is measured.

According to Bourne et al. (2002), in the implementation phase corporate culture has an impact on performance measurement. They claim that a paternalistic culture, not punishing for errors and encouraging conversation and analysis, could lead to successful implementation of a PMS. However, Lönnqvist (2002) states that corporate culture or attitudinal matters do not complicate the measurement. In the present study, we examine whether PM has had impacts on leadership style and what are the key elements of successful implementation.

The study of Martinez (2005) reveals that PMSs have a positive effect on, for instance, focusing people’s attention on what is important to the company, aligning operational performance with strategic objectives, improving people’s satisfaction and aligning people’s behaviour towards continuous improvement. Dumond (1994) states that the PMS is most important in guiding an individual’s performance and can have even a greater effect when the right types of interaction and information are provided to support that PMS. The PMS affects not only an individual’s decisions, but also the comfort level about the environment and his/her own performance.

Bourne et al. (2005) have examined the differences of the use of a PMS in high-performing business units and average-performing business units in the same company. The study reveals, e.g., that in the high-performing business units (in comparison to the average-performing business units)

- the use of measures is more sophisticated,
- the managers discuss their model of how the business units operate and explain how aspects of operation, people and performance interact,
- the managers use the PM information interactively and communicate about performance intensively, both in formal meetings and “at every opportunity”,
- the managers have multiple source of data from different factors in taking action, and
- PM is not the main source of control.

The study of Evans (2004) reveals that the maturity of the PMSs, better approaches to analyze performance results and sophisticated statistical techniques correlate with a higher level of performance. It is also important to turn the data provided from PMS into understandable and useful information (see e.g. Ittner and Larcker, 2003). So, it can be assumed that exact information, interactivity, and communication both in formal meetings and “at every opportunity” are key issues to higher performance, in addition to a consultative management style. In the present study, we examine whether communication between management and employees has become better with the more useful information, whether performance measurement has brought along some new leadership routines for analyzing the measurement results, and whether PM has improved information diffusion through the different organizational levels.

The BSC was introduced to support managers in management accounting, decision-making and management as a whole. It rose to the challenge of the limitations of traditional accounting measures (Kaplan and Norton, 1992, 1996). Its basic idea is to translate strategy into measures, and into action. The BSC included originally four perspectives: Financial, customer, internal, and learning and growth perspectives. The architecture of BSC works as follows: First, there is the financial perspective; it measures the ultimate results of a business. This
may consist of measures of, e.g. revenue growth, profitability, return on investment (ROI), and economic value-added (EVA).

In addition to financial objectives, a company needs customers who generate, for instance, revenue growth. The customer perspective focuses on customer needs, and its measures are typically customer satisfaction, retention, and market share. Actually, financial and customer objectives are desired outcomes, but they do not explicate how to achieve them. A company must define processes in which it must excel to satisfy the customer. The internal perspective defines the activities needed to create the desired customer and financial outcomes. The internal perspective focuses, e.g. on quality, response time, costs, and new product introduction. The fourth perspective, learning and growth, is directed to the future, on how to keep the internal key processes running. The learning and growth perspective focuses on the people and infrastructure of a company. Generic measures are, e.g. employee satisfaction, information system availability, and skills development.

Ittner et al. (2003) have studied the relation between financial performance and performance measurement alignment techniques, e.g. the BSC. They found that the BSC processes are associated with higher measurement system satisfaction, but exhibit almost no association with economic performance. Davis and Albright (2004) have studied whether the bank branches implementing BSC outperform the branches within the same banking organization on key financial measures. They found evidence of superior financial performance for branches implementing the BSC when compared to non-BSC implementing branches. There is some contradiction in research findings concerning the positive impacts of BSC on financial performance. In the present study, we examine whether the PM has had impacts on different areas of management, such as decision-making, quality of products and activities, customer needs and satisfaction, productivity and efficiency improvement, realization of targets, proactive management, finding improvement needs, and consequently on financial performance. All these factors can be seen as essential elements of the BSC framework.

2.3. Management, employees, and performance measurement

Several development and implementation process models have been presented in the performance measurement literature (Kaplan and Norton, 1996; Lynch and Cross, 1995; Olve et al., 1999; Simons, 2000; Tenhunen et al., 2002; Toivanen, 2001). Almost in every measurement system or process model, the starting point is the vision and strategies of the company. Quite often the measurement system is used also on department or team level, in which case we can talk about operative-level performance measurement. The main gaps in many of the presented process models are that they do not exploit the potential of the employees in the development phase, and they do not deeply consider how the employees could be committed to the use of the system. These two issues are critical when companies search for maximal positive impacts of PMs. To get more out of an operative-level PM, companies have to consider the employee perspective more in depth.

Lönnqvist (2002) has studied performance measurement from the perspective of employees, utilizing the wisdom of shop stewards. The primary disagreement between the management and the shop stewards was whether or not the management should use performance measurement to control the employees. The management’s opinion was that controlling is not an essential issue in performance measurement; the shop stewards felt that controlling the employees is one of the main targets in the measurement. Both parties agreed that non-financial measurement has increased its share and the employees have a bigger role in this measurement than before.

According to a study of Rautajoki (1995), the employees felt that they could not contribute enough to the selection of productivity measures or target levels. The management and the employees also had different opinions about the openness of the measurement system. Rautajoki states that 29% of the shop stewards and 47% of the production managers saw the measurement system completely open to the whole personnel. A major problem for the employees was the impossibility to take part in the development of the measurement system. Both the managers and the employees shared the view about the necessity of productivity training. The study of Rautajoki (1995) brings out the fact that different groups of personnel may have quite different opinions on the measurement.

To conclude the literature review, it can be suggested that the management should consider the employee perspective more during the development, implementation, and use of performance
measurement. It is well justified to study the perception of managers and employees of the actual impacts of performance measurement and how these perceptions differ from each other.

3. Research methodology

Martinez et al. (2004) present some limitations of early research on the impact of PMSs, for example, as follows:

(i) Most studies come from surveys with no control on important variables, such as whether the companies have a PMS in place in reality.
(ii) Survey studies do not provide in-depth understanding on the impact of the PMS. Some of them conclude that the use of the PMS increases business performance, but rarely explain why and how.
(iii) Very few findings focus on the operational impact of the PMS.
(iv) Very little research has been reported from case studies.

In an environment described by Martinez et al. (2004), there is a place for a case study focusing on the impacts of PM on operative-level actions. To be able to conduct the case study, there was a need to have access to organizations that operate with a BSC at the operational level. Before the case study, a preliminary survey was carried out by e-mail in Spring 2004. The survey reached 591 organizations, 96 of which sent a response (response rate 16%). In the survey, it was asked, e.g. whether the company used a PMS and if not, the reasons why not. Twenty-nine of the answering organizations had the BSC in use. After contacting the companies applying a BSC, eight of them were interested in participating in the case study. In each of the eight organizations, one representative of the business administration and two representatives of the employees were interviewed face to face during the summer 2004.

In total, 24 interviews were carried out in the offices of the organizations, and all the interviews were recorded. The total interview time was 21 h, from 30 to 71 min per interviewee. Detailed information of the case organizations and the interviewees is presented in Table 1.

The interviewed participants of the management were chosen as near as possible to the top management. The representatives of the employees were chosen by the contact persons of case organizations and the representatives were both blue collar and white collar workers. Nowadays, there are no traditional blue collar workers in many technology companies, as the employees are mainly highly educated specialists. When the representatives are selected by the case organization, there is always a concern about the criteria by which the representatives have been chosen. However, two employee representatives of the same case company allow comparison between the representatives and improve the reliability of the analysis and the results. Because there was only one representative of the management from each case organization, we asked for the manager’s perception and opinion that the whole management of the organization might hold. In our study, the management representatives were on a sufficiently high level in their organization that it can be assumed that they had the overall managerial view on the PM. In addition, all the representatives of the management were included in the management group of their organization. The analysis of the interviews was conducted by two researchers independently, after which a common view was discussed. This procedure was followed to ascertain the reliability of the analysis.

The interviews were semi-structured, using the themes and factors listed below as the basis for the data collection. The impacts of PM on the management and leadership were discussed fairly informally during the interviews. To outline the relevant themes, raised from the literature, for the interviews of the present study, the impacts of PM on management were examined through the following factors:

- decision-making
- quality of products and activities
- customer needs and satisfaction
- productivity and efficiency improvement
- realization of strategic and operative targets
- proactive management
- finding improvement needs.

The impact of PM on financial performance was asked only from the management representatives, because the employees may not possess long-term information about the financial performance.

The impacts of PM on leadership were examined through the following factors:

- leadership style
- presentation of contradictory issues
<table>
<thead>
<tr>
<th>Case organization</th>
<th>Electricity supply</th>
<th>Manufacture of food products</th>
<th>Engineering activities and related technical consultancy</th>
<th>Manufacture of pharmaceuticals</th>
<th>Manufacture of basic metals</th>
<th>Telecommunications</th>
<th>Retail trade</th>
<th>Secondary education</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of employees</td>
<td>140</td>
<td>50</td>
<td>40</td>
<td>80</td>
<td>670</td>
<td>450</td>
<td>65</td>
<td>300</td>
</tr>
<tr>
<td>Turnover</td>
<td>€14 million</td>
<td>€4 million</td>
<td>€4 million</td>
<td>€7 million</td>
<td>€120 million</td>
<td>65 million</td>
<td>€9 million</td>
<td>€20 million</td>
</tr>
<tr>
<td>Representative</td>
<td>CEO</td>
<td>Financial director</td>
<td>Development director</td>
<td>CEO</td>
<td>Development director</td>
<td>Development manager</td>
<td>Division director</td>
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<td>Management</td>
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<tr>
<td>Employee</td>
<td>Production foreman</td>
<td>Purchasing manager</td>
<td>Competence coordinator</td>
<td>Information system manager</td>
<td>Development engineer</td>
<td>Group foreman</td>
<td>Information secretary</td>
<td>Department manager</td>
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<td></td>
<td>Warehouse foreman</td>
<td>Salesperson</td>
<td>Expertise centre manager</td>
<td>Research and development laboratory</td>
<td>Furnace-man</td>
<td>Mechanic</td>
<td>Salesperson</td>
<td>Education manager</td>
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<tr>
<td>Performance measure system</td>
<td>BSC</td>
<td>BSC</td>
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<td>BSC</td>
<td>BSC</td>
<td>BSC</td>
</tr>
<tr>
<td>Years in use</td>
<td>4</td>
<td>1</td>
<td>6</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>
leadership routines
information diffusion

We also examined the implementation process of the PMS through participating in designing, informing, and education about the system.

With the selected approach, both management and employee perceptions were gathered. The qualitative research approach is appropriate when the study focuses on the perceptions and experiences of persons. Furthermore, the study is founded on hermeneutics to gain deeper understanding on the phenomenon under discussion. The ontological and epistemological approach of the study is subjectivist, which is quite natural when applying semi-structured open-ended interviews. It is extremely difficult to find valid, objective and quantitative measures to study, e.g. how the leadership style has changed in the company after the adoption of the PMS. In practice, the research of such abstract concepts often has to rely on subjective perceptions of humans, especially in the business context. Furthermore, with an objectivistic, quantitative approach, it is not possible to gain such deep knowledge of the research subject as a subjectivist approach enables.

In the study, each company represents a case. According to Eisenhardt (1989), cases may be chosen to replicate previous cases or extend emergent theory, or they may be chosen to fill theoretical categories and provide examples or polar types (see e.g. Yin, 2003). The cases in this study were not selected to represent polar types. Primarily, the two main criteria were that the companies measured performance with the BSC, and they had applied the measurement to the operational level. These conditions could be seen as the categories Eisenhardt (1989) mentions. The results are applicable to companies that are measuring their performance or companies that are planning to launch a performance measurement development project.

The main underlying assumption of the study is described in Fig. 2, where the management and employees view performance measurement from their own perspectives. Previous studies (Lönnqvist, 2002; Rautajoki, 1995) suggest that the management and the employees perceive performance measurement and its purposes differently. One of the objectives of this study was to discover the issues on which management and employees have congruent opinions and on which the opinions differ from each other. For the measurement to be successful and, furthermore, to gain a positive impact, it is assumed that the management and the employees ought to have a common view on PM.

4. Findings

4.1. Implementation process

The planning and implementation of the PMS seem to have a rather remarkable role in making the PMS effective. In the case companies, the planning had been done mainly by the management, starting with strategic measures at the company level. After defining the measures at the unit and team level, the role of the employees increases. This is a rather normal and understandable way to start the planning. The management’s, as well as employees’, opinion was that the employees should be somehow tied also to strategic planning.

One of the most important phases in the implementation process was informing the whole personnel about the new measurement system. The employees of the case companies were not satisfied with the management information concerning the measurement system.

Simply answered, poorly ... in the implementation phase it was obviously a surprise to many employees. It seems that the existence of the system was not internalized ... The marketing of the system was done in a lousy manner.— Expertise centre manager, Case C, Employee representative

In the case companies poor and delayed timing of information distribution and lack of measurement training caused some problems for employee commitment.

Due to the fear of something new, and lack of understanding in the area of measurement, informing about the system and the measurement education should be started much earlier—before measuring becomes part of everyday routines. The employees of the case companies felt that training, which clarifies the link between personal and company-level targets, is useful. The understanding on the entire measurement system was seen to enhance commitment and motivation.

I don’t know about the training, at least I haven’t been offered any...we have passwords for the system, but it would be more meaningful if you
knew better how it works and what the structure [of the system] is. —Mechanic, Case F, Employee representative

The management of the companies seemed to have a slightly too positive view of their employees' capabilities to adopt and understand new management systems. The role of training should be emphasized in the companies where the level of employees' education is at a lower level. The employees' representatives and the management of the case companies had a shared opinion that the employees should have a bigger role in the area of PM, at least what comes to the employees' individual metrics and goals.

4.2. Impacts on management

The information gathered from the PMS and the analysis of the information has been utilized quite well in the case companies' decision-making. Along with the performance measurement, the companies have been able to allocate resources like money and workforce to the right places.

For example, we do many different tasks inside the company before the product is finished for the customer. If we've measured that the defining phase of the product has taken too long time, it has been easier to add workforce to that phase. So, the measurement has helped resource allocation. —Development manager, Case F, Management representative

This has been possible because the companies have found the right targets for development, for example, in production and employees' skills and capabilities. Hence, the quality of activities and processes has improved inside the companies. It can be said that by gathering suitable information from the right targets, the decision-making will become faster and more confident. This shows that the case companies have been mainly careful and focused in the PMS definition process.
Most of the companies collected information from their customers’ needs and satisfaction on a regular basis. Both the management’s and the employees’ opinion was that without analyzing the customer information, it is difficult to succeed in increasing competition in the market. The collection of information on products and reclamations was considered very important as well, because of its straight link to customer satisfaction and needs. Thus, in the case companies PM had a clear impact on customer satisfaction and product quality both from the management’s and the employees’ perspective.

The companies utilized well the measuring information collected from the metrics of productivity and efficiency of production and other activities. The problems in production and employees’ personal skills, as well as prioritization of different activities were some examples that the companies had solved with the measuring information.

For example, we’ve repaired the product defects much faster, after we started to measure it. Only the fact that we’ve adopted the metric has improved the confirmation of finished jobs ... so, the invoicing has become quicker, which affects the financial performance. —Development manager, Case F, Management representative

The management’s opinion was that the impact of PM on the financial performance had been realized mainly by improving productivity and efficiency. The improvements were done mainly by organizing the resources in a new way, and the role of measurement information was significant in this process.

In most of the case companies the management and the employees saw that PM had helped the companies to carry on their strategies and achieve their strategic goals better than before.

This decade has actually gone so well financially and it seems that the measurement system has had a certain impact. The goals have been mainly achieved in all these years the measurement system has been in use. So, it’s hardly a coincidence. —CEO, Case A, Management representative

The situation was very similar with the operative goals, indicating that the operative targets were in line with the strategic goals. This means that the case companies have succeeded well with their measuring systems as a whole, because the idea of PM is that the operative targets should support the strategic targets.

According to the management of the companies, the measurement has brought out future aspects of the company and the business. The focus is no longer on the quantitative data of history, as in the financial statement. This comes up, for example, when planning the education of employees concerning their skills, capabilities and know-how. The management tries to find out what kind of skills the employees will need in the future, not only today. The employees did not find so much proactive elements in performance measurement. The reason may be in the nature of the work. The management operates mainly with strategic issues, whereas the employees work in everyday tasks with short-term targets.

When looking at the management effects that the performance measurement has highlighted, it can be said that the commitment of the whole organization has to be on a very high level. The main reason for that can be the bonus systems that were linked to the measures except for one of the case companies. In this company, the effects of performance measurement on the management were seen as much more slight from both management’s and employees’ perspective, compared to the other companies.

4.3. Impacts on leadership

The management’s and the employees’ views on the impacts of performance measurement on leadership style differed from each other quite a lot. The management of the case companies felt that performance measurement had brought a new aspect to the leadership. Along with the measurement, the conversation between the management and employees had improved. Processing different issues of work had become easier with explicit goals.

This has brought more edge and exactness to the conversation when we talk about facts. How comfortable the employees find it, is a different issue, because it’s always easier to talk about issues based on imagination and visions. —CEO, Case H, Management representative

According to the employees, the contents of the conversations had changed. However, they felt that the way of presenting different issues of work
depends much more on the organizational culture and individual characteristics of the manager than on performance measurement. The management and the employees agreed that the measurement information had brought certain frames to the contents of personnel development discussions. Similarly, difficult issues were easier to handle with the exact information.

For some managers it’s easier to work with this kind of system and for some others it’s not. Some are naturally talented leaders. Anyway it’s better if you have facts in the background of the discussion. For example, it’s good for the insecure employees who easily think that they’re going to be blamed for something. —Salesperson, Case G, Employee representative

The study shows that the performance measurement has brought new routines to the case companies. There are many different meetings on different organizational levels, where the participants analyze and present the measurement information and try to solve detected problems. The companies have also developed instructions related to the situations where some metrics give an impulse. The companies have established, for example, analysis groups and development groups. The employees do not see the new routines as clearly as the management. The reason may be that before the measurement system has been extended to the unit and team level, the new routines do not meet all the groups of employees.

The management’s and the employees’ opinions differed quite a lot considering the diffusion of measurement information. The common opinion was that there is much more information available than before PM adoption. The management saw that information is shared in many forms in different channels, e.g. department, personnel and team meetings, newsletters, notice boards, and the intranet. The common opinion of the management was that the diffusion of information through the organization has been rather successful. The employees’ opinion was that the information is not always understandable, it is separated to different systems, and joint measurement meetings are organized too seldom. They also thought that the responsibility of gaining information depends too much on the employees’ own activity.

I think that the information sharing has been too cliquish and poor so far. Maybe there has been some sort of practical training period with the measurement system and that’s why the management has been too insecure and restrained concerning measurement information distribution. —Expertise centre manager, Case C, Employee representative

It could always be done better. Of course you can find the information from the system if you just go to dig around, but you’ll have to be active... It could also be clearer if the corporate level and the unit level information was found in the same place, not scattered like now. —Warehouse foreman, Case A, Employee representative

The persons whose understanding of PM is on a low level are often persons with poor computer skills, making the use of the intranet difficult. In some case companies, the employees did not know what metrics and targets the other teams or units had. This was felt embarrassing in the situations where the measurement was related to the bonus system. The employees saw that the information should be more understandable, the reporting system should be easy to use and the discussions between management and employees should be increased.

As a summary of the performance measurement impacts on leadership, it could be argued that the impacts are felt much more strongly from the point of view of the management than that of the employees. The employees saw that the changes to the leadership came mainly through the organizational culture and managers’ individual characteristics. The perceptions of the employees and managers on the impacts of PM on the management and leadership are presented in a frequency table (Table 2).

The scale used in Table 2 is based on the view and analysis of two researchers. On the basis of the factors used in the interviews, the analysed data were categorized to provide a more precise view of the impacts of PM.

5. Discussion and conclusions

The study reveals some evidence about the positive impacts of performance measurement on leadership. The greater amount of more specific and exploitable information provides a more solid base for management–employee communication. Although the management and the employees did not share the opinion about the success of the PM
information diffusion, they were unanimous concerning the fact that discussions, information diffusion and interactivity between the management and the employees should be emphasized at every opportunity, when PM is launched to the operative level of the company, to achieve higher performance.

In contrast, the perception of the employees and the management of the impacts of PM on leadership style differed considerably. The employees did not see that PM could provide new elements to the leadership style, as it was seen to depend much more on the organizational culture and the individual characteristics of the managers. Hence, it can be concluded, as a limitation to using performance measurement, that PM can only support, not replace the managers in leading people. PM will not solve or fix problems of organizational culture or in leading people.

The findings of the present study are somewhat contradictory to the study of Bititci et al. (2004), as they conclude that a successfully implemented and used PMS will lead to a more participative and consultative management style. In our study, the employees perceived that even if the PMS is used successfully, it does not guarantee improvement in leadership style. Apparently, the use of a PMS does not obliterate the need to consider the social and cultural aspects of leadership. The findings of this study are in line with the study of Bourne et al. (2005). Their research revealed the importance of interactive use of a PMS to improve the performance of the company.

Our study suggests that PM has a range of impacts on the different areas of management. Under suitable circumstances, the impacts are positive. It can be stated that the maturity of the PMS, the measurement linkage to the reward system, and the educational level of the employees are some key factors behind the positive impacts. The findings reveal that the maturity of the PMS enables the transformation of PM data to usable and exploitable information. By using this information, it was possible to allocate the resources to the right activities, which led to higher financial performance. Case company B had used the BSC for 1 year and they did not yet have a clear picture of the range of measures or analyzing the results. Case B was also the only case organization that operated without a linkage between the measurement and the reward system. So, these things may explain why in Case B both the management and the employees perceived the impacts of PM on the management and leadership much less in comparison to the other case companies. Case H had also used the BSC for 1 year and the impacts of PM were perceived much stronger in comparison to Case B. We suggest that the difference could be explained by the clearly higher level of education of the employees in Case H. The findings are quite well in line

<table>
<thead>
<tr>
<th>Management representative (n = 8)</th>
<th>Employee representative (n = 16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management</td>
<td></td>
</tr>
<tr>
<td>Decision-making</td>
<td>No impact</td>
</tr>
<tr>
<td>Financial performance</td>
<td>0</td>
</tr>
<tr>
<td>Quality (products and activities)</td>
<td>0</td>
</tr>
<tr>
<td>Customer needs and satisfaction</td>
<td>1</td>
</tr>
<tr>
<td>Productivity and efficiency improvement</td>
<td>1</td>
</tr>
<tr>
<td>Realization of strategic and operative targets</td>
<td>0</td>
</tr>
<tr>
<td>Proactive management</td>
<td>2</td>
</tr>
<tr>
<td>Finding improvement needs</td>
<td>0</td>
</tr>
<tr>
<td>Leadership</td>
<td></td>
</tr>
<tr>
<td>Leadership style</td>
<td>1</td>
</tr>
<tr>
<td>Presenting contradictory issues</td>
<td>0</td>
</tr>
<tr>
<td>Leadership routine</td>
<td>1</td>
</tr>
<tr>
<td>Information diffusion</td>
<td>0</td>
</tr>
</tbody>
</table>
with the study of Evans (2004). He found that there is a correlation between the maturity of the PMS and a higher level of performance.

Our findings did not support the importance of leadership style and organizational culture in the implementation process of the PMS. Instead, we suggest that the most important issues when launching the PMS are early information and powerful marketing of the new system. In addition, it is especially important for the management to clarify to the whole personnel why and to what purposes the new system is intended to be used. Our findings differ little from the findings of Bourne et al. (2002), as they present that a paternalistic culture, not punishing for errors and encouraging conversation and analysis, could lead to successful implementation of a PMS.

As a limitation of the study, it can be stated that the empirical evidence is based only on 24 interviews from eight organizations. Generalization of our findings to concern all organizations applying the BSC should be done cautiously. The findings need strengthening, especially as regards the relation of leadership to the implementation and use of the PMS, as the research findings are to some extent divergent in comparison to earlier studies. Despite the limitations, we believe that this study and its findings are relevant for the academics and practitioners in the field of PM, because the impact of PM on management and leadership from the perspective of management and employees is an innovative topic, but has not been studied extensively. For further research, the relation of leadership to the operational level performance measurement is an important research area and it needs to be examined more deeply and widely from different perspectives. Furthermore, it would be interesting to extend our sample to enable comparison between different branches, and also between private and public organizations.

References


PAPER II

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The impacts of performance measurement on the quality of working life

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Abstract: The design, implementation and use of Performance Measurement (PM) systems have been studied extensively. However, the literature shows little evidence on what kind of impacts PM practises have had on, for example, the performance of the operative level of an organisation. This paper focuses on the impacts PM has had on the Quality of the Working Life (QWL) of employees, for example, their work motivation, learning opportunities, job satisfaction, participation in decision making and reward system. Furthermore, this paper presents how the perceptions of management and employees differ from each other and what the key elements in the implementation process are as regards the accomplishment of positive impacts of PM on the quality of working life. This paper concludes with the underlying factors behind the positive impacts of PM on the quality of working life.

Keywords: performance management; performance measurement: PM; quality of working life; management; leadership.

1 Introduction

According to current literature, the main purpose of Performance Measurement (PM) is to deliver reliable information to support decision making. Furthermore, strategic purposes (e.g. Kaplan and Norton, 1992) as well as stakeholder satisfaction (e.g. Neely and Adams, 2001) have been under focus. In addition to strategic-level measurement, many companies have applied PM in the lower levels of organisation. When considering PM at the department, unit, team or even individual level, we usually refer to operative-level PM. The literature shows little evidence on how employees perceive the measurement system and its impacts. To achieve positive impacts, it is very important for the employees to understand why something is measured. When operative-level decisions are based on the information aggregated by a PM system, it may have effects on the Quality of the Working Life (QWL) of the employees. To gain positive impacts on the quality of working life, the role of management and leadership needs to be emphasised.

This paper presents a case study of eight organisations. The research approach is qualitative and the empirical evidence is based on 24 semi-structured interviews. One representative of the management and two representatives of the employees were interviewed in each case organisation. The aim of this study was to explore what kind of impacts PM has had on the QWL of the employees. The concept ‘quality of working life’ has been combined from literature findings and includes eight aspects:

1 work motivation
2 learning opportunities
The preliminary assumption of the study was that the management and the employees perceive PM differently and their opinions on the measurement may differ from each other. The study also clarifies the employees’ role in the implementation process of the PM system.

2 The connection of management and leadership to the quality of working life in the PM context

2.1 The connection of PM to the quality of working life

PM has been studied widely in recent years. The PM studies and the literature have focused on the development of a measurement system and measures (Bititci et al., 1997; Kaplan and Norton, 1996; Neely et al., 2000), implementation phase (Bourne et al., 2003; Gooderham, 2001; Letza, 1996; Olve et al., 1998; Simons, 2000; Tenhunen et al., 2002; Toivanen, 2001) and promoting systems and platforms (Kaplan and Norton, 1992; Lynch and Cross, 1995; Mettänen et al., 2004; Neely and Adams, 2001; Tenhunen et al., 2003). However, the earlier studies show little evidence of the actual impacts of PM.

The concept of the quality of working life is a rather grand one and difficult to define. For example, Graber (1980) conceptualises the QWL to consist of three key components:

1. general and facet specific satisfaction with work
2. the nature of working conditions, especially rewards, job design, influence, interpersonal relations, physical environment and job facilitation and
3. the level of employee performance with regard to accomplishment of organisational objectives.

Packard (1981) divides QWL into seven categories: the work itself, working condition, climate, pay, potential for growth and development, supervision and the agency in general. In the survey of Gilgeous (1998), manufacturing managers were asked about their perceptions of the quality of their working life. Gilgeous’ questions centred on how motivated, rewarded, valued, empowered, career developed, satisfied with their job and company the managers considered themselves to be.

To outline relevant themes for the interviews, the concept of QWL was combined from the literature to include eight aspects:

1. work motivation
2. learning opportunities
3. job satisfaction
The impacts of PM on the quality of working life

When designing and implementing a PM system there are always some impacts on the management, leadership and further on the QWL of the employees. Hence, the successful implementation of a PM system should bring out positive impacts. If the PM system can support the management of the company in leadership and communication, it can enhance for example the employees’ commitment, motivation and possibilities to affect the decision making. The underlying research assumption of the study is described in Figure 1, where the management and the employees view PM from their own perspectives.

**Figure 1** The impacts of PM on the QWL of the employees from the viewpoint of the management and the employees

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### 2.2 PM as a part of management and leadership

PM is quite often viewed from the perspective of the management. The management sets the targets and applies PM to monitor whether these targets are met. PM can be considered from the leadership perspective as well. Ruth (1996) states that the main qualities of leadership are abilities for long-term strategic thinking, communication skills, integrity and ambition. In the popular language leadership usually refers to motivating
and committing people – in a word, leading people. According to Juuti and Vuorela (2002), a debating leader, taking into account the employees’ opinions, will support employee welfare. The researchers and practitioners in the field of PM should also notice the leadership aspects of target setting and measurement.

When building up measurement systems, companies have to consider which organisational level the measurement is applied on and which organisation level sets the targets. According to Sloan (1964), the management has to decide which decisions are most efficiently done centralised and which could be moved to the unit level. The centralisation or decentralisation of power has influences on the PM. It is quite obvious that the management sets strategic-level targets, but operative-level targets could be negotiated with the middle management or even shop floor level. An important decision is what kind of role the employees have in the target setting. It is assumed that the employees will commit themselves more on targets they have been able to comment on. The commitment of the employees enhances the possibilities to meet the targets and finally improves the financial performance of the company.

2.3 The role of employees in the PM system implementation and measurement process

Researchers and practitioners have presented a number of different kinds of process models for the implementation of PM systems. The use of a suitable process model helps the company to pay attention to essential issues. Usually these process models are based on the company’s vision and strategies or emphasise stakeholder satisfaction. However, the operative-level implications have not received much attention. It is obvious that the company’s vision and strategies are defined on the top management level. When the measurement system operates at the strategic level, the employees’ role in the development phase is minimal. When the system is operationalised at the lower levels of organisation, the employees’ opinions should be noticed. According to Dumond (1994), performance measures are established to support the achievement of goals and are provided with the intent to motivate, guide and improve an individual’s decision making. Above all, companies should not waste the employees’ potential during the design of the PM system.

The management-employee juxtaposition during the measurement process has been studied fairly slightly. According to Rautajoki (1995), employees experience that they cannot contribute enough to the selection of measures or setting target levels. The study of Rautajoki brings out differences in the issue of productivity measurement between the employees and the management. Rautajoki states that the employees’ and management’s opinion on the openness of the measurement results differ; 47% of the production managers but only 29% of the shop stewards considered the productivity information gathering, processing and reporting open to the whole personnel. The employees considered it problematic that they could not participate in the development of the productivity measurement system. The study of Rautajoki reveals a need for education in productivity, productivity measures and measurement system implementation. Committing the employees to the productivity measurement has been acknowledged in former studies: for example, McKee (2003) suggests that there has been a strong movement over the last couple of decades to involve the workforce in productivity and quality improvement programmes – on the basis that shared ‘ownership’ is much more likely to lead to better results.
2.4 Organisational culture versus PM

Bititci et al. (2004) conclude that organisational culture, management styles and PM are related to each other; companies need organisation culture that is focused continuous improvement and strategic PM. Furthermore, they argue that a successfully implemented and used PM system will lead to a more participative and consultative management style and may lead to significant performance improvements. It can be argued that PM and management style can have an impact on companies’ performance and financial outcome through the measurement system. Robson (2004) argues that measurement systems have to provide graphical, relevant, local and team level information to encourage a culture of high performance. However, it can be assumed that some changes in management, leadership and quality of working life are more related to the PM system than to the organisational culture and individual characteristics and vice versa.

3 Research approach

The study reported here is based on 24 qualitative, semi-structured interviews conducted during the summer 2004. The eight organisations that participated in the study were chosen on the basis of a preliminary survey carried out by e-mail in spring 2004. In the survey it was asked, for example, whether the company used a PM system and if not, the reasons for that. After that we contacted the organisations applying a comprehensive and multidimensional PM system. The selected eight organisations that were interested in participating in the case study had Balanced Scorecard (BSC) in use. To discover the management’s and the employees’ perceptions, one representative of the management and two representatives of the employees were interviewed face to face in each case organisation. In total 24 interviews were carried out in the offices of the organisations and all the interviews were recorded. The total interview time was 21 hr, from 30 to 71 min per interviewee. Detailed information on the case organisations and the interviewees is presented in Table 1.

The interviewed participants of the management were chosen as near as possible to the top management. The representatives of the employees were chosen by the contact persons of the case organisations, and the representatives were both blue collar and white collar workers. Nowadays there are no traditional blue collar workers in many technology companies, as the employees are mainly highly educated specialists. When the representatives are selected by the case organisation there is always a concern about the criteria by which the representatives have been chosen. However, two employee representatives of the same case company allow comparison between the representatives and improve the reliability of the analysis and the results. Because there was only one representative of the management from each case organisation, we asked for the manager’s perception and opinion that the whole management of the organisation might hold. In our study, the management representatives were on so high level in their organisation that it can be assumed that they had an overall managerial view on the PM. In addition, all the representatives of the management were included in the management group of their organisation. The analysis of the interviews was conducted by two researchers independently, after which a common view was discussed. This procedure was followed to ascertain the reliability of the analysis.
Table 1  Information on the case organisations and the interviewees

<table>
<thead>
<tr>
<th>Case</th>
<th>Industry</th>
<th>Staff Turnover (million €)</th>
<th>PM in use (years)</th>
<th>Management representative</th>
<th>Employee representative</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Electricity supply</td>
<td>140</td>
<td>14</td>
<td>4 CEO</td>
<td>Production foreman</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Warehouse foreman</td>
</tr>
<tr>
<td>B</td>
<td>Manufacture of food products</td>
<td>50</td>
<td>4</td>
<td>1 Financial director</td>
<td>Purchasing manager</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Salesperson</td>
</tr>
<tr>
<td>C</td>
<td>Engineering activities and technical consultancy</td>
<td>490</td>
<td>34</td>
<td>6 Development director</td>
<td>Expertise centre manager</td>
</tr>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Manufacture of pharmaceuticals</td>
<td>80</td>
<td>7</td>
<td>3 CEO</td>
<td>Information system manager</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>R&amp;D laboratorian</td>
</tr>
<tr>
<td>E</td>
<td>Manufacture of basic metals</td>
<td>120</td>
<td></td>
<td>5 Development director</td>
<td>Development Furnace-man engineer</td>
</tr>
<tr>
<td>F</td>
<td>Telecommunications</td>
<td>450</td>
<td>65</td>
<td>2 Development manager</td>
<td>Development Group foreman</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>G</td>
<td>Retail trade</td>
<td>65</td>
<td>9</td>
<td>4 Division director</td>
<td>Information secretary</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Salesperson</td>
</tr>
<tr>
<td>H</td>
<td>Secondary education</td>
<td>300</td>
<td>20</td>
<td>1 CEO</td>
<td>Department manager</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Education manager</td>
</tr>
</tbody>
</table>

The case organisations of this study operate in quite diverse lines of business. Seven of them are industrial companies representing, for example, metal industry, food industry, telecommunications or industrial consulting. One of the organisations offers educational services. The turnover of the case organisations ranges between 4 and 120 million € a year and they employ 50–670 people. The size of the organisations, contrary to microcompanies, does not limit the use of a PM system. All the case organisations are located in Finland and many of them are internationally directed as regards to the markets, operations and ownership. The common nominator is that the organisations measure their performance with a comprehensive measurement system.

The qualitative research approach is appropriate when the study focuses on the perceptions and experiences of people. Furthermore, the study is grounded on hermeneutics to gain a deeper understanding of the phenomenon under discussion. The ontological and epistemological approach of the study is subjectivist, which is quite natural when applying semi-structured open-ended interviews. It is extremely difficult to find valid, objective and quantitative measures to study the impacts PM has on the QWL. In practice, the research of such abstract concepts often has to rely on subjective perceptions of people, especially in the business context. Furthermore, with an objectivistic, quantitative approach it is not possible to gain such deep knowledge on the research subject as with a subjectivist approach.

The research object was not only to create a description but also to find explanatory factors underneath the perceptions of the management and the employees, by exploiting the richness of the large interview material. Each company forms a case. According to
Eisenhardt (1989), cases may be chosen to replicate previous cases or extend emergent theory or they may be chosen to fill theoretical categories and provide examples or polar types (see also Yin, 2003). The cases in this study were not selected to represent polar types. Primarily, the main criteria were that the companies measured performance in some systematic way (e.g. BSC) and they had applied the measurement to the operational level at least a few years. These conditions can be seen as the categories Eisenhardt mentions.

4 Findings of the case study

4.1 Implementation process

In the case companies the defining process of the PM system was started on strategic level, including representatives mainly from the management and administration. The role of the employees remained fairly slight and the participation was often limited to the membership of the management group. In most of the cases the commitment of the management was on a high level, which was shown in spent resources, like working hours and reliable advance of the implementation process. However, in the employees’ perspective, these facts were not the most important issues when creating a successful PM system.

The employees’ opinion was that the information on and introduction of the PM system were carried out too late and poorly. Many employees stated that informing about the new system should be started at an early stage. This way the employees’ awareness of the PM and its connection to the company’s business activities can be ensured. Although the employees’ possibilities to affect the measurement have been on the increase when launching unit and team level measures, the consciousness and understanding of the connection between the PM and business operations have remained on an inadequate level. Understanding the entire PM system was seen to be in a remarkable role in employees’ commitment and motivation. However, the companies had paid rather little attention to the measurement and business training of the employees. The management of the companies had a too positive view concerning the employees’ capability to adopt and understand new management systems.

The employees of the case companies felt that information and education clarifying the link between personal and company level targets is useful. The employees’ representatives, as well as the management of the companies shared the opinion that early timing of information distribution and measurement education may be more important than deep involvement in the designing process. These things should be gone through much earlier – before the measuring becomes a part of everyday routines. The role of education should be emphasised in companies where the employees’ basic education is at a lower level. The employees’ representatives and the management of the case companies had a shared view that the employees should have a bigger role in the area of PM, at least what comes to the employees’ individual metrics and goals. This can be put into practice by increasing the interactivity and communication between the employees and the management on all levels. Involving the employees more in the decision making was seen to be an obvious link to their work motivation.
4.2 Impacts on the quality of working life

The representatives of the management and the employees felt that the employees’ work motivation had increased along with the PM system. This was noticed especially in those companies where the teams and individuals had their own metrics and goals. Even the facts that the measures are visible and the employees know what the team-level targets are seen to have a positive effect on work motivation. According to the employees in most of the case companies, their job contents and descriptions were clarified, as well as their awareness of what the company expected them to do. In this context, it was felt extremely important that the employees were able to participate in defining their own metrics and goals. The other facts that were seen in the background of the increasing motivation were understanding the linkage between individual metrics/goals and the company’s business activities and especially the connection of the measurement system to the reward system. As a whole, the management’s and employees’ opinions about the impacts of the measurement on the employees’ motivation and the reasons for its increase were rather similar.

According to the management’s and employees’ opinions the measurement has brought along more exact possibilities and aspects to the training and learning opportunities. In the case companies the supply of training was reorganised to meet the needs that the organisations had at the moment and would have in the future. Furthermore, in some case companies the available learning opportunities were gathered to one portal, when they had been scattered in different places and systems before. The employees have been able to get involved in the decision making concerning their own learning plans and goals. In most of the cases careful and proactive planning and regular measuring have made a very positive impact on the employees’ learning opportunities. Furthermore, a common opinion in the case companies was that along with the PM the employees understand the company’s business and its performance better than before.

PM does not seem to have remarkable impacts on job satisfaction or the work atmosphere. Some representatives of the employees saw that the measurement had a positive impact on job satisfaction through the clarification of job description and content. Similarly, the work atmosphere was seen to have become better, especially through the increased communication between the employees and the management. However, the shared view of the employees and the management was that job satisfaction and work atmosphere depend much more on the organisational culture, individual characteristics and the whole management system. Hence, if the organisational culture is not striving for continuous improvement, PM has little possibilities to improve job satisfaction or work atmosphere.

The impacts of PM on health and safety depend rather a lot on the branch where the company operates. In those case companies where accident risk and physical strain were on a high level, the measurement and the following activities were seen as a very effective way to reduce the number of accidents and susceptibility to risk. In some cases the employees considered it as a matter of honour to minimise the accidents. Otherwise health and safety were seen to be separated from the PM system. The management saw health and safety as a wider entity than the employees, including for example working conditions, ergonomics, healthcare, absence rate and accidents. Briefly, in the case companies the measurement was focused mainly on absence from work and accidents. Thus, the case companies seem to focus their measurement on effects, not causes.
Both the management’s and the employees’ view was that after launching the PM system the employees’ possibilities to participate in the decision making had increased. The reasons were seen to be the increasing communication between the employees and the management and the employees’ raised understanding of the company’s business. The employees saw that they could now have more impact on the decisions concerning their individual or team matters, but to some extent on the company level as well. The employees felt even more than the management that they had got a bigger role in the decision making. It can be concluded that even a small but genuine improvement in the possibilities to participate in decision making has a positive effect on the employees.

According to the management and the employees the team and personal goals were reached better with the PM. The impacts of PM were seen as strongest in those case companies where the goals were defined carefully and a logical connection to the entire PM system was found. In some case companies the management held the view that a self-controlling effect could be seen when extending the measuring to the team and personal level. The background factors that made the employees reach better personal and team goals were similar to those of work motivation. To reach the goals best, the employees should be able to participate in the decision making, understand the linkage between personal goals and the company’s business operations and the measurement should be connected to the reward system.

In seven case companies of the total eight, the measurement was linked to the reward system. The management and employees were unanimous about the importance of the reward system for the employees’ commitment to the PM system. The criteria of the reward system were perceived equitable, although this was considered a fairly difficult and sensitive issue. When the PM system was connected to the reward system, the transparency of the measures and reward criteria were emphasised. In the company which operates without a reward system, the impact of PM on the QWL was seen much slighter both from the management’s and the employees’ perspective, compared to the other companies.

The views of the management and the employees on the impact of PM on the quality of working life were quite similar. The perceptions of the employees and managers on the impact of PM on the quality of working life are presented in Table 2 (including 8 management representatives and 16 employee representatives).

5 Discussion and conclusions

In this paper, we have discussed the impacts a comprehensive and multidimensional PM has brought along to the QWL of employees. The interviews of eight case studies indicated that PM has had a positive impact on the employees’ motivation, learning opportunities, decision-making opportunities and achievement of goals. In the background of motivation were seen to be, for example, the clarification of job contents, better understanding of the linkage of the individual’s goals to the company’s goals and business activities, possibilities to set one’s own targets and the connection of the PM system to the reward system. These are significant issues when introducing PM to the operative level close to the employees. Hence, it can be argued, that to gain any positive impact of PM on the quality of working life, the role of interactivity and communication should be emphasised. The findings suggest that the PM system should
be linked to the reward system to fully exploit the potential of measurement. The PM design process revealed the present state and future needs concerning training and learning, which led to the reorganising of knowledge acquisition in many case companies, focusing more on future needs. The employees of the case companies felt more than the management that they were able to affect the decision making, especially concerning their own jobs. It can be argued that having even a little possibility to take part in the decision-making process improves employees’ work motivation, which is a key element for any organisation’s success. Job satisfaction and work atmosphere were seen to depend more on the organisational culture and individual characteristics than the PM system. If the organisational culture is inflexible, any single management tool, for example, PM, cannot have positive influence on it.

Table 2  Management’s and employees’ perceptions on the impact of PM on the QWL of the employees

<table>
<thead>
<tr>
<th>QWL of the employees</th>
<th>Management perspective</th>
<th>Employee perspective</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No impact</td>
<td>Some impact</td>
</tr>
<tr>
<td>Work motivation</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Learning opportunities</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Job satisfaction</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Work atmosphere</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Health and safety</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Participation in decision making</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Realisation of personal/team-level targets</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Reward system</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

As a whole, the management’s and employees’ opinions about the impacts of the PM on the quality of working life differed from each other less than expected. However, the study of Ukko et al. (2005) revealed that the management’s and the employees’ perceptions differed substantially as regards the impact of PM on leadership. The management considered PM to have brought new elements to the management style, while the employees saw management style as an unconnected issue to the PM system. The different perception concerning leadership may reflect the traditional employee-management juxtaposition in comparison to the perception concerning QWL, which is easily seen as a common interest.

The main differences between the management’s and the employees’ perceptions were seen to be in the implementation process. The employees saw that the information and education on the PM system were conducted too late and poorly. The employees’ opinion was that those things were even more important than being involved in the designing process on the company level. The management of the case companies seemed to have a too positive view concerning the employees’ capability to adopt and understand new management systems. Hence, companies should pay more attention than before to the education and especially to the information, during the implementation of the PM system.
The impacts of PM on the quality of working life

The findings of this study are quite well in line with the earlier study of Dumond (1994). Her research revealed that individuals, for example, have a greater ‘comfort level’ if they understand their PM system; they feel more confident in their decision making, they enjoy the environment more when they understand what is expected of them and they also want feedback about their performance relative to these measures. Her study also showed that if the employees were able to obtain information about both the internal activities and external environment, the information would enhance the individual’s ability to meet the company’s goals as well as his/her personal performance measures.

The empirical evidence of the study is based on 24 interviews from 8 organisations. Furthermore, only one representative of the management was interviewed from each organisation. Although the overall managerial view was asked, there is place for a concern about how representative the perceptions of the management interviewees are. These can be seen as limitations of the study. The findings could be strengthened by extending the sample of management representatives in order to enhance the quality of the data. Generalisation of our findings to concern all organisations applying a PM system should be done cautiously. Despite the limitations, we believe that the results are applicable to companies that are measuring their performance, to companies that are planning to launch a PM development project and to academics as well.

Finally, many issues can be highlighted for further research, concerning, for example, information dissemination, understanding and education of PM, the connection of the PM to the reward system, to achieve effective and motivated use of PM systems. In the future more research should be focused on the current situation as regards the underlying factors behind the work motivation in companies using a PM system.

References


PAPER III

Karhu, Jussi; Ukko, Juhani; Rantanen, Hannu (2006)
Performance measurement and employees:
knowledge, understanding and opportunities to participate in decision-making
In: Neely, A., Kennerley, M. and Walters, A. (eds.)
Performance Measurement and Management: Public and Private
Centre for Business Performance, Cranfield School of Management, Cranfield University
Cranfield, Bedfordshire, pp. 377–384
PERFORMANCE MEASUREMENT AND EMPLOYEES: KNOWLEDGE, UNDERSTANDING AND OPPORTUNITIES TO PARTICIPATE IN DECISION-MAKING

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Abstract

This paper presents the results of a study conducted in Finland in 2005. The purpose of the study was to find out the differences between blue- and white-collar workers and managers concerning knowledge of performance measurement, understanding of targets, and participation in decision-making. The study revealed significant differences between these groups. Although the blue- and white-collar workers were not as familiar with performance measurement as the managers, they understood their targets well. The blue- and white-collar workers wanted to participate in decision-making more than they did at the moment.

Introduction

Many companies apply performance measurement (PM) at the operative level, as the literature on PM suggests (e.g. Kaplan and Norton, 2001). The strategic goals should be converted into concrete operational targets for departments, teams, and individuals. When these operational targets are derived straight from the strategy of a company, the employees become aligned to the strategy. Thus, the employees have quite a vital role in implementing the strategy. PM comes also close to the employees when operational targets are measured. The major question is whether the employees at the operative level really know what PM is and how performance is measured. Furthermore, it is relevant to study whether the employees understand their own objectives and the linkage between their work and the strategic goals of the company. As the study of Ukko et al. (2005) shows, PM has a positive effect on the work motivation of the employees. Two of the main reasons for this are clarified personal job descriptions and employee participation in decision-making concerning their own objectives. Employees engaged in the decision-making concerning their own objectives are more motivated than those who do not have an opportunity to participate.

The aim of this study was to find out employees’ knowledge concerning performance measurement in general and the understanding of the linkage between one’s own job objectives and the company’s business. The current situation and future willingness of employee participation in decision-making was also studied. The differences in these issues between blue- and white-collar workers and managers were studied.

The study focuses on companies operating in manufacturing industry. Because the objective was to gather data from the whole personnel, not just a few representatives per a company, the
participating companies were selected to be small and medium-sized. The participating companies did not have comprehensive or multi-dimensional performance measurement systems. However, they measured their performance with single targets and measures. Thus, the participating companies had performance measures but not systems.

**Employees’ role in performance measurement**

**Employee participation in decision-making**

It can be assumed that employees are more and more able to participate in decision-making, because much of today’s work is knowledge work. Ukko et al. (2005) conclude in their study that employees’ chances to participate in decision-making have increased along performance measurement. They also found out that participation in decision-making had positive and motivational impacts to employees.

The impacts of employee participation in decision-making have been an extensively researched topic. Yammarino and Naughton (1992) noted that, in general, individuals who are more able to participate in decision-making also are more satisfied with their work. This conclusion is supported by the research of Miller and Monge (1986). They found out that participation has an effect on both satisfaction and productivity, and its effect on satisfaction \( (r = 0.34) \) is slightly stronger than its effect on productivity \( (r = 0.15) \). Also the results of the study of Scully et al. (1995) support the belief that participation in decision-making can have remarkable benefits on performance. Scully et al. suggest that companies should consider the locus of knowledge. Employees should be taken into the decision-making process, because they can possess the relevant and practical information that their managers or foremen do not possess.

Scott-Ladd and Marshall (2004) studied the influences of employee participation in decision-making. They found out that participation in decision-making had a significant influence over task variety, identity, autonomy, employee perception of performance effectiveness, and the gains received. Participation in decision-making also directly (and significantly) influences job satisfaction, but it does not have indirect influence on job satisfaction through job characteristics, as Scott-Ladd and Marshall (2004) assumed. Furthermore, participation in decision-making does not have direct influence on affective commitment but it does have indirect influence on it through job satisfaction. These results are presented in figure 1, in which an arrow represents a significant influence.

![Figure 1. Model of the results of the study of Scott-Ladd and Marshall (2004).](image)
To extend the findings of Scott-Ladd and Marshall (2004), it would be interesting to link employees’ knowledge and understanding of performance measurement with participation in decision-making. It can be assumed that the knowledge and understanding of PM play some role in the schema of the influences of participation in decision-making.

Employees’ knowledge and understanding of performance measurement

For over a decade, academics and practitioners of performance measurement (PM) have developed several performance measurement systems, provided platforms for these systems, and prepared instructions on how to implement PM (Kaplan and Norton, 1992, 1996; Lynch and Cross, 1995; Bititci et al., 1997; Neely et al., 2000; Neely and Adams, 2001; Bourne et al., 2003; Tenhunen et al., 2003). The purpose for performance measurement is usually strategic. With the help of a performance measurement system it is easier to formulate a strategy and to monitor whether strategic goals are achieved. According e.g. to Tangen (2005), the performance measurement system should be derived from the strategy of a company and its objectives. If not, PM could lead to irrelevant actions. It is also important to translate the strategic goals defined at the top level into operational targets to the lower levels of the company. Everyone in the company has to be captured to strive for the same ultimate goal.

Kaplan and Norton (2001) emphasize aligning the employees to the strategy, because the employees actually implement the strategy. Therefore, Kaplan and Norton highlight the importance of communication and education as well as developing personal and team targets. These are critical issues to get all employees to make strategy part of their daily work.

1. Communication and education. Employees have to understand the strategy if they are to help implement it. The objective is creating employee knowledge and understanding.
2. Personal and team targets. Employees must understand their role in implementing strategy. Managers and employees in cooperation set personal and team targets that are in line with strategy.

(Kaplan and Norton, 2001)

Employees have to know what they are expected to do. Otherwise they cannot implement the strategy even if they want to. Thus, an employee must understand at least his/her own targets. The employees’ knowledge and understanding were emphasized in a recent study of Ukko et al. (2005). They studied the impacts of performance measurement on the quality of the working life. They found out that along with performance measurement, the employees’ work motivation was enhanced. The reason for this was that the performance measurement clarified their job descriptions and targets, as well as their knowledge of what they were expected to do. Another reason for the better work motivation of employees was that the performance measurement helped the employees to understand the connection between personal targets and the company’s business activities. The better knowledge and understanding of the company’s business and performance measurement as a whole helps employees to be able to participate in decision-making.
Methodology

The theme of the research questions emerged from the literature review presented above. The questions were formulated by three researchers, and two other researchers commented on them as well. The empirical data of this study was gathered from eight manufacturing companies with the help of a structured survey. In the survey, we used a 5-point Likert scale (1=strongly disagree… 5=strongly agree). To achieve a higher response rate, the questionnaires were delivered personally, not by post. The total number of valid responses was 210 and the response rate was 69 %. The data was analysed first with factor analysis. On the basis of the results of the factor analysis, we formulated four sum measures for more efficient data analysis. Because the purpose of this study was to find out differences between blue- and white-collar workers and managers, we compared the means of the sum measures with the analysis of variance setting the organizational position as an independent variable. Thus, methodologically this study is quantitative, applying statistical methods of data analysis.

Findings

Background information of the respondents is presented in table 1. As can be seen, the respondents are quite equally divided into the age groups. The larger number of male respondents is typical for the manufacturing industry. The education level of the respondents is well in line with the total Finnish workforce. Most of the respondents were blue-collar workers (61.4 %).

<table>
<thead>
<tr>
<th>Age</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>29</td>
<td>55</td>
<td>26.2</td>
</tr>
<tr>
<td>30-39</td>
<td>47</td>
<td>22.4</td>
</tr>
<tr>
<td>40-49</td>
<td>47</td>
<td>22.4</td>
</tr>
<tr>
<td>50-</td>
<td>51</td>
<td>24.3</td>
</tr>
<tr>
<td>not responded</td>
<td>10</td>
<td>4.8</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>male</td>
<td>125</td>
<td>59.5</td>
</tr>
<tr>
<td>female</td>
<td>84</td>
<td>40.0</td>
</tr>
<tr>
<td>not responded</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>non-professional</td>
<td>49</td>
<td>23.3</td>
</tr>
<tr>
<td>professional</td>
<td>100</td>
<td>47.6</td>
</tr>
<tr>
<td>bachelor’s degree or higher</td>
<td>58</td>
<td>27.6</td>
</tr>
<tr>
<td>not responded</td>
<td>3</td>
<td>1.4</td>
</tr>
<tr>
<td>Organizational position</td>
<td></td>
<td></td>
</tr>
<tr>
<td>blue-collar worker</td>
<td>129</td>
<td>61.4</td>
</tr>
<tr>
<td>white-collar worker</td>
<td>62</td>
<td>29.5</td>
</tr>
<tr>
<td>manager</td>
<td>18</td>
<td>8.6</td>
</tr>
<tr>
<td>not responded</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>Foreman</td>
<td></td>
<td></td>
</tr>
<tr>
<td>yes</td>
<td>35</td>
<td>16.7</td>
</tr>
<tr>
<td>no</td>
<td>161</td>
<td>76.7</td>
</tr>
<tr>
<td>not responded</td>
<td>14</td>
<td>6.7</td>
</tr>
</tbody>
</table>

Table 1. Background information of the respondents.

Table 2 presents the mean and the standard deviation for each research question (the numbering of the research questions is the same as in the questionnaire). As can be seen, the research question number 4 “I understand my job description and targets” reached the highest mean. The other two of the top three means are achieved by questions 6 and 5 also concerning
the understanding of targets. The lowest mean is in question 11 “I can participate in decision-making concerning the whole company”. It can be assumed that the understanding of targets is good irrespective of organizational position. The lowest mean of question 11 is explained by the small proportion of managers.

Table 2. Means and standard deviations of the research questions.

<table>
<thead>
<tr>
<th>Research question</th>
<th>Mean</th>
<th>Std. deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. I understand my job description and targets</td>
<td>4.34</td>
<td>0.792</td>
</tr>
<tr>
<td>6. I understand the link between my targets and the company’s business</td>
<td>4.19</td>
<td>0.841</td>
</tr>
<tr>
<td>5. I understand the link between my own and the company’s targets</td>
<td>4.09</td>
<td>0.860</td>
</tr>
<tr>
<td>9. I can participate in decision-making concerning my job arrangement and method of work</td>
<td>4.03</td>
<td>0.955</td>
</tr>
<tr>
<td>7. I understand our company’s business and its targets</td>
<td>3.99</td>
<td>0.915</td>
</tr>
<tr>
<td>13. In the future, I want to participate in decision-making more than now concerning my job content and targets</td>
<td>3.84</td>
<td>0.977</td>
</tr>
<tr>
<td>14. In the future, I want to participate in decision-making more than now concerning my job arrangement and method of work</td>
<td>3.83</td>
<td>1.041</td>
</tr>
<tr>
<td>15. In the future, I want to participate in decision-making more than now concerning my team or work group</td>
<td>3.80</td>
<td>1.004</td>
</tr>
<tr>
<td>3. I understand how measuring results are utilised</td>
<td>3.78</td>
<td>1.022</td>
</tr>
<tr>
<td>8. I can participate in decision-making concerning my job content and targets</td>
<td>3.60</td>
<td>1.129</td>
</tr>
<tr>
<td>1. I know what performance measurement is</td>
<td>3.55</td>
<td>0.953</td>
</tr>
<tr>
<td>2. I know how performance is measured in our company</td>
<td>3.39</td>
<td>1.049</td>
</tr>
<tr>
<td>10. I can participate in decision-making concerning my team or work group</td>
<td>3.33</td>
<td>1.171</td>
</tr>
<tr>
<td>16. In the future, I want to participate in decision-making more than now concerning the whole company</td>
<td>3.07</td>
<td>1.147</td>
</tr>
<tr>
<td>12. I am satisfied with my chances to participate in decision-making</td>
<td>3.05</td>
<td>1.161</td>
</tr>
<tr>
<td>11. I can participate in decision-making concerning the whole company</td>
<td>2.11</td>
<td>1.173</td>
</tr>
</tbody>
</table>

Table 2. Means and standard deviations of the research questions.

**Factor analysis**

The principal component analysis produced four factors with an eigenvalue over 1.00. The factor model is presented in table 3. The model explains a total of 69.2 percent of the variance. The communalities of variables (questions) are relatively high, with the highest value in question 14 “In the future, I want to participate in decision-making more than now concerning my job arrangement and method of work” and the lowest in question 7 “I understand our company’s business and its targets”.

Factor 1: The first factor explains 32.8 percent of the variance and its eigenvalue is 5.255. This factor has five main loadings. Question number eight “I can participate in decision-making concerning my job content and targets” has the highest loading, other loadings are in questions numbered 10, 9, 11 and 12. All these questions represent certain autonomy in one’s work, the present situation of participation in decision-making. Therefore, this factor can be labelled as the *autonomy in work* factor. Question number 11 has loading also in factor 4, but it is included in factor 1 because it has higher loading in this one.

Factor 2: The second factor, with eigenvalue of 2.800, captures 17.5 percent of the variance. This factor includes four main loadings. The questions about the future willingness of participation in decision-making receive high loadings. Question number 15 “In the future, I want to participate in decision-making more than now concerning my team or work group” has the highest loading. Also the other questions about future willingness of participation in decision-making have high loadings. The setting suggests that the factor is associated with a
pattern characterised by future willingness of autonomy, and for this reason, the factor can be labelled as the *future autonomy in work* factor.

<table>
<thead>
<tr>
<th>Cronbach’s alpha</th>
<th>factor 1</th>
<th>factor 2</th>
<th>factor 3</th>
<th>factor 4</th>
<th>comm.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.867</td>
<td>0.817</td>
<td>0.810</td>
<td>0.776</td>
<td></td>
</tr>
</tbody>
</table>

8. I can participate in decision-making concerning my job content and targets
10. I can participate in decision-making concerning my team or work group
9. I can participate in decision-making concerning my job arrangement and method of work
12. I am satisfied with my chances to participate in decision-making
11. I can participate in decision-making concerning the whole company
15. In the future, I want to participate in decision-making more than now concerning my team or work group
14. In the future, I want to participate in decision-making more than now concerning my job arrangement and method of work
13. In the future, I want to participate in decision-making more than now concerning my job content and targets
16. In the future, I want to participate in decision-making more than now concerning the whole company
4. I understand my job description and targets
6. I understand the link between my targets and the company’s business
5. I understand the link between my own and the company’s targets
7. I understand our company’s business and its targets
2. I know how performance is measured in our company
1. I know what performance measurement is
3. I understand how measuring results are utilised

<table>
<thead>
<tr>
<th>Eigenvalue</th>
<th>5.255</th>
<th>2.800</th>
<th>1.941</th>
<th>1.073</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of variance explained</td>
<td>32.844</td>
<td>17.503</td>
<td>12.130</td>
<td>6.705</td>
</tr>
<tr>
<td>Cumulative</td>
<td>32.844</td>
<td>50.348</td>
<td>62.478</td>
<td>69.183</td>
</tr>
</tbody>
</table>

Principal component analysis – Varimax rotation
KMO measure of sampling adequacy 0.820

Table 3. Factor analysis (loadings only over 0.4 presented).

Factor 3: The eigenvalue of the third factor is 1.941 and it explains 12.1 percent of the variance. This factor has four main loadings. The highest loading is achieved by question number 4 “I understand my job description and targets”. The other main loadings are received by questions 6, 5 and 7, which also represent the understanding of targets and their linkage to the company’s business. Question number 7 has loading also in factor 4, but it is included in factor 3 because it has higher loading in this one. This factor can be labelled as the *understanding of targets* factor.

Factor 4: This factor accounts for 6.7 percent of the variance, with eigenvalue of 1.073, and with three main loadings. Question number 2 “I know how performance is measured in our company” has the highest loading. Also the questions numbered 1 and 3 have high loadings. The setting suggests that the factor is associated with a high knowledge of performance measurement. Therefore, the factor can be labelled as the *knowledge of PM* factor.
When comparing the means of the sum measures (organizational position as an independent variable) we found out three significant differences between blue- and white-collar workers and managers (table 4). The understanding of targets is good in every group, although significant differences are found. Larger differences between the means appear concerning the knowledge of PM. Although the blue-collar workers do not have as much knowledge on performance measurement as the managers, they understand their own targets well. There is an indication of that the white- and blue-collar workers want more autonomy in work in the future than the managers. That is quite reasonable, because the present situation of autonomy in work is rather poor for blue-collar workers as well as white-collar workers.

**Conclusion**

This study highlighted the differences between blue- and white-collar workers and managers concerning the understanding of targets and knowledge of PM, and participation in decision-making. The blue- and white-collar workers understood their targets well. This is essential for the company, and it indicates that the employees know what they are expected to do. The workers’ common knowledge of PM was on an average level. However, in comparison to the managers there was a significant difference. Based on this, it can be stated that when measuring performance, workers may need more information on PM and how it is utilised.

The main finding of this study was the poor possibilities of the blue-collar workers to participate in decision-making even if it concerns their own job or team. The situation was slightly better for the white-collar workers. There is a danger that even if the workers recognise and understand their targets, the lack of autonomy in work may decrease their work motivation and commitment. For example, the study of Ukko et al. (2005) brings out that participation in decision-making is one of the main underlying factors behind the improvement of work motivation. It can be argued that if the employees are allowed more autonomy in work and more chances to participate in decision-making, it will help them to be more motivated and to enhance their knowledge of performance measurement. This should be taken into account when applying PM at the operative level.

For further study, it would be relevant to rebuild the model of the influences of participation in decision-making on job satisfaction and commitment (Scott-Ladd and Marshall, 2004) with the factors concerning the knowledge and understanding of performance measurement. Furthermore, it would be interesting to compare these findings to similar companies with comprehensive PM systems. This would make it possible to find out the actual influence of PM systems.
References


PAPER IV

Ukko, Juhani; Karhu, Jussi; Rantanen, Hannu (2007)
How to communicate measurement information successfully
in small and medium-sized enterprises: a regression model
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How to communicate measurement information successfully in small and medium-sized enterprises: a regression model

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*Corresponding author

Abstract: The role of internal communication has been highlighted in the earlier literature on Performance Measurement (PM). This paper focuses on the predictors that explain the success of the communication of measurement information in Small and Medium-sized Enterprises (SME) operating in the manufacturing industry. The study is based on a survey carried out in eight companies. The results indicate that the quality of information and face-to-face communication are the main predictors of the success of measurement information communication in SMEs. The study suggests that SMEs should invest in the quality aspects of measurement information, in its exactness, reliability, intelligibility and usefulness.

Keywords: performance measurement; PM; information quality; internal communication.


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Jussi Karhu is a Researcher in the Performance Measurement Team in the Department of Industrial Engineering and Management, Lahti Unit, of the Lappeenranta University of Technology. He has a MSc Degree in Industrial Engineering and Management from Lappeenranta University of Technology. His research focuses on performance management and measurement from the perspective of management and employees.
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1 Introduction

To understand whether they meet their business goals, companies often put in place performance measures. Companies have different approaches to sharing the information gathered through these measures with their employees. A number of different frameworks for integrated and balanced Performance Measurement (PM) have been launched since the 1990s (Lynch and Cross, 1991; Kaplan and Norton, 1992, 1996; Neely and Adams, 2001; Tenhunen et al., 2003; Mettänen et al., 2004). Today, many companies apply PM to the operational levels of the organisation, such as units, teams and even individuals. These types of measures are behavioural – they measure human behaviour. A system measuring human behaviour will eventually change the behaviour – often positively (Neely et al., 1997). Because they are key stakeholders in its development and results, management is often very responsive to strategic PM. However, for company performance measures to have an impact on company performance through individual employees, management must communicate the measures, and employees must understand them. Communicating understandable and accessible measures and targets is a major challenge for management, whether they use a formal or an informal Performance Measurement System (PMS).

Lönnqvist (2002) has shown that communication of important targets is one of the main reasons why managers use PM. Kaplan and Norton (2001) state that communication and education are required to align employees with organisational strategy. Employees must learn about and understand the strategy if they are to help implement it. One of the main purposes of effective communication is to increase employees’ understanding and knowledge of business goals. According to Ukko et al. (2005), successful implementation and use of PM at the operational level depends on the success of internal communication and information diffusion, as these increase the employees’ understanding of the company’s business and targets and thus, their motivation. Bourne et al. (2005) and Ukko et al. (2006) present that the interactive use of a PMS will lead to a higher performance of the company. These studies recognise the importance of communication about PM; what has not been studied is how companies have put it into practice; that is, through what channels companies present measurement information, the quality of that information and how well employees understand and act on it. Typically, the term measurement information refers to the targets and realisation of the targets of measures. At the company level the measures can be for example financial and customer-related, like increase in net sales and customer satisfaction. The measures at the team level can be, for example, the quality of products, delivery reliability and the competence of the
How to communicate measurement information successfully

According to Dumond (1994), a PMS can improve an individual’s performance and can have an even greater effect when supported by specific types of interaction and information. The present study focuses on the question of what the right types of interaction and information are in SME.

Hewitt (2006) has studied the use of e-mail in internal communication in a large service organisation and compared it to face-to-face communication. He found that e-mail had a positive influence on communication climate, for instance. However, e-mail was less influential than face-to-face communication. Bourne et al. (2005) also emphasise the role of interactive face-to-face communication around the company’s performance when reporting about a study conducted in a large company. Bititci et al. (2002) found a web-enabled, intranet-based PMS very useful in a large company. It can be assumed that face-to-face communication is important, irrespective of the size of the organisation. Electronic communication provides possibilities for larger companies which have units in different areas, countries or continents. Smaller companies are used to communicating face-to-face and usually operate in one location. Although electronic communication can support internal communication in SMEs, it does not replace face-to-face communication.

According to the definition of SME by the European Commission, a small enterprise is an enterprise which has fewer than 50 occupied persons and has an annual net sales not exceeding 10 million euros. A medium-sized enterprise is an enterprise which has fewer than 250 occupied persons and an annual net sales not exceeding 50 million euro. This definition is used in this study.

The purpose of the study is to clarify the special characteristics of SME concerning the success of measurement information communication, by answering the following questions:

- What are the practices by which companies communicate about measurement information?
- What is the quality of the measurement information and in what form is it presented?
- What are the main predictors behind the successful communication of measurement information?

In addition, it is examined how the information diffusion and communication should be implemented in the future.

The study focuses on companies operating in the manufacturing industry. Because the objective was to gather data from all the employees and not just a few representatives per company, the data were gathered with a structured survey. The participating companies were small and medium-sized and did not have any formal PMSs. However, they measured their performance with single targets and measures.

2 Internal communication and Performance Measurement (PM) in SMEs

2.1 Internal communication

Organisational communication comprises internal and external communication. The objective of the communication is to deliver accurate and reliable information to the stakeholders of the company. External information covers the external stakeholders
(e.g., customers, financiers, investors), whereas internal communication concerns company employees (Kreps, 1990). The present study focuses on the internal communication of measurement information.

Åberg (1997) divides internal communication to three groups: face-to-face communication, written communication and electronic communication. He has later designed a more sophisticated classification concerning the channels of internal communication (Åberg, 2002). He divides internal communication into direct communication based on face-to-face interaction (e.g., foreman-employee interaction, team meetings, company meetings) and indirect system communication based on written and electronic communication (e.g., noticeboard, handout, e-mail and intranet). Åberg also divides the information channels into two groups, where the first group deals with a certain unit or individual and the other one concentrates on the whole work community. Daft et al. (1987) have studied message equivocality, media selection and manager performance. They group the richness of media channels, based on a blend of four criteria: feedback, multiple cues, language variety and personal focus. According to their classification, foreman-employee interaction is the richest communication channel. It enables instant feedback and simultaneous communication of multiple cues. It is also personal and entails a high language variety. Foreman-employee interaction, as the richest channel, is followed by meetings, electronic communication (e.g., e-mail, intranet) and, lastly, written communication (e.g., letters, handouts, noticeboards). On the basis of the categorisations presented above we have outlined a framework suitable for this study. The framework is presented in Figure 1.

In this study, the use of different communication channels is examined through face-to-face and system-based communication. The channels are divided into two groups (Figure 1). The first group includes foreman-employee interaction, team meetings and company meetings and these channels are based on face-to-face communication. The channels of the second group are handouts, noticeboards, e-mail and intranet. These channels are based on system communication.

Figure 1  Framework of internal communication
2.2 The role of communication in Performance Measurement (PM)

The importance of internal communication in the PM context has been strongly emphasised by researchers (Kaplan and Norton, 2001; Ukko et al., 2005). An interesting point of internal communication is the channels which companies use when they communicate measures and targets through the whole organisation. Traditionally, face-to-face communication has been the primary way to deliver information in organisations. Electronic communication, such as e-mail, the internet, intranet and PowerPoint, provides lots of new possibilities for the presentation and communication of measurement information in companies.

Bititci et al. (2002) have studied the management implications of web-enabled PMSs in a profit centre of a large manufacturing company. They state that after implementing a fully integrated web-enabled, intranet-based PMS there was some improvement in the areas of business benefits and performance, proactive management style and the behaviour of the operational staff, and significant improvement in the areas of confidence in the managers’ decisions, the behaviour of the management, dissemination of knowledge and the visibility of information. Accuracy, reliability and credibility were also improved significantly after launching the web-enabled PMS. Thus, it can be assumed that the use of the intranet should be a very suitable way to communicate measurement information. Hewitt (2006) has examined the role of e-mail in internal communication in a large service organisation and found it to be less influential in comparison to face-to-face communication. However, e-mail was found to influence positively and specifically, the communication climate, shared objectives and goal alignment and perceived external prestige.

Bourne et al. (2005) have examined the differences in the use of a PMS in high-performing business units and average-performing business units in the same large company. They conclude that in high-performing business units the managers used the PM information interactively and communicated about the performance intensively, both in formal meetings and ‘at every opportunity’. Ukko et al. (2006) have studied the impacts of PM on leadership in eight medium-sized and large companies and the findings show that the PM information has provided a more solid base for the discussions about employee development, as well as addressing difficult issues. Smidts et al. (2001) have studied the impact of employee communication and perceived external prestige on organisational identification in three large organisations. They present that if employees’ identification with their organisation affects business performance, an attractive communication climate can contribute significantly to the long-term success of the company. Smidts et al. (2001) continue that managers should therefore pay serious attention to the internal communication climate by providing each employee with adequate information and opportunities to speak out, get involved, be listened to and participate actively. Based on the previous studies, face-to-face communication around the PM is appropriate and seems to enhance the performance of the company.

The quality of information is an essential factor in exploiting information provided by the PM. It is difficult to make decisions based on information which is not reliable, intelligible, useful and exact enough. According to Ittner and Larcker (2003), most companies track a large number of non-financial measures in their day-to-day operations. To avoid going to the trouble of collecting data that already exist, companies should take careful inventory of all their databases. They continue that this inventory should not limit itself to PMSs but should be extended to any information systems that may contain useful
data on key performance drivers. The other important issue, after gathering the data, is to turn it into useful information. Bourne et al. (2005) state that in high-performing business units the managers have multiple sources of data from different factors in taking action and the use of measures is more sophisticated. The study of Evans (2004) reveals that higher levels of maturity of measurement and analysis correlate with higher levels of performance. The study highlights the need for better approaches to analyse performance results and the need to incorporate more sophisticated statistical techniques, competitive comparisons and benchmarking in organisations’ performance review processes. Thus, the scope of measures used to assess organisational performance, together with more sophisticated analysing techniques, will improve the quality of PM information. This enables companies to make the right decisions and will lead them to a higher level of performance.

One of the important issues concerning the communication of measurement information is the form the information should be presented in. According to Robson (2004), the measurement systems have to provide graphical, relevant, local and team level information to encourage a culture of high performance. The information should also be intelligible, available, presented in a familiar atmosphere and gathered cost-effectively (Lönnqvist and Mettänen, 2003).

2.3 Performance Measurement (PM) in SMEs

The PM in SMEs differs from that of larger companies. According to Gunasekaran et al. (2000), most SMEs operate with a poor forecasting and planning system. Barnes et al. (1998) state that SMEs are susceptible to business failure primarily due to poor risk management associated with inadequately informed decision-making. Typical characteristics of SMEs presented in the literature include shortage of human and capital resources, retention of competent staff, fire-fighting mentality and lack of strategic planning (Barnes et al., 1998; Hudson et al., 2000; Tenhunen et al., 2001; Garengo and Bititci, 2004). According to Laitinen (1996), a small firm is usually a simple system and, therefore, a very simple performance system will suffice. The same idea should be taken into consideration when designing the internal communication of measurement information. It can be assumed that if SMEs operate with poor PMS, they probably do not operate with very advanced information systems. Therefore, face-to-face communication may be emphasised in comparison to system information.

2.4 Summary of the literature review

As a summary of the literature review it can be stated that internal communication in all its forms seems to have positive effects on PM and, further, on companies' performance. Therefore it is interesting to study how SMEs have organised their internal communication of measurement information, what channels are used at the moment, what channels should be emphasised in the future and what is the quality of the measurement information. Small and medium-sized organisations differ from larger ones in many ways. They usually do not have such sophisticated systems for information or measurement, which may affect the quality of information.
3 Methodology

Methodologically, this study is quantitative, applying statistical methods of data analysis. The empirical data were gathered from eight manufacturing companies with the help of a structured survey in 2005. Manufacturing companies have measured productivity and effectiveness for a long time. So, they have a long history in the field of PM in comparison to service companies and especially to the public sector. To find a homogeneous group of respondents who are familiar with PM, we have focused the study on industrial manufacturing companies which have launched measurement at the team or even the individual level. The study also focuses on small and medium-sized companies and clarifies their special characteristics concerning the success of measurement information communication. First, we contacted approximately 20 manufacturing SMEs with a letter. After that we called the CEOs and arranged a meeting. Eight companies fulfilling the criteria were willing to participate in the study. There were intranet and e-mail available in all the participating companies. To achieve an overall view of the measurement information communication in the participating companies, all employees were asked to fill in the questionnaire.

The theme of the research questions emerged from the literature review presented above. The questions were selected based on earlier studies that provided some suggestions for a better way to communicate, regarding the use of different communication channels and the presentation and quality of information. The questions were formulated by three researchers and two other researchers commented on them. In the survey, we used a 5-point Likert scale (1 = strongly disagree... 5 = strongly agree). When the data of a study are gathered with a survey, the results and conclusions are usually based on the perceptions of the respondents. This is the case if the survey includes questions or statements and the respondents are asked to choose one of the five categories indicating the strength of agreement or disagreement with the initial statement or question. To find out whether the measurement information communication is successful or not, we believe it is appropriate to study it with the perceptions of the respondents who actually work in the studied companies. It is hard to find any other way to study the success of measurement information communication from the perspective of the employees. It can also be stated that the more respondents there are, the more reliable the results are. To achieve a higher response rate, the questionnaires were delivered personally, not by mail. The total number of valid responses was 210 and the response rate was 69%.

The data were analysed with SPSS software. Missing values were handled with listwise procedure in all analyses, which excludes cases that have missing values for any of the variables used in the analysis. Therefore, single questions with missing values do not necessarily make the whole survey unusable. After the data were described, factor analysis was conducted for a more efficient data analysis. On the basis of the results of the factor analysis, we formulated four sum measures. One purpose of this study was to find out the practices by which companies communicate, as well as the quality of information. In addition, it was investigated whether there were differences between companies. Thus, the means of the sum measures were compared with the analysis of variance, setting the company as an independent variable. To find out the main predictors
for successful communication of measurement information, we continued by conducting a regression model. The regression model requires a dependent variable and one or more independent variables which best predict the value of that dependent variable. When designing the survey we added question number 8 “I think that the internal communication of target information is successful” to get the dependent variable for the regression model. Because of its special role, question number 8 has been treated differently, that is, excluded from the factor analysis and sum measures.

4 Findings

4.1 Data description

Table 1 presents the background information of the respondents. As can be seen, the respondents are quite equally divided into age groups. The greater number of male respondents is typical for the manufacturing industry. The education level of the respondents is well in line with the total Finnish workforce. Most of the respondents are blue-collar workers (61.4%). 16.7% of the respondents are foremen.

Table 1 Background information of the respondents

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29 or younger</td>
<td>55</td>
<td>26.2</td>
</tr>
<tr>
<td>30–39</td>
<td>47</td>
<td>22.4</td>
</tr>
<tr>
<td>40–49</td>
<td>47</td>
<td>22.4</td>
</tr>
<tr>
<td>50 or older</td>
<td>51</td>
<td>24.3</td>
</tr>
<tr>
<td>Not responded</td>
<td>10</td>
<td>4.8</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>125</td>
<td>59.5</td>
</tr>
<tr>
<td>Female</td>
<td>84</td>
<td>40.0</td>
</tr>
<tr>
<td>Not responded</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-professional</td>
<td>49</td>
<td>23.3</td>
</tr>
<tr>
<td>Professional</td>
<td>100</td>
<td>47.6</td>
</tr>
<tr>
<td>Bachelor’s degree or higher</td>
<td>58</td>
<td>27.6</td>
</tr>
<tr>
<td>Not responded</td>
<td>3</td>
<td>1.4</td>
</tr>
<tr>
<td>Organisational position</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue-collar worker</td>
<td>129</td>
<td>61.4</td>
</tr>
<tr>
<td>White-collar worker</td>
<td>62</td>
<td>29.5</td>
</tr>
<tr>
<td>Manager</td>
<td>18</td>
<td>8.6</td>
</tr>
<tr>
<td>Not responded</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>Foreman</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>35</td>
<td>16.7</td>
</tr>
<tr>
<td>No</td>
<td>161</td>
<td>76.7</td>
</tr>
<tr>
<td>Not responded</td>
<td>14</td>
<td>6.7</td>
</tr>
</tbody>
</table>

The respondents represent eight companies, as Table 2 shows. The background information of the companies is also presented in Table 2.
Table 2  Participating companies and respondents per company

<table>
<thead>
<tr>
<th>Company</th>
<th>Industry</th>
<th>Net sales (EUR)</th>
<th>No. of employees</th>
<th>No. of responses</th>
<th>Percentage of all responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Furniture</td>
<td>726,000</td>
<td>13</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>Packaging</td>
<td>45,399,000</td>
<td>85</td>
<td>68</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Machinery for construction</td>
<td>12,105,000</td>
<td>30</td>
<td>18</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>Furniture</td>
<td>4,280,000</td>
<td>40</td>
<td>33</td>
<td>16</td>
</tr>
<tr>
<td>5</td>
<td>Ventilation equipment</td>
<td>16,000,000</td>
<td>60</td>
<td>31</td>
<td>15</td>
</tr>
<tr>
<td>6</td>
<td>Clothing</td>
<td>8,376,000</td>
<td>35</td>
<td>17</td>
<td>8</td>
</tr>
<tr>
<td>7</td>
<td>Furniture</td>
<td>2,800,000</td>
<td>22</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>8</td>
<td>Furniture</td>
<td>2,400,000</td>
<td>20</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>305</strong></td>
<td><strong>210</strong></td>
<td><strong>100</strong></td>
<td></td>
</tr>
</tbody>
</table>

The mean and standard deviation for each research question (the numbering of the research questions is the same as in the questionnaire) concerning the present situation of communication are presented in Table 3. As can be seen, research question number 2 “Information of targets and target realisation is communicated in team meetings” reached the highest mean. The other two out of the top three means were achieved by questions 1 and 3, also concerning face-to-face communication. The lowest mean was in question 6 “Information of targets and target realisation is communicated via e-mail”. It can be stated that communication based on face-to-face interaction is the most trusted way to communicate target information, whereas electronic communication seems to be less used.

Table 3  Means and standard deviations of the research questions

<table>
<thead>
<tr>
<th>Research question</th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2  Information of targets and target realisation is communicated in team meetings</td>
<td>3.72</td>
<td>1.045</td>
</tr>
<tr>
<td>1  Information of targets and target realisation is communicated by foremen</td>
<td>3.47</td>
<td>1.103</td>
</tr>
<tr>
<td>3  Information of targets and target realisation is communicated in company meetings</td>
<td>3.44</td>
<td>1.056</td>
</tr>
<tr>
<td>10 Information is reliable</td>
<td>3.40</td>
<td>1.090</td>
</tr>
<tr>
<td>11 Information is intelligible</td>
<td>3.34</td>
<td>1.000</td>
</tr>
<tr>
<td>12 Information is useful</td>
<td>3.26</td>
<td>0.959</td>
</tr>
<tr>
<td>14 Information is mainly verbal</td>
<td>3.22</td>
<td>0.941</td>
</tr>
<tr>
<td>13 Information is mainly numeric</td>
<td>3.05</td>
<td>1.061</td>
</tr>
<tr>
<td>9  Information is exact enough</td>
<td>3.04</td>
<td>1.096</td>
</tr>
</tbody>
</table>
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Table 3  Means and standard deviations of the research questions (continued)

<table>
<thead>
<tr>
<th>Research question</th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 Information of targets and target realisation is communicated at noticeboards</td>
<td>2.92</td>
<td>1.312</td>
</tr>
<tr>
<td>15 Information is mainly graphics or pictures</td>
<td>2.92</td>
<td>1.083</td>
</tr>
<tr>
<td>8 I think that the internal communication of target information is successful</td>
<td>2.91</td>
<td>1.079</td>
</tr>
<tr>
<td>7 Information of targets and target realisation is communicated via intranet</td>
<td>2.77</td>
<td>1.437</td>
</tr>
<tr>
<td>4 Information of targets and target realisation is communicated by handouts</td>
<td>2.75</td>
<td>1.260</td>
</tr>
<tr>
<td>6 Information of targets and target realisation is communicated via e-mail</td>
<td>2.42</td>
<td>1.322</td>
</tr>
</tbody>
</table>

Table 4 presents the means and standard deviations of the research questions concerning the methods by which the communication should be done in the future according to the respondents. As can be seen, face-to-face communication is the most desirable way in the future and it was also the most common at the moment. Electronic communication did not receive much support.

Table 4  Means and standard deviations of the research questions about communication in the future

<table>
<thead>
<tr>
<th>Research question</th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>17 Information of targets and target realisation should be communicated in team meetings</td>
<td>4.23</td>
<td>0.825</td>
</tr>
<tr>
<td>16 Information of targets and target realisation should be communicated by foremen</td>
<td>4.21</td>
<td>0.885</td>
</tr>
<tr>
<td>18 Information of targets and target realisation should be communicated in company meetings</td>
<td>4.18</td>
<td>0.948</td>
</tr>
<tr>
<td>19 Information of targets and target realisation should be communicated by handouts</td>
<td>3.72</td>
<td>1.162</td>
</tr>
<tr>
<td>20 Information of targets and target realisation should be communicated at noticeboards</td>
<td>3.33</td>
<td>1.358</td>
</tr>
<tr>
<td>22 Information of targets and target realisation should be communicated via intranet</td>
<td>3.30</td>
<td>1.421</td>
</tr>
<tr>
<td>21 Information of targets and target realisation should be communicated via email</td>
<td>2.93</td>
<td>1.307</td>
</tr>
</tbody>
</table>

4.2 Factor analysis

The questions about communication channels and the quality of information at the moment were included in the factor analysis. Factor analysis and to be more specific, in this case, principal component analysis is essentially a method of data reduction that aims to produce a small number of derived variables (factors) that can be used in place of the larger number of original variables to simplify subsequent analysis of the data (Landau and Everitt, 2004). The principal component analysis produced four factors with an eigenvalue over 1.00. The factor model is presented in Table 5. The model explains a total of 63.2% of the variance. The communalities of the variables (questions) are
relatively high, with the highest value in question 12 ‘Information is useful’ and the lowest in question 1 “Information of targets and target realisation is communicated by foremen”.

Table 5  Factor analysis (loadings only over 0.4 presented)

<table>
<thead>
<tr>
<th>Variable (question)</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
<th>Factor 4</th>
<th>Comm.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Information of targets and target realisation is communicated by foremen</td>
<td>0.453</td>
<td>0.482</td>
<td>0.441</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Information of targets and target realisation is communicated by handouts</td>
<td>0.457</td>
<td>0.580</td>
<td></td>
<td>0.595</td>
<td></td>
</tr>
<tr>
<td>5 Information of targets and target realisation is communicated at noticeboards</td>
<td>0.627</td>
<td></td>
<td></td>
<td>0.452</td>
<td></td>
</tr>
<tr>
<td>9 Information is exact enough</td>
<td></td>
<td></td>
<td>0.702</td>
<td>0.647</td>
<td></td>
</tr>
<tr>
<td>10 Information is reliable</td>
<td></td>
<td></td>
<td>0.778</td>
<td>0.705</td>
<td></td>
</tr>
<tr>
<td>11 Information is intelligible</td>
<td></td>
<td></td>
<td>0.841</td>
<td>0.734</td>
<td></td>
</tr>
<tr>
<td>12 Information is useful</td>
<td></td>
<td></td>
<td>0.841</td>
<td>0.766</td>
<td></td>
</tr>
<tr>
<td>6 Information of targets and target realisation is communicated via email</td>
<td></td>
<td>0.806</td>
<td></td>
<td>0.708</td>
<td></td>
</tr>
<tr>
<td>7 Information of targets and target realisation is communicated via intranet</td>
<td></td>
<td>0.754</td>
<td></td>
<td>0.657</td>
<td></td>
</tr>
<tr>
<td>2 Information of targets and target realisation is communicated in team meetings</td>
<td></td>
<td>0.813</td>
<td></td>
<td>0.720</td>
<td></td>
</tr>
<tr>
<td>3 Information of targets and target realisation is communicated in company meetings</td>
<td></td>
<td>0.743</td>
<td></td>
<td>0.671</td>
<td></td>
</tr>
<tr>
<td>13 Information is mainly numeric</td>
<td></td>
<td></td>
<td>0.804</td>
<td>0.716</td>
<td></td>
</tr>
<tr>
<td>14 Information is mainly verbal</td>
<td></td>
<td></td>
<td>–0.540</td>
<td>0.486</td>
<td></td>
</tr>
<tr>
<td>15 Information is mainly graphics or pictures</td>
<td></td>
<td></td>
<td>0.695</td>
<td>0.548</td>
<td></td>
</tr>
<tr>
<td>Eigenvalue</td>
<td>4.912</td>
<td>1.607</td>
<td>1.258</td>
<td>1.069</td>
<td></td>
</tr>
<tr>
<td>Percentage of variance explained</td>
<td>35.089</td>
<td>11.477</td>
<td>8.982</td>
<td>7.634</td>
<td></td>
</tr>
<tr>
<td>Cumulative</td>
<td>35.089</td>
<td>46.566</td>
<td>55.548</td>
<td>63.182</td>
<td></td>
</tr>
<tr>
<td>Principal component analysis</td>
<td>Varimax rotation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KMO measure of sampling adequacy</td>
<td>0.839</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6 presents the final four factors with Cronbach’s alpha values. Below each factor there is a list of the research questions that the factor includes. The sum measures for further analysis have been formulated on the basis of Table 6.
**Factor 1.** The first factor explains 35.1% of the variance and its eigenvalue is 4.912. This factor has seven main loadings. Questions number 11 ‘Information is intelligible’ and number 12 ‘Information is useful’ have the highest loadings. The other main loadings are in questions numbered 1, 4, 5, 9 and 10. The reliability of the factor was measured with Cronbach’s alpha. In this case, a higher value of alpha was achieved when questions 1, 4 and 5 (highlighted in italics in Table 5) were deleted from the factor. Finally, the Cronbach’s alpha for this factor is 0.892. All the remaining questions represent a certain quality of the communicated information. Therefore, this factor can be labelled as the information quality factor.

**Factor 2.** The second factor, with an eigenvalue of 1.607, captures 11.5% of the variance. This factor includes three main loadings. Question number six “Information of targets and target realisation is communicated via e-mail” has the highest loading. Also the questions about communication via the intranet and by handout receive loadings. The Cronbach’s alpha of this factor is 0.683. The setting suggests that the factor is associated with a pattern characterised by some systematic communication and for this reason, the factor can be labelled as the system communication factor.

**Factor 3.** This factor accounts for 9.0% of the variance, with an eigenvalue of 1.258 and with three main loadings. Question number 2 “Information of targets and target realisation is communicated in team meetings” has the highest loading. The other main loadings are received by questions 1 and 3. All these represent internal communication based on face-to-face interaction. This factor can be labelled as the face-to-face communication factor. The Cronbach’s alpha of this factor is 0.670.

**Factor 4.** The fourth factor explains 7.6% of the variance and its eigenvalue is 1.069. This factor has three main loadings and the highest one is in question 13 ‘Information is mainly numeric’. The other main loadings are in questions 14 and 15. In this factor higher reliability (higher Cronbach’s alpha) was achieved when question 14 (highlighted in italics in Table 5) was deleted from the factor. The Cronbach’s alpha for this factor is 0.632. The setting suggests that the factor is associated with presenting information in quantitative form. Therefore, this factor can be labelled as the quantitative information factor.

<table>
<thead>
<tr>
<th>Table 6</th>
<th>Final factors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Factor 1. Information quality</strong></td>
<td>Cronbach’s alpha</td>
</tr>
<tr>
<td>9 Information is exact enough</td>
<td>0.892</td>
</tr>
<tr>
<td>10 Information is reliable</td>
<td></td>
</tr>
<tr>
<td>11 Information is intelligible</td>
<td></td>
</tr>
<tr>
<td>12 Information is useful</td>
<td></td>
</tr>
<tr>
<td><strong>Factor 2. System communication</strong></td>
<td>0.683</td>
</tr>
<tr>
<td>4 Information of targets and target realisation is communicated by handouts</td>
<td></td>
</tr>
<tr>
<td>6 Information of targets and target realisation is communicated via email</td>
<td></td>
</tr>
<tr>
<td>7 Information of targets and target realisation is communicated via intranet</td>
<td></td>
</tr>
</tbody>
</table>
Table 6  Final factors (continued)

<table>
<thead>
<tr>
<th>Factor 3. Face-to-face communication</th>
<th>Cronbach’s alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Information of targets and target realisation is communicated by foremen</td>
<td>0.670</td>
</tr>
<tr>
<td>2 Information of targets and target realisation is communicated in team meetings</td>
<td></td>
</tr>
<tr>
<td>3 Information of targets and target realisation is communicated in company meetings</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Factor 4. Quantitative information</th>
<th>0.632</th>
</tr>
</thead>
<tbody>
<tr>
<td>13 Information is mainly numeric</td>
<td></td>
</tr>
<tr>
<td>15 Information is mainly graphics or pictures</td>
<td></td>
</tr>
</tbody>
</table>

4.3 Differences between companies

Based on the factor analysis, four sum measures were formulated. The differences between companies were analysed with the analysis of variance. The results are presented in Table 7. The analysis of variance shows whether there is a significant difference or not, but it does not reveal the companies between which the difference occurs. Thus, a Tukey’s post-hoc test was used to find out the companies between which the difference was significant.

Table 7  Comparison of the means of sum measures

<table>
<thead>
<tr>
<th>Company</th>
<th>I</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>F-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information quality</td>
<td>3.30</td>
<td>3.18</td>
<td>3.29</td>
<td>3.24</td>
<td>3.78</td>
<td>2.84</td>
<td>3.28</td>
<td>3.04</td>
<td>2.152*</td>
</tr>
<tr>
<td>System communication</td>
<td>2.05</td>
<td>2.99</td>
<td>3.30</td>
<td>1.93</td>
<td>3.54</td>
<td>2.26</td>
<td>1.88</td>
<td>1.81</td>
<td>15.573***</td>
</tr>
<tr>
<td>Face-to-face communication</td>
<td>2.88</td>
<td>3.57</td>
<td>3.81</td>
<td>3.54</td>
<td>3.85</td>
<td>3.31</td>
<td>3.62</td>
<td>3.17</td>
<td>2.526*</td>
</tr>
<tr>
<td>Quantitative information</td>
<td>2.27</td>
<td>3.33</td>
<td>2.94</td>
<td>3.06</td>
<td>3.19</td>
<td>3.03</td>
<td>2.14</td>
<td>2.42</td>
<td>6.307***</td>
</tr>
</tbody>
</table>

Significance *0.01 < p ≤ 0.05.
Significance **0.001 < p ≤ 0.01.
Significance ***p ≤ 0.001.

Concerning information quality, a significant difference was detected between companies 5 and 6. Representatives of company 5 were more satisfied with the information quality than the representatives of company 6.

Concerning system communication, significant difference was found between two subsets. The first subset includes companies 1, 4, 6, 7 and 8 and the second subset includes companies 2, 3 and 5. So, according to the respondents, in the companies of the second subset the internal communication of target information was more based on some system than in the companies of the first subset.
One significant difference was found concerning face-to-face communication between company 1 and companies 3 and 5. Internal communication of target information was strongly based on face-to-face interaction in companies 3 and 5, whereas face-to-face communication was considered rather poor in company 1.

Significant differences were found in the quantitative form of information. Between companies 1 and 2 there was a significant difference, as well as between companies 2 and 8. There was one more significant difference. Companies 2, 4, 5 and 6 formed a subset. Between that subset and company 7 a significant difference was found. The target information is presented mainly in quantitative form in company 2, whereas in companies 1, 7 and 8 the information is less quantitative.

As a summary of the differences between the companies it can be stated that company 5 has the best organised internal communication of target information. Companies 2 and 3 also succeed quite well concerning communication of target information. System communication is emphasised in companies 2, 3 and 5 in comparison to other companies. Although face-to-face communication is the most common at the moment and the most desirable in the future, the successful communication of measurement information may need support from system communication. Concerning information quality, there was a big difference between companies 5 and 6. Although there were interesting differences between companies, they do not reveal how to succeed in the communication of measurement information. For that purpose, a regression analysis of the sum measures was performed.

4.4 Regression model

The aim of the regression analysis was to find out the predictors for success in the communication of measurement information. We conducted the regression analysis with the help of the sum measures presented above. Because we wanted to investigate how to succeed in the communication of measurement information, we set question number 8 “I think that the internal communication of target information is successful” as the dependent variable and the sum measures as independent variables. The universal form of the regression model can be written as:

\[ y = \alpha + \beta_1 x_1 + \beta_2 x_2 + \cdots + \beta_n x_n + \epsilon, \]  

(1)

where \( y \) is a dependent variable, \( \alpha \) is a constant, \( \beta \)’s stand for regression coefficients, \( x \)’s represent predictors and \( \epsilon \) is a residual.

Before making a regression analysis, it has to be secured that the data contain enough subjects. There are two rules-of-thumb, which suggest how many subjects are needed to do a regression analysis (see e.g., Green, 1991). The number of subjects should exceed

- \( 50 + 8m \)
- \( 104 + m, \)

where \( m \) is the number of predictors. In this case \( m \) is 4, so the number of subjects should exceed 82 (first rule-of-thumb) and 108 (second rule-of-thumb). From the data of this study the missing values were excluded listwise. It means that only subjects with valid values for all variables were included in the analysis. With this operation, 196 subjects remained, which is enough.
How to communicate measurement information successfully

When operating with regression analysis, the collinearity or multicollinearity may cause problems. It means that one independent variable is a linear function of other independent variables. To check for multicollinearity, we used the Variance Inflation Factor (VIF). If the VIF value is >10 (Landau and Everitt, 2004), there is a problem of multicollinearity. In our analysis there was no multicollinearity problem, because the highest VIF value was 1.446.

We conducted the regression analysis with the stepwise procedure. It started with the best single predictor in the specified group of independent variables, which included four sum measures:

- information quality
- system communication
- face-to-face communication
- quantitative information.

The stepwise procedure proceeds as follows: it selects the next best predictor and adds it into the model. After adding each variable, all variables in the model are rechecked to see if they remain significant. The criterion for a variable to enter is the $F$-value’s $p \leq 0.05$ and the criterion to remove it is $p \geq 0.1$. The stepwise procedure achieves the final model when the specified group of independent variables does not contain any statistically significant variable to be included into the model. Using this procedure we got a regression model which included two predictors (information quality and face-to-face communication) and a constant. The model is presented in Table 8.

Table 8  Regression model (success in communication of measurement information as a dependent variable)

<table>
<thead>
<tr>
<th>Analysis of variance</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Df</td>
<td>Sum of squares</td>
<td>Mean square</td>
<td>$F$</td>
</tr>
<tr>
<td>Regression</td>
<td>2</td>
<td>139.132</td>
<td>69.566</td>
<td>156.918***</td>
</tr>
<tr>
<td>Residual</td>
<td>193</td>
<td>85.562</td>
<td>0.433</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variables in equation</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Variable</td>
<td>$B$</td>
<td>Std. Error</td>
<td>Beta</td>
</tr>
<tr>
<td>Information quality</td>
<td>0.848</td>
<td>0.064</td>
<td>0.709</td>
<td>13.274***</td>
</tr>
<tr>
<td>Face-to-face communication</td>
<td>0.164</td>
<td>0.069</td>
<td>0.127</td>
<td>2.383*</td>
</tr>
<tr>
<td>(Constant)</td>
<td>−0.430</td>
<td>0.220</td>
<td>−1.953+</td>
<td></td>
</tr>
</tbody>
</table>

Multiple $R$ 0.787.
Adjusted $R^2$ 0.619.
Significance $*0.01 < p \leq 0.05$, $+ 0.05 < p \leq 0.1$.
Significance $**0.001 < p \leq 0.01$.
Significance $***p \leq 0.001$.

The coefficient of determination ($R^2$) of this model is 0.619. This means that 61.9% of the variance of the dependent variable can be explained by the variations of the predictors. Thus, it can be argued that information quality and face-to-face communication explain...
the success in communication of measurement information well. As can be seen in Table 8, the \( t \)-test results prove that the coefficients in the equation should not be considered as zero. Based on the high \( R^2 \), combined with the \( t \)-test results, it can be stated that the regression model represents the relationship between the success in communication of measurement information and its predictors, independent variables. The regression model can be written as follows:

\[
y = -0.430 + 0.848x_1 + 0.164x_2 + \epsilon, \tag{2}
\]

where \( y \) is success in communication of measurement information, \( x_1 \) is information quality and \( x_2 \) represents face-to-face communication.

A closer look at the statistics of the excluded variables shows that system information was actually quite close to being entered into the equation. It did not pass the selection criteria of the stepwise procedure, although its regression coefficient in the equation would have been 0.1 (\( t \)-test’s significance 0.053).

5 Discussion and conclusions

The study shows evidence of the importance of the quality of information and face-to-face methods in the communication of measurement information in SMEs operating in the manufacturing industry. The quality of information has the strongest influence on the success of communication of measurement information. Furthermore, it can be assumed that success in communicating measurement information will have a positive influence on the performance of companies. According to the results of the regression analysis, high information quality leads to success in the communication of measurement information. The quality of information, including exactness, reliability, intelligibility and usefulness could not be considered good, except in company 5. Furthermore, the mean of the question “I think that the internal communication of target information is successful” was 2.91 (scales 1–5), which indicates that the companies have not succeeded in it. So, it can be concluded that the quality of measurement information needs strengthening. SMEs may still operate with poor management systems, which is quite well in line with the findings of Gunasekaran et al. (2000). Both the studies of Evans (2004) and Bourne et al. (2005) highlight a more sophisticated use and analysis of performance measures. Also, our findings support the notion that SMEs in the manufacturing industry have a need for more sophisticated systems to improve the quality of measurement information. The study suggests that SMEs should invest in the quality aspects of measurement information, in its exactness, reliability, intelligibility and usefulness. This will lead to a better understanding of measurement information and will thus provide a more solid base for decision-making.

In addition to information quality, face-to-face communication is the lynchpin of internal communication of measurement information and it has a significant contribution to the regression model. In comparison to system-based communication it can be argued that in small manufacturing companies, where most of the employees do not work with a computer daily, electronic communication (e-mail, intranet) may be a waste of resources. When communicating face-to-face, an employee personifies the information to the person who communicates it. This can be considered as an advantage of face-to-face
communication. Face-to-face communication was also seen to be the best way to communicate measurement information in the future. The findings were parallel with the study of Bourne et al. (2005), when they conclude that the interactive use of performance information together with communication about performance intensity both in formal meetings and ‘at every opportunity’ will lead to a higher performance of the company.

In the future, the best success in the communication of measurement information will be achieved, when the quality of the information is good and it is communicated face-to-face and maybe supported by some system communication. Although system communication was not included in the regression model, it may have a positive influence on the communication climate, as Hewitt (2006) has presented, concerning e-mail. In SMEs, system communication does not necessarily mean e-mail or the intranet, but handouts and noticeboards.

The findings of our study represent the overall view of the personnel of the studied companies. However, as a limitation of the study, the empirical evidence is based on data from eight organisations only. Further, the success in measurement information communication is based on perceptions only. Although the data on success are based on perceptions, they include the perceptions of the managers as well as blue- and white-collar workers and they do at least give some indication that the communication of measurement information has been to some extent unsuccessful. To be generalised, the regression model needs to be tested in practice. Furthermore, the findings of our study can cautiously be generalised to concern SMEs operating in the manufacturing industry. Despite the limitations, we believe that this study provides a contribution to the current literature.

For further research, it would be interesting to compare these results with the results of a similar study carried out in large companies. It can be assumed that system communication is emphasised in large companies, because face-to-face communication may not be possible in every situation. Another interesting issue is how employees in larger companies perceive the quality of measurement information. Generally, it is assumed that larger companies apply more sophisticated analysing techniques to provide more quality to the information. Hence, it can be assumed that larger companies will succeed better in the communication of measurement information.

References


PAPER V

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Employees satisfied with performance measurement and rewards: is it even possible?

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Abstract: The motivational influence of performance-related rewards has been highlighted in the earlier literature on Performance Measurement (PM). This paper focuses on the linkage between participation in decision-making and the success of rewarding. The study is quantitative and the empirical evidence is based on a survey that was carried out in eight companies that operated in the manufacturing industry in 2005. To ensure an overall view, the survey was conducted with all employees of the studied companies. On the basis of the statistical analysis, it can be stated that the more autonomy in work that people have, the more successful they perceive the motivational influence of rewarding. The study suggests that companies should pay attention to the autonomy of employees in their work and, thus, ensure the successful use of performance-related rewarding.

Keywords: Performance Measurement; PM; Performance Measurement System; PMS; performance management; reward; incentive; decision-making; employees.


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1 Introduction
1.1 Background

Many companies have applied a Performance Measurement System (PMS) that links business, plant and shopfloor performance, as the literature on Performance Measurement (PM) suggests (Kaplan and Norton, 1992; Kaplan and Norton, 1996; Kaplan and Norton, 2001; Lynch and Cross, 1995; Torrington et al., 2005). Strategic goals should be converted into concrete operational targets for departments, teams and individuals. For example, Kaplan and Norton (2001) mentioned that one main issue in getting the employees to pay attention to putting the strategy into action is the implementation of personal and team-level targets with a linkage to the strategy. The purpose of these operational-level targets is to make it clear to the employees what they are expected to do. To make the best use of the measures and targets, most of the earlier studies and literature (e.g., Cameron, 1995; Kaplan and Norton, 1992; Kaplan and Norton, 1996; Kaplan and Norton, 2001; Kaplan and Atkinson, 1998; Simons, 2000; Levinson, 2003; Franco-Santos and Bourne, 2005; Torrington et al., 2005; Franco-Santos et al., 2007; Ukko et al., 2007; Ukko et al., 2008) advised the linking of the reward system to the PMS. Franco-Santos et al. (2007) compared the different definitions of PMSs and synthesised that one of the main categories of a PMS is to ‘influence behaviour’. This category encompasses the roles of rewarding or compensating behaviour and managing relationships and control. They also categorised some important processes for further analysis, for example, ‘information management’, which encompasses the processes of information provision, interpretation and decision-making, as well as ‘performance evaluation and rewards’, including the processes of evaluating performance and linking it to rewards. Kaplan and Atkinson (1998) stated that the main purpose of linking the PMS to the reward system is to guide and motivate the employees to focus on the issues that are in line with the strategic targets of the company. Furthermore, there are a lot of
criteria concerning the reward measures that should be taken into account; the measures should be understandable, measurable, attainable, fair and in line with the strategy, among others.

The study of Franco-Santos and Bourne (2005) suggested rewards and decision-making as two of the key factors that facilitate a more effective use of the PMS. An interesting issue in the linkage between the PM and reward systems is the employees’ role in decision-making with regard to the measures and targets that will be used as the criteria for rewarding. The employees’ possibilities to participate in decision-making, especially concerning their own jobs and targets, has been emphasised in earlier literature (e.g., Kaplan and Norton, 1996; Laitinen, 1998; Scott-Ladd and Marshall, 2004; Karhu et al., 2006; Ukko et al., 2008). According to Monge and Miller (1988), those employees who are involved in decision-making have better knowledge about their organisation in comparison to other employees. In addition, they understand their own role in the organisation more deeply as a part of a larger entirety. It can be assumed that the people who are more involved in decision-making have more understanding about their company’s business as a whole and this way, they might be more satisfied with the different elements of rewarding.

1.2 The objective of the study

The study focuses on the relationship between the satisfaction with participation in decision-making and the success factors of rewarding. The quantitative data were gathered with a survey in eight manufacturing companies, which included all of the employees. The objective of the study was to answer the following questions:

- How do the perceptions of different personnel groups concerning the satisfaction with participation in decision-making differ from each other?
- How do the perceptions of different personnel groups concerning the success factors of rewarding differ from each other?
- How do the perceptions of the people with autonomy in their work with regard to the success factors of rewarding differ from the perceptions of the people who do not have autonomy in work?
- What kind of relationship can be found between the autonomy in work and the success in rewarding?

2 Literature review

2.1 The definition of reward

The concept of reward or incentives can be defined in many different ways, depending on the circumstances. For example the following definition has been proposed (Baeten, 2004; Milkovich and Newman, 1999):

“Reward refers to all forms of returns – direct and/or indirect, short term and long term, financial as well as non-financial – that employees receive as part of their employment relationship.”
The definition of Hannula and Lönnqvist (2002) is more related to PM. Their definition for incentives is as follows:

“Incentives, or pay-for-performance, refers to attaching rewards to the achievement of targets set for some chosen measures. The quality, quantity and the rules of paying the reward are agreed on in advance.”

‘Rewards’ can also be divided into intrinsic and extrinsic rewards. For example, Kaplan and Atkinson (1998) presented that intrinsic rewards are those that come from within the individual, such as satisfaction from a job well done or taking satisfaction from acting in a way that is consistent with one’s inner values or beliefs. Extrinsic rewards are rewards that one person gives to another. Extrinsic rewards include recognition, plaques, prizes, awards and, of course, pay that is based on performance, also known as ‘incentive pay’ or ‘pay for performance’. The present study naturally focuses on extrinsic rewards, as the objective of this study is to examine the association between the satisfaction with participation in decision-making and the success factors of rewarding.

2.2 Performance measurement linkage to the reward system

According to Lynch and Cross (1995), a new PMS will be less effective without a new incentive system. They continued that a new incentive system could be a disaster if the wrong measures were rewar ded. Therefore, the two programmes must go hand in glove. Also, the results of the study of Ukko et al. (2007) emphasised the linkage of PM to rewarding. In their study of eight companies, one company operated without a reward system and in that company, the effects of PM on performance were seen as much slighter both from the management’s and employees’ perspective compared to the other companies. There seems to be the need for a linkage between PM and reward systems, but the criteria of the measures, as well as goal setting, should also be defined very carefully. In the largely cited book of Sink (1985), there are criteria for the measures, goal setting and design of incentive systems. According to Sink (1985), the measures can be evaluated with the following criteria:

- validity
- accuracy and precision
- completeness or collective exhaustiveness
- uniqueness or mutual exclusiveness
- reliability
- comprehensibility
- quantifiability
- controllability
- cost effectiveness.

Sink’s (1985) book also presented the guidelines for the formulation of objectives, where the objectives must:
Employees satisfied with performance measurement and rewards

- be measurable
- achieve single-ended results
- incorporate deadlines
- be challenging yet attainable
- focus on improvement
- be motivating for the people who achieve them
- be supported by the organisation
- be controllable
- have an assigned accountability
- be evaluative.

Many organisations also use the “SMART” acronym for describing individual objectives or targets: Specific, Measurable, Appropriate, Relevant, Timed (Torrington et al., 2005). The motivational aspect of performance-related pay has been highlighted extensively in the literature (e.g., Kaplan and Atkinson, 1998; Simons, 2000; Hannula and Lönnqvist, 2002; Van Herpen et al., 2005; Kauhanen and Piekkola, 2006; Ukko et al., 2008). Kauhanen and Piekkola (2006) have studied how the features of performance-related pay schemes affect the perceived motivation of upper white-collar employees. The results show that the following features are important for a successful performance-related pay scheme:

- employees have to feel that they are able to affect the outcomes
- the organisational level of the PM should be close to the employee
- individual and team-level PM increase the probability that the scheme will be perceived as motivating
- employees should be familiar with the performance measures
- the level of payment should be high enough and the rewards, frequent enough
- employees should participate in the design of the performance-related pay scheme.

Franco-Santos et al. (2004) suggested that the main perceived benefits of linking rewards and measurement are the directional benefits that result, rather than motivational benefits. The study of McCausland et al. (2005) indicated that incentive pay has a positive effect on the mean job satisfaction of high-paid workers only. They continued that a potential explanation for this pattern could be that for lower-paid employees, performance-related pay is perceived as controlling, whereas higher-paid employees derive a utility benefit from what they perceive as supportive reward schemes. Performance-related pay has also been criticised. For example, Kohn (1993) concluded that rewards ultimately fail because they succeed only in securing temporary compliance. One of his main arguments was that money does not motivate, even if people are principally concerned with their salaries.
There are lots of criteria for measures and goal setting that should also be taken into account when linking the PMS to the reward system. Kaplan and Atkinson (1998) stated that although the PMS is designed very carefully to ensure the causal chain between performance and rewards, there are important behavioural considerations that the PMS must reflect. They continued that:

- above all, the individual must believe that the system is fair. For example, measuring and rewarding a performance that the individual does not believe he/she controls will reduce or eliminate the motivational potential of a PMS
- the individual must believe that the organisation’s compensation policies are equitable. For example, rewarding senior executives with multimillion dollar bonuses while rewarding assembly line workers with bonuses with a maximum potential of several hundred dollars will create an environment or culture in the organisation that only the senior organisation members are valued by the organisation
- the incentive system should provide rewards on a timely basis to reinforce the relationships between decision-making, measured performance and rewards. As time passes, the link in the decision-maker’s mind between activities and rewards fades.

Hence, it can be stated that performance-related pay should be perceived as, at least, fair and equitable. However, Torrington et al. (2005) stated that even the most experienced managers find it difficult to undertake fair and objective appraisals of their employees’ performance. Subjective judgements are often taken into account, leading to perceptions of bias.

As a whole, the successful linkage between the PMS and the reward system is a challenging task to most organisations. Based on the literature, we have defined the research questions for the success factors of rewarding. The questions include, for example, the aspects of motivation, fairness and equitableness.

2.3 Participation in decision-making

An interesting issue that concerns PMS and rewarding performance is the participation in decision-making with regard to measures and goal setting. Who should participate in the setting of measures and goals for different levels of organisations? Karhu et al. (2006) presented that employees might be more and more able to participate in decision-making, because much of today’s work is knowledge work. According to Turner et al. (2005), the performance information behaviour of a business depends on such factors as employees who use the performance information for decision-making and the empowerment of people in making decisions based on performance information. Simons (2000) stated that if the information that is needed to set performance goals is dispersed widely throughout the organisation, then a participative style is appropriate. Simons (2000) also presented that participation in decision-making that concerns goal setting depends on managers’ assumptions about human behaviour. According to his first view, subordinates should not be invited to participate in setting goals because it is expected that they will attempt to bias the goal-setting process in their favour to minimise future efforts. An alternative view that is prevalent in organisational behaviour is that most individuals inherently enjoy achievement for its own sake and will become self-motivated in achieving the goals of the organisation if they:
employees satisfied with performance measurement and rewards

- believe the goal is legitimate
- become committed to the goal through a process that includes their input and participation.

Kaplan and Norton (1996) stated that even skilled employees who are provided with superb access to information will not contribute to organisational success if they are not motivated to act in the best interest of the organisation or if they are not given the freedom to make decisions and take actions. According to Monge and Miller (1988), those employees who are involved in decision-making have better knowledge about their organisation in comparison to other employees. In addition, they understand their own role in the organisation more deeply as a part of a larger entirety.

A study of Ukkö et al. (2008) presented that if companies allow the employees to participate in decision-making that concerns their own metrics and goals, their work motivation, the understanding of one’s own job and the company’s business will improve and the realisation of the company’s overall targets will increase. Involvement in the decision-making process has also been seen to have positive effects on job satisfaction and productivity (Miller and Monge, 1986; Yammarino and Naughton, 1992). Scott-Ladd and Marshall (2004) have examined employee participation in decision-making. They concluded that participation in decision-making has a significant influence on the task variety, identity, autonomy, employee perception of performance effectiveness and received gains. The possibility of participating in the decision-making is seen to have a positive effect on performance and opinions about rewards. Furthermore, the results of the studies of Scully et al. (1995) and Cotton et al. (1988) supported the findings of Scott-Ladd and Marshall (2004). The study of Sesil (2006) provided evidence that employees’ involvement in decision-making and the possibility of gaining group incentives lead to greater profitability when used in combination. A positive impact on performance that is associated with sharing only the decision-making authority or only group incentives was not found. According to the Baeten’s (2004) study, to address the issue of employee valuation of the reward system, organisations should solicit employee input much more than they currently do when developing reward systems. For example, Zobal (1999) presented some examples from studies which indicate that compensation plans that involved employees in the design and implementation had better results than the plans that did not involve employees.

It seems that most of the earlier studies and literature encourage organisations to involve the employees in decision-making that concerns measures and goal setting. Based on the literature, we have defined the research questions for participation in decision-making at different levels of an organisation. One of the main assumptions of the present study is that there may be a connection between the possibilities of individuals to participate in the decision-making and their perceptions of the success of rewarding.

3 Methodology

Methodologically, this study is quantitative, applying statistical methods of data analysis. The empirical data were gathered from eight manufacturing companies with the help of a structured survey in 2005. Manufacturing companies have measured productivity and
effectiveness for a long time. They have a long history in the field of PM in comparison to service companies and especially to the public sector. To find a homogeneous group of respondents familiar with PM, we have focused the study on industrial manufacturing companies that have launched measurement on the team or even individual level. First, we contacted approximately 20 small- and medium-sized manufacturing companies through a letter. After that, we called the CEOs and arranged a meeting. Finally, eight companies participated in the study. To achieve an overall view, all of the employees were asked to fill in the questionnaire.

The theme of the research questions emerged from the literature review that was presented in Section 2. The questions were selected on the basis of earlier studies and literature that described the characteristics of successful rewarding and participation in decision-making in the PM context. The questions were formulated by three researchers and two other researchers commented on them. In the survey, we used a five-point Likert scale (1 = strongly disagree, 5 = strongly agree). When the data of a study are gathered with a survey, the results and conclusions are usually based on the perceptions of the respondents. This is the case if the survey includes questions or statements and the respondents are asked to choose one of the five categories that indicate the strength of agreement or disagreement with the initial statement or question. To find out whether performance-related rewarding is successful or not, we believe that it is appropriate to study it with the perceptions of the respondents who actually work in the studied companies. It is hard to find any other way to study the success of rewarding from the perspective of the employees. It can also be stated that the more respondents there are, the more reliable the results are. To achieve a higher response rate, the questionnaires were delivered personally, not by mail. The total number of valid responses was 210 and the response rate was 69%.

The data was analysed with SPSS software. The missing values were handled with a listwise procedure in all analyses, which excludes the cases that have missing values for any of the variables that are used in the analysis. Therefore, single questions with missing values do not necessarily make the whole survey unusable. After the data were described, factor analyses were conducted for a more efficient data analysis. On the basis of the results of factor analyses, we formulated the sum measures. To find out whether there were any differences between the selected subsets, we compared the means of the sum measures of different subsets with the analysis of variance. We used Tukey’s post-hoc test to identify between which subsets there was a significant difference, if any. Finally, we conducted correlation analysis to find the assumed connection between the means of the sum measures based on the factors labelled as ‘Autonomy in work’ and ‘Success in rewarding’.

4 Findings

The background information of the respondents is presented in Table 1. The greater number of male respondents is quite normal for the Finnish manufacturing industry. The education level of the respondents is well in line with the total workforce of Finland.

The means and standard deviations for the research questions that concern participation in decision-making are reported in Table 2. As can be seen, the research question ‘I can participate in decision-making that concerns my job arrangement and method of work’ reached the highest mean. The research question ‘I can participate
Employees satisfied with performance measurement and rewards

in decision-making that concerns the whole company’ had the lowest mean and the question ‘I am satisfied with my chances to participate in decision-making’ was perceived as neutral.

Table 1 The background information of the respondents

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;29</td>
<td>55</td>
<td>26.2</td>
</tr>
<tr>
<td>30–39</td>
<td>47</td>
<td>22.4</td>
</tr>
<tr>
<td>40–49</td>
<td>47</td>
<td>22.4</td>
</tr>
<tr>
<td>&gt;50</td>
<td>51</td>
<td>24.3</td>
</tr>
<tr>
<td>No response</td>
<td>10</td>
<td>4.8</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
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<td></td>
</tr>
<tr>
<td>Male</td>
<td>125</td>
<td>59.5</td>
</tr>
<tr>
<td>Female</td>
<td>84</td>
<td>40.0</td>
</tr>
<tr>
<td>No response</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonprofessional</td>
<td>49</td>
<td>23.3</td>
</tr>
<tr>
<td>Professional</td>
<td>100</td>
<td>47.6</td>
</tr>
<tr>
<td>Bachelor’s degree or higher</td>
<td>58</td>
<td>27.6</td>
</tr>
<tr>
<td>No response</td>
<td>3</td>
<td>1.4</td>
</tr>
<tr>
<td><strong>Organisational position</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue-collar worker</td>
<td>129</td>
<td>61.4</td>
</tr>
<tr>
<td>White-collar worker</td>
<td>62</td>
<td>29.5</td>
</tr>
<tr>
<td>Manager</td>
<td>18</td>
<td>8.6</td>
</tr>
<tr>
<td>No response</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td><strong>Foreman</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>35</td>
<td>16.7</td>
</tr>
<tr>
<td>No</td>
<td>161</td>
<td>76.7</td>
</tr>
<tr>
<td>No response</td>
<td>14</td>
<td>6.7</td>
</tr>
</tbody>
</table>

Table 2 The means and standard deviations of the research questions about participation in decision-making

<table>
<thead>
<tr>
<th>Research question</th>
<th>Mean</th>
<th>Std. dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>I can participate in decision-making that concerns my job arrangement and method of work</td>
<td>4.03</td>
<td>0.955</td>
</tr>
<tr>
<td>I can participate in decision-making that concerns my job content and targets</td>
<td>3.60</td>
<td>1.129</td>
</tr>
<tr>
<td>I can participate in decision-making that concerns my team or work group</td>
<td>3.33</td>
<td>1.171</td>
</tr>
<tr>
<td>I am satisfied with my chances to participate in decision-making</td>
<td>3.05</td>
<td>1.161</td>
</tr>
<tr>
<td>I can participate in decision-making that concerns the whole company</td>
<td>2.11</td>
<td>1.173</td>
</tr>
</tbody>
</table>

To confirm our assumption of the association between the research questions that concern participation in decision-making, we continued with factor analysis. The questions in Table 2 were included. The principal component analysis produced one factor with an eigenvalue of 3.281. All of the five questions had loadings over 0.767. The factor included the items of satisfaction and participation in decision-making and was thus labelled as ‘autonomy in work’ (Cronbach’s $\alpha = 0.867$). In this case, autonomy in work can be seen as an employee’s possibility to participate in the decision-making that concerns his/her own job and, to some extent the different levels of the organisation.

Based on factor analysis, the sum measures were formulated. Next, we compared the means of the sum measures of different personnel groups with the analysis of variance, setting the organisational position as an independent variable. The analysis of variance
with Tukey’s *post-hoc* test revealed that there were significant differences between every personnel group, including Blue-Collar Workers (BCW), White-Collar Workers (WCW) and managers (MG). The results are presented in Table 3.

**Table 3**

<table>
<thead>
<tr>
<th>Mean</th>
<th>BCW</th>
<th>WCW</th>
<th>MG</th>
<th>F-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autonomy in work</td>
<td>2.92</td>
<td>3.51</td>
<td>4.40</td>
<td>32.213***</td>
</tr>
</tbody>
</table>

Notes: Significance *** p ≤ 0.001, ** 0.001 < p ≤ 0.01, * 0.01 < p ≤ 0.05, + 0.05 < p ≤ 0.1.

The means and standard deviations for the research questions that concern the success factors of rewarding are presented in Table 4. The only question that was considered even slightly positive was “the reward policy of our company is motivating and incentive”. All of the other answers that concern the success factors of rewarding were more or less negative.

The analysis continued with the confirmation of our assumption about the association between the research questions that concern the success factors of rewarding. Based on the assumption, factor analysis was conducted and the questions in Table 4 were included. The principal component analysis produced one factor with an eigenvalue of 3.233. All of the five questions had loadings over 0.721. The factor included the success factors of rewarding and was titled as ‘success in rewarding’ (Cronbach’s $\alpha = 0.858$). The means of the sum measures based on the factor success in rewarding is used in the correlation analysis at the end of this section.

**Table 4**

<table>
<thead>
<tr>
<th>Research question</th>
<th>Mean</th>
<th>Std. dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>The reward policy of our company is motivating and incentive</td>
<td>3.04</td>
<td>1.352</td>
</tr>
<tr>
<td>The reward policy of our company is equitable</td>
<td>2.86</td>
<td>1.241</td>
</tr>
<tr>
<td>The realisation of targets and results is used as a criterion of rewarding in our company</td>
<td>2.82</td>
<td>1.320</td>
</tr>
<tr>
<td>The reward policy of our company is fair</td>
<td>2.74</td>
<td>1.228</td>
</tr>
<tr>
<td>The criteria of rewarding in our company are correct</td>
<td>2.69</td>
<td>1.192</td>
</tr>
</tbody>
</table>

The next step of the analysis was to identify the possible differences (with regard to the success factors of rewarding) between the different personnel groups. The comparison of the means was conducted with an analysis of variance. Tukey’s *post-hoc* test was used to find the personnel groups between which the difference was significant. The results are reported in Table 5.

One remarkable result of the analysis was that the blue-collar workers had really low satisfaction with regard to the success factors of rewarding. The differences between the blue-collar workers and the managers were significant in all questions, except the question ‘the reward policy of our company is motivating and incentive’. The mean comparison of the question ‘the reward policy of our company is fair’ showed that there was a significant difference between the blue-collar workers and the white-collar workers, as well as between the blue-collar workers and the managers. As a whole, the
managers were quite satisfied with the different elements of rewarding. However, there were no significant differences in the mean comparison of any question between the white-collar workers and the managers. The question ‘the reward policy of our company is motivating and incentive’ was perceived quite similarly and neutrally by all personnel groups.

Table 5  The comparison of the means of the success factors of rewarding

<table>
<thead>
<tr>
<th>Research question</th>
<th>Mean</th>
<th>BCW (1)</th>
<th>WCW (2)</th>
<th>MG (3)</th>
<th>1–2</th>
<th>1–3</th>
<th>2–3</th>
<th>F-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>The reward policy of our company is motivating and</td>
<td>2.98</td>
<td>3.11</td>
<td>3.00</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>0.192</td>
</tr>
<tr>
<td>incentive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The reward policy of our company is equitable</td>
<td>2.64</td>
<td>3.03</td>
<td>3.72</td>
<td>ns</td>
<td>*</td>
<td>ns</td>
<td>ns</td>
<td>7.175***</td>
</tr>
<tr>
<td>The realisation of targets and results is used as an</td>
<td>2.67</td>
<td>2.98</td>
<td>3.50</td>
<td>ns</td>
<td>*</td>
<td>ns</td>
<td>ns</td>
<td>3.690*</td>
</tr>
<tr>
<td>criterion of rewarding in our company</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The reward policy of our company is fair</td>
<td>2.48</td>
<td>2.98</td>
<td>3.67</td>
<td>*</td>
<td>*</td>
<td>ns</td>
<td>ns</td>
<td>9.739***</td>
</tr>
<tr>
<td>The criteria of rewarding in our company are correct</td>
<td>2.50</td>
<td>2.87</td>
<td>3.28</td>
<td>ns</td>
<td>*</td>
<td>ns</td>
<td>ns</td>
<td>4.521*</td>
</tr>
</tbody>
</table>

Notes: Significance *** p ≤ 0.001, ** 0.001 < p ≤ 0.01, * 0.01 < p ≤ 0.05, + 0.05 < p ≤ 0.1.

ns = not significant.

The next stage of the analysis was to examine the connection between autonomy in work and the different elements of rewarding. The results of earlier studies (e.g., Scott-Ladd and Marshall, 2004) indicated that participation in decision-making has a positive influence on the perception of rewards. On this basis, we divided the respondents into two different groups. The group ‘non-autonomy in work’ included the respondents whose means of sum measures (from the factor ‘autonomy in work’) were three or less and the group ‘autonomy in work’ included the respondents whose means of sum measures were over three. The group ‘non-autonomy in work’ contained 84 of the total 191 respondents and 64 of them were blue-collar workers, 19 were white-collar workers and one manager. The group ‘autonomy in work’ included 107 of the total 191 respondents, with 50 blue-collar workers, 39 white-collar workers and 17 managers. The comparison of the means between the respondent groups of ‘non-autonomy in work’ and ‘autonomy in work’ that concern the success factors of rewarding is presented in Table 6.

The results of the mean comparison indicate significant differences in all of the five success factors of rewarding between the respondent group of ‘non-autonomy in work’ and the group of ‘autonomy in work’. Hence, it can be stated that the more satisfied the employees are regarding participation in decision-making, the more satisfied they are with the different elements of rewarding. One of the most striking results was that the respondents without autonomy in work considered the reward policy of their company (2.23), as well as the criteria of rewarding (2.30), particularly unfair. An interesting result was also that there was a significant difference regarding the question ‘The reward policy of our company is motivating and incentive’ between the respondents of ‘non-autonomy in work’ (2.59) and ‘autonomy in work’ (3.33), but not between the different personnel groups.
Table 6  The comparison of the means of the success factors of rewarding

<table>
<thead>
<tr>
<th>Research question</th>
<th>Mean</th>
<th>Non-autonomy in work</th>
<th>Autonomy in work</th>
<th>F-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>The reward policy of our company is motivating and incentive</td>
<td>2.59</td>
<td>3.33</td>
<td>15.017***</td>
<td></td>
</tr>
<tr>
<td>The reward policy of our company is equitable</td>
<td>2.40</td>
<td>3.27</td>
<td>24.671***</td>
<td></td>
</tr>
<tr>
<td>The realisation of targets and results is used as a criterion of rewarding in our company</td>
<td>2.56</td>
<td>3.12</td>
<td>8.782 **</td>
<td></td>
</tr>
<tr>
<td>The reward policy of our company is fair</td>
<td>2.23</td>
<td>3.16</td>
<td>31.644***</td>
<td></td>
</tr>
<tr>
<td>The criteria of rewarding are correct in our company</td>
<td>2.30</td>
<td>3.03</td>
<td>19.389***</td>
<td></td>
</tr>
</tbody>
</table>

Notes: Significance *** $p \leq 0.001$, ** $0.001 < p \leq 0.01$, * $0.01 < p \leq 0.05$, + $0.05 < p \leq 0.1$.

To clarify the assumed connection between the satisfaction with participation in decision-making and the individuals’ perceptions about rewarding, a correlation analysis was carried out. The Pearson correlation was conducted between the means of the sum measures based on the factors ‘autonomy in work’ and ‘success in rewarding’. The correlations are presented in Table 7 by using the whole group of the respondents and the subsets of different personnel groups.

Table 7  The correlation matrix

<table>
<thead>
<tr>
<th></th>
<th>Success in rewarding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autonomy in work (N = 187)</td>
<td>.471*</td>
</tr>
<tr>
<td>Blue-collar workers (N = 111)</td>
<td>.431*</td>
</tr>
<tr>
<td>White-collar workers (N = 57)</td>
<td>.416*</td>
</tr>
<tr>
<td>Managers (N = 18)</td>
<td>.438</td>
</tr>
</tbody>
</table>

Notes: Significance * $p < 0.01$, Pearson.

The correlation matrix reveals that there is a significant positive correlation between autonomy in work and success in rewarding including all personnel groups. Although the number of managers was too small, the result indicates a similar correlation as the other subsets. Consequently, it can be stated that the more autonomy people have in their work, the more successful they perceive the rewards.

5  Discussion and conclusions

The results of the survey contain very interesting findings that concern performance-related rewarding. Although most of the earlier studies and literature (e.g., Kaplan and Atkinson, 1998; Simons, 2000) highlight the motivational aspects of rewarding, the findings of our study do not directly support this. As a whole, the motivational influences of rewarding were perceived as quite neutral and there were no significant differences between the different groups of personnel. Instead, our study
strongly indicates that the people who have more autonomy and possibilities to participate in decision-making perceive the motivational influence of rewarding as much stronger than others. It can be stated that autonomy in work plays a very important role in motivational and successful rewarding. Scott-Ladd and Marshall (2004) presented quite similar findings, as they stated that participation in decision-making positively influences the perception of rewards.

The perception of the fairness, equitableness and criteria of rewards, excluding the motivational aspect, is strongly dependent on the organisational position of the respondent. The managers perceived the different elements of rewarding as very successful, but the blue-collar workers were not satisfied with any of them. The main differences with regard to the success of rewarding as were between the blue-collar workers and managers, while the white-collar workers perceived it quite neutral as a whole. The only aspect of rewarding that reached a significant difference between the blue-collar workers and the managers, but also between the blue-collar workers and the white-collar workers, was the fairness of the reward policy of the company. That question also reached the lowest mean among the blue-collar workers in comparison to other questions. There can be many reasons in the background of this perception. For example, the workers often feel that there is a gap between what they should do and what is measured. Although this issue has been recognised for a long time, it is still topical among the developers of PM and reward systems. On the other hand, the sum of the maximum bonus that the shopfloor workers may receive may differ a lot from the bonuses at the managerial level. This is quite a typical situation, for example, in listed companies, where the bonuses of the top management have been tied to the stock prices.

When comparing the perceptions of the success of rewarding between the groups of ‘non-autonomy in work’ and ‘autonomy in work’, the findings were significant in all the questions. Employees who do not have possibilities to participate in decision-making perceive the reward policy of their company as unsuccessful. This result also emphasises the role of autonomy in successful rewarding. In addition, autonomy in work has a positive influence on the perceptions of rewarding, including all of the personnel groups. On this basis, it can be suggested that companies which operate with performance-related rewards should pay attention to the autonomy of work of their employees (if possible) and try to create an environment where individuals believe that the reward system is, at least, fair. Otherwise, the underlying purpose of rewarding, to get people to make the right actions, becomes meaningless and instead of earning money, the company will lose some. When including employees in decision-making, companies should make sure that the participation is genuine and does not only appear to be so.

The findings of our study represent the overall view of the personnel of the studied companies. As a limitation of the study, the empirical evidence is based on data from only eight organisations. Furthermore, the success in rewarding and decision-making is based only on perceptions. Despite the limitations, the findings of our study can cautiously be generalised to concern the companies that operate in the manufacturing industry and, thus, the paper provides a contribution to the current research.

As is commonly known, managers have more information and they see the situation better than employees. It is obvious and natural that everyone will never be satisfied with the reward policy of a company. However, in our studies, the perceptions between managers and employees differed more than was assumed. Therefore, one interesting question for future research might be: What issues should be taken care of to make the individuals believe that the system is fair? For example, a case study could provide more
exact and deeper information about these issues. Another interesting issue for further research would be the autonomy of employees. Because it is not possible to offer total autonomy to employees, it is interesting to study what the balanced level of autonomy of employees should be.

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References

Employees satisfied with performance measurement and rewards


PAPER VI

Ukko, Juhani; Pekkola, Sanna; Rantanen, Hannu (accepted for publication)
A framework to support performance measurement
at the operative level of an organisation
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A framework to support performance measurement at the operative level of an organisation

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Abstract: The study focuses on performance measurement at the operative level of an organisation. Factors that improve and facilitate the performance of the operations and employees, and the use of performance measurement are examined. A framework to support performance measurement at the operative level of an organisation has been constructed. The empirical evidence of the study is based on interviews in eight organisations. The findings suggest that there are six factors that have a direct and positive influence on operative level performance measurement. The three most important factors are the linkage of performance measurement to reward, interactive communication, and understanding the linkage between an individual’s and the organisation’s targets.

Keywords: performance measurement; PM; performance measurement system; PMS; factor; operative level; operational; employees; management; organisation; framework; reward; communication; decision making.


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1 Introduction

Traditionally, performance measurement (PM) has been seen as a management tool mainly utilised by managers. Ever since the importance of non-financial PM was recognised in the 1980s, it has come closer to the employees (see e.g., Kaplan, 1984; Johnson and Kaplan, 1987). Neely et al. (2000) also emphasise the role of employees in designing, implementing and using a performance measurement system (PMS) and measures (see also Kennerley and Neely, 2002). Marr et al. (2003) present three general reasons why organisations use business PM: to implement and validate their strategy, to influence employees’ behaviour, and to report externally on performance and corporate governance. Kaplan and Norton (1996) state that the main purpose of PM is to translate the strategy into action. To enable this translation, PM has to be mobilised to the operative levels of organisations. Kaplan and Norton (2001) mention that one main issue in making the employees interested in putting the strategy into action is the implementation of personal and team level targets with a linkage to the strategy. PM is today utilised both for strategic and operating purposes. Many organisations have already launched PM on unit, team and individual levels, which can be conceptualised as operative level PM. For example, the study of Lönnqvist (2002) highlights that employees use measurement for a great diversity of the development of the results of their work. As a summary, it can be stated that operative level PM can be seen as a daily routine in many organisations, which makes it a relevant and interesting research topic.

Another interesting research area are the factors that facilitate and improve the process of managing through measures, and the factors that have a positive impact on operative level PM. For example Bourne et al. (2003) suggest that there is a growing trend towards managing performance improvement through focusing on the underlying drivers of performance, whether improvements in the processes or the underlying resources that give these processes capability. According to the studies of Franco and Bourne (2003) and Franco-Santos and Bourne (2005), one problem in identifying actual factors that facilitate the process of managing through measures is the lack of empirical studies in the PM literature. Franco and Bourne (2003) found only seven relevant studies regarding the actual factors that facilitate the process of managing through measures. Furthermore, there is a common consensus among researchers that studies should be focused more on factors that improve business performance (Bourne et al., 2003; Franco and Bourne, 2003; Franco-Santos and Bourne, 2005; Martinez et al., 2004). In the earlier studies regarding the factors that facilitate and improve PM, the studied factors have been related to the role and actions of managers (e.g., de Waal, 2003; Bourne et al., 2005; Franco and Bourne, 2003; Franco-Santos and Bourne, 2005). When PM is launched on the operative level, that is team and individual level, it is also essential to know what are the important factors related to employees and their actions around the operations. For example, Martinez and Kennerley (2006) divide business performance reviews into strategic and operational reviews, in which the operational performance reviews include operations control, productivity, quality and employees’ reviews, among others.

The main objective of the study was to create a framework to support PM at the operative level of an organisation. The purpose of the framework is to help managers to focus on the factors that are important for the higher performance of the operations and the employees, and for the successful use of PM at the operative level of an organisation. By utilising the framework, the managers will be able to carry out development actions that will facilitate and improve PM and performance at the operative level of the
organisation. The framework has been constructed by matching the empirical findings of the study and the current theory of PM. The factors that are important for the higher performance of the operations and the employees, and for the successful use of PM at the operative level of an organisation were studied in eight case organisations. In the following sections, these factors are also called factors behind successful operative level PM.

2 Factors that facilitate and improve operative level PM

2.1 Factors related to the role and actions of managers

There is a lack of studies concerning the factors that have a positive impact on the way organisations manage through measures, and more specifically, factors that have a positive impact on operative level measurement. For example Franco and Bourne (2003) found only seven relevant studies regarding the actual factors that facilitate the process of managing through measures. The current study focuses on the factors that have a positive and a direct influence on the performance of operations, the actions of the employees, and the use of PM at the operative level of an organisation.

In most of the earlier studies regarding the factors that facilitate and improve PM, the studied factors have been related to the role and actions of managers. de Waal (2003) studied behavioural factors that are important for the successful implementation and use of a PMS. He found 18 important factors related to the role and actions of managers, and classified them to five scheme parts: performance management system, controlled system, controlling system, internal environment and external environment. The study of Franco and Bourne (2003) suggests nine factors, mainly related to the role and actions of managers, which have a greater impact on the way organisations, manage through measures. The study of Franco-Santos and Bourne (2005) presents 11 process factors and five context factors that facilitate a more effective use of business PMS. The process factors are grouped into the categories of design, implementation and use factors, whereas the context factors are classified into internal and external factors.

According to Bourne et al. (2005), the organisational context, PM content and process will all impact the outcome. By using this type of approach, it is possible for example to minimise both internal and external contextual differences, allowing the research to focus on the process, content and outputs. In the study of Bourne et al. (2005), five high-performing business units and five average-performing business units were studied and compared through external and internal context factors, process factors and content factors. The categorisation and factors used by Bourne et al. (2005) are illustrated in Table 1.

All the studies mentioned above include quite similar elements to those presented in Table 1. Most of them present factors for the internal and external context and for the design and use of the system. However, in all these studies, the categories and factors are mainly related to the role and actions of managers. In the current study, the factors are related to the roles and actions of employees. When managing through measurement, it is also essential to know what are the important factors related to the employees and their actions around the operations. For example, in the classification of performance reviews presented by Martinez and Kennerley (2006), the business performance reviews have been differentiated into strategic and operational reviews, in which the operational
performance reviews include operations control, productivity, quality and employees’ reviews, among others.

**Table 1**  Categorisation of factors that impact performance

<table>
<thead>
<tr>
<th>Factors</th>
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<tbody>
<tr>
<td><strong>External context</strong></td>
<td></td>
</tr>
<tr>
<td>Industry competitiveness</td>
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<tr>
<td>Economy</td>
<td></td>
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<tr>
<td>Political environment</td>
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<tr>
<td><strong>Internal context</strong></td>
<td></td>
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<tr>
<td>System maturity</td>
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<td>Organisational structure</td>
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<tr>
<td>Organisational size</td>
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<td>Organisational culture</td>
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<td>Management style</td>
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<tr>
<td>Competitive strategy</td>
<td></td>
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<tr>
<td>Resources and capability</td>
<td></td>
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<tr>
<td>Information systems infrastructure</td>
<td></td>
</tr>
<tr>
<td>Other practices and systems</td>
<td></td>
</tr>
<tr>
<td><strong>Processes</strong></td>
<td></td>
</tr>
<tr>
<td>Alignment with objectives</td>
<td></td>
</tr>
<tr>
<td>Data capture</td>
<td></td>
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<tr>
<td>Data analysis</td>
<td></td>
</tr>
<tr>
<td>Interpretation and evaluation</td>
<td></td>
</tr>
<tr>
<td>Decision making</td>
<td></td>
</tr>
<tr>
<td>Communication and information provision</td>
<td></td>
</tr>
<tr>
<td>Decision making and taking action</td>
<td></td>
</tr>
<tr>
<td><strong>Content</strong></td>
<td></td>
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<tr>
<td>Definition of performance measures</td>
<td></td>
</tr>
<tr>
<td>Dimension measured</td>
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<tr>
<td>Structure and presentation</td>
<td></td>
</tr>
</tbody>
</table>

*Source: revised from Bourne et al. (2005)*

### 2.2 Linking PM to rewards

Many researchers state that the measures, both financial and non-financial, should be linked to rewarding (e.g., Banker et al., 2000; Cameron, 1995; Franco-Santos and Bourne, 2005; Franco-Santos et al., 2007; Kaplan and Atkinson, 1998; Kauhanen and Piekkola, 2006; Levinson, 2003; Simons, 2000; Torrington et al., 2005). For example, the study of Banker et al. (2000) highlights the role of non-financial measures in rewarding. According to them, both non-financial and financial performances are improved by using an incentive plan that includes non-financial performance measures. Also the motivational aspect of performance-related pay has been highlighted in the literature (e.g., Hannula and Lönnqvist, 2002; Kaplan and Atkinson, 1998; Kauhanen and Piekkola,
A framework to support performance measurement

2006; Simons, 2000; Van Herpen et al., 2005). However, it is not axiomatic that performance-related pay will increase the motivation of employees or improve their performance. The results of Kauhanen and Piekkola (2006) suggest that the following features are important for a successful performance-related pay scheme:

- the employees have to feel that they are able to affect the outcomes
- the organisational level of the PM should be close to the employee
- individual and team-level PM increases the probability that the scheme will be perceived as motivating
- the employees should be familiar with the performance measures
- the level of payment should be high enough and the rewards frequent enough
- the employees should participate in the design of the performance-related pay scheme.

Also Kaplan and Atkinson (1998) present that even when the PMS is designed very carefully to ensure the causal chain between performance and rewards, there are important behavioural considerations that the PMS must reflect. The individual must believe that the system is fair, equitable and timely. Some studies have also shown contradictory findings concerning the usability of performance-related pay. Franco-Santos et al. (2004) suggest that the main perceived benefits of linking rewards and measurement are the directional benefits that result, rather than motivational benefits. The study of Piekkola (2005) reveals that performance-related pay raises productivity and profitability, but only if high enough. The study of McCausland et al. (2005) indicates that incentive pay has a positive effect on the mean job satisfaction of high-paid workers only. They continue that a potential explanation for this pattern could be that for lower-paid employees, performance-related pay is perceived as controlling, whereas higher-paid employees derive a utility benefit from what they perceive as supportive reward schemes. Kohn (1993) concludes that rewards will ultimately fail because they succeed only in securing temporary compliance. One of his main arguments is that money does not motivate, even if people are principally concerned with their salaries. Ho and McKay (2002) have examined the balanced scorecard bonus plan and conclude that there is a widespread belief among employees that the balanced scorecard is inequitable across branches, too subjective, and creates favourites. Also the study of Ittner et al. (2003) reveals that the use of subjectivity in weighting the measures in a balanced scorecard bonus plan allows supervisors to ignore many performance measures, with financial performance becoming the primary determinant of bonuses. As a whole, it seems that it is appropriate to link PM to rewards, but this linkage should be realised very carefully.

2.3 Communication of measurement information

The role of communication in the PM context has been highlighted by various researchers (e.g., Bourne et al., 2005; Dhavale, 1996; Franco and Bourne, 2003; Franco-Santos and Bourne, 2005; Levinson, 2003; Lönnqvist, 2002; Turner et al., 2005; Ukko et al., 2007a). For example Bourne et al. (2005) conclude that the interactive use of performance information, together with communication about performance intensity,
both in formal meetings and ‘at every opportunity’ will lead to a higher performance of
the company. According to Franco-Santos and Bourne (2005), most authors, when
stressing the importance of communication, normally refer to the feedback of the results
of the measures to the employees.

Organisational communication comprises internal and external communication. Externally
information and communication cover the external stakeholders, whereas
internal communication concerns company employees (Kreps, 1990). Communication of
measurement information usually refers to internal communication. Åberg (2002) divides
internal communication into direct communication, based on face-to-face interaction
(e.g., foreman-employee interaction, team meetings, company meetings) and indirect
system communication based on written and electronic communication (e.g., notice
board, handouts, e-mail and intranet). Many studies claim that face-to-face
communication is the richest channel in internal communication, also in the
communication of measurement information (Bourne et al., 2005; Daft et al., 1987;
Hewitt, 2006; Smids et al., 2001; Ukko et al., 2007a). However, for example the studies
of Bititci et al. (2002), Hewitt (2006), Nudurupati and Bititci (2005) and Turner et al.
(2004) present positive evidence in using system communication. For example, Bititci et
al. (2002) have studied the management implications of web-enabled PMS in a profit
centre of a large manufacturing company. They state that after implementing a fully
integrated web-enabled and intranet-based PMS there was significant improvement in the
areas of confidence in the managers’ decisions, the behaviour of the management,
dissemination of knowledge and the visibility of information. Some improvements were
also found in the behaviour of operational employees. Hence, it seems that system
communication can at least support face-to-face communication.

Another important issue in the communication of measurement information is the
quality of the information. The quality of the information is an essential factor in
exploiting the information provided by the PM. According to Ittner and Larcker (2003),
most companies track a large number of non-financial measures in their day-to-day
operations. To avoid going to the trouble of collecting data that already exist, companies
should take careful inventory of all their databases (cf. Bourne et al., 2005; Franco-Santos
and Bourne, 2005). The other important issue, after gathering the data, is to turn it into
useful information. The study of Evans (2004) highlights the need for better approaches
to analyse performance results and the need to incorporate more sophisticated statistical
techniques, competitive comparisons and benchmarking in organisations' performance
review processes. Therefore, the reliability and validity of measures used to assess
organisational performance, together with more sophisticated analysing techniques, will
improve the quality of the PM information. In addition, an essential issue in PM
communication is the presentation of the measurement information. Robson (2005)
presents that the measurement system should provide graphical, relevant, local and team
level information, whereas Lönnqvist and Mettänen (2003) state that the information
should be intelligible, available, presented in a familiar atmosphere and gathered
cost-effectively. As a whole, it can be assumed that internal communication, and the
quality and presentation of measurement information play an important role in successful
operative level PM.
2.4 Employees’ participation in decision making

As PM has been done at different levels of organisations for some years, it is essential that the possibilities of the employees to participate in the decision making will be taken into consideration. The empowerment of the employees, as well as the employees’ possibilities to participate in the decision making, especially regarding their own job, measures and targets are supported by the literature (e.g., Johnston et al., 2002; Kaplan and Norton, 1996; Laitinen, 1998; Lingle and Schiemann, 1996; Scott-Ladd and Marshall, 2004; Simons, 2000; Suliman, 2007; Turner et al., 2005).

In general, the possibility of employees to participate in the decision making has brought out many positive influences. According to Monge and Miller (1988), employees who are involved in decision making have better knowledge about their organisation in comparison to other employees. They also understand their own role in the organisation more deeply as a part of a larger entirety. Involvement in the decision making process has also been seen to have positive effects on job satisfaction and productivity (Miller and Monge, 1986; Yammarino and Naughton, 1992). The study of Scott-Ladd and Marshall (2004) concludes that participation in decision making has a significant influence on the task variety, identity, autonomy, employee perception of performance effectiveness and received gains. Involvement in the decision making has also been seen to have a positive effect on the performance and opinions about rewards. The results of the studies of Cotton et al. (1988) and Scully et al. (1995) support the findings of Scott-Ladd and Marshall (op.cit.).

Simons (2000) presents that if the information that is needed to set performance goals is dispersed widely throughout the organisation, a participative style is appropriate. He continues that participation in decision making that concerns goal setting depends on the managers’ assumptions about human behaviour. According to his first view, subordinates should not be invited to participate in setting goals because it is expected that they will attempt to bias the goal-setting process in their favour to minimise future efforts. The prevalent view in organisational behaviour is that most individuals inherently enjoy achievement for its own sake and will become self-motivated in achieving the goals of the organisation, if they believe the goal is legitimate, and become committed to the goal through a process that includes their input and participation. According to Turner et al. (2005), the performance information behaviour of a business depends on such factors as employees who use the performance information for decision making and the empowerment of people in making decisions based on performance information. Kaplan and Norton (1996) state that even skilled employees who are provided with superb access to information will not contribute to organisational success if they are not motivated to act in the best interest of the organisation or if they are not given the freedom to make decisions and take actions. It seems that the employees’ possibility to participate in the decision making is important both when designing measures and targets, and when utilising measurement information. As a whole, it can be assumed that the employees’ participation in the decision making improves their motivation, as well as their understanding and knowledge of the PM and the company’s business.
2.5 Other factors related to successful operative level PM

In addition to the factors mentioned above, the earlier literature and studies suggest also a number of other factors that may have positive impacts on operative level PM. These factors are:

- education and understanding (Franco and Bourne, 2003; Franco-Santos and Bourne, 2005; Kaplan and Norton, 2001; Turner et al., 2005)
- clarification of job description (Levinson, 2003; Torrington et al., 2005)
- organisational culture (Bititci et al., 2004; Bititci et al., 2006; Bourne et al., 2002; Bourne et al., 2005; Franco and Bourne, 2003; Franco-Santos and Bourne, 2005)
- organisational strategy (Kaplan and Norton, 1992, 2001; Bourne et al., 2005; Franco-Santos and Bourne, 2005)
- organisational structure and size (Bourne et al., 2005; Franco-Santos and Bourne, 2005)
- management style (Bititci et al., 2004; Bititci et al., 2006; Bourne et al., 2005; Franco and Bourne, 2003; Franco-Santos and Bourne, 2005).

According to Kaplan and Norton (2001), the employees have to understand the strategy if they are to help implement it. The objective is to create employee knowledge and understanding. In this case the role of education should be emphasised. Most of the respondents of the study of Franco and Bourne (2003) called for people to have a good understanding of the measures and of the PMS itself. Some respondents explicitly cited education and training as critical activities for gaining people’s understanding. The clarification of job description is also an important factor in operative level PM. Levinson (2003) states that in an ideal process of performance management systems, both the job to be done and the expectations of accomplishment should be clarified. According to Torrington et al. (2005), an individual’s objectives should be linked to the business objectives to ensure that the employee effort is directed towards organisational priorities. They also highlight the definition of the business role, including job description and continue that the clarity of goals is the key in enabling the employee to understand what is expected and what the order of priorities are. Some studies have also presented organisational culture as an important factor in successful PM. The study of Franco and Bourne (2003) highlights the importance of an organisational culture that encourages action and improvement, and that does not punish people’s errors around performance measures. According to Bourne et al. (2002), a paternalistic culture, not punishing for errors, and encouraging conversation and analysis, can lead to successful implementation of a PMS. Bititci et al. (2004, 2006) have studied the interplay between PM, organisational culture and management styles. The findings of Bititci et al. (2006) show a bi-directional interplay, in which the PMS can shape the organisational culture and management style, and organisational culture and leadership style can affect the success of a PMS initiative. They continue that it was evident from the case studies that if successfully implemented and used, PMS, through cultural change, will lead to a more participative and consultative management style. Also the role of strategy as an important factor has been emphasised, when PM has been used in the implementation and validation of organisational strategy (Kaplan and Norton, 1992, 1996, 2001). In addition,
research objective and methodology

Earlier studies have identified a lack of empirical evidence concerning the factors that facilitate the process of managing through measures. Since many organisations have adopted PM at the team or individual level of the organisation, and the employees use PM in the development of their work, it is relevant to focus on operative level PM. Acknowledging this research gap, the study focuses on factors that improve and facilitate the performance of the operations and the employees, and the use of PM. The research question is:

- What are the factors that facilitate and improve the performance of the operations and the employees, as well as the use of PM?

The primary objective of the study is to construct a framework for successful operative level PM. The purpose of the framework is to help managers to focus on the factors that are important for a higher performance of the operations and the employees, as well as for successful use of PM. By utilising the framework, managers will be able to carry out development actions that will facilitate and improve PM at the operative level of an organisation. The construction of the framework is based on matching the findings of the current study and the PM theory.

For this study, representatives of eight organisations were interviewed in 2006. The main selection criteria for the participating organisations were that they measured their performance formally or informally at the operative level, and they were selected to represent different kinds of organisations, that is, small, medium-sized, large, public and private organisations. One purpose of the study was to examine the possible differences in different organisations as regards to the factors behind successful operative level PM. In each organisation, the primary purpose of use of operative level PM was to support the overall targets of the organisation. This was put into practice by focusing employees’ attention on the important issues, as well as by trying to motivate and reward them with the means of PM.

A total of nine development and general managers, who operated daily with the development of operative level PM, were interviewed in eight organisations. They were also seen as possible users of the framework. This group of interviewees were deeply involved in operative level PM and were thus able to provide an overall view of the issues under investigation. The study also tests the earlier findings of Ukko et al. (2007b, 2008), in which the perspective of employees was emphasised in comparison to the perspectives of the management. For this reason, people who were strongly involved in operative level PM, but also represented the management perspective, were interviewed. However, the lack of employees’ perspective in the current study can be seen as a limitation that should be taken into account when utilising the findings of the study.
In the study, one interviewee was selected from each organisation, except for two interviewees from case organisation E. In this case it was appropriate to interview the controller as well as the director, because they both had equally important roles in the development of operative level PM and human resources. In total, nine interviews were carried out in the offices of the organisations, and all the interviews were recorded. The total interview time was nine hours, from 50 minutes to 87 minutes per interviewee. Detailed information about the case organisations and the interviewees is presented in Table 2.

**Table 2** Information about the case organisations and the interviewees

<table>
<thead>
<tr>
<th>Case</th>
<th>Industry</th>
<th>Number of employees</th>
<th>Representative(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Facilities management</td>
<td>35</td>
<td>Maintenance manager</td>
</tr>
<tr>
<td>B</td>
<td>Regional council</td>
<td>24</td>
<td>Development director</td>
</tr>
<tr>
<td>C</td>
<td>Machinery for construction</td>
<td>48</td>
<td>Development manager</td>
</tr>
<tr>
<td>D</td>
<td>Design</td>
<td>24</td>
<td>CEO</td>
</tr>
<tr>
<td>E</td>
<td>Ventilation equipment</td>
<td>86</td>
<td>Director and controller</td>
</tr>
<tr>
<td>F</td>
<td>Packaging</td>
<td>90</td>
<td>Controller</td>
</tr>
<tr>
<td>G</td>
<td>Packaging</td>
<td>450</td>
<td>HRD manager</td>
</tr>
<tr>
<td>H</td>
<td>Energy</td>
<td>450</td>
<td>Development engineer</td>
</tr>
</tbody>
</table>

According to the definition of small and medium-sized enterprises by the European Commission (Official Journal of the European Union, 2003), a small enterprise is an enterprise which has fewer than 50 occupied persons, and has annual net sales not exceeding 10 million euro. A medium-sized enterprise is an enterprise which has fewer than 250 occupied persons, and annual net sales not exceeding 50 million euro. Based on this definition, case organisations C and D are small enterprises, and case organisations E and F are medium-sized enterprises. Case organisations G and H can be considered as large enterprises, whereas case organisations A and B are public organisations.

The interviews focused on the interviewees’ experiences concerning the factors that improve and facilitate the performance of the operations and the employees, and the use of PM. To achieve a broad view of the studied factors, open-ended questions were used, and the themes were discussed quite informally during the interviews. When applying open-ended questions, multiple answers are often reported. The respondents may give one or more answers, and the combination of answers may vary across respondents (Ghauri and Gronhaug, 2002). Thus, the reliability of coding is important in the evaluation of the reliability of the research. To ensure reliability, two (or more) individuals should do the coding of the same data independently. The degree of agreement between the coders is a measure of reliability in coding (Ghauri and Gronhaug, 2002). In the present study, the interviews were carried out by one researcher. The analysis of the interviews was conducted by two researchers independently, after which a common view was discussed. The analysis was conducted with the method of content analysis by coding the most emphasised factors from each case organisation separately. Next, the results of the case organisations were cross-analysed to find a common view of the factors under investigation. Finally, based on matching the findings of the current study and the PM theory, a framework for successful operative level PM was constructed.
Furthermore, the generalisability in qualitative research can be divided into internal and external, where internal generalisability refers to the generalisability of a conclusion within the setting or group studied, whereas external generalisability refers to its generalisability beyond that setting or group (Maxwell, 1996). According to Lukka and Kasanen (1995), the rhetoric of contextual generalisation provides a way to move from isolated observations to results of a more general status. Therefore the researcher has to understand and communicate the real business context and uncover deeper general structural relationships.

4 Results of the interviews

In this section we present descriptions of the case organisations and the results of the interviews concerning the factors that improve and facilitate the performance of the operations and the employees, and the use of PM. In the end of this section we summarise the findings of the cases by introducing the results of the cross-analysis to achieve a common view of the underlying factors related to successful operative level PM.

4.1 Description of the case studies

Case A

Case organisation A operates in the public sector. This organisation offers for example maintenance service to schools and kindergartens. There are 35 employees, most of whom are over 60 years old. The problem is how to motivate these employees, and how to keep young and skilful employees in the organisation. According to the maintenance manager (interviewee), the organisation holds the view that a reward together with the possibility to participate in the decision making has a positive impact on the effectiveness and actions of the employees. However, it is not possible to create a financial reward system in this organisation, because the municipal economy limits especially the use of financial rewards. Therefore the organisation tries to find alternative non-financial ways to reward the employees. They also give more responsibilities to the employees by including them in development projects, like balanced scorecard implementation. This is seen to increase interactivity and communication between the management and the employees, and to have a positive impact on PM. The interviewee highlighted that updating the targets and job descriptions has a positive influence on work motivation and the realisation of targets.

Case B

Case organisation B is also a public sector organisation and employs 24 people. This organisation is a regional council and it works for the integrative and sustainable development of the region. The organisation does not use any formal PMS, but they have measures to support for example council decisions. They do not have a reward system either, but the employees have possibilities to use their working hours for training or further education. The development director emphasised that these training opportunities together with the possibility to participate in target setting will lead to a better motivation of employees and further to a better performance of the organisation. Training improves
the employees’ capabilities and this way they can have higher targets and wider job
descriptions. This was seen to be an alternative way to reward the employees in the
situation where financial rewards are limited.

Case C
Case organisation C is a small enterprise that employs 48 people. The organisation
develops, manufactures and sells products for environmental care, improvement of
recycling methods and processing of different materials. The case organisation has had a
development project where they have implemented the balanced scorecard. The
development manager (interviewee) stated that they have conducted development
discussions with all employees. In these discussions they have clarified the individual
targets and linked them to the overall targets of the company. The feedback from the
employees has been highly positive. The opinion of the employees was that this kind of
interaction has helped them to understand the business of the company much better than
before, and it was seen to be an essential element in the successful use of the balanced
scorecard. The interviewee also stated that linking PM to the reward system is important,
but the pay should be noticeable enough to work as a motivator for the employees. So,
better interaction and communication, employees’ possibilities to participate in target
setting, together with linking PM to the reward system create a strong base for operative
level PM.

Case D
Case organisation D is a small design enterprise employing 24 persons. The employees
are mostly designers and dressmakers. The products are manufactured by sub-contractors
in other countries. The organisation has had many development projects, including
balanced scorecard implementation, during the past few years. According to the CEO
(interviewee) they started to inform the employees in briefings before launching the BSC
implementation process. The feedback from the employees was positive, as they felt that
they understood better why the project was important for the company. The teams also
participated in the balanced scorecard implementation project and they had possibilities
to affect the team targets and measures. This enhanced interaction and communication
between the managers and the employees. The company has also started regular meetings
around PM. The CEO had a strong opinion that in the future PM should be connected to
the reward system concerning all the employees. He continued that enhanced
management-employee communication together with the employees’ chances to take part
in decision making have had a positive influence on the implementation and use of the
balanced scorecard, both on team and company level.

Case E
Case organisation E is a medium-sized enterprise manufacturing ventilation solutions.
This enterprise employs 86 people. The director and the controller were interviewed
together. This organisation has used the BSC and a reward system for a while. The
interviewees stated that every employee of the company must have a possibility to be a
self-ruling expert in his/her own ground. This means that the employees have lots of
possibilities to affect for example their own goals, measures and training. The
interviewees also emphasised interactive communication, and the company has plenty of meetings, briefings and development discussions around PM at every organisational level. Furthermore, they saw that it is very important to set the targets to cover all employees with a linkage to the reward system. In addition, they highlighted the importance of non-financial rewards, for example language courses abroad or a day in a ski resort. The interviewees also stated that one of the best ways to keep the employees motivated and committed is to give them training and further education possibilities. All these issues were seen to have a positive effect on PM actions at the operational level and lead to a higher overall performance of the company.

Case F
Case organisation F is a medium-sized enterprise. There are 90 employees, and the company operates in the packaging industry. The interviewee was the controller of the company. This company also uses the BSC with a linkage to a reward system. The controller mentioned a couple of issues that he considered important when launching PM to the lower level of an organisation. He stated that the targets and measures of the employees must be clear before they can feel to be appreciated. The appreciation can be shown by rewarding and by the possibility to affect one’s own work. He also emphasised the training and further education opportunities. These opportunities should be mentioned for example in the values of the company, even if the company has no possibilities to provide them during a poor economic situation. The interviewee also held the view that after they had launched PM to the individual and team level, the job descriptions had been clarified. This has caused a positive effect on the measurement and the overall performance of the company.

Case G
This case organisation is a large enterprise in the packaging industry. There are about 450 employees. The enterprise uses the BSC and a merit pay system. The human resource development manager’s (interviewee) opinion was that training, understanding the targets and interactivity in communication are the main issues when using PM at the operative level of the organisation. They have faced some problems in communication on the team and individual level. The responsibility for measurement information communication between the management and the employees was given to the foremen. However, some of the foremen ignored this task, which means that some teams were in a blackout as regards to the measurement information and the realisation of targets. For that reason there were some differences between the employees of different teams concerning the understanding of PM and its linkage to the company business. The reward system was connected to the team level targets and performance, which was seen as a suitable level in this type of an organisation.

Case H
Case organisation H is a large energy enterprise employing around 450 people. The interviewee was the development engineer. According to the interviewee, understanding individual targets and job descriptions, together with open communication, have enhanced the operational level PM. The key factor is that the targets must be at an
attainable level and concurrently challenging enough. The employees have a large role in target setting. The interviewee stated that the company has a strong belief that rewarding is the main issue with regards to the realisation of targets. The company has two different reward systems, one of which is connected to the seasonal maintenance break. If the employees reach the targets by that point, the extra compensation is remarkable.

4.2 Summary and analysis of the results

The interviews were conducted around factors that facilitate and improve the performance of the operations and the employees, and the use of PM at the operative level of the organisation. In the content analysis six factors were highlighted. The factors were named, and then it was analysed how strongly the factors were perceived to influence the success of operative level PM in each case. To achieve a more accurate level of analysis, we divided the influence of different factors into three categories: *limited influence, **influence and ***substantial influence. The factors and their influences behind successful operative level PM in the case studies are presented in Table 3.

<table>
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<tr>
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<td>PM linkage to reward</td>
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<td>Possibilities to participate in decision making</td>
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<td>Understanding the linkage between the individual’s and organisation’s targets</td>
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<td>Interactive communication</td>
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<td>Clarification of job description</td>
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Notes: *limited influence
**influence
***substantial influence

The purpose of the analysis was to find a common view of the case organisations concerning the factors that facilitate and improve the performance of the operations and the employees, and the use of PM at the operative level of the organisation. Based on the level of influence, the factors were divided into two categories. PM linkage to reward, interactive communication and understanding the linkage between an individual’s and the organisation’s targets were perceived as the most important factors behind successful operative level PM. Possibilities to participate in decision making, clarification of job description, and training were also seen to have a positive influence on operative level PM. The size and sector of the organisation did not seem to make a remarkable difference on what were the most important factors behind successful operative level PM. For example, the linkage of PM to rewards, understanding the linkage between the individual’s and the organisation’s targets, and interactive communication were perceived
to have a positive effect on the performance of employees and operations both in small, medium-sized and large organisations, as well as in public and private sector organisations. However, it seems that the public sector does not have the same financial resources for rewarding than the private sector. Therefore, they have to find and use non-financial ways to reward their employees.

As a whole, the perception of the interviewees was that it is difficult for the employees to see how their own job influences the overall performance of the company. Therefore, to motivate the employees there should be measures or appraisals that are more close to the individual’s responsibilities. To increase the motivational aspect of measurement, the linkage of operative level measures to the rewards should be emphasised. In addition, it is important that organisations try to complement the financial reward system by using non-financial rewarding, because financial bonuses are usually realised only once a year and the employees may consider it too obvious. Also, understanding the linkage between individual targets and company targets, as well as individual job description and company business were perceived as important issues. The employees need to know what their part is in the big picture. According to the interviewees, communication around PM was perceived as a vital element that can never be emphasised too much – especially the interactive part of it. The interviewees shared the opinion that when PM is implemented at the team or individual levels, the employees should have possibilities to be involved in the decision making, at least with regards to their own measures and targets. The role of training and further education was emphasised in most of the cases. In the PM context, training and education have multiple roles: the interviewees saw it as a way to enhance the capability and understanding of the employees, to reward and to motivate the employees.

5 A framework to support PM at the operative level of an organisation

The next step of the study was to construct a framework to support operative level PM. The starting point of the study was to focus on the factors behind successful operative level PM. Although the findings of the current study have been presented in different contexts in earlier literature, the literature presents the factors that facilitate and improve operative level PM in a fragmented and disorganised form. The current study extends the earlier research by presenting six factors that facilitate and improve the performance of the operations and employees, and the use of PM at the operative level of an organisation. The findings indicate that the factors can be divided into two different categories, depending on how strongly they are perceived to influence the success of operative level PM. The study suggests that the linkage of PM to rewards, understanding the linkage between an individual’s and the organisation’s targets, and interactive communication are the most important factors in successful operative level PM. In addition, the employees’ possibilities to participate in decision making, clarification of job description, and training concerning PM are perceived as important.

The construction of the framework was started on the basis of the above six factors. The main idea of the framework is that a good state of the underlying factors should lead to higher performance of the employees and operations and to a successful use of PM. Hence, it is important to clarify and analyse the current state of the factors in the organisation. When the current state of the factors has been analysed and clarified, the
organisation can implement development projects which they consider important for a higher performance of the employees and operations. After conducting the development projects, the organisation can reanalyse the current state of the factors and clarify whether the development projects have had the desired results. The better condition of the underlying factors should be realised as a higher output of the measures of the employees and operations. Finally, this will lead to a higher performance of the whole organisation.

The basic idea of the framework is presented in Figure 1. Although the study focuses mainly on the factors that facilitate and improve the performance of the operations and employees, as well as for a better use of PM at the operative level of an organisation, there can be found many other factors that may have an impact on operative level PM in a wider perspective. For that reason, context factors and system factors are included in the framework. The categorisation of these factors is based on the matching of earlier studies (e.g., de Waal, 2003; Bourne et al., 2005; Franco and Bourne, 2003; Franco-Santos and Bourne, 2005; Martinez and Kennerley, 2006) with the findings of the present study. The context factors include internal and external factors, and the system factors include design, implementation and use factors.

Figure 1 presents the idea and phases of the framework. The starting point is evaluation and analysis of six factors behind successful operative level PM. Next, the organisation should choose the most important factors for further development. These development actions should lead to better results of operative level PM. The current study does not provide guidance for the analysis of the factors. However, the analysis can be based for example on the results of a survey concerning the factors behind successful operative level PM. To achieve an overall view of the current situation, the survey can cover all the employees of the organisation or a selected department. To ensure the influences of the development actions, the survey can be repeated after finishing those actions. To get the best use and benefits of the framework, essential findings from the literature of PM can also be taken into consideration. Hence, the key lessons that should be borne in mind when utilising the framework are the following:

- When linking PM to rewards, the employees must believe that the reward system is fair, equitable and timely (e.g., Kaplan and Atkinson, 1998).
- The implementation of operative level targets with the linkage to strategic targets is the main issue when putting strategy into action. This linkage can be present for example in the form of a strategy map (e.g., Kaplan and Norton, 2001).
- The interactive use of performance information together with communication about performance intensity both in formal meetings and ‘at every opportunity’ will lead to a higher performance of the company (e.g., Bourne et al., 2005).
- The employees’ participation in decision making concerning their individual or team matters, but to some extent on the company level as well, will lead to a higher performance of the employees and the organisation (e.g., Ukko et al., 2008).
- When the job description is done carefully, it is easier for the employees to understand the personal targets and to have control over them (e.g., Ukko et al., 2008).
- Training improves the employees’ capabilities, which enables higher targets and wider job descriptions and finally leads to a higher performance (e.g., Pekkola et al., 2007).
As a summary of this section, it can be stated that the framework is a starting point for the development and improvement of operative level PM. The framework includes the factors that have a direct and positive influence on operative level PM. On a wider perspective there are many other elements, for example leadership and organisational culture that influence the PM. Managers who utilise the framework should also note that
the factors are linked to each other (e.g., Ukko et al., 2008). For example training opportunities can be seen as a part of non-financial rewarding, but they may also increase the understanding of the linkage between one’s own and the company’s targets (e.g., Pekkola et al., 2007). Participation in decision making may increase the communication between the managers and the employees and also clarify the job descriptions and targets (e.g., Ukko et al., 2008). Interactive communication has a positive influence on other factors, and further on, a higher performance of the organisation (e.g., Ukko et al., 2007b, 2008). Although the study indicates that three out of the six most important factors have a positive influence on the success of operative level PM, the priority may be different, depending on the needs of the organisation. It can be stated that the priority of the factors, together with the condition of the factors, should guide the decision making regarding development actions.

6 Discussions and conclusions

This study extends the earlier research by providing a framework to support PM at the operative level of an organisation. Based on the empirical evidence, the fragmented literature has been re-organised and complemented into six factors that facilitate and improve the performance of the operations and employees, and the use of PM at the operative level of an organisation. These six factors form a basis for utilising the framework. The study suggests that the linkage of PM to rewards, understanding the linkage between an individual’s and the organisation’s targets, and interactive communication are the most important factors in successful operative level PM. In addition, the employees’ possibilities to participate in decision making, clarification of job description and training concerning PM are perceived as important. The framework enhances the understanding concerning the development actions around the factors that facilitate and improve operative level PM. The purpose of the framework is to show that by taking care of the factors that have a positive effect on the operative level, that is the individual and team level PM, will improve the performance of the employees and operations. This enables higher financial performance of the organisation in the long run.

As regards to the managerial implications of the research, the framework provides a starting point for the development and improvement of operative level PM in organisations. The framework can be used to facilitate the process of managing through measurement by focusing on the six factors behind successful operative level PM. Although the priority and the state of the factors may differ, depending on the needs of the organisation, the evaluation of the factors provides a basis for the decision making regarding the development actions. Managers can utilise the framework by conducting the different phases of the framework. The framework to support operative level PM can also be utilised in the design and implementation of a PMS. The analysis and the development actions around the factors can be carried out before the design and implementation of the PMS. This enables an early reaction to the important issues related to the factors that facilitate and improve operative level PM, emphasising the bottom-up perspective during the design and the implementation phases, which can be seen as an essential element when PM is adopted at the team and individual levels.

The empirical evidence of the study is based on the views of managers. Although all the interviewees were strongly involved in the development of operative level PM, the lack of the perspective of the employees can be seen as a limitation of the study.
Additionally, the empirical evidence is based only on nine interviews in eight organisations, which can be seen as a limitation of the study as regards to the generalisation of its results. However, the findings of the current study are quite well in line with an earlier study of Ukko et al. (2007b, 2008), in which the perspective of employees was emphasised. The present study examined the factors that improve and facilitate the performance of the operations and the employees, and the use of PM. There are also a number of other elements, like leadership and organisational culture, that influence PM in a wider frame. For example, Bititci et al. (2006) conclude that the organisational culture and leadership style can affect the success of a PMS initiative. They continue that organisational culture and management style seem to be interdependent throughout the lifecycle of the PMS. That is, management styles need to evolve as the maturity of the PMS and organisational culture evolve.

The results of the current research are applicable in situations where organisations have adopted PM at the operative levels, that is team and individual levels, of the organisation. The six factors behind successful operative level PM seem to have a positive effect on PM and the performance of employees and operations both in small, medium-sized and large organisations, as well as in public and private sector organisations. However, more empirical evidence is needed about the factors that facilitate and improve operative level PM in different types of organisations. For example, generalisation of the findings regarding large organisations should be made cautiously. In large companies it is not always possible to take into account the detailed viewpoint of the whole personnel concerning the different issues around PM. Also the use of face-to-face methods in the communication of measurement information is not always possible in large organisations.

Based on the research process, some issues for further study can be presented. First, the framework to support operative level PM needs to be tested in practice. A longitudinal study in a few organisations could be an appropriate approach. The study could be carried out by examining the current state of the factors that facilitate and improve operative level PM, after which the development actions would follow. When the development actions have been conducted, the state of the factors should be improved and the performance of teams and individuals should be on a higher level. Second, it is essential and interesting to study what kinds of tools are suitable for analysing and evaluating the factors behind successful operative level PM. Third, the reliability, validity and priority of the factors that facilitate and improve operative level PM can be tested and improved. Fourth, an interesting research issue is to examine how the framework can be utilised in the design and implementation phases of a PMS, and how it is related to the existing design and implementation processes.
References


A framework to support performance measurement


A framework to support performance measurement


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