

STUDIES IN MANAGERIAL AND FINANCIAL ACCOUNTING  
VOLUME 14

**PERFORMANCE  
MEASUREMENT AND  
MANAGEMENT CONTROL:  
SUPERIOR ORGANIZATIONAL  
PERFORMANCE**

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2004



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**PERFORMANCE MEASUREMENT AND  
MANAGEMENT CONTROL: SUPERIOR  
ORGANIZATIONAL PERFORMANCE**

# STUDIES IN MANAGERIAL AND FINANCIAL ACCOUNTING

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First edition 2004

British Library Cataloguing in Publication Data

A catalogue record is available from the British Library.

ISBN: 0-7623-1122-3

ISSN: 1479-3512 (Series)

© The paper used in this publication meets the requirements of ANSI/NISO Z39.48-1992 (Permanence of Paper). Printed in The Netherlands.

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# INTRODUCTION

EDHEC was particularly honoured to organise the 2nd Workshop on Performance Measurement and Management Control on its Nice campus in France, in collaboration with the European Institute for Advanced Studies in Management (EIASM).

EDHEC is a Business School founded on research. Over the last five years, the School has created five Research Centres of international standing:

- Risk and Asset Management
- New Technologies, Law and Best Practices
- Transformational Change and Disruptive Strategies
- Performance Measurement and Management Control
- Customer Equity

The *Performance Measurement and Management Control* Centre was the lynchpin of the Workshop. I would like to thank Eric Cauvin and Pierre-Laurent Bescos in particular for their enormous contribution to the project.

Given the essentially international nature of research today, EDHEC would also like to extend its heartfelt thanks to two highly renowned professors for their particularly active and loyal participation, Professor Marc Epstein and Professor Jean-François Manzoni.

Finally, we would also like to thank all those who participated in and contributed to the success of this workshop through their research work.

Bernard Fournier  
*Chairman – Board of Directors*  
*EDHEC Business School Lille & Nice*



# PREFACE

Performance measurement and management control are critical components of improving organizational performance. But, researchers have historically had little success in determining the specific actions that lead to superior performance. The focus of this volume is on the characteristics of superior organizational performance and the identifiable features of management control and performance measurement systems that drive improved performance.

After several decades of research in this area, we have few clear conclusions. Empirically, we have been able to say little about the specific actions that drive superior organizational performance. Recently, researchers have provided some clarity. Managers and researchers have more carefully collected and analyzed data to better understand the most effective management control and performance measurement mechanisms to drive and measure organizational performance. But, far more research is needed. Some of this research was reported in the prior volume from the highly successful first Nice conference in 2001 and published by Elsevier in 2002. Additional research is reported in this volume and provides both results and guidance for future academic research and management practice.

What can we say regarding how to become a high performance organization? We usually think about high performance organizations having strong financial results, satisfied customers and employees, high levels of individual initiative, productivity, and innovation. And, we talk about how high performance is achieved – including mission, vision, aligned performance measurement and reward systems, and strong leadership. But, we have validated very little of these propositions.

We need to do far more research to advance knowledge of organizations and the drivers and measures of success. We need to contribute to building a research base and developing a deeper understanding of the causal relationships. Only in this way can we provide guidance to managers as to what actions they should take to lead to superior organizational performance.

There is much that management control research can provide to better understand the actions that are needed to drive organizational success. Careful research in the role of strategy, structure, systems, people, and culture as determinants of organizational success can provide significant contributions to the academic literature and guidance for management practice. This is a challenge for all researchers in management control and performance measurement.

This book contains a compendium of some of the excellent papers presented at a workshop on Performance Measurement and Management Control: Superior Organizational Performance in September, 2003. Sponsored by the European Institute for the Advanced Study in Management (EIASM) and held in Nice, France on the campus of EDHEC School of Management, this workshop attracted leading scholars in management control and performance measurement from around the world. We were privileged to provide invited plenary addresses to the workshop and were involved in the selection of the papers that were presented at the conference. The call for papers drew a response far higher than anticipated and thus the competition to make a presentation at the conference was quite high. Further, given the space limitations in this book, another competitive selection was required. The contents of this book represent a collection of leading research in management control and performance measurement and provide a significant contribution to the growing literature in the area.

The primary questions relate to the specific managerial actions that can be taken to drive superior organizational performance and what are the most appropriate measures of long term success in organizational performance. The papers in this volume address these questions using a variety of research methods. Experimental, analytical, empirical, and field studies are all used to explain how management control and performance measurement can aid in the implementation of strategy and the improvement of organizational performance. The approaches are used in both for-profit and not-for-profit organizations.

The answers are not yet clear. But it is hoped that the papers included in this volume contribute to this growing body of knowledge and lead us to an improved understanding of how to build better organizations and evaluate and understand their performance.

The workshop owes its success to numerous individuals and institutions. Their superb support and assistance is greatly appreciated. Among those who contributed significantly are Graciella Michelante and Gerry Van Dyck at EIASM and Pierre-Laurent Bescos, Eric Cauvin, and Olivier Oger at EDHEC Business School. We also want to thank the workshop sponsors, in particular the INSEAD-PriceWaterhouseCoopers Research Initiative on High Performance Organizations. Finally, we want to thank the speakers and participants in the workshop. Their attendance and enthusiastic participation made the workshop an enjoyable learning experience. We are hopeful that this book will continue the search for additional understanding and development in performance measurement and management control, and provide guidance for both academics and managers as they work toward improving organizational performance.

Marc J. Epstein and Jean-François Manzoni  
*Editors*

**PART I:**  
**IMPROVING ORGANIZATIONAL**  
**PERFORMANCE**





# THE DRIVERS AND MEASURES OF SUCCESS IN HIGH PERFORMANCE ORGANIZATIONS

Marc J. Epstein

## ABSTRACT

*Performance measurement and management control are critical components of improving organizational performance. But, researchers have had little success in determining the specific actions that lead to superior performance. Some researchers have proposed models and some companies and consultants have implemented performance measurement systems and management control mechanisms to improve performance. But, the results are unclear. Significant qualitative and quantitative research is necessary to test the validity of the models being proposed and used. This paper reports on a series of research studies that address these issues, provide some initial results, and provide direction for much needed additional research.*

## INTRODUCTION

At the core of the performance measurement and management control literature is a focus on better understanding both the drivers and measures of organizational success. Both managers and researchers attempt to identify the levers that can be used to improve organizational performance and how the implementation of

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**Performance Measurement and Management Control: Superior Organizational Performance**

**Studies in Managerial and Financial Accounting, Volume 14, 3–18**

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ISSN: 1479-3512/doi:10.1016/S1479-3512(04)14001-X

strategy can be more effective. The focus is on the characteristics of superior organizational performance and the identifiable features of management control and performance measurement systems that drive improved performance.

After several decades of research in this area, we have few clear conclusions. Empirically, we have been able to say little about the specific actions that drive superior organizational performance. But, recently researchers have provided some clarity. Managers and researchers have more carefully collected and analyzed data to better understand the most effective management control and performance measurement mechanisms to drive and measure organizational performance. But, far more research is needed. Some of this research was reported in the prior volume from the first Nice conference (Epstein & Manzoni, 2002). Additional research is reported in this volume and provides both results and guidance for future academic research and management practice.

There has been significant discussion in the last two years about corporate accountability (including both corporate governance and transparency) and the imperative to improve organizational performance. In *Counting What Counts: Turning Corporate Accountability to Competitive Advantage*, Epstein and Birchard (1999) explored the elements of accountability and the role of both managers and accountants in making significant improvements. At the core of the book, is the notion that corporations are increasingly being evaluated more broadly and users of information recognize that there is a broader set of elements of organizational performance that lead to long term success and a broader set of measures of organizational success than has been previously used. What are those specific elements and drivers that organizations have used and can use to drive long term success?

In *Built to Last: Successful Habits of Visionary Companies*, Jim Collins and Jerry Porras (1994) reported on their research that addressed some of these questions and the distinguishing characteristics of those companies that have been successful over a long time horizon. Jim Collins, in *Good to Great: Why Some Companies Make the Leap and Others Don't* (2001), continued this research and examined the distinguishing characteristics of those successful companies that have transitioned from good companies to those that have been truly outstanding over the long run.

In *Counting What Counts*, we also developed an approach to corporate performance that focuses on the elements that drive success – focusing particularly on the management control and performance measurement aspects. This includes the factors that distinguish a high performance organization from those that are not high performance, the actions that companies can take to be more successful and accountable, and the development of the appropriate leading and lagging indicators to measure success. We also presented a corporate accountability cycle that includes four elements:

- (1) Governance – including leadership by senior managers and boards of directors.
- (2) Measurement – including financial, operational, and social measures.
- (3) Reporting – including both internal and external reporting for transparency.
- (4) Management systems – including all management control systems for the implementation of strategy.

Epstein and Westbrook (2001) built on that work with the development of the Action Profit Linkage Model that examines how to identify and measure the payoffs of various actions to drive success (for some examples, see Epstein, 2002). Recently, additional research has been completed that focuses on identifying the management control actions related to superior organizational performance. What are the specific actions that managers can take to drive really distinguishing, superior performance? The work focuses on the link between actions and performance in five areas: governance, e-commerce, innovation, mergers, and sustainability (see Fig. 1).

The objective is to better understand, drive, manage, and measure success both in overall corporate governance and in various individual core functional activities. The models and applications are very similar among all five. This review provides an opportunity to examine both the results of the research and an

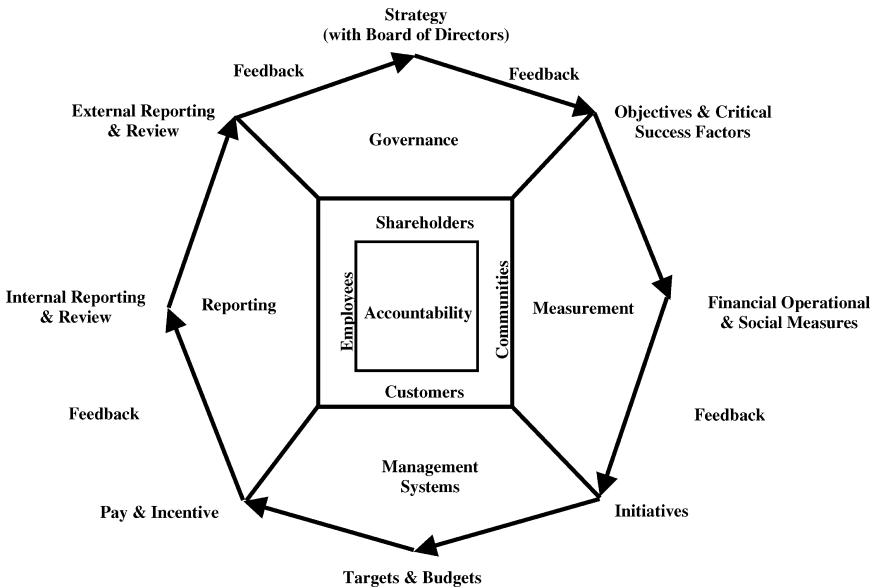


Fig. 1. The Accountability Cycle. Source: Epstein and Birchard (1999).

identification of numerous remaining research questions in management control and performance measurement in general and related specifically to drive superior organizational performance.

### *Governance*

Building on the foundation of the accountability cycle in *Counting What Counts*, Epstein and Roy (2002) developed a model for a clearer articulation of the drivers and measures of performance of corporate boards of directors. Identifying the three strategic objectives for boards of: (1) strategic oversight; (2) accountability; and (3) monitoring and evaluating performance and succession planning, Fig. 2 describes the inputs, processes, outputs, and outcomes of board activities with four key inputs and six key processes that lead to success in the three core objectives and ultimate outcome of corporate profitability.

Although prior empirical research findings are not completely consistent regarding the impact of corporate governance on corporate performance (Korac-Kakabadse et al., 2001; Rhoades et al., 2000), there is evidence that good

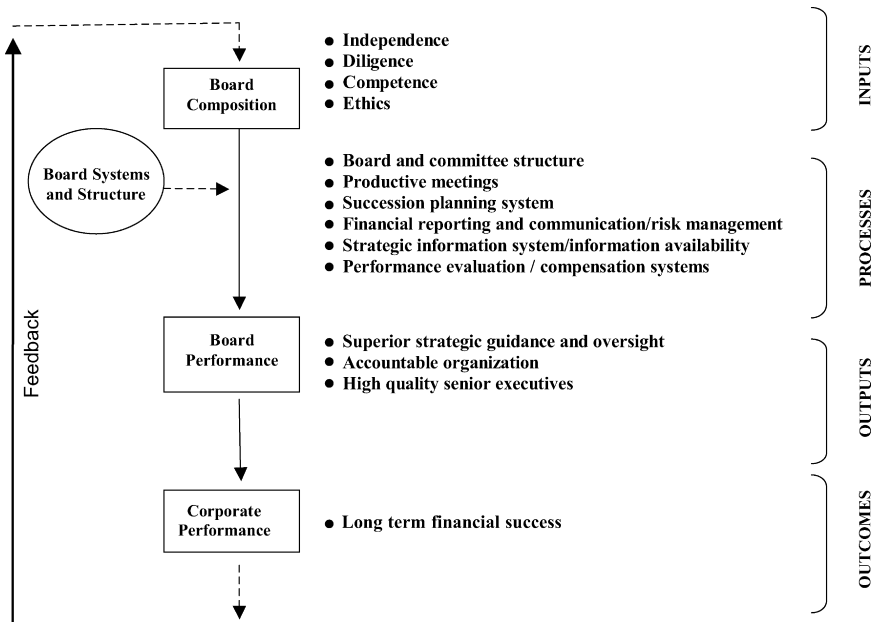


Fig. 2. Determinants of Board Performance. Source: Epstein and Roy (2002).

corporate governance pays (Gompers et al., 2003; MacAvoy & Millstein, 1999; McKinsey & Company, 2002). It is imperative then that researchers develop a clearer understanding of the specific managerial actions that can be taken to drive superior performance and the appropriate performance measures to evaluate success. Then, guidance can be provided to managers as to the specific management control mechanisms that can be designed and implemented to improve performance. We need to apply the theories and empirical data that have already been accumulated and develop additional research studies to provide this specific guidance as to when some managerial control mechanisms work better than others, the payoffs of management control actions, which actions drive higher levels of performance, and the appropriate combination of multiple measures to identify and measure success. These would include both leading and lagging indicators and evaluate inputs and processes along with outputs and outcomes.

Recently Enron has been in the news and was one of the major events that increased the focus on corporate governance. Among the many concerns about management control at Enron was the compensation and reward systems. Though there has been much in the academic literature that has examined the benefits of tying rewards to performance, numerous companies lacked the controls to balance the desired empowerment. For more on empowerment and control, see Simons (1995a, b).

A compensation system's objective is to develop, motivate, monitor, evaluate, and reward senior corporate executives. Traditionally this only required a cursory review of performance and relatively standard pay increases. A decade ago, many suggested that to better align shareholders' and managers' interests, companies should adopt pay plans that pay for performance and is linked to increases in stock price (Hall & Lieberman, 1998). However, because many of the measures of performance were short term, executives received large bonuses as stock price went up but were not required to repay them when stock prices ultimately fell. Further, since performance was often not benchmarked against industry averages, a steadily rising stock market pushed many corporate share prices higher for companies with only average performance (Murphy, 2000). Thus, many CEOs with below industry average performance received bonuses in the tens of millions of dollars.

Numerous other issues at Enron relate to the development of management control and performance measurement systems to improve organizational performance. Enron demonstrates the importance of both culture and trust in driving organizational performance (Currall & Epstein, 2003). Monitoring and managing the level of organizational trust, incentive pressure, and culture and how their fragility can impact organizational success are critical responsibilities of senior managers and boards of directors and are central to management control.

This corporate governance study also included the development of a balanced scorecard framework for corporate governance and constructing three distinct balanced scorecards for evaluating board performance, CEO performance, and to provide information for the board's evaluation of corporate performance (see Epstein & Roy, 2002, 2003a). It also includes the objectives, the causal linkage models, and a long list of metrics for each of the scorecards. The framework has been applied in some companies (for an example, see Kaplan & Nagel, 2003).

Unfortunately, presently there are few boards that systematically and comprehensively evaluate their own performance or the performance of their board members. Recent regulatory changes also do not solve the problem. They attempt to regulate the inputs but do very little to the processes. More fundamental changes are necessary if performance is to be significantly improved and researchers need to provide better guidance on the management control and performance measurement mechanisms – the systems, structures, culture, and people – that can be used to drive superior performance.

### *E-Commerce*

Though much has been written about internet strategy and internet marketing, there is little about what managers can do to effectively implement an e-commerce strategy in large organizations and drive superior performance. Effective management control systems and structures and performance measurement systems are necessary to encourage desired cannibalization and other changes within the organization and motivate the desired changes to improve performance.

Figure 3 is a model of the antecedents and consequences of e-commerce success. It describes the actions that managers can take to improve the implementation of an e-commerce strategy including both the inputs and processes and the outputs and outcomes of successful implementations. In a recent research project, Epstein integrates the academic literature and twenty-five company case studies and analysis to document the management control and performance evaluation approaches that lead to success in the implementation of e-commerce. This includes an analysis of the successes and failures in past implementations and provides guidance for managers and researchers as to the specific management control and performance measurement actions that can be taken to lead to superior e-commerce performance and the metrics to more effectively evaluate success (Epstein, 2004a). This research study specifically includes the e-commerce strategies, structures, and systems including performance evaluation, incentives, and rewards.

After the internet boom of the late 1990s, there was a dramatic drop in both the value of internet stocks and the perception of future internet development. The

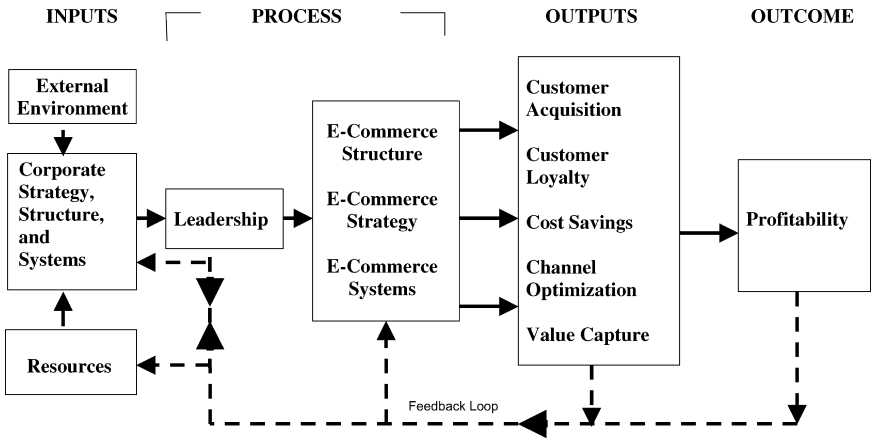


Fig. 3. Antecedents and Consequences of E-Commerce Success. *Source:* Epstein (2004a).

dot-com bust has led many companies to reexamine their e-commerce strategy. It has also caused a careful evaluation of the specific actions that will lead to increases in value creation and the payoffs of e-commerce implementation. Similar to the deficiencies in the measurement of payoffs in other organizational functional units, the research literature and management practice are substantially underdeveloped. There is little on how to measure the performance of either the functional units or the managers or the evaluation of the payoffs of investments in either information technology (IT) or e-commerce and little on what drives success. We have learned that success in IT and the measures of the payoffs are clearly not website hits! It is the actions that will drive ultimate profitability. A careful identification of the appropriate metrics to evaluate success that includes inputs, process, and results measures that aligns with the figure above is necessary (see Epstein, 2004a, b).

Here again the objective is to document the specific actions that will lead to superior performance and how companies might measure success and the payoffs of various managerial actions to improve performance. Thus, we can see what specific inputs and processes are more likely to lead to success in both e-commerce activities and overall corporate performance. This requires a clear understanding of the objectives, drivers and metrics for each. Only then can researchers and managers determine what resources should be expended and how these resources should be deployed to create value and improve performance.

A recent article in Harvard Business Review was titled "Does IT Matter?" (Carr, 2003). Though the title was controversial, the content is not. The main message is that IT no longer creates a strong long term competitive advantage for organizations. IT is necessary and critical but does not differentiate. So, an e-commerce

strategy is not the differentiator. The road to competitive advantage in IT and e-commerce is through the execution – the implementation of strategy through various management control mechanisms. Our research is attempting to determine and isolate the differences between superior organizations and less superior ones related specifically to e-commerce performance and the factors that lead to success.

### *Innovation*

Innovation is one of the most challenging areas for both corporate managers and researchers. Managers report significant difficulty in achieving the desired amount of radical innovation and developing an organization that is creative, innovative, and flexible while still maintaining the level of desired control. Simons (1995a, b) has written extensively about the tensions between empowerment and control yet managers still seem to find this balance difficult. Further, they find that driving innovation in large bureaucratic organizations to be difficult and some have suggested that to increase innovation in large organizations companies must make more effective use of outsourcing (see Chesbrough, 2003; Quinn, 2000). For researchers, innovation is challenging due to the long time horizons, the high levels of uncertainty and risk, and the difficulty of measurement.

In a three year study on innovation, Davila et al. (2004) have examined the actions that managers can take to improve performance in corporate innovation and how to measure success. This study includes empirical data from two extensive surveys of corporate practices in 1997 and 2001 and extensive field research and case studies. The leading global companies in innovation were studied to determine the best practices for driving superior performance in innovation. Many of the companies studied are those with annual spending on research and development of one to five billion dollars and yet they report being generally dissatisfied with their performance in innovation complaining that they cannot get the desired level of breakthroughs. The study concludes with an articulation of the management control actions and performance measures that can be used to drive both breakthrough and incremental innovation through the various phases of innovation including ideation (idea development), selection, and execution for both technological and business model innovation.

Some results on the first survey have been reported in Davila et al. (2003). The results of the project are dramatic. Both the specific management control actions and the performance measures are critical in driving innovation success. Companies have found the development of effective performance measures difficult as they have used typically unrelated measures such as earnings as



the basis for rewards. They are dissatisfied with the prospect of using results measures that are too late and they have not developed process measures that link to performance.

As with the earlier studies reported here, the development of a clearer understanding of the causal relationships is necessary to better understand the drivers of performance. Only then can effective performance measures be developed that link actions to results. One manager reported the use of number of projects launched as one of the leading indicators of performance in an attempt to avoid reliance solely on lagging indicators. But, all this accomplished was to add a non-financial indicator to the previous use of solely financial indicators and did not improve overall innovation performance. As might be anticipated, it drove increased performance in incremental improvements that were quick and easy and reduced the focus on the radical or breakthrough innovations that the company desired since they took more time and were more difficult. Our management control and performance measurement literature would have predicted this behavior, but in most cases, even the more progressive companies are struggling with understanding the drivers of innovation success and developing the systems and structures to improve performance. Management control researchers can make a significant contribution to both the academic and managerial literature by providing specific guidance on the managerial actions that drive improved performance and the appropriate measures of the inputs, processes, outputs, and outcomes of innovation activity.

### *Mergers*

Both academic research and managerial articles generally conclude that the success of mergers is very small estimating that 70–80% of mergers fail. Why do they fail and what are the appropriate measures of success? What are the factors that lead some companies to be continuously successful in mergers while most companies destroy shareholder value when they combine? What are the specific management control actions that companies can take to increase the likelihood of merger success and what are the appropriate performance measures to evaluate merger success?

An extensive review of the previous empirical research provides few answers. A recent analysis, the development of a model, and a comprehensive field study provided some answers, guidance for future managers, and additional opportunities for researchers. There were two components of the research study: performance measures of merger success and management control actions for success in post merger integration. The primary field work was conducted at JPMorganChase a combination in 2001 of Chase Manhattan Bank and JP Morgan and Co.

### *Measures of Merger Success*

Current performance measures of merger success are poor. Primarily, they include only short-term outcome measures and the ones being used do not adequately evaluate success. But, not only are the lagging indicators insufficient, there are typically no leading indicators. Thus, there are no input or process measures that would provide guidance on the drivers and key factors of success.

Better measures are needed that include both short term and long term indicators of merger success and the inputs and processes necessary to drive that success. Using short-term measures such as stock price to evaluate success are clearly insufficient to understand or predict long term merger success. Both financial and non-financial metrics related to the performance on seven factors (strategic vision, strategic fit, deal structure, due diligence, pre-merger planning, post-merger integration, and external factors) that drives to success are necessary. Researchers and managers alike need a better understanding of the management control actions and performance measures that lead to success in each of these key factors and the causal relationships of superior merger performance (Epstein, 2003a).

### *Key Success Factors in Post Merger Integration*

Much of the research on mergers fails to make a critical distinction between three very different approaches to business combinations: mergers, acquisitions, and conglomerates. The management control actions for integration and performance measures are quite different for each. This study concludes that there are five key success factors to the successful combination of two companies in a merger: (1) integration strategy; (2) structure (integration team) and systems including; (3) communication; (4) speed; and (5) aligned systems (Epstein, 2003b). There have been numerous articles and cases on Cisco's and GE's approaches to integration in acquisitions and conglomerates but there have been few articles written about integration among mergers of equals (see for example Ashkenas et al., 1998; Tempest et al., 2000).

After decades of failures, we still have not carefully delineated the different management control structures and systems – the actions to drive success – in the merger process and the performance measures to evaluate merger success. More extensive research is necessary on both the management control actions and performance measures to both drive and evaluate merger success and improve organizational performance.

Sustainability

In 2001, Epstein and Roy proposed a model to describe the drivers and measures of corporate social, environmental, and economic performance (sustainability). The model articulates the actions that companies can take to attain superior performance in sustainability and the relevant performance measures. By providing more specificity to the inputs, processes, outputs, and outcomes, managers can direct their activities to those that are more likely to produce greater results. Researchers can also test this and similar models to determine which management control actions lead to superior organizational performance (see Epstein & Roy, 2001, 2003b) (Fig. 4).

Epstein and Wisner have examined empirical data in the United States and in Mexico to explain the antecedents and consequences of various corporate actions to improve corporate environmental performance and to begin to answer the questions as to the drivers of success in corporate sustainability. One study in Mexico (Wisner & Epstein, 2003) develops a management control model and examines how strategy and various management control mechanisms impact corporate environmental performance.

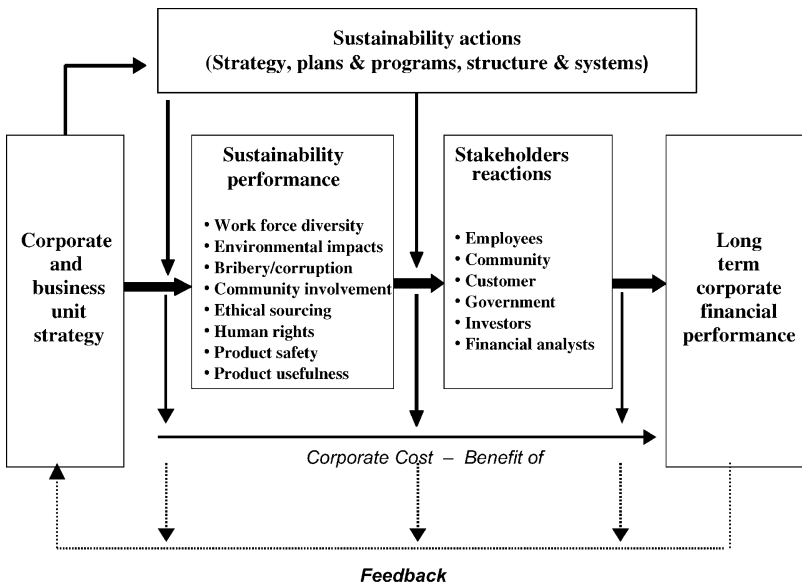


Fig. 4. Drivers of Sustainability. Source: Epstein and Roy (2001).

In a related study and using a U.S. data base, they were able to examine not only the drivers of superior corporate environmental performance but also the impacts of that performance on corporate financial performance (Wisner et al., 2003a). In a related paper, they have identified the specific management control actions and mechanisms that lead to superior performance (Wisner et al., 2003b). See Fig. 5 for the model.

In two papers, Epstein and Schnietz examined the impacts of sustainability performance on financial performance. Whereas Wisner, Epstein, and Bagozzi used earnings growth and return on investment as their output measures of financial performance, Epstein and Schnietz use an event study to examine stock market reaction to changes in corporate sustainability performance (Epstein & Schnietz, 2002; Schnietz & Epstein, 2003). They find that companies with better reputations for sustainability were better insulated from the stock market declines related to the WTO trade talk failures in 1999 and they incurred a decline on average of \$378 million less in market capitalization due to their reputation for sustainability. Some of this work attempts to model the drivers and measures of success in corporate sustainability. Some examines improvements in sustainability performance and builds on earlier field research by Epstein (1996). Other uses survey data to test the specific management control mechanisms to determine which ones have a greater impact on performance. But, much more needs to be done to provide better guidance to both managers and researchers as to the specific actions that can be taken to improve organizational performance.

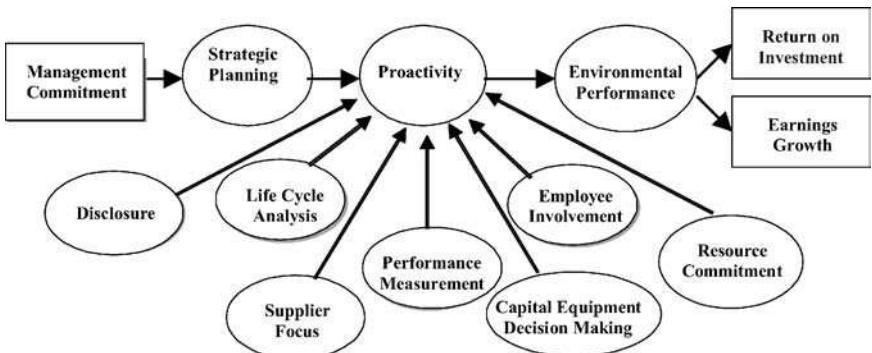


Fig. 5. Antecedents and Consequences of Superior Environmental Performance.  
Source: Adapted from Wisner et al. (2003a, b).

## SUMMARY

For decades, management control researchers have developed new models for the implementation of strategy with the goal of improving organizational performance. Unfortunately, progress has been slow. Most of the models have not been adequately tested. Even reasonably intuitive propositions that increased alignment of strategy, structure, and systems will lead to improved performance have not been proven. So, we have few clear results as to what drives organizational success. And, though we have explored numerous approaches to performance measurement, we have not been able to identify when particular performance measures are more appropriate and whether they lead to improved performance. Researchers need to determine when specific structures and systems will lead to improved performance and what characteristics of superior organizations are critical and can be replicated by other companies and managers.

Much of the work cited above in the five areas of inquiry is focused on the drivers of superior organizational performance and the appropriate performance measures of the inputs, processes, outputs, and outcomes. We need to be able to better answer the questions of how do we design organizations to become superior performers, what are the specific actions that managers can take and systems they can implement to drive success, and what are the appropriate measures of success. In some of the areas, new models were developed. In some areas, field studies, company cases, and surveys were conducted and empirical analysis completed. Various management control mechanisms were investigated and a variety of performance measures used.

These are complex problems that will not be answered easily. But, management control researchers should not accept the models that have been developed without further testing. They should not accept the models of performance measurement without validation. And, most of the propositions have not been adequately tested.

Researchers need to provide more specificity for managers as to what actions will lead to superior organizational performance. Extensive empirical and field research is necessary. Some may test whether the balanced scorecard model, shareholder value model, levers of control model, or other current models do lead to superior performance.

What can we say regarding how to become a high performance organization? We usually think about high performance organizations having strong financial results, satisfied customers and employees, high levels of individual initiative, productivity, and innovation. And, we talk about how high performance is achieved – including mission, vision, aligned performance measurement and reward systems, and strong leadership. But, we have validated very little of these propositions.

We need to do far more research to advance knowledge of organizations and the drivers and measures of success. We need to contribute to the building of a research base and developing a deeper understanding of the causal relationships. Only in this way can we provide guidance to managers as to what actions they should take to lead to superior organizational performance.

Collins and Porras (1994) and Collins (2001) are beginnings but far more needs to be done. There is much that management control research can provide to better understand the actions that are needed to drive organizational success. Careful research in the role of strategy, structure, systems, people, and culture as determinants of organizational success can provide significant contributions to the academic literature and to guidance for management practice. This is a challenge for all researchers in management control and performance measurement.

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# FROM HIGH PERFORMANCE ORGANIZATIONS TO AN ORGANIZATIONAL EXCELLENCE FRAMEWORK

Jean-François Manzoni

## ABSTRACT

*This chapter develops one component of the tentative organizational excellence framework presented at the Conference: The institutionalization of dissatisfaction with the status quo. Eight avenues on which organizations can create value in this direction are presented and discussed.*

## INTRODUCTION

In the mid-1990s I started working with a number of organizations that could legitimately be considered as “High Performance Organizations” (HPOs). I use the HPO term rather subjectively; I did not compute any measure of abnormal return or margin by which these companies outperformed their competitors over some arbitrary time period. But these organizations were clearly remarkable by any measure. Several years on, they are still largely outperforming their competitors.

I was immediately struck by the atmosphere that seemed to permeate these organizations. What Ghoshal calls “the smell of the place” (Ghoshal et al., 2000)

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**Performance Measurement and Management Control: Superior Organizational Performance**

**Studies in Managerial and Financial Accounting, Volume 14, 19–44**

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ISSN: 1479-3512/doi:10.1016/S1479-3512(04)14002-1

was very different from what I had encountered in most of the other companies I have worked with and/or studied over the years. There was what I termed an “intense performance culture”: A sense that anything and everything was possible; a willingness – in fact an eagerness – to set very ambitious targets and to strive very hard to beat them. Things – computers, copiers, processes – worked. Managers and employees worked hard, but: (a) they did not seem unhappy about it, often the reverse; and (b) their efforts seemed to bear many fruits within relatively short periods of time.

This “atmosphere” seemed highly desirable, not just from a business perspective but also from a human perspective, in light of the much lower degree of negative energy that I observed in these organizations. As a result it seemed like a good idea to try to identify the causes of these differences. Could I identify some characteristics – shared by these HPOs and not present in less successful organizations – that could explain how HPOs develop these capabilities and this kind of intense performance culture, while other organizations simply do not?

Several authors had already raised this question. Among the best known, Peters and Waterman (1982) went *In Search of Excellence*. More recently, Collins and Porras (1995) tried to understand the characteristics of organizations that were *Built to Last* and hence achieved outstanding success over long periods of time. (see Appendix 1 for a more complete list of authors who have tried to identify the drivers of organizational excellence). Some efforts focused on specific aspects of the organization’s functioning (e.g. Doz et al., 2001; Treacy & Wiersema, 1995). Some used semi-objective approaches to sample selection (e.g. Collins, 2001; Foster & Kaplan, 2001), while others relied on less systematic samples (e.g. Crawford & Mathews, 2001; Kaplan & Norton, 2001) and yet others focused on understanding a single, arguably remarkable organization (e.g. Bunnell, 2000; Gittell, 2003; Liker, 2003). Another take on the issue has been provided by a number of highly successful leaders reflecting on the principles that (arguably) helped their firms become so successful (e.g. Larry Bossidy, Lou Gerstner, Carlos Ghosn or Jack Welch).

Aside from being a crowded field, this area is also a risky one: Yesterday’s HPOs have a bad habit of foundering in the years following their being studied and written up as exemplars. Enron is an obvious example, but even “built-to-last” organizations have suffered rapid turns of fortune (e.g. Boeing, Sony or Walt Disney).

This area also tends to have a bad reputation in academic circles. First, there is an aspect of “how can you be naïve enough to think that excellence can be traced back to a few separable factors?” Secondly, “we all know there is no way of studying this question with any form of rigor, hence you must be a charlatan.” Tom Peters’s (2001) “true confessions” on the process that led to *In Search Of Excellence* are certainly not reassuring on this front.

These caveats have not discouraged me. I have continued to try to understand why some organizations end up doing much better than others and why, in many cases, their employees also look happier. To do so I started from what excellent companies did and asked myself “how does this differ from what goes on in the less-than-excellent companies I know?” I also proceeded in the opposite direction, starting from the “less-than-excellent” companies and asking “how do HPOs tackle this aspect?” Over time, I also started asking a small but systematic set of questions about every company I was beginning to study or work with: “What would it take to increase the value generated for customers and/or employees? What is holding this company back? What would I add/subtract to make this company a more effective one?”

Through this process, what started as an attempt to understand High Performance Organizations developed into an evolving framework on Organizational Excellence. My experience of organizations is that most of them sub-optimize to some degree, often to a large degree. Notwithstanding all the talk about alignment, rationalization and optimization that I hear bandied about, I am constantly amazed at how much value (again, both business and human value) organizations manage to squander.

Initially developed as a keynote address at the 2nd EIASM Conference on Performance Measurement and Management Control, the framework I proposed seemed to resonate with the conference attendees and I was persuaded to write this chapter as a kind of progress report on my investigations in this area. At this stage, the findings are qualitative rather than quantitative and are therefore proposed as informed insights rather than indisputable assertions. I do not claim that everything that follows is true. I do hope some of it will prove interesting and stimulating.

## **DIAGNOSING VALUE DESTRUCTION**

Organizational excellence, like performance, is a multi-dimensional continuum where, among three organizations (e.g. A, B and C), each can outperform the other two on some dimension and lag on others. There are a host of financial and non-financial indicators one could use to compare organizations. Numerous articles and books have been written on this subject alone. As a first cut, however, I have found the following question helpful:

Overall, is the Whole more, or less than the Sum of the Parts?

At the *individual* level, the question was triggered in my mind by the division general manager of a joint venture between an extremely famous US-based

international conglomerate and a French company well-known as an engine designer and manufacturer. This manager was explaining his frustration over the fact that, individually, his French engineers were technically much stronger than the partner's engineers. Yet "as a group, they (the employees of the joint venture partner) accomplish a lot more than we do."

I have also seen this pattern at the *organizational* level. Taken separately, organization A's divisions are all solid performers. Yet organization A – which should be worth no less than the sum of its parts – is weak. In many organizations I work with, managers are very aware of this situation and rate their own division much higher than the rest, or indeed the whole of the organization. There are, of course, perceptual causes to this phenomenon. I know the people around me better than the folks at Head Office or in other divisions, hence I understand and appreciate my folks' behavior better than that of people far away.

But if this were only a perceptual issue the phenomenon would be universal, which it is not. Some companies feel like more than the sum of their parts, and managers therein experience it that way (see O'Reilly & Pfeffer, 2000, for eight case studies of such organizations). In contrast, most of the organizations I encounter feature a large number of bright and hard working people who seem to accomplish a lot less than they should be accomplishing.

This loss of value can manifest itself along any or all of the following three dimensions:

- (a) *"Why is it so hard to get anything done? I feel like I'm pulling a ten ton truck"*  
Some organizations seem to help their employees perform, while in others, indeed in most organizations, the "system" seems to be standing in the way. Things that should be relatively easy feel very difficult and end up consuming a lot more energy than they should.
- (b) *If given the choice, would people rather deal inside the organization, or with an external supplier?*  
Williamson (e.g. 1975, 1985) has discussed the role of transaction costs in explaining when activities should be internalized and when they should be conducted via market forces. In principle, activities should only be internalized when doing so creates value. This value is clearly perceived in some organizations; people are happy to work with internal partners, whose cultural proximity and strategic alignment lead to more pleasant and effective dealings. This is *not* the way things work in most organizations I study, where managers instead hope for (and in many cases lobby for) the right to conduct their business with external partners rather than internal ones.
- (c) *Is the organization making the most of internal ideas, or is it losing too many good ideas?*

A classic joke about consultants presents them as individuals who borrow your watch to tell you the time while charging you large sums of money for this service. Without going that far, I have indeed noticed that consultants often end up proposing and developing ideas that were available internally. If the idea existed internally, why did the organization need to pay a consultant to present it? This is what I call the “Not Invented Outside” syndrome, which is basically the opposite of the well known and oft discussed “Not Invented Here” syndrome. The *Not Invented Outside syndrome* goes like this: “If the idea came from inside rather than from some bright external individual/consultant/organization, it can’t be that good.”

More generally, most organizations fail to capitalize on the ideas and possibilities available internally and hence destroy significant value.

## FOCUS OF THE CHAPTER

At the Conference I sketched out the architecture of a tentative organizational excellence conceptual framework. I proposed five major headings and selected one or two elements from each section. Developing all five sections to a satisfactory degree would require more than this modest chapter. As a result I chose here to favor depth over breadth and focus on *one* of the five sections.

Two years ago, in a chapter written for a similar event (Manzoni, 2002), I contrasted two approaches to management control: The traditional approach, largely focused on aligning incentives through numbers-driven performance evaluation and reward systems (see Fig. 1), and a potentially new approach, which I thought I was starting to observe in some HPOs. In this paradigm, organizations would be encouraging managers to set challenging targets (rather than trying to extract as much slack as possible) and accept to be evaluated on factors that are less than fully controllable (rather than insisting on controllable factors only).

I further posited that this model required the existence of a number of conditions (see Fig. 2). In particular, organizations wanting to introduce some subjectivity in the evaluation and reward system would have to prevent this subjectivity from degenerating into complacency, hence *the need for stimulation and drive*.

This chapter summarizes my current thoughts on how some organizations go about (and most organizations do *not* go about) developing and, indeed, institutionalizing, this sense of stimulation and drive.

Before getting to the next section, I want to highlight an important *caveat*: Most of the eight dimensions discussed below can be pushed too far. There *can* be too

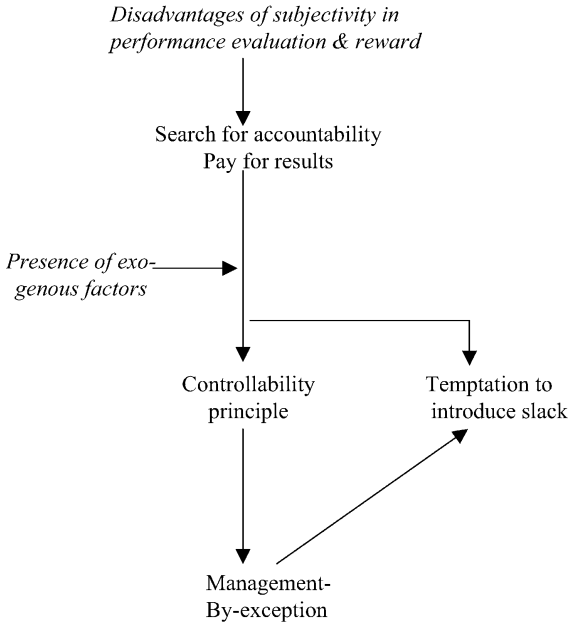


Fig. 1. The Traditional Management Control Paradigm.

much of a good thing, which then becomes dysfunctional for the organization. I want to flag this aspect early and will come back on it at the end of this chapter.

## INSTITUTIONALIZING DISSATISFACTION WITH THE STATUS QUO (DSQ)

The implementation of change – whether at the individual or organizational level – is greatly facilitated by the existence of significant dissatisfaction with the status quo (Kotter, 1996). When executives fail to help the troops understand why change is needed, these troops are much more likely to resist change.<sup>1</sup>

Generating sufficient dissatisfaction with the status quo often requires significant time and attention from senior executives, especially in successful organizations. This investment is costly at two levels: First it diverts senior management attention from other pursuits. In today's hectic and highly competitive environment, senior management time and attention is in heavy demand and hence commands a high opportunity cost. Secondly, the introduction of the required changes is delayed: Stimulation of sufficient dissatisfaction with the status quo

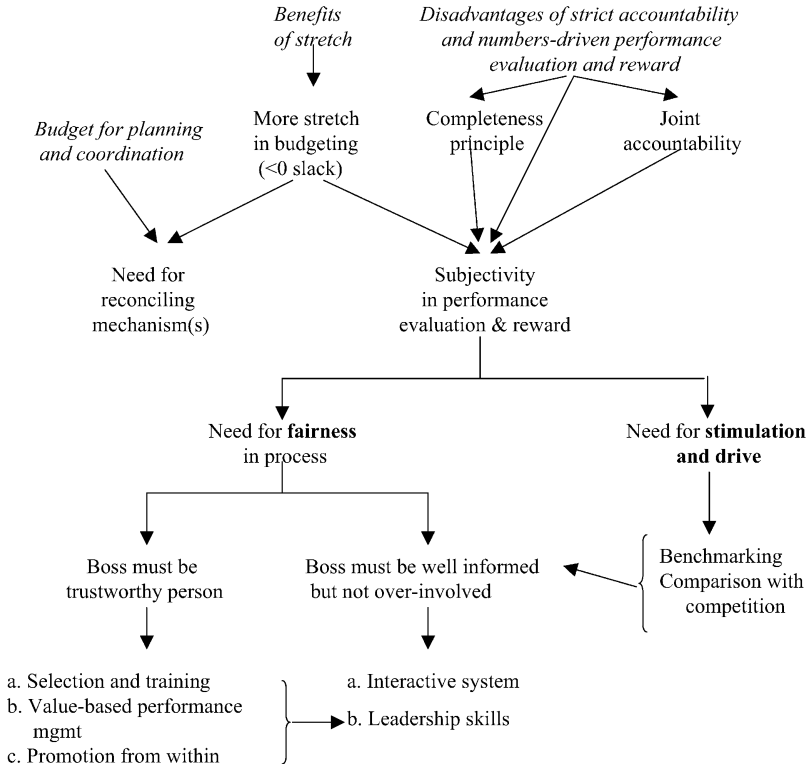


Fig. 2. A New, High Performance, Management Control Paradigm?

across the organization is not exactly an instantaneous process. The larger the organization and the more geographically disperse it is, the more time consuming the process will be and, as a result, the longer the organization will have to wait for the significant changes to be launched.

This statement is less true in a few organizations that seem to have internalized, i.e. that have made part of their culture, a healthy dissatisfaction with the status quo (DSQ). Healthy DSQ does not mean a neurotic obsession or collective paranoia. While Grove (1996) argued that “Only the paranoid survive,” paranoia *is* a mental illness and hence cannot be considered a satisfactory model. In contrast, “healthy DSQ” includes brief celebrations of past achievements, followed by the resetting of sights toward the future and the need to do ever better. This is precisely the atmosphere that seems to prevail within Dell where success is greeted by a short e-mail or a pat on the back, followed by a lengthy discussion of what could have

been done better. The principle established by Michael Dell, the founder, is: “Celebrate for a nanosecond, then move on” (Park & Burrows, 2003).

Instead, most organizations I study tend to be slowed down, sometimes downright paralyzed, by one (or more) of three pathologies:

- Arrogance – characterized by the implicit, and often explicit belief that “It is impossible to do things better than we are doing,” or in other words, “we are great.”
- Ignorance – reflected in a widespread belief that “It is conceivable that other people might be able to do things better, but we really do not know how to do so. We are genuinely doing as well as we can.”
- Denial – characterized by defensiveness at the individual and collective level, and expressed by managers as “We (or at least some of us) know there are opportunities for improvement, but discussing them is not easy and tackling them explicitly feels impossible.”

I would like to discuss eight avenues that I have seen companies pursue to repel these three pathologies and institutionalize DSQ:

### *Maintaining a Sense of Vulnerability*

There can be three sources of perceived vulnerability. The first and most obvious is competition in general or, better yet, a particularly competitor. This competitor can be selected because it is particularly successful and respected, threatening for the organization, and/or disliked (e.g. because it resorts to practices our organization disapproves of). Some organizations have been very successful with the use of a “villain,” i.e. a competitor that receives much attention and focus, often in very competitive, sometimes even demonizing overtones. For example, when Dell was still a glorified start-up, its founder Michael Dell would fire up his employees by telling them that his daughter’s first words had been: “Daddy, kill IBM, kill Compaq, kill Gateway” (Steil, 2002). Similarly, Scott McNealy’s scorn for Microsoft helped to build energy and focus among the Sun Microsystems engineers. And Richard Branson’s relentless jabs at British Airways had a similar mobilizing effect on the Virgin Atlantic employees.

Organizations can also nurture a sense of vulnerability by communicating heavily around the story of organizations similar to itself that were once very successful but subsequently lost some or all of their advance. For example, I have seen the rise and fall of companies like IBM, ABB and Xerox used in several organizations as part of attempts by senior management to alert employees to the dangers of complacency. EMC’s CEO Michael Ruetters recently provided a



good illustration of this focus: “We occupy a building that Prime once leased. On the second floor, there’s a big auditorium. In the back of the auditorium, against a red velvet background, is a giant sign that says Prime Computer. When we moved into the building, the employees asked us to leave the sign up as a reminder of what could happen if EMC ever became complacent” (Hemp, 2001).

A third source of vulnerability is the organization’s own history – where is the organization coming from, and how did it get to this point? A few years ago, for example, the city-state of Singapore reinforced the study of history throughout its school system. This was, I believe, an attempt to remind young generations that while Singapore is successful and prosperous today, this situation is an extraordinary achievement that required decades of unswerving individual and collective discipline and drive – qualities the Singapore government expects younger generations to continue to display.

### *Continuous Search for Better Practices*

The “Not Invented Outside” (NIO) syndrome, mentioned above, is less familiar than the “Not Invented Here” (NIH) syndrome, but it is just as dysfunctional. The syndromes can actually be viewed as the two extremes of an “openness to other practices” continuum, as represented in Fig. 3.

Unsurprisingly, I have observed more occurrence of the NIH syndrome within organizations that were successful in the recent past, while the NIO syndrome tends to develop within organizations that have been humbled and started doubting themselves. The NIH syndrome generates resistance to change, while the NIO syndrome tends to lead to an organizational pathology often called the “program du jour” or the “flavor of the month,” characterized by a proliferation of change initiatives. In contrast with both of these extremes, a healthy attitude is characterized by respect for the organization’s current practices *as well as* curiosity and interest for outside practices. This curiosity can get enacted through several mechanisms.

An obvious approach is to look outside the division, group and, if necessary, industry for similar practices and processes to calibrate or possibly benchmark.<sup>2</sup> But one does not always need to go very far in order to learn; I am often struck by



Fig. 3. Continuum of Organizational Openness to Other Practices.

the way many organizations feel they must go outside their group for interesting calibration/benchmarking, thus failing to leverage the enormous potential offered by other divisions/departments *within* the group. For example, Sodexho, a world leader in the catering industry, organizes a bi-annual fair where the company's 18,000 plus operating units get a chance to showcase and view internal examples of innovation and best practice (Barsoux & Manzoni, 2004).

This calibration/benchmarking habit can be implemented on a reactive basis, that is, it gets triggered when more information is required on a given process. More interestingly, I have seen it used *proactively* by managers who each year allocate specific days (e.g. two days per year) to such activities. The dates are struck from their calendar at the beginning of the year, in order to make sure that, as is too often the case with executives, the urgent does not end up driving out the important.

Some organizations also learn from being at the receiving end of calibration/benchmarking visits. They ensure this learning takes place by specifically asking the visitors what they have learned during their contacts.

A similar process can be institutionalized *within* organizations. For example a French organization has developed and institutionalized the "astonishment report" ("rapport d'étonnement" in French). At the end of their induction period (generally three months), new hires are required to write (and discuss with their boss) a short report documenting anything and everything that they found interesting or surprising since joining the company.

### *Continuous Stream of Data from Customers and Employees*

I am not going to belabor this point. The characteristics, advantages and disadvantages of various types of performance measures have been extensively researched and discussed in the accounting and management control literatures over the last ten years.

Note that customer – and employee-related data need not be quantitative. Dell, for example, taps into more qualitative sources of data on customer discontent. The founder himself, Michael Dell, goes out of his way to visit the chat rooms and Usenet forums where he is going to hear complaints about his company, its products and services. He explains: "Some of it is just chatter – you tend to filter that out. But it's so built into our system now, we actually have teams that monitor those sites routinely. It's a whole new form of feedback. It's not just noise to us" (Fishman, 2001).

More importantly and maybe more controversially, I do *not* think that data availability is the major issue. It certainly was a number of years ago, when many organizations were still missing good data from customers and/or employees. In

the early 21st century, however, any organization that wants to develop such data can do so; expertise and technology are available at reasonable cost.

As a result the key issue is typically not “Do the data exist?”, but rather “Is the organization (and particularly its top management) willing and able to face reality?”

### *Facing Reality*

Too many organizations I work with possess (at least much of) the financial and non-financial data they need, but are simply unable/unwilling to use it productively. The organization, again starting with its top management, is unable to “face reality.” This inability to face reality manifests itself in several ways: At the simplest, disturbing data are simply disregarded. The data exist, some individuals are trying to get it discussed and they meet tacit, sometimes even explicit unwillingness to do so. This was the case, for example, at Motorola where the company turned a blind eye to the data telling them that the market was shifting from analog to digital. This oversight was particularly unforgivable given that Motorola owned several of the key digital patents for cell phones and licensed them out to the likes of Nokia and Ericsson – so the company had perfect data on the evolving market trends (Finkelstein, 2003).

Another approach is of course to manipulate the disturbing data, for example, by changing their scale so that they appear less menacing. This tactic can be motivated by self-protection (see Manzoni, 2002), but it is also often attributed to more legitimate reasons such as to “protect individual and collective motivation” (which, it is argued, would be harmed by unfavorable data that is partly out of the individuals’ control). It also often reflects some degree of complacency.

More pernicious than blatant disregard or tweaking of the data is the subtle disconnect from reality that develops over time in some organizations. This disconnect develops when individuals (again, starting with top managers) are allowed to make statements that are totally or partly inaccurate. Once respect for data starts getting lost, reality ceases to be a constraint.

A related approach is the selective use of the more favorable among numerous “adjusted” versions of the data that are available (e.g. in home office currency vs. in local currencies, adjusted or not for variations in the price of key raw materials or for another key contingency, etc.). I have seen organizations referring to different versions of the data in related presentations, and in some cases within the same document!

A more subtle process involves the use of specific vocabulary. For example, an (engineering dominated) organization refers to commercial failures as “technical

successes.” Or a sentence reported to me by a manager who often heard it in his organization: “we are more or less exactly on par with the revised forecast” – a technically accurate statement designed to obfuscate the fact that we are 20% below target!

What does it take for an organization to face reality? Having first stated the obvious – that it takes courage and self-confidence from the individual at the top – let me add two complementary avenues that are less often discussed: Staffing, and increasing the expected value of bringing forward dissonant information.

- Some managers are careful to include in their teams enough individuals that have a “naturally high” propensity to avoid conscious and unconscious distortions of reality. This personal quality is of course attributable in part to the individual’s personal background and personal character. It is reasonably easy to spot individuals who tend to speak their minds, even when their opinion conflicts with “commonly accepted wisdom.” This propensity can also be enhanced by the employee’s situation. For example, one senior executive explained to me that he always chose one or two of his functional executives among managers who had had general management experience before – typically in a smaller structure. His experience was that such individuals would be more prone to identify, and then bring forward elements that required his attention. Interestingly, this approach is also very frequent within Dell, which employs a fair number of executives who previously held higher offices in smaller organizations.
- Increasing the expected value of bringing forward dissonant information first requires that employees should not be punished, or even discouraged from doing so. Ten to fifteen years ago I remember meeting a number of senior managers who discouraged the expression of dissenting information and data – implicitly (e.g. by making the communication of such information a fairly unpleasant act), or explicitly (which can range from “if I want your opinion, I’ll give it to you” to what is popularly known as “shooting the messenger”).

They did so because they were unable to keep their ego and/or their emotions in check. I see much fewer such managers today. Instead, I see many managers that are so overwhelmed, so swamped that they are unable to welcome and hence process – let alone follow-up on – dissenting information. In fact, senior managers should be doing more than listening to bad news. They should be inviting it or even going out in search of it. Management does not need to do anything special regarding favorable/congruent data; many people will make it their business to bring such data to their attention. Making sure dissonant information comes to the surface takes more effort.<sup>3</sup>

Most managers I know would like to do all these things, but they are just too overwhelmed to do so. Increasing the expected value of bringing forward

dissonant information hence requires managers who can keep their ego and emotions in check, but it also requires enough senior managers maintaining enough spare “bandwidth,” i.e. enough intellectual and emotional capacity to get exposed to, process and follow-up on the data.

I see the lack of managerial bandwidth as a major cause of individuals and organizations failing to face reality. Again, the amount of bandwidth available is function of individuals’ skills and experiences, but it can also be influenced by organizational practices. Most organizations are plagued by inefficient basic processes, too many meetings and projects and too much negative energy, to allow managers to maintain sufficient bandwidth.

I have observed few organizations that do not clutter a significant proportion of their managers’ bandwidth: Among these few organizations, some are *still* unable to face reality because of what I call their “sick sense of loyalty.” This “sick sense of loyalty” is easy to spot in top management meetings: The individual trying to draw the group’s attention to dissonant negative information immediately triggers comments from fellow group members that “while things are not perfect, they are quite good and better than they used to be” or “better than they would be if we did not work so hard on them.” A complacent environment could produce a similar phenomenon, but I have seen such reactions in environments that were not especially complacent or arrogant.

Organizations plagued by this pathology are characterized by strong organizational cultures and a high degree of personal identification with the organization. Loyalty to the organization is hence important and valued. Unfortunately, the concept of “loyalty to the organization” has come to include not criticizing it in any way, because the organization treats negative information as an indictment of the past (“someone did something wrong”), rather than as a signal for the future (“we may have to do something differently going forward”). This pathology usually starts at the top of the organization, as leaders play a major role in shaping organization members’ attitudes on this issue.

### *Managerial Mobility*

Much dissatisfaction with the status quo can be generated by maintaining a sense of vulnerability and looking realistically at a rich set of internal and external data. But employees of whom the organization expects a continuous search for better practices must also be helped to maintain a fresh eye on the systems and structure they manage. One mechanism companies can use to do so is making sure managers do not stay so long in any given job as to become stale. There is obviously no hard and fast rule to predict how quickly managers are likely to become stale.

The answer to this question depends on too many individual, organizational and environmental factors. One can also argue that the fast changing environment in which we live today contributes to more naturally occurring change, and hence stimulation, than past eras may have. Having said that, it is simply obvious that as time passes, a manager should see more and more of his or her own ideas reflected in the operation s/he manages. Other things equal, the stimuli we are exposed to are bound to have a decreasing marginal impact on us as time passes. This phenomenon is clearly visible in business schools, where it is a good idea to rotate direction of executive education programs every few years, as it becomes harder and harder for busy program directors to keep improving (and, in the process, taking the risk of deteriorating) a successful program.

There are three major dangers associated with excessive mobility: The loss of expertise/experience, the creation of perverse incentives and the possible lack of follow-through on ongoing initiatives. Let me consider them in turn.

- The cost associated with the loss of experience can be decreased through a number of organizational processes such as knowledge management and succession planning, but it can never be completely eliminated. The problem then becomes one of trading off this cost with the cost of the decreasing ability to bring about improvement that develops over time. In theory, one could imagine specifying all these functions and trying to find the optimum point for any given situation. In practice, the process is more heuristic.
- The incentive problem is of course one of short-termism: Managers likely to be rotated out of their job before all the consequences of their actions have materialized face a powerful incentive to select courses of actions that yield rapid benefits, regardless of their potentially negative longer term impact. The accounting and control literature has long considered this problem to be a difficult one and has studied it extensively.

At the risk of appearing iconoclastic, I do not believe this is really a complex problem. Managers do not operate in a vacuum; they are surrounded by individuals who, unlike senior executives located much higher in the hierarchy, do have detailed knowledge of the manager's environment and hence can – and, in fact, do – develop informed opinions on the short term/long term trade-offs made by the manager. On numerous occasions I have asked managers whether they knew colleagues who, over the years, had indeed “fooled the system” by being promoted for achievements that were long term value decreasing. Almost unanimously, managers have met such individuals. In fact, they explain, “I could tell you their name.” And that is my point. The information on these individuals *is* available. It is clearly imperfect – reality is complex and honest individuals can disagree on the assessment of a given situation, but over time we

do get to know which individuals “abuse the system.” The problem faced by the organization is hence not one of finding out, but rather one of “doing something about it.” An organization clearly set on making sure managers should not take personal advantage of the uncertainty in which they operate *can* do so through a combination of action controls and severe disciplining of guilty parties.<sup>4</sup> Some organizations do so, most organizations I know do not.

- Over the last few years mobility has come to be associated in many organizations with a lack of follow-through on change initiatives. Manager X initiated a quality drive that was starting to get traction but was abandoned when manager Y took over and decided that quality was now under control and customer orientation should hence become the new priority.

This mobility-related lack of persistence is pervasive, but not universal. Some organizations manage to prevent it by working on the following three fronts: First, by establishing and maintaining a clear sense of corporate priorities flowing from a shared mission/vision/strategy. The lack of a shared, distinctive sense of strategic direction makes it impossible for top management to guide efforts and assess the likely return on investment and on managerial energy of various initiatives. As a result, initiatives proliferate, largely based on local uncoordinated priority definitions.

The second mechanism organizations can use to ensure follow-through is to institutionalize good project-management (and indeed good change management) practices. In particular, each project should have a steering committee and a wider guiding coalition, who can ensure that the initiative continues to receive sufficient attention after its initial sponsor is gone and until it is explicitly decided that the change is now institutionalized and the team can disband.

The third mechanism organizations employ in this area is sufficient managerial involvement in handoffs. It is indeed striking to hear managers explain that when they took over their current position, a small minority met with their new boss to have a solid discussion of what their priorities should be. An even smaller minority met with the previous incumbent (who is generally gone by the time the successor arrives), to discuss their ongoing initiatives and their sense of what the priorities should be going forward. Again, some organizations are genuinely puzzled by this pervasive reality. A Portuguese financial institution, for example, has institutionalized a handoff meeting during which the three parties (previous incumbent, successor and their boss) meet to discuss the transition and establish priorities for the future in light of the previous incumbent’s experience and the boss’s views. Successors of course have the right to propose changes as they learn more about the unit, but the onus is on them to make their case for a change; continuity is not a constraint, but it is a value.

### *Training*

I know a few organizations that put their managers through too many training programs. These managers have seen it all, heard it all and end up becoming executive education consumers rather than individuals in charge of their lifelong development. But these rare organizations are compensated by too many organizations that under-invest in their managers' individual and collective development. Training can be a very effective way to accomplish two objectives:

- Stimulate dissatisfaction with the status quo, by exposing managers to peers in other organizations and industries, and thus challenge the things that individual and organization may have come to take for granted.
- Provide managers with conceptual tools to help make sense of their experiences and prepare them for future challenges.

General Electric is one of the organizations best known for its heavy investment in individual and corporate training. There are many others that, like GE, require managers to be involved at both ends of the training cycle: as trainees, of course, but also as trainers of other leaders. These companies' experiences and practices have been described extensively (see, for example, Tichy & Cohen, 1997), so I will not dwell on this issue.

### *Top Management Example*

Top management can and, in fact, *must* support employees' efforts to drive for continuous performance improvement, at the individual and organizational levels. Top management leading by example on this front is important for symbolic and modeling purposes. The symbolic dimension supports employee motivation ("my bosses are constantly striving for improvement, I should too"), while the modeling helps employees understand how to approach this issue and cascade the attitude toward their own troops.<sup>5</sup>

For some executives I work with, this attitude is not an act they put on for their staff; it is the way they lead their life. They are *constantly* striving to improve performance – their own, and that of their organization. They look at everything as a process that can be improved. They strive constantly to understand cause-effect mechanisms, to identify leverage points that can be productively activated. This dimension is important because it goes beyond a simplistic "you can do more!" exhortation. Bosses who keep demanding "more" often get more, but they do not necessarily get it for long or through means that are sustainable and long term value enhancing. (That is, they often get more of what they were asking for, but they also get more of other, less desirable outcomes.)



At the organizational level, and as mentioned above, top managers can demonstrate their commitment to performance improvement through brief celebrations of past achievements, followed by the resetting of their sights toward the future and the need to do ever better. But I believe that executives who add significant value on this front also demonstrate an unswerving commitment to their own learning. They are self-confident – leaders cannot be effective mobilizers if they do not display a high degree of confidence in themselves and in their views, but they can also be influenced and are capable of changing their mind when necessary. When they do so, they are explicit about the fact that they changed their minds. This evolution of views might be caused by changes in conditions that require a change of course. The initial decision/action is simply no longer appropriate. Or perhaps, results show that the previous course of action was actually a mistake, in which case these leaders do not try to disguise their error; they acknowledge it.

Let me illustrate this point with two high profile leaders: Jack Welch and Carlos Ghosn. Both are celebrated for their personal drive and excellent judgment. Less publicized, but very important to me, is their ability to change their mind (and acknowledge their error) when proven wrong. Welch, for example, insisted for years that each GE business should be number one or two in its industry. In the late 1990s he also started to require each business to present an analysis of its business in ways that put its market share at less than 10%. He had realized that his single-minded insistence on the number one or two position was driving some managers to define their business narrowly enough to be number one or two – instead of defining it more broadly and hence highlighting the potential for improvement.<sup>6</sup> This major change of attitude was driven by one of Welch's visit to Crotonville, GE's executive education center, where this point was brought to his attention by a group of middle managers. Welch later developed this point explicitly in GE's 2000 Annual Report's Letter to Shareholders.

Another example of Welch's willingness to change his mind pertains to the forced performance distribution he called the "vitality chart." Imposed by him in 1999, this assessment process required managers to perform a ranking of their troops within five groups, according to the following distribution: 10, 15, 50, 15, and 10%. I remember this distinctly because while at Crotonville in March and May 1999, I presented views that argued instead for a three category distribution and was obviously reminded that "Jack said . . ." This was not the most comfortable moment of my career. A few months later Welch was giving a speech at a Fortune Global Conference, where he acknowledged that his five categories had proven more problematic to use than he had anticipated, and that a three-group distribution might have advantages. This new relative distribution

(20, 70, 10%) was rolled out in 2000 and was discussed in GE's 2000 Annual Report. The point is of course not that "I was right and he was wrong"; a solid argument can be made that the three-group distribution worked better in 2000 because managers had first been confronted with a more difficult task. The point is that even on a point that he had pushed very strongly personally, Welch could change his mind.

Similarly, Ghosn is quite explicit about some of the mistakes he has made, including his decision to skip an important meeting with suppliers in January 2000, preferring instead to continue his Christmas vacation in Brazil (see Hughes et al., 2003). Ghosn acknowledged his error and presented public apologies. He also discusses this point quite openly. On a more private note, several managers who worked with him at Renault could recall a very important decision on which, faced with strong data and reasoning from his team, he went with their judgment against his initial preference.

Again, this ability to modify their views is only a component of a more important and wider trait: these leaders strive for performance, for their organization but also for themselves. I have seen a few leaders demonstrate this ability. Their personal drive is contagious, and their ability to stand corrected makes it more legitimate for their subordinates to be imperfect, but to take risks and keep learning.

At the other end of the effectiveness spectrum many leaders display an inability to learn that inhibits learning around them, and/or exhibit a systematic "you must do better" obsession. More sympathetic but equally ineffective, some leaders adopt a cheerleader attitude and keep distributing pats on the back without emphasizing the need to keep going and modeling problem-solving skills to identify how to do so. Such leaders do not contribute to institutionalizing dissatisfaction with the status quo.

### *Some Slack Resources*

The presence of excessive slack rarely leads to superior performance (Clayton et al., 1999). But the (total) absence of slack is equally problematic – and in many companies, the cuts to discretionary spending have gone beyond "eliminating waste." For employees to be able to see the potential for improvement, and even more to allow them to pursue these opportunities, they need to have *some* resources to do so. People who engage in firefighting ten hours a day cannot be expected to spend an extra fifteen minutes at the end of the day contemplating how they might improve things, just in case they eventually emerge from chaos long enough to do so.

This intuitive proposition has received some empirical support. Nohria and Gulati (1996) reasoned that innovation would be inhibited by too little and by too much in the way of slack resources. (Too much slack breeds complacency rather than healthy discipline, which does not help innovation, while too little slack prevents experimentation whose success is uncertain.) Data collected from 264 functional departments of two multinational corporations supported the predicted curvilinear relationship. More recently, Tan (2003) observed a similar inverse parabolic relationship between slack and the financial performance of 17,000 Chinese SOEs.

As noted above when discussing managerial bandwidth, too many of the managers I meet are simply too swamped to be able to nurture a healthy dissatisfaction with the status quo. Their main priority is not improving processes for tomorrow; they simply hope to make it through this week, hoping the next will be calmer. It rarely is.

Creating that slack is not just about securing more resources. It is also about identifying and stripping away activities or processes that have lost their significance in order to free up time, energy and resources for more value adding activities. In all companies, there are constituencies that create new projects, initiatives and task forces all the time. They are called functional departments; they are called people who have been recently promoted; they are called people who come back from training courses. But who is responsible for questioning these initiatives or taking them out? A few companies are addressing this problem by appointing senior managers with odd job titles and a specific responsibility to question, to identify obstacles and bureaucratic practices. BP, for example, actually introduced a VP of Progress – a thirty year veteran of the firm with a responsibility to shake things up and to maintain a desire for improvement. As he defined it, the opposite of progress is “Status quo – which I’m not sure even exists. We are constantly moving forward or backward” (Kane, 1996).

## **THE PARADOX OF HIGH PERFORMANCE**

Research suggests that the very drivers of organizational excellence can, if pushed too far, become negative and even destructive forces. Some authors have represented this relationship as an inverted-U between a given strength and performance. For example, Miller (1990) argued that any quality – such as confident leadership, a focused strategy, or a strong corporate culture – would, at some point, lead to a decline in organizational effectiveness: a productive attention to detail could turn into an obsession with minutiae; strategic focus could lead to competitive myopia; emphasis on improving existing processes could lead to

overspecialization; rewarding innovation could descend into gratuitous invention; and a strong culture could engender rigidity. In a similar vein, Christensen (1997) has argued that industry leaders get blindsided by disruptive innovations precisely because they focus too closely on their most profitable customers and businesses.

Other researchers have preferred to represent the challenge of achieving high performance as a matter of managing *opposing* forces. For example, Quinn (1988) talked about the “competing demands of high performance” – and identified critical tensions between say control and organizational flexibility, or between internal and external focus. Others have referred to these paradoxes as “dualities” (Evans & Doz, 1989), “dilemmas” (Hampden-Turner, 1990) or “dialectics” (Mitroff & Linstone, 1993). Over time, researchers have identified a wide range of opposing forces confronting organizations, including differentiation and integration, external and internal orientation, short term and long term outlook, flexibility and efficiency, change and continuity, entrepreneurship and accountability.

In the past, it was possible for companies to oscillate between extremes, adjusting their structure, strategy, processes or culture to the evolving context. However, under conditions of fast-paced change, a sequential approach is no longer viable. Ilinitich et al. (1996) assert that hypercompetitive environments call for companies to achieve contradictory goals simultaneously – and Brown and Eisenhardt (1998) refer to companies that achieve this balancing act between structure and flexibility as operating on the “edge-of-chaos.” Indeed, Evans et al. (2002) argue that the understanding and management of these contradictory forces is the determining factor in the effectiveness of international companies. High performance companies need to leverage existing resources *and* to develop new ones simultaneously; they must satisfy customer needs *and* anticipate them; they must cultivate individual accountability *and* team responsibility; they must be both entrepreneurial *and* focused.

**Table 1.** The Failure of Success.

Strength	Dangers When Pushed Too Far
Competition is personal	Blindsided because of excess attention on one player; imitative; at a loss when main rival hits trouble
Continuous search for good managerial practices	Flavor of the month initiatives
Continuous search for data	Paralysis by analysis; overwhelmed with data
Sensitivity to weak signals	Obsession with minutiae
Job rotation	Poor follow through; loss of competence; politicking
Training/socialization	Lack of requisite variety; groupthink/frame blindness; one-best way
Some spare resources	Wastefulness

Table 1 shows how the recommendations made in this chapter can, if pushed to extremes, become part of the problem rather than part of the solution.

## CONCLUSION

I have attempted to present above my current views on eight dimensions that, I believe, help some organizations create and institutionalize a healthy dissatisfaction with the status quo, thus leading to the pervasive stimulation and drive that characterizes High Performance Organizations. I have tried to highlight the difficulty of striking the right balance between competing objectives, as well as some of the interdependencies existing between these eight avenues. This is a progress report, intended to stimulate thinking and propose ideas that could lead to formal hypotheses, testable through more focused and hence rigorous data collection than mine.

Notwithstanding the obvious need for corroboration of the above, let me highlight some of its implications for management accounting and control researchers. First, I believe this discussion reinforces the comments I made two years ago (Manzoni, 2002) regarding the need to study the use of performance indicators in the organizational and human context in which they exist (or do not exist). As discussed above most companies I know have all, or at least most of the data they need, but managers who understand the implications of unfavorable data often have a very hard time bringing these data to bear on the organization's decision making process. How can we help individuals and organizations face reality more effectively? I do not know whether accounting and control researchers have a competitive advantage studying this question, but it is certainly an important one for practice.

Secondly, I believe that more must be done to help managers regain what I referred to as "bandwidth," i.e. the intellectual and emotional ability to process and act on complex information, including – and in fact, particularly – when this information is dissonant. Kaplan and Norton's (2001) work on the strategy-focused organization is certainly a step in the right direction. One of the biggest drains on managerial bandwidth is the proliferation of projects and initiatives that plague too many organizations, and this proliferation is often associated with an unclear and/or inappropriate strategy definition.<sup>7</sup> Simons and Davila's (1998) discussion of "return on management," which relates the productive organizational energy released per unit of management time and attention invested, is also pertinent to this issue. In too many organizations the performance measurement system contributes to reducing managers' bandwidth, rather than increasing it. Accounting and control systems that have a strong net positive effect

on managers' bandwidth would be a significant contribution to organizational performance.

## NOTES

1. See, for example, Barsoux and Manzoni (2000) for a description of the difficulties encountered by Bob Ayling when he took over a very successful British Airways, and Hughes et al. (2003) for a description of the way Carlos Ghosn created intense DSQ within Nissan.

2. In this distinction, benchmarking is a more explicit and measurement intensive process than calibration, which I see as a more qualitative approach.

3. See, for example, the example provided by Eric Schmidt who recently recalled how, when appointed as CEO of Novell, he had to work hard at eradicating a ubiquitous practice known as the "Novell nod." "People would sit in a room, listening to someone talk and nodding in agreement. Then, as they left the room, they'd all say to one another, "That was the stupidest thing I've ever heard." I'd see that kind of behavior constantly" (Fryer, 2001).

4. The penalty must be severe in order to ensure a high expected penalty value in spite of a probability of detection lower than one.

5. Allow me an anecdote I heard recently to illustrate the motivational dimension noted above. I was discussing with the CEO of a large international insurance company when the subject of British Airways and its long-standing Chairman Lord Colin Marshall came up. The CEO's face lit up and he remembered: "I met Colin Marshall once. It was ten years ago in a BA lounge at the airport, at 6 am. And what struck me was that he was going round the room cleaning up the ashtrays. That was very powerful." One can argue that Lord Marshall, then CEO, should have instead investigated why the ashtrays were not clean and got the process fixed. He may well have later that morning. In the meantime, he illustrated his legendary drive for perfection.

6. A well known illustration of this approach is Coke, which holds a commanding market share in the cola market. It is psychologically difficult to improve on a, say, 70% market share. But if redefined as, say, 20% of the soft drinks market, or better yet 5% of the beverage market, Coke's position suddenly starts featuring more potential for improvement.

7. A strategy can be inappropriate because it is insufficiently differentiated and/or a bad fit with the organization's resources and capabilities.

## ACKNOWLEDGMENTS

The author gratefully acknowledges the financial support of the INSEAD-PwC Research Initiative on High Performance Organizations.

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## **APPENDIX: LITERATURE ON HIGH PERFORMANCE ORGANIZATIONS**

### **Broad-Based Studies**

*In Search of Excellence*, by Tom Peters & Robert Waterman

*On High-Performance Organizations: A Leader to Leader Guide*, by Frances Hesselbein & Rob Johnston

*What America Does Right*, by Bob Waterman

### **Organizational Behavior Orientation**

*Best Practices in Organization Development and Change: Culture, Leadership, Retention, Performance, Coaching*, by Louis Carter, David Giber & Marshall Goldsmith (Eds)

*Built to Last: Successful Habits of Visionary Companies*, by Jim Collins & Jerry Porras

*Corporate Culture and Performance*, by John Kotter & James Heskett  
*Good to Great*, by Jim Collins

*Hidden Value: How Great Companies Achieve Extraordinary Results with Ordinary People*, by Charles O'Reilly & Jeffrey Pfeffer

*Peak Performance: Aligning the Hearts and Minds of Your Employees*, by Jon Katzenbach

*The Icarus Paradox: Hows exceptional companies bring about their own downfall*, by D. Miller

### **Strategy Orientation**

*Creative Destruction: Why Companies That Are Built to Last Underperform the Market – and How to Successfully Transform Them*, by Richard Foster & Sarah Kaplan

*The Discipline of Market Leaders*, by Fred Wiersema & Michael Treacy

*The Myth of Excellence*, by Fred Crawford & Ryan Mathews

*The Strategy-Focused Organization*, by Robert Kaplan & David Norton

### **Studies describing a single High Performance Organization**

*Making the Cisco Connection: The Story Behind the Real Internet Superpower*, by David Bunnell

*The 12 Simple Secrets of Microsoft Management: How to Think and Act Like a Microsoft Manager and Take Your Company to the Top*, by David Thielen

*The Nokia Revolution*, by Dan Steinbock

*The Southwest Airlines Way: Using the Power of Relationships to Achieve High Performance*, by Jody Hoffer Gittell

*The Toyota Way: What the World's Greatest Manufacturer Can Teach Any Business About High Quality, Efficiency and Speed*, by Jeffrey Liker

*The Wal-Mart Decade: How a New Generation of Leaders Turned Sam Walton's Legacy into the World's #1 Company*, by Robert Slater

### **Books by "High Performance" CEOs**

*Citoyen du Monde*, by Carlos Ghosn & Philippe Riès

*Direct from Dell: Strategies that Revolutionized an Industry*, by Michael Dell & Catherine Fredman

*Execution: The Discipline of Getting Things Done*, by Larry Bossidy & Ram Charan

*Jack: Straight From the Gut*, by Jack Welch

*Pour Your Heart Into It: How Starbucks Built a Company One Cup at a Time*, by Howard Schutz & D. Jones Yang

*Who Says Elephants Can't Dance? Inside IBM's Historic Turnaround*, by Lou Gerstner Jr

**PART II:**  
**DRIVERS OF SUPERIOR**  
**FINANCIAL PERFORMANCE**



# DETERMINANTS OF PERFORMANCE MEASUREMENT SYSTEM DESIGN AND CORPORATE FINANCIAL PERFORMANCE

Adriana Rejc and Sergeja Slapničar

## ABSTRACT

*The aim of this paper is to explore specific types of performance measurement system designs as found in today's Slovenian companies. An empirical study of 94 large companies reveals which perspectives of corporate performance measurement characterise Slovenia's post-transitional economy and which contingencies may be applied to explain the variability in approaches. Of these, legal form and the power of workers' council were found to be the most significant contingency factor influencing the way corporate performance is measured and reported within firms. Additionally, the paper addresses the question of whether the contemporary performance measurement systems as are today developed in Slovenian companies actually help improve corporate financial performance of the firms.*

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**Performance Measurement and Management Control: Superior Organizational Performance**

**Studies in Managerial and Financial Accounting, Volume 14, 47-73**

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ISSN: 1479-3512/doi:10.1016/S1479-3512(04)14003-3

## INTRODUCTION

The effectiveness of performance measurement is an issue of growing importance to industrialists and academics alike. Financial measures have long been used to effectively evaluate the performance of commercial, for-profit organisations. By the early 1980s, however, there was a growing realisation that, given the increased complexity of organisations and the markets in which they compete, it was no longer appropriate to use financial measures as the sole criterion for assessing success (Kennerly & Neely, 2002). Several authors highlighted many of the deficiencies in the ways managing accounting information is used to manage business (Johnson & Kaplan, 1987), set out arguments against judging performance based solely on financial criteria (Eccles, 1991; Garrison, 1990; Hronec, 1993; Kaplan & Norton, 1992), and emphasised the failure of financial performance measures to reflect changes in the competitive circumstances and the strategies of modern organisations. Attention turned to how organisations can design more appropriate measurement systems. Many frameworks have been proposed to help organisations identify a set of measures that reflects their objectives and assesses their performance appropriately, such as the balanced scorecard, the performance prism, the performance measurement matrix, the results and determinants framework, and the SMART pyramid. They are all characterised by the considerable role of non-financial performance measures. Organisations were willing to invest considerable amounts of resource implementing measures and frameworks that reflected all dimensions of their performance. Altogether, between 40 and 60% of companies significantly changed their measurement systems between 1995 and 2000 (Frigo & Krumwiede, 1999) and several organisations achieved remarkable results (Kaplan & Norton, 2001). On the other hand, reports can also be found on a new measurement crisis, with organisations applying new measures to reflect new priorities but failing to discard measures reflecting old priorities resulting in uncorrelated and inconsistent measures (Kennerly & Neely, 2002).

In relation to that, there are two issues that we would like to discuss in our paper. Firstly, as with measurement systems introduced at the turn of the last century, there is a danger that a failure to effectively manage the way measurement systems change over time will cause new measurement systems to lose their relevance. The question here is, then, how should performance measurement systems be designed to be relevant in the circumstances in which an organisation operates? Secondly, although the issue of development of contemporary performance measures and measurement frameworks has received considerable attention from both academic and practitioner communities, neither has satisfactorily addressed the question of whether the newly designed performance measurement systems actually help firm profitability.

Performance measurement as a field of study is still in the phase of evolving into a separately identifiable academic “sub-discipline” (Beasley & Thorpe, 2002) and empirical evidence to resolve these questions is needed. Marr and Schiuma (2002) specifically warn that research in the performance measurement framework is biased since it is mainly based on innovation action research and case study research. Also, there seems to be little consensus on what are the underlying theoretical foundations of the field. Here is a clear danger that functional silos will develop their own solution and their own view of the world, instead of contributing within the context of the larger integrated research field. Finally, there seems to be an Anglo-American dominance of the field of corporate performance measurement. Most contributions come from the United States, the United Kingdom and more recently from Scandinavian countries. According to Marr and Schiuma (2002), understanding corporate performance measurement in other cultural contexts would contribute to the field by helping to test generalisability. In this paper, evidence from empirical research is presented that sheds some light on the design of performance measurement systems in large Slovenian companies in terms of the measures and perspectives included. We study the relevant contingencies as well as effects that different performance measurement systems have on corporate financial performance. Thus the paper seeks to explain differences in performance measurement system designs as observed in large Slovenian companies and their relation to financial results and in this way to contribute to the evolving theory of performance measurement and management.

Following this introduction the paper consists of a further six sections. The next section lists the main features of traditional and contemporary performance measurement systems’ design, discusses the literature on the evolution of performance measurement systems, and hence provides the context of the research. In the research methodology and hypothesis section, we develop our research framework by considering the contingency approach to management accounting. Contingencies for performance measurement system designs are explained based on the empirical evidence published so far and current developments in the Slovenian economy. Descriptions of the data, sample, and the results are then presented. The subsequent discussion is followed by conclusions that are drawn in the final section.

## **THEORETICAL BACKGROUND**

### *Traditional and Contemporary Performance Measurement*

Financial measures are required by legislation and have been in existence for many years, so all businesses use some form of financial measurement systems.

The term traditional performance measurement system, however, has been coined to describe performance measurement systems (PMSs) where the overall focus is financial and, as a consequence, the scorecard is dominated by financial-outcome-related measures. Traditional PMSs are further characterised by having limited flexibility, lacking a link to operations strategy, being used to adjust financials, and being locally optimised and fragmented (Lynch & Cross, 1995). Bourne et al. (2000) similarly describe traditional performance measures as being criticised for encouraging short termism, lacking strategic focus, encouraging local optimism and not being externally focused. Nevertheless, not all companies relying primarily on traditional performance measures actually use the same structures of measures. The most important differences can be observed in the dominance of either the accounting measures (such as earnings) or the financial (cash-flow-related) measures.

Businesses today require better information across a wider scope than that of the traditional, and often linear, financial measures, to achieve understanding of the factors that create the foundations of future success (Fawcett et al., 1997). According to Neely (1999), there are several reasons for the increase in interest in contemporary performance measurement: the changing nature of work; increasing competition; specific improvement initiatives; national and international quality awards; changing organisational roles; changing external demands; and the power of information technology. Instead of concentrating on the results that will get managers immediate rewards, thus sacrificing long-term health of the business for the short-term gain, today the range of measures must be structured to provide a clear view of the causes of the results and the drivers of future performance. Contemporary performance measurement is thus characterised by assigning equal importance to both the purposes and objectives of an organisation (outcomes) as well as the processes and other drivers of success (Atkinson et al., 1997; Kaplan & Norton, 1996; Lynch & Cross, 1995). Measures must reflect the strategies and capabilities of the organisation and not just the financial results; therefore, financial performance measures are balanced by the non-financial ones. Lynch and Cross consider some other characteristics of a contemporary performance measurement system, such as customer-driven (future focus), flexible, a dedicated system for operational feedback, tracks concurrent strategies, catalyst for process improvements (radical and incremental), systemically optimised, and integrated (Lynch & Cross, 1995).

### *Determinants of Performance Measurement System Design*

Although many organisations have undertaken projects to design and implement better performance measures, few organisations appear to have systematic



processes in place for managing the evolution of their measurement systems. Not so rarely organisations are drowning in the additional data that is now being collected and reported (Neely et al., 2000). Measures tend to lose their relevance and ability to discriminate between good and bad performance over time as performance objectives are achieved or as behaviour no longer reflects the performance objectives underpinning the measures (Meyer & Gupta, 1994). Meyer and Gupta observe that failure to effectively manage this change causes the introduction of new measures that are weakly correlated to those currently in place so that an organisation will have a diverse set of measures that do not measure the same thing. Kennerly and Neely (2002) claim that organisations need to review and modify measures and measurement systems as the organisation's circumstances change. Numerous other authors espouse the need for reflection on measures to ensure that they are updated to reflect the continuous change and issues of importance to the business.

This raises a crucial question. Can the concept of contingencies be applied? We believe that considering the drivers of change, i.e. those factors that make change necessary, may enhance the organisation's readiness for change. *The contingency approach to management accounting*, so far the most relevant to topics of performance measurement, is based on the premise that there is no universally appropriate accounting system that applies equally to all organisations in all circumstances (Otley, 1980). Rather, it is suggested that particular features of an appropriate accounting system will depend on the specific circumstances in which an organisation finds itself. Consequently, the underlying premise of *the contingency approach to performance measurement* is that measures and measurement systems must reflect the context to which they are applied. By detecting contingencies of corporate performance measurement, one is encouraged to believe that the design of an organisation's PMS should change when the same conditions (contingent factors) appear.

Emmanuel et al. (1995) summarises three main classes of contingent factors that have been identified as influencing the design of an accounting system. These are the *environment* (its degree of predictability, the degree of competition faced in the market place, the number of different product/markets encountered, and the degree of hostility exhibited), *organisational structure* (size, interdependence, decentralisation and resource availability), and *technology* (the nature of the production process, its degree of routineness). A consideration of *corporate strategy* has, quite surprisingly, not been prominent in control design studies despite some arguments that differences in corporate strategies should logically lead to differences in the design of planning and control systems (Dent, 1990).

In relation to contingencies in corporate performance measurement, Waggoner et al. (1999) summarised the following key forces driving change in performance measurement: customers, information technology, the marketplace, legislation

(public policy), new industries, nature of the work, and future uncertainty. However, the focus here is more on the enabling power of these drivers to foster the evolution of performance measurement systems within organisations and not on the resulting structures of the measures.

To determine potential contingency factors of performance measurement we will therefore have to rely on the contingency theory of management accounting and simultaneously consider the specific characteristics of Slovenian economy and legislation that can also influence the way managing directors monitor their company's performance.

### *The Role of Performance Measurement Systems in Improving Financial Performance*

From the methodological perspective, the most difficult research question is whether the contemporary performance measurement systems actually help firm profitability.<sup>1</sup> The main function of performance measurement in a strategic context, as claimed by Letza (1996), is to provide the means of control to achieve the objectives required and to fulfil the company's mission/strategy statement. This view is supported by Neely et al. (1994) who view performance measurement as a key part of strategic control. Fawcett et al. (1997) and Neely et al. (1994) develop this argument by stating the need for performance measurement to exercise this control through: (1) helping managers to identify good performance; (2) setting targets; and (3) demonstrating success or failure which is ultimately reflected in financial statements.

The very essence of PMSs is therefore to improve decision-making so that the company performs better financially. As a consequence, the PMSs' effectiveness can be viewed only from the perspective of its contribution to the company's financial performance. Yet, quantitative empirical evidence with specific focus on how internal performance measurement systems with the balanced structures of financial and non-financial performance measures improve corporate financial performance is still lacking. In the further subsections we will attempt to address this question, too.

## **RESEARCH METHODOLOGY AND HYPOTHESIS**

In our analysis we look more closely at the corporate performance measurement system designs in the post-transitional Slovenian economy by trying to isolate

different aspects of corporate performance. We analyse how different perspectives of performance are combined and investigate which factors lie behind the particular structure of performance measures actually used in companies.

### *Dependent Variables*

Based on the extensive literature on performance measurement (Garrison, 1990; Hronec, 1993; Kaplan & Norton, 1996, 2001; Lynch & Cross, 1995) we selected 45 performance measures as possible elements of a performance measurement system (see Table A.1). To enhance the interpretability of the results we further analyse and group variables. The pattern of inter-correlation among 45 performance measures is empirically captured by the factor analysis. The factor solution helps us understand how many factors actually determine performance measurement and how the measures may be empirically grouped on the basis of common variance. However, we use the factor analysis only as an exploratory tool and continue to refine the factor solution by a normative approach in order to operate with only a few of the most meaningful performance measures for each aspect of performance. We test the reliability of the chosen indicators for each aspect of performance with Cronbach  $\alpha$ .

In the second phase, we investigate the characteristics of the sample companies by partitioning the sample on the previously identified aspects of performance. By clustering the companies into similar clusters according to the importance that managing directors ascribe to the detected aspects of performance we inspect designs of performance measurement systems (the design can be described by the combination of aspects of performance, used as partitioning variables).

### *Independent Variables*

The variability in performance measurement systems is grounded on the contingency approach to management accounting. In addition, some other factors are included, such as legal form, the power of workers' council etc. All in all, only those contingencies have been hypothesised that may have relevance for performance measurement at the corporate level. As a result, we focus on three main classes of contingent factors: organisational structure, the internal environment, and the external environment. These variables should explain much of the variability in Slovenian corporate performance measurement.

*Organisational structure* is proxied by legal form and the size of the company (variables 1 to 2 in the list below). The size (measured by assets and sales

revenues) is one of the indicators that influence the organisational structure and so is the legal form of a company.

- With the legal form we try to capture the corporate governance situation in recently privatised companies: this is the behaviour of closely- versus openly-held corporations. Closely-held companies can inform their shareholders of the firm's value more efficiently than widely-held firms – through communication channels other than financial statements (Klassen, 1997). The managing directors of closely-held companies may, therefore, be less inclined to typical shareholders' measures of corporate performance.
- Organisational size is an important variable affecting both structure and other control arrangements (Emmanuel et al., 1995). Increased growth by means of diversification and consequent exposure to more diverse product-market environments prompts more complex information systems. Large companies are also exposed to more pressure from different stakeholder groups, which requires comprehensive performance measurement systems to cope with the increasing levels of complexity and diversity.

The next group of variables indicates *the internal environment* (internal characteristics) of a company (variables 3–8). Here, the following plausible contingencies are considered: corporate strategy; the acquisition of ISO certificates, the export orientation of the company; the share of workers' representatives in supervisory boards, workers' council influence on performance criteria; and workers' council influence on corporate strategy.

- Differences in corporate strategies should logically lead to differences in planning and control systems design. According to research by Govindarajan and Gupta (Emmanuel et al., 1990), when greater reliance is placed on the long-run criteria of evaluation, effectiveness is enhanced for “build” strategies but diminished for “harvest” strategies. Therefore, companies with growth strategies would focus primarily on the achievement of strategic objectives while, in companies suffering a latent or acute crisis, most attention must be paid to short-term financial goals (such as liquidity).
- The proponents of TQM maintain there is a universal set of practices that, if implemented, will lead to high performance. Since an official quality award is bestowed upon a company for following these practices, it is hypothesised that the presence of an ISO 9000 certificate means the managing director considers quality-related performance measures as being more important.
- It is hypothesised that companies with dominant export orientation towards developed foreign markets face more fierce competition, which forces them

to adopt the best practices in performance measurement that can be found in competitive organisations.

- In relation to the workers' representatives in supervisory boards, specifics of Slovenian legislation need to be taken into account. Workers' participation in the corporate structure is primarily defined by the Law on Workers' Co-determination (1993), with some issues being covered by the Companies Act (1993). The Companies Act introduces a two-tier governance structure with the Supervisory Board as the intermediate body between the management and the Shareholders' Assembly. Supervisory Boards play a relatively important role in the control and selection of the management and thus determine the governance of Slovenian firms. According to the Law on Workers' Co-determination (1993), at least one third of the members of Supervisory Boards in firms up to 1000 workers, and at least half of the members of Supervisory Boards in firms with 1000 or more workers, have to be workers' representatives (Prašnikar & Gregorič, 2002).<sup>2</sup> It is therefore hypothesised that employees' interests are better represented and secured in large companies with a larger share of workers' representatives in supervisory boards.
- Relating to workers' councils, Slovenian legislation provides an extensive framework for workers' participation in firm management. Participation in the management through the Workers' Council or Workers' Trustee is a right and not an obligation of workers. The workers' council is formed on the initiative of workers in firms with at least 20 workers who have an active voting right.<sup>3</sup> In firms with fewer than 20 of such workers, workers can participate through the workers' trustee. In Slovenia, it is the Workers' Council that, usually on the proposition of the workers' union organisations, chooses the workers' representatives on the Supervisory Boards. Apart from that, there are different degrees of workers' participation (Prašnikar & Gregorič, 2002). The lowest extent of participation is the obligation of the employer to inform the workers' council about the economic situation of the firm, its developmental goals, production, changes in production organisation, technology and similar. Second, a joint consultation means that the employer and the workers' council try to reach a consensus of their standpoints on status questions and HRM decisions. Third, in co-determination the employer needs the consent of the workers before taking a final decision. Consent is required for issues concerning the organisation and implementation of safety measures, the main rules for using the annual vacation, the criteria for evaluating workers' work achievements and innovative activity, the use of housing funds, vacation capacities, and the criteria for promoting workers. Finally, there is also the right of veto. It is usually argued that the existence of powerful interest groups in an organisation increases the level

of uncertainty it faces. Researchers (Emmanuel et al., 1990) have referenced the “stress” and “aggressiveness” of interest groups as influencing control reports. Hence, it is hypothesised that in organisations where powerful workers’ councils have bargaining power in determining corporate objectives (strategies) and performance criteria managing directors’ attitudes to employee satisfaction, development and compensation are more strongly impacted. Managerial priority is then given to the preservation of employment, money wages and other benefits, which should be reflected in performance measurement.

*The external environment* refers mainly to the pressure from competitive market forces. Number of competitors in the main market (variable 9) will be considered. Gordon and Miller (1976) proposed that in the face of severe competition or market hostility a more sophisticated information system is required, incorporating non-financial information.

Independent (explaining) variables are therefore:

- (1) Legal form;
- (2) Size of the company (measured by assets, and sales revenues);
- (3) Corporate strategy;
- (4) Acquisition of ISO certificates;
- (5) Export orientation (measured by the share of exports in total sales revenues);
- (6) Share of workers’ representatives in supervisory boards;
- (7) Workers’ council influence on performance criteria;
- (8) Workers’ council influence on corporate strategy; and
- (9) Number of competitors.

In addition, variables measuring financial performance (EBITDA/Assets, ROA and ROE) have been added to the model to address the question of whether companies with different performance measurement system designs differ in their financial performance, too. Since less than 10% of the sample companies have been quoted on the stock exchange the consideration of market value as a measure of financial performance was not possible. We investigated the financial performance with a two-year time lag to allow the performance measurement systems to yield different financial results. This was the maximum time lag we could consider regarding the period of our research and the availability of financial statements.

### *Hypothesis*

In order to investigate which contingent factors impact on the overall design of performance measurement, it is hypothesised that:

The selected contingent variables relating to organisational structure, the internal and the external environment significantly explain for the differences in performance measurement systems design, which are captured by cluster membership.

We test the hypothesis by performing MANOVA, including all variables expressed on a ratio and interval scale into the model. To determine which contingent variables are effectively responsible for the differences in performance measurement systems design we follow up the analysis with univariate ANOVA. Further, with discriminant analysis we identify the linear combinations of the contingent variables that best discriminate the groups. Additionally, the impact of nominal and ordinal contingent variables, which due to their measurement scale are excluded from the main model, is analysed with  $\chi^2$ -test.

## **DATA AND SAMPLE**

The empirical analysis is based on a sample of large Slovenian companies. Large companies were selected since we believe formal performance measurement systems are much more important tools for control in large companies compared to medium-sized and small companies. The selection criteria were: (1) revenues amounting to EUR 5.6 million and over; (2) assets amounting to EUR 2.8 million and over; and (3) number of employees amounting to 250 and over. The third criterion was chosen because under Slovenian legislation the number of employees has important implications for corporate governance. The total number of large companies that met all three criteria in 1999 was 258.

Information on performance measurement systems was obtained from questionnaires. Questions covered two research areas: firstly, the importance of 45 performance measures within management information systems (dependent variables) and, secondly, the basic characteristics of the company and its external environment (independent variables). All variables were measured at the corporate level. The importance of performance measures was measured on a Likert scale from 1 (least important) to 5 (most important). Independent contingent variables, on the other hand, were measured either as nominal, ordinal, interval or ratio (see Table A.2).

The questionnaire was tested by a personal interview with the managing directors of six large Slovenian companies operating in different industries and located in different regions. Other managing directors were contacted personally by telephone, informed of the purpose and goals of the research and asked to participate. Through the personal contact we sought to obtain the personal agreement of the managing director or another member of the Board of Directors to participate (the average number of members on a Board of Directors is 2.4 in the sampled companies), since this was crucial to the quality of our research.

Finally, we posted questionnaires to the selected companies in December 2000 and January 2001. March 2001 was the cut-off date: we received 150 questionnaires. Of these, 94 companies that fully answered all parts of the questionnaire were used in research. A sample of 94 large companies is considered satisfactory in Slovenia's small economy.

## RESULTS

The factor analysis of 45 performance measures allowed us to isolate 6 factors that can be referred to as aspects of performance. The original composition of these 6 factors was further refined by a normative selection of the most meaningful measures. The reliability of the indicators chosen for each aspect of performance was tested with Cronbach  $\alpha$ . Shown in Table 1, the statistics confirm that the normative refinement is reliable.

Six aspects of performance (factors) are now composed variables calculated as the mean value of performance measures' assigned importance.

The segmentation of the sample with cluster analysis was performed to identify homogeneous groups of companies according to the relative weight of the six performance aspects in their overall performance measurement system. We used SPSS, version 10.0. The number of clusters was ascertained with Ward's hierarchical clustering method in which squared euclidean distance was used as a similarity measure of standardised variables. The dendrogram is presented in Fig. A.1. The resulting three clusters were used as inputs for the  $k$ -means clustering method. The initial seeds in  $k$ -means clustering to which observations were assigned were selected as the centroids of the three clusters, previously found by Ward's hierarchical clustering method.

The three clusters are described with the following mean values of the six aspects of performance (see Table 2 and Fig. 1). There are 42 companies in the first cluster, 32 companies in the second cluster and 20 companies in the third cluster.

The first impression is that all three clusters have quite similar patterns of performance measurement system design. Values assigned to specific aspects of performance are either all relatively high (see Quality and innovation, Employee relations, and Financial soundness) or all relatively low (see Shareholders' return). Apparently, some aspects of performance are either the most important or least important to all managing directors, except that the intensity with which the overall importance of performance measures is expressed differs among clusters. There is an explanation of such a pattern. In Slovenia, the total quality management paradigm has been very well accepted. Since 1989, when the first quality certificate based on the ISO 9000 was granted, the number of ISO 9000 and



**Table 1.** Six Aspects of a Performance Measurement System as Composed Variables.

Composed Variable	Original Variable
Financial soundness ( $\alpha = 0.842$ )	Liquidity Solvency Meeting financial objectives Debt-to-equity ratio
Employee relations ( $\alpha = 0.89$ )	Employee relations Employee satisfaction Learning process of employees Reputation for attracting, developing and keeping talented people
Shareholders' return ( $\alpha = 0.78$ )	Earnings per share Shareholder satisfaction Market-to-book value Dividend to net profit
Social and environmental responsibility ( $\alpha = 0.80$ )	Community relations Environmental responsibility Social responsibility
Accounting measures ( $\alpha = 0.68$ )	Sales/Assets ROA ROI Orders received Efficiency Value added
Quality & innovation ( $\alpha = 0.76$ )	Optimisation of internal processes Total quality management indicators Product quality Meeting customer objectives R&D to sales revenues Introduction of new products and services

ISO 14001 certificates has been increasing every year. Today, there are over 1500 certified companies operating in Slovenia. In addition, the Slovenian Business Excellence Award based on the European Quality Award was established in 1998 to further encourage Slovenian companies to compete in business excellence. Product and service quality as well as the quality of processes is generally accepted as one of the most important business determinants.

Employee-related performance measures were similarly assigned relatively high importance, indicating that the traditionally embedded care for employees

**Table 2.** Design of a Performance Measurement System in the Three Clusters.

	Report					
	Financial Soundness	Employee Relations	Shareholders' Return	Social and Environmental Responsibility	Accounting Measures	Quality and Innovation
Cluster no. 1						
Mean	4.52	4.65	3.61	4.21	4.37	4.62
<i>N</i>	42	42	42	42	42	42
Std. Dev.	0.38	0.34	0.63	0.52	0.42	0.26
Cluster no. 2						
Mean	3.87	3.93	3.10	3.41	3.57	3.91
<i>N</i>	32	32	32	32	32	32
Std. Dev.	0.46	0.38	0.56	0.55	0.37	0.43
Cluster no. 3						
Mean	4.21	3.56	1.86	3.07	4.25	4.17
<i>N</i>	20	20	20	20	20	20
Std. Dev.	0.54	1.11	0.60	0.87	0.41	0.46
Total						
Mean	4.23	4.17	3.07	3.70	4.07	4.28
<i>N</i>	94	94	94	94	94	94
Std. Dev.	0.53	0.75	0.90	0.78	0.54	0.49

and social matters could still be present. When considering the underlying reasons, however, one should pay attention to the already mentioned Slovenian legislation. According to the Law on Workers Co-determination, the number of employees has implications for the inclusion of employees on the Supervisory Board. The law also gives employees the right to have a representative on the Management Board – the workers' director – if the firms has more than 500 employees. In addition, employees can participate in management through the workers' council or the workers' trustee. The Slovenian legislation therefore provides an extensive framework for workers' participation in firm management, which clearly influences managing directors' considerations of employee interests, particularly employee satisfaction, development and compensation. On the other hand, while it is true that only some large Slovenian companies carry out formal measurements of employee satisfaction, since 2001 there is a nation-wide Slovenian project of measuring organisational climate, which includes measurement of employee satisfaction. In 2001, there were 30 (mostly large) companies included in the project, in 2002 50, while in 2003 there are 80 companies participating in the project (Kunšek, 2003). The project is impacting on the perceptions and

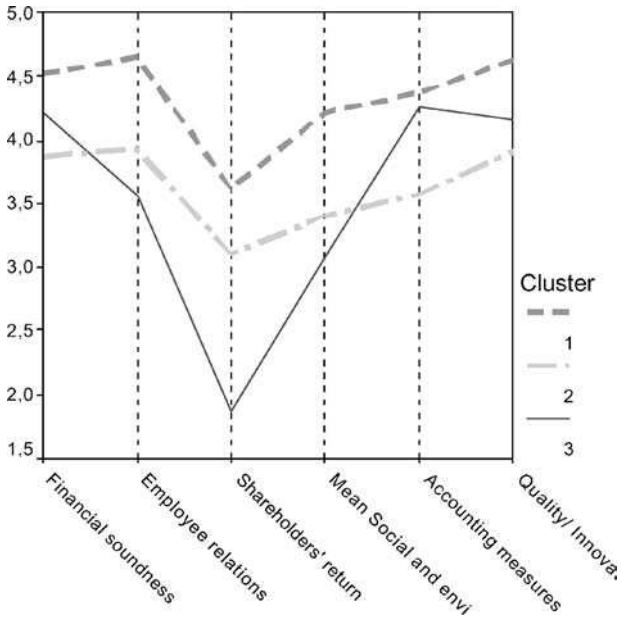


Fig. 1. Design of a Performance Measurement System in the Three Clusters.

attitudes of practically all Slovenian managing directors regarding the issue of employee interests, not only those that actually participate in the project.

Considering financial soundness (comprising liquidity and solvency, in particular), this has been one of the biggest concerns of Slovenian companies ever since the country became independent in 1991. The period following shortly after 1991 was marked by enormous falls in sales due to the loss of markets in ex-Yugoslavia, coupled with the problems of accounts receivable that had to be written off. Many companies struggled for years to solve the financial crisis that spilled over from one company to another. Empirical evidence from recent research on a larger sample of Slovenian firms confirms our findings. Slovenian managing directors consider quality-related non-financial performance measures as being highly important. Of the top 20 most important performance measures, there are just four financial and accounting ones, ranked 6th, 7th, 19th and 20th. These are liquidity and solvency (often in the role of the leading performance measure), profit growth rate, and efficiency, respectively (Rejc & Slapničar, 2003).

When we look for differences between the three clusters, we observe that the most distinguishing feature is the importance ascribed to the shareholders' return. We will turn to this finding later on.

To determine which contingent variables are effectively responsible for the differences in performance measurement design the  $\chi^2$ -test was used in the case of the nominal or ordinal measurement scale of contingent variables (legal form, acquired certificate based on an ISO 9000, corporate strategy and number of competitors).

The legal form is the first to differ significantly among the clusters (Pearson  $\chi^2 = 17.511$ ,  $p < 0.001$ ). While the companies of clusters 1 and 2 are almost entirely public limited liability companies, the majority of companies in cluster 3 are private limited companies. Although information on company size can only be descriptive because no significant differences were found among the three clusters (see below), cluster 1 consists of the largest companies (by size of assets and sales revenues). The average values show that companies in cluster 1 are approximately twice the size of companies in cluster 3 and by one-third larger than companies in cluster 2 when measured by assets and sales revenues. We will use size and legal form of the companies to name the clusters. The cluster 1 is composed of large-sized public limited companies; cluster 2 is also composed of public limited companies (large public ltd.), however, they are smaller in size and will be named smaller public ltd. Cluster 3 represents predominantly private ltd. companies of a relatively smaller size.

To test the hypothesis whether the groups differ along combinations of the selected contingent variables (measured on a ratio scale) we performed MANOVA (see Table A.3 for descriptive statistics on contingent variables). The first step in MANOVA is to determine whether the centroids of the three clusters are significantly different.

The null hypothesis is:

$$\begin{pmatrix} \mu_{11} \\ \mu_{21} \\ \vdots \\ \mu_{71} \end{pmatrix} = \begin{pmatrix} \mu_{12} \\ \mu_{22} \\ \vdots \\ \mu_{72} \end{pmatrix} = \begin{pmatrix} \mu_{13} \\ \mu_{23} \\ \vdots \\ \mu_{73} \end{pmatrix}$$

where  $\mu_{ij}$  is the mean of the  $i$ -th variable for the  $j$ -th group.

The test statistics presented in the Table 3 reject the hypothesis that there are no differences among the clusters with respect to the contingent variables.

The univariate ANOVA was performed to identify which variables are responsible for the differences (see Table 4).

The values of  $F$ -ratio and  $p$  indicate that there was a non-significant difference among clusters in terms of size (measured by assets and sales revenues), export orientation, financial performance (measured by EBITDA/Assets, ROE and

**Table 3.**

Pillai's	Value	F	Hypothesis	Error df	Sig.
Wilks'	0.661	2.073 <sup>a</sup>	18.00	162.00	0.009
Hotelling's	0.485	2.156	18.00	160.00	0.006
Roy's largest	0.416	3.789 <sup>b</sup>	9.000	82.00	0.000

<sup>a</sup>Exact statistic.

<sup>b</sup>The statistic is an upper bound on *F* that yields a lower bound on the significance level.

ROA) and the share of employees' representatives in the Supervisory Boards looking at them independently. Variables workers' council influence on the strategy and workers' council influence on performance criteria have found to be significant.

**Table 4.**

Source	Univariate Test Results					
	Dependent Variable	Sum of Squares	df	Mean Square	F	Sig.
Contrast	In ass	3.272	2	1.636	1.338	0.267
	In sales	1.909	2	0.955	0.937	0.396
	EBITDA/Assets 2002	0.019	2	0.010	1.496	0.230
	ROA 2002	0.033	2	0.016	2.947	0.058
	ROE 2002	0.191	2	0.095	2.412	0.095
	Export	0.224	2	0.112	0.864	0.425
	Workers' council influence on the strategy	26.873	2	13.436	12.085	0.000
	Workers' council influence on performance criteria	14.911	2	7.455	6.356	0.003
	% of employees' representatives in supervisory board	1,495.906	2	747.953	1.772	0.176
Error	In ass	108.769	89	1.222		
	In sales	90.679	89	1.019		
	EBITDA/Assets 2002	0.570	89	0.006		
	ROA 2002	0.492	89	0.006		
	ROE 2002	3.515	89	0.039		
	Export	11.553	89	0.130		
	Workers' council influence on the strategy	98.953	89	1.112		
	Workers' council influence on performance criteria	104.394	89	1.173		
	% of employees' representatives in supervisory board	37,576.646	89	422.210		

We carried out post hoc tests to find out which clusters differ along significant variables. Games-Howell test was significant for the difference between cluster 1 and 3 in terms of the influence of workers' council on the performance criteria ( $p = 0.019$ ). Employees in the smaller privately held companies are significantly less involved in the process of determining performance measures as they are in large public companies. Significant differences are found also in the influence of the workers' councils on strategy: between clusters 1 and 2 ( $p < 0.037$ ), between clusters 1 and 3 ( $p < 0.0001$ ) and 2 and 3 ( $p = 0.017$ ). This influence is larger in both clusters of public companies, being the largest in cluster 1. The results can well explain why Employee relations and Social and environmental responsibility were ascribed the highest importance in the cluster 1, followed by cluster 2 and were least important in cluster 3.

The discriminant analysis reveals that the group differences shown by MANOVA can be explained in terms of one underlying dimension (linear combination of predicting variables) which accounts for 85,7% of total variance and is statistically significant at  $p = 0.009$ .

The structure matrix presented in Table 5 gives the canonical variate correlation coefficients which allow the interpretation about the relative contribution of each dependent variable to group separation. Influence of workers' council on strategy and influence of workers' council on performance criteria contribute the most to the explanation of the different performance measurement systems captured in three different clusters.

The legal form and the size also explain the importance clusters ascribe to the shareholders' return. Shareholders' return as a performance perspective is

**Table 5.** Structure Matrix.

	Function	
	1	2
Workers' council influence on the strategy	0.791 <sup>a</sup>	-0.405
Workers' council influence on performance criteria	0.580 <sup>a</sup>	-0.214
% of employees' representatives on supervisory board	0.298 <sup>a</sup>	0.201
In assets	0.265 <sup>a</sup>	-0.118
In sales	0.225 <sup>a</sup>	0.035
ROE 2002	0.265	0.602 <sup>a</sup>
EBITDA/Assets 2002	0.203	0.488 <sup>a</sup>
Export	0.087	-0.485 <sup>a</sup>
ROA 2002	0.363	0.404 <sup>a</sup>

*Note:* Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions variables ordered by absolute size of correlation within function.

<sup>a</sup>Largest absolute correlation between each variable and any discriminant function.

significantly less important to managing directors of companies from cluster 3. There are several explanations of this. Firstly, smaller privately-held companies do not need to promote shareholders' interests formally (in annual reports, for example) as they have more efficient communication channels to inform their owners about the results (Klassen, 1997). According to Mian and Smith (1990), financial reporting to external users and internal information systems often overlap and privately-held companies, as the case of cluster 3 could be, can be a good example. Secondly, owners of internally-held companies in many cases also play the role of managers and can satisfactorily take care of their financial return. Thirdly, closely-held companies usually face less market pressure in terms of reporting to owners. When seeking new capital, closely-held companies do not go public and, therefore, their managers do not use costly signals to communicate expected high future earnings. Finally, shareholders' return comprises performance measures such as earnings per share, dividend to net profit, and market-to-book value that can only be relevant to public ltd. companies. Shareholder satisfaction is actually the only performance measure included in this perspective that is broad enough to capture the interests of all types of owners, even those in privately-held companies. Since in cluster 3 private owners may have more control over the company, workers' council influence is less significant.

## **DISCUSSION**

The question is why cluster 2 ranks all performance measures lower than cluster 1. Is formal performance measurement less important to smaller public ltd. than to large public ltd.? Although there are no significant differences among the two clusters in the share of exports and number of competitors (analysed with  $\chi^2$ -test), it is interesting that trends show a less fiercely competitive environment for cluster 2. The share of exports in total revenues is on average about 10% lower in cluster 2, 62.6% of companies in cluster 2 face 10 or less competitors, as opposed to 45.3% of companies in cluster 1, the majority of whom have more than 10 competitors. This may well explain why the performance measurement system design of cluster 2 is less clearly expressed.

No significant differences among the three clusters were observed in the variable acquisition of quality certificates or in the variable corporate strategy. These contingent variables do not explain the differences in the Quality and innovation aspect of performance measurement. All companies rank this aspect of performance very highly, in cluster 2 that has just been marked as rather vague, the mean value of Quality and innovation is, as one would expect, the lowest. Accounting measures, Financial soundness, as well as Social and environmental

responsibility are the aspects of performance measures that seem to be similarly important for all companies. Accounting measures are required by the Slovenian legislation and Slovenian accounting standards and may therefore be important to all managers. Liquidity and solvency have already been mentioned as one of the biggest financial concerns of Slovenian companies in the last decade. And finally, although environmental responsibility has only gradually been developed in Slovenia, managing directors obviously believe that fostering positive connections to social and environmental stakeholders can help a firm's profitability. There are both similarities and synergies between environmental protection activities and programmes and the operations methods and techniques. Today, large companies (especially those quoted on the Stock Exchange) have already developed reporting on social and environmental responsibility.

The final remark must be addressed at the non-significant difference among clusters in terms of financial performance. Evidently, empirical evidence does not support the thesis that companies with different performance measurement system designs in fact perform differently, financially. There are more explanations for that. Firstly, the first step of the research design resulted in three contingent factors – legal form, workers' council influence in developing the corporate strategy, and workers' council influence in determining performance criteria – that led to some differences in PMSs design in terms of importance of shareholders' return and employee relations. These results can not be easily and in a plausible way related to different financial performance in the first place. The cluster analysis therefore left us with an interesting but – from this perspective – difficult situation that certainly needs to be further reflected upon. Secondly, there is a possibility that the time lag between the leading and lagging indicators, that has been considered in the research design, is too short. Financial data has been calculated for 2002 based on available financial statements, which might be a too short time span for significantly different financial returns across the clusters. Was the time span larger (more than two years) the results might have been different. And finally, the emphasis in three performance measurement systems may not have been articulated enough to produce different financial performance.

Despite our results the relationship between performance measurement system designs and financial performance must remain on the agenda for future research as one of the most important performance measurement related questions. Also, other potential contingent variables will have to be taken into account. From the perspective of the ownership structure foreign ownership (particularly ownership by multinational corporations) can importantly influence performance measurement systems of the partner companies. Similarly, companies quoted



on the Stock Exchange may substantially differ from other companies in terms of performance measures used to determine performance. In 2000, when our sample was determined, the number of sample companies either owned by foreign multinationals or quoted on the Stock Exchange was too small to allow any investigation of their impact on performance measurement system design. However, as to the present sample, we will refine the research approach by verifying the empirical results with several in-depth interviews with the managing directors.

## CONCLUSIONS

Although it has long been recognised that performance measurement has an important role to play in the efficient and effective management of organisations, it remains a critical and much debated issue. Empirical evidence based on a sample of 94 large Slovenian companies shows there are differences in performance measurement system designs that can be interpreted in the light of some contingent factors. Three clusters were identified that can be described as large public ltd. companies (cluster 1), smaller public ltd. companies (cluster 2) and smaller privately-held companies (cluster 3). The legal form (contingency 1) explains the importance clusters ascribe to Shareholders' return as a performance perspective. This perspective is significantly less important to the managing directors of privately-held companies. It is the influence of workers' council in determining performance criteria (contingency 2) and in developing the corporate strategy (contingency 3), which is significantly higher in cluster 1 than in the two other clusters. This explains why Employee relations is actually the highest ranked aspect of performance in large sized public ltd. companies and also the highest ranked in smaller public ltd. companies. In privately-held smaller companies it is ranked only in fourth position. Finally, smaller public ltd. companies rank all performance measures lower than large public ltd. companies. Although there are no significant differences among the three clusters in the share of exports and number of competitors the descriptive numbers reveal the less tough competitive environments for smaller public ltd. companies.

In addition to contingency factors, financial performance of the sampled companies has been studied. The discovered differences in performance measurement system designs and the underlying contingencies do not result in different financial performance of these companies. The methodological approach of the present study therefore doesn't offer support to the thesis that different performance measurement systems lead to different financial results.

## NOTES

1. The belief that financial results are the most important ultimate aspect of performance is firmly embedded both in the traditionalists' view of the corporation (Friedman, 1962, 1970; Friedman & Friedman, 1980) as well as in the alternative view to the traditional conception of the business enterprise (Pava & Krausz, 1996). In the traditionalists' view business managers have a responsibility to shareholders to maximise firm value while having no mandate to embark on socially-responsible projects that do not enhance the income generating ability of the firm. In the alternative view, on the other hand, environmental concerns, community relations, product quality, consumer relations, and employee relations are also considered an important aspect of performance, nevertheless, along with financial performance (Pava & Krausz, 1996).

2. In addition, workers can participate in Management Boards through the workers' representative – the workers' director – in firms with more than 500 workers.

3. A worker with an active voting right is one who has been with the firm for at least six months without interruption.

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## APPENDIX

*Table A.1.* Average Importance Grade of 45 Performance Measures.

	<i>N</i> Statistic	Mean Statistic	Std. Error	Std. Dev. Statistic
1. Customer satisfaction	105	4.733	0.047	0.486
2. Product (service) quality	105	4.648	0.066	0.679
3. Reputation for quality of products and services	105	4.571	0.073	0.745
4. Meeting customer related objectives	105	4.419	0.083	0.852
5. Achieving Strategic objectives	105	4.381	0.078	0.801
6. Liquidity	105	4.362	0.079	0.810
7. Solvency	105	4.324	0.076	0.778
8. Total quality management indicators	105	4.286	0.081	0.829
9. Achieving the corporate vision	105	4.276	0.090	0.925
10. Reputation for financial soundness	105	4.267	0.074	0.763
11. Optimisation of internal processes	105	4.257	0.080	0.821
12. Employee satisfaction	105	4.248	0.076	0.782
13. Sales growth rate	105	4.238	0.077	0.791
14. Learning process of employees	105	4.238	0.076	0.779
15. Introduction of new products/services	105	4.238	0.080	0.815
16. Value added	105	4.229	0.081	0.835
17. Employee relations	105	4.229	0.064	0.654
18. Reputation for ability to attract, develop and keep talented people	105	4.229	0.081	0.835
19. Profit growth rate	105	4.229	0.079	0.812
20. Efficiency	105	4.181	0.089	0.907
21. Value added per employee	105	4.133	0.086	0.878
22. ROE	105	4.114	0.082	0.836
23. Performance in relation to competitors	105	4.086	0.099	1.011
24. ROI	105	4.076	0.083	0.851
25. Financial performance related targets	105	4.057	0.081	0.830
26. Environmental responsibility	105	4.057	0.081	0.830
27. Profit margin for products sold	105	4.019	0.088	0.899
28. Reputation for long-term growth of firm's value	105	3.876	0.096	0.987
29. Orders received	105	3.829	0.097	0.995
30. ROA	105	3.819	0.084	0.864
31. Profit margin for goods sold	105	3.810	0.116	1.186
32. Creating value for shareholders	105	3.800	0.099	1.013
33. Reputation for innovation	105	3.790	0.103	1.053
34. Shareholders' satisfaction	105	3.781	0.099	1.009
35. Reputation for quality of management	105	3.686	0.092	0.944
36. Community relations	104	3.663	0.092	0.941
37. Debt to equity ratio	105	3.648	0.092	0.940

**Table A.1.** (Continued)

	<i>N</i> Statistic	Mean Statistic	Std. Error	Std. Dev. Statistic
38. Environmental and social responsibility	105	3.638	0.095	0.972
39. Sales/Assets	105	3.610	0.088	0.904
40. Sales per employee	105	3.562	0.100	1.028
41. R & D to sales	105	3.371	0.090	0.923
42. Earnings per share	105	3.305	0.125	1.279
43. Social responsibility	105	3.257	0.096	0.981
44. Market-to-book value	105	2.838	0.100	1.020
45. Dividends to net profit ratio	105	2.714	0.103	1.054

**Table A.2.** Measurement Scale of Independent Variables.

Variable	Measurement Scale	Values
Legal form	Nominal	0 = private limited liability company, 1 = public limited liability company
Size of the company measured by assets, by revenues	Ratio	
Financial performance	Ratio	
Corporate strategy	Nominal	0 = strategy of stabilisation, consolidation, 1 = strategy of growth and development
Acquired certificate based on ISO 9000	Nominal	0 = the company is not certified, 1 = the company is certified or is in the process of acquiring a certificate
Share of export in total sales revenues	Ratio	
Number of competitors	Ordinal	0 = none, 1 = from 0 to 5.2 = from 6 to 10.3 = more than 10
% of employees' representatives on Supervisory boards	Ratio	
Workers' council influence on performance criteria	Interval	From 1 (least important) to 5 (most important)
Workers' council influence on corporate strategy	Interval	From 1 (least important) to 5 (most important)

**Table A.3.** Descriptive Statistics on Contingent Variables.

Descriptive Statistics									
	<i>N</i> Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Statistic	Skewness Statistic	Std. Error	Kurtosis Statistic	Std. Error
Assets in EUR	94	4,064	520,043	79,815	105,518	2.401	0.249	5.727	0.493
Sales in EUR	94	7,105	739,922	69,081	100,691	4.102	0.249	22.110	0.493
ROA 2002	92	-0.45	0.13	0.0149	0.07596	-3.351	0.251	18.001	0.498
ROE 2002	92	-1.32	0.70	0.0274	0.20178	-3.157	0.251	22.947	0.498
EBITDA/Assets 2002	92	-0.36	0.24	0.0750	0.08045	-1.938	0.251	9.467	0.498
Export	94	0.00	1.00	0.4608	0.36257	-0.090	0.249	-1.605	0.493
Workers' council in- fluence on strategy	94	0	5	2.03	1.168	-0.063	0.249	-0.393	0.493
Workers' council in- fluence on perfor- mance criteria	94	0	5	2.07	1.138	-0.149	0.249	-0.291	0.493
% employees' repre- sentatives in Super- visory board	94	0.0	111.0	31.718	21.8543	1.094	0.249	3.837	0.493
In Assets <sup>a</sup>	94	8.31	13.16	10.6617	1.09977	0.328	0.249	-0.396	0.493
In Sales <sup>a</sup>	94	8.87	13.51	10.5812	0.99936	0.543	0.249	-0.161	0.493
Valid <i>N</i> (listwise)	92								

<sup>a</sup> Variables assets and sales were used in their natural in values in the analysis to improve the distribution.

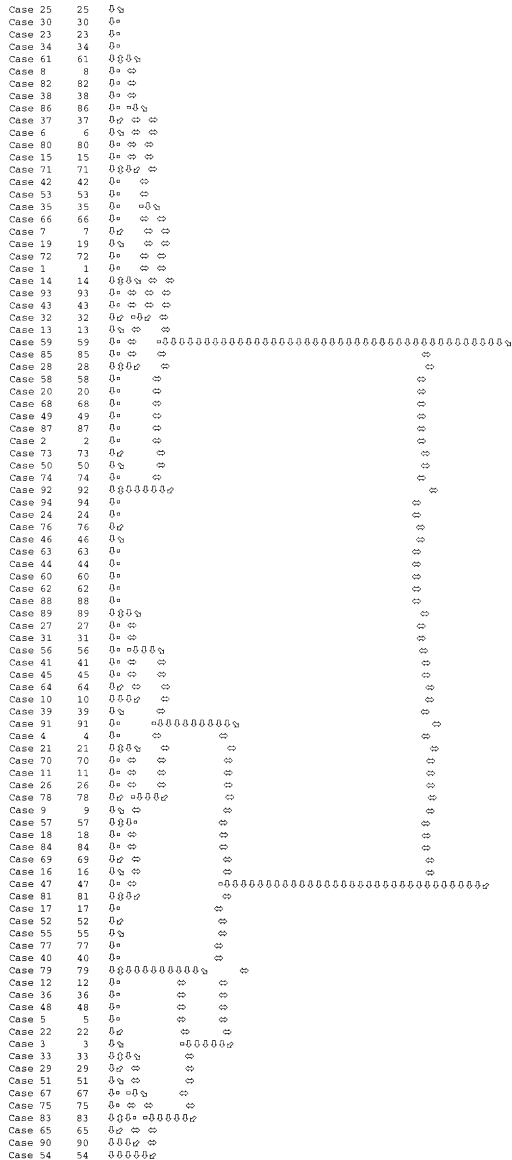


Fig. A.1. Dendrogram of Sample Partitioning (Ward's Clustering Method, Distance Measure: Squared Euclidean Distance, Standardised Variables).





# SOCIAL PRACTICES AND CORPORATE PERFORMANCE

Christel Decock Good and Laurent Georges

## ABSTRACT

*The aim of the study is to evaluate the links between systems of work practices and firm performance. First, we examine the working practices of 58 firms across five areas: employment structure, social climate, compensation policy, training expenses and working conditions. Secondly, we test the impact of these five dimensions on the financial performance of the firm. The results are based on a national sampling of French firms drawn from a wide range of industries. The structural model demonstrates predictive power as the variance explained ( $R^2$ ) in key endogenous constructs is 45.59% for two dimensions: training expenses and working conditions.*

## 1. INTRODUCTION

The issue is the relationship existing between the social performance and the economic performance of companies? In view of the ideological implications suggested by this link, several authors have tried to test it empirically. This debate might seem to belong to another era (Milton Friedman wrote about it in 1970), but not for the academicians' or practitioners' community. Popularization through the media of such events as the summit on sustainable development in Johannesburg and the application for the first time in 2003 of the New Economic

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**Performance Measurement and Management Control: Superior Organizational Performance**

**Studies in Managerial and Financial Accounting, Volume 14, 75-96**

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ISSN: 1479-3512/doi:10.1016/S1479-3512(04)14004-5

Regulations Law on the diffusion of social and environmental information, only reinforce interest for this type of research. Nevertheless, even if these themes are at the heart of many publications, the problem remains unresolved. In fact, few models have been proposed and empirical surveys often lack precision. Several explanations may be proposed. Firstly, researchers are confronted with the difficulty of obtaining relevant data about such a delicate field as ecology and human resources. Secondly, as causal relationships are not easy to establish, studies are limited to descriptive ones. Moreover, for the rare existing studies that do exist the analyses adopted are very different: one group focuses on the company's social policy as a whole while a second one studies the remuneration policy and a third one examine the human resources' performance through the balanced-scorecard. Therefore, even if these contributions provide much information, they are difficult to compare.

The rarity of existing studies and their weak complementarity are particularly detrimental. If we can remedy this, at least partially, it would improve our understanding of the links between social and economic performances. In terms of management practices, it would avoid having to resort to ambiguous and simplified rules and heuristics – such as more training or less pressure on employees.

This article is organized in the following way. In the first part, we define the theoretical framework of our study. For this purpose, we have drawn on the resource-based approach as well as on studies carried out on the theme of social performance. After discussing the conceptual field, we select different variables of social and economic performance and we integrate them into an explanatory model. In order to make these choices, we will make particular use of a measurement tool that is not often exploited, i.e. the social balance-sheet. As it is a real management overview of human resources, this official document will be central to our analysis. In the third part, we describe the methodology of our survey carried out with a sample of French companies. This part is followed by a thorough presentation of the results obtained from testing our hypotheses, using the PLS structural equations method (partial least squares analysis). The conclusion will underline the limits of our survey, the research perspectives and several theoretical and managerial implications.

## **2. THE THEORETICAL FRAMEWORK**

After presenting the contributions of the resource-based approach, we will examine studies dealing with the link between social and economic performances.

### *2.1. The Resource Based Approach*

Over the past few years, strategic thinking has been directed towards new directions in order to explain the origins of differences in performance for companies working in similar environments. The problematic comes from the fact that companies from the same sector are different and these differences persist over time. In terms of the resource-based approach it means that resources used are not the same.

The term “resources” must be understood in a wide sense: it includes material and immaterial items. Barney (1991) defines them as “assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by a firm that enable the firm to conceive of and implement strategies.” Practitioners and researchers have accepted the notion that the individual performance of employees may have an impact on economic and financial results. Interest in this field has intensified with the theory of resources states that the employees of a company build up a competitive advantage that is difficult which for the competitors to duplicate.

Wright and McMahan (1992) define four factors that should be combined so that a competitive advantage may emerge thanks to human resources. First, the human resources must create value in the firm’s production process. Secondly, they must constitute a rare resource. Thirdly, the combination of investments in human resources within a firm should not be easy to imitate. Finally, the human resources must not be easy to replace due to technological progress.

Human resources management practices influence employees’ competencies through acquisition and development of the company’s human capital. By offering formal and informal experiences of apprenticeship or management training, the firm is able to influence its employees’ development. Bonuses for individual or collective performances, use of merit-based internal promotion systems or other incentives related to stock market results are examples of actions aimed at motivating and influencing behaviors.

In other respects, Bailey (1993) states that human resources are frequently “under-used” because people do not explore the maximum of their capacities. An organizational strategy aimed at prompting an additional effort by employees is likely to generate higher gains than costs. For this reason, these practices may contribute to influencing employees’ motivation or skills as well as job appraisal systems. Nevertheless, the organizational contribution to the employees’ motivation and performance is limited if jobs are structured in a way that employees are supposed to know their task better than anyone and if they do not have the capacity and the competencies.

**Table 1.** The Research in HRM and Accounting.

HRM	Accounting
Problematics: Optimal preparation and activation of company's human resources	Problematics: To provide an information system that will measure the efficiency of the entity
Theoretical approach: Strategic and psycho-sociological analysis, constructivism	Theoretical approach: Methodological individualism and economic rationality; constructivism
Perception of the company: Coordinated set of individuals and groups, in a work situation inspired by individual and collective goals	Perception of the company: Coordinated set of technical and human means, likely to generate value
Key actors: Individuals, groups and technostructure	Key actors: Stakeholders internal and external to the company
Managers' missions: To learn and to monitor over permanent adjustment between economic goals and human resources	Managers' missions: To maximize the shareholders' value
Main subject of the discipline: The employee, members of groups developing under built and changing constraints	Main subject of the discipline: The stakeholders concerned about the impact of the company on their wealth, and the manager, its representative, in charge of defending its interests

The resources based approach clearly suggests that an employee's attitude may have significant implications on the company's global performance. Human resources management practices may affect the employees' individual performance through their motivation and the organizational structures set up to improve working conditions. According to this approach, incentives (either at the level of the company or at the individual level) lead directly to an improvement in such results as productivity, the turnover or other variables over which employees are able to exercise direct control. On the other hand, if the returns on investments are higher than the costs, we can expect a smaller turnover of employees and better productivity that will also affect the indicators of financial performance. Thus, before presenting our model, we propose to examine previous empirical surveys concerning the link social performance/economic performance based on two disciplines – human resources management and accounting (see Table 1).

### *2.2. The Problematic of the Link Social Performance – Economic Performance: The Social Performance Approaches*

The problematic of the social performance can be tackled in several ways depending on the social area studied. Nevertheless, very few empirical studies have been

carried out in this field. There are two difficulties to get around: to measure the social performance and to nearer it to an indicator of economic performance. First, we will examine studies related to a company's social policy.

### 2.2.1. Studies Based on the Social Policy

In general, studies which examine the link between social and economic performances reveals a positive association. Nevertheless, it is still not very easy to compare them as each research uses different social indicators.

Denison (1984) carried out a survey of 34 companies in several industrial sectors. The social data were taken from questionnaires (processed in the university of Chicago) and dealt with the decision-making, the work organization and the level of involvement. The economic variables were accounting ones: assets' profitability (net result/assets) and commercial profitability (net result on turnover). It is interesting to mention that the author made a dynamic analysis studying the correlation between the social data at the date  $t$  and the financial data at  $t$  to  $t + 5$ .

Schuster (1988) carried out a survey of 1300 companies. His goal was to test the link between the economic performance measured by the yield of the shareholders' equity and an "active" management of human resources, that is: individualized remuneration policy, profit sharing, personalization of goals, flexibility of working hours and internal consulting practices. The established correlation was weak but positive.

Grinyer et al. (1990) carried out a survey of 25 companies having known a recovery. Different levels of the hierarchy were interviewed within these companies as well as within other companies that have not known a recovery. It turned out that in the recovered companies, staff, internal communications and industrial relations were the areas that management had invested in most.

In addition, Huselid (1995) revealed a link between quality human resources management and having received an American label of *High Performance Work Practice* as well as with the financial performance. The author created a measurement scale for quality management related to the following items: staff selection, improvement in performance, incentives, research service, complaints and grievances procedures, information sharing, development of attitude, human resources participation in the management, intensity of recruitment efforts, the average number of hours devoted to training per employee per year and the requirements for internal promotion (seniority vs. merit). The study was based on a sample of 968 companies. The economic indicators were accounting and stock market data. The results concerning the link between the social and economic performance were nevertheless ambiguous.

More recently, Huselid et al. (1997) examined the impact of human resources managers' capabilities on corporate financial performance. The authors found

relationships between HR management effectiveness and cash flow and market value, in 293 U.S. firms.

### 2.2.2. *Studies Based on the Remuneration Policy*

This second category of research refers to remuneration policies. They vary from one company to another depending on their priorities. We may observe disparities in organizations. These differences depend only on some specific requirements in qualifications and do not concern all the employees. Furthermore, they depend more on the company's characteristics than on the sector of activities.

The studies aimed at providing a relation between the firm's remuneration policy and its performance may be analyzed according to two prisms:

- the management staff and the other employees must be analyzed separately;
- it is important to take into account that the level of the salary is not the only dimension to consider: its composition is too important.

Remuneration policies for senior executives, because of the problem of stocks options, are topical issues for academicians in accounting and human resources management as well as for practitioners. Yet this problematic is not recent: McGuire et al. (1962), Lewellen and Huntsman (1970), Masson (1971), Magnan et al. (1993) carried out the first empirical studies in this domain. These studies show a strong correlation between the salaries of executives and the company's size. However, the link is not very clear with ratios or accounting data. The latest studies (Bens et al., 2002; Botosan & Plumlee, 2001; Wilkinson et al., 1994) identify further the cost of the stocks-options and not its first role: motivating the managers.

### 2.2.3. *The Evaluation of the Social Performance: Human Resources Accounting*

The third group of research concerns evaluations of performance. The main studies on social accounting or human resources accounting were conducted by Flamholtz (1971, 1988). The author based his reasoning on two approaches:

- conditional value expected from an individual in an organization  $E(CV)$ ;
- realizable value expected from an individual in an organization  $E(RV)$ .

$E(CV)$  is the maximum potential expected value that an organization can expect from an individual assuming that he does not leave that organization. It represents the value of his services.  $E(RV)$  is the value expected from an individual in the organization accepting that there is a probability that the person will leave the organization. The difference between these two values corresponds to the cost of turnover. These mathematical expectations may then be translated into monetary units referring to the value of the service given by the person: this can be the cost

of the service, its market value or the part of the profit his work has contributed to. Because it is difficult to make such an evaluation, this method has not been used much up to now.

As underlined by Stabile (1993), social accounting is not a priority because the accounting profession is not under a lot of pressure to develop such a field of study. Nether in Anglo-Saxon countries (where accounting regulations are established by private bodies for the purpose of satisfying investors' expectations) nor in continental countries (where the pluralism of the user is more recognized) is there a pressure group demanding the development of social accounting.

In general, according to Roslender (2000), the problem of social accounting is the ambiguity between human capital and human asset. The author proposes a differentiation of various terms, but it lacks precision. By 'asset', we mean all the intangible capacities of human resources that constitute the company while the human capital may be defined as an intellectual asset, in addition to tangible and intangible assets.

So, investors or external analysts have some difficulties to appreciate an eventual social risk. The monetary valuation of such resources may seem to be too subjective and limited, insofar as the totality of the risks are not taken into account (D'Arcimoles, p. 130).

In addition, Lepak and Snell (1999) propose a framework to theorize how employment modes, employment relationships, and HR configurations might vary in concert with different forms of human capital. They develop a model in the resource-based view about the value and uniqueness of employee skills. The main limitation of this approach is to put the model into operation.

For this reason, a balanced scorecard of social indicators seems to be more appropriate. A similar vision is shared by Capron (1995), for whom social accounting has three main functions:

- to provide detailed information concerning individuals as members of an organization;
- to help decision-making for human resources management policies;
- to motivate deciders and to influence their perception of human resources.

Thus, according to Martory, the aim of soci(et)al accounting is not so much the incorporation of human resources into the balance-sheet or into the income statement as bringing the immaterial values to light. So, we choose Mathews' definition (1997, p. 483): "social and environmental accounting has been defined as . . . voluntary disclosures of information, both qualitative and quantitative made by organizations to inform or influence a range of audiences. The quantitative disclosures may be in financial or non-financial terms."

### **3. THE CHOICE OF STUDIED VARIABLES, THEORETICAL MODEL AND RESEARCH HYPOTHESES**

After selecting the various variables allowing us to apprehend the notion of economic and financial performances, we will present our theoretical model and research hypotheses.

#### *3.1. The Choice of Variables to Study*

##### *3.1.1. The Social Balance-Sheet and the Choice of Social Variables*

In France, there is a precious tool for self analysis: the social statement. Its origin comes from the Law of July 12th 1977 that requires all companies with more than 300 employees to draw up and to submit this social report to the company's committee. Its aim is to improve the system of social information given to different actors (employees, unions), planning the human resources management, furthering dialog and comparing data within time. A macro economic approach is used to draw up this document for apprehending the undertaken measures in favor of the employment (Comhaire & Dendauw, 1998) and to be used as a tool of warning for outside observers.

This document is established according to the following principles (Iacono, 1996).

- (1) The first key idea of the social balance sheet is related to its division into periods similar to financial and accounting reasoning: it is drawn up annually.
- (2) The second key idea is the underlying methodological reasoning. It falls within a totally analytical reasoning. The "balance sheet" does not retranscribe a positive or negative balance related to the company's social policy; rather, it presents an inventory of the organization and a representation of the existing circumstances.
- (3) The third key idea is the financial principle of this balance sheet. In fact, after a simple reading, it is easy to identify the cost of human resources and to know the company wages bill. Nevertheless, it is very delicate to pass judgment on social policy carried out and on the impact of this policy on shareholders' value. The problem of the social balance sheet is the absence of a potential evaluation of performance. The indicators do not reveal the positive aspects of actions undertaken in terms of employment, training or working conditions. The only comparisons within time or those relative to other companies.



More precisely, this balance sheet is composed of 7 chapters and 34 headings:

- employment (workforce, outside workers, recruitment, departures, unemployment and absenteeism);
- remuneration and secondary charges (wage bill, hierarchy of remuneration, secondary charges, wage costs and financial participation);
- conditions of hygiene and security (industrial and travel accidents, professional illness and expenses for security);
- other working conditions: working time and its timetable rearrangements, its organization and the expenses for an improvement in these conditions;
- training: percentage of the wage bill devoted to day release training, number of trainees, number of hours of training, leaves of absence to enable employees to follow a training course;
- professional relations: composition of the company's central committee, number of meetings, dates and subjects of its agreements;
- the other life conditions falling under the company: social works and cost of other additional services.

The aim of these rubrics is to strengthen quantitative data and objectivity. Unfortunately, the document is not easy to read! The wealth of figures is not balanced by comments. This leaves the impression of a collection of data without any analysis. The studies of Lequin (1989) give further visibility on these indicators as the author offers a factorial analysis which reduces the number of indicators from 74 to 47.

Moreover, the data is presented outside any strategic and economic context: external constraints are completely ignored. For this reason, it is difficult for investors outside the company to pass judgment on remuneration policy carried out. Besides, both academicians and practitioners underline the importance of the social climate within a company and see this as dimension an important determinant of internal equilibrium. At this specific level, the absence of comments is very detrimental.

### *3.1.2. The Traditional Indicators of Economic and Financial Performances*

There are two types of variables that have been used in previous surveys: the accounting and financial indicators. The latter is appropriate for studying the reaction of investors to new information, within the scope of neoclassical financial theory. As we have not adopted this perspective, we concentrate on the following main accounting indicators:

- results/shareholders' equity (Abbott & Monsen, 1979; Bowman & Haire, 1975; Davidson III & Worrell, 1990; Freedman & Jaggi, 1992);

- results/total assets (Davidson III & Worrell, 1990; Freedman & Jaggi, 1992; Hackston & Milne, 1996; McGuire et al., 1988);
- the rate of operating margin (Freedman & Jaggi, 1992);
- cash-flow/total assets (Freedman & Jaggi, 1992);
- cash-flow/shareholders' equity (Freedman & Jaggi, 1992);
- the capital stock (Hackston & Milne, 1996);
- the result growth rate per share (Sturdivant & Ginter, 1977);
- the rate of growth of the equity price on 2–5 years (Alexander & Buchholz, 1978);
- the result on shareholders' equity growth rate (Roberts, 1992).

In the light of these studies, it turns out that better results have been obtained with the financial and accounting data rather than with stock market indicators: too many parameters may affect the variation of a company's equity price and human resources management practices to claim a correlation between these two variables. Nevertheless, the choice of an accounting variable remains a delicate issue. In fact, shareholders want to know their company's value and the ability of its managers to contribute to its growth. On the other hand, lenders and creditors will look for the company's capacity to generate cash flows.

Therefore, accounting indicators have several vocations: to inform about the value of the company and its growth capacity, but also about future cash flows. From this point of view, Cormier et al. (2001) examine the pertinence of several indicators of performance: the net result, the operating cash flows; the residual result and the value added.

The net result is a contested indicator, because it is not exempt from accounting choices that can depend on the managers' strategies. In addition, it is contested as a representation of the companies' global performance. The operating result that is namely used by Freedman and Jaggi (1992) is more pertinent as it expresses the capacity of the company to generate profits by activity.

Cash flows constitute an alternative indicator for measuring of performance. Despite a weak informational content (Bowen et al., 1986), it is an additional indicator to more traditional ones like the net result (Janin, 2002). These indicators are the ones chosen by the FASB, Financial Accounting Standards Board. In fact, in the U.S., the presentation of a table of cash flows is compulsory. The international norm IAS 7 recommends also the presentation of this table. Since 1999, in France, the table of employment resources may be presented under the heading of treasury (instead of the working capital).

The concept of added value, very present in French accounting, is based on the notion of distribution of wealth to various partners of the company. Borrowing the expression from Cormier et al. (2001, p. 84): "the value added is a simple and

immediate way of seeing the profit as the result of collective efforts of the capital, of the management, of the State and employees.”

Finally, the last variable examined for measuring performance is the residual result, i.e. the net result minus the cost of invested capital. The construction of the residual capital, developed by Bernard (1995) is similar to that of EVA. Despite having its limits (Biddle et al., 1998), this indicator does allow us to examine another aspect of performance.

From this review of the literature, we can underline the following two points. First of all evaluation of human resources passes through a balanced scorecard rather than an evaluation in term of costs. Secondly, the choice of the economic performance variables is not less determinant than the choice of social performance variables.

### *3.1.3. Retained Data and Variables*

The social data come from the results of a survey among large French companies. They have been integrated in a database (collection of social balance sheets) created by a team of researchers and used for statistical studies. The quantity of information available in the social balance sheet required several choices. The retained variables have been selected according to following three criteria:

- simple and few questionable data;
- data that were a good reflection of the elements revealed in previous empirical surveys, i.e. the levels of remuneration, the working conditions, the structure of the staff and the behavior of employees;
- data most frequently available.

Finally, 17 social variables were retained for representing 5 concepts (see Table 2):

- structure and employment (4 variables);
- remuneration (3 variables);
- training (3 variables);
- working conditions (2 variables);
- social climate (5 variables).

The economic data for apprehending the concept of performance, came from annual reports and databases (Diane). Their choice turns out to be delicate.

We have used two types of criteria for selection:

- the economic character of the variable;
- the originality of the variable with regard to previous surveys.

**Table 2.** Retained Concepts and Variables.

Concept	Variables	Acronyms	Calculation
Remuneration	Rate of the average remuneration of workers/executives	ERMO	Average remuneration of executives/average remuneration of workers
	Average remuneration of executives	RMC	Average remuneration of executives
	Top 10 salaries	RMSUP	Top 10 salaries average
Training	% expenses in training	FORM	Expenses for training/total salaries
	% executive trainees	STAG	Total trainees/total employees
	Hours paid of training per person	HSP	Total Hours of training/total employees
Working conditions	Rate of industrial accidents	TGA	Number of lost days because of industrial accidents/(total employees $\times$ 200)
	Social work	OS	Social expenses/total employees
	Length of work	HHM	Average weekly timetable
Social climate	Rate of absenteeism	TXA	Number of lost days because of absenteeism/(total employees $\times$ 200)
	Rate of resignation	TDT	Total resignation/permanent staff
	Executives' rate of resignation	TDC	Resignation of executives/permanent staff of executives
	Non executives' rate of resignation	TDNC	Resignation of non executives/permanent staff non executive
	Margin of remuneration executive man/woman	ERHF	Remuneration of executive women/remuneration of executive men
Structure and employment	% executives	PGCA	Executive staff/total employees
	Rate of recruitment	TXE	Number of recruited CDI <sup>a</sup> /permanent staff
	Rate of dismissal	TXL	Number of dismissal/permanent staff

<sup>a</sup> CDI-contract on permanent basis.

Considering the recent studies, we retained three variables for measuring performance:

- the operating cash-flows;
- the value added;
- the residual result.

We regret that these data give only incomplete information about the composition of remuneration. In fact, we do not know neither the fixed nor the variable parts, nor even the eventual bonuses.

The situation is similar for variables that may be judged to be too brief such as the rate of absenteeism for social climate. Other data about the frequency of absenteeism would probably have been more appropriate.

### 3.2. The Theoretical Model and Research Hypotheses

#### 3.2.1. The Tested Theoretical Model

After specifying the selecting variables, a theoretical model was created (Fig. 1). The social variables are considered as exogenous variables and come from 5 distinct domains: structure/employment; remuneration; training; working conditions; social climate. The company’s economic performance acts as an exogenous variable.

#### 3.2.2. The Research Hypotheses

In this paragraph, we develop our five research hypotheses on the basis of the proposed model.

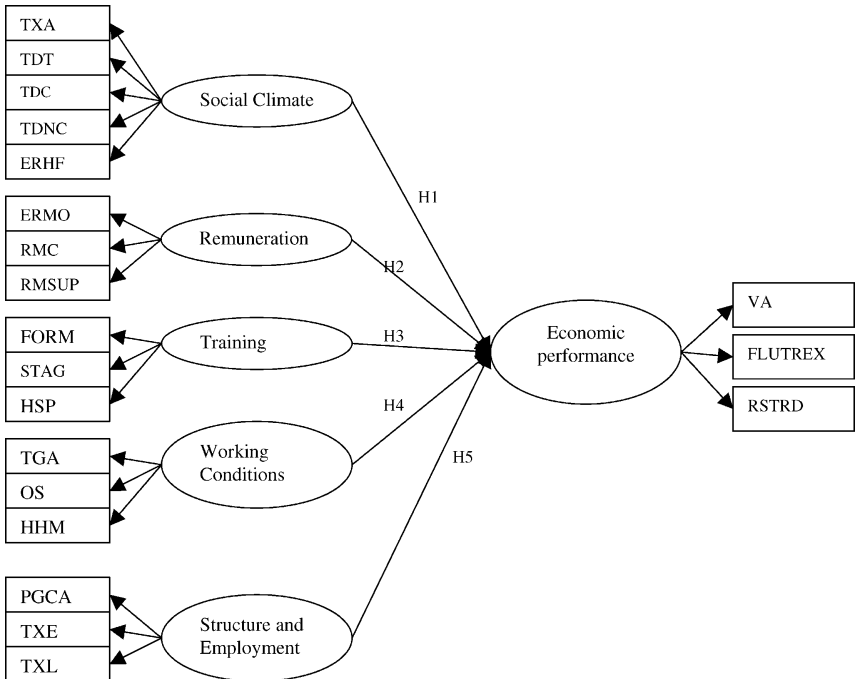


Fig. 1. Tested Model.

The studies based on the remuneration policy presented in the first part highlight the importance attached to the kinds of remuneration and their impact on the company's performance. The results are not clearly established in the literature (Magnan et al., 1993; Wilkinson et al., 1994), but the most frequent approach is to consider that policies for incentive remuneration reduce agency costs between employees and managers, on the one hand, and between shareholders and managers on the other hand. Therefore, the company's performance increases. Thus, the tested hypothesis is the following:

**Hypothesis 1.** The more favorable the remuneration policy is to employees, the higher the company's economic performance is.

The resources-based approach and studies on a company's social policy (Grinyer et al., 1990; Huselid, 1995), suggest that the human resources management practices, in terms of training, may affect motivation and lead to an improvement in the company's results. Furthermore, the totality of conditions allowing an improvement in working conditions and a better social climate would raise the company's productivity and performance. Three hypotheses follow from this idea.

**Hypothesis 2.** The more favorable the training policy is to employees, the higher the company's economic performance is.

**Hypothesis 3.** The more favorable the working conditions are to employees, the higher the company's economic performance is.

**Hypothesis 4.** The more favorable the social climate is to employees, the higher is company's economic performance.

Finally, our last hypothesis is more an assumption of control over potential differences between the sectors of activity depending on the company's employment structure and the growth of the company in terms of recruitment. We may reasonably suppose that there is a link between the company's structure in terms of employment and its performance. Thus, the fifth hypothesis is:

**Hypothesis 5.** There is a relation between the company's structure in terms of employment and its performance.

## 4. METHODOLOGY OF THE STUDY

In the next paragraph, we describe our methodology as well as the different choices made to collect and analyse the data. At this level, we are faced two difficulties:

**Table 3.** Sample Characteristics.

Number of employees	300–699	700–1499	1500–1999	2000–4999	5000 and more	Total
% of firms	10.4	25.3	35.6	16.2	12.5	100
Turnover	1,000–2,999 kf	3,000–5,999 kf	6,000–9,999 kf	10,000–14,999 kf	15,000 and more kf	Total
% of firms	15.6	25.6	35.4	13.4	10	100
Industry	Food	Energy	Intermediary goods	Equipment	Services	Total
% of firms	8	12	30	30	10	100

- access to the data and particularly to the French social balance sheet.
- the limited size of our sample

#### *4.1. Sample Characteristics*

Our sample is composed of 58 French corporations. It presents the following characteristics (see Table 3).

#### *4.2. Model Estimation*

The structural equation model, represented by the path diagram in Fig. 1, was estimated using partial least square (PLS) latent path model. PLS is a non-parametric estimation procedure (Wold, 1982). Its conceptual core is an iterative combination of principal components analysis relating measures to constructs, and path analysis capturing the structural model of constructs. The structural model represents the direct and indirect non-observational relationships among the constructs. The measurement model represents the epistemic relationships between the observed variables and the constructs.

PLS can accommodate small samples (Wold, 1982) and it provides measurement assessment which is crucial to our study as we have a rather limited sample size and develop some new measures, respectively. In addition, it avoids some of the restrictive assumptions imposed by LISREL-like models (cf. Dawes & Lee, 1996). A detailed description of the PLS model is provided by Wold (1982) and Fornell and Bookstein (1982).

Using the bootstrap procedure (Chin, 1998) packaged in the PLS-Graph software (version 1.8), you can calculate the standard deviation and generate an approximate *t*-statistic. This overcomes disadvantage of having no formal significance tests for the estimated parameters in parametric methods.

## **5. RESULTS**

### *5.1. Scale Development and Purification*

Following standard procedures for developing psychometrically sound measures (Churchill, 1979), several steps were taken to ensure reliability and validity of the multi-items scales.

Firstly, a reliability analysis was carried out and items with low item-to-total correlations were deleted. We suppressed two constructs (working conditions as



well as structure and employment) because of low Cronbach Alphas (respectively  $\alpha = 0.01$  and  $\alpha = 0.11$ ) (Nunnally, 1978).

Secondly, principal component analyses with varimax and oblimin rotations were carried out for the variables contained in each hypothesis. After the suppression of two items (TXA and ERHF) all constructs showed favorable convergent and discriminant validity.

Therefore, at the end of this purification phase, our model was simplified as two constructs were deleted. As a consequence, Hypotheses H2 and H4 could not be tested in the remainder of the study.

### 5.2. Structural Equation Modeling

The PLS results are interpreted in two stages: (1) by assessment of its measurement model; and (2) by assessment of its structural model (Fornell & Larcker, 1982). The properties of the measurement model are detailed in Table 4.

All but one factor loadings are higher than 0.50 (Falk & Miller, 1992, p. 81). The item with a lower factor loading (HSP) was not dropped because it helps to define the meaning of the construct and scored reasonably well in the principal components analysis. The Rho of Jöreskog (Werts et al., 1974) was generally satisfactory. It ranged from 0.56 to 0.90, above the established standard for an exploratory study (Nunnally, 1978).

**Table 4.** Scale Properties of the PLS Measurement Model.

Construct	Indicators	Factor Loadings	Rho of Jöreskog	Average Variance Extracted
Social climate	TDT	0.89	0.87	0.69
	TDC	0.77		
	TDNC	0.82		
Remuneration	ERMO	0.55	0.74	0.51
	RMC	0.60		
	RMSUP	0.92		
Training	FORM	0.54	0.56	0.41
	STAG	0.95		
	HSP	0.19		
Financial performance	VA	0.86	0.90	0.74
	FLUTREX	0.83		
	RSTRD	0.90		

**Table 5.** Discriminant Validity.

	Social Climate	Remuneration	Training	Performance
Social climate	<b>0.56</b>			
Remuneration	0.05	<b>0.71</b>		
Training	-0.01	-0.14	<b>0.77</b>	
Performance	-0.12	-0.52	0.33	<b>0.51</b>

*Note:* Bold numbers on the diagonal show the square root of the AVE; numbers below the diagonal represent construct correlations.

Convergent validity was confirmed for three constructs (remuneration, social climate and financial performance) as the average variance in manifest variables extracted by construct (AVE) was at least 0.51, indicative that more variance was explained than unexplained in the variables associated with a given construct. However, one construct (training) showed a low convergent validity. As this study is exploratory, we decided to keep this construct.

One criterion for adequate discriminant validity is that the correlation of a construct with its indicators (i.e. the square root of the AVE) should exceed the correlation between the construct and any other construct. The findings shown in Table 5 suggest discriminant validity. All diagonal elements are greater than the off-diagonal elements in the corresponding rows and columns.

The structural model demonstrates predictive power as the variance explained ( $R^2$ ) for our dependent variable is 34.4%. An overall goodness-of-fit index cannot be reported because the objective of PLS is prediction vs. fit.

Table 6 reports the standardized B1 parameters which are based on the total sample, and the standardized B2 parameters which are obtained from bootstrap simulation. Differences between both parameters are low, indicating stable estimates. In accordance, with our hypotheses all parameters were found to be positive except for H1 which predicted a negative link between social

**Table 6.** Parameter Estimation of the Structural Model.

Hypothesis	B1 <sup>a</sup>	B2 <sup>b</sup>	Std. Dev.	t-Value
H1: Social climate → performance	-0.09	-0.12	0.09	-1.06
H2: Remuneration → performance	0.47	0.51	0.22	2.09*
H3: Training → performance	0.26	0.25	0.14	1.96*

<sup>a</sup>Parameter based on the total sample.

<sup>b</sup>Parameter obtained from bootstrap simulation.

\*Significant at the 5% level.

climate and financial performance. Bootstrapped standard deviations and *t*-values (Chin, 1998; Guiot, 2001) confirm the significance of Hypotheses H2 and H3. One Hypothesis H1 is non-significant.

### *5.3. Discussion*

Our initial model included 6 constructs. After a first analysis showing reliability problems with some of our measurement scales, we had to delete two constructs. Our final model and hypothesis test the impacts of social climate, remuneration policy and the training program on the financial performance of the firm. These three hypotheses have been tested thanks to data collected during one year in France.

The hypothesis concerning the impact of the social climate cannot be accepted. The social climate was measured with three items: the total rate of staff turnover, the executives' turnover rate and the non-executives' turnover rate. The absence of a significant link might be explained by the choice of indicators used, which might hide certain effects. For instance, employees' resignations may lead to salary gains while suppressing some hidden costs. Hence, short-term impacts are not clearly established. Thus, the difficulty of measuring the social climate is underlined and we acknowledge the limits of our measure.

However, the hypothesis regarding the link between the remuneration and the financial performance could not be rejected. The concept of remuneration was apprehended with three items: the executives' average remuneration, the 10 highest salaries and the average difference between the executives' salaries and the employees' salaries. This result is in accordance with previous studies. It suggests that remuneration policy, especially for executives and top level managers, is associated with a higher degree of productivity. This productivity appears through a higher level of value added. This result is quite interesting as only few studies have evaluated the impact of the executives' remuneration policy on the financial performance the firm's. This means that in France, there is a certain form of incentive through the salary: this is quite common in North America where stock options are commonly used but more innovative for Western Europe.

Finally, the last hypothesis regarding the link between training and performance could not be rejected. Training policy was measured with three indicators: the training expenses, the percentage of executives in training periods and the numbers of training hours remunerated. This result indicates that investments in training lead to an increase in financial performance, even in the short term (we might only expect an impact in the long term).

## 6. CONCLUSION

Previous research in the academic and economic press claims that human resources management practices affect company's economic performance. However only a few models have been tested empirically. Thus, the goal of the present study is to complete the literature. First, we proposed a model of hypotheses linking social performance and economic performance. Social performance is measured according to five dimensions: social climate, remuneration policy, working conditions, training policy and the company structure of employment. The economic performance was measured by three variables: operating cash-flows, value added and residual result. Secondly, this model was tested on a sample of 58 French companies, using the data collected during one year provided by the social balance sheet, a document drawn up by all companies with more than 300 employees. The methodology used is PLS, which is particularly appropriate for small samples.

Two hypotheses could not be rejected: the links between the training and remuneration policies on the one hand and the economic performance on the other hand.

The non-acceptance of the three other hypotheses underlines the limits of our model. There is no choice but to accept that it is not easy to apprehend the social climate or the working conditions by indicators, even qualitative ones. Moreover, this model was tested only for a year: a longitudinal approach might lead to other results. An international comparison might also contribute to the study as historical and national factors might explain the social and remuneration practices of national companies.

For this reason, several research perspectives follow on from this study, as well as from other approaches in terms of social and accounting studies, that are able to contribute to the knowledge of the impact of the company's social performance on its economic performance.

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# COMPETITIVE STRATEGIES, SALESPEOPLE CONTROL AND SALESFORCE PERFORMANCE

Pierre-Antoine Sprimont

## ABSTRACT

*This article examines sales-forces control as determinant for their performance. Three differentiation strategies are mobilized as explanatory factors of salesmen control and performance. The results obtained from a sample of 182 French companies underline several significant relations that explain sales-force performance. The proposed managerial implications aim at accompanying the reflection of practitioners to improve the performance of their salespersons.*

Moncrief et al. (2000) show that there is a significant literature today on explanatory factors and consequences of salesforce control. Concerning the consequences of control, experts and researchers attach obviously a great importance to salespeople performance; this one having a direct influence on firm's profitability. Many research also analyse the variables of attitude, such as satisfaction, stress and motivation. In the most completed models, these variables play a mediator role between control and performance of salespeople (e.g. Babakus et al., 1996). Concerning the explanatory factors of control, research stressed contingent

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**Performance Measurement and Management Control: Superior Organizational Performance**

**Studies in Managerial and Financial Accounting, Volume 14, 97-113**

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ISSN: 1479-3512/doi:10.1016/S1479-3512(04)14005-7

variables such as specificity of procedures, environmental uncertainty and capacity of outcomes measurement (Krafft, 1999). Physical and sometimes psychological distance of salesforce with the remainder of the organization indeed supported the mobilization of the contractualist theories (see the synthesis of Stathakopoulos, 1996). Today, experts and researchers grant a great interest to the impact of strategy on salesforce control (Churchill et al., 2000). This axis of investigation falls under research on “fit” which postulates that a relevant adjustment between businesses strategy and organisational policy is supposed to increase effectiveness and performance of the firm (Venkatraman, 1989).

Salesforce action is closely linked with the way in which the company competes on the market. Component of the policy marketing mix, salesforce is the ambassador of firm project near its most invaluable “credit,” namely the customer. The salesmen control set up by sales management thus has a key role in the success of company strategy (Ryans & Weinberg, 1981). On this point, Slater and Olson (2000) validate the general assumption according to which the performance of strategic behaviors of adaptation (defender, prospector, analyst) is related to precise orientations as regards salesmen control.

In the prolongation of the literature on salesforce control and the literature on businesses strategy, this article aims to bring replies to these questionnements: How is the performance of the sales force articulated? Which are the effects of salesmen control on the performance? Does competitive strategy influence the salesforce control? Which is the impact on the performance of the salesforce control adjusted with the strategy?

The first part describes the conceptual model (Fig. 1). The second part exposes the method of research selected to validate the assumptions. The third part analyses the results obtained.

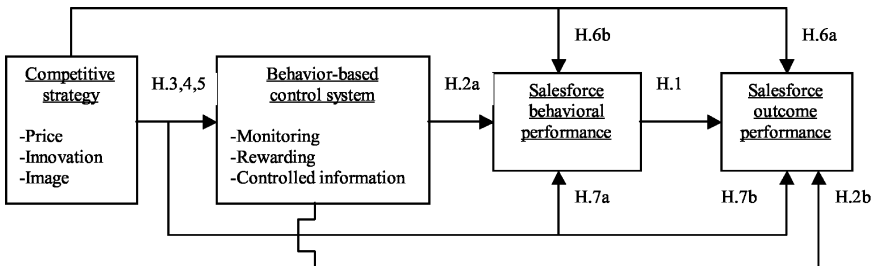


Fig. 1. Variables and Research Hypotheses.



# **1. CONCEPTUAL MODEL: STRATEGY-CONTROL-PERFORMANCE**

## *1.1. Sales Force Performance*

Salesforce performance can be defined like an evaluation of salesmen's contribution to achieving the organization's objectives (Churchill et al., 1985). This contribution is a multidimensional concept which must reflect the different missions of commercial function. To measure salesforce performance, managers use always outcomes-based criteria, but today they use more and more behavioral information to evaluate salesmen. (Morris et al., 1991). That's why, our model distinguishes on the one hand the performance in terms of outcomes and on the other hand the performance in terms of the behaviors.

### *1.1.1. Outcome Performance*

Outcomes are obviously the most important dimension of salesforce performance. They contribute mainly to the performance of marketing department and consequently to the firm performance. Outcomes (e.g. volume of sale, market share) are the historical measurement of salesmen's contribution to organization's objectives. However, in an increasingly complex commercial environment (e.g. long-term negotiation) outcomes are not any more one very precise indicator of salesman effort and performance. That's why, managers mobilize more intensely of the qualitative criteria to evaluate their salesforce.

### *1.1.2. Behavioral Performance*

This research examines four facets of behavioral performance of sales force (making sales presentations, providing information, controlling expenses, using technical knowledge). These four dimensions are in sync with the principal missions of industrial sales forces (Weitz & Bradford, 1999).

The "making sales presentations" dimension of salesforce selling behavioral performance refers to the quality of contact that sales force establishes with customers. The manner of approaching the customers, of identifying their needs and of bringing them a relevant answer are in the heart of the marketing strategies which are based on the "directed sale customer."

The "providing information" dimension of salesforce nonselling behavioral performance determines the salesforce implication in the collection of information. Interface between the company and the market, salesman has access to a significant number of information on the customers and the competitors. The transmission

of information on the markets is one of the principal missions of industrial sales forces because salesmen are an essential element of competitive surveillance.

The “controlling expenses” dimension of salesforce non selling behavioural performance is a criterion which partly conditions the profitability of commercial function. For many experts, salesforce is one of the last tanks of productivity of company; this is why a more strict control of the costs accompanies today the evolution of sales department (Anderson, 1996).

The “using technical knowledge” dimension of salesforce selling behavioral performance refers to salesforce’s knowledge on specificities and applications of products. In “B-to-B” relations, salesmen are the principal ambassadors of the firm. Thus, It is very important that salesman’s arguments are perfectly performed and precisely develop the advantages of the offer.

The outcomes of the sales force are the consequence of the efforts and commercial competences of salesmen. Many conceptual models propose the relation according to which a higher behavioral performance of the sales force leads to a higher level of outcomes. Many empirical investigations (Babakus et al., 1996; Baldauf et al., 2001; Grant & Cravens, 1996) validate this relation. They show that the sales forces which have a better approach of customers and a better technical knowledge of product have higher results of sale. We propose to test this relation in a French management context.

**Hypothesis 1.** The higher the level of behavioral performance of salesforce, the higher will be the level of outcome performance.

### *1.2. Salesforce Control*

The conceptual development of Anderson and Oliver (1987) is at the origin of the current of research on the antecedents and the consequences of the salesforce control. These authors define the salesforce control like a system which is set up by the direction to supervise, direct, evaluate and remunerate the salesmen. This system is measured on a continuum limited by two pure and opposed forms of control: Outcome-based control and behavior-based control.

Outcome-based control is characterized by a very incentive compensation, a weak directing attitude of managers and a weak monitoring of salesmen. This philosophy of control is a transposition of mechanisms of market and is defined as the control of “laissez-faire.” With this control, salesman can be compared to a contractor responsible for his performance and free to choose his working methods (e.g. organization, strategy of sale . . .).

Behavior-based control is characterized by a strong monitoring of salesmen activities, sales manager directs them narrowly and uses subjective and complex

measures of salesperson behavior to evaluate performance. The fixed wage is traditionally the element of remuneration of this control because it encourages the salesman to accept like legitimate the authority of management.

For many conceptual frameworks, behavior-based control is supposed to increase the behavioral performance of salesforce (e.g. Challagalla & Shervani, 1996; Krafft, 1999). According to these models, salesperson directs its efforts and adopts a commercial attitude according to the requests of management. Thus, behavior-based control is supposed to improve the qualitative aspects of the work of salesforce. For example, fixed wage offers a relative safety to the salesperson (compared with variable wage). This insurance enables it to develop long term marketing strategies and to be more flexible in its negotiation. Salesman is more serene to develop its professional competences and perform in nonselling activities (e.g. drafting of mission report). Conversely, a control more directed behaviors is likely to be less inciting for salesmen and thus to limit their efforts of sale. This reflexion leads us to formulate the following hypotheses:

**Hypothesis 2a.** The more a salesforce control system is behavior-based, the better the salesforce will perform on behavioral performance dimensions.

**Hypothesis 2b.** The more a salesforce control system is behavior-based, the lesser the salesforce will perform on outcome performance dimensions.

### *1.3. Competitive Strategy*

In this research, we recognize three facets of differentiation taken from Mintzberg's analysis, namely differentiation by price, by image and by innovation (see the empirical validation of Kotha & Vadlamani, 1996). Although they cannot thoroughly describe the business strategy of firm, these three dimensions are selected because they describe competitive advantages which narrowly influence the work of the sales force.

#### *1.3.1. Differentiation by Price Strategy*

The company aiming at a differentiation by price strategy focuses on the variables which contribute to a relatively low positioning of sales price of products. By definition, commercial supply is only slightly innovative and relatively standard. That's why trade agreements are primarily negotiated on the basis of price and less on the technical attributes of the product. This type of negotiation makes relations between salespeople more impersonal and the customer and does not require as qualified a salesforce (White, 1986). In this case, control of salesperson behavior, which is extremely expensive, does not have priority. In order to compensate for

weak profit margins and to reach the sought economies of scale, the major commercial objective is the volume of sale. In this context, sales incentives as remuneration are recommended in order to motivate the salespeople on primarily quantitative criteria. These arguments lead us to formulate the following Hypothesis:

**Hypothesis 3.** The more the commercial supply is differentiated by price, the lesser the salesforce control system is behavior-based.

### *1.3.2. Differentiation by Innovation Strategy*

The differentiation by innovation strategy aims to distinguish the commercial supply through an innovative technology in order to reduce purchasers' power so that they have more difficulty finding substitutable products. Some studies show that the sales force is a key function of this strategy (e.g. Hambrick, 1983). Indeed, the company relies on its salespeople to familiarize the customers with the new product advantages and to collect information in order to improve its offer, to analyze the reactions of competition and to seize new innovation opportunities. In this context, where control must support the qualitative and co-operative aspect of salespeople, a behavior-based control is recommended. This control makes it possible to reduce unproductive and counterproductive behaviors related to the sale of new products and to enhance the salesforce's organisational identity (Atuahene-Gima, 1997).

**Hypothesis 4.** The more the commercial supply is differentiated by innovation, the more the salesforce control is behavior-based.

### *1.3.3. Differentiation by Image Strategy*

The goal of a differentiation by image strategy is to develop an attraction for the product through a gravitational packaging and significant expenditure in promotion and publicity. For this strategic orientation, the firm attaches a great importance to the business aspect and devotes significant resources to it because negotiation is built around the psychological aspects of the purchase process. A behavior-based control is thus expected to both increase on the one hand the professionalism of the salespeople and on the other hand to control the activity of the sales force according to the promotional campaigns.

**Hypothesis 5.** The more the commercial offer is differentiated by image, the more the salesforce control is behavior-based.

### *1.3.4. Efficiency of Fit*

Research in strategic management considers that a control in line with strategy increases the organization's performance. This proposition constitutes the base of

research on “fit.” Indeed, from an academic point of view, it is supposed that independently of the organisational context, no strategy is intrinsically more powerful than another (Venkatraman, 1989).

**Hypothesis 6.** Strategies of differentiation (price, innovation, image) do not have a direct effect on outcome performance (Hypothesis 6a) and on behavioral performance (Hypothesis 6b) of sales force.

**Hypothesis 7.** Associations suggested on assumptions 3, 4 and 5 have a positive effect on behavioral performance (Hypothesis 7a) and on outcome performance (Hypothesis 7b) of sales force.

## 2. METHOD OF RESEARCH

Adjustment logics lend themselves easily to a quantitative validation with a broad sample of companies. They then require a formalized and standardized measurement of concepts in order to more finely interpret the variations of performance. The sales manager is the guarantor best adapted to our problems. Because of his position and his relations with the sales force, s/he can perfectly evaluate the control and the performance of the salesmen. As s/he is responsible for putting the company’s business strategy into operation, s/he can suitably describe the differentiation of its commercial offer. This is why, to empirically test the suggested model, a quantitative validation by questionnaires of sales managers is carried out.

### *2.1. Protocol of Research*

The hypotheses are tested on a sample of French industrial sales forces (B-to-B). The independent salesmen (e.g. sales representatives) as well as the sales forces prospecting private individuals and great distribution are isolated from the analysis. This selection makes it possible to study a relatively homogeneous sample of sales forces. A partnership agreement was signed with the federation of the Commercial Leaders of France (DCF) in order to mobilize a population that is very skeptical of research. The letter of presentation of the investigation was written by the President of the federation to increase the mobilization of the contacted companies. 259 questionnaires out of the 800 sent were returned, that is to say a response rate of 32%. After removing of the incomplete questionnaires and those not relating to paid industrial sales forces, a final sample of 182 companies is obtained to test the hypotheses.

## *2.2. The Measurement of the Variables*

The measuring instruments are taken from research on the control of the sales force. A translation of these scales was carried out and two pretests carried out to ensure the validity of the tools (comprehension, internal coherence, distribution). All the answers were collected on a Likert scale of 7 points.

The performance of the sales force is measured using the scale (multi-criterion) of Behrman and Perreault (1982). The advantage of this tool is to neutralize certain externalities (size, share of market, branch of industry . . .), because it is based on the judgement of the sales manager and not on quantified criteria of performance (Rich et al., 1999).

The measurement of the behavioral orientation of control is based on the nature of controlled information, the monitoring and the remuneration structure (fixed vs. variable). The information controlled measures the bases from which the objectives are set and evaluation carried out, and feedback communicated. The 10 items proposed are a transposition of the study of Challagalla and Shervani (1997). They conceptually distinguish control of the activity and the control of competences. The monitoring is measured by three items which evaluate the frequency of control, the intensity of the rounds in double and the role of the person in charge in the orientation of the sales effort. This measurement is retained by Oliver and Anderson (1994) and Babakus et al. (1996). For the remuneration structure, the person in charge is requested to indicate the fixed share of wages, the share of bonus, and the share of commissions in the total remuneration of the sales force.

The three strategies of differentiation (price, image, innovation) are measured starting with items extracted from the “block of competitive methods” of Dess and Davis (1984). The 9 items retained relate to the attributes of the commercial offer. The person in charge indicates the importance of each competitive method in the marketing policy of the company.

## *2.3. Data Collection*

The characteristics of the final sample are as follows: the person in charge is responsible for, on average, 16 salespeople; the sales forces devote an average of three hours per week to the drafting of management reports, four and a half hours to the preparation of the commercial rounds, six hours to administrative management of the sales and twenty-three hours to the sale itself. The reliability and the frequency of distribution of the scales are considered to be satisfactory. Of all of the measured variables, the worst reliability relates to the degree of

monitoring (Cronbach Alpha = 0.61). The factors are reasonably well centered and present a significant range of dispersion. The sales managers thus did not overestimate the performance of their sales force. To check the validity of the behavioral performance scale and behavioral orientation of the examination, a confirmatory factorial analysis is carried out.

For the criteria on the behavioral orientation of control, the adjustment indicators show that the monitoring, the control of the activity and the control of competences form a consistent dimension (GFI = 0.891, AGFI = 0.833, CFI = 0.897, RMSEA = 0.08). The share of fixed wages is not closely tied to this dimension. That means that the sales force control system must be understood using two indicators: the structure of remuneration and an aggregative index scale built from three dimensions referring to the behavioral orientation control. For the sample, the share of fixed wages accounts for 71% of total remuneration, the

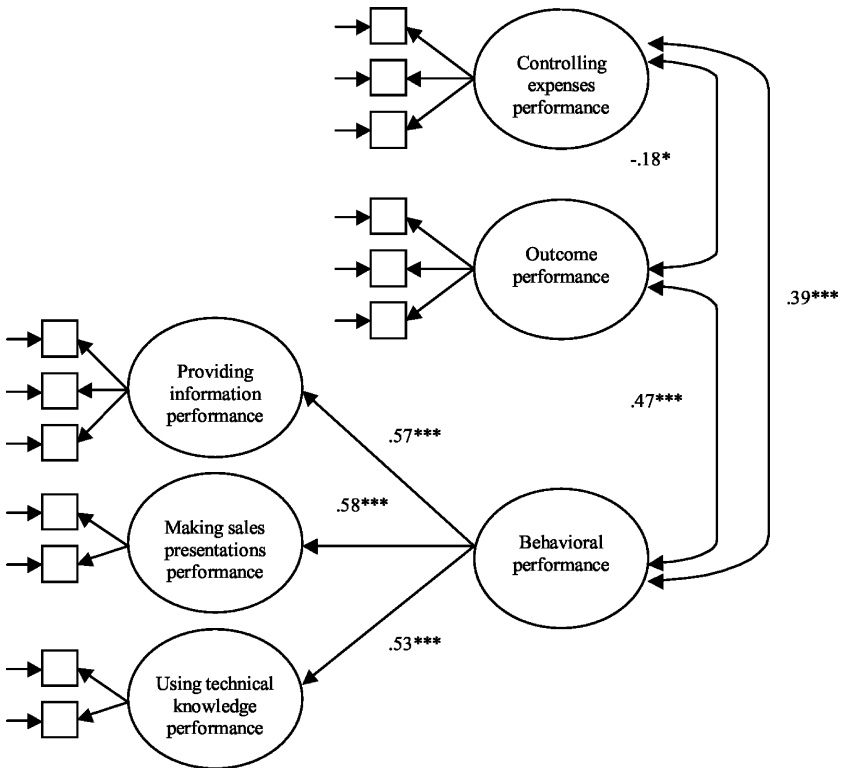


Fig. 2. Structure of Salesforce Performance.

share of bonus 13%, and the share of commission 16%. The high values of the standard deviations (respectively 22, 13, and 22) show a wide dispersion of these three components of remuneration.

In order to more precisely study the sales force's articulation of performance, we can distinguish the performance in terms of results and the performance in terms of behaviors. The latter is defined by the performance related to feedback, to the mastery of product knowledge, to customer relations, and to the respect of the financial budgets. The model which presents the indices of the highest adjustments (GFI = 0.940, AGFI = 0.908, CFI = 0.977, RMSEA = 0.043) shows a negative relationship between outcome performance and controlling expenses performance. The criteria of performance on information, on sales presentation and on technical knowledge form a consistent second-rate dimension which is positively correlated with outcome performance and controlling expenses performance (Fig. 2).

### **3. PRESENTATION AND DISCUSSION OF THE RESULTS**

In this part we present the findings and analyze the lessons of this research on managerial policy.

#### *3.1. Test of the Hypotheses*

Hypotheses 1 through 6 are tested using a model of structural equations (Amos 4.0). From a methodological point of view, this technique allows a global solution of the relations between the mobilized variables (Table 1).

The results show a positive relation between the behavioral performance (customer, product, information) and the outcome performance. Hypothesis 1 is validated. Let us note that the negative relation between the controlling expenses performance and the outcome performance is confirmed.

Following the example of American sales forces (Cravens et al., 1993), the control of the French sales forces is two-dimensional: the share of more or less incentive remuneration is independent of the more or less behavioral orientation of control (monitoring and information controlled). Thus Hypothesis 2a, concerning the influence of behavioral control on performance, is partially validated. The share of fixed wages does not have an effect on the performance of salespeople; whereas a greater supervision of behaviors positively influences the behavioral performance of salespeople. Since the two dimensions of control do not have significant effects on the performance in terms of results, Hypothesis 2b is



**Table 1.** Structural Parameters and Model Fit Statistics for a Sample of 182 Salesforces.<sup>a</sup>

Hypothesis	Hypothesized Path		Std. Coef.	<i>p</i>
Hyp. 1	Behavioral performance	Outcome performance	0.73	0.005
Hyp. 1	Controlling expenses performance	Outcome performance	-0.42	0.006
Hyp. 2a	Behavior based control	Behavior performance	0.43	0.015
Hyp. 2a	Salary	Behavioral performance	0.02	n.s.
Hyp. 2b	Behavior based control	Outcome performance	-0.17	n.s.
Hyp. 2b	Salary	Outcome performance	0.08	n.s.
Hyp. 3	Price differentiation	Behavior based control	0.02	n.s.
Hyp. 3	Price differentiation	Salary	0.16	0.022
Hyp. 4	Innovation differentiation	Behavior based control	-0.06	n.s.
Hyp. 4	Innovation differentiation	Salary	0.21	0.008
Hyp. 5	Image differentiation	Behavioral based control	0.35	0.001
Hyp. 5	Image differentiation	Salary	-0.16	0.023
Hyp. 6a	Price differentiation	Outcome performance	-0.12	n.s.
Hyp. 6a	Innovation differentiation	Outcome performance	-0.21	n.s.
Hyp. 6a	Image differentiation	Outcome performance	0.05	n.s.
Hyp. 6b	Price differentiation	Behavioral performance	0.19	n.s.
Hyp. 6b	Innovation differentiation	Behavioral performance	0.30	0.048
Hyp. 6b	Image differentiation	Behavioral performance	0.19	n.s.
Hyp. 6b	Price differentiation	Controlling expenses performance	-0.13	n.s.
Hyp. 6b	Innovation differentiation	Controlling expenses performance	-0.11	n.s.
Hyp. 6b	Image differentiation	Controlling expenses performance	-0.31	0.016

<sup>a</sup>GFI = 0.882, AGFI = 0.841, CFI = 0.887, RMSEA = 0.051.

rejected. Hypotheses 3, 4 and 5 show the idea that strategy impacts the control of the sales force. Differentiation by price does not have an effect on the behavioral orientation of control and has a positive effect on the share of fixed wages. This relation partially negates Hypothesis 3. Differentiation by innovation does not have an effect on the orientation of control and has a positive effect on the share of fixed wages. This result partially validates Hypothesis 4. Differentiation by image has a positive effect on the behavioral orientation of control and a negative effect on the share of fixed wages. This double impact, at the same time positive and negative, partially validates and partially negates Hypothesis 5.

Hypothesis 6 supports the idea that strategy does not have a direct effect on the performance of the sales force. The absence of links between the three strategies of differentiation and the outcome performance validate Hypothesis 6a.

**Table 2.** Effect of Interactions Between Control and Differentiation Strategy on Salesforce Performance.

Interaction	Performance Dimension	<i>t</i> -Values
Bonus × Image differentiation	Sales presentation	1.798*
Bonus × Image differentiation	Providing information	2.182**
Bonus × Image differentiation	Totale	1.970**
Behavioral based control × Image differentiation	Providing information	1.694*
Behavioral based control × Innovation differentiation	Controlling expenses	-1.720*
Behavioral based control × Innovation differentiation	Technical knowledge	-2.154**
Behavioral based control × Innovation differentiation	Totale	-2.402***

\* $p < 0.1$ .\*\* $p < 0.05$ .\*\*\* $p < 0.01$ .

The positive effect of the differentiation by innovation strategy on behavioral performance and the negative effect of the differentiation by image strategy on the controlling expenses performance negate Hypothesis 6b.

Assumption 7 supports the idea that conceptually proposed associations (strategy-control; Hypotheses 3, 4 and 5) have a positive effect on sales force performance. Only the relevant tests of this Hypothesis are presented (Table 2). Hypothesis 7a, which states that the interaction has an effect on the outcome performance, is not validated. Hypothesis 7b, which states that the interaction has an effect on performance in terms of behavior, is partially negated. The results show that for a differentiation by image strategy, a more behavior-based control has a positive effect on the performance in terms of information communication. The share of more or less incentive remuneration is not a sufficiently precise criterion to show significant adjustments. The tests show indeed that only the share of performance incentives adjusts efficiently to a differentiation by image strategy. Surprisingly, the behavioral orientation of control that is associated with a differentiation by innovation strategy has a negative effect on performance. This relation, which negates Hypothesis 7b, can be explained by the direct positive effect that behavioral controls and the differentiation strategy have on the performance in terms of behaviors. Finally let us note that a differentiation by price strategy does not reveal any efficient adjustment with the salesforce control policy.

### 3.2. Discussions and Managerial Implications

This research stresses five facets of the sales force's performance: the performance in terms of outcomes, of information, of sales presentations, of technical

knowledge and of budgetary respect. The relations established between these five criteria inform us about the articulation of sales force performance. We observe that the criteria of performance related to information feedback, technical knowledge and the effectiveness of the sales presentations form a consistent dimension. It thus appears that a good quality collection of information contributes to the behavioral performance of the salespeople. Thus, in addition to allowing an informational watch, the management reports can be perceived as a means for salesmen to better analyse their missions. By stepping back, they can improve their customer relations and product knowledge. A positive relationship between the behavioral performance and the outcome performance is established. That shows that management can have an indirect effect on the results of the sales force by focusing on the behavior of the sales forces. We see a negative relationship between budgetary respect and the sales results observed. Our scale of measurement of a salesperson's performance, compared to management's expectations, can explain this negative association. Since the scale examines *the externalities*, it seems that management judges the cost of operations of the sales force without taking account of the results obtained. On this point, Jackson et al. (1995) show that the most impressive evolution (over ten years) of the evaluation of American sales forces relates to an increased mobilization of the profit incentive. In other words, management's decisions on sales force expenditures is seen in the results.

Our results show that there is not a universal model of sales force control. A very broad panel of remuneration policies and wide variations of behavioral control are observed. The absence of a link between the behavioral control and the level of more or less incentive remuneration confirms the conclusions of preceding research: the control of the salesmen is two-dimensional with antecedents and consequences suitable for each one of these two dimensions.

Our results show a positive effect of the behavioral control on the behavioral performance of the sales force and consequently an indirect effect of this control on the performance in terms of results. Management's commitment to more narrowly control and more intensely monitor the activities and competences of salespersons thus bear its fruits. Like preceding research (e.g. Morris et al., 1991), our analysis shows that this type of management is accompanied by a more active participation of the sales manager in the sales force's work. Indeed, management intervention and supervision are positively associated with competence controls and the activity. The companies which wish to undertake this dynamic management style must thus communicate about this relative inconsistency (management of competences = more supervision). The salesmen will be more accepting of this loss of autonomy (management accompaniment on rounds, more frequent inspections, more management involvement) if the benefits of behavioral control are well established.

The absence of links between remuneration (fixed vs. variable) and performance tends to prove that, apart from the context of application, there is not one single optimal solution which defines the balance between incentive and non-incentive remuneration. A priori, on this point the company cannot establish any different alternative to its remuneration policies of the sales force. It is thus advisable not to believe all of the assertions of certain consulting firms on this subject. For example, let us quote this consultant's statement taken from a professional magazine: "*We estimate that for levels of variable remuneration below 15, remuneration does not have any impact on the performance of the sales force.*"

The bases of differentiation have an explanatory capacity on the control of the sales force. Thus, the management that emphasizes a differentiation by image strategy are more inclined to intensely control the behaviors of their salesmen and to propose a more significant share of variable remuneration. The strategies of differentiation by both price and innovation have a positive effect on the share of fixed wages but do not affect the behavioral orientation of control. These three competitive advantages do not have a direct effect on the performance in terms of results. That means that the salesperson's level of contribution to the sales goals is not related to the way in which the company competes on the market. However our results validate a positive relationship between a differentiation by innovation strategy and the behavioral performance of the sales force. That could mean that, all things being equal, the salespeople selling innovative products are naturally aware that it is necessary to be strong in negotiation, to have extensive product knowledge, and to be able to communicate all of this well. On this point, a parallel can be drawn to the work of Baldauf et al. (2001), which established a positive link between the added value of the commercial offer and the behavioral performance of the Austrian sales forces. Let us note that these authors did not validate this relationship for British sales forces.

Based on the tests of interaction, we can draw several conclusions. For companies emphasizing a differentiation by image strategy, behavior-oriented control and remunerative incentives positively influence the performance of the sales force. For this type of strategy, organisational efficiency is driven by two opposing forces. On the one hand, performance is explained by a more intensely behavior-oriented control; on the other hand, performance is related to an incentive remuneration (based on objectives). This result confirms the fact that companies differentiating themselves by image devote significant resources to train and supervise the sales force. Indeed, for this type of strategy, behavior oriented control is particularly beneficial. The interaction of differentiation by image and of performance incentives can explain the conceptual ambiguity underlined by Lal (1994). On the one hand, management can estimate that the investments in

terms of image (publicity, mark . . .) must be accompanied by reduced financial incentives, as the salesmen are able to obtain commissions which are largely the fruit of investment of the company. On the other hand, the differentiation by image strategy improves the customer's perception of the product, and the conclusion of a sale will require less effort. A more incentive remuneration can thus be granted. Our results show that in this case, an incentive but conditional remuneration is more efficient.

For companies emphasizing a differentiation by innovation strategy, the efficiency of the adjustment is more difficult to interpret. We showed that this strategy has a positive effect on the share of fixed wages. It is, however, simply an observed trend, since this association does not impact the performance. We observe that the differentiation by innovation strategy attenuates the positive impact of control of the behaviors on the performance; the association of these two dimensions has a negative effect on the performance. It thus seems that control of the behaviors interferes with the direct relationship between a differentiation by innovation strategy and the behavioral performance of the sales force. This result partly confirms the idea of Slater and Olson (2002), which states that the sale of new products requires a very qualified sales force which can distribute its efforts between both its short and long term objectives. They recommend in this case, a relative autonomy and a "*laissez-faire*," so that the salespeople can determine by themselves their selling behaviors.

#### **4. LIMITS AND PERSPECTIVE OF RESEARCH**

The limits and the prolongations of this research are directly related. Far from being exhaustive, three prospects for research are stated in conclusion for this work.

The protocol of empirical validation of this study is in line with the hypothetico-deductive process of our thinking. However, the limits of a quantitative validation are well-known. The administration of a questionnaire does not make it possible to determine the dynamic aspect of logics of adjustments and obliges a selection of a predetermined number of explanatory variables. On this point, the case studies would make it possible to more finely analyze and to enrich the articulation between the various concepts of this research.

This research stressed the balance between variable and fixed parts of remuneration. If this dimension is a crucial element of the control of the sales force, it is only one component of the policy of remuneration. For example, Gomez-Mejia and Welbourne (1988) identify 17 dimensions of remuneration grouped in three classes of decisions: the base of remuneration (e.g. basis of calculation, frequency of payment), the structure of remuneration (e.g. level, fixed vs. variable) and the

administrative management of remuneration (e.g. centralization, bureaucracy). A promising way of research would be to examine the performance of salesmen in relation to these components of remuneration.

The results of this study are obtained in the French legal and cultural contexts. It is possible, as stated by Baldauf et al. (2001), that the national environment influenced the nature of the results obtained and relationships established. For example, culture can affect the salesperson's motivation in response to the stimuli of the inspection (Macquin & Rouziès, 2001) and labour laws can influence the nature of the examinations of the sales force (Krafft, 1999). This research can thus be interpreted as a contribution to the prospect for Baldauf et al. (2001) which proposes studying the antecedents and the consequences of sales force control in each culture.

These limits constitute new ideas for research on the performance and the control of the sales force.

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# STRATEGY AND INTEGRATED FINANCIAL RATIO PERFORMANCE MEASURES: EMPIRICAL EVIDENCE OF THE FINANCIAL PERFORMANCE SCORECARD AND HIGH PERFORMANCE COMPANIES

Belverd E. Needles Jr., Mark L. Frigo  
and Marian Powers

## ABSTRACT

*Following our prior research (Frigo et al., 2002; Needles et al., 2002), we continue to examine the link between strategy and financial performance, as well as, the underlying performance drivers that describe how a company executes strategy to create financial value. We also present a structured, theoretical framework for integrated financial ratio analysis that links financial objectives, performance drivers and performance measures for value creation. We investigate empirically companies in the United States S&P 500 and companies that have displayed characteristics of return-driven,*

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**Performance Measurement and Management Control: Superior Organizational Performance**

**Studies in Managerial and Financial Accounting, Volume 14, 115–151**

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ISSN: 1479-3512/doi:10.1016/S1479-3512(04)14006-9

*high performance companies. We find support for the hypothesized relationships in the model and of above-mean performance by high performance companies across all performance measures.*

Our prior research (Frigo et al., 2002; Needles et al., 2002) examines the connection between strategy, strategic performance drivers and financial ratios for companies in a mature economy (United States) and an emerging economy (India). In both studies, we found that the financial performance of the companies selected clearly reflected the expected performance characteristics of companies that emphasize strategic directions of operational excellence and product leadership (innovation), the expected performance characteristics were not as strong for the strategic direction of customer intimacy. This paper reports on this further research and is directly related to the theme of the research conference: "Understanding the drivers of corporate performance, the linkages between them, and how to measure their impact on profitability."

In this study, we continue to examine the relationship of strategy and financial performance, as well as, the underlying performance drivers and measures that describe how a company executes strategy to create financial value. Previously, we studied companies representing three strategy categories based on the Discipline of Market Leadership (DML) (Treacy & Wiersema, 1995): (1) Operational Excellence; (2) Product Leadership; and (3) Customer Intimacy. Our hypothesis was that if an organization is truly a "market leader," does financial performance follow? We examined the strategy of companies using the DML concepts since it provides a suitable framework for studying strategic performance drivers that may be used in executing the strategy. We noted that the DML categories have been incorporated in the balanced scorecard customer value proposition (Kaplan & Norton, 2001, pp. 86–89). The links between strategy and financial performance can be studied by considering the performance measures, both financial and non-financial, that are included in strategy maps within a balanced scorecard framework or value drivers within a value-based management framework.

We further develop our theoretical framework for integrated financial ratio analysis that links strategy for financing, investing, and operating activities using performance drivers and performance measures for financial value creation or destruction. We investigate these relationships empirically for companies in the United States using the S&P 500. This approach allows us to look at a broad spectrum of companies and industries. Also, we examine "high performance" companies and examine how the financial performance of these companies differs from other companies in the same industry.

## **PREVIOUS RESEARCH**

As noted above, this research extends previous research, which has investigated the relationship of strategy and financial ratio analysis (Frigo et al., 2002; Needles et al., 2002). Further, it is related to previous research by Nissim and Penman (1999, 2001) in which they:

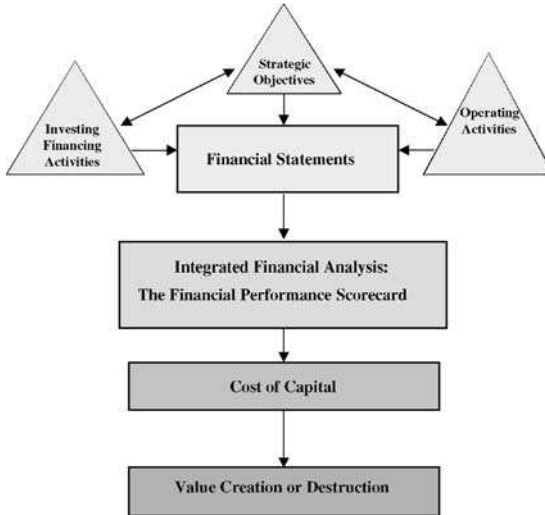
Produce a structural approach to financial statement analysis for equity valuation. The structure not only identifies relevant ratios, but also provides a way of organizing the analysis task. The result is a fundamental analysis that is very much grounded in the financial statements; indeed fundamental analysis is cast as a matter of appropriate financial statement analysis. The structural approach contrasts to the purely empirical approach in Ou and Penman (1989). That paper identified ratios that predicted earnings changes in the data; no thought was given to the identification. The approach also contrasts to that in Lev and Thiagarajan (1993) who defer to “expert judgment” and identify ratios that analysts actually use in practice (p. 110).

Our approach is consistent, but not the same, as that of Nissim and Penman and incorporates the Dupont model, as does Nissim and Penman. Also, like Nissim and Penman, we base our model on accrual accounting, which implies the residual income model, but, as Nissim and Penman say, do not “suggest that this model is the only model, or even the best model, to value equities” (2001, p. 111). Further, we do not develop the algebraic formulas supporting these relationships, as they may be seen in Nissim and Penman.

## **INTEGRATED FINANCIAL RATIO ANALYSIS**

Financial statements provide important information about a company’s ability to achieve its primary strategic objective, which is to create value for its owners. The intelligent user of financial statements will be able to discern how well the company has performed in achieving this objective. Financial analysis provides the techniques to assist the user in this task. Figure 1 shows the roles that financial statements and financial analysis play in linking the strategic goals and activities to cost of capital and value creation. In short, the financial statements reflect how well a company’s management has carried out the strategic and operating plans of the businesses. This performance is in turn evaluated by the market place and a value is placed on the company.

Analysts have traditionally conducted ratio analysis by examining ratios related to various aspects of a business’ operations. For example, return on assets might be used to evaluate a company’s profitability and receivable turnover to evaluate liquidity. However, these analyses are often made without regard to how these ratios interact with each other to give an overview of a company’s performance.



*Fig. 1.* The Components of Value Creation or Destruction. *Source:* © 2003, Needles & Powers.

Integrated financial ratio analysis, which we call the Financial Performance Scorecard (FPS), is a structure or framework for considering the interaction of financial ratios with particular emphasis on the drivers of performance and their relationship to performance measures. These performance measures are reflected ultimately in a return that is compared with a benchmark cost of capital. If the return exceeds cost of capital value has been created. If the return is less than cost of capital, then value has been destroyed (Adman & Haight, 2002; Gebhardt, Lee & Swaminathan, 2001). Cost of capital was used as a criterion for selecting the leading companies, but for purposes of evaluating the FPS in this study, we will assume that the cost of capital is determinable and given.

The FPS is based on the notion that management has certain financial objectives that must be achieved in order to create value and that these financial goals are interrelated. Further, underlying the performance measures that are widely used by analysts and in the financial press to assess a company's financial performance are certain financial ratios called performance drivers, which are critical to achieving the performance measures; hence, the term "performance drivers." While we hypothesize that the performance measures of "high performance companies" will uniformly excel on the basis of performance measures, the companies will not display uniform characteristics when it comes to performance drivers because these measures are more a function of the various strategies companies may

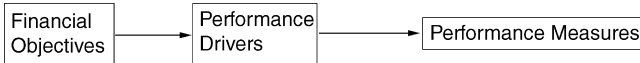


Fig. 2. Relationship of Financial Objectives, Performance Drivers, and Performance Measures.

employ to achieve high performance. The relationships of financial objectives, performance drivers, and performance measures may be visualized as shown in Fig. 2.

Figure 3 expands upon Fig. 1 to show the detail of the FPS. The inner circle (green) shows the five financial objectives and the related performance drivers. The outer circle (blue) shows the performance measures. The performance measures

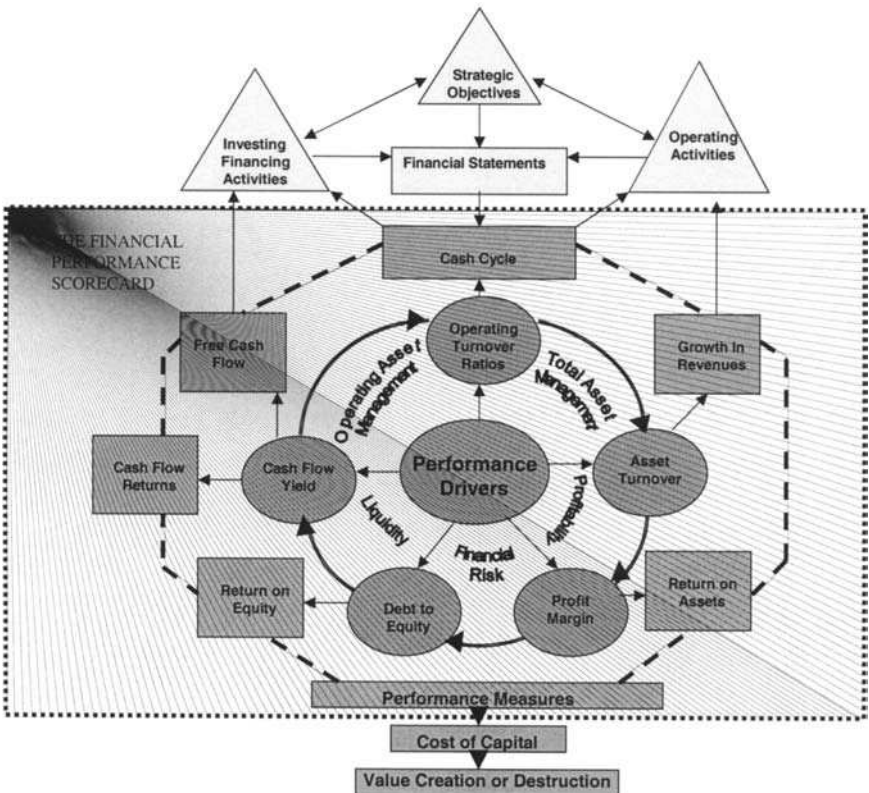


Fig. 3. Integrated Financial Ratio Analysis: The Financial Performance Scorecard (FPS).  
 Source: © 2003, Needles & Powers.

are compared against the benchmark of cost of capital to determine if value has been created or destroyed. The components of the FPS may be summarized as follows:

Financial Objective	Performance Drivers	Performance Measures
Total asset management	Asset turnover	Growth in revenues
Profitability	Profit margin	Return on assets
Financial risk	Debt to equity	Return on equity
Liquidity	Cash flow yield	Free cash flows Cash flow returns
Operating asset management	Turnover ratios	Cash cycle

The financial objectives and their related performance drivers and performance objectives will be discussed in the following sections.

## **DISCUSSION OF THE FINANCIAL PERFORMANCE SCORECARD**

Growth in revenues is a common measure of performance (see, for example, *Business Week*, 2002; Forbes, 2003; Zack, 2002). However, research has shown that the more fundamental driver of growth in revenues is asset turnover. (Fairfield & Yohn, 1999; Jansen & Yohn, 2002). Thus, management's objective is to manage the total assets of the business to achieve the most efficient use of assets in generating revenues. Similarly, return on assets is probably the most common measure of profitability, but the underlying drivers of return on assets are asset turnover and profit margin (Brief & Lawson, 1992; Kissin & Penman, 2001; Selling & Stickney, 1989), according to the following formula:

$$\text{Return on assets} = \text{asset turnover} \times \text{profit margin.}$$

The key variable influencing the goal of profitability is profit margin, whereas, as already mentioned, asset turnover is related to the goal of total asset management. Thus, in combination the goal is profitable growth in sales, which is a function of both asset turnover and profit margin.

Return on equity is often cited as a profitability measure, but here the key driver is debt to equity, and the goal is management's target for financial risk. Return on equity may be derived though the following formula:

$$\text{Return on equity} = \text{return on assets} \times (1 + \text{debt to equity})$$

Penman (1991) studied return on assets and found it to be a good measure of profitability but not a good measure of risk. He drew the opposite conclusion with regard to return on equity. This is consistent with our classification of return on assets as a profitability measure and return on equity as a financial risk measure.

Free cash flows and cash flow returns on sales and assets (Madden, 1999) are often used as measures of value of liquidity. However, the more fundamental driver of these performance measures is cash flow yield, which is computed as follows:

$$\text{Cash flow yield} = \frac{\text{cash flows from operating activities}}{\text{net income}}.$$

The cash flow yield is an important ratio for several reasons. One reason is that the long-run survival (and value) of a business depends on its ability to generate cash flows from its operations, and it begins with profitable operations that enable it to generate these cash flows. The cash flow yield measures whether net income has underlying cash flows from operations. A key component of free cash flows is cash flows from operating activities, which stems from a company's ability to generate cash. Further, cash flow yield is the driver of cash flow return on sales and cash flow return on assets, as may be seen from the following formulas:

$$\text{Cash flow return on sales} = \text{Cash flow yield} \times \text{Profit margin}$$

$$\text{Cash flow return on assets} = \text{Cash flow yield} \times \text{Return on assets}$$

The goal of liquidity is closely related to the goal of operating asset management. Operating asset management is judged by management control of the cash cycle, which is the time required to make or buy products, finance the products, and sell and collect for them, as illustrated in Fig. 2. The cash cycle is driven by three turnover ratios: inventory turnover, receivables turnover and payables turnover. Using these turnover ratios, the total days of financing of operating assets may be determined as follows:

$$\begin{aligned} \text{Financing period} &= \text{average days' inventory on hand} \\ &\quad + \text{average days receivable outstanding} \\ &\quad - \text{average days payable} \end{aligned}$$

To limit the scope of this paper, this last objective, operating asset management, and its related measures will be addressed in a future paper.

## **EMPIRICAL OBJECTIVES**

We divided the empirical research into two parts. The first part provides evidence with regards to the components of the FPS. In particular, it examines the

relationships of the performance drivers and performance measures. We expect the performance drivers will be independent of each other because each gives a view of a component of a company's strategic objectives. Further, we expect the performance measures to be independent if they measure different aspects of a company's performance. We expect performance measures that include a common performance driver to be correlated. To test these propositions, we examine the correlation of the ratios for all companies, selected industries, and the industry leaders. We further conducted a rank correlation to determine if the performance drivers and measures rank companies in a similar manner.

The second part looks at the relationship of the performance of the "high performance" companies to that of their respective industries. Since performance drivers are most closely related to differences in a company's strategy (for instance, product innovation vs. operating efficiency, tolerance for financial risk, etc.), we expect there to be variation in performance drivers but we expect "high performance" companies to excel above their industry peers on performance measures which are overall measures of success or failure. We will also examine industry effects for those industries in which we have a sufficient sample.

## EMPIRICAL SAMPLE

As noted, our analysis focused on two groups of companies: Companies in the S&P 500 and "high performance" companies. The source of the data was CompuStat database. For the first group, we included companies in the S&P 500 index for which data exists consecutively from the year 1996 to the year 2001. Based on this condition, data for 349 companies existed.

The second group consisted of the thirty-eight high-performance companies. These companies appear in Appendix A. The first source consists of companies that met the following stringent criteria, as part of an ongoing research study called "The Return Driven Strategy Initiative" (Frigo, 2002; Frigo & Litman, 2002; Litman & Frigo, 2004):

- Cash Flow Return on Investment (CFROI) had to exceed twice the cost of capital consistently for over ten years straight (Rate of Return on Equity was used for financial services firms).
- Growth rates must exceed twice the GDP growth rate over the same period.
- Total Shareholder Returns (TSR) had to exceed market performance over the time period – consistent with the growth and return levels.

These companies were identified by screening over 15,000 equities in North America, Europe and Asia over the last 20–30 years. The ongoing research in the



Return Driven Strategy Initiative on these companies is being spearheaded at The Center for Strategy, Execution and Valuation in the Kellstadt Graduate School of Business at DePaul University. The “Return Driven Strategy Companies” identified demonstrate balanced superior performance in returns and growth over a sustained period of time. According to Return Driven Strategy, the pathway to superior financial value creation is through the customer, by fulfilling unmet needs in increasing market segments. The strategic competencies to achieve superior performance rest on operations, innovation of offerings and branding (Frigo, 2002). The connection between financial ratio analysis is most directly seen in operations. For a company like Dell, operational excellence is clearly reflected in the ratios that drive profitability, cash flow and asset utilization. Dell must innovate its offerings to fulfill unmet customer needs, but it does so focusing on its cash conversion cycle and profitability.

Appendix B contains the formulas used to calculate ratios in this study. In the first part, ratios were calculated for each year and partial analysis was made of the mean results for the years 1997–2001. Each ratio was calculated for years 1997–2001 (Year 1996 was used to calculate averages that were used in the formulas). The means for each ratio were calculated for the period of years 1997–2001. This period was used because it was the most recent period for which data was available and it contained a mixture of years with stronger (1997–1999) and weaker economies (2000–2001). Then, to test whether the findings hold for both strong and weak economies, the same procedure was followed except that the analysis was conducted using a three-year average for each ratio using three groups: first average group: 1997–1999 (stronger economy); second average group: 1998–2000 (stronger economy); and third average group: 1999–2001 (weaker economy).

In doing the analyses, companies were grouped by the first two digits of the SIC code. Forty-eight industries were identified based on this grouping. Use of the first three digit of the SIC code did not provide enough companies in many industries to provide reliable industry averages.

The database allows the user to construct a report for any industry, time period, and a ratio or rank by which the results are to be sorted. Pearson and Spearman rank correlations may then be conducted on rankings of each ratio in the industry report and between leading companies’ ratios in the industry.

We studied both of these groups together as companies representing high performance companies. We hypothesized that these companies would show superior financial performance based on the financial performance ratios within industries.

The second part of the study examines the relative performance of the high performance companies in relation to the mean performance of their industry

peers. We included only those industries (two-digit code) for which we had seven or more companies and at least one leading company. Using this screen, we have eleven industries and thirty-one high performance companies, as shown in Appendix C. When we had more than one high performance company, we averaged the ratios of the companies.

## DISCUSSION OF RESULTS

The results of the analyses are discussed in three sections: (1) all companies and selected industries; (2) high performance companies; and (3) comparison of industry leaders to their respective industries.

We tested ratios whose correlation was more than 0.5 for statistical significance. We ran correlation significance test – linear regression. We examined SIG ( $< 0.05$ ) and  $t$  ( $T > 1$ ). We used stepwise variable selection method. We found that all correlations more than 0.5 were significant both for SIG and  $t$  tests. SIG was significant at the 0.001 level in almost all cases. We also calculated Pearson and Spearman correlations (basically they are the same except Spearman correlation calculations produce correlation coefficient, that does not provide much information for data interpretation but it can be used for data manipulation). In all tables we use the correlation value (they are the same for both Pearson and Spearman correlations). The rank correlations were extremely low. Thus, we did not find that ratios were useful in ranking companies' performance.

### *All Companies and Selected Industries*

The results of the first part of the analysis are presented in Tables 1–7. We first examined the correlation of the ratio values. In this analysis, we expected there would be little correlation among the four performance drivers and among the performance measures, except where the performance measures had one or more common components. These expectations were confirmed by the analysis, as can be seen in the upper left quadrant of Table 1a–d, of all companies for the entire period 1997–2001, and for the three year averages. Using five-year averages (Table 1a), there is virtually no correlation among the performance drivers, indicating that they are independent of each other. Among the performance measures, there is also very little correlation, except for return on assets with profit margin (0.63), return on assets with cash flow return on total assets (0.78), cash flow return on stockholders equity with return on equity (0.83), and free cash flow with return on assets (0.51) and cash flow return on total assets (0.84).

These correlations were significant at the 0.001 level. As we expected ratios with a common driver were highly correlated. One of the two drivers of return on assets in profit margin. The latter four results stem from the common driver of cash flow yield. The same patterns are observed when three-year period are observed (Table 1b–d). In other words, cash flow measures tended to be correlated with other cash flow measures. These results tended to hold across all groupings of companies.

There are some relationships in the above analysis for all companies where we would expect higher correlations because of common drivers. It could be argued that the lack of correlation is due to offsetting industry effects. To examine this issue, we performed the same analysis for four selected industries:

- Chemicals, etc. (Industry 28)
- Engines, machinery, and equipment (Industry 35)
- Measurement devices, etc. (Industry 38)
- Advertising and other services (Industry 73)

These are the four industries for which there are at least three high performance companies. The results for the five-year period 1997–2001 are found in Table 2. First, although some industry effect is evident from the slightly higher correlations than with all companies, the correlations among performance drivers, with few exceptions are low, confirming the conclusion of independence. (The negative correlation of asset turnover to debt to equity and profit margin to cash flow yield in industry 28 and profit margin to debt to equity in Industry 38 appear to be anomalies. Industries 35 and 73 have no correlations above 0.5. An industry effect among performance measures is observed in that the five relationships that were significant for all industries all show higher correlations when examined for each of the four individual industries. Further, other relationships come more strongly into play. Both profit margin and free cash flow seem to be more important when analyzed on an industry to industry basis. Both of these measures are more highly correlated with the other performance measures. We conducted this same analysis for each three-year period and on all industries for which we have at least seven companies and found consistent results.

The results of the rank correlations of all companies for the entire period 1997–2001, and for the three year averages appear in Table 3a–d. These rank correlations are close to zero in all cases, indicating that either that the performance drivers and performance measures are independent or that the combining of companies from many industries. To test the latter proposition, we present the rank correlation analysis for the five-year period-1997–2001-of the four selected industries in Table 4. With regard to performance drivers most correlations are low and

there are few correlations above 0.5, which occurred randomly in different cells for different industries. Among performance measures, the correlations are also generally very low, with very few exceptions mainly involving cash flow measures. Some of these exceptions are difficult to explain such as the negative correlation between growth in revenues and return on equity for Industry 74. We also did this analysis for the three-year averages and found lower rank correlations. Further, there is little industry effect on rank correlations. Our conclusion is that financial ratios are do not rank companies performance in the same way even though each may be an important measure of performance. These results emphasize the importance of examining multiple measures of performance when evaluating the performance of a company.

### *High Performance Companies*

The correlation analysis for all high performance companies is found in Table 5a–d. As we expected there are few high correlations among the four performance drivers (see Table 5a) and none are significant at the 0.005 level. With regard to performance measures, higher correlations are expected where the related ratios have common drivers. We found high correlation in the same five cells that we identified previously for all countries. High correlations usually involve “return” ratios such as with profit margin with return on assets (0.70), return on equity (0.46), cash flow return on assets (0.56) and return on assets with return onequity (0.69), cash flow return on assets (0.89), and free cash flow (0.77). These correlations are significant at the 0.001 level. These conclusions are generally consistent for the three-year averages (Table 5b–d). An interesting result, which contrasts with that of all companies, is the negative correlation between debt to equity and most other performance measures. We believes this result stems from the financial strength of the high performance companies which allows them to function with less debt than less successful companies.

We also conducted a rank correlation on the high performance companies, as shown in Table 6a–d. As with the rank correlation results for all companies, the correlations are for low for all combinations of ratios. This further validates the conclusion the ratios are independent.

### *Comparison of High Performance companies to Their Respective Industries*

We expected high performance companies to differ on performance drivers and to excel on performance measures. Table 7a–d shows the difference in percentage

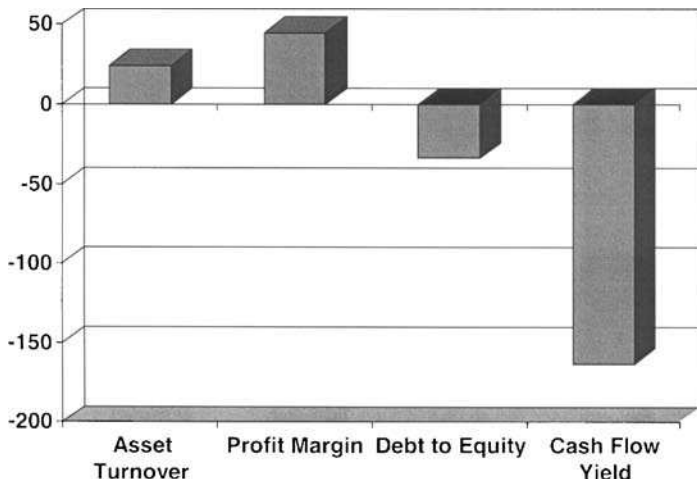
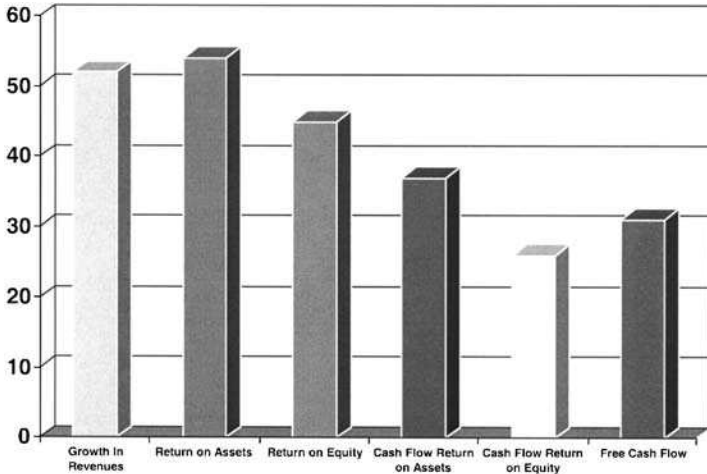


Fig. 4. Performance Drivers – High Performance Companies Compared to S&P 500 (in Percentages).

terms between industry leaders ratio values and the values for S&P 500 companies in the same industry based on two-digit SIC code (see Appendix B). Differences in performance drivers for all companies (last line in Table 7a) are illustrated in Fig. 4. In accord with our expectations, there is less uniformity with regard to performance drivers than with performance measures. For instance, only in five of the eight industries do the high performance companies exceed excel on the asset turnover. However, on average for all industries the high performance companies' asset turnover is positive. With regard to profit margin the high performance companies excel in all industries. It appears that profit margin is a key differentiator of high performing companies. Further, high performance companies in all industries bear less financial risk as measured by the debt to equity ratio than the industry average.

One performance driver, cash flow yield, is lower for the leading companies in all industries. This result runs counter to our predisposition. Further examination of the data shows that non-high performing countries composing the industry average tend to have lower net income in relation to leading companies. We also expect that the superior growth rate of the high performance measures makes demands for increased working capital that are not required by low growth companies. In addition, the role of one time charges, such as restructuring may bias the results. Future studies of the cash cycle of high performance companies, which as noted, was beyond the scope of the present study, may shed more light on this issue. The relationship among income-based returns and cash flows returns



*Fig. 5.* Performance Drivers – High Performance Companies Compared to S&P 500 (in Percentages).

put forth in the FPS, however, are validated by the fact that cash flow returns for leading companies do not tend exceed the industry average by as much as they do for return on assets and return on equity.

With very few exceptions in Table 7a–d, the high performance companies exceed the industry averages across all six performance measures and across all industries. This conclusion also held for the five-year period and for the three three-year periods in at least sixty-three of the sixty-six cells. Further, when the averages are taken for all industries, the leaders excel across all performance measures. Finally, by averaging across the eleven industries (representing 83 S&P 500 companies and 22 high performance companies) in the last line of each table, the positive results with regard to asset turnover, profit margin, and all the performance measures can be clearly seen. The overall superior performance of the high performance companies for the five-year period may be seen in Fig. 5.

## CONCLUSIONS

The empirical results confirm the basic propositions of the FPS and the criteria for choosing high performance companies. The results confirm the basic propositions of the FPS by demonstrating that the performance drivers and performance measures are independent of each other as shown by low correlation among each other or rank correlation. This proposition held true for both for all companies,

for selected industries, and for industry leaders, which show independence among the ratios with low correlations among performance drivers, except asset turnover and profit margin, and performance measures. The criteria for choosing high performance companies were validated by the performance measures in the FPS model. The high performance companies exceed the industry averages across all performance measures and across all industries. The high performance companies show mixed results with regard to performance drivers when compared with industry drivers. High performance companies excel on profit margin, are lower on the cash flow yield, have lower financial risk, and have mixed results for asset turnover. We believe these results are due in part to the different strategies that companies may employ.

## **LIMITATIONS AND FUTURE RESEARCH**

This exploratory study, which we consider part of on-going research in the area of strategy and financial performance measurement, has several limitations, some of which we expect to study in future research. First, we were limited to two SIC industry codes due to the small sample size. This was due to our limiting our sample to S&P 500 companies. If we expand our sample size sufficiently to analyze at the three-digit SIC level, we expect to find similar results to this study. Second, our individual industry studies were limited to eleven industries. No other industry had more than three members. A larger sample would enable us to include more industries. Again, we believe the breadth of the eleven industries we were able to study gives us confidence that we will reach the same conclusions with a larger sample. Third, we limited our ratio analysis to the items from the database without adjustment. For instance, we did not adjust net income for special items or look at operating income. If we were to adjust for unusual items, we believe we would achieve stronger results. Fourth, we need to explore most closely the effects of negatives on the ratios and their relationships, especially in the area of cash flow yield. Fifth, we have not studied one component of the FPS, the operating asset objective, the related operating ratios, and the cash cycle. We expect this complex subject to be the object of a separate paper. This study will likely shed more light on the role and importance of the cash flow yield as a measure of financial performance.

## **ACKNOWLEDGMENT**

We wish to thank Stanislav L. Sirot for his assistance in developing the database.

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**Table 1.** Correlation Tables – All Companies.

Correlation for the Ratio Values	Asset Turnover	Profit Margin	Debt to Equity	Cash Flow Yield	Growth in Revenues	Return on Assets	Return on Equity	Cash Flow Return on Total Assets	Cash Flow Return on Stockholders' Equity	Free Cash Flow
(a) Data for the period 1997–2001 – all companies.										
Asset turnover	1.00									
Profit margin	-0.21	1.00								
Debt to equity	-0.33	0.06	1.00							
Cash flow yield	-0.08	-0.10	0.00	1.00						
Growth in revenues	-0.01	0.09	0.08	-0.08	1.00					
Return on assets	0.32	0.63	-0.26	-0.12	0.10	1.00				
Return on equity	0.02	0.34	-0.15	-0.05	0.01	0.33	1.00			
Cash flow return on total assets	0.35	0.44	-0.29	-0.13	0.09	0.78	0.26	1.00		
Cash flow return on stockholders' equity	0.02	0.12	-0.01	-0.04	0.00	0.14	0.83	0.30	1.00	
Free cash flow	0.36	0.20	-0.32	-0.08	0.15	0.51	0.15	0.84	0.28	1.00
(b) Data for the group one – period 1997–1999 – all companies.										
Asset turnover	1.00									
Profit margin	-0.20	1.00								
Debt to equity	-0.40	0.08	1.00							
Cash flow yield	-0.08	-0.11	0.00	1.00						
Growth in revenues	0.04	-0.04	0.08	-0.09	1.00					
Return on assets	0.33	0.60	-0.31	-0.12	0.06	1.00				
Return on equity	0.05	0.46	-0.01	-0.07	-0.03	0.51	1.00			
Cash flow return on total assets	0.34	0.44	-0.35	-0.12	0.06	0.78	0.39	1.00		
Cash flow return on stockholders' equity	0.02	0.21	-0.05	-0.06	-0.05	0.24	0.78	0.43	1.00	
Free cash flow	0.35	0.18	-0.39	-0.07	0.10	0.50	0.21	0.83	0.37	1.00

*Table 1. (Continued)*

Correlation for the Ratio Values	Asset Turnover	Profit Margin	Debt to Equity	Cash Flow Yield	Growth in Revenues	Return on Assets	Return on Equity	Cash Flow Return on Total Assets	Cash Flow Return on Stockholders' Equity	Free Cash Flow
(c) Data for the group two – period 1998–2000 – all companies.										
Asset turnover	1.00									
Profit margin	-0.22	1.00								
Debt to equity	-0.34	0.06	1.00							
Cash flow yield	-0.08	-0.11	0.00	1.00						
Growth in revenues	-0.01	0.01	0.07	-0.06	1.00					
Return on assets	0.32	0.61	-0.25	-0.11	0.04	1.00				
Return on equity	0.01	0.29	-0.17	-0.05	-0.03	0.30	1.00			
Cash flow return on total assets	0.34	0.45	-0.27	-0.15	0.11	0.78	0.24	1.00		
Cash flow return on stockholders' equity	0.01	0.14	-0.06	-0.06	-0.01	0.15	0.89	0.31	1.00	
Free cash flow	0.36	0.21	-0.34	-0.12	0.18	0.53	0.15	0.84	0.26	1.00
(d) Data for the group three – period 1999–2001– all companies.										
Asset turnover	1.00									
Profit margin	-0.18	1.00								
Debt to equity	-0.26	0.05	1.00							
Cash flow yield	-0.08	-0.09	0.00	1.00						
Growth in revenues	0.01	0.10	0.02	-0.02	1.00					
Return on assets	0.29	0.71	-0.17	-0.11	0.10	1.00				
Return on equity	-0.02	0.18	-0.21	-0.02	0.01	0.14	1.00			
Cash flow return on total assets	0.35	0.44	-0.22	-0.08	0.14	0.75	0.11	1.00		
Cash flow return on stockholders' equity	-0.01	0.05	-0.07	0.00	0.03	0.03	0.93	0.13	1.00	
Free cash flow	0.37	0.22	-0.26	-0.06	0.20	0.50	0.09	0.84	0.15	1.00

**Table 2.** Correlation Tables for Selected Industries.

Correlation for the Ratio Values	Asset Turnover	Profit Margin	Debt to Equity	Cash Flow Yield	Growth in Revenues	Return on Assets	Return on Equity	Cash Flow Return on Total Assets	Cash Flow Return on Stockholders' Equity	Free Cash Flow
(a) Data for the group one – period 1997–2001; Industry 28.										
Asset turnover	1.00									
Profit margin	-0.04	1.00								
Debt to equity	-0.64	-0.20	1.00							
Cash flow yield	-0.28	-0.56	0.42	1.00						
Growth in revenues	-0.10	0.56	-0.30	-0.40	1.00					
Return on assets	0.30	0.93	-0.37	-0.63	0.53	1.00				
Return on equity	-0.57	0.39	0.73	-0.11	0.15	0.23	1.00			
Cash flow return on total assets	0.33	0.79	-0.31	-0.44	0.37	0.86	0.24	1.00		
Cash flow return on stockholders' equity	-0.60	0.20	0.83	0.10	-0.02	0.02	0.96	0.14	1.00	
Free cash flow	0.20	0.60	-0.21	-0.21	0.21	0.59	0.17	0.84	0.17	1.00
(b) Data for the group one – period 1997–2001; industry 35.										
Asset turnover	1.00									
Profit margin	-0.23	1.00								
Debt to equity	-0.30	-0.26	1.00							
Cash flow yield	0.25	-0.38	0.04	1.00						
Growth in revenues	0.32	0.28	-0.46	-0.08	1.00					
Return on assets	0.39	0.76	-0.46	-0.31	0.56	1.00				
Return on equity	0.29	0.61	0.14	-0.27	0.14	0.73	1.00			
Cash flow return on total assets	0.59	0.44	-0.56	-0.19	0.74	0.86	0.48	1.00		
Cash flow return on stockholders' equity	0.58	0.27	0.03	-0.17	0.40	0.62	0.75	0.72	1.00	
Free cash flow	0.56	0.39	-0.61	-0.05	0.76	0.80	0.38	0.96	0.62	1.00

*Table 2. (Continued)*

Correlation for the Ratio Values	Asset Turnover	Profit Margin	Debt to Equity	Cash Flow Yield	Growth in Revenues	Return on Assets	Return on Equity	Cash Flow Return on Total Assets	Cash Flow Return on Stockholders' Equity	Free Cash Flow
(c) Data for the group one – period 1997–2001; industry 38.										
Asset turnover	1.00									
Profit margin	0.17	1.00								
Debt to equity	0.06	-0.69	1.00							
Cash flow yield	0.05	-0.18	0.49	1.00						
Growth in revenues	-0.20	0.27	-0.26	-0.29	1.00					
Return on assets	0.33	0.97	-0.65	-0.16	0.31	1.00				
Return on equity	0.58	0.60	-0.02	0.19	0.09	0.71	1.00			
Cash flow return on total assets	0.21	0.57	-0.27	0.00	0.64	0.66	0.58	1.00		
Cash flow return on stockholders' equity	0.26	-0.07	0.54	0.40	0.29	0.05	0.54	0.64	1.00	
Free cash flow	0.22	0.52	-0.24	0.00	0.60	0.60	0.57	0.95	0.66	1.00
(d) Data for the group one – period 1997–2001; industry 73.										
Asset turnover	1.00									
Profit margin	-0.08	1.00								
Debt to Equity	-0.39	-0.24	1.00							
Cash flow yield	-0.11	-0.28	-0.27	1.00						
Growth in revenues	0.30	0.50	0.17	-0.19	1.00					
Return on assets	0.34	0.86	-0.48	-0.36	0.46	1.00				
Return on equity	0.09	0.77	0.00	-0.48	0.42	0.82	1.00			
Cash flow return on total assets	0.33	0.77	-0.71	0.01	0.36	0.89	0.56	1.00		
Cash flow return on stockholders' equity	-0.05	0.64	0.18	-0.30	0.38	0.59	0.85	0.44	1.00	
Free cash flow	0.51	0.64	-0.75	0.07	0.33	0.83	0.49	0.96	0.37	1.00

**Table 3.** Rank Correlation – All Companies.

Rank Correlation	Asset Turnover	Profit Margin	Debt to Equity	Cash Flow Yield	Growth in Revenues	Return on Assets	Return on Equity	Cash Flow Return on Total Assets	Cash Flow Return on Stockholders' Equity	Free Cash Flow
(a) Data for the period 1997–2001 – all companies.										
Asset turnover	1.00									
Profit margin	0.01	1.00								
Debt to equity	–0.01	0.02	1.00							
Cash flow yield	0.04	–0.01	0.03	1.00						
Growth in revenues	–0.01	0.08	0.09	–0.03	1.00					
Return on assets	0.01	0.05	–0.06	–0.10	–0.06	1.00				
Return on equity	–0.07	–0.02	–0.02	–0.02	–0.02	0.11	1.00			
Cash flow return on total assets	0.09	–0.10	0.00	0.02	–0.08	0.05	0.00	1.00		
Cash flow return on stockholders' equity	0.05	–0.04	–0.04	–0.05	0.01	0.00	0.03	0.16	1.00	
Free cash flow	0.14	–0.04	0.01	0.03	–0.05	0.05	–0.07	0.09	0.09	1.00
(b) Data for the group one – period 1997–1999 – all companies.										
Asset turnover	1.00									
Profit margin	–0.04	1.00								
Debt to equity	0.04	0.09	1.00							
Cash flow yield	–0.02	–0.05	–0.02	1.00						
Growth in revenues	–0.06	–0.05	0.13	–0.03	1.00					
Return on assets	0.09	–0.04	–0.02	0.00	0.00	1.00				
Return on equity	0.01	–0.06	0.00	–0.08	–0.08	0.10	1.00			
Cash flow return on total assets	0.19	0.06	0.08	0.15	–0.05	0.03	–0.06	1.00		
Cash flow return on stockholders' equity	0.03	0.00	–0.04	0.05	–0.14	0.04	0.06	0.05	1.00	
Free cash flow	0.23	–0.03	0.07	0.02	–0.07	0.07	–0.04	0.16	0.05	1.00

*Table 3. (Continued)*

Rank Correlation	Asset Turnover	Profit Margin	Debt to Equity	Cash Flow Yield	Growth in Revenues	Return on Assets	Return on Equity	Cash Flow Return on Total Assets	Cash Flow Return on Stockholders' Equity	Free Cash Flow
(c) Data for the group two – period 1998–2000 – all companies.										
Asset turnover	1.00									
Profit margin	–0.02	1.00								
Debt to equity	0.04	0.05	1.00							
Cash flow yield	–0.03	0.00	0.08	1.00						
Growth in revenues	0.03	0.01	0.01	–0.01	1.00					
Return on assets	0.03	–0.05	–0.04	–0.05	–0.10	1.00				
Return on equity	–0.04	–0.05	–0.11	–0.01	0.00	–0.01	1.00			
Cash flow return on total assets	0.15	–0.04	–0.03	0.07	–0.16	0.13	–0.04	1.00		
Cash flow return on stockholders' equity	0.01	–0.07	0.05	0.01	0.00	–0.04	–0.09	0.11	1.00	
Free cash flow	0.08	–0.09	0.05	0.08	–0.04	–0.02	–0.05	0.20	0.08	1.00
(d) Data for the group three – period 1999–2001– all companies.										
Asset turnover	1.00									
Profit margin	0.08	1.00								
Debt to equity	0.02	–0.06	1.00							
Cash flow yield	–0.02	–0.03	0.10	1.00						
Growth in revenues	0.05	–0.11	0.02	–0.06	1.00					
Return on assets	0.00	0.02	–0.10	0.02	–0.04	1.00				
Return on equity	–0.04	0.01	–0.04	–0.02	0.06	–0.05	1.00			
Cash flow return on total assets	0.10	0.06	0.05	0.06	–0.05	0.04	–0.02	1.00		
Cash flow return on stockholders' equity	–0.04	0.01	0.02	0.00	–0.01	–0.04	–0.03	0.10	1.00	
Free cash flow	0.14	–0.07	0.05	0.03	–0.07	–0.04	–0.13	0.09	0.02	1.00

**Table 4.** Rank Correlation Tables for Selected Industries.

Rank Correlation	Asset Turnover	Profit Margin	Debt to Equity	Cash Flow Yield	Growth in Revenues	Return on Assets	Return on Equity	Cash Flow Return on Total Assets	Cash Flow Return on Stockholders' Equity	Free Cash Flow
(a) Data for the group one – period 1997–2001; industry 28.										
Asset turnover	1.00									
Profit margin	0.18	1.00								
Debt to equity	–0.04	–0.02	1.00							
Cash flow yield	–0.05	0.00	0.01	1.00						
Growth in revenues	–0.35	–0.18	–0.25	–0.24	1.00					
Return on assets	0.03	–0.13	0.10	–0.16	0.03	1.00				
Return on equity	0.42	0.37	0.13	–0.05	–0.64	0.21	1.00			
Cash flow return on total assets	0.14	–0.21	–0.05	–0.14	0.05	0.05	0.10	1.00		
Cash flow return on stockholders' equity	–0.07	–0.15	–0.01	–0.02	–0.09	–0.08	0.18	–0.02	1.00	
Free cash flow	0.06	–0.17	–0.18	–0.08	0.00	–0.13	0.01	0.19	0.03	1.00
(b) Data for the group one – period 1997–2001; industry 35.										
Asset turnover	1.00									
Profit margin	0.13	1.00								
Debt to equity	–0.06	0.16	1.00							
Cash flow yield	0.05	–0.56	0.10	1.00						
Growth in revenues	0.03	0.51	0.31	–0.26	1.00					
Return on assets	0.09	0.74	0.03	–0.49	0.28	1.00				
Return on equity	0.35	0.20	–0.03	–0.19	0.07	0.40	1.00			
Cash flow return on total assets	0.54	0.47	0.13	–0.30	0.04	0.58	0.28	1.00		
Cash flow return on stockholders' equity	0.09	0.29	0.24	–0.06	0.05	0.26	0.34	0.40	1.00	
Free cash flow	0.33	0.20	0.06	–0.07	–0.02	0.45	–0.01	0.55	0.32	1.00

*Table 4. (Continued)*

Rank Correlation	Asset Turnover	Profit Margin	Debt to Equity	Cash Flow Yield	Growth in Revenues	Return on Assets	Return on Equity	Cash Flow Return on Total Assets	Cash Flow Return on Stockholders' Equity	Free Cash Flow
(c) Data for the group one – period 1997–2001; industry 38.										
Asset turnover	1.00									
Profit margin	0.03	1.00								
Debt to equity	–0.36	0.02	1.00							
Cash flow yield	0.13	0.04	0.00	1.00						
Growth in revenues	–0.08	0.21	–0.09	0.45	1.00					
Return on assets	–0.14	0.79	–0.02	0.30	0.16	1.00				
Return on equity	0.07	0.04	0.22	–0.09	0.29	–0.04	1.00			
Cash flow return on total assets	–0.03	0.42	0.14	0.02	–0.01	0.36	0.26	1.00		
Cash flow return on stockholders' equity	0.12	–0.14	–0.12	0.23	0.26	–0.20	0.14	0.02	1.00	
Free cash flow	0.08	0.56	0.11	0.10	0.18	0.32	0.34	0.67	–0.04	1.00
(d) Data for the group one – period 1997–2001; industry 73.										
Asset turnover	1.00									
Profit margin	0.20	1.00								
Debt to equity	0.48	–0.13	1.00							
Cash flow yield	–0.20	–0.08	–0.21	1.00						
Growth in revenues	–0.02	–0.19	–0.16	0.65	1.00					
Return on assets	–0.51	–0.02	–0.60	0.59	0.46	1.00				
Return on equity	–0.28	–0.11	0.01	–0.29	–0.38	–0.02	1.00			
Cash flow return on total assets	0.01	0.12	0.05	0.06	0.06	–0.24	–0.15	1.00		
Cash flow return on stockholders' equity	0.20	0.31	–0.06	–0.02	0.15	–0.22	0.03	0.42	1.00	
Free cash flow	0.05	–0.34	0.55	0.37	0.07	0.02	–0.09	–0.02	–0.33	1.00



**Table 5.** Correlation Tables – Industry Leaders.

Correlation for the Ratio Values	Asset Turnover	Profit Margin	Debt to Equity	Cash Flow Yield	Growth in Revenues	Return on Assets	Return on Equity	Cash Flow Return on Total Assets	Cash Flow Return on Stockholders' Equity	Free Cash Flow
(a) Data for the period 1997–2001– industry leaders.										
Asset turnover	1.00									
Profit margin	−0.47	1.00								
Debt to equity	−0.28	−0.13	1.00							
Cash flow yield	0.01	−0.06	0.37	1.00						
Growth in revenues	0.28	0.00	−0.09	0.23	1.00					
Return on assets	0.15	0.70	−0.49	−0.19	0.16	1.00				
Return on equity	0.13	0.46	−0.06	0.01	−0.07	0.66	1.00			
Cash flow return on total assets	0.29	0.56	−0.45	0.01	0.21	0.89	0.62	1.00		
Cash flow return on stockholders' equity	0.20	0.17	0.27	0.41	0.07	0.28	0.77	0.49	1.00	
Free cash flow	0.35	0.40	−0.47	0.11	0.25	0.77	0.44	0.92	0.45	1.00
(b) Data for the group one – period 1997–1999 – industry leaders.										
Asset turnover	1.00									
Profit margin	−0.51	1.00								
Debt to equity	−0.32	−0.15	1.00							
Cash flow yield	−0.10	−0.27	0.31	1.00						
Growth in revenues	0.26	−0.12	−0.17	0.03	1.00					
Return on assets	0.08	0.73	−0.51	−0.43	0.07	1.00				
Return on equity	0.07	0.49	−0.12	−0.28	−0.03	0.72	1.00			
Cash flow return on total assets	0.23	0.46	−0.48	−0.25	0.02	0.82	0.63	1.00		
Cash flow return on stockholders' equity	0.13	0.02	0.24	0.13	−0.08	0.18	0.69	0.49	1.00	
Free cash flow	0.31	0.31	−0.48	−0.18	0.05	0.71	0.45	0.91	0.42	1.00

*Table 5. (Continued)*

Correlation for the Ratio Values	Asset Turnover	Profit Margin	Debt to Equity	Cash Flow Yield	Growth in Revenues	Return on Assets	Return on Equity	Cash Flow Return on Total Assets	Cash Flow Return on Stockholders' Equity	Free Cash Flow
(c) Data for the group two – period 1998–2000 – industry leaders.										
Asset turnover	1.00									
Profit margin	-0.52	1.00								
Debt to equity	-0.31	-0.16	1.00							
Cash flow yield	-0.08	-0.31	0.33	1.00						
Growth in revenues	0.17	-0.27	-0.11	0.08	1.00					
Return on assets	0.08	0.72	-0.52	-0.47	-0.15	1.00				
Return on equity	0.04	0.47	-0.11	-0.28	-0.32	0.68	1.00			
Cash flow return on total assets	0.22	0.54	-0.51	-0.25	-0.03	0.84	0.53	1.00		
Cash flow return on stockholders' equity	0.10	0.04	0.32	0.21	-0.14	0.12	0.65	0.36	1.00	
Free cash flow	0.33	0.33	-0.50	-0.15	0.03	0.70	0.37	0.90	0.35	1.00
(d) Data for the group three – period 1999–2001– industry leaders.										
Asset turnover	1.00									
Profit margin	-0.51	1.00								
Debt to equity	-0.29	-0.13	1.00							
Cash flow yield	-0.15	-0.28	0.30	1.00						
Growth in revenues	0.09	-0.28	-0.05	0.15	1.00					
Return on assets	0.06	0.73	-0.48	-0.47	-0.22	1.00				
Return on equity	0.02	0.53	-0.04	-0.35	-0.49	0.67	1.00			
Cash flow return on total assets	0.21	0.46	-0.55	-0.21	0.05	0.76	0.31	1.00		
Cash flow return on stockholders' equity	0.05	-0.02	0.45	0.24	-0.19	-0.05	0.50	0.11	1.00	
Free cash flow	0.30	0.24	-0.54	-0.07	0.11	0.58	0.14	0.89	0.16	1.00

**Table 6.** Rank Correlation – Industry Leaders.

Rank Correlation	Asset Turnover	Profit Margin	Debt to Equity	Cash Flow Yield	Growth in Revenues	Return on Assets	Return on Equity	Cash Flow Return on Total Assets	Cash Flow Return on Stockholders' Equity	Free Cash Flow
(a) Data for the period 1997–2001– industry leaders.										
Asset turnover	1.00									
Profit margin	-0.10	1.00								
Debt to equity	0.11	0.06	1.00							
Cash flow yield	-0.04	-0.12	0.40	1.00						
Growth in revenues	-0.18	-0.02	0.05	0.44	1.00					
Return on assets	0.25	0.24	0.28	0.12	-0.07	1.00				
Return on equity	0.12	0.15	-0.12	-0.20	-0.12	-0.09	1.00			
Cash flow return on total assets	0.19	0.03	0.13	-0.11	-0.05	0.34	0.07	1.00		
Cash flow return on stockholders' equity	-0.09	0.00	0.37	0.11	-0.12	0.03	-0.16	-0.04	1.00	
Free cash flow	0.31	-0.13	0.26	0.25	-0.01	0.30	0.08	0.42	0.11	1.00
(b) Data for the group one – period 1997–1999 – Industry leaders.										
Asset turnover	1.00									
Profit margin	0.25	1.00								
Debt to equity	0.31	0.18	1.00							
Cash flow yield	0.11	-0.03	0.33	1.00						
Growth in revenues	0.13	0.01	-0.16	-0.24	1.00					
Return on assets	0.02	-0.14	0.04	0.03	-0.42	1.00				
Return on equity	0.02	-0.02	-0.13	-0.29	-0.15	0.12	1.00			
Cash flow return on total assets	0.31	0.05	0.12	0.09	-0.26	0.31	-0.28	1.00		
Cash flow return on stockholders' equity	0.06	0.01	0.11	-0.11	0.02	0.26	0.11	0.08	1.00	
Free cash flow	0.32	-0.19	-0.01	0.09	-0.20	0.14	0.15	-0.09	-0.12	1.00

*Table 6. (Continued)*

Rank Correlation	Asset Turnover	Profit Margin	Debt to Equity	Cash Flow Yield	Growth in Revenues	Return on Assets	Return on Equity	Cash Flow Return on Total Assets	Cash Flow Return on Stockholders' Equity	Free Cash Flow
(c) Data for the group two – period 1998–2000 – industry leaders.										
Asset turnover	1.00									
Profit margin	0.08	1.00								
Debt to equity	0.35	0.02	1.00							
Cash flow yield	0.07	-0.15	0.26	1.00						
Growth in revenues	-0.28	-0.14	-0.15	-0.10	1.00					
Return on assets	0.34	0.20	0.06	-0.06	0.03	1.00				
Return on equity	0.02	0.18	0.08	-0.07	-0.02	0.16	1.00			
Cash flow return on total assets	0.13	0.04	0.06	0.11	-0.30	0.55	-0.17	1.00		
Cash flow return on stockholders' equity	0.34	-0.21	0.10	0.06	0.12	0.07	-0.03	-0.04	1.00	
Free cash flow	0.35	0.11	-0.10	-0.10	0.03	0.35	0.16	0.23	0.09	1.00
(d) Data for the group three – period 1999–2001– industry leaders.										
Asset turnover	1.00									
Profit margin	0.21	1.00								
Debt to equity	0.35	-0.08	1.00							
Cash flow yield	-0.11	-0.13	0.14	1.00						
Growth in revenues	-0.05	0.02	0.11	0.30	1.00					
Return on assets	0.16	0.25	0.05	0.16	-0.02	1.00				
Return on equity	-0.32	0.12	-0.18	0.31	-0.06	0.02	1.00			
Cash flow return on total assets	0.27	0.17	0.22	-0.03	-0.03	0.34	-0.21	1.00		
Cash flow return on stockholders' equity	0.00	0.16	0.09	0.01	0.11	0.00	-0.01	-0.03	1.00	
Free cash flow	0.32	-0.17	-0.09	0.10	-0.03	0.30	-0.18	0.27	-0.01	1.00

**Table 7.** Comparison of Industry Leaders with Industry Averages.

Industry#	Asset Turnover	Profit Margin	Debt to Equity	Cash Flow Yield	Growth in Revenues	Return on Assets	Return on Equity	Cash Flow Returns on Total Assets	Cash Flow Returns on Stockholders' Equity	Free Cash Flow
(a) Percentage difference between industry leaders and S&P500 companies average ratios values (by industry and all) – years 1997–2001.										
20.00	-31.50	49.51	-305.07	-34.60	-30.16	38.86	96.15	20.56	86.87	4.90
28.00	-6.63	34.39	-20.41	-58.91	61.49	32.08	41.22	20.36	24.60	13.48
35.00	41.02	18.49	-65.26	-49.75	67.83	50.07	49.38	46.88	48.32	36.37
36.00	-23.39	82.33	-1014.05	-14.29	89.11	71.40	56.18	60.54	30.62	55.34
37.00	43.87	43.31	-282.84	-49.56	47.12	61.39	38.71	55.96	14.41	54.41
38.00	3.01	19.01	-35.23	-195.79	61.15	24.11	7.11	24.22	7.55	17.18
53.00	28.46	28.18	-43.27	-71.50	57.84	53.96	47.08	29.52	18.45	25.98
73.00	17.85	53.14	-33.91	-37.87	47.76	50.38	37.77	31.49	15.96	25.16
All	23.61	45.45	-33.76	-163.53	52.01	54.49	44.61	37.27	25.87	30.56
(b) Percentage difference between industry leaders and S&P500 companies average ratios values (by industry and all) – years 1997–1999.										
20.00	-24.97	52.52	-153.75	-43.09	100.95	45.13	59.97	25.22	29.08	10.93
28.00	-3.47	38.54	-65.54	-64.09	63.14	35.98	37.05	22.31	21.87	15.08
35.00	43.06	16.95	-43.16	-37.93	71.10	51.16	52.91	48.09	53.57	39.11
36.00	-18.29	73.56	-328.89	-6.97	46.80	67.09	52.23	60.81	39.67	53.42
37.00	41.36	30.07	-219.77	-2.65	-9.80	52.97	19.71	53.52	14.37	52.42
38.00	1.19	19.95	-38.97	-247.99	61.99	25.34	0.79	23.77	0.92	14.32
53.00	30.61	7.80	-32.54	-35.68	44.71	42.70	33.04	33.79	23.43	28.67
73.00	18.99	37.37	-41.23	-38.05	32.41	44.06	29.15	30.98	13.84	24.89
All	27.45	45.24	-25.14	-167.97	55.91	55.53	43.79	39.33	28.26	32.67

**Table 7.** (Continued)

Industry#	Asset Turnover	Profit Margin	Debt to Equity	Cash Flow Yield	Growth in Revenues	Return on Assets	Return on Equity	Cash Flow Returns on Total Assets	Cash Flow Returns on Stockholders' Equity	Free Cash Flow
(c) Percentage difference between industry leaders and all S&P500 companies average ratios values (by industry and all) – years 1998–2000.										
20.00	-29.47	41.79	-376.05	-13.29	69.40	29.56	67.22	20.12	34.22	-0.31
28.00	-3.06	37.97	-44.59	-69.55	49.93	36.20	47.57	24.87	30.64	18.91
35.00	42.42	8.25	-69.71	-62.46	63.89	45.67	43.56	46.45	49.70	38.06
36.00	-26.99	71.63	-400.30	-4.25	39.35	63.37	44.01	60.58	36.50	54.85
37.00	44.91	33.97	-228.38	-16.01	56.53	55.73	26.97	55.59	16.14	53.98
38.00	4.36	5.81	-19.75	31.66	70.04	12.47	-14.05	21.46	3.93	15.72
53.00	29.20	24.14	-30.97	-49.06	56.58	49.51	42.92	26.12	14.76	26.86
73.00	18.85	39.22	-21.28	-43.36	43.14	43.14	28.71	30.63	16.54	23.49
All	26.78	43.83	-28.08	-175.86	52.66	54.00	43.05	39.68	28.43	33.74
(d) Percentage difference between industry leaders and all S&P500 companies average ratios values (by industry and all) – years 1999–2001.										
20.00	-33.26	40.63	-409.31	-10.87	-51.78	23.43	223.09	19.28	223.23	0.08
28.00	-2.13	39.08	-19.99	-45.32	59.09	37.54	63.75	29.77	55.01	25.36
35.00	41.35	11.46	-91.59	-41.32	71.39	43.45	36.33	44.63	39.14	37.45
36.00	-29.43	86.21	-1559.25	-10.73	99.04	70.97	51.76	59.77	21.32	56.24
37.00	47.30	53.89	-285.79	-95.36	83.19	67.23	53.52	58.09	19.17	56.44
38.00	8.41	9.83	-19.78	8.36	76.48	15.72	-3.77	26.28	13.02	22.59
53.00	28.59	44.29	-37.89	-96.28	69.96	62.92	58.29	25.13	13.25	26.28
73.00	18.29	62.19	-17.94	-40.42	66.48	55.24	44.90	33.21	22.20	28.72
All	25.52	48.99	-34.21	-186.60	53.78	56.27	52.50	40.47	34.45	34.90

## APPENDIX A: RETURN-DRIVEN HIGH PERFORMANCE COMPANIES

### *Frigo Companies*

Company Symbol	SIC Code	Description
ABT	2834	<i>Abbott Laboratories:</i> This company is a leading maker of drugs, nutritionals, and hospital and laboratory products.
ADP	7374	<i>Automatic Data Processing, Inc.:</i> ADP, one of the world's largest independent computing services companies, provides a broad range of data processing services.
AMGN	2836	<i>Amgen Inc.:</i> The world's leading biotech company, Amgen has major treatments for anemia, neutropenia, rheumatoid arthritis, and psoriatic arthritis.
AXP	6199	<i>American Express Company:</i> This company, a leader in travel-related services, is also active in investment services, expense management services, and international banking.
AZN	2834	<i>AstraZeneca PLC:</i> Formed through the April 1999 merger of Zeneca Group PLC of the U.K. and Astra AB of Sweden, AZN ranks among the world's leading drug companies.
BBBY	5700	<i>Bed Bath &amp; Beyond Inc.:</i> BBBY operates a nationwide chain of nearly 400 superstores selling better-quality domestics merchandise and home furnishings at prices below those offered by department stores.
BVF	2834	<i>Biovail Corporation:</i> This company is engaged in formulation, clinical testing, registration and manufacture of drug products using advanced drug delivery technologies.
CTAS	2320	<i>Cintas Corporation:</i> This leader in the corporate identity uniform business also provides ancillary services including entrance mats, sanitation supplies, and first aid products and services.
DELL	3571	<i>Dell Computer Corporation:</i> Dell is the leading direct marketer and one of the world's 10 leading manufacturers of PCs compatible with industry standards established by IBM.

## APPENDIX A (Continued)

Company Symbol	SIC Code	Description
DHR	3823	<i>Danaher Corporation:</i> This company is a leading maker of tools, including Sears Craftsman hand tools, and of process/environmental controls and telecommunications equipment.
ESRX	6411	<i>Express Scripts, Inc.:</i> This company offers prescription benefits, vision care, and disease state management services.
FNM	6111	<i>Fannie Mae: FNM,</i> a U.S. government-sponsored enterprise (GSE), uses mostly borrowed funds to buy a variety of mortgages, thereby creating a secondary market for mortgage lenders.
FRX	2834	<i>Forest Laboratories, Inc.:</i> This company develops and makes branded and generic ethical drug products, sold primarily in the U.S., Puerto Rico, and Western and Eastern Europe.
GE	9997	<i>General Electric Company:</i> This industrial and media behemoth is also one of the world's largest providers of financing and insurance.
GPS	5651	<i>The Gap, Inc.:</i> This specialty apparel retailer operates The Gap Stores, Banana Republic, and Old Navy Clothing Co., offering casual clothing to upper, moderate and value-oriented market segments.
HD	5211	<i>The Home Depot, Inc.:</i> HD operates a chain of more than 1,400 retail warehouse-type stores, selling a wide variety of home improvement products for the do-it-yourself and home remodeling markets.
HDI	3751	<i>Harley-Davidson, Inc.:</i> This leading maker of heavyweight motorcycles also produces a line of motorcycle parts and accessories.
INTC	3674	<i>Intel Corporation:</i> Intel is the world's largest manufacturer of microprocessors, the central processing units of PCs, and also produces other products that enhance PC capabilities.
ITW	3540	<i>Illinois Tool Works Inc.:</i> ITW operates a portfolio of more than 600 industrial and consumer businesses.



## APPENDIX A (Continued)

Company Symbol	SIC Code	Description
JNJ	2834	<i>Johnson &amp; Johnson:</i> The world's largest and most comprehensive health care company, JNJ offers a broad line of drugs, consumer products and other medical and dental items.
JNY	2330	<i>Jones Apparel Group, Inc.:</i> This company is the world's largest manufacturer of women's apparel, footwear and accessories, with brands such as Jones New York, Nine West, Rena Rowan, and Evan-Picone.
KO	2080	<i>The Coca-Cola Company:</i> Coca-Cola is the world's largest soft-drink company and has a sizable fruit juice business. Its bottling interests include a 40% stake in NYSE-listed Coca-Cola Enterprises.
LLY	2834	<i>Eli Lilly and Company:</i> This major worldwide maker of prescription drugs produces Prozac antidepressant, Zyprexa antipsychotic, diabetic care items, antibiotics, and animal health products.
MDT	3845	<i>Medtronic, Inc.:</i> This global medical device manufacturer has leadership positions in the pacemaker, defibrillator, orthopedic, diabetes management and other medical markets.
MRK	2834	<i>Merck &amp; Co., Inc.:</i> Merck is one of the world's largest prescription pharmaceuticals concerns. The company plans to spin off its Medco PBM subsidiary.
MSFT	7372	<i>Microsoft Corporation:</i> Microsoft, the world's largest software company, develops PC software, including the Windows operating system and Office application suite.
MXIM	3674	<i>Maxim Integrated Products, Inc.:</i> This company is a worldwide leader in design, development and manufacture of linear and mixed-signal integrated circuits.
OMC	7311	<i>Omnicom Group Inc.:</i> OMC owns the DDB Worldwide, BBDO Worldwide and TBWA Worldwide advertising agency networks; it also owns more than 100 marketing and specialty services firms.

## APPENDIX A (Continued)

Company Symbol	SIC Code	Description
ORCL	7372	<i>Oracle Corporation:</i> This company is the world's largest supplier of information management software.
PAYX	8721	<i>Paychex, Inc:</i> This company provides computerized payroll accounting services to small and medium-size concerns throughout the U.S.
PFE	2834	<i>Pfizer Inc.:</i> PFE, the world's largest drug company, with about 11% of the global market, acquired Pharmacia in April 2003, in exchange for 1.8 billion PFE shares.
PII	3790	<i>Polaris Industries Inc:</i> This company manufactures snowmobiles, all-terrain vehicles, personal watercraft, motorcycles and related accessories for recreational and/or utility use.
RHI	7363	<i>Robert Half International Inc.:</i> RHI is the world's largest specialized provider of temporary and permanent personnel in the fields of accounting and finance
SGP	2834	<i>Schering-Plough Corporation:</i> This company is a leading producer of prescription and OTC pharmaceuticals and has important interests in sun care, animal health, and foot care products.
SYK	3842	<i>Stryker Corporation:</i> Stryker makes specialty surgical and medical products such as orthopedic implants, endoscopic items and hospital beds, and operates a chain of physical therapy clinics.
SY Y	5140	<i>Sysco Corporation:</i> Sysco is the largest U.S. marketer and distributor of foodservice products, serving about 415,000 customers.
WMT	5331	<i>Wal-Mart Stores, Inc.:</i> Wal-Mart is the largest retailer in North America, operating a chain of discount department stores, wholesale clubs and combination discount stores and supermarkets.
WYE	2834	<i>Wyeth:</i> This company (formerly American Home Products Corp.) is a leading maker of prescription drugs and over-the-counter medications.

**APPENDIX B***Formulas for Ratio Computations*

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**Performance Drivers**

Asset turnover	Net sales/average total assets
Profit margin	Net Income/Net sales
Debt to equity	(Total assets – stockholders' equity)/ stockholders' equity
Cash flow yield	Cash flows from operating activities/net income (In the analysis, if either numerator or denominator of cash flow yield were negative the ratio was excluded.)

**Valuation performance measures**

Growth in revenues	Change in net sales/net sales
Return on assets	Net Income/average total assets
Return on equity	Net income/average stockholders' equity
Cash flow returns	Cash flows from operating activities/average total assets
	Cash flows from operating activities/average stockholders' equity
Free cash flow	Cash flows from operating activities – Dividends + sales of Capital assets – purchases of capital assets (In the analysis, to adjust for size of company, free cash flow was divided by average total assets.)

**Operating asset and financing ratios**

Receivables turnover	Net sales/Average Accounts Receivable
Average days' uncollected	365/Receivables turnover
Inventory turnover	Cost of sales/Average Accounts Inventory
Average days' inventory on hand	365/Inventory turnover
Payables turnover	(Cost of sales + or – change in inventory)/average accounts payable
Average days' payable	365/Payables turnover
Financing period	Average days' dales uncollected + Average days' inventory on hand – Average days' payable

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## APPENDIX C: INDUSTRY SAMPLES

2-SIC Codes	Include Industries	<i>N</i> of Companies in s&p 5000	<i>N</i> of Companies in Industry Leaders
20	Food and kindred products, can, frozn presrv fruit & veg, grain mill products, sugar & confectionery prods, fats and oils, beverages, malt beverages, distilled and blended liquor, misc food preps, kindred pds	15	1
26	Paperboard mills, paper mills, paper and allied products, convert paper, paprbrd, ex boxes	10	1
28	Chemicals & allied prods, indl inorganic chemicals, plastic matl, synthetic resin, plastics, resins, elastomers, pharmaceutical preparations, biological pds, ex diagnostics, soap, detergent, toilet preps, special clean, polish preps, perfume, cosmetic, toilet prep paints, varnishes, lacquers, industrial organic chemicals, Misc chemical products,	32	11
33	Blast furnaces & steel works, steel works & blast furnaces, prim smelt, refin nonfer metl, rolling & draw nonfer metal, drawng, insulatng nonfer wire	10	1
34	Metal cans, cutlery, hand tools, gen hrdwr, heating eq, plumbing fixture, misc fabricated metal prods	7	1
35	Engines and turbines, farm machinery and equipment, construction machinery & eq, oil & gas field machy, equip, metalworking machinery & eq, special industry machy, nec, general industrial mach & eq, pumps and pumping equipment, general indl mach & eq, nec, computer & office equipment, electronic computers, computer storage devices, computer communication equip, computer peripheral eq, nec, office machines, nec,	20	3

36	Electr, oth elec eq, ex cmp, electrical incl apparatus, household appliances, electric lighting, wiring eq, tele & telegraph apparatus, radio, tv broadcast, comm eq, semiconductor, related device,	17	2
37	Motor vehicles & car bodies, motor vehicle part, accessory, aircraft, aircraft engine, engine parts, aircraft parts, aux eq, nec, ship & boat bldg & repairing, motorcycles, bicycles & parts, guided missiles & space vehc, misc transportation equip	16	2
38	Srch, det, nav, guid, aero sys, industrial measurement instr, elec meas & test instruments, lab analytical instruments, surgical, med instr, apparatus, ortho, prosth, surg appl, suply, electromedical apparatus, photographic equip & suppl	17	3
53	Department stores, variety stores, misc general mdse stores	9	1
73	Advertising agencies, help supply services, cmp programming, data process, prepackaged software, cmp integrated sys design, cmp processing, data prep svc	14	5

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**PART III:  
DEVELOPING IMPROVED  
PERFORMANCE MEASURES**





# SUPPLY CHAIN PERFORMANCE MEASUREMENT: A TRANSACTION COST THEORY – AND VALUE-BASED APPROACH

Péter Horváth and Klaus Moeller

## ABSTRACT

*The network management within supply chains requires a systematic cost oriented tool to measure and manage the transactions between the partners. Therefore a supply chain performance measurement was developed, that considers all cost of selection, acquisition, use, administration, maintenance and disposal. It can be used for determining what a particular purchase really cost the organization – including obvious issues (transportation, duties etc.) as well as more subtle issues (e.g. process changes due to quality deviations). Therefore a combination of cost-based and value-based approaches was used. The system was put into action in an international supply chain within the manufacturing industry to prove its practical use.*

## 1. INTRODUCTION

In an environment of fragmentation and split-ups of industry structures, an effective and efficient management of decentralized companies in supply chains

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**Performance Measurement and Management Control: Superior Organizational Performance**

**Studies in Managerial and Financial Accounting, Volume 14, 155–184**

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ISSN: 1479-3512/doi:10.1016/S1479-3512(04)14007-0

is becoming more and more important. Additional value added within vertical co-operations can only be generated if the supply chain management is based on an adequate performance measurement.

In this paper, a supply chain performance measurement is described, which considers all costs of selection, acquisition, use, administration, maintenance and disposal of a specific item. Instead of simply basing a buying decision or a supplier relationship on price, the method suggests a much broader focus. In order to realize that, transaction cost economics is used. Thus the practicability of transaction cost theory was improved in the first part of the performance measurement model by an operationalization of these transaction costs. In order to show its practicability, the model was applied in an empirical test at a mechanical manufacturer for calculating the transaction costs of an international buyer-supplier relationship. The result is a theory-based approach for measuring the coordination efficiency within a framework of transaction cost accounting. This is a prerequisite to achieve cost-efficient outputs in business networks. The second part of the supply chain performance measurement model enlarges the view from the internal cost oriented perspective to a supply chain/network oriented overall perspective based on a value-based view. The two parts can be combined to a comprehensive supply chain performance measurement model which covers value/cost as well as tangible/intangible assets and financial/non-financial measures.

The following sections will introduce the developments that lead to the formation of supply chain networks, to their structural characteristics and to the performance measurement they need. Afterwards the performance measurement model on the basis of transaction costs and a value-based approach is described and showed in practical use. The paper closes with an outlook on further developments and research.

## **2. INTERORGANIZATIONAL MANAGEMENT**

### *2.1. Collaborative Business – the Forming of Networks*

The cognition and research subject of Business Administration is changing. The paradigm that started with *Gutenberg*, who named his professorial thesis “The Company as the Subject of Business Theory,” is moving towards business networks as subject of business theory. This is observable in almost every article – at least indirectly by the use of phrases like globalization, increasing competition, concentration on core competencies, increasing importance of IT

etc. Furthermore, business models based on networks become more and more successful.

This change is also reflected in the scientific community, where business networks are becoming a main topic of scientific research and discussions. This transition towards co-operations and coordination results in a change of the cost structure – away from production costs to transaction costs. The accumulation of transactional costs is becoming more and more important for an effective control of internal activities as well as activities between companies. Based on the assumption that business networks will be the subject of tomorrow's business theory, the following is the major challenge for future research: The costs and benefits of transactions between companies have to be measured in order to achieve an efficient output of individual companies and business networks. In addition to that also the value created by the network itself and the participants have to be analyzed.

## 2.2. Structural Aspects of Supply Chain Networks

Supply chain networks consist of independent enterprises which are working together to exploit a particular business opportunity by offering a product jointly to the market, based on common interests and partnership-oriented business relations (Fig. 1).

Its objective is the coordination of logistical activities across the entire network in order to create a value for the customer and at the same time improving the profitability of each network participant. Usually it has no predominating partner or focal enterprise, which lead the network. These types of networks rather exist on basis of mutual trust, respect, openness and information-sharing. Therefore these constituting factors of such networks need to be monitored, evaluated and managed, since they are crucial for the future existence and success of those networks. They are one important reasons, why measuring and managing costs alone is not sufficient for the management of such a network. For being able to handle the arising complexity of such networks that exist on mutual trust basis, information management is a key issue. The necessity of sharing information leads automatically to a performance measurement.

In order to understand the structures of supply chain networks we need to recall the imperatives that lead to the forming of such networks.

*Globalization of the marketplace* – Today materials and components are sourced all over the world and global companies sell their outcomes globally as well. The practice of world-wide co-operation builds networks and calls for adequate tools of coordination and evaluation.

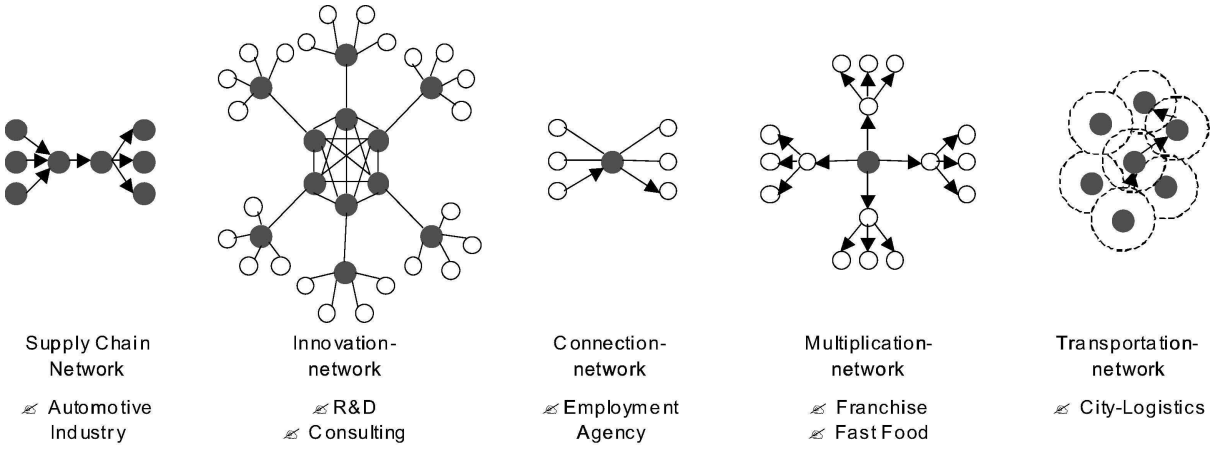


Fig. 1. Functional Typology of Enterprise Networks (Otto, 2002, p. 226).

*Information and communication technology* – IT can be viewed as the enabler of global network operations: Only through the existence of information networks, global co-operation becomes feasible and affordable. Networks for information also need measures for evaluation.

*Customer service orientation* – The customer of today expects products that fits to his or her needs. On the other hand, no company can produce any kind of variety at low costs within its own enterprise. Networks offer the opportunity for unique combinations and to make variety affordable.

*Limited availability of resources* – Manufacturing is only one side of the medal. Materials are becoming limited in its availability and waste products can no longer be treated with a “throw-away” mentality. Reverse logistics become more and more important as well as material cycles and networks in which waste materials are input materials for the next manufacturing process.

*Alliances and partnerships* – The myriads of acquisitions and mergers in the past have proven the need for co-operation and the creation of synergies. Home markets no longer pay back the cost for research and development alone. However, mergers very often failed: They were expensive because of its long-term structural changes and very often only helped to cover a few strategic imperatives while leaving others out of focus. Networks on the other hand are much more flexible and allow for unique configurations, covering the strategic needs of specific operations and processes. And the concentration on core competencies of the last decade further leads to an increased need for co-operation among companies.

Another important aspect are the consequences of various *dynamics and uncertainties* which can occur frequently in logistics networks. Information delays and false expectations lead to the Bullwhip-Effect. Such dynamics need to be monitored and managed by an adequate performance measurement and management system.

### 2.3. Performance Measurement in Supply Chain Networks

For corporate management, Performance Measurement has become a viable subsystem of the managerial control system. In the same way it is key to the control of supply chain networks. The measurement of performance is a part of the information supply system of the managerial control system. When extended to Performance Management, it also becomes part of the control system itself. Any control system or subsystem has to be viewed from three aspects: The functional view (“what,”) the institutional view (“who”) and the instrumental view (“how”).

Performance measurement in supply chains can have various duties, e.g.: supply information for testing the content of supply chain management strategies, continuous improvement, supply chain co-operation intensity, coordination and transformability (flexibility, response times). In general performance measurement delivers any information which helps to align the network operations and strategies towards the formal network targets of generating sustainable profits and value added for all participants and the network itself.

Regarding the institutional view, we need to clarify who builds and operates as well as coordinates the performance measurement system in a supply chain network. It is obvious that in a mutual trust organization, a kind of steering committee must exist to cope with the coordination workload arising. This committee will logically be the origin for a performance measurement system and its system administrator. Hieber (2002, p. 79) describes seven principles of performance measurement in supply chains:

- integration in the management of each network partner and network-orientation – that means evaluation of local (partner) and global (network) performance;
- collaborative approach and partnership-orientation: performance measurement must help all partners to excel and win through the network and it must evaluate co-operation as well (e.g. the soft factors of trust, information-flow);
- business process orientation: network performance is not a sum of functional results but the result at the end of a process;
- hierarchical approach – multilevel orientation: PM must link small operational units with overall network objectives and strategies across different organizational levels;
- systematic approach – model orientation: PM can only be effective if conducted in an integrating framework. Single indicators without connection and alignment will not be able to steer the network on the performance trajectory towards the goals set by the network organization.

Last but not least the system needs to build itself: it has to decide about the instrumental components, the methods used and coupled in the performance measurement system. In a balanced approach of financial and non-financial measurement tools is, consensus, in today's performance measurement, theory. Mere financial information mostly is lagging information, which only shows what has or has not been achieved, but does not indicate how, and if, future performance will be achieved. Therefore also non-financial measures need to be employed, which very often serve as leading indicators and show if the network is on the right track. The connection of those lead and lag indicators is key to a functioning performance measurement system. Performance

measurement literature shows a wide collection of different performance measurement models and tools. In the following part, we focus on the instruments of value-based and transaction-cost-based performance measurement (Fig. 2).

Key requirements on performance measurement for supply chain network	SCOR	BSC	VDI Standards	SCM Software	EFQM -Model	ENAP- Framework
Network-oriented <ul style="list-style-type: none"> <li>• Supporting all relevant partners</li> <li>• Integrated vs. non integrated elements</li> <li>• Focusing on an end to end vie (big picture)</li> </ul>	****	*	*	***	***	*
Partnership-oriented <ul style="list-style-type: none"> <li>• Include explicitly collaborative items</li> <li>• Adaptability to the extent of partnership</li> <li>• Stresses win-win-situation</li> </ul>	*	***	*	*	****	*
Balanced oriented <ul style="list-style-type: none"> <li>• Financial vs. non-financial elements</li> <li>• Past vs. future oriented</li> <li>• International vs. external view</li> </ul>	*****	*****	**	**	*****	*****
Business process-oriented <ul style="list-style-type: none"> <li>• Integral logistics orientation</li> <li>• Supporting logistics planning and execution</li> <li>• Processes</li> <li>• Providing logistics figures</li> </ul>	*****	**	*****	***	**	*****
Multi-level-oriented <ul style="list-style-type: none"> <li>• Supporting hierarchical structure</li> <li>• Strategic, tactical and operational elements</li> <li>• Top-down methodology</li> <li>• Cause-and-effect relationships</li> </ul>	****	*****	**	****	*	**
Model-oriented <ul style="list-style-type: none"> <li>• Including specific guidelines (e.g. self assessment, implementation)</li> <li>• Including definitions and instructions</li> </ul>	*****	***	***	****	*****	****
Scope-oriented <ul style="list-style-type: none"> <li>• Adjust to the needs of logistics network objectives</li> <li>• Limited to specific number of generic performance indicators</li> </ul>	*****	*****	*****	**	***	****
Entirely supported	*****					
To a very large extend	****					
Partly supported	***					
To a very small extent	**					
None identified	*					

Fig. 2. Comparison of Different Approaches and Evaluation of Appropriateness (Hieber, 2002, p. 95).

### 3. APPROACHES FOR MEASURING SUPPLY CHAIN PERFORMANCE

#### 3.1. *Value-Based Approach*

The spreading of the value-based management approach began in the United States during the 1980s. An important reason for this development is the fact that American corporations, at that time, were permanently threatened by hostile take-overs. That is why they tried to protect themselves through a value-based management against these take-overs. The approach stated that one should manage both the enterprise and its divisions in a way that potential buyers – namely corporate raiders – were not able to gain any additional value through restructuring the corporation.

In Europe since the early 1990s as well, the approach and the real-life implementation of a value-based management have been in the focus of managerial and scientific discussion. One reason for this development might be the changes in, and the liberalisation of, capital markets. This, however, has led to an internationalisation of the shareholder structure, as well as an increasing pressure by foreign investors.

Not only for corporations but also for enterprises with legal constitutions, value based management is playing an increasingly important role, since in private and limited liability companies assuring the long-term going concern and increase of property are also seen as key topics. Management must extent its understanding of strategy towards an active value-based management approach. Thus, this shift calls for a change in views: from a managerial orientation towards a shareholder- or owner-oriented view.

There are various methods for measuring increases in value, but all of them are based on the main idea of Rappaport's (1986) shareholder value approach:

- Shareholder Value approach by Rappaport.
- Discounted Cash-flow method by Copeland/Koller/Murrin.
- CFROI-method of the Boston Consulting Group.
- EVA-/MVA-valuation method of Stern/Stewart.

The companies which are linked in a supply chain network regularly will have the increase in firm value as one objective of their strategic target system. Supply chain management has to pay attention to this fact. One can only expect an effective and efficient co-operation in such networks, if it is possible to communicate to potential partners (who are willing to contribute to the market-orientation or completion of the resource basis) that their participation is going to increase



their invested values. That is why systems for measuring value added within and through supply chain networks need to be developed. This chain of arguments is lined up under the premise of a partnership strategy. Problems which can arise out of information asymmetries or opportunist behaviour (New Institutional Economics) will remain excluded from our discussion for the moment.

### *3.2. Cost-Based Approach*

While the value-based view mainly echoes the strategic and long-term potentials for the success of a network or a single network partner, the cost-based view focuses on the internal, processional and organizational aspects of participating in a supply chain network. It analyses the effects of taking part in a network organization on the individual firm within the network and gives valuable signals where processes or structures need to be improved in order to make the network more efficient and fluent. It also serves as a target-oriented control tool, helping to secure the achievement of target profits within the single network firm. Nevertheless, regarding the strategic issues, cost-based information can also help answering questions of organizational capabilities when examining a potential network entry, e.g. “Will the company be able to handle the network-related processes in an efficient way or might it not be able to cope with the expectations from the network and therefore be a too expensive partner (not only for the services or goods transmitted, but also for the way transactions are done)?”

Lorenzoni et al. (1999, p. 5 ff.) describe two major cost-based approaches, which seem to be contrary but in fact are complementary: “Typically, however, make or buy decisions are framed in managerial accounting from a short run, differential cost perspective. In contrast, the strategic management literature frames such decisions in terms of transaction costs. This latter approach really includes very little accounting, while the former includes very little strategy.” They further state that they are not alternative viewpoints but in fact two lenses of the same objective, which both help to obtain an adequate view of the situation.

In the following section we will focus on transaction costs for the following reasons: Since the managerial accounting approach has been based on quantitative and lagging measures leaving out the qualitative (lead indicator) aspects, it becomes difficult to get the necessary connection to the value based approach, which focuses on value drivers that are often based on qualitative foundations – the value-based model transforms qualitative performance data to quantitative data. In order to analyse the quantitative as well as the qualitative performance structure of a supply chain, the cost-based approach is based on transaction cost economics.

The outcomes of that model enable the participating organizations to focus their improvement efforts on the most valuable processes. And finally, the theoretical background of a principal-agent-situation also reflects the implicit attitudes of the organizations and allows taking measures regarding the design of the co-operation. We will then, later, show how a combination of value and cost-based approaches can build a valuable and easy to use performance measurement model for supply chain networks.

## **4. STRUCTURE OF THE SUPPLY CHAIN PERFORMANCE MEASUREMENT MODEL**

### *4.1. Grounded Theory Research Methodology*

The most important task of scientific methodology is to connect various research methods, so called “triangulation.” Of all the alternative research paradigms, (innovative) action research and qualitative empirical research are used more and more. One of these is the pragmatic research approach of Grounded Theory which has been introduced in 1967 (Glaser & Strauss, 1998; Strauss & Corbin, 1996) and can be called the classical qualitative method for discovering theories. The main goal of this method is not to test hypotheses or theories but to discover or modify them systematically based on documents, observations, interviews, or existing theories.

Therefore the advantage of the “Grounded Theory” is the empirical discovery and structuring of facts that so far have been unknown to research. It is based on an extensive data gathering, ongoing analyzes, as well as the feed-back and interaction between these two elements. Thus, the results of the previous research determine the theory-based choice of necessary further data and especially case studies. Hereby it supports the consolidation and ongoing interpretation of the gathered information. Such an empirical as well as theoretical way of research, which is performed at the same time, is one of the basic elements of the Grounded Theory. This facilitates not only a faster research process but also a qualitatively improved one (Fig. 3).

### *4.2. Cost-Based Supply Chain Evaluation*

#### *4.2.1. Literature Review*

*4.2.1.1. Determinant oriented research.* According to Picot et al. (1998, p. 41) the model to systematize the determinants of transaction costs that Williamson (1975)

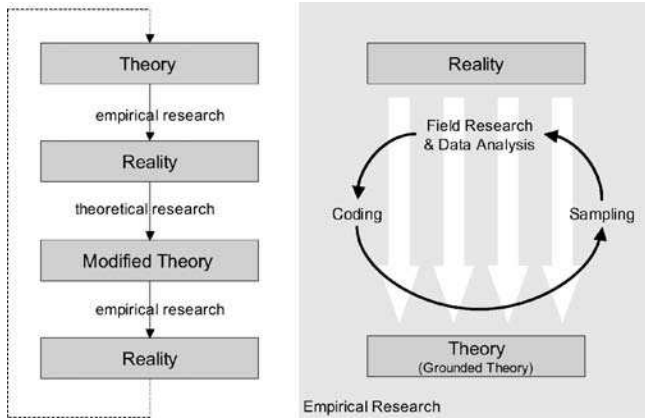


Fig. 3. Triadic-Circular Process of the Grounded Theory – Delimited from the Theory Formation of Quantitative Research.

once developed (“Organizational Failure Framework,”) meanwhile has found a broad acceptance in the scientific community. It contains various terms within the categories human factors, environmental factors, as well as transaction related determinants. These terms determine the transaction costs of certain institutional arrangements.

An essential part is the research into determinants, the relations among them, and their relation to transaction costs. The bases of these determinant related explanatory and configurational approaches are either a large quantity of empirical researches or qualitative logical checks (Böhme, 1999, pp. 119–125; Krickx, 2000, p. 316; Picot & Franck, 1993, p. 192; Rindfleisch & Heide, 1997, pp. 33–39; Röbl, 1994, p. 302; Shelanski & Klein, 1995, p. 338). Therefore single determinants within model based hypotheses are codified and with the help of rating scores operationalized. This procedure is limited to certain parts of the reality. Thus the reduction of reality has only little expressiveness for a future oriented configuration of relationships. Therefore, the goal of these surveys is exclusively the ex post checking of explanatory hypotheses regarding the influence of determinants on the level of transaction costs. Thus, the validity of these proofs is limited to the samples. Furthermore, the empirical researches have to confine themselves to a limited number of determinants and some scenarios without including all transaction cost categories. Meanwhile in the surveys regarding vertical integration all determinants have been included however there always has been a concentration on a maximum of four dependent or independent variables (Beck, 1998, p. 112; Bucklin & Sengupta, 1993, p. 32; Buvik & John, 2000, p. 56;

Joshi & Stump, 1999, p. 334; Nesheim, 2001, p. 222; Nootboom, 1993, p. 444; Nootboom et al., 1997, p. 985; Stölzle, 1999, p. 32; Tsang, 2000, p. 215).

*4.2.1.2. Transaction cost accounting research.* Albach (1988, p. 1143), Ballwieser (1991, p. 109), and Weber (1993, p. 19) as well as many other scientists, are demanding transaction cost accounting as part of the company cost accounting system for a long time. This new accounting system is supposed to reflect the value consumption of transactions and cooperations as an addition to the traditional cost accounting system. Hereby it should allow a precise analysis and control of the cooperation with other business entities.

According to the concepts of Albach (1988, p. 1161), Pampel (1993, p. 196), and Matje (1996, p. 41) this new system should follow the traditional company cost accounting system and thus transaction costs would be reduced to its cost comprehension. Transactional categories of costs would be calculated by systematically combining cost categories that usually are used for bookkeeping. The link from this kind of transaction cost accounting to theory-based statements is not obvious because the relation to determinants is missing. Alternatively, Hohberger (2001) developed a closed system of transactional cost accounting by adding twelve transactional cost categories to the company cost accounting scheme. This change of the traditional cost accounting system not only would cause many problems but also is concentrated on operative aspects of the implementation.

All approaches so far are limited to a mere new sorting of already known and calculated costs without strong relations to theory assumptions.

#### *4.2.2. Multi Dimensional Measurement Framework*

*4.2.2.1. Formal structure. Hierarchy.* The processes of establishing, maintaining, and dismantling cooperations cause costs that cannot be assigned to a single transaction but only to the cooperation as a whole (e.g. contracting or building up resources that are specific for this cooperation). The evaluation of a buyer-supplier relationship not only has to consider these processes but also the processes that are necessary to execute single transactions. This can result in problematic interdependencies whenever the execution of processes of one level influences the other level. Thus, an unambiguous distinction of costs by their reference level is necessary. The measurement model distinguishes two levels: On the one hand there are activities to establish a relationship and acquire (relationship) potentials. On the other hand this establishment of a relationship builds the framework for single activities that consist of an exchange of money and goods or services. These activities are the operational completion of single transactions. Thus, a vertical cooperation consists of a buyer-supplier relationship and numerous single transactions.

*Dimensions.* Based on the publications of Williamson, various systematics of transaction costs have been developed to improve the evaluation of single transactions. These systematics are unrelated, non-hierarchical, and overlap with each other. The choice of the underlying perspective has an extensive influence on the subject – and therefore also on the level of transaction costs. This is not acceptable for business applications. Consequently, in our measurement model an integrated approach has been chosen, which connects various perspectives. These are the transactional stages, the point of origin (inside or outside the company), the determinants and the transaction itself. The systematization by the point of origin neither is very difficult, nor does it give relevant insights into the transaction cost structure. Thus, this systematization will not be used. Therefore, three dimensions exist that each in itself contains all transaction costs. Besides the identity of the perspectives regarding the level of costs, these perspectives allow the most extensive analyses regarding the content of the transaction costs (Fig. 4).

*Data Sources.* In general, an operationalization is equal to making facts measurable. According to Friedrichs (1990, p. 78) and Schnell et al. (1999, p. 10), the theoretical constructions have to be translated into concrete measurable and observable elements so that the terms used for their description can be understood unambiguously. For an measurement and quantification of transaction costs two forms are suggested:

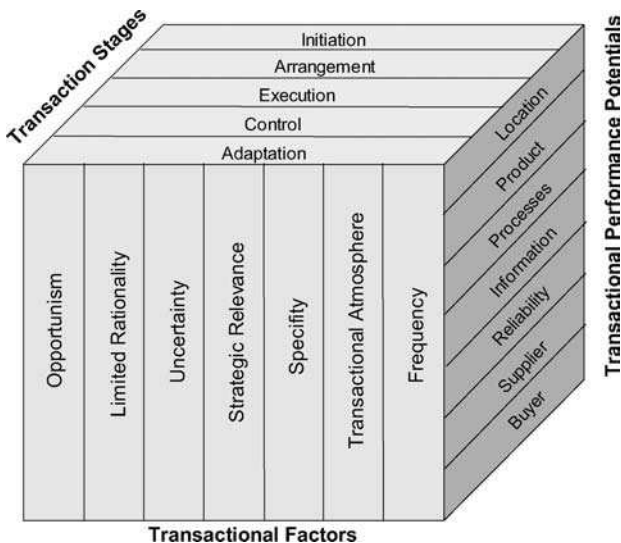


Fig. 4. Systematics of Transaction Costs by Transactional Stages, Transactional Factors, and Transactional Performance Potentials.

- Certain already by the traditional cost accounting recorded transaction costs can be measured directly. They merely have to be recorded and if need be differentiated. A full cost approach should be used because of the strategic underlying question or decision. The temporal systematics of transaction costs is very similar to a process-oriented cost accounting. Companies usually have detailed calculation and recording systems like work schedules and machine hours for functions and departments that can trace their costs directly. For indirect functions and overheads the German version of activity-based costing (process-based costing) can be used (Horváth, 2001, p. 532; Horváth & Mayer, 1989, p. 214; Mayer, 1998).
- Especially the transactional factors cannot be measured directly. Therefore, Laatz (1993, p. 31) suggests that the influencing factors are measured by closed questions in combination with a multi-item measurement. Afterwards a weighted index is calculated. The author uses the five grade Likert-scale with the codes 1 = very low transaction costs to 5 = very high transaction costs.

A hierarchical distinction of the transaction costs of different levels results in the detailed terms cost systematization, category, sub category, and ascertainment (Fig. 5).

The measurement of transaction costs has to support decisions and thus requires a managerial cost understanding out of the perspective of one company. In contrast to that transaction cost theory has an underlying cost understanding that is based on overall total costs. Thus, the meaning of the term transaction cost has to be reduced to the costs of one partner within a cooperation because only out of this perspective the success of a cooperation can be measured. Therefore, for the use in this paper the success of the buyer-supplier relationship will be measured out of the buyer's perspective (Pausenberger & Nöcker, 2000, p. 406). Hence only the costs that occur within the buying company are relevant for business decisions.

*4.2.2.2. Content structure. Transactional Stages.* Transactions have a temporal dimension. According to authors like Williamson (1990, p. 168), Picot (1991, p. 344) and Richter and Bindseil (1995, p. 136) it is essential to consider these different stages to completely record the occurring transaction costs. The measurement model uses the widely used system of Picot (1991, p. 344), who distinguishes the stages initiation, arrangement, execution, control, and adaptation. The time periods of the company cost accounting system cannot be used because transactions are not in accord with the accounting periods. Thus, it is preferred to use the real stages as cost subjects. The hierarchy within the transactional stages are called stages/business processes (category), sub-processes (sub category) and activities (ascertainment), using the terms of the German process-based costing.

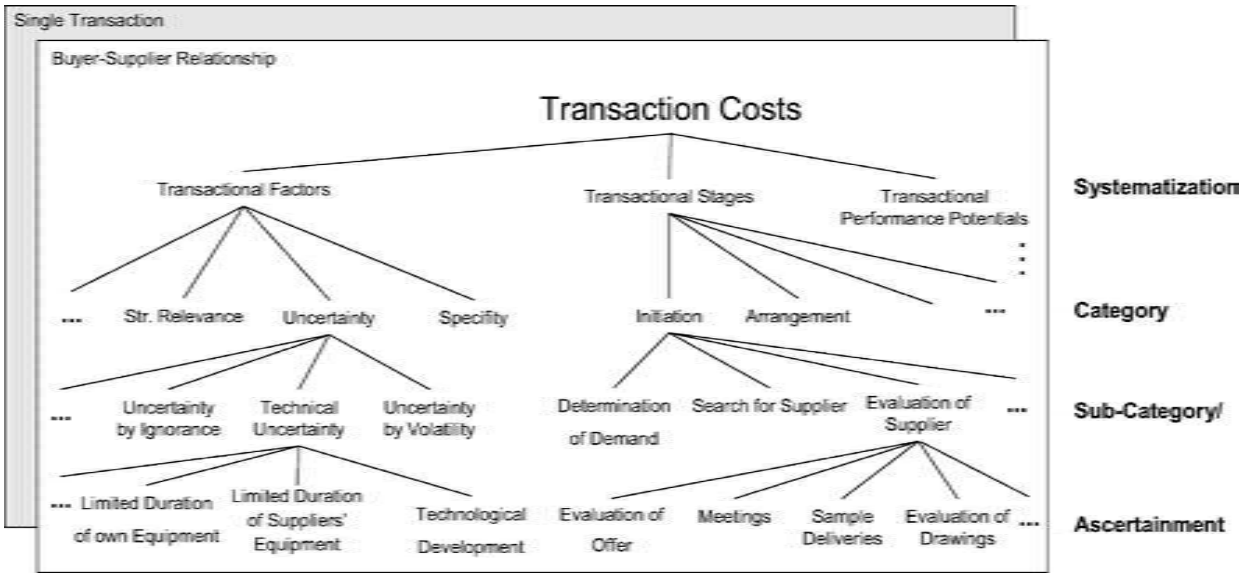


Fig. 5. Hierarchical Differentiation of the Transaction Costs Within the Operationalization Model.

*Transactional Factors.* The relative level of transaction costs is determined by the relative level of their influencing determinants (uncertainty, specificity, strategic relevance, transactional atmosphere, frequency, opportunism, and limited rationality). As we refer to the determinants but not completely reflect all these aspects in the model we named this category “transactional factors.”

The level of transaction costs is usually based on comparisons (e.g. “transactions with a higher level of determinant X *ceteris paribus* lead to more transaction costs than those with a lower level of determinant X”). So far transaction costs have not been formulated as dependent variable of a mathematical function. Therefore, the comparisons can help with a qualitative estimation of the level of transaction costs in alternative organizational arrangements or between alternative business partners. Within the measurement model the transactional factors are primarily used for relative levels of transaction costs. The results of this procedure are qualitative but nonetheless support the comparison of two alternatives as well as statements regarding specific configurations of alternatives. The transaction costs that have monetarily been calculated in the framework of transactional stages are assigned to transactional factors. The costs are identical however looked at from different perspectives. Because of this, statements can be made about the configuration of determinants and behavior within the cooperation. This is an immense extension of the application of transaction cost theory because statements about determinants can directly be linked to certain transaction cost categories and therefore are related to specific levels of transaction costs. The statements of transaction cost theory are used directly for concrete applications within the framework of a cost-oriented relationship configuration.

The following two tables show the measurement of opportunism and uncertainty as examples. The systematics of transaction costs that are caused by opportunism is based on the cost categories of the principal-agency-theory (see Table 1).

Krickx (2000, p. 317) developed an approach which was how to operationalize uncertainty. The definition and operationalization of this approach is most comprehensive and easy to handle because it is based on the causes of uncertainty in contrast to multi-dimensional concepts that focus on the effects of uncertainty. Furthermore, other causes of uncertainty that occur in specific situations can easily be added. The factors that are shown in Table 2 are considered separately in the model.

*Transactional Performance Potentials.* While the systematics by stages and transactional factors are founded in the theory of the model, the systematics by transactional performance potentials is intended to support business decisions. The systematics by the performance (of the suppliers) has the following goal: the occurring transaction costs have to be assigned to characteristics of transactional performances that can easily be observed. This cost assignment



**Table 1.** Operationalization of Opportunism Costs by Means of the Systematology of Agency Costs.

	Type of Problem Solving	Measure
Hidden characteristics	Elimination of the information asymmetry by signaling Elimination of the information asymmetry by screening Bringing interests into line	General communication procedures/events of supplier Ex ante supplier audit – information about relevant quality characteristics and performance of supplier (Heide & John, 1990, p. 25) Image of partner to the contract Differentiated cooperation contract
Hidden action/hidden information	Monitoring	Quality check Check of invoices
Hidden intention	Securities	Penalty for breach of contract
Remaining loss of welfare	Missing parts caused by delayed deliveries that are not subject to penalties for breaches of contracts Complaints of own customers because of defective supplier parts	Production disturbances caused by missing parts Rework Further consequences of defective parts Complaints

supports performance measurement, performance comparison, and afterwards performance improvement. Direct measures can be identified with the particular aim to reduce specific parts of the transaction costs. The practical assignment problem has been solved by pragmatic rules.

**Table 2.** Operationalization of Uncertainty Costs by Means of Factors that Cause Uncertainty.

Characteristic	Explanation
Technological uncertainty	Uncertainty that results from the limited duration of technical equipment and the general technological development.
Performance ambiguity	Difficulties to control the performance of suppliers ex post.
Demand variability/volatility	Quantitative and qualitative demand variability and volatility.
Unpredictability	Developments of the industrial environment that are difficult to anticipate and result in uncertainty.
Complexity	Multitude and variety of system elements.
Ignorance	Inability or reluctance of decision makers to recognize interrelations or developments.

Posselt and Grensler (2000, p. 182) show an approach as to how to assign transaction costs that has been developed for the performance of convenience shops. Following their approach the transactional performance potentials are: location, product, processes, information, reliability, supplier and buyer.

### *4.3. Empirical Case Study*

#### *4.3.1. Transaction Cost Accounting Results*

The measurement model has been applied at a manufacturer for powertrain systems and an international buyer-supplier relationship at the example of the electric motors supply by a Japanese supplier (Möller, 2002, p. 185). The data is based on quantitative company data as well as interviews. According to the model two perspectives have been chosen: the level of the overall buyer-supplier relationship (5 year duration and overall 5000 electric motors) and the level of the single transactions (250 electric motors per delivery).

The assignment of transaction costs to the model has been successful for all cost categories – 56% of the items have been monetarily quantified. Out of these, 39% are based on information out of the process-based costing system, 13% are individually calculated costs, and 4% are based on invoices. The remaining 44% of the cost categories have been operationalized by questions (Fig. 4). The following sections discuss only the aggregated results of the 327 data items that have been gathered (Fig. 6).

The transactional cost accounting has shown that the overall cooperative relationship caused costs of € 186,437 respectively € 37.29 per electric motor within a time period of 5 years. The transaction costs have a share of 15.7% of the total cost volume of the transaction – the purchase price of € 237 reflects their importance. Out of the transaction costs three quarters are caused by single transactions (€ 26.48) while one quarter is caused by the re-allocation of the buyer-supplier relationship costs (€ 10.81) to the parts purchased.

To evaluate which of the two levels of transaction costs has more potential for cost cuts, experience and data for comparisons would be necessary. However, this kind of transaction cost accounting has been used for the first time and thus former data has not been available. On the other hand the comparison with the process-oriented cost calculation for complex purchase procedures (€ 25.61) shows that there are significant differences of 31% (based on the value of the transaction costs because process-oriented costs in general are independent of the product value). Obviously, the calculation of purchase and supplier costs has not been complete because it did not contain all costs over the whole

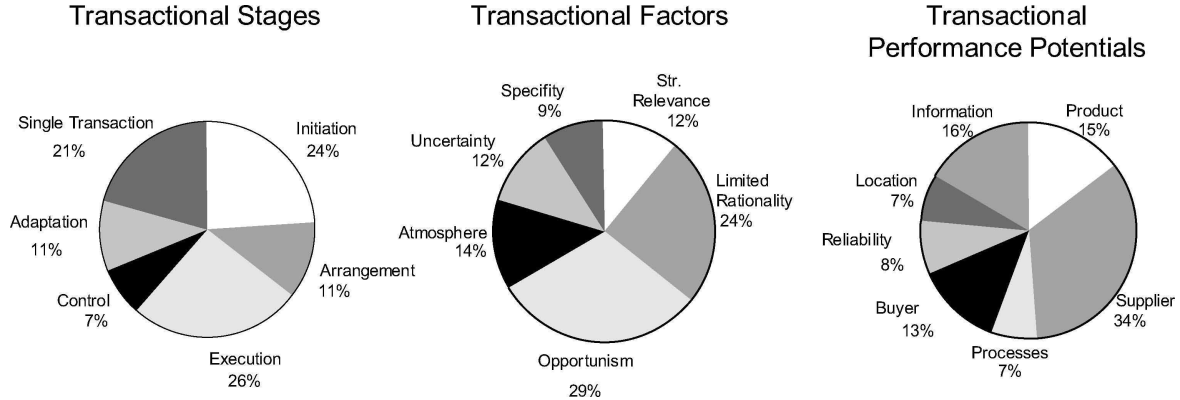


Fig. 6. Distribution of the Data Items Among the Three Systematics Transactional Stages, Transactional Factors, and Transactional Performance Potentials ( $n = 327$ ).

**Table 3.** Monetary Transaction Costs of the Operationalization Model (in €).

Transactional Stages		Transactional Factors		Transactional Performance Potentials	
Buyer-supplier relationship					
Initiation	16.652	Opportunism	18.299	Location	1.600
Arrangement	898	Limited rationality	13.598	Product	0
Execution	31.705	Strategic relevance	5.558	Processes	0
Control	5.275	Specificity	0	Information	5.757
Adaptation	525	Uncertainty	500	Supplier	31.224
		Frequency	0	Reliability	5.275
		Transact. atmosphere	16.100	Buyer	10.199
54.055		54.055		54.055	
Single transaction					
Initiation	8	Opportunism	411	Location	4.280
Arrangement	36	Limited rationality	86	Product	1.866
Execution	6.200	Strategic relevance	0	Processes	4
Control	375	Specificity	6.122	Information	8
		Uncertainty	0	Supplier	90
		Frequency	0	Reliability	371
		Transact. atmosphere	0	Buyer	0
6.619		6.619		6.619	

time period. Therefore, profitability and contribution-margin calculations could be improved further by more detailed information. For this transaction costs could be split further to get more information about the monetary components (Table 3).

In addition to the monetary parts of transaction costs there has been a qualitative survey (this is the reason why some of the cells in Table 3 do not contain a monetary value but the number 0). On a scale from 1 (very low transaction costs) to 5 (very high transaction costs) on the highest level of aggregation in this case the value has been 2.55. This means that the decision for a market coordination has been correct (Table 4).

In general the calculation has provided information on 3 major topics:

- The monetary and non-monetary transaction costs for a buyer-supplier relationship have been quantified for the first time. This information can be used for well-founded make-or-buy decisions.
- The qualitative assessment of the buyer-supplier relationship delivers numerous ideas for improvements of the cooperation. There is a direct connection to cost

**Table 4.** Qualitative Index-Value of the Transaction Costs Dependent on the Transactional Factors.

Transactional Factors	Index Value
Opportunism	2.15
Limited rationality	1.48
Str. relevance	3.17
Specificity	3.10
Uncertainty	2.50
Frequency	3.75
Transact. atmosphere	2.09
Total	2.55

determining factors and thus the processes and products of the future can be influenced considerably.

- Altogether a supply chain performance measurement model has been developed that can be used to check, measure and shape all relevant aspects of a buyer-supplier relationship.

#### 4.3.2. Application of the Measurement Model

The measurement model is supposed to be used as part of the accounting system. The practical application leads to a monetary aggregation that can perform the following tasks:

- Calculation: As an alternative to predetermined overhead rates based on the purchasing value, a transaction cost calculation includes all relationship specific costs. It is a total cost approach.
- Make-or-buy: The transaction cost accounting can be used for an exact and detailed calculation of the costs of a buy-decision. The make-alternative already can be calculated very detailed by the traditional cost accounting systems. Therefore, companies now have a well-founded tool for make-or-buy decisions.
- Strategy: Detailed cost information is provided for decisions regarding relationship and network design and corresponding typologies. Furthermore, the expected behavior is considered.
- Configuration of cooperations: The measurement allows a detailed analysis of the dominant cost influencing factors and shows areas that are relevant for cost cutting. Furthermore, it can be used as basis of a scenario analysis (e.g. regarding the profitability of an extensive contracting vs. the potential expenses to adapt these contracts later on).

- Choice of supplier: The calculation of transaction costs evaluates suppliers from the buyers' point of view including all cost aspects. Nonetheless, additionally other aspects (quality, on time delivery etc.) have to be considered and included into the supplier evaluation model.
- Efficiency improvement in purchasing: The information out of transaction costs and their determinants can be used to optimize purchasing processes. Cost cutting potentials can be utilized by re-focusing technologies, capacities, and competencies.

The supply chain performance measurement model completely includes monetary and non-monetary aspects (that will have monetary impacts in the future) of relationships. It therefore increases the transparency of past decisions and prospectively supports the accuracy of future forecasts.

The supply chain performance measurement model has extensive strategic effects. It supports the prospective choice and configuration of relationships based on cost and behavioral aspects. Thus it supports the management of interfaces between companies. It can be used as a planning and a control tool and hence supports the choice of strategies and targets as well as the analysis of actions and their implementation.

#### *4.4. Value-Based Supply Chain Evaluation*

##### *4.4.1. Hierarchical Model Design*

*4.4.1.1. Classification of benefit potentials.* The claim of integrating various managerial functions makes it necessary to take different perspectives for objectives, tasks and performance contributions of Supply Chain Management into account. For this purpose, we divide Supply Chain Management for an additional analysis of its use potentials into the following four organizational coordination areas:

- managing co-operation;
- product and process management;
- technology and innovation management;
- managing the organizational infrastructure.

*Managing Co-Operation.* The management of co-operation, which co-ordinates the co-operative work of all supply-chain members in the form of value-added-creating partnerships, is a key element of the Supply Chain Management concept. Relationships, which regularly go through conflicts and opportunism, are not unsuitable for co-ordinating and integrating inter-organizational action. One should

behave in a competitive way against other supply chains, but among succeeding chain members co-operation should predominate. This behaviour can help grant value creation and at the same time reduce complexity and intransparencies in the service generation. On the long run, business relationships along the supply chain need to be shaped as trust-based win-win constellations. Here, the primary task of Supply Chain management is to gain and maintain the trust of all business partners and to establish a preventive conflict management, as well. A congruent set of interests and a related contribution of resources of the specific partner should be considered as further criterion for a successful co-operation.

*Product- and Process Management.* Since the produced goods (materials or services) generate the customer value and by doing so also the profit, one should pay special attention to product und process management. In that context, the analysis and design of product flow need special attention, since the flow of products contributes to customer satisfaction (through adequate delivery service, like e.g. reliable delivery, quality at delivery and delivery readiness) and on the other hand produces costs (e.g. stocking costs). Furthermore, the degree of the vertical range of manufacture is laid down within the management of products and processes and by that the dislocation of manufacture onto the different network partners within a supply chain as well. One can gain product-specific competitive advantages through high product quality, innovative products and a large product variety.

*Technology and Innovation Management.* The optimisation of information flows for handling business processes is a central element of Supply Chain Management. The integrated processing of information form the basis for an inter-corporate design of business processes within supply chains. Information flows work in two directions: along the flow of goods (from the supplier to the customer) and from the customer to the supplier. The rapid innovation in information and communication technologies (data-warehouses, electronic data exchange, Internet, Intranet, special software for supply chains) contributes to an effective support of all kinds of transactions within the supply chain. The main task of information management is first of all to assure the availability of necessary information and to present business processes in a transparent way. Especially in the use of internet technology there will be a great potential to support the handling of business processes as soon as standards like HTTP, XML, JAVA, HTML have made their way and gained broad acceptance and on their basis modern database systems and data-warehouse solutions offer various kinds of access functions. Building on these open standards, one must clarify the standards for communication and the way of maintaining securing data among the business partners.

*Managing the Organizational Infrastructure.* The management of the organizational infrastructure pays the necessary attention to organizational and structural aspects of supply chain Management. In contrast to traditional functionally shaped

organizations, a strong process-orientation concentrating on inter-corporate processes is key to the concept of supply chain management when designing organisations. Operational processes no longer adapt themselves to a fixed and prescribed organizational structure. Instead enterprise structures orientate themselves according to the operational processes. The adoption of Supply Chain Management strategies means in most cases organisational change, as well. Structuring the supply chain has, due to its offshore-positioned competence level, a mainly strategic character and lays down the length and ramifications of the supply chain. In this context, configuring a supply chain includes the structures for procurement, production, distribution and logistics and especially the design and handling of specific supply chains formed by selected co-operation partners including their sites and capacities. Enterprise networks originate out of the configuration and coupling of single supply chains. That is why the design of the resulting business network needs to be considered in depth as well. Forming a uniform understanding of processes among co-operation partners is an essential precondition for a process-oriented design of an organisation. This effort can be supported with the help of a standardized description language for processes within the supply chain. The Supply Chain Operations Reference Model (SCOR) is one example for such a tool (see <http://www.supply-chain.org>).

*4.4.1.2. Value-based measurement model.* Developing a model for analysing the value added within supply chain networks, actions of the supply chain management shall be forecasted, tracked, measured, and judged regarding its contribution to value added. The work logic of the model focuses on the translation of potential value added factors and activities in supply chain networks with the help of an active and targeted Supply Chain Management, that means concrete activities.

For this objective the model was subdivided into five levels (Fig. 7).

On the first level we can find the target measure “Supply Chain Network Value Added” (SCNVA). SCNVA results from measurement components for tangibles and intangibles (2nd level). The tangible part of value added can be split up – with the help of a value driver tree – into four value creation potentials (3rd level). At this level there are five resulting value creation potentials in a supply chain network:

- Increase in revenues.
- Reduction of costs.
- Reduction of capital.
- Reduction of risk.
- Increase in the value of intangible assets.

Each of these value creation potentials can be further split up into different value driver categories (level 4). On the lowest level (level 5), value drivers



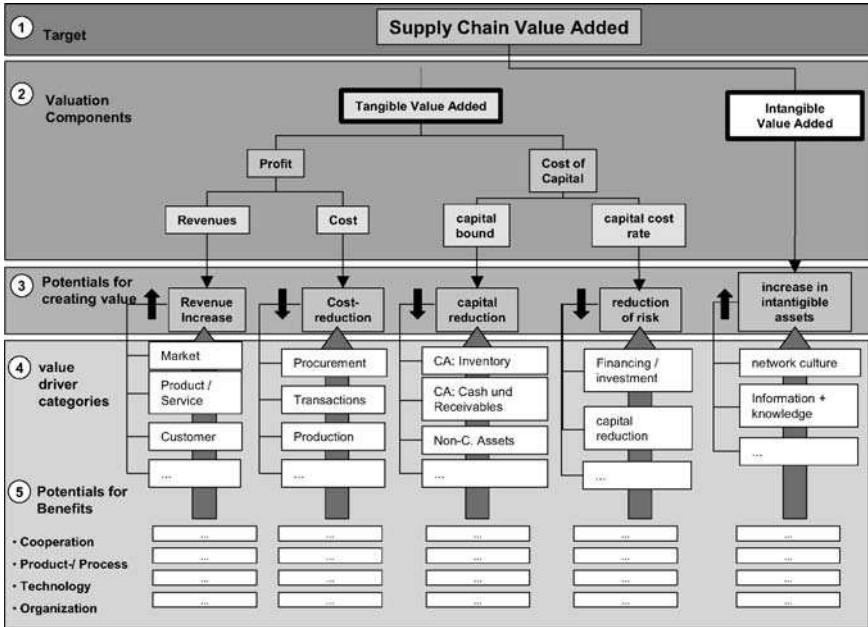


Fig. 7. Measurement Model of Supply Chain Network Value Added.

can be classified both into value driver categories and a benefit potential as well. This two-dimensional clustering opens up a broader range of action and identification potentials when deriving measurement and management initiatives. This two-dimensional clustering opens up a broad range of opportunities for deriving measurement and management initiatives: On the one hand, one can derive value drivers in a top down approach out of the value driver categories and on the other hand, one can start deriving them out of a value & benefit matrix and classify them into value driver categories in a second step (see Fig. 8).

**4.4.1.3. Value & benefit matrix.** The value & benefit matrix was developed on the basis of the VALCOR – (“Value is core”) – matrix (Gomez & Weber, 1989, p. 54) to be able to judge about the creation of benefits out of Supply Chain Management. For this purpose, we link the systemization of Supply Chain Management benefit potentials with the value creation model, which we have presented above. The value drivers originate out of the connection (made up by our definition) with the value added, which we need to calculate. In each single case of model implementation, we need to adjust the benefit potentials, which ought to be analysed. On the basis of supply-chain-specific potentials for co-operation, product or organizational

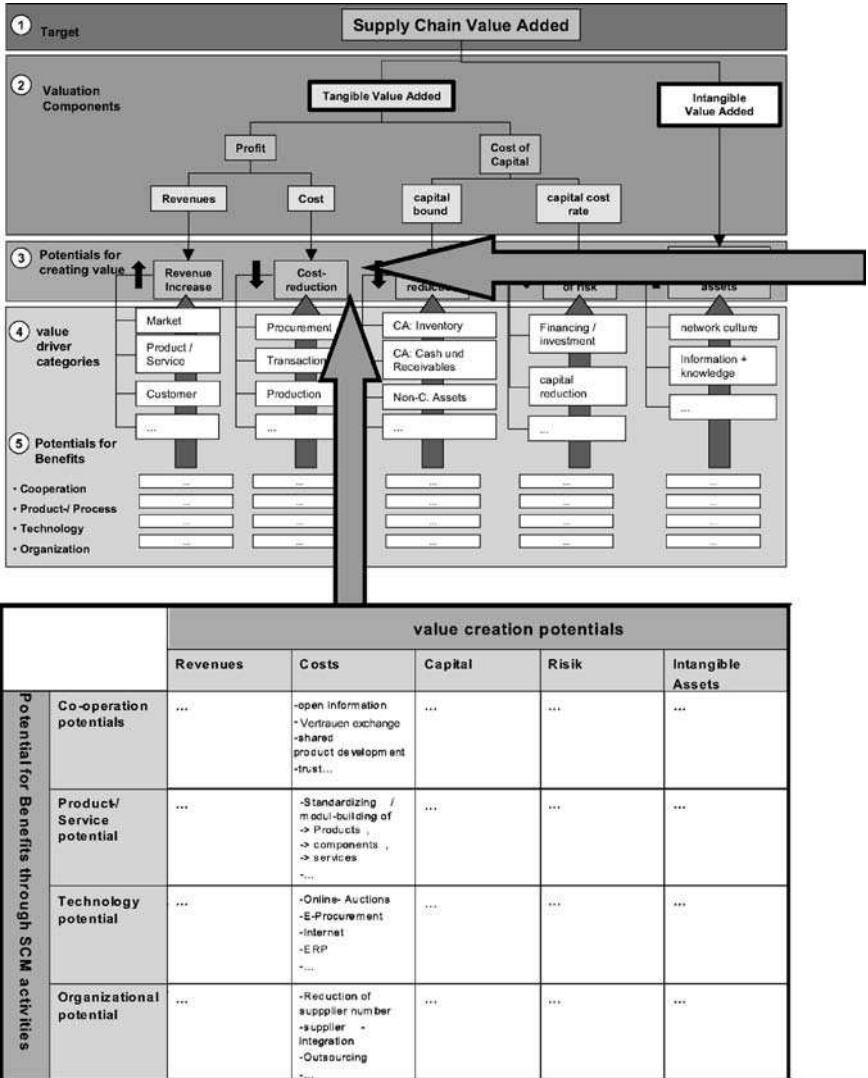


Fig. 8. Value and Cost Potential of “Cost Reduction” within the Value Based Model.

performance, and technology the value & benefit matrix shows identified starting points for value-increasing strategies and initiatives, which have effects on the value drivers of revenues, costs, capital, risk and intangible assets. The concept of the value & benefit matrix points to the variety of scenarios which need to be examined

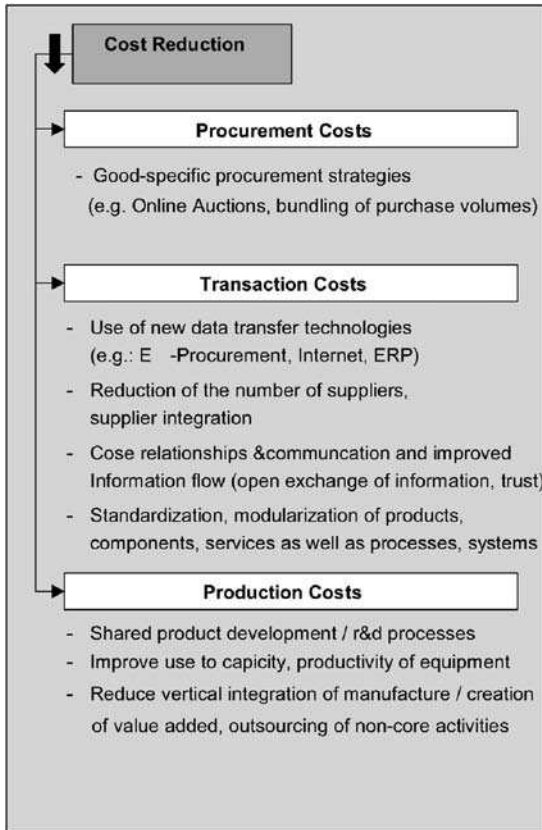


Fig. 8. (Continued)

for their effects on SCNVA in the course of a value-oriented supply chain planning process. With the help of simulations, one can compare and evaluate these scenarios. Thus, the value & benefit matrix is to be seen as a structured brain-storming process for finding out the relevant value drivers, because the model does without displaying quantitative relationships between value drivers and benefit potentials.

*4.4.1.4. Value creation through intangibles.* The measurements of tangible assets possess less a problem since they can be measured with financial numbers coming from managerial and financial accounting systems. But in an age of

knowledge-based economy know-how, employee skills, information technology for the support of inter-company transactions, as well as an adequate network culture find themselves in the focus of discussion. The key problem of measuring intangible assets is that they influence the financial results only in an indirect manner – mostly in the form of multi-level cause- and effect-relationships. However, the SCNVA model focus on the display of the cause- and effect-relationships regarding tangible and intangible value-creation potentials, but much more on finding, clustering and measuring these relationships. There are various ways for measuring value-creation potentials of intangibles, e.g. one can display non-financial indicators like the customer-satisfaction index, which can mirror the service-degree or the trust within the supply chain culture through measures like number or volume of collaborate projects, investments for relationship-building or the number of met timelines.

#### *4.4.2. Further Conceptual Details*

We will illustrate the SCNVA model with the help of an example for the value-creation potential of a cost reduction. On level 4, the potential for value added through cost reduction is split up into the three value driver categories of costs of procurement, transactions and manufacture – one can add further value driver categories, when needed. This can be done with the help of the value & benefit matrix. Figure 8 shows different Supply Chain Management initiatives to reduce costs. They were classified according to the value driver categories, mentioned before. We start on the lowest level with a segmentation of Supply Chain Management initiatives for reducing costs and classify them into four benefit potentials for gaining an overview of the area in which the planned initiatives will be able to create benefits. The determination of the individual value drivers can start from the value & benefit matrix (in a bottom-up way) or from the value driver categories (on a top-down path). It is decisive that all cost-savings can be found in the measuring component “costs” on the second level. That is where a monetary valuation in cost numbers will take place. These will, in the end, via profit and ROA, flow into the tangible value added and by doing so into the SCNVA.

## **5. CONCLUSION: THE COMBINED USE OF BOTH APPROACHES**

Network management within supply chains requires a systematic, cost-oriented tool to measure and manage the transactions between network/supply chain partners. It can be used for determining the real costs of a purchase to the organization – including obvious issues (transportation, duties etc.) as well as more subtle issues (e.g. process changes due to quality deviations). The paper describes an

comprehensive approach for supply chain performance measurement, based on a combination of a cost-based and a value-based approach. While the cost-based system has been based on an extensive use of activity based costing, the second approach is a value-based model that transforms qualitative performance data to quantitative data. In order to analyze the quantitative as well as the qualitative performance structure of a supply chain, the cost-based approach is based on transaction cost economics. The outcomes of that model enable the participating organizations to focus their optimisation efforts on the most valuable processes. Furthermore, the theoretical background of a principal-agent-situation also reflects the implicit attitudes of the organizations and allows taking measures regarding the design of the co-operation.

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# PERFORMANCE MEASUREMENT IN FRENCH COMPANIES: AN EMPIRICAL STUDY

Pierre-Laurent Bescos and Eric Cauvin

## ABSTRACT

*The early models for performance measurement traditionally focused solely on financial results. Companies seeking to compete with industry leaders had to change their ways of measuring performance. One view advanced by the literature is that traditional financial measures are incompatible with a production strategy that emphasizes quality and Just-in-Time. The subject of our study is to gain more insight into the design of performance measurement system of French companies, taking into account the role of size, strategy, uncertainty and the influence of non-financial measures on financial performance.*

## 1. INTRODUCTION

In the past, financial results were the sole focus of the early models of performance measurement, especially in the U.S. where few academics and practitioners questioned this one-sided focus on rate-of-return measures until the decline of competitive strength of American companies became apparent in the beginning of the 1980s (Johnson & Kaplan, 1987). Despite the existence of “Tableau de

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**Performance Measurement and Management Control: Superior Organizational Performance**

Studies in Managerial and Financial Accounting, Volume 14, 185–202

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ISSN: 1479-3512/doi:10.1016/S1479-3512(04)14008-2

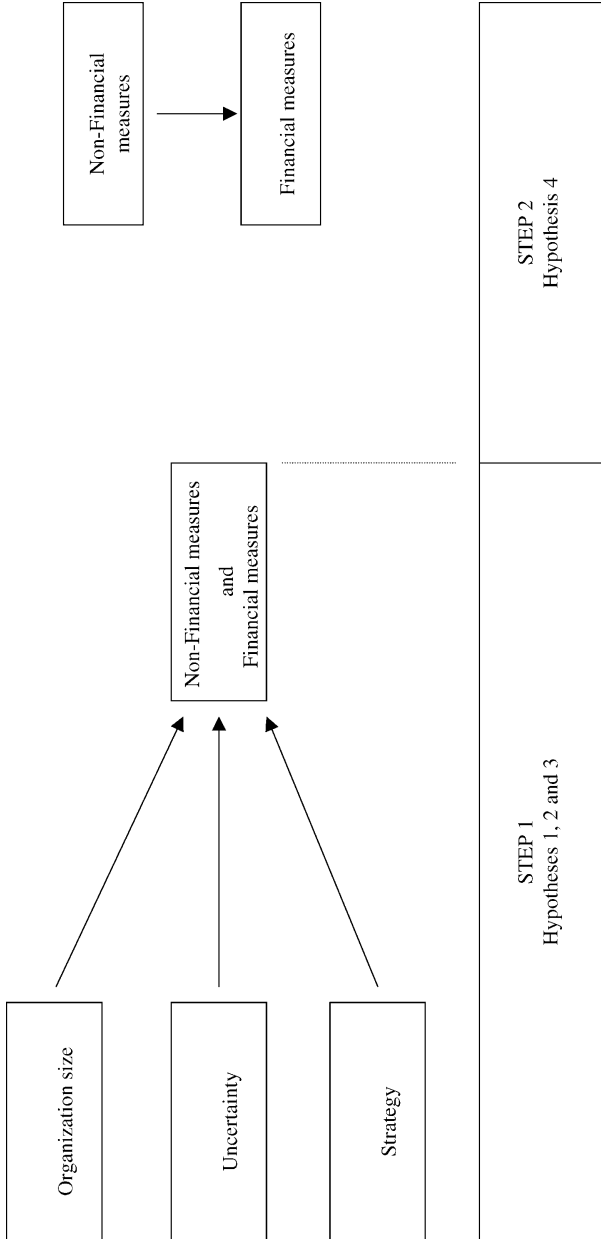


Fig. 1. Framework for the Study.



Bord” (Epstein & Manzoni, 1997, 1998; Lebas, 1994), the debate centering on the use of non-financial and financial indicators heated up in the 1990s. Dixon et al. (1990) were among the first to discuss why companies seeking to compete with industry leaders had to change their ways of measuring performance. One view advanced by researchers was that traditional financial measures are incompatible with a production strategy that emphasizes quality and Just-In-Time. McNair et al. (1990) took a different view, claiming that the problems related to performance measurement had little to do with an overemphasis on financial measures. Instead, the difficulty lay in translating non-financial measures into financial ones. Kaplan and Norton (1992, 1993, and 1996) shifted the focus from measures and measurement itself to creating a true system of performance measurement which links the company’s long-term strategy with its day-to-day operations. It is a sophisticated information structure and management approach that links effects (also called organizational objectives), such as profit levels, with causes, such as customer or employee satisfaction.

The subject of our research is to gain more insight into the present issues regarding performance measurement systems by surveying French firms. Taking a contingency theoretical perspective in this study (Hoque & James, 2000), we consider the influence on such performance indicators (outcome variables) as organization size, perceived environmental uncertainty, strategy and non-financial measures (contextual variables). The framework for the research is illustrated in Fig. 1.

The relevant literature is briefly summarized below. The following sections address the research method, results and conclusions.

## **2. LITERATURE REVIEW**

The aims of this section is to review the literature and to develop the research hypotheses based on the organization size, the perceived environmental uncertainty, the strategy and the non-financial measures as leading indicators.

### *2.1. Organization Size*

Contingency theories of organizations developed by Burns and Stalker (1961), Lawrence and Lorsch (1967), and Woodward (1965) suggest that size may affect the way organizations design and use management systems. Numerous accounting studies have drawn on this theoretical framework. Merchant (1981, 1984) claims that organizational growth poses increased communication and control problems.

Bruns and Waterhouse (1975), Ezzamel (1990), and Libby and Waterhouse (1996) suggest that as firm size increases, accounting and control processes tend to become more specialized and sophisticated.

Others in the organizational literature (e.g. Burns & Stalker, 1961; Chandler, 1962; Pugh et al., 1969) argue that size is related to greater decentralization and structuring of activities due to information processing constraints on senior management. Furthermore, the need to stimulate effective communication flow becomes more apparent in larger organizations when the behavioral orientation characterizing management control in small organizations becomes unworkable. As a consequence, in large business enterprises, a broader set of information and measurement issues arises (Kaplan & Atkinson, 1998). Small companies frequently do not require elaborate performance evaluation techniques, as the strategy setters, usually the owners, are close to the "action." Based on this a priori reasoning, it is suggested here that larger organizations are likely to rely more on a Balanced Scorecard approach to management than are smaller organizations (Hoque & James, 2000). These considerations lead us to formulate the following hypothesis:

**H1.** the larger the organization, the more financial measures are used.

### *2.2. Perceived Environmental Uncertainty*

Several studies of accounting-based control and performance evaluation systems and their effects on performance arrived at the same conclusion (Brownell, 1982; Dixon et al., 1990; Govindarajan, 1984; Govindarajan & Gupta, 1985; Hayes, 1977): accounting measures are more appropriate, in terms of positive effects, where the competitive environment is less uncertain, the basis of competition is less complex, or where the business unit is implementing a more predictable "harvest" competitive strategy rather than a more uncertain "build" strategy. These studies provide support for the following hypothesis:

**H2.** The higher the perceived level of environmental uncertainty, the less financial measures are used.

### *2.3. Strategy*

Various studies have pointed out the relation between the strategy of an organization and its management accounting system (Chenhall & Langfield-Smith, 1998; Govindarajan, 1988; Govindarajan & Gupta, 1985; Shank, 1989; Simons, 1987). Different typologies have been used to classify the possible strategies: low cost

strategy – differentiation strategy – focus strategy (Porter, 1980, 1985); defender – prospector – analyzer (Miles & Snow, 1978; Simons, 1987); development strategy – build strategy – harvest strategy (Gupta & Govindarajan, 1984). In fact, these typologies all arrive to the same point (Langfield-Smith, 1997) and will help us to analyze several studies regarding the links between the management accounting system used by companies and their strategies.

One of the most frequently used typologies is Porter's (1980). He contrasts low cost strategies with differentiation strategies. According to his work, firms implementing the first type of strategies should use strict cost control tools. Low cost and differentiation strategies imply different managerial mindsets and involve different perspectives for the management accounting system (Lynch & Cross, 1995; Shank, 1989). Measurement systems have to contribute to the implementation of the strategic orientations in guiding the action by ensuring short and long term performance evaluation (Cross & Lynch, 1990; Dixon et al., 1990). Therefore, strategy, actions and measures must continuously work in harmony. Looking for consistency between strategy – actions – measures implies the use of financial and non-financial performance measures (Dixon et al., 1990). If quality and time become essential strategic criteria, financial performance measures are less effective to manage a firm in the long run. This does not mean that accounting data are not useful, but they do not always reflect the analysis of industrial difficulties. They must be complemented by non-financial performance measures.

Shank et al. (1989) argue that firms that have adopted a low cost strategy use a set of measures to control costs and to compare the standard with actual costs. On the other hand, firms following a differentiation strategy develop other types of measures concerning quality, efficiency of promotional operations, etc. These considerations lead us to formulate the following hypothesis:

**H3.** Companies following a strategy of differentiation use more non-financial indicators than companies following a cost strategy.

#### *2.4. Non-Financial Measures Serve as Leading Performance Indicators*

Non-financial indicators of investments in “intangible” assets may be better predictors of future financial (i.e. accounting results or stock price) performance than historical accounting measures, and should be used to supplement financial measures in internal accounting systems (Deloitte Touche Tohmatsu International, 1994; Kaplan & Norton, 1996). This same discussion has produced calls for disclosure of non-financial information about the drivers of company value (Edvinsson & Malone, 1997; Stewart, 1997; Wallman, 1995).

No single performance indicator can capture the full complexity of an organization's performance. In particular, financial indicators often do not provide managers with a timely understanding of the full impact of decisions. As a result, they tend to be less proactive indicators of potential problems than operational (non-financial) indicators. Financial and non-financial indicators should not be viewed as substitutes for each other. While financial measures tend to reveal performance information more slowly than non-financial (they tend to capture the impact of a decision only after the financial consequences of that decision materialize, which can be quite long after the decision was made), they also have two important benefits. They represent the impact of decisions in a comparable unit-money measurement which allows aggregation of results across units. Secondly, they also capture the cost of trade-offs between resources as well as the cost of spare capacity. Business organizations exist in large part to create value for shareholders; financial performance thus remains an essential parameter. Ultimately, improvement on non-financial measures should translate into superior financial performance (Epstein & Manzoni, 1997).

Empirical research can help to establish the roles and effectiveness of non-financial measures on financial performance (Banker et al., 2000; Behn & Riley, 1999; Ittner & Larcker, 1998a). The growing body of research which has addressed empirical links between non-financial and financial measures of performance in a variety of firms and industries also includes Amir and Lev (1996), Banker et al. (1993), Banker et al. (1995), Banker et al. (1996), Banker et al. (2000), Barth and McNichols, (1994), Behn and Riley (1999), Gosh and Lusch (2000), Hugues (2000), Ittner and Larcker (1997, 1998a), and Perera et al. (1997). These studies often find significant relations between non-financial measures and financial performance measures. Given extensive theoretical and growing empirical support, it is not surprising that many organizations report that they are turning to forward-looking, non-financial information to both guide decisions and evaluate current performance (Ittner & Larcker, 1998b). These observations led us to make the following hypothesis:

**H4.** Non-financial measures may be easily and directly related to financial measures.

The following section presents the research methodology applied to test our four hypotheses.

### **3. RESEARCH METHODOLOGY AND MAIN RESULTS**

In order to test the hypotheses above, we conducted a survey by sending questionnaires to members of the French CFO association.<sup>1</sup> The first mailing took place

in June 2003, followed by another one in July. 2,502 companies were contacted with 209 of them representing the final sample. This represents a rate of response of 8.3%, which is quite usual for this type of study conducted in France. The companies selected for the study had an average annual turnover of €1.4 billion and an average of 7,183 employees. Most of them are large companies with over €100 million turnover (115 companies – 55%). The main sectors represented are manufacturing (98 companies – 46.9%) and services (111 companies – 53.1%). The firms in our sample are mainly subsidiaries (115 companies – 55%), but there are also head offices (57 companies – 27.3%) and independent companies (35 companies – 16.7%). The questionnaire was constructed by adapting questions and items previously used in other surveys. It was tested by 11 CFO's in the Nice area.

### *3.1. Financial and Non-Financial Indicators*

In order to measure the importance of financial and non-financial indicators, the companies were asked to express their degree of use on a list of 17 indicators on a five-point Likert scale. This list was adapted from Kald and Nilsson (2000). The results appear in the Appendix (Table 1). A good balance between the use of financial and non-financial indicators can be seen: there is no significant difference between the mean for financial indicators and the mean for non-financial indicators (respectively 3.85 and 3.58). The two highest means refer to the measures of profitability (4.45) and customer satisfaction (4.24).

In order to reveal the eventual internal structures of these 17 items, a principal component factor analysis was carried out. A Varimax rotation facilitated the interpretation of the variables. The analysis generated five factors with a proper value greater than 1 which explain 60.6% of the variance (see Appendix, Table 1). The first component (Source) regroups the non-financial measures related to the main sources of performance, such as customer satisfaction, quality, productivity and delivery reliability. The second component (Market) represents the non-financial measures related to market position, competence, product development and distribution of sales. The third component (Profit) corresponds to financial measures, such as profitability, cost effectiveness and budget discrepancies. The fourth component (Environment) expresses the use of non-financial measures related to process development and level of technology, and the environment profile of the firm. The fifth component (Cash) regroups the financial measures related to cash flow and working capital. Thus, we have three components related to non-financial measures (#1, 2 and 4) and two components which are financial in nature (#3 and 5 – see correlations on Table 1 between measures

and components). Two items, shareholder and employee satisfaction, do not play a significant role in this analysis.

These five factors were selected as new variables.

### *3.2. Environmental Uncertainty*

Environmental uncertainty was measured according to the perception of the respondents on 8 items using a five-point Likert scale (see Appendix, Table 2). The questions were adapted from Govindarajan (1984). The respondents were asked to express their degree of agreement concerning the difficulty to anticipate several elements of the future business environment, Market demand and the competitor's actions were considered as most uncertain (average respectively of 3.43 and 3.01). Regarding the other uncertainty elements, the respondents often disagree. A principal component factor analysis with a Varimax rotation allowed us to identify three components explaining 56.7% of the total variance (see Appendix, Table 2). The first component (Supply) is fraught with uncertainty elements related to raw materials (raw material availability and price). The second component (Demand) corresponds to the uncertainty of the company's markets (market demand, competitors' actions and product attributes and design). The third one (External) refers to the uncertainty regarding the general environment of the firm (government regulation, manufacturing technology and labor relations). All the items play an important role in this analysis.

These three factors were selected as new variables.

### *3.3. Strategy*

Strategy was identified by adapting the measurement tool of Chenhall and Langfield-Smith (1998). Eleven items describing the strategic priorities for the last three years were selected. The respondents indicated their level of agreement using a five-point Likert scale (see Appendix, Table 3). In order to identify and characterize the strategies included in the sample, a principal component factor analysis was carried out which led to the identification of three components explaining 53.1% of the variance (see Appendix, Table 3). In spite of differences in the item classification, the three strategies identified are similar to those presented by Chenhall and Langfield-Smith (1998). Thus, they were selected as new variables. The first component (Customer) represents the items related to the quality and to the services offered to customers (to provide high quality products, to customize products and services to meet customers needs, to keep delivery

promises, to ensure product availability, to provide effective after-sales service and support).

The second component (Efficiency) corresponds to the cost leadership strategy which implies low production costs and priorities centered on low prices (low production costs, fast deliveries, low price). Finally, the third component (Product) focuses on innovation and flexibility to supply products (to make changes in design and to introduce new products quickly, to provide unique product features, to make rapid volume and/or product mix changes). These three factors were selected as new variables.

### *3.4. Non-Financial Measures Serve as Leading Performance Indicators*

Empirical research can help to establish the impact of non-financial measures on financial performance. For this purpose, the companies were asked to express their degree of agreement from a list of 14 items which link non-financial and financial measures using a five-point Likert scale. This list was adapted from Ittner and Larcker (1998). The results appear in the Appendix (see Table 4). On average, there is a high expected correlation between customer satisfaction and revenues (or market share), and between quality and productivity improvements (or cost reductions). Customer satisfaction and quality are perceived as leading performance indicators (respectively with means of 3.2 and 3.00) when compared with employee satisfaction or employee training measures (with means of 2.61 and 2.60 respectively).

In order to reveal the eventual internal structures of these 14 links, a principal component factor analysis was performed. A Varimax rotation facilitated the interpretation of the variables. The analysis generated four factors with a proper value greater than 1 and explains 65.5% of the variance (see Appendix, Table 4). The first component (Stock) regroups the links between stock price returns and non-financial measures, such as customer satisfaction, quality, employee satisfaction and employee training. This first component is correlated to all the types of non-financial measures (see correlations between groups of indicators and main components on Table 4). The second component (People) demonstrates the relation between accounting returns or revenue and employee training. The third component (Customer) corresponds to the links between accounting returns and customer satisfaction. The fourth component (Quality) expresses the role of quality on financial results (revenue, accounting returns, operational performance and cost reduction).

These four factors were selected as new variables.

All the variables defined in this second part were used to test the four hypotheses previously discussed.

### 3.5. Tests on Hypotheses

Our first hypothesis (*the larger the organization, the more financial measures are used*) is validated. As shown in Table 5, there are relations between variables concerning financial and non-financial measures and variables concerning size (turnover and staff). Turnover and staff correlate negatively with the component *Source*, which represents non-financial measures. On the contrary, turnover and staff positively correlate with the component *Profit*, which represents financial measures. Size is obviously important and needs to be carefully considered when studying performance measurement.<sup>2</sup>

Our second hypothesis is related to the links between uncertainty and performance measurement: *the higher the perceived environmental uncertainty, the less financial measures are used*. Unfortunately, this hypothesis is not validated as indicated in Table 5. There is no significant correlation between the variables of uncertainty and variables of performance measurement.

Our third hypothesis (*companies following a strategy of differentiation use more non-financial indicators than companies following a cost strategy*) is not completely validated. However, we can note some interesting and significant correlations between the use of non-financial measures (Source and Market) and strategies focused on customer or product, and between financial measures (Profit) and a strategy based on efficiency.

Our fourth hypothesis (*non-financial performance leads financial performance*) is validated, based on the results on Table 4. As we observed in Section 2.4, significant correlation exists between non-financial and financial measures.

## 4. CONCLUSIONS

Our study allows us to arrive at some conclusions regarding performance measurement. Firstly, our four hypotheses are not completely validated. Our first hypothesis on the relation between company size and performance measurement is validated. These findings confirm the results of Hoque and James (2000). The second one, concerning the links between perceived uncertainty and performance measurement, is not validated, contrary to the results of Govindarajan (1984) and Dixon et al. (1990). As Shank (1989), we find with our third hypothesis a link between strategy and performance measurement. Our fourth hypothesis



concerning the links between non-financial and financial indicators is validated in line with the work of Ittner and Larcker (1998). It is clear that CFO's are aware of the links between non-financial and financial performance.

Some other interesting findings can also be pointed out. Firstly, regarding the relation between size and performance measurement, our study shows that as a company grows, financial indicators are preferred to non-financial indicators. On the contrary, small companies prefer to use non-financial measures. This can be explained by the importance of the financial markets for big firms. A second finding shows that indicators related to employee satisfaction or value to shareholder do not play an important role in France as they do elsewhere. An international study on performance measurement would tell if cultural variables weigh on some choices of indicators.

Finally, a third finding of our study shows that performance measurement systems are built around a structure based on a balance between non-financial and financial measures which can differ from the main components of the Balanced Scorecard (Kaplan & Norton, 1992). Table 1 shows five main components (source, market, profit, environment and cash) which are not related to the four perspectives of the Balanced Scorecard (financial, customer, internal, learning and growth). This tends to present the four perspectives of the Balanced Scorecard as an example of the relations between non-financial and financial measures and not as a model of performance measurement system. This implies an adaptation of the Balanced Scorecard to the context of a firm or a country.

The results of our survey surely need to be validated by a larger sample of companies from different countries. Nevertheless, our survey allows for a better understanding of the contingency factors which explain the use of non-financial and financial measures, and the balance between both.

## **NOTES**

1. DFCG: Association des Directeurs Financiers et Contrôleurs de Gestion.
2. We measured the statute of the business unit of the respondent using a variable and we did not find a significant correlation between this statute and organization size. In fact, we asked respondents to give the size for the entire firm and not the size of their business units.

## **ACKNOWLEDGMENT**

We would like to thank Hyperion for financing our study.

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## APPENDIX

**Table 1.** Results on the Importance of Financial and Non-Financial Measures (Adapted from Kald & Nilsson, 2000).

Variables	Nature	Types of Measures	Mean	Std. Dev.	Main Components				
					Source	Market	Profit	Environment	Cash
PROFIT8	F	Measures that reflect profitability	4.45	0.84	0.03	0.23	0.75	-0.20	0.12
SATCLI8	NF	Customer satisfaction	4.24	0.83	0.63	0.47	0.00	0.14	0.02
QUALI8	NF	Measures that reflect quality	4.00	0.99	0.75	0.01	0.13	0.34	0.02
REDUC8	F	Measures that reflect cost effectiveness	3.90	0.95	0.14	-0.05	0.65	0.24	0.17
EFFICA8	NF	Production efficiency	3.87	0.96	0.77	0.07	0.08	0.17	0.01
CASHFLO8	F	Cash flow	3.87	1.09	0.06	0.04	0.26	-0.03	0.87
RESPECT8	NF	Reliability of delivery	3.85	1.00	0.78	0.11	0.10	-0.28	0.07
ECARTS8	F	Variances on budget	3.82	1.05	0.09	-0.09	0.63	0.02	0.07
POSITIO8	NF	Market position	3.63	0.97	0.09	0.70	0.20	-0.20	-0.16
COMPETE8	NF	Competence	3.61	0.87	0.40	0.54	-0.06	0.39	0.00
CREATIO8	F	Value to shareholders	3.55	1.17	-0.17	0.43	0.41	0.14	0.24
BFR8	F	Working capital	3.53	1.12	0.02	0.04	0.12	0.08	0.90
DEVPROD8	NF	Product development	3.46	0.96	0.13	0.66	0.02	0.20	0.03
PROCESS8	NF	Process development/level of technology	3.31	1.08	0.15	0.37	-0.13	0.54	0.16
DISTRIS8	NF	Measures that reflect the distribution of sales	3.24	1.21	0.07	0.62	-0.07	-0.02	0.13
SATPERS8	NF	Employee satisfaction	3.22	0.93	0.45	0.42	-0.08	0.42	-0.04
ENVIRON8	NF	The environmental profile of the unit	3.17	1.09	0.10	-0.06	0.20	0.82	-0.02
Synthesis: Correlations between groups of indicators and main components									
FIN8	F	Financial measures	3.85	0.62		0.181**	0.730**		0.660**
NFIN8	NF	Non-financial measures	3.58	0.47	0.630**	0.596**		0.468**	
		Nature of the main components			NF	NF	F	NF	F

Note: Nature: F: Financial measure; NF: Non-financial measure.

\*\*Significant correlation at  $p < 0.01$  level

**Table 2.** Results on Uncertainty Items (from Govindarajan, 1984).

Variables	Type of Uncertainty	Mean	Std. Dev.	Main Components		
				Supply	Demand	External
DEM12	Market demand	3.43	1.16	0.110	0.766	-0.058
CONCUR12	Competitors' actions	3.01	0.94	-0.148	0.651	-0.031
REGLE12	Government regulation	2.99	1.13	0.106	0.050	0.727
ATTEN12	Product attributes/design	2.91	0.99	0.093	0.643	0.403
PRIXMP12	Raw material price	2.75	1.27	0.858	0.034	0.001
TECHNO12	Manufacturing technology	2.63	1.01	0.106	0.175	0.563
SYNDIC12	Labor union actions	2.55	1.13	-0.140	-0.169	0.667
DISPO12	Raw material availability	2.30	1.13	0.873	-0.033	0.088
GLOBAL12	Global score on uncertainty (mean of all items)	2.78	0.50			

**Table 3.** Results on Strategy Items (from Chenhall & Langfield-Smith, 1998).

Variables	Type of Strategy	Mean	Std. Dev.	Main Components		
				Customer	Efficiency	Product
FOURN11	Provide high quality products	4.17	0.87	0.666	-0.005	0.272
ADAPTE11	Customize products and services to customers' needs	4.01	0.95	0.541	-0.027	0.422
RESPEC11	Make dependable delivery promises	3.91	1.08	0.710	0.370	-0.014
COUT11	Low production costs	3.84	1.01	-0.117	0.750	0.010
DISPO11	Product availability	3.80	1.00	0.571	0.279	0.124
SAVQ11	Provide effective after-sale service and support	3.64	1.11	0.677	-0.204	-0.008
NOUV11	Make changes in design and introduce new products quickly	3.41	1.11	0.179	-0.014	0.823
DELAIS11	Provide fast deliveries	3.27	1.14	0.462	0.657	0.106
UNIQUE11	Provide unique product features	3.21	1.18	0.125	-0.229	0.616
VOLUME11	Make rapid volume and/or product mix changes	2.96	1.16	-0.001	0.446	0.642
PRIX11	Low price	2.68	1.16	0.081	0.525	-0.114

**Table 4.** Results on Non-Financial Measures as Leading Performance Indicators (Adapted from Ittner & Larcker, 1998).

Variables	Nature	It is Easy to Directly Relate	Mean	Std. Dev.	Main Components			
					Stock	People	Customer	Quality
F18	C	Customer satisfaction measure to revenue or market share	3.90	0.92	-0.13	0.18	0.76	0.08
B18	Q	Quality measures to productivity improvements or cost reductions	3.70	0.89	0.08	0.04	0.01	0.76
A18	Q	Quality measures to operational performance	3.25	1.01	-0.08	0.12	0.03	0.75
C18	Q	Quality measures to revenue or market share	3.24	1.00	0.06	0.31	0.31	0.45
G18	C	Customer satisfaction measure to accounting returns	3.22	0.99	0.22	0.01	0.77	0.23
D18	Q	Quality measures to accounting returns	3.20	1.04	0.24	0.12	0.26	0.72
M18	ES	Employee training measures to accounting returns	2.99	1.09	0.18	0.79	0.15	0.28
J18	ES	Employee satisfaction measure to accounting returns	2.97	1.02	0.30	0.45	0.53	0.06
L18	ET	Employee training measures to revenue or market share	2.97	1.03	0.07	0.85	0.16	0.11
I18	ES	Employee satisfaction measure to revenue or market share	2.85	1.07	0.25	0.48	0.54	0.02
H18	C	Customer satisfaction measure to stock price returns	2.45	1.07	0.78	-0.14	0.39	-0.02
K18	ES	Employee satisfaction measure to stock price returns	2.17	0.99	0.82	0.19	0.13	-0.06
E18	Q	Quality measures to stock price returns	2.10	0.98	0.76	0.10	0.00	0.30
N18	ET	Employee training measures to stock price returns	2.06	0.98	0.75	0.42	-0.11	0.11
Synthesis: Correlations between groups of indicators and main components								
Customer	C	Customer measures (variables F18 + G18 + H18)	3.20	0.75	0.537**	-0.087	0.839**	0.048
Quality	Q	Quality measures (variables A18 + B18 + C18 + D18 + E18)	3.00	0.68	0.435**	0.207*	0.040	0.881**
Semploye	ES	Employee satisfaction measure (variables I18 + J18 + K18)	2.61	0.83	0.677**	0.414**	0.462**	-0.040
Femploye	ET	Employee training measures (variables I18 + J18 + K18)	2.60	0.86	0.504**	0.842**	-0.029	0.224*

\*Significant correlation at  $p < 0.05$  level.\*\*Significant correlation at  $p < 0.01$  level.

**Table 5.** Correlations Between the Variables Used for Testing Hypothesis.

Contingency Variables	Variables Concerning the Financial and Non-Financial Measures (See § 2.1)					
		Source	Market	Profit	Environment	Cash
Size (see § 2)	Turnover	-0.188**	-0.145*	0.206**	0.030	0.006
	Employees	-0.176*	-0.126	0.185**	-0.013	0.031
Strategy (see § 2.3)	Customer	0.609**	0.152*	0.005	0.089	0.110
	Efficiency	0.122	-0.023	0.343**	0.073	0.113
	Product	0.080	0.442**	0.057	0.076	0.000
Uncertainty (see § 2.2)	Supply	0.023	-0.021	0.021	0.018	-0.005
	Demand	-0.074	0.066	0.144*	0.032	-0.005
	External	0.056	0.105	-0.096	0.123	0.005
Uncertainty (see § 2.2)	Global score***	0.077	0.110	-0.043	0.159	0.032
First stage of product–life cycle (see § 2.4)	Launch	-0.036	0.140	-0.057	-0.069	0.020

\*The correlation is significant at the level  $p < 0.05$  (unilateral).

\*\*The correlation is significant at the level  $p < 0.01$  (unilateral).

\*\*\* Global score on uncertainty (mean of all the scores on the 8 items – see Table 2 – variable GLOBAL12)



# MULTIFACETED NEW PRODUCT DEVELOPMENT PERFORMANCE: SURVEY OF UTILIZATION OF PERFORMANCE MEASURES IN FINNISH INDUSTRY

Petri Suomala

## ABSTRACT

*The paper analyzes the present state of performance measurement (PM) in Finnish industrial R&D and new product development (NPD) management. A questionnaire focusing on the present objectives and practices of NPD performance measurement was sent to 350 R&D managers. The results are analyzed on the basis of a classification of reported objectives, measures, and their purposes of use. Results show that there is room for improvement in PM of NPD. The companies often rely on a few established measures in a rather unstructured manner. Life cycle dimensions and multifaceted effects of NPD are not fully reflected by the measures.*

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Performance Measurement and Management Control: Superior Organizational Performance

Studies in Managerial and Financial Accounting, Volume 14, 203–233

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ISSN: 1479-3512/doi:10.1016/S1479-3512(04)14009-4

## INTRODUCTION

Several decades of R&D studies have produced a large amount of data related to effective product development management. For instance, Cooper has developed the NewProd model for separating probable successful projects from probable losers. He remarks that project selection is pivotal in effective risk reduction in product development. According to the NewProd model, product superiority/quality, market need, growth and size, and product scope are the factors that have the strongest impact on the probability of success (Cooper, 1985). Regarding effective R&D management, a major challenge is provided by the fact that there is a wide spectrum of different kinds of projects that can be assessed under the label R&D. In other words, the management of research projects is different from the management of development projects although both can be regarded as R&D projects. The most problematic area, according to Matthews (1991), is the gap between clear research projects and development projects. These projects may often fail to show sufficient justification for funding, since they neither represent a pure “breeding ground” anymore, nor have they yet reached the status of “investments” that could be assessed using sound financial measures. From the management point of view, it seems to be important to realize that a fundamental function of R&D is to implement the desired corporate strategy. It has been suggested that the management of product development should be strategically anchored and that the performance measures employed should be both strategically consistent and have a good internal balance (Brown & Eisenhardt, 1995).

Performance measurement (PM) can be seen as a systematic means for obtaining information and understanding concerning a phenomenon or issue that is rather complicated or broad in nature, thereby hindering the possibility to manage it only by gut feeling (see e.g. Ijiri, 1975; Kaplan & Norton, 1992, 1996; Neely et al., 1995; Uusi-Rauva, 1986). In this respect, the management of industrial R&D, or new product development (NPD), seems to be a domain that could benefit from performance measurement. NPD management includes several complex aspects – such as the identification of probable success projects, the total impact of NPD on various stakeholders (customers, supply chain, owners, etc.), or the life cycle dimensions of product development – which are difficult to manage without any quantification or at least without systematic qualitative assessment. Pillai et al. (2002, p. 168) summarize that the PM of product development should provide help for continuously revalidating assumptions made in the past. This should be done in the light of the knowledge gained from current projects. In addition, performance measurement has also a communication function: R&D is not only expected to produce and develop new products and processes, but also to show their value to the organization (Brown & Svenson, 1998). Further, Tipping

et al. (1995) stress that it is not fair to judge the value of an R&D organisation to a corporation simply by looking at the new products.

However, some studies have indicated that the management of NPD is not as developed as it could be. Many managers are still relying on gut-feel regarding “best practice” in new product development. Analogously, it has been pointed out that research has tended to be theory-driven instead of being applications-based (Poolton & Barclay, 1998). It has been concluded that in most cases companies do not measure their R&D activities very well, but that they are striving to find out how to do it effectively (Driva et al., 2000). In this respect, it seems fair to claim that a good deal of work is still needed to improve the efficiency of the interface between industrial R&D management and academic R&D research.

This study was set up to gain more information on and greater understanding of the state of product development performance measurement in Finnish industry. The basic notions concerning product development management, such as *the dominance of gut-feeling* and *somewhat poor performance measurement*, pointed out by Poolton and Barclay and Driva, as well as the general assumption that performance measurement has potential to contribute to R&D management in many ways, provided the motivation to approach the subject in the Finnish context. The aim of the paper is to describe what the main objectives of product development are and what the role of performance measurement is in Finnish industrial product development management today.

## **NPD PERFORMANCE MEASUREMENT**

### *The Present State According to the Literature*

The overall observation of the literature seems to be that the measurement of product development is not as developed as it probably should be. Compared to many other application areas, such as manufacturing, performance measurement in product development is rather poorly developed (O’Donnel & Duffy, 2002, p. 1199). When measuring the effectiveness of research and development, one should aim both to demonstrate the organization’s performance in this critical dimension and to point out the means to improve it in the future. Somewhat in contrast with this, NPD measures in many companies suffer from short-termism and an overemphasis on single projects or products. A very typical measure of product development assesses the variance between the plan and the actual outcome of a project along the dimensions of cost and time (Meyer et al., 1997, p. 89).

Driva et al. have conducted a survey on the use of performance measures in product development both in Europe and USA. They received some 150 replies

from European and American companies. The results show that the five most common performance measures are (Driva et al., 2000, pp. 151–152):

- total cost of the project (employed by 71% of the companies);
- on-time delivery of the development project (60%);
- actual project cost compared to budgeted cost (60%);
- actual vs. target time for project completion (58%);
- lead time to market (57%).

Furthermore, 51% of the companies surveyed employed some kind of projected profitability analysis. However, 18% of those not employing it at the moment wanted to use it in the future. Overall, it is highly interesting that none of the five most important measures actually concern the outcomes and effects of product development.

According to another survey, 50% of companies use performance indicators that are related to product performance, including broad aspects such as quality, technical performance, development cost, production cost and unit cost of the product (Hyland et al., 2002). According to the same study, approximately 60% of the companies monitor the profits generated by the product innovation activity. Hyland et al. also conclude that, apparently, many companies are much more involved in establishing an innovation process than in actually trying to improve it. Thus, the potential of performance measures in improving and developing activities or processes is not fully utilized (Hyland et al., 2002). As a piece of data from 20 years ago, Meyer cites a study by Schainblatt (1982), who found that 59% of the firms studied did not measure the R&D activity at all. Further, as few as 20% of the firms studied carried out comparisons of R&D costs and commercial outcomes on a quantitative basis (Meyer et al., 1997, p. 89). More recently, Kerssens-van Drongelen and Bilderbeek (1999) have found that 80% of the companies that had some kind of R&D activities measured their product development at least in some manner. Further, corresponding ratios (between 40 and 50%) have been reported also in other studies (Griffin, 1997; Hertenstein & Platt, 2000). While it is difficult to list the comprehensive reasons for these observations, Nixon indicates one when he states:

The measurement of R&D productivity and effectiveness has received relatively little attention in the management control and accounting literatures (Nixon, 1998, p. 330).

On the other hand, it has been recognized that managers are generally unsatisfied with the present R&D measurement approaches presented in the literature (Pearson et al., 2000, p. 357). Further, according to Hertenstein and Platt, NPD managers are not satisfied with either the practices of performance measurement in industrial new product development. Also, the link between the measurement

and corporate strategy seems to be weak in many cases despite the fact that a number of managers stress the importance of measuring the strategy alignment of product development (Hertenstein & Platt, 2000). Nevertheless, it is a fact that many companies do not utilize explicit measurement of new product development performance at all and that, overall, comprehensive and consistent measures are still in their infancy (Driva et al., 2000, p. 158). However, it has been found that those companies that *do* have explicit measurement often use both financial and non-financial measurement (Hertenstein & Platt, 2000).

Werner and Souder studied the differences between U.S. and German practices in R&D performance measurement. They found that both the perceptions of the usefulness of the measures and the fundamental philosophy related to performance measurement in these countries were different from each other (Werner & Souder, 1997). German managers did not show any particular trust in performance measures. Particularly output measures were distrusted, whereas the input measures were employed more often. U.S. managers, on the other hand, relied mostly on measures like the number of patents, financial measures such as rate-of-return, or quality assessments. The authors underscore, as a lesson learned from the cross-cultural study, that research and development measures cannot be selected “in a vacuum”; rather, the performance measurement needs to be adapted to the organization in such a way that the measures are consistent with the particular organizational culture and philosophy. Hence, the greatest effectiveness in using measures is only achieved when they become an integral part of the firm’s research and development system (Werner & Souder, 1997).

Using four case studies, Davila has also shown the diversity that exists in the use of management control systems in NPD. Depending on the project characteristics, the role of control systems seems to vary. Prototyping, for instance, is likely to partially replace management control systems when technology is the main source of uncertainty. In contrast, when uncertainty is mostly due to the market of the project scope, management control systems are seen as vehicles for reducing uncertainty rather than for monitoring and controlling. Thus, on the basis of this evidence, the information perspective – the role of measures in producing relevant information for the decision-making process – is supported (Davila, 2000). Davila’s study also pointed out the relative importance of non-financial measures:

... project managers rely on non-financial performance measures much more than they do on financial ones. This finding suggests that researching management control systems in new product development cannot be restricted to traditional accounting measures, but needs to encompass a broader set of measures. This is so because managers work with the implicit assumption that good performance in non-financials will drive good financial performance (Davila, 2000, p. 404).

Consistently with this, it has also been argued that NPD managers might want to increase the emphasis on non-financial measures and, simultaneously, decrease the emphasis on financial ones. The rationale for this would be the difficulty in separating the financial results of NPD from those of other functions (Hertenstein & Platt, 2000). In other words, non-financial measures are expected to be better than financial ones in identifying the specific contribution of NPD to company objectives.

The lack of measures per se seems not to be a problem. Meyer has found some 75 different measures of research and development in the literature. On the basis of his analysis of them, he criticizes the existing performance measures of R&D. He argues that the actual impact of these various measures is questionable due to a number of aspects, including the fact that the measures are not able to provide help for management in understanding the long-term dynamics of evolving product lines and the measures do not provide understanding concerning the leverage that the underlying product architecture, i.e. product platform, can provide in derivative products (products that can be derived from or based on a platform) (Meyer et al., 1997). Further, one of the reasons for poor measurement may be that presented by Szakonyi. He points out that collaboration between R&D and finance is quite underdeveloped. Indeed, the lack of collaboration between these sectors can be regarded as one of the most dramatic shortcomings in R&D effectiveness (Szakonyi, 1994b, p. 53).

### *How to Measure NPD?*

The nature of the management control system seems to be an important issue also in the sense that it itself affects the performance. For instance, when new product performance is defined on the basis of subjective, self-reported measures, it is seen that the use of different measurement information (including cost-, time-, and product design-related information) is significantly related to performance. More specifically, better cost and product design information is positively associated with performance, but time information has a negative association. Thus, the management control system's design is, as such, related to performance (Davila, 2000). This fact highlights the importance of paying proper attention to the design, composition, and use of any control system. Indeed, there is evidence available that the most successful organizations tend to use performance measurement in new product development more extensively than firms whose performance is inferior. In addition, higher targets lead to better outcomes: according to the PDMA best practice study by Griffin, the best firms typically have higher expectations regarding future new product development performance than other firms (Griffin, 1997).

One of the most important problems related to new product development success measurement is the issue of multidimensionality of product development outcomes. At least three general dimensions can be presented (Griffin & Page, 1996, p. 479): the consumer-based, financial, and technical dimensions. Griffin and Page argue that these dimensions are independent of each other: “Achieving success with consumers is unrelated to whether a product produces profit for a firm.” This seems to be, however, only partly true: one could achieve customer-based success without producing profits for the organization, but it is not very likely in a competitive market that one can produce financial results without simultaneously succeeding with respect to the customer perspective. Nevertheless, as Griffin and Page point out, firms often have accept some kind of compromises between these three success dimensions. A sacrifice at one level might be required in order to be able to achieve success in another. Due to this, Griffin and Page found that the most appropriate measures for new product success depend on the new product and business strategy of the organization (Griffin & Page, 1996).

In addition to strategy, performance evaluation can be founded on external customers’ opinions. For instance, Hiron et al. (1998) propose external customer satisfaction as a measure of research and development management. On the other hand, Pearson et al. identify “everything should begin with the customer” thinking as one of the most popular management dogmas that is also well represented in the measurement of development activities, for instance, through an emphasis on customer satisfaction metrics (Pearson et al., 2000). At the same time, the authors argue that there is a consistent pattern in the failure of leading companies to stay at the cutting edge of their industry when a technological or market paradigm shift occurs. Hence, good management of R&D is characterized by designing an evaluation process that is focused on effectively weeding out products and technologies that do not properly address customer needs (Pearson et al., 2000).

It has been argued that the diversity of R&D functions, which include activities from basic research to product or process improvements, calls for a diverse set of measures, which can completely cover the measurement need within these activities. In line with this, Brown and Gobeli have suggested versatile R&D measurement practice. This would be organized around the concept of the “top ten R&D productivity indicators” intended to capture the multidimensionality of R&D performance, including measures for (Brown & Gobeli, 1992):

- resources;
- project management;
- people management;

- planning;
- new technology study and development;
- outputs;
- division results and outcomes.

It is likely that no single approach for NPD performance measurement can be established. On the basis of a number of factors, the performance measurement should be rather adapted to fit any particular context seen as relevant. It has been pointed out that different objectives require different types of measures (Schumann et al., 1995). As one typology, Schumann et al. propose a matrix the dimensions of which represent external/internal focus of measurement and the timing (end-of-process vs. in-process) of it.<sup>1</sup> Schumann et al. suggest that internal end-of-process measurement would be mainly used for performance tracking purposes and internal in-process measurement for technical productivity improvement purposes. On the other hand, external end-of-process measurement would allow competitor assessment, while external end-of-process measurement would facilitate the search for best practices.

Besides this, performance measures for NPD have been organized and classified in many ways. Naturally, one of the most general and typical classifications is based on the distinction between financial and non-financial indicators. Hertenstein and Platt have presented a more specified typology: Financial measures constitute one domain, which include measures such as revenue/sales, product cost, development costs, gross profit of the new product, sales to break-even, or the percentage of total sales formed by new product sales. Non-financial measures are further divided into eight subgroups including timing measures, design effectiveness and efficiency measures, customer satisfaction measures, and strategic measures (Hertenstein & Platt, 2000). Many measures in the typology of Hertenstein and Platt are not very well operationalized. Especially the strategic measures are not really measures at all; rather they represent still somewhat ambiguous ideas regarding what could be measured in terms of strategy in new product development. Also, from the new product performance point of view, it seems irrelevant to measure, for instance, employee morale or individual contribution. They may be seen as antecedents for the performance, but they do not really indicate performance as such. The typology also includes a few shortcomings regarding the hierarchy of the measures; for instance, in the category of customer satisfaction measures, satisfaction concerning the product and satisfaction concerning ease of use seem to be overlapping.

Furthermore, Szakonyi has constructed a framework for the evaluation of research and technology effectiveness (Szakonyi, 1994a). Effectiveness is defined as a function of, for instance, good R&D planning, identifying a market need for R&D, competent management of personnel, and good teamwork. The assessment



of effectiveness is based on performance evaluation in ten activities, including for instance selecting R&D, planning and managing projects, transferring technology to manufacturing, fostering collaboration between R&D and finance, linking R&D to business planning, and coordinating marketing and R&D. In each activity, the evaluation is carried out utilizing a scale of six pre-determined levels of performance (Szakonyi, 1994a):

- (1) Issue not recognized.
- (2) Initial efforts are made toward addressing issue.
- (3) Right skills are in place.
- (4) Appropriate methods are used.
- (5) Responsibilities are clarified.
- (6) Continuous improvement is underway.

One can easily deduce from the previous description that the method proposed by Szakonyi is designed primarily for monitoring purposes and for both external and internal benchmarking, not to support the practical every-day management of development activities.

The need for multidimensional and comprehensive (including both financial and non-financial measures) measurement of NPD leads to the idea to employ some kind of balanced system for measurement. In fact, the balanced scorecard (BSC) has been identified as a suitable method for the performance analysis of new product development. According to Sandström, at least three benefits are associated with the utilization of a balanced scorecard in product development: its future orientation, its clarity, and the ability of the BSC to capture multiple perspectives of performance. A prerequisite for the successful implementation of BSC is the involvement of the designers (users more generally) during the process of developing the measurement system (Sandström & Toivanen, 2002). Generally speaking, the involvement seems to be important since the R&D measurement should be consistent with the way the development is organized and planned. Hence, emphasis has to be placed on the alignment of performance measures and the decision-making process (Pearson et al., 2000). Measures should not come “out of the blue,” so to speak. Interestingly, however, it has been found that the selection of measures is not as critical an aspect of performance measurement system design as it could be anticipated to be. The least and most effective measurement systems may include roughly the same set of indicators, which implies that the other design parameters are far more important than the metrics for the effective design of a new product development performance measurement system (Kerssens-van Drongelen & Bilderbeek, 1999). One of the possible explanations relates to organizational climate: Krogh et al. have recognized the importance of right atmosphere and attitudes for the success of R&D evaluation and assessment (Krogh et al., 1988).

They have argued that a constructive approach is most likely to truly support the R&D units being evaluated.

As can be seen from the literature, the performance of R&D is elusive, multifaceted, and challenging to measure. Therefore, no single measure for R&D performance monitoring can capture the versatile nature of product development; rather, a more comprehensive construct is needed for performance measurement. Analogously to the BSC framework presented by Kaplan and Norton (see e.g. Kaplan & Norton, 1992, 1993, 1996), it is proposed that the performance and success of new product development can be evaluated and measured from at least four directions that provide a versatile enough view covering the aspects presented in literature:

- Customer view: how well does the product respond to and fulfill the customer's need, is the quality sufficient, what are the operating costs, is appropriate after sales support available?
- Shareholder view: does R&D produce profitable business, is the growth rate of the business acceptable, what is the competitive position?
- R&D view: how is the deployment of strategic resources, do competence development and learning take place?
- Supply chain view: what is the status of cost efficiency, time to market, design for assembly or manufacture, availability of appropriate sales; what is the delivery channel, how is the feasibility of the product from the supply chain point of view?

These four directions together are assumed to reflect the essential parts of the product's value chain and life cycle. R&D represents a starting point for a product life cycle; supply chain – when seen broadly – is responsible for issues connected with the physical realization of the product and delivering the product to the customer; customer has the power to determine whether the product functionality and quality are consistent with the need; and finally the shareholder viewpoint demonstrates that successful R&D should – at least in the long term – result in profitable business.

## METHOD

The survey was initiated in 2001 with a literature review of NPD and R&D performance measurement. In the spring of that year the research questions were sufficiently clarified for the questionnaire to be designed. After a few iterations regarding the design of the survey, the questionnaire was pre-tested with the assistance of three R&D managers. These R&D managers were asked to fill

**Table 1.** The Response Pattern of the Study.

	Number of Companies	Percentage (%)
Population	340	100.0
Sent questionnaires	340	100.0
Total responses	82	24.1
Excluded from the sample	19	5.6
Usable responses	63	18.5

in the questionnaire and evaluate the applicability and comprehensibility of the questions. The pre-testing brought out only minor needs for improvement in the questionnaire. After some modifications, the questionnaire was sent to respondents in September 2001. Respondents had the possibility to reply through the Internet (www.questionnaire) and by mail.

The questionnaire was sent to 340 R&D managers of Finnish industrial companies, most of which employed more than 200 employees. The contact addresses of the companies were queried from the Sales Leads database software. According to the database used, these 340 companies covered the whole population of Finnish industrial companies that employed more than 200 employees.

Responses were obtained from 82 companies. That corresponded to a response rate of 24.12%. According to the responses, 19 companies did not have R&D activity at all. These companies were excluded from this study and hence the final sample consisted of 63 companies (see Table 1). Only three of the respondents represented staff other than the company's R&D management staff. These represented either general management or marketing management.

The most represented lines of industry in the sample were machine construction (13 responses), electronics and optical instruments (12 responses), and pulp and paper (9 responses). The companies from which responses were received employed on average 1033 persons, which was due to the participation of a few very large global corporations. Approximately 56% of the sample consists of companies that employ more than 200, but less than 500 persons. The profile of the sample in terms of the size and industrial sectors of the companies is depicted in Fig. 1.

Both versions of the questionnaire (web form and sent paper bundle) were identical as regards the substance and order of appearance of the questions. Only the visual formatting of the versions was somewhat different. The questionnaire consisted of 11 open-ended and 10 closed-ended questions. The questionnaire was 8 pages long (paper version) and it was laid out according to four main sections.

The first section dealt with background issues of the respondents and the companies. The second part of the questionnaire included questions about a company's NPD and R&D. Especially the objectives of product development, which were

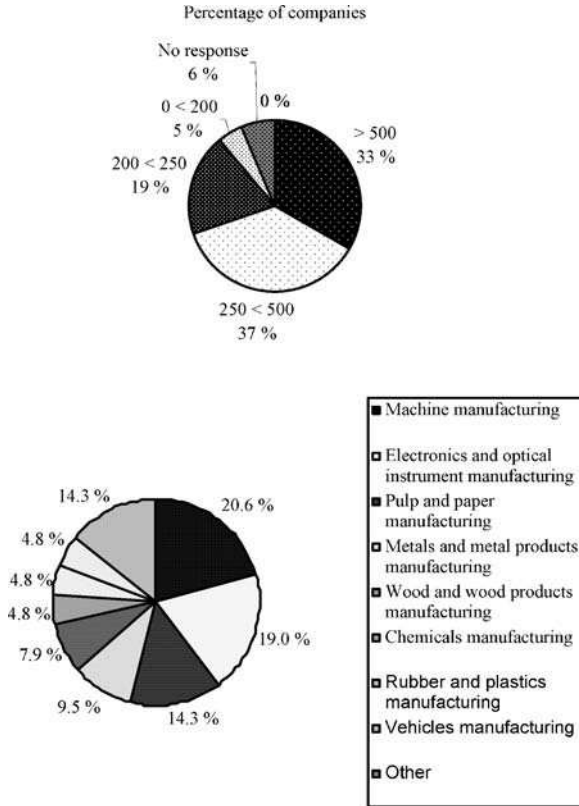


Fig. 1. The Distribution of the Size and Industrial Sector of Responded Companies.

perceived as important by respondents, were emphasized. The third section of the questionnaire was reserved for the R&D managers' opinions on the validity of their company's performance measurement practices in general. The key subjects of this research were underlined in the fourth section of the questionnaire. These subjects were the performance metrics of NPD used, the purpose of measures, and R&D managers' opinions on the quality of the NPD performance metrics used.

The data were analyzed both quantitatively and qualitatively. Answers for the closed-ended questions were given using nominal and order scales. For instance, the opinions of the R&D managers were clarified with different kinds of arguments. The respondents were asked to indicate the level of agreement or disagreement using five pre-defined scales. The data which were gathered with the order scale type of questions or statements, were analyzed using arithmetic

average and median computations. However, the majority of the data were obtained by open-ended questions. These were e.g. the important objectives of product development, the metrics of product development used, and the purpose of measures. The data gained from open-ended questions were quite many-sided as written by the respondents and therefore required interpretations that undeniably have some influence on the reliability of the results. The open-ended data were put into statistical mode by subjectively classifying them into similar kinds of categories. This unavoidably obscures the chain of evidence of this study to some extent, but was necessary, given the large variety and amount of data obtained.

The main purpose of the study was to determine and describe the present state of the performance measurement of NPD in Finnish industry using a conceptual framework constructed on the basis of a literature review. In other words, the primary interest was not in establishing causes for or statistical relationships within the observed phenomena. Therefore, the statistical analyses of the data are limited. However, some analyses, such as variance and correlation analyses with tests of significance, were applied to investigate the dependency of some variables (e.g. number of measures applied, number of measurement categories represented, satisfaction with the measures, company size, value chain coverage, and project orientation of a company's product development). These analyses were mainly limited by the fact that the number of respondents was relatively low, which restricted the possibility to divide the answers into smaller subgroups.

The remainder of the paper is organized as follows: First, descriptive results are presented. In this section, the objectives identified and measures of product development applied are analyzed. In addition, the needs behind the measurement and its purposes are discussed. Second, the relationships between a number of variables are briefly analyzed in the last part of the results section.

## **RESULTS**

The R&D spectrum – from basic research to actual product development – includes a number of activities that are very different from each other. Therefore, as part of the study, it was inquired what portion of the R&D staff is allocated to a particular phase of R&D. The question seemed to be somewhat difficult to answer for some companies, and thus the total number of replies for this question remained lower than the total number of respondents. Table 2 shows the relevant results. One can observe from the table that the main focus is on the later phases of the spectrum: 49% of the companies do not have any basic research staff at all, and approximately 40% of the companies have allocated one to four persons for

**Table 2.** Distribution of Staff in R&D Spectrum ( $n = 51$  Companies).

Number of Allocated Employees	Number of Companies					
	Basic Research	%	Applied Research	%	Product Development	%
0	25	49.0	11	21.6	5	9.8
1–4	20	39.2	20	39.2	15	29.4
5–9	3	5.9	12	23.5	10	19.6
10–14	2	3.9	2	3.9	4	7.8
15–19	1	2.0	3	5.9	3	5.9
20–	0	0.0	3	5.9	14	27.5
Sum	51	100.0	51	100.0	51	100.0

basic research. On the other hand, over 40% of the companies have more than ten employees in product development.

On the basis of this, it seems fair to conclude that performance measurement of product development (in contrast with research and development) is in practice a relevant unit of analysis. Consistently, also the literature points out that the main scope of industrial R&D, at least in terms of employee allocation and money invested (see e.g. IRI, 2000; Jaakkola & Tunkelo, 1987), is product development.

### *Objectives of Product Development*

The perceived objectives of product development were clarified using open-ended questions. Respondents were allowed to subjectively indicate a maximum of five important goals of their company's product development. Replies were obtained from 61 companies. Based on the responses, it was possible to recognize 16 different objectives or objective domains that reflected similar kinds of interests for the company's product development activity (Table 3).

However, the objectives were not equally at the same level. For instance, the most common objective for product development, "new product and technology development," could be considered as being the basic task of product development. It is quite abstract as an objective and essentially illustrates *what* should be done in product development, while many other – more specific – objectives can be employed to describe *how* this task of product development should be completed. This basic task can be conducted e.g. in a customer-oriented way and by keeping on schedule with the project (see the identified objectives in Table 3).

Considering customer needs and improving customer satisfaction turned out to be a very common objective domain of product development, as was also the case

**Table 3.** The Perceived Objectives of Product Development ( $n = 61$  Companies).

No.	Product Development Objective (is to ...)	Companies	%	Perspective
1	Develop new products and technology	26	42.6	R&D
2	Consider customer needs and improve customer satisfaction	25	41.0	Customer
3	Improve product's quality and features	25	41.0	Customer
4	Persist in project's schedule and shorten lead times	23	37.7	R&D
5	Improve cost effectiveness in a product supply chain	20	32.8	Supply chain
6	Consider different requirements of the supply chain, e.g. produceability of a product	14	23.0	Supply chain
7	Be efficient	12	19.7	R&D
8	Be innovative	10	16.4	R&D
9	Improve cost effectiveness of R&D	8	13.1	R&D
10	Improve company's or product's profitability	7	11.5	Shareholders
11	Improve manufacturing process	6	9.8	Supply chain
12	Improve company's or product's competitiveness	6	9.8	Shareholders
13	Extend and intensify co-work done in R&D	5	8.2	Other
14	Increase knowledge and learning	4	6.6	R&D
15	Influence company's or product's sales	2	3.3	Shareholders
16	Other	27	44.3	Other

with improving the product's quality and features. Both goals were appreciated by 41% of the respondents (Table 3). Responses that were seen to relate with customer needs and the satisfaction objective domain were for instance as follows:

- "Customer-oriented,"
- "Solve the customers' problems,"
- "Correspond to customer needs," and
- "Improve customers' profitability"

As regards the objective domain of improving the product's quality and features, the responses that were seen to associate with it were for example:

- "Quality,"
- "Improve product's quality,"
- "Improve the reliability of devices," and
- "Technical performance"

Also keeping the R&D projects on schedule and shortening the product development lead times were considered important by a large portion of respondents. Examples of responses are as follows:

- “Rapidity,”
- “Short development time,”
- “Persisting in the schedule,” and
- “Shortening the projects’ lead times”

No more than approximately 12% of respondents regarded (that is, explicitly mentioned) company or product profitability as an important objective of a company’s product development (see line 10 in Table 3). The objective domain “other” turned out to be quite large (see the last line of Table 3). It contained specific product development objectives that were reported only by one company and the domain mainly comprised goals that were unidentifiable. This may indicate slight misinterpretation of the question by some of the respondents. The responses included:

- “Education of new employees,”
- “Consistency with the legislation,” and
- “Serving as a resource pool”

Product development objectives can be viewed from perspectives that are considered to be relevant in evaluating the comprehensive performance of product development (Table 4: column Perspective). According to the tentative theoretical framework, these perspectives were concluded to be the customers, the product development or R&D itself, the product’s supply chain, and the shareholders of the company. In theory, it should not be reasonable to emphasize any particular aspect over another. On the contrary, the requirements of each stakeholder should even be assessed individually. Is this done in Finnish industry? Answers can be found in the perceived important objectives of product development (Table 4).

The customer perspective was considered important by 67.2% of the respondents at the level of product development objectives. The objectives of customer perspective were associated with customer needs and satisfaction and product quality and feature improvements.

**Table 4.** The Number of Companies that Perceived Product Development Objectives Associated with a Specific Perspective ( $n = 61$  Companies).

No.	Perspective	Companies	%
1	R&D itself	47	77.0
2	Customer	41	67.2
3	Supply chain	29	47.5
4	Shareholder	14	23.0
5	Other	32	52.5



The most common perspective, at the level of product development objectives, appeared to be the R&D internal perspective that was valued by 77.0% of the companies (Table 4, the first row). In addition to the basic task of product development, which was to develop new products and technology, the R&D internal perspective included objectives that were associated with a project's schedule and lead-time, efficiency, innovativeness, cost effectiveness of R&D, and knowledge increment or learning.

The supply chain perspective was appreciated by 47.5% of the product development managers in the responses regarding the objectives of product development (Table 4). Objectives of the supply chain perspective were related with product costs, cost effectiveness of the supply chain, produceability, and manufacturing process improvements.

The least valued perspective turned out to be the company shareholders' perspective. Only 23.0% of the respondents referred to at least one product development objective that was related to the company shareholder's perspective (Table 4). Objectives that were classified as belonging to the company shareholders' perspective were associated with profitability, competitiveness, and sales of a product, a product-line, or a company.

The nature of perceived objectives of product development did not indicate very clearly that the requirements that arise from different product life cycle phases strongly affect the formulation of objectives. Either the objectives are expressed at such a general level that does not enable clear connection of objectives and life cycle phases (which is the case e.g. with the objective "*Correspond to customer needs*"), or the objectives are related to a particular phase, mostly the beginning of life cycle ("*Short development time*"), which suggests that the life cycle is not considered as a whole – the possible versatility of requirements arising from different phases has not been recognized or at least not communicated.

### *Performance Measures of Product Development*

The product development managers were asked to define the performance measures of product development actually used in-house. According to the replies, 44 companies use at least one indicator of product development performance. That corresponds to approximately 70% of the sample of this survey. The preceding portion is quite high when compared with international findings (Hertenstein & Platt, 2000, p. 315; Griffin, 1997, pp. 429–458). However, the result may be partly due to a response bias: it is very likely that those companies that answered the questionnaire are more active in NPD performance measurement than those that returned no answers.

**Table 5.** The Number of R&D Employees and Performance Measurement ( $n = 51$  Companies).

Number of R&D Employees	Frequency	%	Number of Companies Having NPD Measures	%	Number of Measures	% of all Measures (%)	Average Number of Measures
0	7	14	3	43	14	8	4,7
1–4	6	12	2	33	5	3	2,5
5–9	6	12	4	67	12	7	3,0
10–14	8	16	7	88	26	15	3,7
15–19	6	12	5	83	30	17	6,0
20–39	5	10	3	60	14	8	4,7
40–59	5	10	4	80	9	5	2,3
60–	8	16	8	100	65	37	8,1
Sum	51	100	36		175	100	4,9

Table 5 illustrates the association between the number of R&D employees and performance measurement used in product development. Quite as expected, the proportion of the companies having product development performance measures is higher in companies that have a bigger R&D unit. Consistently, the overall number of measures seems to relate to the number of R&D employees.

The product development performance measures used were classified into 14 different categories, which represented apparently different subjects. It appeared that 56.8% of companies measured the product development performance with metrics that could be associated with time (Table 6). The time category contained mainly measures such as lead and cycle times and time schedules. Examples of specific measures are as follows:

- “Product development project lead time,”
- “Development schedule punctuality,”
- “Schedule objective vs. schedule realization,” and
- “Time to market”

The second most typical category of product development performance measures was sales or revenue. It contained measures of which at least one was in use in 40.9% of the companies. The category included measures like new products’ sales per overall sales and absolute revenues either of a product, a product line, or a company (Table 6).

Both product development project costs and overall costs of product development were placed in the category of costs of product development. This showed that 31.8% of the companies used performance measures associated with costs of product development (Table 6: the third row). Examples include:

**Table 6.** Product Development Performance Measure Categories ( $n = 44$  Companies).

No.	Category of Product Development Performance Measures	Companies	%	Perspective
1	Time	25	56.8	R&D
2	Sales or revenue	18	40.9	Shareholders
3	Costs of R&D	14	31.8	R&D
4	Customer satisfaction measures	13	29.6	Customer
5	Profitability	13	29.6	Shareholders
6	Costs of supply chain	12	27.3	Supply chain
7	Effectiveness and efficiency	11	25.0	R&D
8	Innovation	9	20.5	R&D
9	Product's produceability	8	18.2	Supply chain
10	Volume based	7	15.9	R&D
11	Personnel	6	13.6	R&D
12	Strategic	5	11.4	Other
13	Combination of profitability and sales or costs	3	6.8	Shareholders
14	Other	16	36.4	Other

- “Project budget;”
- “NPD project costs;” and
- “Costs of product development”

Customer satisfaction was measured primarily by directly asking the customer, but also indirectly by market share measurements or by keeping track of the number of customer complaints. Some sort of customer satisfaction measurement as part of product development measurement was practised by 29.6% of the companies (Table 6: the fourth row).

The profitability category included typical profitability measures such as return on investments and net profit of a company. *Costs of supply chain* consisted of measures that were focused on the cost of different parts of the supply chain:

- “Direct product costs;”
- “Manufacturing costs;” and
- “Warranty costs”

Effectiveness and efficiency of the product development was measured by employing measures like product development success rate, R&D maturity index, and number of accomplished product modifications. Innovation measures, on the other hand, were mostly connected with the number of patents and patent applications.

Consistently with the identified objectives, also in the case of product development performance measure the category “other” turned out to be fairly large. Of the companies, 36.4% reported at least one R&D performance indicator that was either unidentifiable or unclassifiable by the researchers (Table 6: the last row). The main reason for this was that the reported measures were either too general or too company-specific. Examples of these answers include:

- “Spice index,”
- “Measures related to quality,” and
- “Capability of new technologies”

The product development performance measures used can also be viewed from the aforementioned important perspectives or views of product development performance evaluation (Table 6: Perspective). Time, personnel, innovation, effectiveness and efficiency, and product development volume measures can be seen as indicators of the internal aspect of product development performance. That was seen to be the most common perspective among the companies in view of the fact that 81.8% of the companies used at least one measure that was associated with the internal aspect of the product development or R&D (Table 7).

*Company shareholders’* perspective was seen to include measure categories such as sales and revenue, profitability, and combinations of them. Of the companies, 65.9% appeared to use measures that were seen to relate with the company shareholders’ interests (Table 7).

*The supply chain perspective* consisted of measure categories like costs of supply chain and product’s produceability. The R&D performance was measured from the supply chain’s perspective by 38.6% of the companies (Table 7).

*The customer perspective* appeared to be the least measured perspective among the companies. Of the companies, 29.9% used R&D performance measures that were associated with customers (Table 7). The perspective consisted of customer satisfaction measures.

**Table 7.** The Number of Companies that Used Product Development Performance Measures Associated with Specific Perspectives ( $n = 44$  Companies).

No.	Perspective	Companies	%
1	R&D	36	81.8
2	Shareholders	29	65.9
3	Supply chain	17	38.6
4	Customer	13	29.6
5	Other	18	40.9

**Table 8.** The Number of Different Perspectives Represented by the Performance Measures Used in Companies ( $n = 44$  Companies).

Number of Perspectives	Number of Companies
1	14
2	15
3	9
4	6

The versatility and comprehensiveness of product development performance measurement can also be analyzed by looking at the number of different perspectives represented by the performance measurement. Table 8 provides a summary.

Only six companies seem to utilize measures that cover all the four perspectives that were specified. The performance measures in nine companies constitute three different perspectives that are relevant in product development performance measurement. A majority of companies ( $n = 29$ ) cover one or two perspectives by their measures. Further, if it was assumed that the companies who responded are active in their NPD performance measurement, the results would not indicate comprehensive measurement practices that consider the objectives of several stakeholders.

On the basis of these reported measures typically utilized in product development management, it cannot be concluded that the requirements that arise from different product life cycle phases are comprehensively taken into account. The situation is actually quite similar to that with objectives. Either the measures are defined so generally that it is very questionable to connect the measures to a particular life cycle phase (which is the case e.g. with the measure “*net profit of a company*”) or the measures are related to a particular phase, mostly the beginning of life cycle (“*sales of new products*”), which suggests that the possible versatility of requirements arising from different phases has not been fully recognized. In addition, the survey did not produce explicit evidence that the whole life cycle and the cumulative effects during the life cycle had been taken into account in NPD performance measurement.

#### *Relationship Between the Perspectives of Objectives and Measures*

Performance measurement should support and be aligned with objectives of an organization. The performance measures, at best, concretize the given objectives and communicate about them. When comparing the product development

**Table 9.** The Relationship Between the Perspectives of the Important Product Development Objectives and the Employed Measures.

No.	Perspective	Objectives		Performance Measures		Margin (%)
		Companies	%	Companies	%	
1	Shareholders	14	23.0	29	65.9	-43.0
2	Customer	41	67.2	13	29.5	37.7
3	Supply chain	29	47.5	17	38.6	8.9
4	R&D	47	77.0	36	81.8	-4.8
5	Other	32	52.5	18	40.9	11.5
	Number of companies	61		44		

performance measures with the important perceived objectives of product development, it is possible to analyze how the management accounting system is actually aligned with the given objectives of product development. In this study, it is reasonable to carry out the comparison at the level of perspectives.

The greatest difference between the important perceived goals of product development and the performance measures has found with the company shareholders' perspective. Of the companies, 23.0% explicitly identified the objectives of product development that were associated with the company shareholders' perspective, while 65.9% of the companies employed measures that indicated the company shareholders' interests (Table 9). The difference was 43.0 percentage units.

The customer perspective showed also a notable margin between objectives and measures. The margin was 37.7 percentage units. However, in contrast to the company shareholders' perspective, the number of objectives in product development considered to be important from the customer perspective greatly surpassed the measures used (Table 9: the second row). Smaller gaps between objectives and the measures used were observed in the supply chain and R&D perspectives. The difference between both perspectives turned out to be less than 10 percentage units.

Overall, an important fact to notice is that 61 companies (96.8% of the sample) reported objectives of R&D, while 44 companies (69.8% of the sample) defined the measures of R&D used. In general there seems to be more wishful thinking than measuring in the product development of the companies.

### *Needs and Purposes*

The identified measures were associated with a number of purposes in product development. Altogether 30 companies reported at least one purpose for the measurement. Table 10 summarizes the most typical purposes. The most common

**Table 10.** Purpose of Measurement ( $n = 30$  Companies).

Purpose of Measurement	Number of Companies	% of all Companies (%)	Number of Measures	% of all Measures (%)	Number of Different Measures
Assessment of effectiveness, efficiency, or productivity	16	53.3	30	17.4	15
Process quality improvement	9	30.0	15	8.7	11
Resource allocation	8	26.7	29	16.9	23
Assessment of staff innovativeness	7	23.3	10	5.8	6
Assessment of corporate profitability	6	20.0	7	4.1	7
Reward systems	5	16.7	6	3.5	5
Product decision	5	16.7	14	8.1	13
Assessment of customer satisfaction	4	13.3	9	5.2	6
Capability assessment	3	10.0	8	4.7	8
Timing decisions	3	10.0	4	2.3	4
Assessment of product stance in the market	3	10.0	7	4.1	4
Benchmarking	2	6.7	5	2.9	4
Staff competence assessment	2	6.7	3	1.7	3
Sales improvement	2	6.7	2	1.2	2
Technology assessment	2	6.7	3	1.7	3
Decreasing product development cost	2	6.7	3	1.7	3
Assessment of competitiveness	2	6.7	8	4.7	7
Project management	1	3.3	4	2.3	4
Recruiting	1	3.3	1	0.6	1
Flexibility assessment	1	3.3	3	1.7	3
Organizing projects	1	3.3	1	0.6	1
Sum	85		172	100.0	

purpose for the measurement was the assessment of effectiveness and efficiency. Sixteen companies identified this purpose for the measurement. In addition, altogether 30 measures were employed for this purpose and 15 of them can be regarded as different from each other. Other important purposes include process quality improvement (9 companies, 15 measures), resource allocation (8 companies, 29 measures), and the assessment of staff innovativeness (7 companies, 10 measures). Regarding the tail of the table, curiosities included recruiting (one company) and flexibility assessment (one company, three measures).

The product development managers were also asked how satisfactory their experience had been of the product development performance measures used. The majority of the answers (55.8% or 24 out of 43) indicated slight or strong dissatisfaction among the respondents (Table 11: number of answers). Furthermore, the results did not indicate any clear connection between satisfaction and the versatile use of measures. Versatile use of product development measures in a company was seen to be associated with the number of measures from different categories in which the measures utilized by that company were classified (Table 11: number of measures from different categories). It was also shown by the results that no particular category of the measures was distinguished as causing more or less satisfaction among the respondents (Table 11: the last set of columns).

Table 12 summarizes the answers for an open-ended question which inquired about the information needs of product development managers. Although the number of answers was to some extent limited, a few issues came up. For example, more profound information regarding markets, customers, and competitors was requested. On the other hand, some indications that the long-term effects of NPD should be better tracked were obtained as well. In addition, competence measurement seems to be a topic that attracts a number of managers.

Overall, it seems that too many product development managers are dissatisfied with the available performance measures although the present measures are able to fulfill some of the fundamental information needs. The performance measurement practices in Finnish companies are not as comprehensive and multidimensional as they could be. The open-ended questions implicate that performance measures (or other information sources) should convey better than before the nature of dynamics associated with the business environment. They should also be able to provide more profound information on the relevant stakeholders of product development.

### *Relationships Between Variables*

Table 13 presents the pairwise correlation matrix among applicable (measured in interval scale) variables. These variables include: company size (measured



**Table 11.** The Product Development Managers' Satisfaction with the Measures Used ( $n = 63$  Companies).

Opinion	Number of Answers	Total Number of Represented Measure Categories	Number of Represented Categories (on Average)	Measure Category Code from the Table 6 (the Figure Indicates the Number of Companies Having at Least One Measure in a Particular Category)													
				1	2	3	4	5	6	7	8	9	10	11	12	13	14
Highly dissatisfied	7	28	4.0	3	2	1	4	3	1	2	2	1	3	2	2	1	1
Somewhat dissatisfied	17	56	3.3	11	4	4	5	6	5	4	3	4	2	1	1	0	6
No opinion	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Somewhat satisfied	16	70	4.4	10	10	8	4	4	6	4	4	3	2	3	2	1	9
Highly satisfied	3	5	1.7	1	2	0	0	0	0	1	0	0	0	0	0	1	0
No response	20	1	0.1	0	0	1	0	0	0	0	0	0	0	0	0	0	0

**Table 12.** The Information Needs of NPD Managers that are Not Fulfilled by the Present Measures.

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Question XXII: “What information, that you don’t have at the moment, you would need for product development management?”

Domain A: More profound market and customer information

“Perhaps even more profound information on customers, markets and their development.”

“More accurate customer information.”

“Information on how satisfied are the customers with our products.”

Domain B: Competitors and their NPD

“Innovations made by competitors, and the results associated with them.”

“Better material for competitor assessment.”

Domain C: Economic effects

“Some kind of life cycle -thinking and industrial learning. In other words, the decreasing of manufacturing costs and the impact of product development on this.”

Domain D: Capability and competence measurement

“I would need a compact measurement system that tracks the capabilities.”

“Analyses that relate to competencies and capabilities, we only have gut feeling at the moment.”

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by the number of employees), R&D effort (the number of R&D employees), value chain coverage (the number of value chain functions<sup>2</sup> represented), R&D project orientation (the percentage of work allocated at projects), the volume of NPD measurement (the number of measures), the comprehensiveness of NPD measurement (the number of different measurement categories represented), and satisfaction with measurement (the perceived relevance of employed measures).

Significant correlations were found between the number of employees and the number of measures, between project orientation and the number of measures, and – quite obviously – between the number of measures and the number of different measurement categories represented. However, no linear dependency was observed between satisfaction and any of the analyzed variables. The connection between company size and the number of measures was further tested by dividing the sample into two subgroups on the basis of the size of the company: the first group consisted of companies employing less than 500 people and the second group consisted of bigger companies employing more than that. The average number of applied measures differed from one group to another (2.6 and 4.5; respectively). The difference is significant at the level of 5% (*t*-test, equal variances assumed).

Multidimensional measurement (measured by the number of measurement categories represented) does not, however, seem to be connected with satisfaction: neither the correlation nor variance analyses with *t*-tests revealed any significant connection between these two variables (equal variances assumed, sig. = 0.653).

**Table 13.** Correlation Matrix.

	NOOFNPDE	VCCOV	PROJPERC	NOOFNPDM	NDIFFCAT	MEASSF2
<b>NOOFEMPL</b>						
Pearson correlation	0.981**	0.114	0.105	0.605**	0.149	0.086
Sig. (2-tailed)	0.000	0.391	0.431	0.000	0.261	0.592
<i>N</i>	55	59	59	59	59	41
<b>NOOFNPDE</b>						
Pearson correlation		0.086	0.133	0.630**	0.165	0.110
Sig. (2-tailed)		0.523	0.324	0.000	0.221	0.500
<i>N</i>		57	57	57	57	40
<b>VCCOV</b>						
Pearson correlation			0.247	0.058	0.066	-0.072
Sig. (2-tailed)			0.051	0.649	0.606	0.648
<i>N</i>			63	63	63	43
<b>PROJPERC</b>						
Pearson correlation				0.336**	0.428**	0.160
Sig. (2-tailed)				0.007	0.000	0.305
<i>N</i>				63	63	43
<b>NOOFNPDM</b>						
Pearson correlation					0.807**	0.142
Sig. (2-tailed)					0.000	0.364
<i>N</i>					63	43
<b>NDIFFCAT</b>						
Pearson correlation						0.034
Sig. (2-tailed)						0.829
<i>N</i>						43

\*\*Correlation is significant at the 0.01 level (2-tailed).

Further, variance analyses did not reveal any significant difference in the mean number of measures at different levels of satisfaction. Interestingly, satisfaction in one industry – electronics and optical devices – with its NPD performance measures seems to be higher than that observed in other industries: cross tabulation revealed an almost significant dependency between these two variables ( $\chi^2$  test, sig. = 0.061).

## DISCUSSION

The aim of the paper was to describe the practices in product development performance measurement and the needs related to the objectives and characteristics

of new product development in Finnish industrial enterprises. The results of this study indicate – regarding the important perceived objectives of product development – that companies are not very comprehensively taking into consideration the versatile effects of product development activities. Especially the company shareholders' perspective surprisingly appeared to be rather weakly appreciated among the companies. The proportions shown in Table 4 could be compared with the degree of 100%, which would indicate that every company considers each of the four perspectives (customers, R&D itself, shareholders, and supply chain) as important from the NPD performance point of view.

Regarding the performance metrics of product development used, the results of this study suggest that the ability to measure things that are considered to be important is weak in some cases (Table 9). That is especially the case with the customer perspective. The results also indicate a contrary situation. The metrics used measured the product development performance very often from the company shareholders' perspective, although this perspective was not considered a very important one. That might be due to the predominance of financial accounting in the past. The majority of the R&D managers felt the product development metrics used were dissatisfactory. However, the analysis of data did not reveal any variables (perhaps other than industrial domain) that explained the differences in satisfaction. The versatile use of metrics was not in any case associated with the satisfaction felt among the respondents. It was also evident that no particular category of the metrics can be associated with more or less satisfaction among the respondents.

Taking into account that measuring the *effectiveness* of product development was identified as one of the most important purposes of product development performance measurement (see Table 10), it seems especially contradictory that the customer perspective was virtually neglected at the level of measures. The effects of product development can be found in many parts of the value chain, but the effects the customers experience determine to a great extent the long-term success potential of the company. Therefore, it seems rather obvious that if the effects need to be measured at all, they should be tracked at least from the customers' point of view.

One of the most important observations made during the study also relates to effectiveness, and this seems interestingly inconsistent with prior perceptions: if a primary aim of product development were to promote a company's long-term profitability, it could be expected that measures of (long-term) profitability would be very common. However, this is not the case in practice. Sales or revenue metrics dominate the financial measurement at company level. Another important issue, life cycle performance of new products, receives little explicit attention from practitioners. Although the product requirements that arise from different phases

of life cycle might have an importance that should be taken into account in product development measurement, it is not very surprising that life cycle –related measures are somewhat neglected (for instance, short-term orientation is a common feature of PM discussed in the literature). Given the importance of and increased interest in life cycle management issues, it is inevitable that more discussion and suggestions based on both academic research and industrial experiences are needed on the subject.

Overall, the study suggests that the present state of product development performance measurement is not as well developed or as ideal as it could be. On the other hand, the R&D managers themselves seem to think that PM of product development could be better realized in their companies. A great portion of respondents perceive that measurement is not very satisfactory at the moment (Table 11). The identified information needs also suggest that there are fundamental issues such as customers' satisfaction with the products that should be better covered with product development performance measures (Table 12).

The difference between perceived product development objectives and utilized measures raises some questions. It might be that the measuring of some important issues requires an effort that it is not realistic to allocate for this purpose. On the other hand, sometimes it just seems too inconvenient to analyze an issue to an extent that enables systematic measurement. Furthermore, it is important to realize that all the issues and objectives – even important ones – do not have to be measured. It is quite possible that management has other than measurement-based means to tackle some of the information needs. Direct observations or expert opinions – for example – can supplement the information produced by explicit performance measures. Therefore, it is actually contradictory to expect that the objectives and the measures should be exactly consistent with each other. Also, it should be pointed out that product development objectives and measures may be at least partly hierarchical, i.e. an issue or factor that is perceived as an important objective could be pursued utilizing a measure which seems to be – at first sight – quite different from the objective.

The greatest limitation of the study is related to the assignment of objectives and measures to particular performance dimension (customer, R&D, shareholder, supply chain). It might be questionable to strictly associate one objective or one measure with only one performance dimension. In most cases, it could be claimed that a measure or objective is relevant from more than one perspective. More work should be done to fully develop the logic needed to connect measures and objectives to the above-mentioned four dimensions.

Further research should be focused on how to improve the soundness of the connection between objectives, measures, and different dimensions of performance. Conducting several in-depth interviews with R&D professionals to

clarify their opinions concerning the relation of those three main concepts could do this. Another survey tackling the problem of the assignment of measures and objectives would be beneficial. Yet another important finding that highlighted possible subjects for further research was the fact that the customer perspective was considered important, but was not generally being measured for the use of R&D management. Is this an implication of poor ability to measure customer satisfaction or does the problem concern attitudes?

## NOTES

1. Chiesa and Masella (1996) employ a similar classification but introduce also an additional category for the timing, namely *ex-ante* measurement that can be utilized when input resources or the skills of organisation are evaluated.
2. Product development, purchasing, manufacturing, delivery, marketing.

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# THE EFFECT OF MULTIPLE MEASURES-BASED PERFORMANCE EVALUATION ON MANAGERS' PERFORMANCE: THE ROLE OF PROCEDURAL FAIRNESS AND INTERPERSONAL TRUST

Mahfud Sholihin, Ainun Na'im and Chong M. Lau

## ABSTRACT

*The objective of this study is to investigate whether multiple measures-based performance evaluation affects managers' performance; and if so, whether the effects are indirect through procedural fairness and interpersonal trust. This study hypothesizes that multiple measures-based performance evaluation has indirect effects on managers' performance through procedural fairness and interpersonal trust. In addition, it also hypothesizes that procedural fairness has indirect effects on managers' performance through interpersonal trust. In order to test these hypotheses, this study employs a path analytical model to analyze the data collected from 70 managers of various Indonesian manufacturing companies. The results indicate that the hypotheses are supported. The effect of multiple measures-based*

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Performance Measurement and Management Control: Superior Organizational Performance

Studies in Managerial and Financial Accounting, Volume 14, 235–262

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ISSN: 1479-3512/doi:10.1016/S1479-3512(04)14010-0

*performance evaluation on managers' performance is partially mediated by procedural fairness and interpersonal trust. This means that in addition to indirect effect via procedural fairness and interpersonal trust, the use of multiple measures for performance evaluation in itself has a direct effect on managers' performance. With respect to the indirect effect of procedural fairness on managers' performance, this study finds that interpersonal trust fully mediates the effect of procedural fairness on managers' performance. Hence it can be concluded that procedural fairness has no direct effect on managers' performance.*

## 1. INTRODUCTION

*Supervisory evaluative style* (how superiors evaluate their subordinates) is an important topic in management accounting, which has earned special attention in the literature (Hartmann, 2000). Prior studies on this topic suggest that the basis of managerial performance evaluation used by superiors to evaluate their subordinates' performance can affect the subordinates' attitudes and behavior (Otley & Pollenan, 2000). Evidence from early research on supervisory evaluative styles (e.g. Hopwood, 1972; Otley, 1978), however, suggests that the effects of performance measures on the subordinates' attitudes and behavior may be *indirect* through some intervening variables. Their results suggest that the effects of performance measures used in performance evaluation on the subordinates' attitudes and behavior is likely mediated by the subordinates' perception of the *fairness* of the performance measures used and the extent of *interpersonal trust*, which the use of such performance measures promotes. However, these issues were not investigated nor resolved in prior management accounting studies.

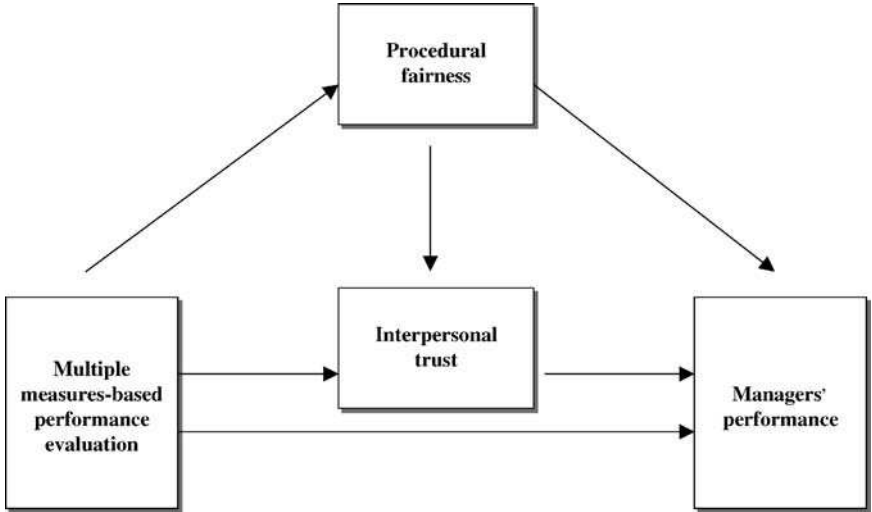
Another important area in management accounting that has long been attracting the attention of management accounting researchers is organizational performance measurement. Otley (1999, p. 363), indeed, suggested that "... the measurement of the performance of business (and other) organizations has long been of central interest to both managers and management accounting researchers." One of the recent developments in performance measurement, which stimulates scholars to study is the use of multiple performance measures which incorporate both financial and non-financial measures (e.g. Ittner & Larcker, 1998; Kaplan & Norton, 1992, 1996b). Most studies in this topic, however, view from an organizational perspective (e.g. Hoque & James, 2000; Hoque et al., 2001) and there is a lack of empirical evidence on the effects of multiple measures usage on managers' attitudes and behavior. This study, therefore, attempts to address this gap in the literature, by empirically investigating the behavioral consequences of the use

of multiple performance measures for performance evaluation. It will respond to Otley's (1999, p. 381) challenge that "... performance measurement practices need to be evaluated ... from a social, behavioral and managerial perspective ...". In addition, Atkinson et al. (1997) have also suggested that research in management accounting should address the issue of how performance measurement systems can produce desired behavior and outcomes. To respond to such concerns, this study is motivated to investigate empirically the effects of multiple measures usage on managers' performance.

In studying the effect of multiple measures-based performance evaluation on managers' performance, this study is also motivated to investigate two other variables which are believed to act as intervening variables. These are procedural justice (procedural fairness) and interpersonal trust. These two important variables have generally been neglected in prior management accounting studies.

Lau and Lim (2002b) argue that procedural fairness is an important variable to be studied in management accounting research because of its effects on the organizational members' attitudes and behavior. Milani (1975) and Kenis (1979) both suggested that subordinates' perception of justice may be an important predictor of subordinates' behavior and attitudes. Lindquist (1995, p. 141) similarly contended that "fair procedures ... lead to enhancements of satisfaction and performance. In addition, Libby (1999) found that a fair budgeting process could motivate subordinates' performance. There are however, very few studies in management accounting on procedural fairness (Lau & Lim, 2002b). This study may therefore provide important additional evidence on the role of procedural fairness in management accounting literature.

The inclusion of interpersonal trust variable in this study is grounded in Handerson's (1980) suggestion that to perform a successful performance evaluation, it is necessary to establish an environment where trust among members of the organization can develop. Trust is an important feature in performance evaluation because increased trust among organizational members is likely to lead to improved communication (Merlinger, 1956; Read, 1962). Furthermore, in a trusting environment, people are likely to feel free to relate to one another. This may lead to openness among organizational members (Reina & Reina, 1999). Simmons (1981, p. 243) suggested that "trust is the glue of effective, humane, and efficient organizations." In the management accounting context, some researchers (e.g. Hopwood, 1972; Lau & Buckland, 2001; Otley, 1978; Ross, 1994) have investigated the role of trust in performance evaluation, which contrasted financial-based and non-financial-based performance evaluation. They found that trust was a contributing factor in influencing the relationships between the performance evaluative styles and managerial attitudes and behavior. This current study is intended to provide additional evidence as to whether, and in



*Fig. 1.* The relationships Between Multiple Measures-Based Performance Evaluation and Managers' Performance.

what role, trust also acts as an important factor in performance evaluation, which is based on multiple measures (a mixed of financial and non-financial measures).

This study proposes that there is an indirect effect of multiple measures-based performance evaluation and managers' performance through procedural fairness and interpersonal trust as modelled in Fig. 1. The figure also indicates that there is an indirect effect of procedural fairness on managers' performance through interpersonal trust.

## 2. THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT

### *2.1. Linkage Between Multiple Measures-Based Performance Evaluation and Managers' Performance*

Extant literature suggests that there is a relationship between performance evaluation style that is based on accounting or financial data (budget emphasis) and subordinates' attitudes and performance (Briers & Hirst, 1990; Lindsay & Ehrenberg, 1993; Otley & Fakiolas, 2000). Since multiple measures-based performance evaluation is one of performance evaluative styles, hence, it is expected that multiple measures-based performance evaluation is also associated with

subordinates' behavior (e.g. performance). It is likely that the use of multiple measures may lead to better managerial performance because multiple measurement systems are capable of providing continuous signals and motivating breakthrough improvements in critical activities in such critical areas as product, process, customer and market development (Hoque et al., 2001; Kaplan & Norton, 1993).

The multiple measurement system can provide continuous signals because it incorporates both financial and non-financial measures. Financial measures provide information on past performance and, "indicate whether the company's strategy, implementation, and execution are contributing to bottom-line improvement" (Kaplan & Norton, 1992, p. 77). On the other hand, non-financial measures (e.g. customer, internal business process and innovation and learning perspectives) provide the information on the driver of future success (Kaplan & Norton, 1992, 1996a). In addition, a multiple measurement system also reflects the complexities of the work environment, which enable managers to recognize the various dimensions of their work (Atkinson et al., 2001).

Kaplan and Norton (1996b) argued that multiple measures might function as the cornerstone for future success because, "... combining the financial, customer, internal process and innovation, and organizational learning perspectives . . . helps managers understand . . . many interrelationships. This understanding can help managers . . . and ultimately lead to improved decision making and problem solving" (Kaplan & Norton, 1992, p. 79). Kaplan and Norton (1993, 1996a) provide evidence that companies which use the multiple measurement system can operate in a more efficient way. In addition, Hoque and James (2000) empirically found that the use of multiple measures in performance evaluation was associated with organizational effectiveness. It is likely that increased organizational effectiveness was caused by improved managerial performance. The improved managerial performance was likely due to managers' improved decision making and problem solving arising from the use of multiple measures performance. Hence, it is proposed in this study that *the use of multiple measures is positively associated with managers' performance*.

However, as proposed in Fig. 1, the relationships between multiple measures usage and managers' performance may be indirect via procedural fairness and interpersonal trust. The theoretical supports for these expectations are provided in the following sections.

## 2.2. Linkage Between Multiple Measures-Based Performance Evaluation and Procedural Fairness

Folger and Konovsky (1989) define procedural justice (fairness) as the perceived fairness of the means used to determine the amount of reward or compensation the

employees receive. In the context of performance evaluation, procedural fairness is likely to be the concern of both the subordinates and the superiors. Subordinates usually consider performance evaluation to be very important, because it is often linked to the reward system that will determine their remunerations and promotions (Lau & Lim, 2002a). Due to the importance of performance evaluation, subordinates normally expect that the procedures used for evaluating their performance should be fair. High procedural fairness is also an important concern of the superiors and the organizations as a whole. There is much evidence, which indicates that the implementation of procedures perceived by subordinates as unfair is detrimental to the organizations' interest (e.g. Greenberg, 1987; Kanfer et al., 1987; Lissak, 1983; Thibaut et al., 1974). Based on their review of procedural justice research, Lind and Tyler (1988, p. 179) concluded that, "organizations that ignore procedural justice concerns run the risk of engendering negative organizational attitudes . . . and . . . lower performance." Since the perception of unjust procedures can negatively affect organizations, superiors are likely to maintain high procedural fairness in conducting performance evaluations. It is likely that the adoption of multiple measures, instead of solely financial measures in subordinate performance evaluation, may be viewed as fair by subordinates for the following reasons.

Performance evaluation that takes into accounts both financial and non-financial indicators relies on more than one aspect or dimension of subordinates' performance. Multiple measures-based performance evaluation views subordinates' performance in a broad scope. Kaplan and Norton (1996a) argue that multiple measures-based evaluation considers both lagging and leading indicators, and both short and long-terms objectives. It also includes both external measures and internal measures of critical business processes, innovation, and learning and growth. In addition, it provides a balance in terms of the outcome measures – the results from past efforts – and the measures that drive future performance. Finally, this form of evaluation balances objective and easily quantified outcome measures, with subjective and somewhat judgmental performance drivers of the outcome measures. Subordinates are likely to regard such balances in performance evaluation as fair. For example, it is possible that in a certain period, such as in the research stage of developing a product, subordinates may produce unsatisfying financial results. Such innovative acts, however, may lead to a better organizational performance in the long term. Therefore, if a subordinate is evaluated based only on financial performance measures, the evaluation may view the subordinate as a poor performer. Such an unbalanced evaluation may lead the subordinate to perceive the evaluation process as unfair. On the other hand, if the performance evaluation also considers the performance in terms of research and innovation, the subordinate is likely to perceive that the evaluation process is fair.

Based on the above argument, it is possible to conclude that subordinates whose performance is evaluated based on both financial and non-financial measures are likely to perceive the evaluation procedures in their organization as fair. Consequently, in this study, it is proposed that *multiple measures-based performance evaluation is positively associated with procedural fairness*.

### *2.3. Linkage Between Procedural Fairness and Managers' Performance*

Extant literature in legal, political and organizational contexts suggest that procedural fairness affects performance (e.g. Alexander & Ruderman, 1987; Cornelius, 1985; Earley, 1984; Earley & Lind, 1987; Folger & Konovsky, 1989; McFarlin & Sweeney, 1992). Based on an extensive review of the literature on the relationships between procedural justice and performance-behavior in various settings, Lind and Tyler (1998) conclude that procedural justice does affect performance.

In a management accounting context, Libby (1999) also found that performance was affected by participation (voice) and explanation. Both voice and explanation are parts of procedural fairness. In the same vein, Wentzel (2002) and Little et al. (2002) found that procedural fairness affected managerial performance.

Hence, overall, the literature suggests an association between procedural fairness and managers' performance. Additionally, expectancy theory also suggests that when subordinates perceive that the procedures used to evaluate their performance are fair, they will have the motivation to perform better (Porter & Lawler, 1968; Vroom, 1964). With fair performance evaluation procedures, the results of performance evaluation are likely to reflect subordinates' performance accurately. Therefore, subordinates will be motivated to perform better. This is likely to lead to improved performance. In contrast, when subordinates perceive that the performance evaluation procedures are unfair, they will not be motivated to perform well because with unfair evaluation procedures, it is possible that good performance may be evaluated as poor performance (Porter & Lawler, 1968; Vroom, 1964). Consequently, subordinates are likely to perform poorly when unfair performance evaluation procedures are employed.

In conclusion, the discussion above suggests that multiple measures-based performance evaluation may be associated with the subordinates' performance (Section 2.1). However, the discussion also indicates that multiple measures-based performance evaluation may also be positively related to procedural fairness (Section 2.2). Procedural fairness, in turn, may be related to subordinates' performance (Section 2.3). There is, therefore, theoretical support for the existence of indirect effects on the relationship between the use of multiple measures-based

performance evaluation and subordinates' performance via procedural fairness. Accordingly, the following hypothesis is tested:

**H1.** Multiple measures-based performance evaluation has an indirect effect on subordinates' performance through procedural fairness.

#### 2.4. *Linkage Between Multiple Measures-Based Performance Evaluation and Interpersonal Trust*

Zand (1997) argues that a company's reward system can encourage trust as long as the reward system is collaborative, integrative and "win-win." Win-win reward systems means, "one person's gain is a gain for other person as well, and one person's loss is also loss for the other" (Zand, 1997, p. 118). In line with Zand's (1997) argument, Whitener et al. (1998) contend that performance evaluation and reward systems can facilitate managerial trustworthy behavior, which, in turn, can affect the trust of subordinates to their superiors. Therefore, it is necessary for organizations to design their performance evaluation systems in such a way which facilitates the enhancement of the subordinates' trust in their superiors. Performance evaluation which is based on multiple measures is likely to be one of such means because such evaluation is likely to promote the subordinates' trust in their superiors for the following reasons.

It is possible at the time the performance evaluation was conducted, a particular *short-term* quantitative performance measure of subordinates' performance may be unsatisfactory. However, it is also possible that if the subordinates' performance is viewed *from a long-term* perspective, which considers other indicators, either financial or non-financial, the subordinates' performance may be beneficial to the organization's success (Johnson & Kaplan, 1991; Kaplan, 1983). Since multiple measures usage is likely to consider various factors and facets of performance that are important to organizational success, subordinates may perceive superiors who employ multiple measures in performance evaluation as having *ability* in conducting performance evaluation, which, in turn, may lead subordinates to trust their superiors more.

It is also possible that superiors who evaluate subordinates solely on short-term quantitative indicators may be regarded by subordinates as *lacking in ability* in evaluating their performance properly. The subordinates may think that the superiors do not understand performance evaluation well because of the lack of recognition given to other aspects of performance. In contrast, superiors who consider both short-term and long-term perspectives, and both financial and non-financial measures (multiple measures), are likely to be viewed by the subordinates as having *ability* in conducting performance evaluations. This



may lead to higher trust toward the superiors. Subordinates may perceive such superiors to have trustworthy behavior (Mayer et al., 1995).

Superiors who evaluate subordinates using multiple measures may also be perceived by subordinates as superiors who *demonstrate concerns* because the use of multiple measures may "... reflect the complexities of the work environment and (consider) the variety of contributions that employees make" (Atkinson et al., 2001, p. 407) (parentheses added). It is possible that a subordinate may achieve below target for a certain performance indicator but easily obtain above target for other indicators (Lippe & Salterio, 2002). This may cause subordinates to feel that their careers are protected. In turn, this may lead subordinates to view their superiors as acting *benevolently* in evaluating the subordinates' performance. The higher the perception of benevolence, the higher the perception of trustworthy behavior is likely to be (Whitener et al., 1998). If subordinates perceive that the superior is trustworthy, they will trust their superior more. This will lead to higher subordinates' propensity to trust (Mayer et al., 1995). With this in mind, it is reasonable to propose that *there is a positive relationship between the use of multiple measures-based performance evaluation and trust in superiors.*

### 2.5. Linkage Between Interpersonal Trust and Subordinates' Performance

Zand (1997) defines trusting behavior as a willingness to increase vulnerability to another person whose behavior cannot be controlled, in situations in which a potential benefit is much less than a potential loss if the other person abuses the vulnerability. Further, he suggests that two people who trust each other will greatly increase their problem solving effectiveness. This will increase their commitment to each other and they will experience greater satisfaction with their work and their relationships. People who trust each other can synchronize, help each other and work together constructively. Trusting behavior can improve decision quality and its implementation. It is likely that the higher the decision quality, the higher is the performance. Lippit (1982) argues that the existence of trust between organizational members can increase both problem solving and *performance*. Similarly, Reina and Reina (1999, p. 8) note that "directly or indirectly trust is related to individual, group, and organizational *performance*" (emphasis added).

In summary, based on the discussion above, multiple measures-based performance evaluation is expected to be positively related to trust in superiors (Section 2.4.). Trust in superiors, in turn, is expected to be positively related to subordinates' performance (Section 2.5.). These relationships suggest therefore, that the effect of multiple measures-based performance evaluation on subordinates' performance may be indirect through trust in superiors. The following hypothesis is therefore tested:

**H2.** There is an indirect effect of multiple measures-based performance evaluation on subordinates' performance through the subordinates' trust in their superiors.

### *2.6. Linkage Between Procedural Fairness and Trust in Superiors*

Previous studies in various settings have shown that procedural fairness has a positive influence on trust. In a political setting, Lind and Tyler (1988) reported that U.S. citizens' trust in their national government was highly correlated with the perceived fairness of the government's decision-making procedures. Further analysis found that, trust judgments were much more strongly affected by procedural justice than by distributive justice. They also found that citizens' trust in legal institutions was strongly related to procedural fairness. In the organizational arena, Konovsky and Pugh (1994) found a very high correlation between subordinates' judgments of their superior's procedural fairness and their trust in their supervisor. Other studies in the organizational area (e.g. Alexander & Ruderman, 1987; Folger & Konovsky, 1989; McFarlin & Sweeney, 1992) and in a budgeting context (Magner et al., 1995; Magner & Welker, 1994) have also demonstrated that perceptions of procedural fairness are positively related to trust in the leaders and decision makers. Hence, *this study proposes that procedural fairness is positively associated with trust.*

As previously discussed, procedural fairness is expected to be associated with managers' performance (Section 2.3.). Since procedural fairness is also expected to be positively related to trust (Section 2.6.), and trust, in turn, may be related to managers' performance (Section 2.5.), it is therefore possible to conclude that the effect of procedural fairness on subordinates' performance may be mediated by the intervening effect of trust. Accordingly, the following hypothesis is tested:

**H3.** There is an indirect effect of procedural fairness on subordinates' performance through the subordinates' trust in their superiors.

## **3. RESEARCH METHOD**

### *3.1. Data and Sample*

Data for this study were collected using a questionnaire survey sent to 229 managers working in organizations listed as manufacturing companies in the *Jakarta Stock Exchange*. The names of the companies were published in the *Indonesian*

*Capital Market Directory* (IEFR, 2000). The managers were selected from various manufacturing companies. This approach avoids external validity problems and enhances the possibility of generalizing results (Chong & Bateman, 2000). Only those manufacturing companies employing more than 100 employees each were studied, as firms with fewer than 100 employees may not have formalized control systems, and are unlikely to have clearly defined areas of responsibilities (Brownell & Dunk, 1991). In addition, the selection of organizations with more than 100 employees is useful for the control of the size of the organizations (Lau & Lim, 2002a).

The manufacturing sector was selected for this study because it is the largest sector (52%) published in the *Indonesian Capital Market Directory*. It is very common in management accounting research to study a single sector, but involving a number of organizations (e.g. Brownell & Dunk, 1991; Hoque & James, 2000; Lau & Lim, 2002a, b; Lau et al., 1995; Simmon, 1986). Listed companies were selected because almost all the largest and most advanced Indonesian companies were listed in the *Jakarta Stock Exchange*. This permits the selected sample to include the largest and most advanced companies in Indonesia. Although the sample was derived from manufacturing organizations, it was not the intention of this study to investigate a particular function (e.g. manufacturing). In order to ascertain if the results are generalized across functional areas, following previous management accounting studies (e.g. Brownell, 1982; Brownell & Dunk, 1991; Hopwood, 1972; Lau & Lim, 2002b; Otley, 1978; Otley & Pollenan, 2000), this study selected samples from across functional areas.

In order to provide some degree of control over the seniority of the respondents across organizations, only functional heads were selected. The functional heads were selected as follows. Telephone calls were made to the secretary of each company to obtain the names of the functional heads. This method ensured that the functional heads would receive the questionnaires and that they would be the only ones who answered the questionnaires. In addition, to avoid bias, only a maximum of 4 managers were selected from each company. On average, each company provided the names of two managers.

Based on the *Indonesian Capital Market Directory* (IEFR, 2000), there are 146 manufacturing companies. One company has less than 100 employees. Hence, it was excluded from the sample. One company regarded itself as a service rather than a manufacturing organization. Consequently, this company was also excluded from the sample. Thirty two companies informed the researchers that it was their policies not to disclose the name of their managers. As a result, the researcher was able to obtain the names of 229 managers from 112 companies. Table 1 and Table 2 present the industry types of the targeted sample companies and the sample selection process, respectively.

**Table 1.** Industry Types of Targeted Sample.

Industry Type	Number of Companies
Food and beverages	21
Tobacco	3
Textile mill products	8
Apparel and other textile products	15
Lumber and wood products	5
Paper and allied products	6
Chemical and allied products	8
Adhesive	4
Plastics and glass products	11
Cement	3
Metal and allied products	11
Fabricated metal products	3
Stone, clay, glass and concrete products	4
Machinery	2
Cable	6
Electrics and electronic equipment	5
Automotive and allied products	16
Photographic equipment	3
Pharmaceuticals	8
Consumer goods	4
Total	146

### 3.2. Survey Administration

A questionnaire together with a prepaid return addressed envelope and a covering letter explaining the objectives of the research was mailed to each of the 229 intended respondents. As the instruments used to measure the variables examined in this study were developed in English, and English is not widely used in

**Table 2.** Sample Selection Process.

Description	Number of Companies
Targeted company sample	146
Has less than 100 employees	1
Regarded itself as a service organization	1
Will not disclose the name of their managers	32
Final company sample	112

Indonesia, it was necessary to translate the instruments into Indonesian. The translation process involved three separate steps as recommended by Hofstede (1980). *First*, the researchers, who are Indonesian national and highly proficient in the Indonesian language, translated the questionnaire from English into Indonesian. *Second*, a university professor in Indonesia, who is bilingual and also an Indonesian national, translated the Indonesian version of the questionnaire back into English. *Third*, a cross-check of the latter English version with the original English version was performed. This third step was to ensure that the translation was accurately done, and was undertaken by one of the authors who speaks English. Only the Indonesian version of the questionnaire was used in the survey.

The questionnaires were mailed out in November 2001. A reminder letter was mailed after three weeks. Managers who did not respond to the questionnaire two weeks after the reminder letters sent out, were contacted by phone. Out of the 229 questionnaires mailed, 83 responses (36%) were returned. Thirteen responses were excluded from the study because of the failure of the respondents to complete the whole questionnaire. As a result, there were 70 usable responses. Given that the survey was undertaken in Indonesia, such a response rate may be considered very high. Gudono and Mardiyah (2001) noted that response rates in Indonesia generally range from 10 to 16%.

### *3.3. Variables and their Measurements*

#### *3.3.1. Multiple Measures-Based Performance Evaluation*

The multiple measures-based performance evaluation was measured using a modified 20-item instrument developed by Hoque et al. (1997) and subsequently used by Hoque and James (2000) and Hoque et al. (2001). The questionnaire was modified because it was originally developed to measure organizational performance. In this study, it was used to measure individual employee performance. The 20 items were derived from Kaplan and Norton's (1992) four dimensions of the Balanced Scorecard, namely financial, customer, internal-business-process, and organizational learning and growth perspectives. Whilst Hoque and James (2000) and Hoque et al. (2001) used a five-point Likert scale ranging from 1 (not at all) to 5 (a great extent), this study employed a seven-point Likert-type scale, ranging from 1 (never important) to 7 (always important), to provide respondents with the opportunity to identify more clearly where their responses fit on the continuum (Ross, 1994). The instrument asks respondents to indicate how much importance their superior attaches to the twenty items when their superiors evaluate their performance. Details of the instrument are presented in the Appendix.

Following Hoque and James (2000) and Hoque et al. (2001), a principal components analysis with varimax rotation was conducted to assess whether the 20 items could be grouped according to the four dimensions of the Balanced Scorecard. The result indicates that items 13 and 17, which were expected to load on the customer perspective, did not load into this perspective satisfactorily. Consequently, those two items were not included for further analyses. To test the reliability of the 18 remaining items, a reliability test was undertaken. The result of reliability test produced a cronbach alpha coefficient (Cronbach, 1951) of 0.95 for this instrument.

### 3.3.2. *Procedural Fairness*

Procedural fairness was measured using a four-item, five-point Likert-type scale instrument developed by McFarlin and Sweeney (1992), and subsequently used by Lau and Lim (2002a, b). It asked respondents to rate the fairness of the procedures used to evaluate their performance, to communicate performance feedback, and to determine their pay increases and promotion ranging from 1 (very unfair) to 5 (very fair). An overall measure of procedural fairness was obtained by summing up responses to the four individual items. Details of the instrument are presented in the Appendix.

A reliability check for this measure in this study produced a cronbach alpha of 0.77, which is considered acceptable (Nunnally, 1967). The factor analysis extracted only one factor with an eigenvalue greater than one (eigenvalue = 2.351; total variance explained = 58.771%). This supports the unidimensional nature of this instrument.

### 3.3.3. *Trust in Superiors*

Trust was measured using a four-item instrument developed by Read (1962) to measure the level of trust held by subordinates in their superiors. This instrument had been used by Hopwood (1972), Otley (1978), Ross (1994), Magner and Welker (1994) and Magner et al. (1995). It asks the respondents to indicate to what extent they trust or have confidence in their superiors' motives and intentions with respects to matters relevant to their career and status in the organization, ranging from 1 (to a very little extent) to 5 (to a very great extent). An overall measure of trust was obtained by summing up responses to the four individual items. Details of the instrument are presented in the Appendix.

The cronbach alpha coefficient for this instrument in this study is 0.79, which is close to the 0.81 reported by Ross (1994). The factor analysis extracted only one factor with an eigenvalue greater than one (eigenvalue = 2.477; total variance explained = 61.914%). This supports the unidimensional nature of this instrument.

### 3.3.4. *Managerial Performance*

There are two instruments to measure managerial performance, namely Mahoney et al.'s (1963, 1965) and Govindarajan and Gupta's (1985) instruments. While the former is a self-rating measure, the latter considers the expectation of top management. The Mahoney et al. (1963, 1965) instrument is much more established, and has been used extensively by many prior management accounting studies (e.g. Brownell, 1982; Brownell & Dunk, 1991; Brownell & McInnes, 1986; Chong & Bateman, 2000; Govindarajan, 1986; Kren, 1992; Lau & Lim, 2002a; Lau & Tan, 1998; Lau et al., 1995). Govindarajan (1986) and Brownell and McInnes (1986) both provided evidence of its reliability and its construct validity. Brownell (1982, pp. 17–18) contended that, "the nine-dimensional structure of the measure clearly captures the multidimensional nature of performance without introducing the problem of excessive dimensionality." Govindarajan (1986, p. 505) similarly noted that, "the Mahoney measure offered two advantages. First, independent assessments of reliability and validity of this measure have yielded satisfactory results in other studies. Second, this measure explicitly recognises the multidimensional nature of managerial performance, while at the same time, avoiding the problems inherent in measures with excessive dimensions." Due to these advantages, Mahoney et al.'s (1963, 1965) instrument was selected in this study. Details of the instrument are presented in the Appendix.

Mahoney et al.'s instrument (1963, 1965) comprises eight dimensions of performance and a single overall performance rating. In order to ascertain that Brownell's (1982, pp. 17–18) contention that, "the nine-dimensional structure of the measure clearly captures the multidimensional nature of performance without introducing the problem of excessive dimensionality" holds, a regression analysis was conducted by regressing the overall performance rating onto the other eight items. The result indicates that the majority of the variation in the overall rating was explained by the eight items. An  $R^2$  of 0.64 ( $p = 0.001$ ) was obtained. This value was considered favorable when compared with the  $R^2$  of 0.55 in the overall rating as suggested by Mahoney et al. (1963, 1965). In addition, a factor analysis also revealed that the eight dimensions loaded satisfactorily on one factor. Following Kren (1992), in this current study, the measure of performance was obtained by summing up responses to the eight individual items of performance.

## 4. RESULTS AND DISCUSSION

This study investigates whether multiple measures-based performance evaluation is associated with subordinates' performance and if so, whether such relationships

are indirect through procedural fairness and interpersonal trust. A path analysis is considered as an appropriate technique to investigate such relationships. This study, therefore, employs a path analytical technique with regression approach. Cohen and Cohen (1983, p. 126) suggest that to assess the adequacy of regression models, the residuals of the estimated values of the regression should be tested. Therefore, before testing the hypotheses, tests were performed to ensure that the inherent assumptions of the regression models were satisfied. Tests undertaken included testing for the normality of residual, homogeneity of variance of residuals and the appropriateness of the linear models. The results of these tests indicate that the inherent assumptions of the models used were validated.

In addition, it is also important to conduct non-response bias test before analyzing the data as suggested by Oppenheim (1966). The test is undertaken to ascertain whether there are systematic differences between responses that came in early, and those which arrived late. In conducting these tests, the responses were divided into two groups based on their dates of arrival. The first half comprises the 50% of responses, which came in early, and the second half comprises the last 50% of responses received. These tests were performed by running *t*-tests to compare the mean of responses for each variable between the two groups. The results indicate that there are no significant differences between the early responses and the late responses for all the variables examined in this thesis. Based on these results, it can be concluded there is no non-response bias.

The zero-order correlations between the variables examined in this study are presented in Table 3. These results provide preliminary support for all the hypotheses. Multiple measures usage is positively associated with managerial performance. Additionally, Table 3 shows that both procedural fairness and trust are positively and significantly associated with managerial performance. The results also indicate that procedural fairness and trust are positively and significantly related to each other, suggesting that multicollinearity may exist. Therefore, in addition to the three inherent assumptions of regression models, the presence of multicollinearity was also assessed by performing tolerance and variance inflation factor (VIF) tests for each regression model. The results, presented in Table 4,

**Table 3.** Correlation Matrix Among Variables.

	Procedural Fairness	Trust	Managerial Performance
MM-based evaluation	0.304**	0.383**	0.318**
Procedural fairness		0.476**	0.200*
Trust			0.272*

\*\* $p < 0.01$  (1-tailed).

\* $p < 0.05$  (1-tailed).



**Table 4.** Multicollinearity Detection with Managerial Performance as Dependent Variable.

Variable	Colinearity Statistics	
	Tolerance	VIF
Constant	N/A	N/A
MM-based evaluation	0.834	1.199
Procedural fairness	0.756	1.322
Trust	0.711	1.404

indicate that multicollinearity among variables was not detected. Therefore, there is no problem with the regression models used in this study.

#### 4.1. Hypotheses Testing

Hypothesis H1 states that there is an indirect relationship between multiple measures-based performance evaluation and subordinates' performance through procedural fairness. Hypothesis H2 states that there is an indirect relationship between multiple measures-based performance evaluation and subordinates' performance through the subordinates' trust in their superiors. As indicated in Table 3, there is a significant zero order correlation between multiple measures-based evaluation and managerial performance. The indirect effects of multiple measures-based performance evaluation on subordinates' performance consists of the following paths and are calculated as follows based on the values of the path coefficient in Table 5:

Path (1)	MM – PF – MP	$0.304 \times 0.053$	0.016
Path (2)	MM – PF – T – MP	$0.304 \times 0.396 \times 0.153$	0.018
Path (3)	MM – T – MP	$0.263 \times 0.153$	0.040
Total indirect effect			0.074

Path (1) indicates the indirect effect exclusively via procedural fairness, which is 0.016. Paths (2) and (3) indicate the indirect effect through trust, which is 0.058. These results show that the relationship between multiple measures-based performance evaluation and subordinates' performance comprises two effects. First, there is a direct effect of 0.244 (see Table 5) and second, there is an indirect effect of 0.074, which can be further decomposed into the portion attributable to

**Table 5.** Path Analysis Results of Managerial Performance, Multiple Measures, Procedural Fairness, and Trust.

Dependent Variable	Independent Variable	Path Coefficient	<i>t</i> -Value	<i>p</i> -Value
PF	MM	0.304	2.629	0.011
T	MM	0.263	2.434	0.018
	PF	0.396	3.664	0.000
MP	MM	0.244	1.944	0.056
	PF	0.053	0.402	0.689
	T	0.153	1.126	0.264

Note: PF = Procedural fairness. MM = Multiple measures-based performance evaluation. T = Trust. MP = Managerial performance.

procedural fairness (0.016) and the portion attributable to trust (0.058). Based on Bartol's (1983) contention, those combined indirect effects may be considered meaningful because they exceed an absolute amount of 0.05.

Table 6 presents a summary of the decomposition of the zero-order correlations into the direct, indirect and spurious effects. In order to assess whether the relationship is *fully* or *partially* mediated by procedural fairness and trust, Baron and Kenny's (1986) approach is used. This approach argues that a full mediation exists if a significant relationship (i.e. a significant zero order correlation) between the independent variable and dependent variable becomes insignificant (i.e. an insignificant path coefficient) after controlling for the effects of the intervening variables. On the other hand, the mediation is only partial if the relationship between the independent and dependent variable is still significant after controlling for the effects of intervening variables (Lau & Buckland, 2001; Nouri & Parker, 1998).

**Table 6.** Decomposition of the Observed Correlations.

Relations	Observed Correlation	Direct Effect	Indirect Effect	Spurious Effect
MM/MP	0.318**	0.244 <sup>+</sup>	0.074	
MM/PF	0.304**	0.304**		
PF/T	0.476**	0.396**		0.080
MM/T	0.383**	0.263*	0.120	
T/MP	0.272*	0.153		0.119
PF/MP	0.200*	0.053	0.061	0.086

\*\* $p < 0.01$ .

\* $p < 0.05$ .

<sup>+</sup> $p < 0.10$ .

For this study, the relationship between multiple measures-based performance evaluation and subordinates' performance is significant ( $r = 0.318$ ;  $p < 0.01$ , Table 3). After controlling for the indirect effects via procedural fairness (0.016) and trust (0.058), the path coefficient between multiple measures-based performance evaluation and managers' performance is still *marginally* significant (0.244,  $p < 0.056$ , Table 5). This means that procedural fairness and interpersonal trust *mediate partially* the relationship between multiple measures-based performance evaluation and managers' performance.

In summary, apart from an indirect effect via procedural fairness and interpersonal trust, multiple measures-based performance evaluation itself has a positive and marginally significant direct effect on managers' performance. Based on these results, hypotheses H1 and H2 are supported.

Hypothesis H3 states there is an indirect relationship between procedural fairness and subordinates' performance through trust. The indirect effect and the spurious effect consist of the following paths and are computed as follows based on the values of the path coefficients in Table 5:

Path (4)	PF – T – MP	$0.396 \times 0.153$	0.061
Path (5)	PF – MM – MP	$0.304 \times 0.244$	0.074
Path (6)	PF – MM – T – MP	$0.304 \times 0.263 \times 0.153$	0.012
Total indirect effect			0.147

Path (4) indicates the indirect effect exclusively via trust is 0.061. Paths (5) and (6) indicate a total spurious effect of 0.086. As the indirect effect via trust is in excess of an absolute amount of 0.05, it is considered meaningful (Bartol, 1983). Thus, Hypothesis H3 is supported.

Recall that there is a significant zero order correlation between procedural fairness and managerial performance (0.200;  $p < 0.05$ , Table 3). After controlling for the indirect and spurious effects, the effect of procedural fairness on managerial performance is not significant (0.053;  $p < 0.689$ , see Table 5). This means that trust *mediates fully* the relationship between procedural fairness and managerial performance.

## 5. CONCLUSIONS AND LIMITATIONS

The objectives of this study are: (1) to investigate whether multiple measures-based performance evaluation affects managers' performance; (2) if so, whether

the effects are indirect through procedural fairness and trust. Consequently, this study hypothesizes that multiple measures-based performance evaluation has indirect effects on managers' performance through procedural fairness and trust. In addition, it also hypothesizes that procedural fairness has indirect effects on managers' performance through trust.

In order to test these hypotheses, this study employed a path analytical model to analyze the data collected from 70 managers of various Indonesian manufacturing companies. The results indicate that there is a significant association between multiple measures-based performance evaluation and managerial performance. Further analyses indicate that such relationships are indirect and mediated by procedural fairness and trust. The effects of multiple measures-based performance evaluation on managerial performance are *partially mediated* by procedural fairness and trust. This means that in addition to the indirect effect via procedural fairness and trust, the use of multiple measures for performance evaluation in itself has a direct effect on managerial performance (Baron & Kenny, 1986). With respect to the indirect effects of procedural fairness on managers' performance, this study found that trust fully mediates the effect of procedural fairness on managers' performance. Hence it can be concluded that procedural fairness has no direct effects on managerial performance.

Based on these results, the overall findings of this study are generally in accordance with expectations. That is: (1) multiple measures-based performance evaluation has indirect effects on managerial performance through procedural fairness and trust; (2) procedural fairness has indirect effects on managerial performance via trust.

As with other empirical studies, there are limitations associated with this study. *First*, there are limitations associated with the survey questionnaire method. These include low response rates and the possibility of respondents' bias in filling in the questionnaire due to the lack of control from the researcher. Therefore, future studies could employ other methods (e.g. case study) in exploring the issues studied here. *Second*, although the sample of this study was selected from across functional areas, the number of responses from a particular area is small. Hence, analyses of the results on functional basis were not undertaken. Future research should investigate if variation across functional areas may influence the results. In addition, since the sample was selected from larger-sized organizations with more than 100 employees each, it is unclear if the results can be generalized to smaller-sized organizations with less than 100 employees. *Finally*, as this study only selected samples from the manufacturing sector and only among Indonesian managers, generalizing the results to non-manufacturing sectors and to other Asian countries should be made with caution. These limitations provide opportunities for future research to study these issues in other sectors and in other Asian and Western countries.

Notwithstanding the aforementioned limitations, this study, at best of our knowledge, is the first to explore the relationships between multiple measures usage in managerial performance evaluation and managerial performance. These results provide timely evidence, which may have important theoretical and practical implications for the adoption of multiple measures-based evaluation, which is gaining popularity in increasing number of organizations in both Asian and Western countries.

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## APPENDIX

(1) When your superior (your immediate boss) is evaluating *your performance*, how much importance do you think he or she attaches to the following items?

Please respond by *circling* a number from 1 to 7, based on the following scale, for each of the items listed below.

- (1) Never important
- (2) Seldom important
- (3) Occasionally important
- (4) Sometimes important
- (5) Often important
- (6) Usually important
- (7) Always important

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	Never Important						Always Important
Operating income	1	2	3	4	5	6	7
Sales growth	1	2	3	4	5	6	7
Return-on-investment	1	2	3	4	5	6	7
Manufacturing lead time	1	2	3	4	5	6	7
Rate of material scrap loss	1	2	3	4	5	6	7
Labour efficiency variance	1	2	3	4	5	6	7
Material efficiency variance	1	2	3	4	5	6	7
Percent defective products shipped	1	2	3	4	5	6	7
Ratio of good output to total output	1	2	3	4	5	6	7
Number of new patents	1	2	3	4	5	6	7
Number of new product launches	1	2	3	4	5	6	7
Time-to-market new products	1	2	3	4	5	6	7
Market share	1	2	3	4	5	6	7
On-time delivery	1	2	3	4	5	6	7
Number of customer complaint	1	2	3	4	5	6	7
Survey of customer satisfaction	1	2	3	4	5	6	7
Warranty repair cost	1	2	3	4	5	6	7
Customer response time	1	2	3	4	5	6	7
Cycle time from order to delivery	1	2	3	4	5	6	7
Percent shipments returned due to poor quality	1	2	3	4	5	6	7

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(2) Please respond to each of the following questions by *circling* a number from 1 to 5 based on the following scale:

- (1) Very unfair
- (2) Unfair
- (3) Neutral
- (4) Fair
- (5) Very fair

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	Very Unfair				Very Fair
How fair are the procedures used to evaluate employee performance?	1	2	3	4	5
How fair are the procedures used to determine promotions?	1	2	3	4	5
How fair are the procedures used to communicate performance feedback?	1	2	3	4	5
How fair are the procedures used to determine pay increases?	1	2	3	4	5

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(3) Please respond by *circling* a number from 1 to 5, based on the following scale, for each of the items.

- (1) To a very little extent
- (2) To a little extent
- (3) To some extent
- (4) To a great extent
- (5) To a very great extent

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	To a very Little Extent				To a very Great Extent
Does your superior take advantage of opportunities that come up to further your interests by his/her actions and decisions?	1	2	3	4	5

	To a very Little Extent				To a very Great Extent
How free do you feel to discuss with your superior the problems and difficulties you have in your job without jeopardising your position or having it “held against” you?	1	2	3	4	5
How confident do you feel that your superior keeps you fully and frankly informed about things that might concern you?	1	2	3	4	5
Superiors at times must make decisions which seem to be against the interests of their subordinates. When this happens to you as a subordinate, how much trust do you have that your superior’s decision is justified by other considerations?	1	2	3	4	5

(4) How would you rate *your performance* on the following items?

Please respond by *circling* a number from 1 to 7, based on the following scale, for each of the items.

- (1) Very low
- (2) Low
- (3) Below average
- (4) Average
- (5) Above average
- (6) High
- (7) Very high

	Very Low					Very High	
Planning for my area of responsibility	1	2	3	4	5	6	7
Coordinating my area’s activities	1	2	3	4	5	6	7
Evaluating subordinates’ activities	1	2	3	4	5	6	7

	Very Low						Very High
Investigating issues in my area	1	2	3	4	5	6	7
Supervising staff	1	2	3	4	5	6	7
Obtaining and maintaining suitable staff	1	2	3	4	5	6	7
Negotiating	1	2	3	4	5	6	7
Representing the interests of my area	1	2	3	4	5	6	7
Overall performance	1	2	3	4	5	6	7

**PART IV:**  
**BALANCED SCORECARD**  
**IMPLEMENTATIONS**



# TECHNICAL AND ORGANIZATIONAL BARRIERS HINDERING THE IMPLEMENTATION OF A BALANCED SCORECARD: THE CASE OF A EUROPEAN SPACE COMPANY

Fabienne Oriot and Evelyne Misiaszek

## ABSTRACT

*Since the early 1990s the balanced scorecard has been celebrated as a new construct for strategic performance measurement; recently, however, critical analysis has grown, especially in France. This debate has lead us to make an inventory of its limitations. In the first part of the article, we review the ambiguities and weaknesses of the balanced scorecard as highlighted in the recent literature. In the second part, we analyze each of these criticisms in the light of the results obtained from a case study conducted at a European space company that developed a balanced scorecard project between 1997 and 1999.*

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Performance Measurement and Management Control: Superior Organizational Performance

Studies in Managerial and Financial Accounting, Volume 14, 265–301

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ISSN: 1479-3512/doi:10.1016/S1479-3512(04)14011-2

## INTRODUCTION

Developed in response to many of the criticisms leveled at traditional management control tools, the balanced scorecard, designed by Kaplan and Norton (1992, 1993, 1996a, b, 2001), is a tool for driving organizational performance. In essence, the two authors offer an approach that looks at financial and non-financial performance indicators and links them up to strategy. Moreover, their approach adopts a generic structure – the “strategy map” – aimed at highlighting the strategy’s hypotheses from four perspectives based on causal relationships: the innovation and learning, internal business process, customer, and financial perspectives. Since the advent of the balanced scorecard, several authors have sung the praises of this approach. Alongside all this, however, a certain skepticism has appeared in Europe, notably in France, where the use of tableaux de bord is solidly backed by more than fifty years experience (Chiapello & Lebas, 1996; Gray & Pesqueux, 1993; Lorino, 2001; Mendoza & Zrihen, 1999). Furthermore, the study by Gehrke and Horvath (2002) investigating the spread and implementation of the balanced scorecard in France and Germany revealed that, in fact, few companies actually use this approach.

The aim of this paper is both to make an inventory of and to understand the limitations of the balanced scorecard. In the first part, the ambiguities and weaknesses of the balanced scorecard as highlighted in the recent literature are reviewed. They are grouped into two categories: those linked to the very hypotheses used to construct the tool, and those identified during the implementation of the balanced scorecard in certain organizations. Certain of these hypotheses have already come in for severe criticism at the hands of various authors, casting doubt upon the very relevance of the tool. In the second part, then, we will analyze each of these limitations in the light of the results obtained from a case study conducted at a European space company that, between 1997 and 1999, developed a balanced scorecard project. This study falls under the interpretive paradigm approach (Macintosh, 1995), and has a comprehensive, exploratory finality.

### THE LIMITS OF THE BALANCED SCORECARD IN THE LITERATURE

#### *Basic Hypotheses Which are Open to Question*

##### *Ambiguous Objectives*

The aptness of a tool can only be judged in the light of the objectives that have been set for it. So what are the objectives of the balanced scorecard approach? The translations of the term in different languages provide an initial indication



(Mendoza et al., 1999). Is Kaplan and Norton's model a "balanced" system (in English), a "prospective" one (*tableau de bord prospectif* in French) or a "global" one (*cuadro de mando integral* in Spanish)? Any attempt to summarize a particular control tool's objectives is fraught with difficulty because there are many different, sometimes contradictory, standpoints. Therefore we will use Simons' (1991, 1995) typology of formal control systems, which refers to differentiated finalities, as a reference. Two main types of control system can be identified:<sup>1</sup>

- Diagnostic Control Systems, whose purpose is to coordinate and monitor the implementation of intended strategies;
- Interactive Control Systems, whose purpose is to facilitate and guide emerging strategies.

With the diagnostic control system, the strategy is perceived as a group of pre-set constraints from top management to be respected by managing critical performance variables via a system of delegation. With the interactive control system, the aim is more to favor the emergence of strategic opportunities while at the same time encouraging top managers to become personally involved with the other players in the organization via a process of regular interactions and organizational training. Which aim do Kaplan and Norton assign to the balanced scorecard? The authors claimed on several occasions that their strategic management system was neither a control system nor "top-down direction" but "top-down communication." They presented the balanced scorecard as an interactive system and insisted on the communication and learning processes which must back it up (Kaplan & Norton, 2001).

This representation, however, can also be called into question. Thus several authors consider the balanced scorecard to be a diagnostic system, including Simons himself (1995) who actually refers to Kaplan and Norton's balanced scorecard (1992) as a diagnostic control system, since it offers a systematic way of analyzing critical performance variables and measures associated with intended strategies. Similarly, Simons underlines the fact that the balanced scorecard is based on a top-down approach coupled to a system of formal incentives linked to output measures, very characteristic of diagnostic control systems. This vision of the balanced scorecard as a diagnostic control system is also shared by Weber and Schäffer (1999), who regret that something which is often presented as a managerial innovation in fact only perpetuates traditional, formal planning systems, leading to continuously redefined strategies. In addition, the same authors make the point that in organizations which have attempted to use Kaplan and Norton's approach as an interactive system, the managers have been overburdened by the multitude of measures. Furthermore, Lorino (2001) notes that the concept itself leads to a control philosophy "after the fact." Finally, Gehrke and Horvath (2002)

show that the spread of new tools is widely influenced by consulting firms, which prefer to sell diagnostic systems. Indeed, interactive systems may be more difficult to sell, as they are long term processes which require the full involvement of all the actors in the organization and, first and foremost, that of top management. Some companies, moreover, seem to have used the balanced scorecard more as a diagnostic system because, even if it can be a true vehicle for change favoring the emergence of a new strategic management system, its implementation is more difficult and takes more time than setting up a simple measurement system. In addition, companies are still essentially focused on their financial aims and thus see in the balanced scorecard a modeling and forecasting tool for their results.

Kaplan and Norton themselves allow some ambiguity to remain about the aims they assign the balanced scorecard. Several of their propositions allow us to interpret this tool as much as a diagnostic system as an interactive one. A case in point is when they assert that strategy maps help organizations see their strategies in a cohesive, integrated and systematic way (Kaplan & Norton, 2001). Similarly, they also consider that balanced scorecard measures help to elaborate the strategy of the organization, to communicate it, and to harmonize the initiatives of employees, departments and the company to reach a collective goal (Kaplan & Norton, 1996b). In fact, the interactive character of the balanced scorecard was mainly developed in Kaplan and Norton's second book (2001), and was not very clear at the outset (1992, 1996a). One can suppose that the two authors modified their approach to address the criticisms leveled at the first version. The balanced scorecard, originally (1992) presented as "*a fairly modest technique for putting financial information in the context of different kinds of non-financial information,*" was subsequently (2001) presented as "*an all-encompassing management control system that should be at the heart of the strategy-making process*" (Ahrens & Chapman, 2003, p. 3).

The question, in short, is the following: Is the balanced scorecard a means to achieve a strictly diagnostic aim, or can it also achieve an interactive one? Simons (1991) has observed that budgets, for example, can be used for interactive aims as well as for diagnostic ones. Is there the same flexibility in Kaplan and Norton's approach? What is at issue is whether the difficulties encountered in using the balanced scorecard with an interactive aim are linked to the actual approach advocated by Kaplan and Norton, or rather to the way that it has been implemented within the organizations which have been studied. The framework proposed by Simons creates scope for subjective interpretations, and it is not always possible to establish whether a particular control tool is part of a diagnostic control system or of an interactive one (Ferreira & Otley, 2003). A use of the balanced scorecard as a joint system, both interactive and diagnostic, could also be advocated as a

means to balance complementary organizational tensions (Henri, 2003). Hence it could be useful to complete the analysis of the balanced scorecard with another model, like the framework developed by Otley (1999).

### *Looking at Performance from a Mainly Financial Angle*

Performance control is at the very heart of Kaplan and Norton's strategic model, which states that "while keeping an eye on short term performance thanks to financial indicators, the balanced scorecard highlights those indicators for long term improvement of financial and competitive performance" (Kaplan & Norton, 1996a, p. 21). In the wake of Kaplan and Norton, numerous authors have accepted that the model's strength lies in the creation of a comprehensive measurement system that enables companies to keep track of all the important dimensions of its strategic performance in a systematic way. The framework of the strategy maps and the four perspectives helps managers avert two dangers: over-emphasizing or, on the contrary, neglecting one of the four dimensions (Butler et al., 1997; Lorino, 2001). But much research has shown that performance is an ambiguous term that cannot be simply defined (Bourguignon, 1995; Lebas, 1995), and in particular it does not specify to whom the organization is delivering its performance (Otley, 1999). Kaplan and Norton do not really spell out what they understand by performance; rather, what comes out of the balanced scorecard construction principles is that, contrary to assertions cited above, performance is assimilated to the achievement of short term financial objectives. Indeed, the four perspectives are placed in a hierarchical framework in which the financial axis is the final objective towards which the other three axes converge. Thus, even if Kaplan and Norton stress the fact that the paths towards financial performance are not signposted by purely financial indicators, the goal to be achieved is still clearly a financial one (Mendoza et al., 1999), especially in big companies because of the importance of the financial markets (Bescos & Cauvin, 2003). This position also reveals that the balanced scorecard is mainly designed to satisfy the demands of top management, whose main preoccupation is with the most powerful stakeholder, the shareholder, in accordance with traditional Anglo-American practice. Finally, we can observe that this "financial vision" evokes a diagnostic system finality.

Similarly, the short term orientation of Kaplan and Norton's model does not allow the time lapses between the implementation of operational actions and their financial translation to be taken into account (Lorino, 2001; Mendoza et al., 1999). The link between non financial and financial indicators can lead to inconsistency in the relationship between long and short term objectives (Lorino, 2001). Moreover, to give preference to a financial and short term representation of performance is to deprive oneself of other ways of representing performance which could satisfy other stakeholders engaged in an organization's strategy. Even if Kaplan

and Norton's representation is "balanced," it is hardly exhaustive concerning the way in which the different stakeholders are taken into account. While customers and employees are the object of special attention via a dedicated axis of analysis, suppliers, in contrast, are not given great importance although they are currently a priority for many organizations. Nor does this approach seem to allow any improvement in environmental or, in a wider sense, societal performance (Brignall, 2002). And what about alliance partners, government organizations, unions, end users, competitors? Even for the employees, Bontis et al. (1999) suggest that they are considered almost as an afterthought. Thus the specific challenge of managing people and their knowledge is underestimated by the balanced scorecard. Furthermore, knowledge is reified, i.e. it is treated as a physical thing, and this misconception might reinforce the mistake many companies make: to believe that the creation of an information system is enough to automatically manage knowledge (Bontis et al., 1999). These comments also explain why some authors have proposed balanced scorecards dedicated to the management of one specific variable such as intellectual capital, human resources, or suppliers (Datar et al., 2001; Edvinsson & Malone, 1997; Kulp et al., 2002). In a way these propositions call into question the integrated character of Kaplan and Norton's approach (Brignall, 2002). But it is important to note that Kaplan and Norton (1992) proposed the four axes as a framework and did not dismiss the possibility of integrating others. In their second book (2001), they put much more emphasis on the importance to be given to human resource variables and they also refer briefly to environmental, health and safety aspects.

In addition, the approach comes up against the difficulty of representing certain aspects of performance. Some authors have drawn attention to the fact that aspects which are considered important – employee attitudes, customer preferences, and R&D creativity, for example – may not even be properly measured, perhaps because the level of measurement available is inadequate or because it distorts the process being measured (Otley, 1999). Indeed the higher upstream from performance we are, the more difficult it is to define the criteria for measurement. In this way, the indicators on the innovation and learning perspective are often much more difficult to identify than those on the financial one. So it is hardly surprising that in the majority of companies the financial vision of performance is the norm. Surveys carried out by professional organizations (A.I.C.P.A., 2001) or certain academic research bodies (Butler et al., 1997; Gehrke & Horvath, 2002; Germain, 2003), have found that the majority of companies, even those using mixed indicators (financial and non-financial), still maintain a strong emphasis on the financial ones. In an effort to overcome this difficulty, certain authors have proposed models using a different architecture<sup>2</sup> (Butler et al., 1997), or even different construction principles<sup>3</sup> (Lorino, 2001).

### *A Model Based on American Culture*

Although the relevance of a model depends on the objectives which are assigned to it, it is also rooted in a particular cultural environment, and this – whether national or organizational – has important implications for the design and implementation of effective management control systems (Bhimani, 1999; Birnberg & Snodgrass, 1988; Bourguignon et al., 2001; Dent, 1991; Hofstede, 1984, 1987; d'Iribarne, 1989; Mendoza & Bescos, 2001). Introduced by Kaplan and Norton (1992), the balanced scorecard has been developed in a specific cultural and societal environment. Several authors, therefore, have tried to differentiate between the American balanced scorecard and the French *tableau de bord*, (Bessire, 2000; Bourguignon et al., 2001; Chiapello & Lebas, 1996; Epstein & Manzoni, 1997, 1998; Gehrke & Horvath, 2002; Lorino, 2001; Mendoza & Saulpic, 2002; Mendoza et al., 1999; Ponsard & Saulpic, 2000). Bourguignon et al. (2001), in particular, confront the American cultural perspective of the contract – everybody should act freely, within contracts which he or she chooses to be committed to, under a general imperious moral demand of fairness – to the French philosophy of honor – everyone belongs to a social group, with specific obligations and privileges, distinct from those of other positions (d'Iribarne, 1989). So the top-down construction of the balanced scorecard calls into question the French philosophy of honor, which guarantees the sense of a hierarchy and the principle of obedience and creates a defensive attitude towards external control. In contrast, it corresponds perfectly to the American cultural practice of the “unquestioned contract,” that lever which is supposed to encourage the obedience of personnel. According to Gehrke and Horvath (2002), this may partly explain why the *tableau de bord* is used more as a local performance tool in line with local responsibility devoid of compensation, since honour demands mastery in one's own domain without the need for extrinsic monetary rewards.

The authors who defend this cultural perspective also contrast the French rationalistic and intellectual philosophy to American pragmatism: in the American perspective, the truth of an idea is in its testing, and ideas are defined as action plans (Deledalle, 1980; Pesqueux, 2002). The balanced scorecard, in contrast, parades as a ready-to-use device, as a framework for performance measurement, and most of all as a tool designed by consultants and offered for sale: it does not present itself as an elaborated and theorized system (Ahn, 2001; Gehrke & Horvath, 2002; Mendoza et al., 1999; Weber & Schäffer, 1999). Conversely, the French *tableau de bord* – developed in the fifties, initially for production facilities by practicing engineers – has become a conceptual framework, certainly more complex than the balanced scorecard but also more easily adaptable to the specific context of each organization and work unit (Chiapello & Lebas, 1996; Mendoza et al., 1999). Empirical examples support this diagnosis. In their study, Butler

et al. (1997) concluded that the Kaplan and Norton template was finally rejected by U.K. managers on the grounds of its unsuitability to their company's culture and business language, proof of its non-adaptability within the context of a given organization. Similarly, a comparative study of French and German companies (Gehrke & Horvath, 2002) found the existence of various practices: the balanced scorecard remains little used by French companies, and only slightly more so by German ones. Nevertheless, the balanced scorecard concept, taken as managerial innovation, was more widespread in Germany than in France: French companies strongly resisted adopting the balanced scorecard, and even the concept itself did not spread on a large scale. Indeed, Gehrke and Horvath (2002) remark that France would seem to be less affected by innovative managerial trends, and this could perhaps be because of its historical and cultural background, the role of the State, the traditional presence of a strong engineer-dominated and also risk-averse culture (Bourguignon et al., 2001; Gehrke & Horvath, 2002; Mendoza & Bescos, 2001).

However, Gehrke and Horvath (2002) criticize the explanation of these differences that are based only on the cultural perspective, and propose to also use the new institutional theory framework (Di Maggio & Powell, 1991) that suggests change in administrative technologies are more likely to occur in settings where practices become institutionalized and offer the benefit of legitimacy. In fact, this other perspective suggests the existence of specific conditions in the institutional environment of organizations that impact adoption and diffusion at a national level (Gehrke & Horvath, 2002): thus in France, the slightest dissemination of the balanced scorecard would be tantamount to linking it to the institutionalized degree of maturity of the *tableau de bord*. Both the institutional theory and the cultural perspective have to be used in order to understand the low level of implementation of the balanced scorecard in French organizations. The limited diffusion of the balanced scorecard in France can also be explained by the fact that in France, with its engineer-dominated management culture, management techniques suffer from a relatively low social status; consequently, innovations do not attract the same attention as in countries where management techniques enjoy a higher status (Gehrke & Horvath, 2002). In an intensely risk-averse culture like in France, security is too important to be left to management systems (Gehrke & Horvath, 2002). The idea of "mapping the strategy" is not in line with the dominant perception of strategy in France (Lorino, 2001): the elimination of managerial risk by means of automatic control devices is an illusion. Even the very innovative character of the balanced scorecard is discussed by French authors (Meric, 2003) in opposition to other European authors (Mooraj et al., 1999; Norreklit, 2000).

For all these reasons, the balanced scorecard may face difficulties of implementation in a French organization.

*A Reward-Based Model*

As the logical consequence of this American representation of management, Kaplan and Norton explicitly recommend the use of the remunerations lever, the formal incentives which are one of the main characteristics of a diagnostic control system (Simons, 1995), to favor the adoption of the balanced scorecard tool by the different players. This approach could be difficult to set up in certain countries, notably France, where there is not a long tradition of performance-based remuneration (Bourguignon et al., 2001; Ponssard & Saulpic, 2000) and where such a system could be at odds with the principle of honor mentioned earlier. Thus, French companies in particular will tend to hesitate and draw back from a reward system whose effects cannot be clearly defined.

Kaplan and Norton give very few indications as to how these rewards should be fixed, although they have the potential to destroy the impact of an otherwise well-designed scorecard (Otley, 1999). Should we for example link these rewards to performance as soon as the balanced scorecard is introduced, or wait until the reliability of the model has been tested? However, if the incentives are linked to output, we need to be able to define and measure them, something which is not possible in all organizations and for all activities, e.g. public-sector organizations, research or training activities (Merchant, 1982, 1985; Ouchi, 1977). On the other hand, the incentives of an interactive control system may be subjective, rewarding contribution rather than results: superiors make personal judgments based on both facts and intuition in order to recognize innovative behavior (Simons, 1995).

Finally, since the leadership of a balanced scorecard project is usually entrusted to finance staff whereas the design of payment systems is very much the province of the human resources function in most organizations, the risk is that the reward system may not be well coupled to the performance measurement system (Otley, 1999). In particular, companies must be conscious of the risk of “double talk” when they tie significant rewards to financial performance while emphasizing a broader outlook during balanced scorecard progress meetings (Epstein & Manzoni, 1997). In their second book, Kaplan and Norton notice that some companies skip the strategy translation part of the scorecard process and merely introduce new, non-financial measures to their incentive compensation plan. Scorecards used to introduce non-financial indicators into a compensation plan do not pick up how these non-financial measures lead to improved customer and financial performance.

*A Model Which Embraces a Top-Down Representation of Organizations*

Kaplan and Norton propose following a top down, gradual process in order to translate the strategy elaborated by top managers into local operational actions. Several arguments have been raised refuting the top-down method of construction.

First of all, this approach means that the balanced scorecard is a tool which is more concerned with the needs of top management rather than with helping unit managers make decisions. And Kaplan and Norton give very little information as to how to set up the balanced scorecard at these levels. In fact, the balanced scorecard approach does not try to take into account local constraints, nor capitalize on existing know-how at the operational levels. On the contrary, it would appear to favor a rather directive approach from top management, tending to reduce room to manoeuvre at local levels. Hence top down deployment cannot be the exclusive approach in French organizations where hierarchy and a local sense of obedience are kinds of facts of nature (Gehrke & Horvath, 2002).

Thus, by trying to give transparency and standardization to all the performance catalysts, the balanced scorecard risks being rejected by the operating managers, who will feel that decision making has been taken out of their hands (Mendoza et al., 1999). Non-financial measures add the visibility of actions and is also apt to shake the power structures within an organization (Tuomela, 2001). These people need to retain a certain amount of autonomy – some would say grey areas – without which they risk “purifying” their reports, giving only information which is official or acceptable to their superiors (Mendoza & Zrihen, 1999) – a phenomenon which Epstein and Manzoni (1997) call “opaqueness by design.” This analysis obviously agrees with the “organizational slack” concept from Cyert and March (1963) on the one hand, and Crozier and Friedberg’s (1977) “blurred zone” which each actor tries to install around himself within the parent system. Crozier and Friedberg (1977) also talk about these “margins of freedom” as unavoidable “negotiation margins” which the player uses to negotiate his participation within the organization.

Moreover, to foster internal commitment (Argyris & Kaplan, 1994), the measurement system must not be imposed, it must be understood and accepted by all managers and therefore defined with them in order to facilitate its appropriation (Norreklit, 2000). However, due to its top-down strategy, the balanced scorecard primarily creates external commitment (individuals find motivation in variables outside themselves), such as reward incentives indexed to the achievement of objectives (Norreklit, 2000).

Here again, the top-down approach with a standardized structure based on the four perspectives brings the balanced scorecard closer to a strategic system with a “diagnostic” purpose (Simons, 1991, 1995). And the “mechanical” top-down deployment disregards the “incremental and collective construction” of strategy (Bourguignon et al., 2001). In this case it cannot really be transferred into an organization which gives greater credence to a more emergent vision of strategy. In other words, the question remains as to the relevance of using the balanced scorecard for interactive control as defined by Simons (1995).



In order to address these different criticisms, several authors (mainly French) recommend a joint approach, top-down and bottom-up (Mendoza et al., 1999; Otley, 1999; Ponssard & Saulpic, 2000) where it is a case of encouraging at one and the same time awareness of new, important strategic axes and operational constraints and, by pooling knowledge, the progressive emergence of a shared representation of performance. The main challenge is to find the happy medium between excessive standardization of information and an overly individualized flexible system (Mendoza & Bescos, 2001) which is too loosely related to strategic objectives.

In essence, we believe that the balanced scorecard falls under the myth of global rationality, which repudiates the existence of multiple, heterogeneous local rationalities and hurriedly assimilates top management rationality to that of the organization as a whole. Indeed, it is impossible to speak of an organization's objectives or rationality as if they existed as such, totally cut off from the objectives of individuals or groups (Crozier & Friedberg, 1977). The organization as a whole is nothing more than an abstract reification just like the organization's goals which are nothing more than "bogus evidence" (Fiol & Solé, 1999).

#### *A Model Based on a Cause and Effect Relationship*

According to Kaplan and Norton (2001), the strategy map makes explicit the strategy's hypotheses. Each measure of a balanced scorecard becomes embedded in a chain of cause-and-effect logic that connects the desired outcomes of the strategy with the drivers that will lead to the strategic outcomes. So the balanced scorecard provides a new framework to describe a strategy by linking intangible and tangible assets in value-creating activities. In this way, the balanced scorecard can use strategy maps of cause-and-effect linkages to describe how intangible assets get mobilized and combined with other assets, both intangible and tangible, to create value-creating customer value propositions and desired financial outcomes. Other authors as well have tried to model the links between processes and financial results. Epstein and Westbrook (2001), for example, put forward the "action-profit linkage model" which helps firms identify, measure and understand the causal links between actions and profits.

Yet many academics have contested the cause-and-effect relationship assumption (Ahn, 2001; Bourguignon et al., 2001; Brignall, 2002; Justin, 1998; Lorino, 2001; Mendoza et al., 1999; Norreklit, 2000; Otley, 1999; Ponssard & Saulpic, 2000). An analysis of the main criticisms highlights two basic points: the mechanistic representation of the relations between the different types of measures, and the fact that time as a dimension is not taken into account in this representation.

The first limitation of the balanced scorecard is that it offers a mechanistic, even simplistic, model of organizations: Although a plausible chain of events,

it is again very much a simplification of reality (Otley, 1999). For example, there is little significant evidence and few measures that inform us if, when, or how employee satisfaction will improve customer satisfaction and ultimately lead to improved profitability (Epstein, 2002). Indeed, the four perspectives are much more interdependent and subordinate between themselves than Kaplan and Norton's unidirectional model would have us believe. Norreklit (2000) questions the one-way nature of this chain: in order to be able to invest in research and development, firms need satisfactory financial results, but they likewise need research and development in order to be able to produce satisfactory financial results; it must therefore be a circular pathway. She also points out the lack of "mechanical" causality between quality and financial results and between customer satisfaction and financial results. The relationships between the indicators corresponds more to a circular causal representation putting a large number of interlinked factors into play (Lorino, 2001). So this, in a way, represents a move towards an integrated model with several hundred indicators (Ponssard & Saulpic, 2000) that are difficult or even impossible to operationalize. In fact, as Norreklit (2000) suggests, the relations which we are trying to represent are more ones of finality than causality. A finality relationship is involved when: (i) a person believes a given action to be a means – the best means – to an end; and (ii) the end and this belief actually cause the action. Thus a reciprocal relationship is involved between ends and means. A finality relationship does not assume the existence of a general law from which it follows that actions will lead to good financial results. So the consequence of assuming finality is that the relationships among the various perspectives become more ambiguous and increasingly complex, making many of the techniques suggested for the balanced scorecard impracticable.

The second weakness of the cause-and-effect relationship assumption is not taking into account asynchrony. It measures cause and effect at the same time without considering any time lag; it has no time dimension (Norreklit, 2000). This is where Lorino's (2001, p. 4) "dilemma" stems from: "*If I control non-financial objectives using synchronous financial ones, I don't take into account the time lapse between operational performance and financial impact; if I control non financial objectives using financial ones from sometime later, the control comes too late to rectify strategies.*"

The limits induced by the non validation of the cause and effect hypothesis leads, on one hand, to the fear that the balanced scorecard may result in the anticipation of performance indicators which are faulty, thus creating dysfunctional organizational behavior and sub-optimized performance (De Haas & Kleingeld, 1999), and on the other to neglecting the time lag between financial and non financial indicators, thus favoring short term behavior. As the long term is more

difficult to evaluate, it is tempting to retain only those actions having a relatively short term, strong financial impact (Mendoza et al., 1999).

Actual studies carried out within organizations introducing the balanced scorecard confirm these limitations. For example, Ahn (2001, p. 453) studied the design and implementation process of a balanced scorecard in a strategic business unit of a Swiss company and wrote: *“To sum up, it can be said that the very generally expressed recommendations for developing the balanced scorecard caused significant problems; above all, there is a lack of decision-making aids for companies both when generating and linking the strategic goals and when generating the measures and their values to be attained. The over complexity caused by the derivation of too many cause-and-effect chains was another problem. So a detailed elaboration of the balanced scorecard proved necessary, and involved an unexpectedly large amount of time being required of the balanced scorecard-team to fulfill its task.”*

Thus the question concerns the representations of organizational reality which convey but also feed the different management tools used today. If this organizational reality<sup>4</sup> is complex (Le Moigne, 1990) how can it be represented through management tools? In our opinion, Kaplan and Norton have chosen a representation which makes for simplicity, or even an *“over-simplification of reality”* (Brignall, 2002, p. 88). Meric (2003, p. 138) even speaks about *“an esthetics of simplicity.”* Yet this is not the only possible choice, even if this debate is far from over: it opposes the theorists of complexity, such as Morin (1990), vaunting a complex representation of complexity, to others like Dupuis (1990), defending the idea of a simplifying representation. This debate is an enriching one and should also be conducted in the highly pragmatic area of management tools.

### *A Self-Evolving Model*

Kaplan and Norton's tool is supposed to be flexible and dynamic enough to evolve with strategy; little guidance is given as to how that evolution should be managed (Mendoza et al., 1999; Otley, 1999). If one looks at the initial construction hypotheses, and especially the top-down approach which imposes an intended strategy and gives priority to measuring performance rather than to the management process, the self evolving part of the system remains to be demonstrated, the more so as there is no way that it can work independently of the organization's actors: *“the balanced scorecard is not a living thing”* (Mendoza & Zrihen, 1999).

All this raises several questions (Mendoza & Zrihen, 1999): even if the balanced scorecard gives information about the implementation of the strategy chosen, it certainly does not give any means of evaluating its relevance, nor is it capable of detecting evolutions within the environment which could justify a change in

strategy. This weakness is of special relevance for companies which are facing increasing pressure due to rapid change and fierce competition (Ahn, 2001).

Consequently, under no circumstances does the balanced scorecard exempt companies from setting up a regular, strategy revision process. Similarly, in the case of a strategic change, the balanced scorecard must itself undergo an adaptation which must originate from a voluntary action on the part of the actors concerned. It is therefore also necessary to provide for periodic management and revision procedures for the tool and especially to define who is in charge of the evolution of the system. Moreover, Kaplan and Norton (2001) report that, in many organizations, the balanced scorecard seldom survives a change of top management.

### *Implementation Difficulties*

As the preceding review has shown, the criticisms leveled at the basic hypotheses of Kaplan and Norton's model are substantial. Let us now move on to consider the model's practical validity. To do so, we thought it necessary to line up the criticisms against the difficulties encountered in implementing the balanced scorecard in certain organizations. Indeed, just as hands-on practitioners may operate effectively with certain models which in theory are open to criticism, so some tools lauded by theorists may be difficult to actually implement within an organization. As there are not many field studies on this subject, this literature review is more limited than the first one.

#### *The Difficulties Associated with the Integration of the Balanced Scorecard into Existing Control Systems*

Even if certain authors call the balanced scorecard a "management system" (Butler et al., 1997), most would say that it is just another performance deployment and follow-up tool. As such, it fits into the existing panoply of management control tools (budgets, reporting, planning, key business indicators) and techniques (management by objectives, management by exception, project management, etc.). It is therefore apposite to inquire whether, when it is set up in an organization, the balanced scorecard is compatible with the other tools present. Indeed, the risk in superimposing tools is to overburden those responsible for collecting and processing data and to overload the decision makers with information. Given that the majority suffer from information overflow (Mendoza & Bescos, 2001), the introduction of another tool risks creating an attitude of rejection or cynicism: "If I wait long enough, this will go away" (Epstein & Manzoni, 1997).

And where managers have already developed their own information systems, the balanced scorecard risks being seen as a hindrance to their own room to

manoeuver, especially if it imposes new indicator standards destined to supplant those – which may be considered more relevant by the local actors who use them – already in place. Conversely, the new tool will be welcomed with open arms, as Butler et al. (1997) state, when there is widespread dissatisfaction with the type and value of the data provided on a regular basis. In a word, the attitude towards the balanced scorecard is a question of management culture (Stemsrudhagen, 2003; Swaffin-Smith et al., 2003).

### *The Involvement of the Internal Actors*

Like every management tool, the successful implementation of a balanced scorecard also depends on the involvement – in the design process as much as in the actual implementation – of all the actors in the organization. In the first instance, such a project requires the visible and long-term involvement of top management. To achieve the benefits of the balanced scorecard, top management needs to show focus during the design of the tool, and consistency when using it (Epstein & Manzoni, 1997). Secondly, it is important to make the right choice in selecting the balanced scorecard project leader: who should be given role, and how does one prevent the other actors from feeling wronged? In particular, if the finance and accounting department is behind the initiative, and if the initiative arouses little interest within management as a whole, then it may be difficult for the balanced scorecard to make any impact (Norreklit, 2000). Similarly, management controllers have an important role to play in the project. The control system which is already in place, and the roles played by the management controllers – which may vary greatly from one company to another – must also be considered. Indeed, it must be remembered that management controllers are actors in the organization who also have their own power games and influence strategies (Bessire, 1995). Thirdly, the active participation of the human resources department would seem to be desirable when one thinks of the importance of the incentives mentioned earlier and the importance given to employee adherence and participation. Finally, there is the question of the appropriateness of using an external consultant, who could be viewed just as much as a relatively neutral actor encouraging more openness and frankness of expression (Butler et al., 1997) as one who is too far from the real issues of organizational practice.

### *The Difficulties Linked to the Choice of Indicators and their Targets*

The balanced scorecard requires access to new information which could pose technical and organizational problems. There is no need to review here the traditional information accessibility difficulties (individual metrics are only viable if the required data is easily available), nor those created by new information systems in certain organizational contexts. However, it must be borne in mind

that the difficulties encountered in identifying and choosing indicators may be due to lack of clarity in their definition. Kaplan and Norton's model does not give a precise definition of an indicator. They define it with reference to the objectives which are assigned to it and via examples. Conversely, certain authors have attempted to pin down this idea. Thus Lorino (2001) defines an indicator as information which should help an individual or more generally a group of actors to carry out an action towards achieving an objective, or to evaluate the result. The indicator must have an operational relevance (be associated with an action being driven), a strategic relevance (be associated with an objective to be achieved) and a cognitive effectiveness (be associated with a player).

Another criticism concerns the fact that each indicator seems to be linked to just one of the four perspectives, which does not facilitate the choice of those intended to be cross perspective (Bontis et al., 1999). Similarly, there is also the much wider question of the compatibility of transverse indicators within the traditional vertical hierarchy (Mendoza et al., 1999).

Certain authors highlight the difficulty of defining targets. Target setting is a crucial feature of well-implemented balanced scorecards, as the level of difficulty in attaining the required level of performance in different areas essentially defines the relative levels of attention that managers need to pay to them (Otley, 1999). Despite this, it seems that this subject is not discussed much in Kaplan and Norton's model or in the literature.

Paradoxically, in an effort to manage the dissemination of the strategy within the business units, and to compare the performance of the latter using internal benchmarking, the balanced scorecard favors the choice of common and standardized indicators between these different units. According to Kaplan and Norton, some of them should even be generic, i.e. applicable to any type of company regardless of the context. Nevertheless, it is not just because one finds the same indicators in different scorecards that we have set up organizational capacity to be coordinated (Ponssard & Saulpic, 2000). The preoccupation still remains that of standardizing the approach in order to satisfy the expectations of a top manager concerned with convergence, rather than preserving the demands of different units and functions, fitting them together into a coherent approach (Oriot, 2003).

## THE STAR COMPANY STUDY

According to Gehrke and Horvath (2002, p. 168): "*French academics in Management Accounting place little research emphasis on implementation issues.*" Whence the pertinence of our research which aims to describe and understand how a balanced scorecard was constructed and used in a French organization.

*The Choice of Method for this Research*

Having reviewed the criticisms that several of the fundamental hypotheses of Kaplan and Norton's balanced scorecard have given rise to, and after having shown the difficulties encountered in setting up such a tool, we will now discuss each of these different points using a case study, the purpose of which was mainly exploratory, but also descriptive and comprehensive (Otley & Berry, 1994; Yin, 1994). This study was carried out in a European space-sector company, which we will call STAR in the interests of confidentiality. Faced with important strategic and cultural changes, this company called into question the relevance of its management and performance practices, leading among other things to the implementation in 1998 of a balanced scorecard project, which ended in 1999.

We have used an interpretive method (Macintosh, 1995) and an exploratory process, in order to study the balanced scorecard implementation project over this period. First of all we looked at the organizational context in which the project was initiated, and then we studied in detail the process whereby the balanced scorecard was set up, using an in-depth documentary analysis (Mucchielli, 1991) of all the work-group progress reports, and the different communication media (in-house newspapers, e-mail exchanges), which accompanied the project. This documentary analysis was completed by in-depth, semi-directive interviews with the participants in this work-group. The people we talked to had all been chosen to be group representatives by those in charge of the organization's different business units, and they were from various company departments (finance, information technology, quality). Our study was conducted between 2000 and 2001, i.e. two years after the end of the project, which enabled us to obtain retrospective accounts concerning the implementation of the balanced scorecard. We were then able to cross-reference these accounts with the different events and decisions identified from the documentary study. This triangulation process has ensured the "internal coherence" of the research (Ahrens & Dent, 1998; Mucchielli, 1991; Usunier et al., 1993; Yin, 1994), while at the same time facilitating comparison of the different points of view. The objective of this case study was to obtain a better understanding of the difficulties and ambiguities cited in the literature concerning the implementation of a balanced scorecard in an organization. Accordingly, we have tried to penetrate the complexity of an organizational context (Ahrens & Dent, 1998; Dent, 1991; Scapens, 1992) in order to develop several descriptions of the subject, which would lead in turn to a number of hypotheses capable of explaining the limits of the balanced scorecard or the difficulties of its implementation. These hypotheses can then be tested in due course in other organizations.

*Presentation of the Company and of  
the Balanced Scorecard Project*

STAR is a world-leading European space-sector company. Its expertise covers the whole range of space technologies, whether civil, military or commercial (earth observation, telecommunications, scientific programs, manned flights and space transport). The present study covers the period between 1997 and 1999, a period in which the company and its environment experienced important changes. The first of these concerned the evolution of the space market. In the eighties, this market was “scientific” and the few available customers were mainly institutions, headed up by the space agencies.<sup>5</sup> The market thus depended heavily on industrial policy and on the strategic interests of the potential client countries. In contrast, from the mid nineties, STAR was confronted with a competitive and rapidly expanding civil market. Exploration of the universe and development of civil and military observation continued, but the real explosive growth was in telecommunications. The second change came about as a result of reduced government spending, and it went hand in hand with the privatization and proliferation of the competitors. Similarly, the opening up of the telecom market spawned the development of highly competitive requests for proposals and the appearance of new players,<sup>6</sup> even if the main competitors remained the American giants. Henceforth, profits – to the operators’ delight and the constructors’ dismay – were to be made more in the exploitation of satellites than in their construction. The market was being squeezed and the world production capacity exceeded the number of confirmed orders. Contracts were characterized by tighter and tighter pricing, deadlines were shorter and shorter while at the same time satellites became more and more complex to build. In a nutshell, the constructors had to improve their technical performance (power, reliability, extended lifespan, etc.) and their services (delivery into orbit, financial package, insurance, etc.) while simultaneously reducing their costs.

In the face of this new situation, STAR decided to implement an ambitious strategy which would enable it to strengthen its position in the world market. To this end, it was imperative that it improve its productivity and responsiveness, above all by reducing its costs and time cycles. The company had to grow sufficiently large to be recognized worldwide and to have sufficient resources at its disposal to conduct its research and development policy. The directors of STAR therefore decided to instigate a major change in order to bring about a transformation of the company, going from a traditional engineering and prototype approach to one characterized by shorter, accelerated production runs.<sup>7</sup> As one employee we talked to put it: “*Previously, we told the engineers to make it work. Now we wanted it to work, be efficient and be cheap to produce!*” There was a knock-on effect of this change on the structure of STAR. Up till now the company had been organized



around projects, with relatively loosely defined teams dedicated to a particular project for a given customer. Each project was strongly customer-oriented and highly efficient in terms of prototype management. However, there was almost no inter-team communication, and the different projects coexisted with no “osmosis” or building up of know-how between them. The fact remained that starting shorter, accelerated production runs required greater rationalization of resources, and STAR realized that another type of organization, built around its “processes” or “industrial activities”<sup>8</sup> was necessary. However, the traditional project-based organization, the real trademark of the space industry, was not challenged, mainly because it was well adapted to meeting customer needs. One of the major priorities at STAR in the mid-nineties, therefore, was to achieve a balance between the traditional project-oriented culture and the new process-based approach. A new matrix structure, based on the one hand around business units and on the other around operations departments, saw the light in 1995. Each business unit constituted a profit center, corresponding to a product line and was composed of several projects.<sup>9</sup> Operations departments were cost centers, service providers (electronic or mechanical equipment, software, engineering, etc.) for the business units. This provision of services for the different projects corresponds exactly to the process approach mentioned above.

At the very moment when processes began to occupy an increasingly important place in the company structure, there was a change in STAR’s top management. The new team expressed its dissatisfaction with the fact that fundamentally financial reporting was not readily available. In particular, it deplored only being able to make observations a posteriori with no real possibility for anticipation. Similarly, it criticized the reporting system for offering only a disjointed vision of company reality: on the one hand a vision of projects, and on the other a vision of processes. This new management wanted a multifunction tool capable of linking up all the indicators which supposedly depicted the same situation. Under increasing pressure from shareholders, it took the decision to develop within this haven of scientists and engineers a corporate culture based on performance measurement. To achieve its strategic goals, the board launched a global performance improvement program aimed at re-thinking the professional practices of the company, based on 13 “breakthrough initiatives” corresponding to improvement priorities in all areas – marketing and sales, new product development, reorientation of internal achievements towards strategic products, supplier management, customer satisfaction, improvement in productivity, human resource management, and performance measurement systems. Each project included representatives from all business units or directorates, and had to promote the adoption of unified approaches throughout the company. Each directorate was then required to co-ordinate its own actions.

Our study focused on the “metrics” work group, whose mission was to set up a new performance measurement system in order to achieve three goals: first, to facilitate communication between the finance department and technicians, in order to better communicate shifts in strategy within the company; second, to identify the progress factors likely to improve results, and combine the efforts being implemented; and finally, to be in a position to determine the impact of improvements made at the process level in the work units on the future financial results of STAR, in order to communicate more convincingly to shareholders. This work group undertook the benchmarking of French and British companies<sup>10</sup> and instigated a survey of all the measurement indicators – both financial and technical – in use in the main business units of STAR. This inventory of practices led to the adoption of Kaplan and Norton’s Balanced Scorecard, considered the tool best adapted to the needs and culture of the company. STAR chose this method because it presented the best chance of encouraging the spread of its “process culture” and strategy throughout the organization, and also because it was the one that optimized the re-use of existing indicators, while at the same time including a greater proportion of non-financial ones. The work group participants decided to first build a balanced scorecard at the corporate level, and then to have each business unit take it on board and adapt it at their level. The four perspectives recommended by Kaplan and Norton were thus applied to STAR’s strategic objectives, and a set of indicators was defined at the corporate level (see Appendix A).

To be adopted, indicators must be: Simple, Measurable, Available, Realistic, Temporal, and Positive (S.M.A.R.T. +) and satisfy the following criteria:

- be identified on the company’s list of indicators;
- measure the performance of one of the key processes: output performance (lagging indicator) or process parameter (leading indicator);
- have a quantified objective;
- have an “administrator” (someone responsible for the production of the indicator) and an owner (someone responsible for the results);
- undergo regular appraisal by the owner and his management in order to identify and proceed with actions leading to objective fulfillment.

Finally, each indicator is described in detail on a standard identity card (see Appendix B).

Following this exercise conducted at the corporate level, each business unit manager was asked to do the same exercise at their level. But, in 2001, only two directorates out of the nine initially planned continued to use the balanced scorecard. Neither this tool nor the process-based culture was successfully generalized over the whole company. In fact, quite the reverse is true: the project-based approach remained largely dominant.

### *Critical Review of the STAR Balanced Scorecard Project*

Having highlighted the main drawbacks of the balanced scorecard as discussed in the literature, we will now analyze the STAR project in an attempt to determine whether the difficulties identified are the consequences of the tool's intrinsic weaknesses, or rather the result of the company's inadequate management of the project's implementation. To this end, we will take, in turn, each of the previously described theoretical criticisms and implementation limitations and compare them with the field data. At this exploratory stage of the study, one must bear in mind that the elements which follow are only hypotheses which need to be tested at some later date.

#### *The Balanced Scorecard Objectives at STAR*

The work group in charge of constructing the measurements system had to satisfy a double requirement: on the one hand, that of the CEO, who wanted a reliable, rapid and forward-looking system in order to better inform the company's shareholders; and on the other, that of the managers who took part in the global performance improvement program and wanted to benchmark the internal processes and promote a best practices culture within the company. The following terms of reference were defined by the work group: *"to define and implement a performance measurement process across all directorates and central functions of the company. This process shall be strategy driven and shall: (1) address the needs and requirements of stakeholders; (2) link financial and non-financial indicators to relate process performance to ultimate business performance; (3) drive the breakthrough initiatives corresponding to improvement priorities in all areas; (4) harmonize indicators according to internal and external best practices; (5) develop a measurement culture throughout the company; (6) achieve efficiency by means of adapted systems."*

The objective of forecasting results and the definition of intended strategy by top management link the STAR balanced scorecard project more to a "diagnostic control system" as defined and already cited by Simons (1991, 1995). The purpose of the approach taken by the work group was really in effect to coordinate the actions of the different business units in order to encourage the dissemination of the strategy decided by top management throughout the organization. At the same time, it meant constructing a standardized tool based on somewhat "mechanical" mathematical reasoning, which would allow information about the actions taken in the business units or at the level of different operational processes to filter upwards simultaneously, thus enabling the financial forecast asked for by the CEO. However, parallel to this diagnostic finality, there was also a more informal but nevertheless essential objective: structural and cultural change. For

the improvement program committee it was not only a matter of convincing the business units to use the new strategic indicators. It also wanted to genuinely modify the organization's way of working. The goal was on the one hand to complement the traditional project structure with a process one, encouraging interactivity between actors and the pooling of knowledge, and on the other, to evolve from a technical culture (engineers wishing to run a "good project") towards a management culture (a good project certainly, but cheaper). This gave rise to a dichotomy of purposes.

The research data, gathered one or two years after the end of the project, showed that the balanced scorecard group, faced with the absence of any imposed hierarchy and any official support of the objectives from top management, progressively favored the diagnostic finality by endeavoring to construct a standardized tool in which a mathematical representation of the operational processes intended to facilitate the coordination of actions and promote the forecasting of financial results for the CEO was given priority. At this juncture another point must be recalled: in 2001, only two directorates out of the nine initially planned continued to use the balanced scorecard. The adoption of the scorecard was not successfully generalized over the whole of the company. This fact also confirms the priority status of the diagnostic finality of the balanced scorecard, and the lack of interest shown by the business units towards the scorecard.

These results raise the question of whether a control system can, at one and the same time, carry out different purposes which are nevertheless complementary at the level of the organization as a whole (in this case, facilitating the financial forecast, in addition to promoting structural and cultural change).

#### *The Concept of Performance in the STAR Project: Axes and Indicators*

The research data collected on the STAR balanced scorecard bears witness to the unequal weighting given to the different dimensions which supposedly make up the performance of an organization. The standard balanced scorecard architecture with four axes has, on the whole, been retained, but the weighting of each perspective is unequal. The "financial" and "customer" boxes are well represented by traditional indicators. Conversely, the "innovation and learning" perspective is insufficiently developed. Thus, regarding human resources for example, only a few very traditional indicators (turnover, production hours), are identifiable. Yet the management of people is one of the core values officially proclaimed by the company, since human resources – talent and knowledge – are a critical success factor in the space sector, driven by innovation and high-performance technology. As was stated earlier, the translation of core values does not seem to have been the number one priority of the work-group. But even for diagnostic purposes, the "people" axis of the "innovation and learning" perspective is hardly original.

Admittedly, this could be explained by the difficulty in identifying this type of indicator: for example, it is never easy to translate motivation or creativity and innovation into an indicator. But another explanation lies in the actual manner in which the balanced scorecard project was carried out at STAR. One of the main constraints might have arisen from the fact that nobody from human resources management participated in the balanced scorecard work-group. Financial and quality managers made up the majority of this group, and perhaps they did not have either the interest or competence required to develop good human resources indicators. It is therefore regrettable that the balanced scorecard group worked quite independently of the other “breakthrough initiative” groups, and in particular, in this case, of the human resource management one.

Still on the “innovation and learning” axis, the “lessons learned” indicator should be noted. This, according to those questioned, was one of the original and very useful measures taken to translate experience feedback: for each incident, a causal analysis was made and systematically entered into a special file for use on future projects. As we noted in the theoretical section, certain areas of the balanced scorecard contain indicators which are quite different, and even contradictory. This heterogeneity shows up well in the STAR “innovation and learning” area, raising the concern that one of the dimensions therein – in this case “lessons learned” – becomes dominant and progressively overshadows the others.

The same heterogeneity occurs in the “internal business process” area, which is swamped by a large number of indicators. Users we talked to testified to this frame’s lack of readability. Yet one of the project’s main aims was originally to stress processes. The indicators chosen attempt more to evaluate the main processes rather than identify the strategic performance drivers which actually make them work (for example, market share was not segmented by public/private sector).

Risk management is another critical success factor in the space sector, because of the highly technical nature of projects and their size (conducted over several years and worth millions of euros). In STAR’s balanced scorecard, however, it is not adequately taken into account. It is a multidimensional concept, involving market, technological, and financing risk. According to those in charge whom we interviewed, it would nonetheless have been one of the best sorts of feedback for the CEO, since each type of risk can generate disparities in costs and consequently in margins.

### *The Impact of Culture*

At STAR, according to those interviewed, an engineering culture dominates. It is characterized by very high technological and scientific skills, by a constant concern for quality and reliability, and by a concentration of very highly qualified staff with different national and cultural backgrounds. This scientific focus can

be found in the construction of STAR's balanced scorecard, where the technical and mechanistic aspects of the tool have been given greater importance than the communication and management aspects. Similarly, there is an extreme concern for technical details. For example, there were long discussions aimed at fixing the significance threshold value for one or other indicator. As we will show later, the work group spent a great deal of time on mathematically modeling the relations between the different indicators to increase their financial forecasting power. In short, the balanced scorecard project was conducted by these engineers in the same way as they conduct a traditional industrial one.

### *The Rewards*

At STAR, top and middle management's salary is partially indexed to the achievement of individual or collective objectives. In the design of the balanced scorecard, however, the question of the link between scorecard performance and rewards did not arise, probably due to the low level of support from top management and the non-involvement of the human resources manager in the project. This link, however, constitutes an important motivation catalyst in Kaplan and Norton's model.

### *The Top-Down Approach*

At the time of the balanced scorecard project, the markets were growing and top management had a clear idea of the strategy they wanted to apply throughout the organization. Similarly, the modeling demanded by the CEO, chosen in order to favor rapid uptake of financial forecasts for the shareholders, tended towards developing a tool capable of linking up all the indicators used in the business units with the aim of benchmarking the operational processes. Thus in the reports from the balanced scorecard work-group, there appear questions which translate this "mechanical" approach. Examples include: "*Can we find a mathematical formula showing the contribution of each indicator to the bottom line? Can we define a composite index representative of STAR's overall status and progress? Are we meeting the needs of the CEO?*" The participants in the balanced scorecard project therefore came down in favor of constructing a diagnostic tool (Simons, 1991, 1995) appropriate to the top-down strategy definition used at STAR (remember that in the final analysis only two directorates out of the nine initially planned used the balanced scorecard).

Nevertheless, in the beginning the project seemed to favor a grass roots approach, since the first job was to evaluate all available information from the units and an e-mail suggestions box was set up for the benefit of all employees. Similarly, representatives of each business unit were invited to participate in the

work group in order to pool existing know-how and foster collective learning. However, after functioning for a year, the performance improvement program work-groups were disbanded. The interactive management process was thus a one-off affair. In short, if the implementation of the balanced scorecard did initially contribute to the drive for sharing and interactive management, this finality does not seem to have extended beyond the lifespan of the work-group. Indeed, once in place, the balanced scorecard left the door open to a recurrent, mainly top-down approach.

### *The Cause and Effect Relationship*

In the STAR approach, the cause and effect relationship was a fundamental element in response to the CEO's needs – to have the ability to measure the effects of operational improvements on the bottom line in order to be able to rapidly update the shareholders. One of the first tasks of the work-group was therefore to design a model, based on the diagram below (see Appendix C), correlating the different operational processes to financial performance expressed in terms of "Gross Operating Margin." The template obtained was not used, but remained a theoretical construct because it was not possible to reliably identify all the cause and effect relationships. The initial objective of linking up all the indicators was gradually abandoned and with it went the predictive character of the tool, aimed at making an evaluation of the impact of processes on the bottom line. Why this rejection of what after all was the very fountainhead of the project, a response to the CEO's request? Several hypotheses can be advanced. Perhaps, by not including enough operational managers and project heads in the work-group (composed mainly of "functional" managers, from Finance and Quality in particular), STAR did not make available the means to achieve this modeling objective. Perhaps also the complexity of the space sector makes the elaboration of a mathematical and somewhat mechanical model difficult. As proof of the complexity needed to accurately represent activity, one has only to look at the circular nature of the different axes in Fig. 1: the quality of the R&D influences, for example, customer satisfaction, but conversely new R&D projects can only be developed in partnership with customers. Furthermore, projects in the space sector are highly complex technologically, non-recurrent, and with enormous sums of money at stake; in addition, they are spread over several years, which accentuates the time lapse between the operational improvements and the financial result, a lapse which is difficult to model. Finally, is Kaplan and Norton's model, by proposing a linear scheme of cause and effect relationships, committing the ultimate sin of excessively simplifying a reality which is far from simple? All these hypotheses still need to be tested.

### *The Evolution of the Tool*

As the balanced scorecard was not adopted across the whole company, judging its evolving character is rather delicate. Nonetheless, the STAR case is interesting because it deals with an organization which has, over the last ten years, lived through several important changes. Between the time when the balanced scorecard project was launched (1997) and its end (1999), the business environment of the company once more evolved in line with the downturn in the telecommunications market. In fact, from 1999, growth perspectives were shrinking and top management abandoned its ambitious strategy in order to concentrate on internal restructuring. The declining military activity was split up between different business units, the market segments were redefined, and the dedicated operational processes were integrated into the business units. Under these conditions the “project” structure has come back into prominence, and the wish to favor processes instead of projects has disappeared. Similarly, the strategic direction set by top management has become more “hazy.” Then there is the fact that there have been important mergers in the space sector. From 1999 onwards, the implementation of the balanced scorecard was no longer a priority. Thus at the very moment when it was ready to be handed down to the different organizational units, the tool was made obsolete without ever having really started its “life” within the organization.

Admittedly, this turnaround in the situation and the scale of it cannot perhaps be generalized for all companies, but it does illustrate the problem touched on earlier – that of lack of adaptability of the balanced scorecard in fast-moving and changing organizations. As an intended strategy dissemination tool, it does not really facilitate the evolution of strategy nor the emergence of strategic opportunities.

### *The Integration of the Balanced Scorecard into Existing Control Systems*

As mentioned in the theoretical section, the more the users in an organization are dissatisfied with their present tools, the greater the chance that they will accept the balanced scorecard. And it so happens that in 1997 when the project was launched, STAR had what was described by an interviewee as a “disparate sort of patchwork” made up of, on the one hand, financial reporting indicators complemented with technical and financial summary sheets for each project, and on the other, process performance measurement indicators. In particular, top management regretted only being able to make observations a posteriori, with no real possibility for anticipation, and they criticized the reporting system for only offering a disjointed vision of company reality: on one side, projects, on the other, operational processes; on one side, technical matters, on the other, financial. Similarly, the business units regretted only having one relatively standard and heavy (60 pages) document at their disposal, which gave little in the way of explanation as to the causes of their performance, and which was not linked to strategic requirements.



The expectations vis à vis a new tool were thus all in place at the moment when the planning stages of the balanced scorecard were launched. Nevertheless, due to the circumstances outlined earlier, only two business units would adopt the approach from 1999. We have interviewed the employee (a quality manager and an ex-participant of the work-group) in charge of implementing the balanced scorecard in one of these two business units. Today he thinks that the information supplied by the balanced scorecard is a real plus for the analysis of the evolution of financial data for his unit. This information is especially appreciated as a basis for discussion with top management, at the monthly budgetary meetings. The financial indicators have been complemented with indicators from the three other perspectives (customer, innovation and learning, internal), and the financial axis is one perspective among others. The main difficulty encountered seems to be the collection and processing of data, which is still not completely automated. This unit's motivation for adopting the balanced scorecard can be explained at the outset by the strong involvement in the original pilot study of the person in charge of quality. There is also the fact that the unit manages operations, serving as an internal supplier for projects. As such it is permanently under pressure to innovate, and its main objective is to offer projects a high quality service for the lowest cost. Knowledge of recurrent processes, therefore, is particularly relevant information. In other words, this unit was one of the ones which could see its activity most enhanced by using the balanced scorecard.

### *Involvement of the Players*

As can be seen from the previous example, quality managers are the actors who turn out to be most interested in the approach, and this for two reasons: it attempts to enhance the operational processes which are at the center of their preoccupations, and – while simultaneously increasing the legitimacy of their own actions – offers them a real means of dialogue with the operational managers within their unit. In his study about BSCs in Finnish companies, Malmi (2001) notes that quality programs seem to encourage BSC adoptions in Finland. The latter have therefore been the main representatives from the operational directorates in the work-group, while the industrial directors and project heads remained in the background. This partiality in having the operational units represented by quality managers explains some of the difficulties encountered in the implementation phase: since the balanced scorecard was not able to benefit from the support of the other two categories of actors, its implementation depended to a large extent on the motivation of the person on the spot in charge of quality.

In addition, the quality managers did not have a strategic position within the balanced scorecard work-group, since leadership of the project was entrusted to a financial director, accompanied by numerous financial managers. This choice

of a financial leadership could appear surprising, since the project aimed at better integrating the non-financial and technical dimensions, but it came about for the following reasons. It was decided to directly involve the CFO, in order to avoid any adverse reaction on his part to a tool which might have been perceived as competing with the financial reporting in place. This choice was ambiguous and so were its effects. This leadership ended up reinforcing the financial dimension of the finished balanced scorecard, thereby respecting the priority of forecasting the bottom line for the CEO, and arousing a certain mistrust on the part of the other players.

The human resource manager did not wish to participate in the work group. He was involved in another, “competing” one, whose objective was to respond to the needs of employees. In this way, the two groups, people and balanced scorecard, have functioned in a disjointed fashion. This is obviously a long, long way from Kaplan and Norton’s interrelations between the different axes. To put it another way, the difficulty is not to get various indicators to coexist on the same scorecard, but rather to make things work in such a way that the actors who participate in the life of these different indicators really do work together. Also, this observation tends to arise from the same reasoning quoted earlier, where each function wanted to keep its “margin of freedom.” Similarly, the human resource manager was perhaps also afraid of losing his “domain of competence” if he shared it with other functions.

Now we must address the issue of the role of top management – an essential factor in the introduction of any management tool or change process. At STAR, once their requirements had been spelt out, top management gave hardly any support – whether in the design or implementation phase – to the project. Normally the CFO, in the role of work-group leader, should have ensured liaison between top management and the team, but it must be remembered that the project was “given” to him, rather than instigated by him. To complete the picture, the external consultants at the level of the overall “performance improvement program” must be mentioned. Suffice it to say that their role in the balanced scorecard work-group was a very limited one. Finally, we can mention that an article giving an update on the project, published in a July 1998 issue of the STAR in-house newspaper, explains that although the personnel understood and supported the need for change, they did not really feel involved and, moreover, were afraid that the program would lead to a loss of jobs.

Before concluding this article, it would be interesting to return to the starting point, namely the objectives of the balanced scorecard. We saw that the work-group had to fulfill two sets of requirements: those of the CEO for a “mathematical,” forward-looking model, in order to better respond to the demands for financial information from shareholders; and those, more general, of an information system aimed at promoting structural and cultural change. As neither of these two

objectives were in fact achieved, we tried to analyze the reasons for this failure in the light of the difficulties and weaknesses identified at STAR. The first objective, in our view, was not achieved for two reasons: the reality was too complex, and reliable cause-and-effect relationships could not be established. This shows the difficulty of developing non-financial indicators, and of coupling up the different performance indicators and dimensions with each other. The second objective, we believe, was also not achieved for two reasons: top management did not get sufficiently involved, and the balanced scorecard approach had difficulty acquiring legitimacy in a French engineering culture such as that of STAR. It is important, however, to qualify our analysis as, even if this program was only a one-off affair, it has perhaps left some trace within the organization, namely that of making the scientific personnel more aware of management concerns. In this light, one may consider that the balanced scorecard served as a first step towards integrating a management culture into the organization, even if progress in this direction did not get very far.

## CONCLUSION

We believe that the development of the balanced scorecard raises several essential and interdependent questions. First, is the balanced scorecard, built on a cause-and-effect relationship, realistic? We have shown how this representation can appear mechanistic and simplistic relative to the complexity which characterizes most organizations today, where stakeholders are numerous and interdependent, having multiple, circular interactions. Secondly can the balanced scorecard be considered a universal management technique? We have seen how national, organizational or professional cultures can put a brake on the implementation of such a tool. In particular, we have seen that without taking into account the scientific culture of STAR's engineers, the implementation of a balanced scorecard could not succeed. Whereas previous studies have focused mainly on the influence of national culture on the use of the balanced scorecard, our research invites a deeper consideration of the influence of the professional cultures that make up an organization. We have, indeed, shown that the context at STAR is particularly complex, characterized by technology-intensive, non-recurrent projects and enormous, long-term financial stakes. For this reason, we consider that in analyzing the implementation of a balanced scorecard, it would be beneficial to make use of a rather more complex form of contingency framework (Otley, 1980). For example, the BSC seems to be easier to implement in a crisis situation (Jazayeri & Scapens, 2003). But can it really be used as a cultural change lever in a more stable environment? There is no question of us bunching all organizations together and blanketing them with the

interpretations that this research has lead us to formulate. The value of a tool can only be assessed according to the particular context within which it is used and according to its finalities. Each organization will choose the aim(s) the balanced scorecard is required to fulfil, with no a priori finality inherent in the system. In short, the results of this study are only hypotheses that require fuller, in-depth treatment, but they do corroborate a great many of the criticisms expressed in the literature.

## NOTES

1. Simons also identifies two other “levers of control”: the “beliefs systems” and “boundary systems.”
2. From three perspectives: shareholder’s perspective; extraordinary growth; continuous improvement.
3. The approach is guided by the identification of critical processes relative to strategic objectives as a basis.
4. The organizational realities should provide us with the answer since we consider that there can be as many as there are players.
5. Centre National d’Etudes Spatiales; European Space Agency.
6. Ex-USSR countries, China, India and Israel.
7. The term “shorter, accelerated production runs” must be taken in context. It entails going from “a few units produced over several years” to “several units produced per year.”
8. Processes cover the tasks of design, production, distribution (e.g. development of new products, acquiring new business . . .).
9. From 5 to 20 projects per business unit.
10. Compiled by the Benchmarking Club de Paris and the European Foundation for Quality Management.

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## APPENDIX A: LIST OF INDICATORS BY PERSPECTIVE

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### Financial Perspective

How do we look to shareholders?

Profitable

Productive

Cash generative/capital efficient

Successful

Trade profit %

Economic value added

Net cash flow

Return on capital employed

Sales growth

### Customer Perspective

How are we viewed?

Customer satisfaction

Customer satisfaction index

Delivery schedule adherence

Delivery non-conformance

Market share

Customer complaints index

### Innovation and Learning

How do we sustain our ability to improve?

Technological edge

Knowledge management

People

R&D spending/Sales revenue

Lessons learnt

Staff turnover

### Internal Perspective

What must we excel at?

Process capability (operational  
and service)

Change control

Risk management

Design for manufacture

Supplier management

Information system infrastructure

Process cycle time

Key process capability index

Cost of non quality

Phase review adherence

Productivity measures

Bit hit rate

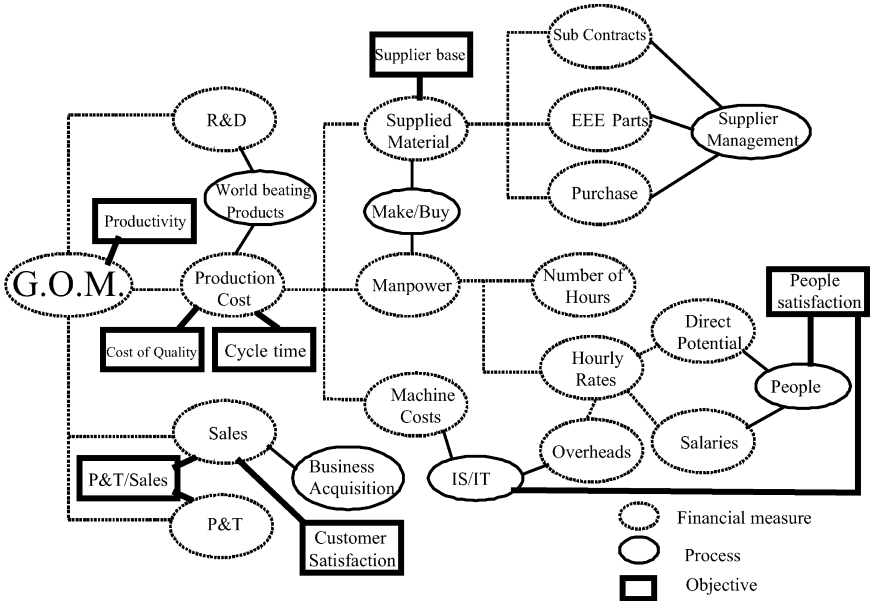
% orders placed with key  
suppliers

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## APPENDIX B: METRICS DESCRIPTION FORM

<b>Metric Name</b>	Clear and Simple Title																																
<b>Scope</b>	What the metric tells you about which process and how it is going to be used.																																
<b>Target</b>	Quantify the goal for the process and/or external benchmark																																
<b>Report format</b>	<p><b>Example</b></p> <table border="1" style="margin-top: 10px; width: 100%; text-align: center;"> <caption>Approximate data points from the graph</caption> <thead> <tr> <th>Month</th> <th>Target</th> <th>Rate 1</th> <th>Rate 2</th> </tr> </thead> <tbody> <tr><td>JAN</td><td>45</td><td>25</td><td>35</td></tr> <tr><td>MAR</td><td>45</td><td>25</td><td>55</td></tr> <tr><td>MAY</td><td>65</td><td>55</td><td>55</td></tr> <tr><td>JUL</td><td>75</td><td>75</td><td>65</td></tr> <tr><td>SEP</td><td>75</td><td>90</td><td>75</td></tr> <tr><td>NOV</td><td>90</td><td>90</td><td>85</td></tr> <tr><td>JAN</td><td>100</td><td>100</td><td>85</td></tr> </tbody> </table>	Month	Target	Rate 1	Rate 2	JAN	45	25	35	MAR	45	25	55	MAY	65	55	55	JUL	75	75	65	SEP	75	90	75	NOV	90	90	85	JAN	100	100	85
Month	Target	Rate 1	Rate 2																														
JAN	45	25	35																														
MAR	45	25	55																														
MAY	65	55	55																														
JUL	75	75	65																														
SEP	75	90	75																														
NOV	90	90	85																														
JAN	100	100	85																														
<b>Process owner</b>	Process owner/accountable – name <i>and</i> position																																
<b>Reporting level</b>	E.g. shop floor, Dept, Group, Team, Division, Directorate, CEO																																
<b>Review and analysis process</b>	How, when and by whom the metric will be reviewed and analysed and improvement/corrective actions defined and implemented.																																
<b>Deployment status</b>	Current deployment and future plans for deployment of metric departments/directorates/organizations.																																
<b>Data administrator</b>	Who collects the data, prepares and publishes the metric.																																
<b>Data input</b>	Where the data is to be obtained from & the raw data matrix form/components/numbers.																																
<b>Formula used</b>	Calculations including any factors and contributory metrics.																																
<b>Assumptions and baselines</b>	Detailed assumptions used for the calculation of metric, e.g. number of working days, or exclusions.																																
<b>Reporting period</b>	E.g. monthly/data need by date/report issue date																																

## APPENDIX C: FROM GROSS OPERATING MARGIN TO PROCESSES AND METRICS





# THE STRUCTURE OF BALANCED SCORECARDS: EMPIRICAL EVIDENCE FROM NORWEGIAN MANUFACTURING INDUSTRY

Jan Ivar Stemsrudhagen

## ABSTRACT

*This study builds on the premise that leaders enact their performance measurement systems through their use of information, and explores, based on balanced scorecard (BSC) theories, the leaders' use of information in 83 Norwegian manufacturing companies. The study shows that the nominalistic structures of performance measurement systems comprise many of the measures found in BSCs, irrespective of whether or not the companies have in fact implemented this system. By undertaking a factor analysis, we identify four dimensions in the performance measurement systems' nominalistic structure: the owner dimension, the customer dimension, the operations dimension, and the learning and growth dimension.*

## 1. INTRODUCTION

The structures of performance measurement systems appear to have changed dramatically in recent years. At pace with the growing opportunities for information

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**Performance Measurement and Management Control: Superior Organizational Performance**

**Studies in Managerial and Financial Accounting, Volume 14, 303–321**

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ISSN: 1479-3512/doi:10.1016/S1479-3512(04)14012-4

exchange, brought about by the technological development, and at pace with the increasing rate of competition and change which puts ever higher demands on leaders' ability to keep updated, the practitioners' cry for comprehensive systems that report all strategically important information is becoming increasingly loud (Boulton et al., 2000; Eccles, 2001). In parallel with this development, work has been going on to develop new performance measurement systems with structures that enable leaders to keep updated. Systems such as the balanced scorecard (Kaplan & Norton, 1992), performance measurement in service businesses (Fitzgerald et al., 1991) and the performance pyramid (Lynch & Cross, 1991) all claim to be describing the measures, dimensions and structures which performance measurement systems need to include in order to successfully support the work of leaders in a change-oriented setting.

The structures of performance measurement systems have been changing over the last decade, and the question of their current nature largely remains unresolved. The question has been intensely debated, and it has been argued that the new systems have revolutionized old structures, bringing about a greater emphasis on the measurement of factors which reflect the strategic intentions of companies, and supplementing the traditional and financial measures with non-financial measures relating to customers, internal business processes, operations, quality, flexibility, resource utilization, innovation, learning and growth, and other dimensions (Kaplan & Norton, 2001a; Laitinen, 2002). It has also been argued that the new systems ignore a number of important dimensions, such as public authorities, suppliers, and competitors, and that they should measure more and different factors than what is currently the case (Kloot, 1997; Nørreklit, 2000).

The purpose of this chapter is to explore the structures of performance measurement systems used in Norwegian manufacturing industry. It bases its argument on the structure of balanced scorecard, which in terms of take-up and academic attention is the performance measurement system which has enjoyed the greatest success since the beginning of the 1990s, in Norway and elsewhere (Malmi, 2001; Silk, 1998). Based on a questionnaire completed by 83 companies, the chapter seeks to identify the degree to which performance measurement systems used in Norwegian manufacturing industry have the properties prescribed by the BSC.

According to the literature on BSCs, performance measurement systems should reflect a company's strategic intentions, they should comprise dimensions which are similar to the perspectives of finance, customers, internal business processes, and learning and growth, and they should comprise non-financial measures (Kaplan & Norton, 1996a, 2001a; Malmi, 2001). The study outcomes demonstrate that non-financial measures form an important mainstay for the performance measurement systems employed in Norwegian manufacturing industry, and by means of a factor analysis four dimensions were identified as being strikingly similar to the perspectives of the original BSC: the dimensions

of owners, customers, operations, and learning and growth. The performance measurement systems were scrutinized for strategic patterns which might reflect the companies' strategic intentions, yet none were found. The study also reveals that there are only modest differences between the structures of performance measurement systems in BSC companies and those in non-BSC companies.

The following section reviews the literature on the structure of BSCs, and culminates with the definition of a set of research issues. The methodology and findings of the study are then described, before a conclusion is drawn up and comments are made with respect to further research.

## **2. THE STRUCTURE OF BSCS**

The BSC construct has been developing continually since its launch in 1992 (Kaplan & Norton, 2001b; Malmi, 2001). In the beginning, its founders were generally focusing on which properties performance measurement systems should have (Kaplan & Norton, 1992). At a later stage, they tended to direct their attention to the ways in which performance measurement systems can be used in strategic management (Kaplan & Norton, 1996a, 2001a). In parallel with this development, companies, government agencies and not-for-profit organisations have acquired practical experience of Kaplan and Norton's ideas, and they have been extensively researched (see e.g. Epstein & Manzoni, 2002; Kaplan & Norton, 2001a; Kloot & Martin, 2000).

The BSCs' development demonstrates the dynamic and flexible nature of the construct. Nevertheless, literature's description of its structural properties has remained relatively constant over time (Kaplan & Norton, 1992, 2001a; Malmi, 2001). Kaplan and Norton's writings, and other publications, describe non-financial measures as an important mainstay of performance measurement systems, whose most significant dimensions are normally described in terms of financial, customer, internal business processes, and learning and growth perspectives, and it is argued that the constituent elements of such systems should be derived from and reflect a company's strategic intentions. In recent years, literature on BSC has pointed out that strategies make up holistic logics with inherent coherences and causalities (see Stemsrudhagen, 2002b, for a literature review), and that performance measurement systems should visualise these strategic patterns (Kaplan & Norton, 1996a, 2001a; Nørreklit, 2000).

### *2.1. Strategic Patterns*

BSC is a performance measurement system which visualises companies' strategic intentions by concretizing them in various dimensions and coherences.

Consequently, in order to understand BSCs, it is necessary to understand the concept of strategic intention, and how such intentions may be reflected in performance measurement systems.

Strategic intentions are deliberate descriptions of a future organizational state (Hamel & Prahalad, 1989). Such descriptions normally consist of rational models with a restricted number of dimensions which describe the strategic logic on which a company's profitability is based. A prominent example is Porter's strategic typology (Porter, 1980, 1985). He described how the value chain incorporates one set of value drivers and one set of cost drivers, and argued that work to reduce costs and increase revenues was to some degree incompatible, and that businesses would therefore have to choose between differentiation and cost leadership (possibly restricting the competitive scope). Another well-known example is the typology of Miles and Snow (1978). Their focus was on the willingness of companies to alter their products and markets (Hambrick, 1983, p. 690), and they described three successful strategic logics which each reflected different ways of handling change: prospectors emphasize entrepreneurial activities, monitoring the market and stressing product development and changes; defenders have a narrow product-market domain, with stable technology and operations, and they emphasize engineering tasks and improvements in efficiency; while the analysts are in the middle, exhibiting the characteristics of both prospectors and defenders.

The literature on BSCs argues that performance measurement systems should reflect the dimensions and logics which are intrinsic to strategic intentions. In general, text books on BSC use Porter's differentiation and cost leadership strategy, and describe how a differentiation strategy should mean that companies attach importance to measures of image, customer relations and/or product attributes, while a cost leadership strategy should involve a measurement system which accentuates operational efficiency (Hornigren et al., 2003; Kaplan & Norton, 2001a; Simons, 2000). The founders of the BSC have increasingly emphasized that performance measurement systems should reflect the logics which are inherent in strategic intentions. In the course of the decade or so that has passed since their first publication on this topic, the strategic logics of performance measurement systems have moved to the very centre of the BSC, and Kaplan and Norton are currently attaching importance to the use of strategy maps for describing them (Kaplan & Norton, 2001a, b).

## *2.2. Dimensions*

According to the BSC literature, the dimensions of performance measurement systems are constructs which reflect the inherent logic of the company's strategic



intentions. The BSC describes such logics in terms of finance, customers, internal business processes and learning and growth. The underlying rationale is that these dimensions, and their coherence, determine a company's ability to generate profits. To secure sustainable profits, companies need to establish the necessary infrastructure for producing innovative organizations that are capable of learning and growth. Such infrastructures consist of the skills and knowledge of employees, the technology they use, and the culture of the organization, and they drive the organization's ability to change and improve its internal business processes in the long run. The internal business processes embrace the activities necessary to create customer value, and consist of activities such as product design, brand and market development, sales, service, operations and logistics. These activities drive the customer dimension, and consequently the revenues of a company, while also driving costs. The customer dimension describes how a company differentiates to attract and retain customers, and it describes the company's success in terms of satisfying their customers. The financial dimension describes the financial objectives of a company, and shows the financial consequences of the other dimensions of a scorecard.

Kaplan and Norton (1992, 1996a) argue that the dimensions of finance, customers, internal business processes and learning and growth may be used to depict almost any strategic logic in any organization. Even if they describe specific types of organization which are special enough to warrant their own dimensions, such as government agencies and not-for-profit organizations (Kaplan & Norton, 2001a), their standard argument is that the four dimensions are universally valid constructs which can be adapted to any organization by emphasising the various dimensions in accordance with the characteristics and strategic intentions of the organization.

The BSC has been intensively criticized for its exclusive focus on the dimensions of finance, customers, internal business processes, and learning and growth. In general, there is a tendency to argue that performance measurement systems should reflect every strategically relevant dimension within and outwith an organization (Eccles, 2001; Epstein & Manzoni, 2002; Kloot, 1997). More specifically, the BSC has been criticized for failing to take account of dimensions which are of strategic importance to most organizations, such as public authorities and suppliers, and dynamic factors such as competitors, technological developments, networks, and factors capable of generating external shock (Nørreklit, 2000). This criticism is implicit in a number of studies on organizations which have been using BSCs or similar performance measurement systems. These studies often conclude that in practice, performance measurement systems of this kind will contain dimensions beyond those included in Kaplan and Norton's conventional framework (see e.g. Epstein & Manzoni, 2002; Ewing & Lundahl, 1996; Fitzgerald et al., 1991; Laitinen, 2002).

### 2.3. *Measures*

The measures of a BSC are constructs which reflect scorecard-inherent perspectives (Kaplan & Norton, 1996a), and Kaplan and Norton have suggested a wide array of measures which are appropriate for the four perspectives of a conventional BSC (see Table 1). These measures should make the company visible from four different angles: they work as indicators of organizational qualities which are of interest from the respective perspectives of owners, customers, internal business processes, and learning and growth.

The link between perspectives and measures of performance measurement systems is elusive. In real terms, it tends to be difficult to place measurements within a specific perspective, and it is fully possible to develop systems which comprise widely different perspectives and dimensions, yet rely on identical measures (Laitinen, 2002). For instance, performance measurement in service businesses (Fitzgerald et al., 1991) is a system whose dimensions are customised for service providers and which thus differ from those found in BSCs, yet the system comprises a number of measures which are identical to those employed in BSC systems (Stemsrudhagen, 2002b).

The categorization of different measures into dimensions or perspectives is of importance to the perception of a performance measurement system, and thus illustrates the fact that the structural properties of a performance measurement system give meaning to the system and its inherent measures. This can also be illustrated by the fact that differences in strategic logics of performance measurement systems may result in different perceptions of the systems' inherent measures, even if they are in fact identical, objectively speaking. For example, if one company pursues a differentiation strategy while another pursues a cost leadership strategy, the two companies may well interpret certain measures differently, even if the measures refer to the same values (Shank & Govindarajan, 1993).

### 2.4. *Research Questions*

The distinctive quality of the BSC is its structure (Malmi, 2001), and the purpose of this chapter is to explore the degree to which performance measurement systems, in real terms, have the structural properties which are inherent to the BSC. I will do this by raising three research questions. Firstly, I will ask whether performance measurement systems contain logics and dimensions, i.e. strategic patterns, which would typically characterize systems which are firmly rooted in a company's strategic intentions. The second question is whether performance measurement systems comprise the dimensions originally proposed by Kaplan and Norton, or whether

the criticism directed at their exclusive focus on these four dimensions reflects the fact that, in practice, other dimensions are of relevance. The third question is how important different types of measures, especially non-financial ones, are to performance measurement systems.

The structure of the BSC is not necessarily specific to companies which have implemented Kaplan and Norton's ideas (Malmi, 2001). Methods such as performance measurement in service businesses (Fitzgerald et al., 1991), tableau de bord (Lebas, 1994), and the performance pyramid (Lynch & Cross, 1991) all have qualities similar to the BSC, and it may well be that a company's performance measurement system has the structural properties described by the BSC without the company actually having implemented this system. Furthermore, as we will see below, it may well be that the nominalistic structures of a company's performance measurement system do not depend on whether or not the company has implemented a balanced scorecard system (Simons, 1990). In connection with our investigation of the three research questions set out above, it is therefore interesting to pose yet another question: Are the properties of the performance measurement systems in BSC companies different from the properties found in non-BSC companies?

### **3. METHODOLOGY**

In researching this chapter, the first step on the way was to identify which measures are usually associated with BSCs. Most literature on this topic is based on the early writings of the construct's founders, and the measures were thus identified by means of Kaplan and Norton's first three publications on BSCs (1992, 1993, 1996b). In addition, by studying one of the most prominent books on BSCs in Scandinavia (Olive et al., 1999) we sought to allow for any particular Scandinavian features to be taken into account. This review resulted in the list of measures set out in the first column of the tables below.

The next step was to devise the questionnaire. It was soon evident that this work would have to be based on an ontologic presupposition with respect to BSCs and performance measurement systems: are their structures a realistic phenomenon which exist irrespective of the users of the systems, or do they constitute a nominalistic phenomenon (Burrell & Morgan, 1979)? There are various lines of reasoning on this question, and Malmi's (2001) and Simons' (1990) views represent two opposite extremes. Malmi discusses what a BSC is, and concludes that "... the BSC should be defined as a construct, not how this construct is used." This means that the structure of the BSC is perceived as an inherent property of the system: "... for a measurement system to be a BSC, it should fulfil the

following criteria: it should contain financial and non-financial measures, these measures should be derived from strategy, and the measurement framework should contain perspectives derived from the original four.” Simons (1990) argues that performance measurement systems are enacted through the choice of which management controls to make interactive. The structure of performance measurement systems is created in interaction between managers and a long series of widely disparate sources of information (see e.g. Bruns & McKinnon, 1993; Guilding et al., 2000; Stemsrudhagen, 2002a, for empirical studies of the sources of information employed by managers), and this nominalistic construct may well have structures which are identical to those prescribed by the BSC, without assuming the existence of a separate BSC system (Bettis & Prahalad, 1995; Simons, 1995).

This chapter seeks to explore and map the structures of performance measurement systems in practice, and we should adopt the ontological assumption which maximises our opportunity to increase our knowledge of these structures. Were we to adopt Malmi’s view, our study would provide knowledge of the degree to which companies employ systems that contain the measures, dimensions and strategic links described by Kaplan and Norton, i.e. about the diffusion of BSC systems. A number of such studies have already been undertaken (see e.g. Malmi, 2001; Olsen, 1999; Silk, 1998). More importantly, however, putting constraints on BSC systems as a realistic phenomenon seems to serve little purpose in today’s reality. We know that managers are currently flooded with information, and that one of their greatest challenges is to focus their attention on the strategically most important information (Simons, 1995; Stemsrudhagen, 2002a). Also, we are well aware that the technological possibilities are unlimited, and managers may be on-line to strategically important information, e.g. about the four BSC dimensions, with the aid of seamless systems and networks which lack the BSC’s properties on system level. This chapter thus adopts Simons’ view, and presupposes that performance measurement systems are enacted through managers’ use of information, and that exploring these nominalistic structures is of greater interest than focusing on whether companies have adopted a specific system which had its properties assigned a priori.

Consequently, the questionnaire asked respondents to answer the following question for each of the measures listed in Table 1: “To what extent is the measure used for managing the company?” The answers were measured on a Likert scale, on which 1 signified “not at all,” while 5 signified “to a large extent.” Respondents were also asked to specify whether they had any knowledge of BSCs (yes or no), and whether they were using a BSC (yes or no). The questionnaire was sent to Norwegian manufacturing companies with a turnover in excess of NOK 500 mill. Through a search in the *Kompass Europe* database 182 such companies were

identified. The questionnaire was addressed to the companies' chief accountants. This represents a potential bias for the study. Eighty three companies returned the forms, which gave a response rate of 45.6%.

Once the forms had been returned, the answers were entered into a database which formed the basis for three different analyses. Firstly, performance measurement systems used in Norwegian industry were analysed and the properties of the systems employed by BSC companies were compared to those employed by non-BSC companies. The comparison showed that there were only minor differences between the two groups, and the following analyses were therefore run on the entire sample. A factor analysis was run to identify the dimensions of performance measurement systems in the sample. Also, in our attempt to uncover any strategic patterns and logics that might be inherent in the systems, we cluster analysed the 83 companies over the variables which described the extent to which different measures were employed by the companies' management. The analyses are described in further detail in connection with the presentation of the results below.

## **4. RESULTS**

The three research questions raised by this chapter are discussed in the following three sections, the first of which will map the various measures' importance to Norwegian manufacturing companies and compare the performance measurement systems employed by BSC-companies with those employed by non-BSC companies. The following section will attempt to identify the dimensions of performance measurement systems used in Norwegian manufacturing industry by running a factor analysis on the variables which describe the use of different measures. The last section will use a cluster analysis to uncover any strategic patterns that may be inherent in the performance measurement systems.

### *4.1. The Use of Measures in Norwegian Industry*

Table 1 sets out the importance of the various measures within Norwegian industry. The table shows that managers of Norwegian manufacturing companies are well informed. They make use of information on all the dimensions which are inherent to the original BSC, and for 19 of the 35 measures the average score is higher than 3. The management index measure is clearly in a different category, as it is hardly being used at all, which seems a bit of a paradox when viewed against the recognition, and the literature's argumentation, that management is essential to the success of organizations. This argument is particularly prominent in literature

**Table 1.** To What Extent is the Measure Used for Managing the Company?

	<i>N</i>	Mean	S.D.	Median
Return on sales	80	4.01	0.14	4.5
Operating margin	80	4.38	0.11	5.0
Return on total assets	82	3.72	0.14	4.0
Contribution margin	82	4.33	0.12	5.0
Return on equity	81	3.04	0.14	3.0
Revenue growth	82	3.69	0.13	4.0
Cashflow	81	3.53	0.14	4.0
Budget variances	83	4.41	0.10	5.0
Economic value added	62	2.29	0.18	2.0
Customer satisfaction	81	3.59	0.12	4.0
Number of new customers	81	2.47	0.13	2.0
Repurchase percentage	78	2.47	0.15	2.0
Market share	82	3.99	0.12	4.0
Number of complaints	82	3.32	0.13	3.0
Ratio of sales to new customers	81	2.36	0.13	2.0
Customers lost	81	2.72	0.13	3.0
Customer profitability	81	3.19	0.13	3.0
Inventory turnover	83	3.51	0.12	4.0
Setup time	77	2.40	0.14	2.0
Percent defects	76	2.93	0.14	3.0
Lead time	75	2.92	0.13	3.0
On-time delivery	80	3.65	0.14	4.0
Non-financial productivity measures	78	3.32	0.15	4.0
Value of inventory	82	3.63	0.13	4.0
Manufacturing time	78	2.58	0.13	3.0
R&D expenses/total expenses	82	2.83	0.15	3.0
Investment in new products	81	2.93	0.15	3.0
Revenue from new products	81	3.14	0.15	3.0
R&D, number of hours	80	2.19	0.13	2.0
Course expenses per employee	81	2.10	0.10	2.0
Investment in IT	82	3.15	0.12	3.0
Management index	60	1.77	0.14	1.0
Staff turnover	81	2.59	0.14	2.0
Absence	83	3.40	0.14	4.0
Employee satisfaction	76	2.79	0.14	3.0

on performance measurement systems. Economic value added is another measure which is in little use, possibly due to the fact that this measure is relatively new in a Norwegian context. The number of companies responding to the questions on management index and economic value added was significantly lower than for the other questions, which indicates that these measures are used even less than indicated by the table.

The table shows a clear pattern in the use of different types of measures. The financial measures are clearly the ones in most widespread use among company managers. Return on sales, operating margin, contribution margin, and budget variances all score between 4 and 5 on average, and most of the other financial measures have high scores. The measures relating to customer aspects and internal processes score relatively evenly, most of them ranking close to the middle of the scale from 1 to 5. There is a tendency for measures relating to Kaplan and Norton's learning and growth dimension – such as R&D input, course expenses per employee, and management index – to be used somewhat less than the other measures listed in the table.

Table 2 is collated on the basis of the same data as Table 1, but the figures are split between those relating to BSC companies and those relating to non-BSC companies. Furthermore, this table also reports the results of a Wilcoxon rank sum test. Significant  $p$ -values are highlighted.

The overall impression is that there are only minor differences between the ways in which BSC companies and non-BSC companies make use of the various measures. Out of a total of 35 measures, a significant difference between the two groups of companies was found for only 5 of them. Three of these measures relate to internal processes, i.e. set-up time, lead time and non-financial productivity measures. Also, economic value added and employee satisfaction are in wider use among BSC companies than among non-BSC companies.

Table 2 suggests that, in practice, the BSC is of limited importance. A probable explanation is that the structure of performance measurement systems is primarily a nominalistic phenomenon. The fact that the structure of the management's use of information is relatively uniform in all companies, whether they have BSC systems implemented or not, indicates that the realistic structure of performance measurement systems has only limited impact on the nominalistic structure: managers enact their systems through their use of information, and this enactment is not determined by the structures which are inherent in the systems. Another, but rather unlikely explanation, is that companies without a BSC make use of systems with similar properties, perhaps because they have implemented other performance measurement systems which resemble the BSC. This explanation is not very probable, however, as the Norwegian take-up of performance measurement systems such as the performance pyramid and performance measurement in service businesses is only very small.

#### *4.2. The Dimensions of the Performance Measurement Systems*

The second question we raised above, was what dimensions performance measurement systems contain in real terms. Factor analysis is a method frequently

**Table 2.** The Performance Measurement Systems in BSC Companies vs. Non-BSC Companies.

	BSC				Non-BSC				<i>p</i>
	<i>N</i>	Mean	S.D.	Med.	<i>N</i>	Mean	S.D.	Med.	
Return on sales	21	3.90	0.29	4.0	55	3.98	0.16	4.0	0.90
Operating margin	21	4.24	0.29	5.0	55	4.42	0.11	5.0	0.86
Return on total assets	21	3.86	0.28	4.0	57	3.63	0.16	4.0	0.42
Contribution margin	21	4.29	0.25	5.0	57	4.33	0.15	5.0	0.76
Return on equity	21	3.14	0.31	3.0	56	3.05	0.17	3.0	0.82
Revenue growth	21	3.76	0.26	4.0	57	3.60	0.15	4.0	0.52
Cashflow	20	3.90	0.25	4.0	57	3.37	0.17	3.0	0.12
Budget variances	21	4.29	0.20	5.0	58	4.41	0.12	5.0	0.45
Economic value added	17	3.18	0.40	3.0	41	1.88	0.18	1.0	<b>0.00</b>
Customer satisfaction	20	3.85	0.21	4.0	57	3.47	0.15	4.0	0.19
Number of new custom	20	2.65	0.24	3.0	57	2.42	0.16	2.0	0.28
Repurchase percentage	19	2.47	0.31	2.0	56	2.52	0.17	2.0	0.87
Market share	21	4.14	0.30	5.0	57	3.89	0.14	4.0	0.15
Number of complaints	20	3.55	0.28	3.5	58	3.28	0.16	3.5	0.40
Ratio of sales to new cust.	20	2.45	0.26	2.5	57	2.37	0.16	2.0	0.68
Customers lost	20	2.65	0.28	2.5	57	2.79	0.15	3.0	0.61
Customer profitability	21	3.24	0.28	3.0	56	3.18	0.15	3.0	0.80
Inventory turnover	21	3.67	0.26	4.0	58	3.41	0.14	3.0	0.36
Setup time	20	3.00	0.29	3.0	53	2.15	0.15	2.0	<b>0.01</b>
Percent defects	20	3.25	0.28	3.5	53	2.83	0.17	3.0	0.18
Lead time	21	3.33	0.22	3.0	50	2.74	0.16	3.0	<b>0.04</b>
On-time delivery	20	3.90	0.26	4.0	56	3.52	0.17	4.0	0.26
Non-financial prod. Measures	20	3.95	0.21	4.0	54	3.09	0.18	3.0	<b>0.01</b>
Value of inventory	20	3.75	0.28	4.0	58	3.57	0.16	4.0	0.50
Manufacturing time	21	2.71	0.27	3.0	53	2.55	0.15	2.0	0.62
R&D expense/total exp.	21	2.86	0.27	3.0	57	2.84	0.19	3.0	0.91
Investment in new prod.	20	2.65	0.24	2.5	57	3.02	0.18	3.0	0.37
Revenue from new prod.	21	3.43	0.29	4.0	56	3.02	0.19	3.0	0.25
R&D, number of hours	20	2.15	0.24	2.0	56	2.25	0.15	2.0	0.77
Course expenses per employee	20	2.15	0.15	2.0	57	2.05	0.12	2.0	0.40
Investment in IT	20	3.30	0.24	3.0	58	3.12	0.14	3.0	0.54
Management index	13	2.08	0.29	2.0	44	1.73	0.16	1.0	0.15
Staff turnover	20	2.80	0.27	3.0	57	2.54	0.17	2.0	0.37
Absence	21	3.38	0.24	4.0	58	3.41	0.17	4.0	0.83
Employee satisfaction	20	3.35	0.23	3.5	52	2.56	0.16	2.5	<b>0.01</b>

used to define the underlying dimensions of data sets, and in order to identify the dimensions of performance measurement systems in Norway, a factor analysis was conducted on the variables that describe the extent to which the measures were used for managing the companies.



**Table 3.** Dimensions of Performance Measurement Systems in Norwegian Manufacturing Companies.

	Dimension One	Dimension Two	Dimension Three	Dimension Four
Return on sales	-0.12	-0.25	<b>-0.52</b>	-0.06
Operating margin	-0.29	-0.18	-0.50	0.31
Return on total assets	<b>0.76</b>	-0.02	0.09	-0.07
Contribution margin	-0.34	-0.09	<b>-0.56</b>	0.07
Return on equity	0.32	<b>-0.56</b>	0.02	-0.10
Revenue growth	-0.50	-0.44	-0.05	0.45
Cashflow	<b>0.51</b>	0.02	-0.15	0.29
Budget variances	-0.12	0.15	<b>-0.58</b>	-0.06
Economic value added	<b>0.66</b>	0.04	0.05	0.16
Customer satisfaction	0.22	<b>-0.56</b>	0.20	0.20
Number of new customers	-0.36	<b>-0.69</b>	0.15	0.33
Repurchase percentage	-0.05	<b>-0.86</b>	-0.01	-0.22
Market share	-0.23	-0.42	-0.19	0.42
Number of complaints	0.21	-0.49	-0.40	-0.09
Ratio of sales to new customers	0.04	<b>-0.93</b>	-0.08	-0.20
Customers lost	-0.11	<b>-0.83</b>	0.05	0.21
Customer profitability	-0.03	<b>-0.69</b>	-0.15	-0.13
Inventory turnover	0.15	-0.03	<b>-0.82</b>	-0.13
Setup time	0.26	-0.09	-0.45	0.45
Percent defects	0.25	-0.16	<b>-0.53</b>	0.15
Lead time	0.20	-0.10	<b>-0.51</b>	0.11
On-time delivery	-0.05	0.02	<b>-0.53</b>	0.26
Non-financial prod. Measures	0.35	-0.29	-0.09	0.23
Value of inventory	0.03	0.05	<b>-0.83</b>	-0.10
Manufacturing time	0.22	0.12	<b>-0.72</b>	0.06
R&D expense/total expense	0.16	0.01	-0.08	<b>0.72</b>
Investment in new products	-0.10	0.10	0.05	<b>0.77</b>
Revenue from new products	0.07	-0.04	-0.30	0.20
R&D, number of hours	0.09	-0.03	-0.02	<b>0.51</b>
Course expenses per employee	0.35	-0.26	-0.08	0.29
Investment in IT	0.14	-0.04	-0.01	<b>0.64</b>
Management index	0.40	-0.19	-0.21	0.40
Staff turnover	0.01	0.16	0.00	<b>0.75</b>
Absence	0.33	-0.29	-0.27	0.02
Employee satisfaction	<b>0.61</b>	-0.11	-0.17	0.16

The factor analysis outcomes are presented in Table 3. The analysis identified four underlying dimensions, referred to as dimension one, two, three and four in the table. The four dimensions explain 26.5, 10.3, 7.7 and 7.2% of the total variation respectively, which totals 51.7% overall. The table shows the factor loadings

for the different variables and the four dimensions after an oblique transformation, as this facilitates interpretation. All factor loadings higher than 0.5 are highlighted.

The analysis demonstrates that the greater the importance of dimension one in a Norwegian manufacturing company, the more will its management be using return on total assets, cashflow, economic value added and employee satisfaction. Dimension one principally relates to key figures which measure the financial aspects which are of chief concern to company's owners. Consequently, it resembles the financial BSC perspective, but differs slightly in that it accentuates the owners' interests even stronger than Kaplan and Norton (see e.g. Kaplan & Norton, 1996a, 2001a).

Dimension two coincides with Kaplan and Norton's customer perspective. In companies to which this dimension is central, the management will largely be using customer-related measures such as customer satisfaction, number of new customers, repurchase percentage, ratio of sales to new customers, customers lost, and customer profitability.

Dimension three is similar to Kaplan and Norton's internal business process perspective. In companies that attach importance to this dimension, the management will largely be using measures such as inventory turnover, percent defects, lead time, on-time delivery, value of inventory and manufacturing time. One difference appears to be that this dimension relies more heavily on financial measures such as budget variances, contribution margin, and return on sales, i.e. conventional measures which have traditionally played an important role in the control of a company's operative processes. In order to pinpoint this difference, this dimension is referred to as the operations dimension rather than the internal process dimension.

The last dimension in Table 3 corresponds to the learning and growth perspective of a traditional BSC. To the extent that this dimension is central to a company, managers will accentuate the use of different measures for staff turnover, investment in IT, investment in new products, and R&D in their efforts to manage the company.

#### *4.3. The Patterns of the Performance Measurement Systems*

The remaining research question is that of whether performance measurement systems contain strategic patterns which reflect strategic intentions. The data set collected from Norwegian manufacturing companies was searched for such patterns by cluster analysing the 83 companies over the 35 variables which describe the managers use of information (see Table 4). The similarities between the companies were measured by means of Euclidean distances and Pearson

**Table 4.** Clusters of Performance Measurement Systems in Norwegian Manufacturing Companies.

	Cluster 1		Cluster 2		<i>p</i> <sup>a</sup>
	Mean	Median	Mean	Median	
Return on sales	3.83	4.0	4.44	5.0	0.29
Operating margin	4.20	4.5	4.89	5.0	<b>0.03</b>
Return on total assets	3.47	4.0	4.44	5.0	<b>0.03</b>
Contribution margin	4.07	5.0	4.67	5.0	0.24
Return on equity	2.70	3.0	3.89	4.0	<b>0.01</b>
Revenue growth	3.43	4.0	3.78	4.0	0.51
Cashflow	3.20	3.0	4.78	5.0	<b>0.00</b>
Budget variances	4.33	5.0	4.44	5.0	0.93
Economic value added	1.57	1.0	3.22	3.0	<b>0.00</b>
Customer satisfaction	3.40	3.5	4.11	4.0	<b>0.04</b>
Number of new customers	2.43	2.0	2.56	2.0	0.68
Repurchase percentage	2.23	2.0	2.56	2.0	0.46
Market share	3.70	4.0	4.44	5.0	<b>0.05</b>
Number of complaints	2.97	3.0	4.11	4.0	<b>0.01</b>
Ratio of sales to new customers	2.20	2.0	2.89	3.0	0.13
Customers lost	2.43	2.0	3.22	3.0	0.10
Customer profitability	3.13	3.0	3.56	4.0	0.24
Inventory turnover	3.20	3.0	4.44	5.0	<b>0.00</b>
Setup time	2.00	2.0	4.22	4.0	<b>0.00</b>
Percent defects	2.77	3.0	4.00	4.0	<b>0.01</b>
Lead time	2.67	3.0	3.89	4.0	<b>0.00</b>
On-time delivery	3.33	3.5	4.22	4.0	<b>0.05</b>
Non-financial prod. measures	2.97	3.0	4.33	5.0	<b>0.01</b>
Value of inventory	3.27	3.0	4.00	4.0	0.12
Manufacturing time	2.33	2.0	3.78	4.0	<b>0.00</b>
R&D expense/total expense	2.37	2.0	3.67	4.0	<b>0.01</b>
Investment in new products	2.47	2.0	3.33	3.0	<b>0.04</b>
Revenue from new products	2.60	3.0	3.56	4.0	<b>0.04</b>
R&D, number of hours	1.93	2.0	2.78	3.0	<b>0.02</b>
Course expenses per employee	1.67	2.0	2.33	2.0	<b>0.01</b>
Investment in IT	2.80	3.0	4.11	5.0	<b>0.01</b>
Management index	1.37	1.0	3.33	3.0	<b>0.00</b>
Staff turnover	2.40	2.0	3.00	3.0	0.15
Absence	3.03	3.0	3.78	4.0	0.12
Employee satisfaction	2.40	2.0	3.89	4.0	<b>0.00</b>

<sup>a</sup>The *p*-values show the results of a Wilcoxon rank sum test.

correlations, respectively. The analysis thus attempted to classify the companies based on the magnitude of various types of information as well as the patterns across the variables. The clusters were formed by means of the average linkage procedure. This procedure is a hierarchical agglomerative method, which has

proved superior to non-hierarchical methods when only random seed points are available, which was the case for the analyses described in this chapter. Due to the fact that there are no pure objective way to determine the number of clusters in such analyses (Everitt et al., 2001), no effort was made to determine a “correct” number of clusters, but to analyse the properties of the various clusters at different numbers of clusters (up to and including 5 clusters).

The analysis did not produce any pattern which might be related to strategic intentions, but a pattern did become apparent across various cluster numbers. This is exemplified in Table 4, which shows the properties of the clusters that were identified when the similarities between the companies were measured by means of Euclidean distances and the number of clusters was set to 2. The difference between these two clusters is that all measures listed in the table are in wider use by managers in cluster 2 companies than in cluster 1 companies. This means that the dominating pattern was the extent to which managers made use of information.

Table 4 illustrates the fact that Norwegian manufacturing companies can be classified on the basis of their managers’ tendency to make use of performance measurement systems. This indicates that management culture is important to the pattern in the managers’ use of various measures: in some companies the management culture is founded on the use of performance measurement systems, and this type of company will be using all measures to a greater extent than other companies. This conforms with the findings of certain earlier studies (see Macintosh, 1985, for an overview).

## **5. CONCLUSIONS AND FURTHER RESEARCH**

This study explores performance measurement systems in Norwegian manufacturing industry as a nominalistic phenomenon. The study focuses on the ways in which managers enact their performance measurement systems through their use of information. The chapter shows that the enactment structures were all relatively similar, whether the managers operated within a BSC company or not. This indicates that managers’ enactment is relatively unconstrained by the concrete structures of their performance measurement systems.

If managers enact their performance measurement systems, we should be calling for the development of performance measurement systems that facilitate managers’ enactment. Today’s technological possibilities are limitless in terms of creating seamless information systems, networks and multimedia terminals for supporting managers’ enactment. In this day and age, when managers have on-line access to all types of information irrespective of time and space and are able to impose their own structures on performance measurement systems, the

traditional assumption that comprehensive systems with predetermined structures derived from a company's strategic intentions are at the core of a company's performance measurement system, may very well be an anachronism.

The study also shows that Norwegian managers are well informed, and that conventional, financial measures such as return on sales, operating margin, contribution margin and budget variances are the ones in most widespread use. The managers also made use of various measures relating to customers and internal processes, and there was a tendency for them to be using the various measures relating to learning and growth to a lesser extent than other measures. At the risk of labouring the point made above, this means that most managers in Norwegian manufacturing industry were well informed with respect to the dimensions and measures which are inherent in the BSC, irrespective of whether or not they employ this type of system.

The search for dimensions in managers' use of information was carried out by means of a factor analysis, through which four performance measurement system dimensions were identified: the owner dimension, the customer dimension, the operations dimension, and the learning and growth dimension. The study thus provides a certain level of empirical support for the claim that the structure of the BSC retains its relevance when performance measurement systems are seen as a nominalistic phenomenon, albeit differences were also found: The owner dimension bears a good resemblance to Kaplan and Norton's financial dimension, but puts even greater emphasis on the owners than what the founders of the BSC do in their financial perspective. The operations dimension is similar to Kaplan and Norton's perspective of internal business processes, but puts greater emphasis on conventional, financial measures which have traditionally been used to control a company's operative processes.

A cluster analysis was undertaken to identify any strategic patterns in the performance measurement systems. The analysis resulted in a classification of the companies based on the extent to which the management made use of performance measurement systems. This shows that the dominating pattern was the extent to which information was used in the management of the companies, a fact which may be interpreted to indicate that the use of different measures is primarily a matter of management culture. In some companies this is based on performance measurement systems, and to the extent that this is the case, the study indicates that all types of measure will be used to a greater extent than in companies with other management cultures.

To sum up, this study made use of explorative techniques such as factor and cluster analyses to explore the nominalistic structures of performance measurement systems used in Norwegian manufacturing industry. The study indicates that we should emphasise the nominalistic structures of performance measurement

systems; that these structures include many of the measures used in BSC systems, irrespective of whether the companies had implemented such a system or not; that the dimensions of the nominalistic structures bore a strong resemblance to the dimensions proposed by Kaplan and Norton; and that the cluster analysis can be interpreted to indicate that the use of performance measurement systems and their inherent measures is primarily a question of management culture. The study thus provides useful contributions to our efforts to understand the nominalistic structures of performance measurement systems, yet its explorative character means there is a great need for further research on such structures, involving different settings, different respondents, different methods and different perspectives.

## ACKNOWLEDGMENT

The practical work to collect the empirical material for this chapter was carried out by Lars Erling Olsen, and I am grateful for his input to the project.

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# BONUS AND PENALTY CONTRACT ACCEPTANCE IN A BALANCED SCORECARD ENVIRONMENT: A CASE STUDY

Peter Van de Weghe and Werner Bruggeman

## ABSTRACT

*Some recommend the company's incentive system to be linked with the Balanced Scorecard (BSC) in order to ensure that employees work towards the strategy by the goals on the BSC. Incentive systems have an impact on effort and task performance. However, the effectiveness of incentives can vary dependent on personal, task- and incentive scheme variables as well as on some motivational mechanisms like goal setting. The incentive contract choice (bonus vs. penalty) was investigated by Luft (1994).*

*In our research, we investigate whether bonus and penalty systems in a BSC-environment are accepted or not and what factors influence this (non-)acceptance.*

## 1. INTRODUCTION

The Balanced Scorecard (BSC) is used by a growing number of companies as a basic framework to structure their performance reporting. The BSC, developed by

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**Performance Measurement and Management Control: Superior Organizational Performance**

**Studies in Managerial and Financial Accounting, Volume 14, 323–352**

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ISSN: 1479-3512/doi:10.1016/S1479-3512(04)14013-6

Kaplan and Norton (1992, 1993, 1996a, b), enables management to translate the mission, the goals and the strategies of the company and of its different business units and management functions into a coherent set of performance measures, grouped into four perspectives: the shareholders or financial perspective, which groups the measures assessing the extent to which the company realizes the shareholders expectations; the customers perspective which measures the perception of the company by its clients; the internal business processes perspective which determines the performance of critical internal processes; and the innovation and learning perspective which measures the learning ability, the growth potential and the improvement and change capacity.

When developing a BSC for an entity, the critical success factors are identified, starting from the mission, the goals and the strategy. In order to identify the appropriate critical success factors, Kaplan and Norton (2001) propose to base the BSC on a hypothesized underlying business model, the “cause and effect chain” or the “strategy map” of the entity. Then, the most appropriate performance measures are chosen for these critical success factors, sometimes also called strategic objectives.

The BSC offers, besides the financial performance reporting of the past period, also insight into the evolution of the critical success factors that are of vital importance to the future financial success. In this sense the BSC can be considered as a measuring tool that contributes to a more effective strategic management of the company and to the creation of a “Strategy-Focused Organization” (Kaplan & Norton, 2001).

Kaplan and Norton (1996a, b, 2001) propose to use the BSC not only as a tool to communicate and follow up the strategy to be realized, but also as a basis for evaluating and rewarding managers. Rewarding managers on the basis of the BSC is consistent with the goal of creating a better “strategic alignment” (Kaplan & Norton, 1996a, b). One may never use an incentive system without having a clear goal of what one wants to achieve (e.g. goal congruence, strategic alignment, . . .).

Although linking reward systems to the BSC can be expected to increase strategic alignment, we don't know if managers really desire this system or if this linkage has a positive effect on the acceptance of the pay system.

The purpose of this paper is to study the acceptance and the related preferences of managers and employees concerning an implemented BSC based incentive system in a service company. The incentive scheme for managers and employees was based on multiple strategy-linked performance measures. For some measures the incentive contract was framed in bonus terms for others it was described in penalty terms. During the study we examine the following research questions. First, do managers and employees accept a BSC linked bonus determination method? Second, do managers and employees accept the incentive system described in penalty terms? Third, what are the factors influencing their contract

acceptance? The results we present, are based on evidence collected during individual interviews as well as on a survey in the particular company.

The remainder of the paper is organized as follows. In Section 2 we review some existing theories on the subject. In Section 3 we describe the empirical research method. In Section 4 we present our case study in a temp agency. The case study is subdivided in a presentation of the case (with its BSC and incentive system), the qualitative interview data and the qualitative questionnaire data. In Section 5, we provide a note on possible future research. And finally, Section 6 contains the conclusions of our research.

## **2. LITERATURE REVIEW**

To date, much research about the performance effects of incentive systems has already been conducted. This relation consists of three main factors: monetary incentives, effort and performance. Bonner et al. (2000) reviewed the theories and evidence regarding the effects of performance based monetary incentives on individual effort and task performance and built a framework for future research (Bonner & Sprinkle, 2002). Within this framework they mainly propose (like commonly and intuitively accepted) a positive monetary incentives-effort relation as well as a positive effort-performance relation. However, some questions can arise about the premise that monetary incentives are supposed to have a motivating and performance improving character. Both, theories (among others Baker et al., 1988; Bonner & Sprinkle, 2002) as well as empirical results (among others Bonner et al., 2000; Libby & Lipe, 1992) show that – under some conditions – it is possible that the proposed relation doesn't hold. We must recognize that monetary incentives not always have positive effects, but sometimes have vague or even negative impacts on effort and consequent performance. This means that sometimes monetary rewards can be counter-productive, not increasing effort and performance because of some influencing factors. To respond to this issue, Bonner and Sprinkle (2002) also take into account some moderating factors of the incentives-effort-performance relation. Cognitive and motivational mechanisms (such as expectancies, self-interest, goals, self-efficacy etc.) only have a direct impact on the incentives-effort relation, while person-, task-, environmental- and incentive scheme variables have an impact on both the incentives-effort and the effort-performance relation. All these moderating factors can be interpreted as the mediators of how monetary incentives lead to higher/less effort and consequent performance.

Prior evidence also shows that these person variables as well as contract attributes have an impact on performance through self-selection effects (Waller

& Chow, 1985). This means that the type of contract offered by an organization to potential workers can affect performance by attracting people with certain personal attributes. So the choice of the type of contract is also a very important determining variable in assessing a certain pay system.

When talking about the type of contract, we can refer to Luft's study (1994) about the incentive contract choice by employees. Here the type of contract is more an issue of framing language. Using controlled experiments, she provided evidence that employees are more likely to accept incentive contracts described in bonus terms than otherwise identical contracts described in penalty terms. Luft (1994) raises the following as reasons for this behavior:

- Bonuses provide non-monetary payoffs such as approval and reward, which "absence of penalty" in penalty systems does not give. By getting a bonus many people may receive significant utility payoffs such as "being appreciated" (Kanter, 1977) while people may find the condemnation implied in a penalty very disagreeable (Levy, 1992).
- Evidence also shows that people may feel greater subjective disutility from changes in wealth perceived as losses (when a penalty is applied) than from changes perceived as foregone gains (when the bonus is missed) (Kahneman & Tversky, 1979; Kahneman et al., 1990).
- Bonuses and penalties are seen as incomplete contracts, which means that people who earn high bonuses expect (it is not sure, they only expect it because it is implicit) additional payoff in the future by means of promotions or base-salary increases. Therefore bonuses are more prevalent than penalties.
- In penalty systems the "base pay" is uncertain and not guaranteed like in bonus systems. This may arouse suspicion or resentment among employees.

While Luft's paper (1994) discusses the contract choice out of the employee's point of view, Lazear (1991) suggests employers when to use which system, i.e. bonus schemes when output or input *below* some critical level has no effect on value received, and penalty schemes when output or input *above* some critical level has no value.

Besides Luft (1994) and Lazear (1991), some authors use the dichotomy of bonuses and penalties for investigating the impact of it in controlling the misrepresentation and resource consumption by unit managers in an intrafirm resource allocation setting (Waller & Bishop, 1990) or for investigating how this dichotomy can affect management decision makers and their investments in different time frames (Shelley & Omer, 1996). These last two studies however show the impact of such systems, but provide no intermediate explanation like (non-)acceptance of the system, which is important to understand the effects of bonuses or penalties.

Although some literature about penalty contracts yet exists, such contracts do not occur very often, especially not within firms. Anyway, if those “negative” framed contracts do occur, they are relatively more frequent (and thus may be considered as better accepted) in between-firm relationships than in employment contracts within firms (Luft, 1994; Shelley & Omer, 1996). Penalty contracts between firms could for example include some penalty for late delivery or bad quality of intermediate products.

As we stated earlier, goals can be important when examining the incentives-effort-performance relation. Locke and Latham (1990) investigated the relationship between task performance and goal setting. After all, setting goals is a motivational mechanism that can influence a person’s behavior by altering his effort intensity, duration, direction and his strategic learning. These mechanisms have in turn some influence on task performance. However, their model doesn’t end here. They also investigated how task performance can affect worker’s satisfaction, namely by adding performance-related rewards (both extrinsic and intrinsic) to those that are not related to performance. All these relations form their “High Performance Cycle” which explains how monetary incentives have a role to increase self-efficacy and stimulate managers to work to more difficult targets which in turn affect performance and their pay. In this phase, the cycle can restart itself and pass through all the stages again.

Most studies we mentioned till now, concern “stand-alone” incentive systems. Now, some research has been performed on the effectiveness of incentive systems connected to strategy-linked performance measurement systems such as the BSC. Nowadays such incentive systems are very important, because organizations want their employees to contribute to strategy realization. Strategy can be mapped (Kaplan & Norton, 2000) and translated into a BSC (Kaplan & Norton, 1996a, b, 2001). In this way both short and long term, financial and non-financial measures are included in the performance measurement system. Since organizations want to stimulate their employees to work towards strategy, it is recommended to link the incentive system to the BSC. In that way people will be more motivated to pay attention also to non-financial performance measures and to the long term goals of the organization. After all, if employees’ incentives only depend on (short term) financial performance, they will not pay enough attention to non-financial and long term performance, for not evaluating and rewarding people on the items they are asked to perform on, is looking for trouble (Baker et al., 1988; Eccles, 1991; Lazear, 1991; Lipe & Salterio, 2000). In this sense, Banker et al. (2000) investigated the impact of incorporating non-financial measures in incentive contracts on financial performance and concluded that non-financial measures of customer satisfaction are significantly associated with future financial performance and contain more information than prior financial measures. This

shows that a performance measurement system at best includes both financial and non-financial measures, while both types are also linked with incentives. Besides, Ittner and Larcker (1998) mention some potential problems of multi-criteria incentive systems like there are “information overload,” i.e. managers spreading their effort over too many objectives, or focusing on the wrong measure by directing too much effort to tasks that are easily measured (or influenced) at the expense of tasks that are harder to measure, but may be more important. Lipe and Salterio (2000) examined whether the use of the BSC in different business units – with the BSC containing both common and unique performance measures – has an impact on the way superiors evaluate these business units’ performance. They concluded that the superior only takes into account the common measures.

In summary, literature in general has shown considerable evidence that positive monetary incentives affects positively effort and performance and that the incentive-effort relationship is moderated by expectancies, self-interest, goals, self-efficacy, person-, task-, and environmental variables. Prior evidence also shows that person variables as well as contract attributes affect performance through self-selection effects. Evidence also shows that employees are more likely to accept incentive contracts described in bonus terms than in penalty terms. It is expected that bonuses give the feeling of being appreciated, while penalties may lead to the feeling of condemnation. Bonuses are expected to increase self-efficacy and stimulate managers to work on more difficult targets.

All this shows that there has already been done a lot of research on incentive systems in general, but not much on penalty systems and BSC based incentive systems. Also, these topics are generally investigated individually and not treated in their combination. Now, in this paper we want to combine these elements in a study on managers’ acceptance and preferences towards BSC based incentive contracts, either framed as bonus or as penalty. Besides, Luft’s (1994) study was a lab experiment, while she acknowledges that further research must be conducted in the natural environment. That is why our study has been done in a practical business setting.

For investigating the acceptance of an incentive system we could start from the relations in the framework of Bonner and Sprinkle (2002) because acceptance implicitly takes part of that framework. It influences the incentives-effort relation mentioned above. The incentive system in our research provides two framing possibilities, to say bonus and penalty. Because of this specific nature, we can say that the acceptance of the incentive system includes the acceptance of the appraisal system and therefore also possesses the same characteristics and effects. This is an interesting point, because acceptance of the appraisal system is a critical intermediate variable in generating satisfaction, motivation and productivity (Roberts, 2002), which are influencing variables of effort.

But why do we take acceptance as the key variable in our research? Two reasons for this are offered by Swiercz and Icenogle (1991). First, employees have the power to undermine the working of an incentive system, even if it is designed very well. After all, incentive pay success depends on the existence of three preconditions, which are: subjects must desire more pay, they must believe that their efforts will result in better performance and they must believe that better performance will result in more pay. This means that the incentive systems must be accepted before it can be successful. Second, since employees develop attitudes about the different aspects of the pay system (pay level, raises, benefits, . . .), it is plausible to suggest that employees are also likely to develop attitudes on the acceptability of that pay system. So it is worth investigating acceptance of the system too.

These reasons fit in the logic that a person in an organization prefers and accepts a certain incentive scheme when he expects or experiences that the scheme gives him sufficient opportunities to realize his personal goals. This situation creates a feeling of satisfaction. Some employees attach high value to personal wealth (and want to maximize their income), others give more value to non-monetary goals (such as being appreciated, have good interpersonal relationships, feel secure, have sufficient leisure time etc.). Therefore we can say that the purpose of an incentive system is to create goal congruence between the employee and the employer.

Based on the relevant literature, we can now define some *expectations* for our own research. These expectations, which are presented hereafter, form the base of our conducted research:

- In a BSC environment employees are more likely to accept bonus framed incentive systems than penalty systems for the comprehensive parcel of performance criteria (i.e. not every performance measure on its own).
- In a BSC environment employees are likely to accept the bonus system.
- In a BSC environment employees are likely to not accept penalty systems.
- Acceptance of BSC based bonus systems depends on the employees' personal goals, expectancies and person characteristics.
- Acceptance of BSC based penalty systems depends on the employees' personal goals, expectancies and person characteristics.

### 3. RESEARCH METHOD

The purpose of our research is to:

- Investigate whether the expectations about bonus and penalty contract acceptance from the literature can be supported by evidence collected from a case study in a BSC environment.

- Use the case study to identify innovative practices in relationship with BSC based bonus incentives and penalties.
- Use the case study data to develop new hypotheses (i.c. expectations) about the acceptance of BSC based incentive systems.
- Collect questionnaire data from a large group of managers to verify whether the expectations derived from the literature and the case study can be supported.

During our empirical research we followed a stepwise approach.

First of all we searched for a company that uses both bonus and penalty incentives in relation to the BSC. A description of the relevant features of the company is given in Section 4.1.

Second, we studied the functioning of the BSC based incentive system to get some insight in the company's strategy, to identify innovative practices and some interesting management concerns. This is described in Section 4.2.

Third, we wanted to learn more about the acceptance of the incentive system in the particular company, so we did some open interview sessions with a selected sample of managers and employees. The main elements of this qualitative data are found under Section 4.3.

Fourth, in Section 4.4, we formulate our research hypotheses (i.c. expectations) based on the literature and the qualitative data.

Fifth, we tried to collect quantitative questionnaire data from a large group of managers and employees. This questionnaire is described in Section 4.5.

## 4. CASE STUDY

### *4.1. Description of the Research Site*

As mentioned before, we looked for a company that had implemented a BSC based incentive system with bonuses and penalties. At last, we found such a company where we conducted our research. It concerns a Belgian service company i.c. a temp agency (after this named Company X). This particular company professes to offer a wide range of "Human Resources Solutions" to her customers, and wishes "to be the best practice on quality in staffing business." For the sake of completeness, we must mention that in the sector of temp work, a customer (client) is defined as the company that appeals to the temp agency for filling out their vacancies. The exercise is thus to make sure that the right applicant is matched with the appropriate vacancy. Applicants can be workers, as well as mechanics, employees or executives.

In a broad sense, Company X consists of two different kinds of employees (or co-workers as the CEO prefers), i.e. office managers (OM) and placement officers



(PO). The former are responsible for bringing in customers and new placement requests by doing some commercial customer-visits. On the contrary, the latter work in the office and try to match the vacancies with the available applicants. Some office managers can also be responsible for a group of certain agencies and are then called region managers. Although this distinction could be made, we don't pay attention to it, because of its irrelevancy for our research.

The company employs approximately 80 employees, who are spread across 31 offices.

The former mission of Company X was "to be the cheapest." However, the competition was that severe, the external environment was that hard and the labor market that tensed, that they could not maintain their position and service. That is why they changed the mission statement towards offering higher quality. In order to put this mission and the consequent strategy really into practice, they decided to implement a BSC.

## 4.2. Description of the BSC Based Incentive System

### 4.2.1. Company Strategy

The company had long term continuity and profitability as long term goals and considered revenue growth as a key strategy to achieve their goals. As key drivers of revenue growth were considered: the high quality of their services, a strong sales power, effective credit control and the creativity of the employees to quickly react to changes.

### 4.2.2. Link Between BSC and the Incentive System

The purpose of the use of the BSC was to measure the success of the strategy implementation and to link employees' compensation to the strategic performance in order to motivate them to better realize the strategy. In this way we can state that Company X becomes a Strategy-Focused Organization (Kaplan & Norton, 2000).

Their scorecard can be presented as shown in Exhibit 1.

In the beginning, Company X used this scorecard only as a performance measurement tool, but began to realize that measuring *as such* was not enough. Therefore they tied the incentive system to the employees' performance. Each type of employee has its personal scorecard (respectively Exhibits 2 and 3).

As we can see, the incentive system consists of three different elements. First, there exists the possibility of a bonus, while secondly a penalty can be applied and at last there are also non-monetary positive incentives.

The bonus determination is a *monthly* process in different stages, whereby the incentive system provides an appropriate motivation to work towards good

<i>Critical Success Factors</i>	<i>Performance Measures</i>
<i>Financial:</i>	
Revenue Growth	Office turnover
Effectiveness of credit control	No. of new contracts % Bad debts in relation to turnover
<i>Customer:</i>	
Service Quality	
<ul style="list-style-type: none"> <li>• Quality of matching</li> <li>• Quality of administration</li> <li>• Cleanness of desk</li> <li>• Quality of screening</li> </ul>	No. of starters No. of administrative mistakes No. of proofs of default No. of full period placements
<i>Processes:</i>	
Sales power	No. of company visits No. of placement requests by clients No. of invited candidates No. of new clients
Coaching (accompaniment) of applicants	No. of coachings
<i>Innovation and learning:</i>	
Creativity and change	Realized improvements Ad hoc performance measures: e.g. * No. of job placed students (month item) * No. of placements within x days (incentive item)

*Exhibit 1. Temp Agency Balanced Scorecard.*

<i>Performance Measure</i>	<i>Type of Incentive Contract</i>
Office turnover	Bonus
No. of extra company visits	Bonus
'Month item'	Bonus
No. of coachings (minimum 5)	Bonus
% Bad debts in relation to turnover	Penalty
No. of administrative mistakes	Penalty
Cleanness of desk/car	Penalty
'Incentive item' (variable and only during 2 limited periods a year)	Non-monetary positive incentive

*Exhibit 2. Personal Scorecard Office Manager.*

<i>Performance Measure</i>	<i>Type of Incentive Contract</i>
Office turnover	Bonus
No. of extra new contracts	Bonus
No. of administrative mistakes	Penalty
Cleanness of desk	Penalty
'Incentive item' (variable and only during 2 limited periods a year)	Non-monetary positive incentive

*Exhibit 3. Personal Scorecard Placement Officer.*

organizational as well as individual performance. After all, each employee can only earn a bonus when some basic conditions are met, which are the following. An office manager must reach a minimum of 15 company visits, while a placement officer is charged to get a particular (pre-defined) number of new contracts. If they don't reach these minimum conditions, then no bonus at all can be obtained, not even when other bonus performance measures do attain the target. Hence, if these conditions are met in the first place, only then the bonus can be calculated.

First, there is an overall criterion on the office level, whereby every office must meet a certain turnover target. When the office reaches its target, it gains 100% of a fixed bonus ("basic participation"). Additionally for every 3% extra turnover, the office gains an extra bonus of 10% of the fixed bonus amount, with a maximum of two times the fixed bonus. This means that one has a "double participation" (two times the fixed bonus) when the office realizes a turnover target of 130%.

Second, employees can also earn extra bonuses when they exceed the obligatory basic conditions concerning company visits and new contracts for respectively office managers and placement officers. Besides this, office managers can also gain an extra bonus when they surpass a charged number of coachings, i.e. accompaniments of applicants when applying to customers of Company X. Moreover, it is not only the exceeding that provides a bonus, but it is also a stepwise system where one can earn a bonus for every certain number of units by which the basic condition is exceeded. Each of these extra bonuses amounts to 25% of the bonus in the first step, which is based on office turnover. Comparable to this, there is also a "month item," which only applies to office managers. These are performance measures that alter every month in order to stimulate employees in exerting permanent effort and to take the opportunity for adapting performance measures to the rapid changing environment. By this system an employee can earn a "double participation," which means that as much bonuses are earned that the total bonus amounts to four times the fixed bonus.

After these stages in the bonus determination, one's bonus can still be reduced by applying some penalties under certain conditions. This system of penalties is rather unique and therefore interesting to take a closer look at. When we consider

penalties in this case, we must clearly indicate that they can only be applied to the earned bonuses and cannot be deducted from the base pay. In Company X penalties are especially used when *minimum requirements* of tasks are not met, like administrative mistakes, cleanness of desk or car, too much bad debts. Each penalty costs the employee a decrease of his or her total bonus with 25%.

For the sake of completeness, we also mention that there is an “incentive item,” which is comparable to a month item (thus also variable), but is only valid during a limited period during the year. There exist two such periods a year, and the achievement of the proposed target does not pay in money, but in rewards like televisions, weekends, . . . It can thus be considered as a fringe benefit.

At last we could mention the practice of something rather unusual, but potentially strong habit. The company publishes the bonus results of its employees on its *intranet*, so that everyone can see who has earned which bonuses. The CEO’s philosophy is that in this way a kind of positive competitiveness occurs between the employees, without harming someone, for it is only the bonus results and not the applied penalties that appear online.

So in summary there is a set of four *innovative practices* that can be identified in our case study. First, there is a monthly bonus and penalty determination. Second, there exists a variable “month item.” Third, penalties are especially applied for not meeting minimum performance standards. And fourth, there is the online visibility of the individual bonus gains.

#### 4.3. *Acceptance of the Incentive System: Qualitative Data*

In a first phase of our research we collected some qualitative interview data from office managers and placement officers who are rewarded under the BSC-based incentive system. We held in-depth interviews with office managers and placement officers. All interviewed managers and employees experienced the complete introduction of the new incentive system. During the interviews the managers and employees provided us with detailed information about their opinion, preferences and objections towards the different choices of the incentive system. They expressed the degree to which they accepted the bonus calculation method, the penalty system, the periodicity of the bonus determination, the target setting method, the communication of bonus results and the “month items.” From these interview data we could draw some first conclusions and formulate a number of expectations.

##### 4.3.1. *Acceptance of the Bonus Calculation Method*

All interviewed office managers and placement officers were in favor of the multiple bonus system. Although there were a number of imperfections, they succeeded to manage them.

There were a number of employees that were very *enthusiastic* about the system. These were:

- employees that had income maximization as a primary objective in their life, or
- employees that did not perform for the money, but for the sake of self-realization.

So, bonus system acceptance seems to be *dependent on the personal goals of the employee*. Enthusiastic employees found themselves in a situation of perfect goal congruence. One placement officer commented:

I accept that the owners of the company earn more income, when also we get more money. And I can also accept the owners only want to share the increase in profit with people who are REALLY GOOD.

Interviewees also mentioned that to survive in the system one has to be able to work under constant high pressure. Employees enthusiastic about the system seemed to have a number of common characteristics: they were not risk averse, were stress resistant, go-getters, commercial, young and energetic and at last they had a positive and gaming mentality, so they never give up. Consequently the degree of being enthusiastic is connected with values and beliefs of individual employees.

Additionally enthusiastic interviewees complained about *uncontrollable factors* that sometimes hamper the achievement of performance targets. But they found a way to manage around them. One placement officer was faced with a seasonal pattern in the demand for temporary workers, while the performance targets are the same every month. During the peak season it was not difficult to achieve the targets and she was able to earn large bonuses. However during the low season she had more difficulty and got a lower bonus. She could live with the situation and tried to explore new opportunities to make sure that her bonus level did not go down too much.

Other placement officers experienced a shortage of good people on the market and the economic downturn as other uncontrollable factors. However the bonus system motivates them to increase the number of calls to prospect companies and to candidates, in order to minimize the missed bonuses. Thus the controllability of a performance indicator could be of importance in influencing the acceptance of the performance appraisal system and the linked incentive system.

Interviewees also stated that the bonus system cannot be fully accepted when the performance measures used to determine the bonus are not very precise. In other words, the performance measures' *accuracy* is an important factor determining the bonus system acceptance. For example performance is measured by the number of contracts, but in the beginning it was not very clear which types of contracts were accounted. Top management stated that only "full contracts" would be taken into account, but for many employees, the definition of a full contract was never made clear.

#### 4.3.2. *Acceptance of Monthly Bonus Determination*

All interviewees agreed that for their situation a monthly bonus determination system is optimal. It invites office managers and placement officers to constantly exploit market opportunities and to never lose discipline. One region manager commented:

Since the introduction of the new incentive system I now much more optimize my daily schedule to make sure I will be able to realize my target number of visits. This discipline is necessary because we are competing in a market with high rivalry. In our competitive environment a yearly bonus would less motivate people than the monthly system.

All interviewees agreed that a system of monthly bonus determination leads to more tight control of performance but it increases significantly the job tension. One placement officer added: *“One can never take some rest. One bad day can be disastrous for your bonus.”*

#### 4.3.3. *Acceptance of Difficult Targets as a Basis for Bonus Determination*

All interviewees accepted that the bonuses are linked to the achievement of difficult targets. At the time of the introduction of the new system the targets were set unreasonably high and nobody could reach the targets. Even the best people were not motivated to reach the targets and rejected the system. After a positive meeting with the agency management the targets were on a challenging level but managers and employees are sure they can achieve them if they worked hard enough.

So, the bonus preference compared to a flat rate was dependent of the degree of *attainability* of the performance targets. Office managers and placement officers accept a bonus system based on difficult targets, provided they are allowed to participate in the target setting process to make sure that the goals can be reached with an acceptable probability.

#### 4.3.4. *Acceptance of “Month Items”*

The characteristic “month item” was highly appreciated by all interviewees. It gives opportunities to employees to propose bottom up improvement ideas, which also can be rewarded in the bonus system. When it was felt that the bonus system only motivated people for performance on the short term, and people lacked to invest in training, and spent insufficient time on innovation, one could specify a strategic improvement project as item of the month, have it approved by the agency management and also earn a bonus on the realization of the project.

#### 4.3.5. *Acceptance of the Penalty System*

All interviewees preferred as much as possible positive incentives and disliked penalties. Penalties only create frustration and discouragement of employees. The

perception is that not getting a bonus is less frustrating than losing some part of your income.

However they all agreed that it is fair to apply penalties when people make serious quality mistakes and do not meet the minimum requirements in their job. They even proposed that the agency management should link penalties mainly to performance items that contain a high risk for the firm (for example: making legal mistakes).

At the other hand managers and placement officers rejected the penalty system when the performance measures linked to penalties are not perfectly controllable. For example they found it unfair that employees get a penalty for insufficient credit management in case of one of the customers going bankrupt. One region manager accepted this argument but commented: *“I accept that we have to correct the number of late payments in case of unexpected bankruptcy, but I can assure you, when one office manager gets a penalty for bad debt at the end of the month, you can see that for the next month there will be no late payments anymore.”* So, penalties created energy to prevent failures in the future.

One office manager observed that people also will never accept penalties on expected minimum requirements that are in conflict with their culture. For example it would be not appropriate to apply penalties for non-participation in group activities not related to the job (e.g. carting events, mountain biking). Very probably, spontaneous behavior cannot be controlled by negative bonus systems.

#### *4.3.6. Acceptance of Online Communication of Bonus Results*

Something rather unusual exists in this particular company, for the company publishes the bonus results of its employees on the intranet. In this way everybody can see who has earned which bonus. This issue could have some ethical aspects, because some managers found that this online visibility of the bonus results, had a demotivating effect on medium and low performers.

#### *4.4. Research Expectations Based on the Literature and the Qualitative Interview Data*

Additionally to this qualitative research, we conducted also a quantitative one. When discussing the literature, we proposed some expectations about the acceptance of bonuses and penalties within a BSC environment. However, when analyzing the interview data, we found that still other expectations could be formulated. Now, in this paragraph we resume the expectations from the literature and complete them with those from the qualitative interview data.

Out of the *literature*, we can formulate following *expectations*:

- Exp. 1:* In a BSC environment employees are more likely to accept bonus framed incentive systems than penalty systems for the comprehensive parcel of performance criteria in its whole (i.e. not every performance measure on its own).
- Exp. 2:* In a BSC environment employees are likely to accept the bonus system.
- Exp. 3:* In a BSC environment employees are likely to not accept penalty systems.
- Exp. 4:* Acceptance of BSC based bonus systems depends on the employees' personal goals, expectancies and person characteristics.
- Exp. 5:* Acceptance of BSC based penalty systems depends on the employees' personal goals, expectancies and person characteristics.

Also from the *qualitative* interview data we can establish a number of additional *expectations*:

- Exp. 6:* Acceptance of the bonus calculation method, the penalty system, the monthly bonus determination, the use of difficult but attainable performance targets and the use of "month item" bonuses depends on the controllability, accuracy and attainability of the performance measures.
- Exp. 7:* Employees are expected not to be in favor of the online visibility of bonus results via the company's intranet because it is demotivating.

#### *4.5. Acceptance of the Incentive System: Quantitative Data*

To examine the above expectations on acceptance of bonuses, penalties and related factors, a customized questionnaire was designed. The unit of analysis of this research part is the individual office manager and placement officer in the temp agency. We conducted our survey only in one single company because of the obvious advantages of more controllability, a constant external environmental impact, an equal business culture, . . . However, we must make the usual caveat with this type of research and acknowledge that this influences (i.c. deteriorates) the external validity of our results. Anyway, we think that our results can be of interest for every service company that applies a BSC based bonus and penalty system.



4.5.1. Research Method

4.5.1.1. *Data collection and questionnaire development.* We designed a survey specifically for this service company, whereby some points of interest are asked with specific questions for either placement officers or office managers because they are not all evaluated and rewarded on the same base. *All measures* are constructed as a 5-point Likert scale with the following anchor points: (1) fully disagree; (2) rather disagree; (3) neutral; (4) rather agree; and (5) fully agree. So the respondent had to tick the extent to which he or she could agree with the proposed statement.

The questionnaire was pilot-tested in 2 offices (2 placement officers and 2 office managers). Based on the comments of the respondents during the pilot-test, the questionnaire was fine-tuned. However, we made mainly changes to the format, and only little changes to content.

Concerning the final questionnaire we had the opportunity to administer it at an internal company conference where almost all employees were present. In this way, we could count on 68 respondents, among which 31 office managers and 37 placement officers. This means a very high response rate of almost 98%.

4.5.1.2. *Measurement scales in the questionnaire.* **Acceptance** (see also Table 1). Measuring acceptance in our study must be split up into three different measures. The bonus, the penalty and the online visibility part.

*Acceptance of bonus (calculation method, monthly determination, difficult targets, monthly items).* First, there is the acceptance of the bonus part of the incentive scheme. This consists of different elements, i.e. the acceptance of the bonus calculation method, the monthly bonus determination, the use of difficult but attainable performance targets and the use of “month items.” And even though

**Table 1.** Descriptive Statistics of the Acceptance Variables.

	N	Alpha	Mean	Std. Dev.
General bonus acceptance	68	0.63	4.24	0.52
Bonus acceptance OM	31	0.63	4.38	0.39
Bonus acceptance PO	37	0.66	4.03	0.56
General penalty acceptance	68	0.64	3.10	0.81
Penalty acceptance OM	31	0.69	3.14	0.82
Penalty acceptance PO	37	0.63	3.21	0.85
Online visibility acceptance of bonus gains	68		3.71	1.16

we mentioned these elements as separate in our expectations (cfr. 4.4), factor analysis<sup>1</sup> showed that these measures can be taken together to one bonus measure. Still one remark must be made. Some items only apply to office managers (e.g. “month items”) and others only to placement officers. Therefore we made three different variables. One general bonus acceptance measure that includes items that only apply to both groups of employees,<sup>2</sup> and then two other bonus acceptance measures that include items that apply to the appropriate group.

*Acceptance of penalty (existence of penalties, monthly determination, the choice of the performance criteria for penalties).* Second, there is the acceptance of the penalty part of the incentive scheme. Like in the bonus story, all different items can be taken together to one penalty measure by factor analysis.<sup>3</sup> Again three different variables are established, to say one general,<sup>4</sup> one for placement officers and one for office managers. Although these variables don’t differ a lot because office managers can only be penalized on one item more than placement officers (i.e. having too much bad debts), we still have made the distinction of the variables in parallel with the bonus part of the incentive system.

*Acceptance of online visibility.* A third aspect of which we want to know the acceptance is the online visibility of the bonus results. We just asked the respondents to indicate to what extent they accepted the practice of online visibility of the bonus gains.

**Personality** (see also Table 2). In our research we consider the term personality as a combination of both personal goals and the extent to which one is a go-getter to pursue those goals. For measuring *personal goals*, we adapted the nine aspects of the Job Satisfaction Survey (Spector, 1985) to our own research, and we did this on the basis of our interviews. So, we did NOT measure people’s satisfaction, but the extent to which people think that their job must satisfy certain needs. This reflects one’s personal goals. We asked about the importance of ten items

**Table 2.** Descriptive Statistics of Personality Variables.

	<i>N</i>	Alpha	Mean	Std. Dev.
Earning a lot of money is important	68		4.18	0.79
Promotion opportunities are important	68		4.13	0.81
Fringe benefits are important	68		4.38	0.71
An interesting job content is important	68	0.64	4.74	0.34
A good work climate is important	68	0.67	4.42	0.49
The extent to which one is a go-getter	68	0.71	4.19	0.46

and people must tick whether they agreed that an item was important for him/her to realize or not. With factor analysis we filtered out five broad aspects of people’s personal goals, i.e. the importance of earning money, having promotion opportunities, fringe benefits, an interesting job and a good work climate.<sup>5,6</sup>

For completing our measure of personality by asking their personal goals, we must also know how far people want to go in trying to accomplish those goals, i.e. is one a *go-getter* or not. Therefore we had five items, which can be taken together to form one construct.<sup>7</sup>

**Controllability, accuracy and attainability of performance measures** (see also Table 3). It is obvious that controllability, accuracy and attainability are useful in our research, because it has been proved that the greatest dissatisfaction with a performance appraisal (and thus consequently with the incentive system) results from perceptions of inappropriateness of the performance indicators and the imposed targets (Swiercz & Icenogle, 1991). Additionally these authors state that the attitude towards the performance appraisal system is the most discriminating variable for (non)-acceptance of the system. It is also inevitable to incorporate these variables, because we want to do our research in a BSC environment, which means that the perceptions about the performance measurement system are very important. *Controllability* and *accuracy* were measured separately for office managers and placement officers, because they have different performance measures on which they are appraised. Each group was asked if they agreed that each measure on its specific scorecard is controllable or accurate. With factor analysis we could be sure that all performance measures could be incorporated in one variable. So at the end we had four variables. A controllability and an accuracy variable for both office managers and placement officers.<sup>8</sup> For the third variable *attainability*, people were asked to tick the extent to which they perceive the targets as relatively easy to attain. Here we also used factor analysis and can conclude that the different items could be taken together into an attainability variable.<sup>9</sup>

**Table 3.** Descriptive Statistics of Controllability, Accuracy and Attainability.

	N	Alpha	Mean	Std. Dev.
Controllability of performance indicators for OM	29	0.60	3.97	0.51
Controllability of performance indicators for PO	37	0.63	4.32	0.41
Accuracy of performance indicators for OM	26	0.77	4.38	0.50
Accuracy of performance indicators for PO	36	0.64	4.27	0.56
Perceived attainability of enforced goals	64	0.69	2.45	0.65

#### 4.5.2. Analysis of the Results

**4.5.2.1. Descriptive statistics. Dependent variables.** In Table 1 we provide the descriptive statistics for the three acceptance variables: bonus, penalty and online visibility. We show the number of respondents for each variable, the Cronbach Alpha for composed variables and the Mean and Standard Deviation.

These data show that there is a rather high acceptance of the bonus side of the BSC based incentive system, while the penalty acceptance is not very high and systematically below the bonus acceptance. What is also notable is that the answers in the case of penalties are far more dispersed (i.e. larger standard deviation) than in the case of bonuses, which means that the respondents more agree in their opinion about the bonus system than they do about the penalty system.

Additionally there is also the acceptance of online visibility of bonus gains, which has a relatively high standard deviation, and a mean that tends towards acceptance.

**Independent variables.** Now we will briefly throw a glance at the descriptive statistics of the independent variables personality, controllability, accuracy and attainability. These descriptive statistics are not as important as those for the dependent variables because they are only used for explaining the acceptance variables and don't really have specific value on their own in this research.

As we already mentioned, personality is composed of the extent to which someone is a *go-getter* and five "*personal goals*" variables concerning money, promotions, fringe benefits, interesting job and the work climate. The descriptive statistics for these variables are presented in Table 2.

From the means of these variables, we can only conclude that people find all those elements important and that most people in this company are *go-getters*.

Concerning the *controllability* and the *accuracy* of the performance indicators and the *attainability* of the targets, the descriptives are found in Table 3.

Again the mean scores are high for most variables. So, most people seem to perceive that the performance indicators on their scorecard are relatively controllable, and that the performance indicators are accurate. The tendency for attainability is more towards neutrality, which means that the employees find that the enforced goals are relatively difficult and hard to obtain.

**4.5.2.2. Discussion on the expectations.** In this section we will try to find an answer on the previously mentioned expectations of our research. We want to know whether all expectations are true or if some of them are not?

*Expectation 1.* As we take a look at Table 1, we can see that the mean of all *bonus* acceptance variables systematically exceeds the mean of the *penalty* variables.

So these data support our expectations about bonuses having a greater acceptance than penalties. A paired samples *t*-test showed that bonus framed incentive systems are indeed more likely to be accepted than penalty incentive systems ( $p < 0.002$ ), and this for all three employee groups (general, OM and PO).

*Expectations 2 and 3.* The analysis of the mean scores in Table 1 reveals that respondents tend to accept the bonus part of a BSC-based incentive system and that they are more or less neutral to the penalty system. The latter means that they do not explicitly accept the system, so we could state that this rather tends to non-acceptance of the penalty system.

Looking at the distribution could give us also some more information about how the mean is formed. Is it by a skew or a more or less normal distribution? This is important because this gives an indication of the strength of the (non-) acceptance. When we investigate this, we find that the distributions of all these variables do not differ significantly from a normal distribution.<sup>10</sup> So this means that the values of the variables are spread at the left as well as at the right side of the Mean. However, we see that, when looking at the general acceptance<sup>11</sup> in Table 1, only 19.1% of the respondents has a score below 4 (i.e. “non-acceptance” or “neutral”) concerning bonuses whereas in the case of penalties no less than 80.9% has a score below 4. Another remarkable percentage is that only 1.5% of the respondents has a clear non-acceptance of the bonus system (i.e. a score below “neutral”), while nevertheless already 38.2% clearly doesn’t accept the penalty system. These percentages are shown in a graphical way on the histograms in Figs 1 and 2. This corresponds to our expectations that say that in a BSC environment bonuses are accepted and penalties are not.

*Expectation 4.* Expectation 4 concerns the issue of bonus acceptance being dependent on personality. We investigate this relation by discussing the correlations, which can be found in Table 4.

Looking at these data, we can conclude that not all personality variables influence the acceptance of bonuses or penalties and online visibility. Surprising is that there is no significant relationship between earning money and getting promotions as personal goals and the acceptance of the system. Fringe benefits on the contrary seem to have a positive relation with acceptance of the bonus system. It seems there is only a significant correlation for the common system and for the system of the placement officers, while office managers show no correlation at all. This means that the more fringe benefits are important for placement officers, the more they will accept their bonus system. This can be explained by the fact that the fringe benefits (i.c. the “incentive item” on their personal scorecard; cfr. supra) could be more important to earn for placement officers, than for office managers. This also explains that fringe benefits are perceived as a major item in their bonus

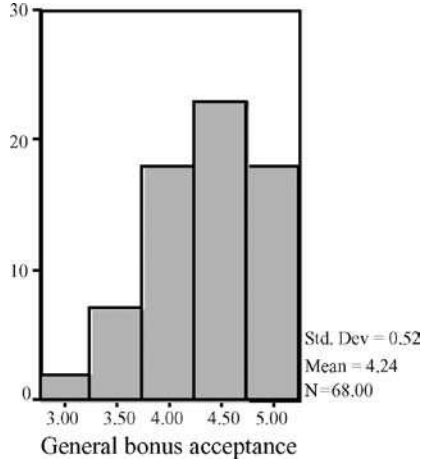


Fig. 1. General Bonus Acceptance Histogram.

system because they are more likely to accept the system when fringe benefits are important to them, and thus are perceived as incorporated in the system.

People for whom having an interesting job is very important are more willing to accept the bonus system. This might be an indicator that affinity with the job and the company is important for making people accept the bonus system.

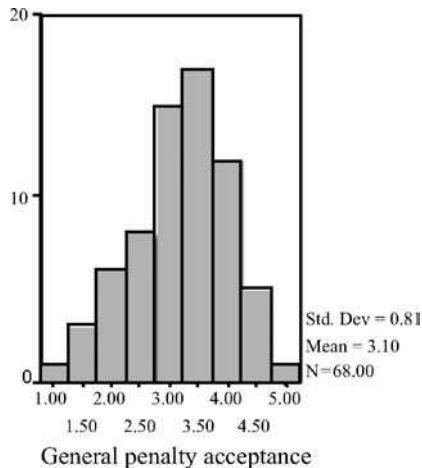


Fig. 2. General Penalty Acceptance Histogram.

**Table 4.** Correlations between Personality and Acceptance.

	General Bonus Acceptance	Bonus Acceptance OM	Bonus Acceptance PO	General Penalty Acceptance	Penalty Acceptance OM	Penalty Acceptance PO	Acceptance of Online Visibility
Earning a lot of money is important	-0.116	-0.217	-0.86	-0.139	-0.048	0.089	-0.089
Promotion opportunities are important	0.092	0.040	0.222	0.092	0.250	0.221	0.201
Fringe benefits are important	0.271*	-0.157	0.447**	0.028	-0.125	0.014	0.012
An interesting job content is important	0.338**	0.370*	0.339*	0.234	0.262	0.203	0.018
A good work climate is important	-0.077	-0.077	0.096	0.168	0.260	-0.266	-0.262*
The extent to which one is a go-getter	0.566**	0.673**	0.583**	0.496**	0.489**	0.004	0.184

\*Correlation is significant at the 0.01 level (2-tailed).

\*\*Correlation is significant at the 0.05 level (2-tailed).

Another significant positive correlation can be found between the acceptance of the bonus system and the extent to which one is a go-getter. Thus, when employees are real go-getters, chances of accepting the bonus system increase.

*Expectation 5.* Expectation 5 is similar to 4, but it handles the penalty side of the incentive system. Data are shown in Table 4. We can see that only one personal variable is correlated with the acceptance of the penalty system. There is only a significant correlation for the extent to which one is a go-getter. The interpretation is that people that are real go-getters, energetic, challengers, are also more likely to accept penalties instead of people with low perseverance who are likely to reject the system. No reasonable explanation can be given why the penalty acceptance of placement officers is not related to their perseverance, while all other incentive acceptance variables show a very significant correlation.

*Expectation 6.* Expectation 6 handles about the influence of the independent variables *controllability*, *accuracy*, and *attainability* on the dependent variable *acceptance*. Data are presented in Table 5.

Let us first analyze the effect of controllability on acceptance. We clearly see that the distinction between office managers and placement officers plays a role here. The extent to which performance indicators are controllable for office managers positively affects the acceptance of the penalty system, but has no effect on the acceptance of the bonus system. Thus, the more performance indicators on office managers' scorecard are perceived as controllable, the more they will be tended to accept the penalty system. For placement officers it is the other way around. Their perceived controllability influences their bonus acceptance, but has no significant relation with their penalty acceptance. So when they think they have more control over the performance indicators on their scorecard, there is a good chance they will accept the bonus part of the incentive system. The reason for this odd phenomenon could lie in the fact that office managers accept more the bonus system than placement officers do, and that the latter have a greater acceptance for the penalty system than office managers. This reasoning is shown in the previously presented Table 1, when looking at the mean scores.

A second variable that was expected to have an influence on acceptance of the incentive system, is the perception whether performance indicators are measured accurately or not. However, the expected relation is not found in our data. The reason could be that people don't perceive an accuracy problem, i.e. they don't perceive the measures disputable. In that case the accuracy of the measures will not influence their acceptance of the incentive system.

At last there is a clear and obvious negative link between the perceived attainability of the enforced goals and both bonus and penalty acceptance. This means that the potential acceptance of the bonus and penalty scheme diminishes



**Table 5.** Correlations between Controllability, Accuracy, Attainability and Acceptance.

	General Bonus Acceptance	Bonus Acceptance OM	Bonus Acceptance PO	General Penalty Acceptance	Penalty Acceptance OM	Penalty Acceptance PO	Online Visibility
Controllability of performance indicators for OM	0.171	0.248		0.378*	0.435*		0.273
Accuracy of performance indicators for OM	0.078	0.341		0.221	0.227		0.300
Controllability of performance indicators for PO	0.414*		0.462**	0.270		-0.275	0.178
Accuracy of performance indicators for PO	0.281		0.240	0.227		-0.297	0.014
Perceived attainability of enforced goals	0.315*	0.524**	0.318	0.543**	0.713**	0.238	0.169

\*Correlation is significant at the 0.01 level (2-tailed).

\*\*Correlation is significant at the 0.05 level (2-tailed).

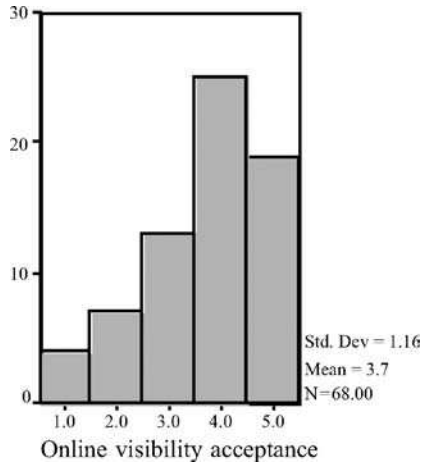


Fig. 3. Acceptance of Online Visibility of Bonus Gains.

when targets are set at a too high level, so that they are hard to obtain. Oddly enough, this relation does not apply to placement officers and we cannot give any assignable reason for this.

*Expectation 7.* If we consider the *online visibility acceptance*, we see in Table 1 that the mean answer floats between “neutral” and “rather agree,” so there is not a very strong acceptance. But if we take a look at the histogram of the distribution of the answers (cfr. Fig. 3), we remark that the majority is situated at the right-hand side of the Mean and that the distribution is asymmetric towards acceptance of the online visibility of bonus gains.<sup>12</sup> This is not what we expected, because we supposed online visibility to be demotivating and therefore non-acceptable.

However, there can be a demotivating effect like we expected. This can be verified by looking at the correlations between the acceptance of online visibility of bonus gains and the possible influencing variables that were used before (cfr. last column of Tables 4 and 5). Just one variable has some significant influence, to say the personal goal of wanting to have a good work climate. The correlation is even a negative one. This means that people who find it important to have good relationships with colleagues and their boss and who want working conditions with enough time left for oneself and his or her family, that those people are not likely to accept the online visibility of the bonus gains. The explanation might be simple. If bonus results are presented online on the intranet, competition, rivalry,

jealousy and envy may arouse. These factors may not be helpful for a good atmosphere and work climate between colleagues. So, people who find this variable important, are expected to reject the online visibility, because it would harm their personal goal.

## **5. A NOTE ON POSSIBLE FUTURE RESEARCH**

Till now, scientific research has barely scratched the surface of positive (bonus) and negative (penalty) incentive problems, let alone in multidimensional strategy-driven environments. Since the multidimensional issues turned up, it is impossible to imagine business without these issues as they are inextricably bounded up with it. As a starting point we investigated the acceptance and the influencing variables of both incentive systems.

Future research then could address performance effects of bonus and penalty incentive systems. To what extent does the use of a bonus or a penalty affect peoples task performance? This could be interesting to investigate because the conducted qualitative interviews revealed that low performing employees leave the company and high performers stay. However, this observable fact could not be investigated in the quantitative research, because of three reasons linked to the nature of our research method and the research site. First of all, there were no personal performance records available in the examined company. At the same time, we could not ask people for a self-assessment of their performance, because most of them didn't know their exact performance number. Second, data showed that most employees were working in the temp agency for maximum 2 years, so that even if we should have had data, no conclusions could have been drawn. Third, in our questionnaire we could not take into account the people who left the company, because the questionnaire was taken from current employees and there were no useful data on former employees. Hence, future research should be able to address those problems, either in a survey or an experiment. Our qualitative result of low performers leaving and high performers staying, could be explained by the phenomenon of self-selection effects (Waller & Chow, 1985). But as we state, this must be investigated more thoroughly, so that it outgrows the exploratory phase.

Another opportunity is to extend the research to a multi-company setting in which firms must be carefully selected on the basis of some common characteristics like a pay system based on both positive and negative incentives, an explicit multi-dimensional and strategy-driven performance measurement system along with the possibility to clearly measure individual performance.

## 6. CONCLUSIONS

Our research was conducted in order to broaden the knowledge in a domain that is still very unexploited, namely the domain of BSC-based incentive systems defined in both, bonus and penalty terms. Each of the components in this topic has already been researched, but never was the combination. From the existing literature and from some qualitative interview data in our research site, we proposed some expectations, which we investigated by a customized questionnaire.

We find evidence in our results that in a BSC environment employees generally are more likely to accept bonus framed incentive systems than penalty systems. Additionally our data revealed that bonuses are almost fully accepted, but that penalty systems are not. Concerning penalty systems, people tend more towards neutral, which implies more or less non-acceptance. This explains also why bonuses are more likely to be accepted than penalties.

However, bonuses are not always accepted and penalties are not always rejected. After all, not all situations or persons are the same. Bonus or penalty acceptance can also depend on some influencing variables.

First of all we find that whether a person accepts the bonus system depends on whether he or she finds fringe benefits and an interesting job important. The more they are important, the greater the chance the bonus system will be accepted. Another variable that plays a role is the matter if someone is a go-getter or not. Is he or she a go-getter, then both systems bonus and penalty are likely to be accepted, otherwise not. This may be interesting, even if it is not possible that companies alter a person's goals or perseverance. However a company can, through its selection process, attract people with the wanted features, so that they are more likely to accept both systems bonus and penalty. In that way the company can retain their penalty system, together with its positive motivational characteristics, without demotivating because of non-acceptance.

Second, our research discloses that it is important for a company to ensure that the performance measures on people's BSC are controllable and attainable. Otherwise, when those measures are not controllable or too difficult, the incentive system won't be accepted. A remark must be made here. The controllability is only important to make office managers accept a penalty system and to make placement officers accept the bonus side of the system. This could be, because the mean bonus acceptance is higher for office managers, and the mean penalty acceptance is higher for placement officers. Thus, for the element of the incentive system they accept the most, they are not really sensitive for the controllability.

At last our findings showed that employees generally accept bonus gains to be published on the company's intranet, but that this also depends on whether a good work climate is important for that employee or not. If this is important, then the

online visibility will not be accepted because of the fear for rivalry and jealousy, which means a less good work climate.

## NOTES

1. Cronbach alpha: general bonus acceptance (0.63); Bonus acceptance OM (0.63), PO (0.66).
2. We may use this variable in its whole and we don't have to split it up in OM and PO, because they don't answer differently on the general bonus acceptance questions (independent samples *t*-test,  $p = 0.06$ ).
3. Cronbach alpha: general penalty acceptance (0.64); Penalty acceptance OM (0.69), PO (0.63).
4. Equal to footnote 2 we may use this variable in its whole, because both groups' answers don't differ (independent samples *t*-test,  $p = 0.326$ ).
5. Three variables are one-item scaled and two variables composed with different items (Cronbach alpha: 0.64 and 0.67).
6. We define the work climate as the atmosphere at work – which includes the relationship with boss and colleagues – and the work-life balance (the extent to which one has enough time for oneself and one's family).
7. The confirmative factor analysis reveals that these five items all load together on one factor. Also a Cronbach alpha of 0.71 shows consistency in the measurement scale.
8. Cronbach alpha: controllability OM (0.60), PO (0.63); Accuracy OM (0.77), PO (0.64).
9. Cronbach alpha: 0.69.
10. *p*-Values go from 0.058 to 0.889.
11. We only discuss general acceptance here, because the things we describe are more or less identical for the general acceptance and the acceptance of OM and PO.
12. After all, it is the answer "rather agree" (anchor point 4) that has been ticked the most, and the majority (64.7%) chose an answer on the right of being "neutral," to say acceptance.

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**PART V:  
MEASURING AND IMPROVING  
PERFORMANCE IN NON-PROFIT  
ORGANIZATIONS**





# PERFORMANCE MEASUREMENT IN NON-PROFIT ORGANIZATIONS: HOW TO LINK THEORY AND REALITY?

Emanuele Lettieri, Francesca Borga, Cristina Masella  
and Alberto Savoldelli

## ABSTRACT

*Many academics suggest that performance measurement [PM] could help non-profit organizations [NPOs] to become high-performance organizations. Despite that, many NPOs appear not to use PMSs at all.*

*The aim of this paper is threefold: (i) to contribute to the present debate about what is a high-performance NPO and how NPOs can pursue high-performances; (ii) to understand the actual gaps between the “as is” and “should be” PMSs; and (iii) to discuss the main obstacles for implementing and using a PMS in NPOs.*

*A model based on the concept of community has been reviewed in thirteen large-size NPOs. The model identifies five capabilities which should characterise high-performance NPOs. The comparison between the model and the “as is” PMSs allowed to identify the main gaps between reality and theory. The main obstacles for PMS implementation and use have been discussed.*

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**Performance Measurement and Management Control: Superior Organizational  
Performance**

**Studies in Managerial and Financial Accounting, Volume 14, 355–374**

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ISSN: 1479-3512/doi:10.1016/S1479-3512(04)14014-8

## INTRODUCTION

The importance of non-profit sector as producer of social services and as employer has raised continuously during the last decade (Lester, 1999; Salamon & Anheier, 1999; Speckbacher, 2003). For that, the non-profit sector is at the present playing a significant role within the modern economies. The non-profit sector, however, urges to match *good values* and *management* in new paradigms (Lettieri et al., 2002; Zimmerman et al., 2003), in order to cope with its new role. Delivering basic services to ameliorate social needs is not still enough. Recipients require timely and tailored value-for-money services. Local institutions require more integration between their long-range programs and non-profit organisations' actions (Shaw, 2003). Donors require efficiency in managing funds and outstanding outputs/outcomes. Government require accountability.

Those challenges are reshaping non-profit sector and feeding a rough renewing wave (Borzaga & Santuari, 2000; Rifking, 1995; Ryan, 1999). The introduction of managerial processes and organisational behaviour is on the agenda of politicians and practitioners (Bradley et al., 2003). The hot issues are how to improve the performances and how to steer the non-profit organisations [NPOs] towards excellence. The challenge has been intuitively understood, but the ways for challenging are not yet clear (Fiorentini, 1997; Lettieri et al., 2002; Zimmerman et al., 2003). Clear roadmaps and sextants to address excellence are still missing.

Many academics suggest that performance measurement [PM] can help NPOs to become high-performance organizations (e.g. Thayer et al., 2001). In this sense, several attempts to introduce a performance management system [PMS] (e.g. Balanced Scorecards, Social Accountability, Total Quality Management, EFQM model) and to manage through measures have been made in recent years. At the present, however, none of those PM models are widely used (Cutt & Murray, 2000). In fact, many NPOs appear not to use PMSs at all.

Despite the importance of such a research stream, academics seem to dedicate few efforts to it. Reviewing the proceedings of the 2002 Performance Measurement Association (PMA) Conference – that is one of the main international conferences in the field and includes both academic and practitioner delegates – only 6 papers on 82 were related to PM in the non-profit sector. Enlarging the analysis, only 16 papers dealt with PM in the public sector. This results seem to be in contrast with the general agreement that PM and measures can help public and non-profit sectors to improve welfare and contain public expenditures. The arguments are, on one hand, the difficulty to obtain funds for researching (NPOs themselves are poorly interested in funding research) and, on the other hand, the

complexity of the research (Conroy, 2002), since the strictly linkage between politics and management, and the presence of heterogeneous stakeholders.

The main purpose of this study is to gain further understanding of how non-profit managers manage through measures and steer their organisations towards excellence. This paper aims to contribute to the performance measurement literature and its latest focus non-profit and public sectors. In particular, the study looks at the present debate about what is a high-performance NPO and how NPOs can pursue high-performances. Moreover, the main obstacles to the implementation and use of PMSs in the NPOs are discussed, after evaluating the actual gaps between the “as is” and “should be” PMSs.

## **METHODS**

The research was conducted through three sequential stages.

The research team, firstly, reviewed broadly the literature regarding performance measurement in search of relevant studies to ground the research (the results are summarised in the section “state of the art”) and inform the further stages. The research was conducted using both PROQUEST and EBSCO databases. An inclusion/exclusion protocol was designed. The papers excluded were: (i) published before 1990; (ii) focused mainly on the for-profit sector; and (iii) with a general low quality. The quality assessment exercise aimed at assessing relevance and included: (i) theory robustness; (ii) implications for practise and policy; (iii) data supporting methodology; (iv) generalisability of results; and (v) contribution to the existing knowledge.

Secondly, an existent theoretical model for PM in NPOs (Lettieri et al., 2002) has been reviewed by a panel of practitioners in order to test its comprehensiveness and fitness to non-profit landscape. Such a model aims at supporting a holistic view of NPO performances, matching the specific contingencies of NPOs and the main lessons learnt on PM in both for-profit and public sector. The model has been used to deploy the concepts of excellence and high-performances. Each construct was deployed in a set of measurable definitions.

Thirdly, a set of interviews with NPO managers and volunteers were conducted in both Italian and English large-size NPOs. The purpose was to gather insights on the gaps between the “as is” and “should be” situation. All the dimensions of the model were reviewed, clarifying the relative importance of each dimension. An ad-hoc semi-structured questionnaire was designed to support the research team during the interviews and to make the findings objectively comparable.

## STATE OF THE ART

A review of the relevant papers on PM in both public and non-profit sectors has been conducted in order to ground the further empirical research. The review was aimed at understanding the factors that influence: (i) the design exercise in the non-profit context (contingencies); (ii) the use of PMSs; and (iii) the potential impact on results of an effective use of PMSs.

In the last decade, significant research efforts have been addressed to research the more adequate PMS design for NPOs. The key purpose was to highlight the specifications a PMS should have to meet the needs of the non-profit sector. Three main streams can be highlighted, whose focus is respectively: (i) the external context factors (like the interconnections between politics and NPOs) that influence PMS design (Berman & Wang, 2000; Bovaird, 2002; Brinkerhoff & Brinkerhoff, 2000; Kaplan, 2001; Van Peursem, 1995); (ii) outcome measurement and metrics design (Campbell, 2002; Plantz et al., 1997); and (iii) the relevant subjects to whom non-profit sector should be accountable (Conroy, 2002; McLaughlin & Jordan, 1999), the definition of the relevant stakeholders and their role (Boland & Fowler, 2000; Lettieri et al., 2002; Thayer & Fine, 2001; Newcomer, 1997).

The latter stream empathised overall the concepts of stakeholder involvement and community-management (Mulroy, 2003; Shaw, 2003). Those results are aligned with the last lessons learnt in the for-profit sector (Neely et al., 2002). A large part of the literature focused on the develop of ad-hoc models for the NPOs. A variety of models have been developed, but none of them has become widely adopted or used over long periods of time (Baraldi, 2001; Grossman, 2001; Kaplan, 2001a; Speckbacher, 2003). Cutt and Murray (2000) reviewed the most known PMSs within the non-profit sector, highlighting their purposes, strengths and weaknesses (Table 1). These PMSs focus the measurement on different targets. Most of them assess single processes (as fund-raising and customer relationship management) or single programs (as plans for the social development). Others analyse a NPO as a whole, evaluating as different processes or functions match together to pursue the expected goals. On the contrary fewer efforts are been addressed to assess larger non-profit systems either within geographical areas or sectors. The main focus are processes, activities or outputs, rather than outcome. The underlining assumption is that well-performed processes imply good outcomes. That focus is a partial solution to the complexity of defining quantitative outcomes, strictly representative of the goals they are intended to reflect and which can be easily and timely measured.

The large part of the PMSs do not deepen how to design and carry out specific measurement, who to involve and how the results should be interpreted and used. Significant pitfalls occur in explaining without ambiguity how a program,

**Table 1.** Classification of the Evaluation Systems in the Non-Profit Sector  
(Cutt & Murray, 2000).

What is Evaluated?	
Programs, units or functions	Ethical fund-raising accountability code by the Canadian center for philanthropy Outcome funding by the rensseleerville institute High performance non-profit organizations
Whole organizations	Balanced scorecard Canadian comprehensive auditing Foundation framework for performance reporting The drucker foundation self-assessment tool for non-profit organizations Programs outcomes: the united way approach Malcolm baldrige national quality award ISO 9000 standards National charities information bureau standards in philanthropy Charity rating guide by the american institute for philanthropy Standards for organizational & financial integrity by Canadian council of christian charities Charities review council of Minnesota standards Guidestar database on non-profit organizations and performance ratios
Larger systems	Oregon benchmarks Council on accreditation Progress of Canada's children, Canadian council of social development Professional accreditation bodies relevant to the non-profit sector

an organization or a larger system is performing and why. The real challenge is to design powerful indicators like profit, return on investment or market share. The main contribution these PMSs give is the attempt to put the discourse about performance into a more rational, data-based format. Beside that, the majority of systems is still based on a subjective base. An other research (Kennerley & Micheli, 2003) has reviewed the relevant contributions to PM literature in the field of both public and non-profit sector. The authors argued that ad-hoc PM frameworks should be developed since the heterogeneity of the organisations within the sectors and the difficulty to translate the models designed for the for-profit sector to other that do not share the same logics. An other study focused on the more spread PM frameworks in public organisations (McAdam, 2002), clarifying that Balanced Scorecards and EFQM model are the more spread.

Less efforts dealt with PMS implementation in NPOs. The contributions focused mainly on case studies (e.g. Grossman, 2001; Kaplan 2001a, b). On one side they gathered in-detail insights, but on the other side the generalisability of

such results is modest. The role played by the volunteers and the implications of a culture focused on action than on management are not investigated and further research is recommended.

A few studies were conducted on the use of PMSs and on the conditions that enable the full exploitation of the measures collected. The main factors seem to be the quality of the design, the capability to communicate success/failure, the link between incentives and performance, the in-house design and development, the involvement of the key-stakeholders during performance review (Thayer & Fine, 2001). “Incentives” is still a hot-issue for NPOs. The alignment between individual targets and strategy cannot be achieved through monetary compensation, but should be grounded on values-agreement and recognition. The necessity to exploit “soft” incentives is a complex task for PM managers. The mismatching between mission/strategy and actions in NPOs has been largely researched. Sawhill and Williamson (2001) argued that “very few non-profits have systematically linked their metrics to their mission, and too many repeat the mistake of confusing institutional achievements with progress towards achieving it.” About the in-house design and development, Sanderson (2001) argued that the shortcomings of PMSs in both public and non-profit sector are because such systems were externally imposed.

Little understanding exists regarding the impacts (in terms of results and improvements) PMSs have addressed in non-profit sector. The large part of the studies describes which could be the impacts without supporting their arguments with large evidence (Bradley et al., 2003; Kaplan, 2001b; Lettieri et al., 2002). More quantitative researches with a large empirical base would be necessary to gather insights on the value PMSs have for NPOs, supporting the justification of the investments necessary for its design, introduction and use.

## **HIGH-PERFORMANCE NON-PROFIT ORGANISATIONS**

Shared definitions of “excellence” and “high-performance” for NPOs seem to lack. The absence of powerful indicators such as share-holder value or return on investment make a hard task to define the previous concepts. The EFQM Excellence Model defines excellence as an “outstanding practice in managing the organisation and achieving results based on a set of fundamental concepts.” The Centre for Excellence in the non-profits (CEN) define excellence as “a condition when the majority of the key stakeholders hold the belief that the non-profit organization is doing a superior job of setting and achieving worthwhile aims in a capable, cost-effective and ethical way” (Tebbe, 1996). Those definitions suggest that:

- The judgement is carried on by a broad set of stakeholders (as recipients, donors, volunteers, Government) and excellence is judged through different criteria and mind sets;
- Excellence is a relative concept, i.e. the stakeholders compare performances among peers NPOs and decide which are excellent and which are not;
- Criteria to support evaluation should be specified and be the result of a democratic negotiation among the key-stakeholders (Who do evaluate? For whom is a NPO excellent?);
- The capabilities on which to assess excellence are: (i) the capability to achieve outstanding social outcomes; (ii) the capability to select and implement cost-effectiveness programs; and (iii) the capability to link ethics and management.

Within this context, “community” has been identified as the ontology of the non-profit sector and as a corner-stone for an innovative PMS (Lettieri et al., 2002). A NPO plays its role when spreads a common awaken about specific needs and coordinate various subjects to reach a common goal. The implication is the creation of need-driven communities as a whole of independent subjects which are independent and have own objectives that could be contrasting; which agree a common purpose (as NPO’s mission or specific programs) for own reasons; which make available resources of various kind to reach the common goal. The main constituencies of a need-driven community are: the promoters, the employees, the volunteers, the donors of financial resources (private subjects, private firms, public Institutions), the partners in day-by-day activities (other NPOs or other actors), the users (recipients) and the society as a whole. Such a heterogeneity clearly explains how different could be the mind-sets used to evaluate excellence. A NPO should recognise the key-stakeholders, measure their satisfaction and increase their involvement in strategic planning and daily activities (Mulroy, 2003; Shaw, 2003). The community should grow, define goals and act to achieve them (in a capable, cost-effective and ethic way) and learn to enhance abilities and knowledge (Lettieri et al., 2004).

In this sense excellence is a condition when a NPO is able to build and manage a need-driven community that is able to generate sustainable outstanding outcomes in a capable, cost-effective and ethic way. Indeed, a high-performance NPO should be characterised by five capabilities (which are the criteria to evaluate excellence):

- Build and manage a need-driven community;
- Translate the vision in mid/long-term strategies and in short-term actions;
- Create outstanding and cost-effective social value;
- Manage the available physical and intangible assets;
- Survive in mid/long-term.

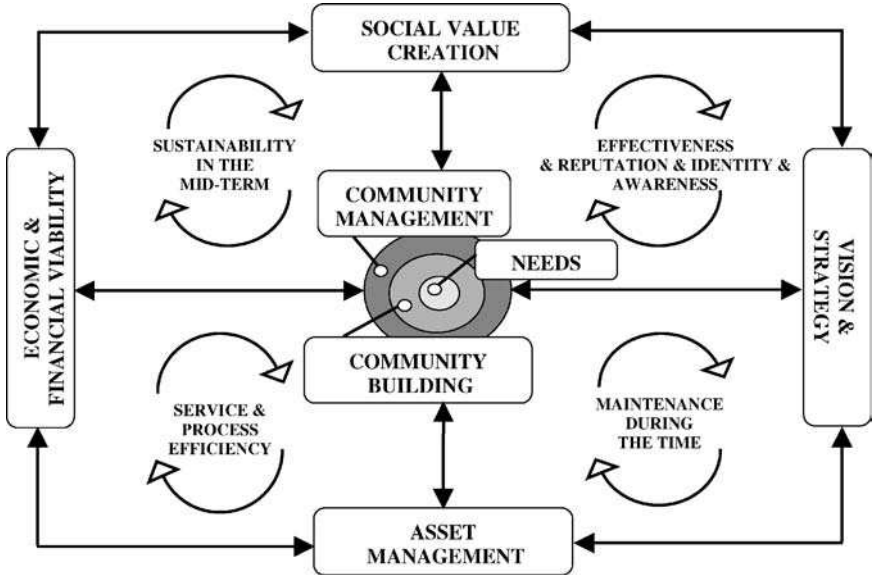


Fig. 1. A Framework for Performance Measurement in NPOs Based on the Concept of Community.

These capabilities were synthesised in a model, where the main relationships among them were deployed (Fig. 1). Four main virtuous cycles were identified (for an exhaustive explanation of the model, its logic blocks and their relationships, see Lettieri et al., 2002):

- The first cycle fosters “*effectiveness, reputation, identification & awareness.*” Coherently with the vision and long-term strategy the community acts to create social outcomes; the achievement of the expected results increases community satisfaction and creates trust and alignment on strategy;
- The second cycle fosters “*coherence maintenance during the time*” between strategy and actions. Pursuing vision and strategy requires specific knowledge and capabilities, which is stored within community members;
- The third cycle fosters “*services & process efficiency.*” To survive in the long-term period an efficient use of the available resources is required: continuous improvement, processes and operation reengineering, capabilities development, human resources management are the most useful tools to enhance this cycle;
- The four cycle fosters “*sustainability in the mid-term.*” Organizations which do not create value for the society are destined to die, since their incapacity to build and manage a need-driven community.



**Table 2.** The First Sample of Interviewed Non-Profit Organisations.

Organisation (All Italian Branches)	Main Field of Activity	Employees/ Volunteers	Main Location of Activity
Amnesty International – Italy www.amnesty.it	Human rights protection Education	25 employees 3.000 volunteers	National level of operation
Cesvi (Italy) www.cesvi.org	Cooperation International solidarity	30 employees 350 volunteers	International level of operation
Consortium SIS (Italy) www.consortiosis.org	Teaching/training Consultancy	20 employees No volunteers	National level of operation
Enpa (Milan branch) (Italy) www.enpa.it	Animal protection Education	10 employees 50 volunteers	Local level of operation
Unicef – Italy www.unicef.it	International solidarity Education	10 employees Variable number	

This PM model was designed to support NPOs' managers to steer their organisations towards excellence, clarifying the perspectives to look at and facilitating the design of success maps. Such a model meets NPOs' main needs in terms of management (Zimmerman, 2003) and fosters the design of a new paradigm between social values and management.

The model was reviewed by a panel of practitioners in order to verify the grade of fitness with the specificities of the non-profit sector and to gather a first-hand feed-back on the underpinning hypotheses. The panel includes the PM managers of the Italian branch of five large-size NPOs (Table 2). The panel includes also a consortium of social cooperatives (Consortium SIS) in order to understand how the model performances when: (i) the dominant logics become closer to ones in the for-profit sector; and (ii) the volunteers participation decreases.

The concept of need-driven community was widely agreed upon as the idea to design a PMS around such a concept. This result is coherent with the more recent approaches to non-profit sector (Mulroy, 2003; Shaw, 2003).

## THE EMPIRICAL RESEARCH

The empirical research aimed at testing and refining the framework architecture. On one side, a feedback on the concept of "need-driven community" was required since it was the framework corner-stone. On the other side, feedbacks on the main perspectives and the virtuous cycles were required. Each capability – as main construct – was deployed in a set of dimensions (Table 3) and measurable

**Table 3.** The Dimensions Used to Operationalise and Review the Five Capabilities.

Capabilities	
Community	Community satisfaction and retention Community growth Community strengthening and competition Communication and awareness generation Community involvement
Social value creation	Project management Services/products provision
Strategy and vision	Strategy planning Strategy clarification and translation Vision and strategy spread and strengthening Strategy reformulation and broadening
Financial viability	Economic management Financial management Economic efficiency attainment
Asset management & growth	Infrastructure management and growth Knowledge management and growth Human resource management Communication development Services/product provision and innovation

indicators were associated to each dimension. In this sense, each cycle was deployed according to the perspectives it consists of. Indeed, all the capabilities involved in a cycle were listed and for each one of them at least one indicator was suggested. A semi-structured questionnaire was designed to support the research team during the interviewing process and to guarantee objectivity during data-collection (Yin, 1994). The interviews were performed face-to-face with NPO managers and volunteers. The questionnaire consisted of two main sections. The first section dealt with three aspects related to the NPO: (i) General details (activities, personnel and revenues); (ii) Planning and Performance Measurement Systems and Practices; and (iii) Community. The second part was aimed at making an explicit comparison between the PMSs used by the interviewed organisations and the framework based on capabilities.

Heterogeneous NPOs were included in the sample in order to gather data on the role that different contingencies (within the non-profit sector) play on the design of PMSs and to define the boundaries within the framework can be effectively used (Whetten, 1989). The sample details have been summarized in Table 4 and in Box 1.

**Table 4.** The Second Sample of Interviewed Non-Profit Organisations.

Organisation (Italian & English NPOs)	Main Field of Activity	Employees/Volunteers	Main Location of Activity
Aibi (Italy) <a href="http://www.aibi.it">www.aibi.it</a>	Social assistance International adoptions	32 employees 100 volunteers	International level of operation
Avis (blood donation) <a href="http://www.avis.it">www.avis.it</a>	Health care Volunteerism promotion	4 employees 66 volunteers	National level of operation
British quality foundation <a href="http://www.quality-foundation.co.uk">www.quality-foundation.co.uk</a>	Promotion of the British excellence model	15 employees 200 volunteers	National level of operation
Cesvi (Italy) <a href="http://www.cesvi.org">www.cesvi.org</a>	Cooperation International solidarity	30 employees 350 volunteers	International level of operation
Ciai (Italy) <a href="http://www.ciai.it">www.ciai.it</a>	Cooperation International solidarity	23 employees 50 volunteers	International level of operation
Consortium Cgm (Italy) <a href="http://www.retecgm.org">www.retecgm.org</a>	Consultancy Relationship management	26 employees No volunteers	National level of operation
Enpa (Milan branch) (Italy) <a href="http://www.enpa.it">www.enpa.it</a>	Animal protection Education	10 employees 50 volunteers	Local level of operation
Itaca (Italy) <a href="http://www.progettoitaca.com">www.progettoitaca.com</a>	Social assistance	135 employees 15 volunteers	Local level of operation
London Youth (UK) <a href="http://www.londonyouth.org.uk">www.londonyouth.org.uk</a>	Health care Human rights	90 employees Variable number	Local level of operation
Northampton night shelter (not available)	Health care Human rights	14 employees 10 volunteers	Local level of operation
Sol.co Bergamo (Italy) <a href="http://www.solco.it">www.solco.it</a>	Social assistance Education and research	70 employees No volunteers	Local level of operation
Terre des Hommes – Italy <a href="http://www.tdhitaly.org">www.tdhitaly.org</a>	Cooperation International solidarity	10 employees 200 volunteers	International level of operation
Unicef – UK <a href="http://www.unicef.org">www.unicef.org</a>	International solidarity Education	10 employees Variable number	Local level of operation

**Box 1: Sample Main Characteristics.**

The NPOs in the sample have the following figures in terms of:

- (a) *Fields of activity*: “cooperation and international solidarity” (5 NPOs operate in those fields), “social assistance” (4), “education and research” (3), “philanthropy, promotion of volunteerism” (2), “international adoptions” (2), “culture, sport, recreation” (1), “health care” (1), “consultancy, development and relationships management” (1), “animal protection” (1), “professional training” (1), “promotion of excellence”(1).
- (b) *Geographical borders of activity*: local (7), national (4), international (4).
- (c) *Number of branches*: only one branch (6), several branches with one controlling the others (4), many independent branches (5).

The data that have been gathered led to understand:

- The PMSs diffusion in the non-profit context;
- The perspectives evaluated and the gap between the “as is” and the “should be” PMSs;
- The main obstacles to implementation and use of PMSs in the NPOs.

### *The PMSs Diffusion in the Non-Profit Context*

The first point to be underlined is that all the interviewed NPOs agree about the importance of PM in the non-profit context (at least for mid/large-size NPOs). Despite that, the grade of diffusion of PMSs is not homogeneous. Some of the analysed organisations do not have any PMS in use and they limit themselves to an implicit measure of a set relevant indicators. In other cases, the PMS is restricted to financial measures and to the level of single program. In seven cases a quite complete PMS was observed; in nearly all these cases the implemented solution was the result of very recent or still in progress projects. This is a first confirm of literature results: PM is a new and evolving issue for NPOs. In fact, there is a diffused awareness about the potentialities of and the reasons for PMSs, but it is still not so clear how to effectively introduce them in the NPOs.

According to the interviews, the current interest of NPOs for PM grounds in the ever-increasing request for transparency (and efficiency) coming from both private and public supporters. For the same reason more and more NPOs are working to get quality certificates (four organisations were already certified ISO 9000 or EFQM, and one was operating for achieving it) or are measuring indicators to comply with regulations (e.g. “Best Value” in UK, “Accreditation”

in Italy). The two aspects are positively related: in fact, the implementation of certifiable management systems or the compliance with strict regulations helps the awareness of measurement as a hot issue for excellence.

Interesting was to gather insights on how NPO managers use collected data. The main aims are: (i) accountability and external communication (Conroy, 2002); (ii) decision making (Neely et al., 2002); and (iii) motivation (Kaplan, 2001a). The large part of interviewed NPOs use them for accountability and external communication to promote the results achieved. Only a few NPOs seem to use data to support decision making and strategy design. As Campbell (2002) argued, NPOs are still facing the difficulty to translate their mission in measurable goals and. Less NPOs link their PMSs and data to compensation. In particular, only a small part of NPOs have monetary incentives (e.g. BQF, Sol.co and UNICEF), while the large part of them identifies “moral recognition” as the key-lever to align individual behaviours to mission and strategy.

#### *The Perspectives Measured and the Gap Between the “As Is” and the “Should Be” PMSs*

Focusing on the perspectives that NPOs really measure, interviewees were asked to describe which dimensions they currently measure (in an implicit or explicit way) and which ones they would like to measure in the future. The insights were grouped according to the five perspectives described in the previous theoretical model.

Concerning the community perspective, the capability to satisfy and retain stakeholders has been widely recognised as one of the most relevant ones. Despite that, all the NPOs evaluate such a goal mainly in an informal way. None of the interviewed NPOs tracks the feedbacks received from the key-stakeholders. Those habits ground in resource scarcity (in capacity and time) and management inexperience. Many NPOs believe informal measures sufficient to assess stakeholders’ satisfaction, neglecting structured evaluations. Community growth and strengthening are not always measured, even if they are believed to be very important. This is due mainly to time constrains, thus the use of databases and proper information technologies would be useful. CESVI, for example, has a wide and detailed database to keep track of all relations with supporters (time and amount of donations, magazines and newsletters received etc.) and also of collaborators’ skills and performances. This can be a very effective starting point for monitoring and supporting relations with the community. The capability to create awareness and communicate is often implicitly estimated and just large-size organisations can afford broad public opinion surveys. Nevertheless, it

would be possible to assess communication campaigns in terms of stakeholders' acquisition. Commitment and involvement is a feature not easy to measure as well, but a more formal examination of stakeholders' contributions and suggestions could be introduced. Concerning competition, comparison between branches and benchmarking analysis are not widely performed, also because of the unavailability of data; in this respect, British organisations have more information at their disposal.

Indicators related to projects and activities are more widespread and are often ad-hoc designed. Many NPOs are organised by projects and PM deals to financial measures and cost documentation, less efforts are dedicated to a formal evaluation of the creation of social value for the recipients and the society as a whole. This is certainly due to actual difficulties in measuring the real impacts of NPOs' actions, since the final goal of NPOs is not limited to provide social services (outputs), but also to solve or ameliorate specific social needs (outcomes). Campbell (2002) named this difficulty as the PM paradox in the non-profit sector. Many NPOs have tried to design ad-hoc measures, but the focus was more on outputs (e.g. the extent to a service is delivered, the ratio "funds used for operations on total financial resources"), rather than on outcomes (e.g. utility for the recipients). The challenge is to measure outcomes in terms of impacts on local communities (Conroy, 2002). An example is represented by CIAI, which measures the effectiveness of its international adoption projects considering indicators like: education rate before the intervention in the area on education rate after it; percentage of children working before the intervention on percentage after it.

Concerning vision and strategy, all the interviewed NPOs have a formal explicit mission and recognise the importance to translate mission in concrete and value-adding actions. Moreover, all interviewees stated that operational goals of the organisation are strongly related to its mission. The existence of strategic plans and long-term goals varies greatly from an organisation to another one: NPOs that work in a local environment do not usually have long-term plans, while NPOs that work in a wider context show formalised three/five years plans. Moreover, British organisations seem to pay more attention to such an issue than the Italian ones. Capabilities related to vision and strategy are normally implicitly evaluated, since the difficulties implied in their measurement. In this sense, NPOs need the culture and skills to design specific metrics for measuring strategy effectiveness and goals achievement. Indicators linked to the percentage of objectives strictly related to strategy (on total), to stakeholders' agreement about strategic plans, and to the number of new projects launched due to strategy enlargement in the last three/five years, are a first-hand set of indicators to overcome those gaps. The presence of formal process aimed at defining and periodically reviewing

the mid-term strategies is rare. A best-practice example is the London Youth (UK) that defines the strategic plans for a three years period, then twice a year reviews the strategic plan and sets the objectives for the short, mid and long term. This is an occasion for evaluating the effectiveness of strategies and improve the way it is translated into operative plans, even if no formal measures are considered.

As to economic and financial issues, the interviewed NPOs demonstrated to already have several indicators in use and all of them are measuring the ratio between administrative expenses and total income. A few of them also estimate fund raising efficiency. Despite that, the focus is on the short-term. A formalised planning of the financial resources required to maintain and enlarge the present services seems to lack. Activities/projects are usually activate on the base of the available budgets with little attention to the further years. A major concern on the European NPOs is the absence of a capacity planning culture. The focus on the short-term and action rather than on mid-long term and strategy reduce the inclination to investment. The large part of the budget is usually allocated to projects and operations rather than to capacity building and improvement.

Coherently with the above considerations, measures about assets and capabilities management and growth are poorly implemented by NPOs. Nevertheless there is a growing attention on these themes; NPOs are aware that “good will” is not sufficient for achieving excellence and outstanding performances. The efforts are at the present towards a better management of human resources and an enhanced internal communication. However, only in few cases such issues are fully recognised. PM is focused mainly on the costs control.

All the gathered insights were synthesised a diagram (Fig. 2), clarifying the gaps between the “as is” and “should be” PMS (that within this paper coincides to the theoretical model that has been previously described). The diagram clearly highlights that the focus of the “as is” PMSs is on the financial performances, since the necessity to be accountable to donors and Government, and the more easiness in setting the metrics. Profit generation is not the main purpose of a NPO, but the financial viability remains a strict constraint for surviving in the mid/long term. Major concerns are on gathering measures about strategic issues. NPO managers seem unable to extract value from the present measures. Feedbacks about strategy effectiveness, strategy implementation and strategy communication are believed poor and worthless. The other capabilities are characterise by average results. Nevertheless, a hot issue is the definition of adequate metrics for innovation and growth. Such an issue grounds in the historical focus on short-term and the limits of this *modus operandi* are showing at the present all the shortcomings. Examples are the modest diffusion of the information & communication technologies and the poor commitment on knowledge management (Lettieri et al., 2004).

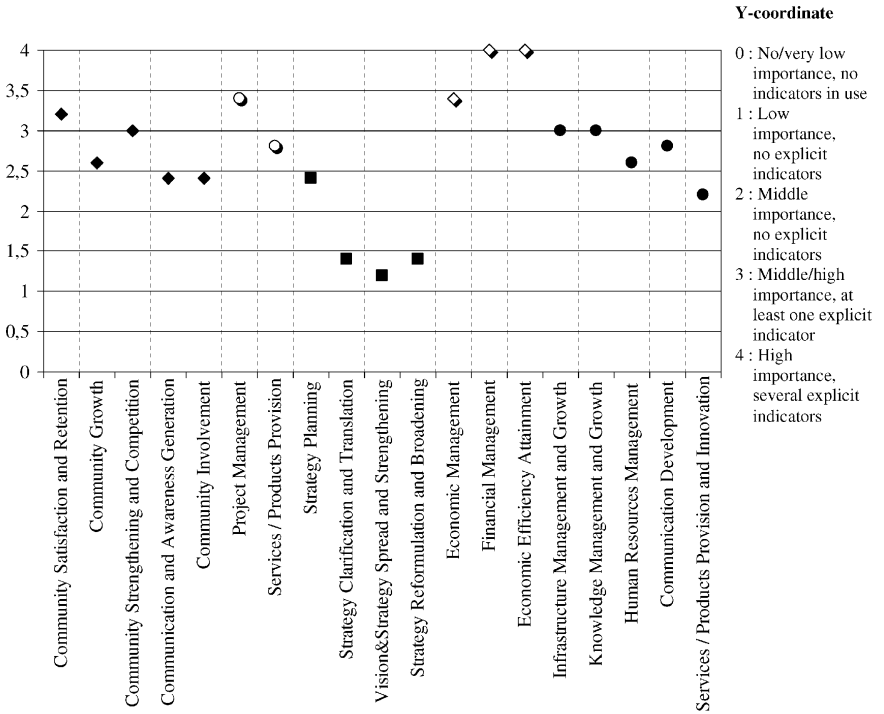


Fig. 2. The Gap Between the “As Is” and the “Should Be” PMSs in Analysed NPOs.

### *Main Obstacles to PMSs Implementation and Use*

The interviews were aimed also at identifying the main factors that can obstacle the implementation and use of PMSs. Literature suggests a set of factors (see Bourne et al., 2002; Franco & Bourne, 2003, as relevant reviews). The NPO managers were asked to evaluate the relevance of those factors and to formalise eventually new ones.

Regarding the implementation stage the main obstacles seem to be:

- The top management poor agreement and commitment;
- The modest involvement of the key-stakeholder during the metrics design;
- The insufficient training on PM and managerial culture;
- The poor efforts to communicate internally and answer to stakeholders questions.

The modest attention to long-term and the desire to invest all funds in concrete actions reduces top-management commitment on PM issues. PM is believed to be



worth mainly for accountability rather than for steering. In this sense, the metrics for measuring are not the result of the negotiation among the key-stakeholders (Neely, 2002), but a mix between normative constraints and adaptation of for-profit models (Cutt & Murray, 2000). Internal communication is also poor. Communication should aim at answering to managers and employees' questions regarding PMS and its purpose. Additionally, communication should respond to each individual's concerns on how the system will affect his day-to-day work or what he is going to be measured on. A modest managerial culture and inexperience on management often emphasise the previous shortcomings.

Regarding the use stage, the main obstacles appear to be:

- The low frequency that characterises metrics refresh;
- The absence of dedicated and professional staff for managing PMSs;
- The modest contribution from data analysis and interpretation for decision-making;
- The intrinsic difficulty to evaluate volunteers and assign rewards.

The effective use of PMSs seems to be obstacles by two main group of factors. On one side, the way PMSs are managed seems to be inadequate. The interviews have shown two main concerns. Many NPO managers complained that measures are refreshed sporadically and their capacity to collect relevant information is progressively reduced. At the same time, the staff in charge for PM seems to lack the necessary competencies and professional background. In four organisations within the sample the experience of NPO managers appeared inadequate and in six of them it appeared just sufficient. On the other side, the outputs generated by the PMSs seem to be worthless. The data are perceived unable to support adequately decision-making and to sustain motivation through an ad-hoc reward system for volunteers. In this sense, the two main benefits (steering and motivation) from PM are missing.

## CONCLUSIONS

The present research allowed to contribute to the actual understanding of the current practices of PM in the non-profit sector. The introduction into the non-profit sector of both managerial culture and for-profit models is on the agenda of academics, practitioners and politicians. The insights gathered from the empirical analysis are an interesting base for further researches.

The starting point is the recognition of the difficulty to clarify the concept of excellence for a NPO, since the absence of a measurable purpose as profit generation. On the base of the different contributions in the literature, a definition

has been proposed. Excellence is a condition when a NPO is able to build and manage a need-driven community that generates sustainable outstanding outcomes in a capable, cost-effective and ethic way. In this sense, five criteria (based on the concept of capabilities) have been defined. Those capabilities were synthesised in a model, where the main relationships among them were deployed.

The main conceptual blocks of the PM framework were reviewed by a former panel of NPO managers from the non-profit sector and by a latter case-studies analysis. The interviews supported the idea of NPO as manager of a need-driven community and evaluated as positive the framework fitness to their needs. Main gaps exist between the “should be” and the “as is” PMSs. The main shortcomings on the capacity of the present PMSs to measure strategy effectiveness, strategy implementation and strategy communication. The arguments are both the large focus on the short-term that characterises NPOs top-management and the difficulty to measure outcomes and social value generation. Financial indicators seem to be widely used within the non-profit sector. In fact, although the profit generations is not the primary purpose, the financial viability is a *conditio sine qua non* for the sustainability in the mid-long term. Heterogeneous behaviours were observed about the other perspectives (social value creation, community building and management, asset management and growth). A list of the main factors that obstacle the implementation and the use of a PMS has been provided. They are related to the way PMS are design and to the results they permit to achieve.

The previous findings help to understand the complexity of PM in the non-profit sector and which are the main issues to be solved. The difficulties to define to whom being accountable (who are the key-stakeholders?) and to match “good will” with “management” (how to match social value with for-profit logics?) are only few of the several questions that require an answer. In this sense, the paper aims at stimulating further researches on PM in the NPOs in order to gather deep insights and fill the present gaps in the literature.

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# THE STAIR: A DUAL CORE MODEL FOR CHANGING PUBLIC SECTOR PERFORMANCE

Mary Zeppou and Tatiana Sotirakou

## ABSTRACT

*This paper argues that public sector performance depends on how well public organizations perform two distinct but complementary roles: entrepreneur and guardian of public interest. It is suggested that the successful enactment of this dual role rests on the organization's ability to use the STAIR model (Strategy-Targets-Assignment-Implementation-Results). In this paper the findings of a research survey – undertaken within the context of the Greek public sector, are presented. The results reveal that enhancing performance in the Greek public service requires competence in managing a certain set of cultural and operational variables – which are embedded in the STAIR framework – i.e. “behavioral” values, “reward” values “creative & proactive” values, and “e-process” operations.*

## 1. INTRODUCTION

Market globalization and competition, the impact of information technology and the emergence of the knowledge society are placing unprecedented competitive pressures on governments and their organizations. Meeting these challenges

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**Performance Measurement and Management Control: Superior Organizational Performance**

**Studies in Managerial and Financial Accounting, Volume 14, 375–406**

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ISSN: 1479-3512/doi:10.1016/S1479-3512(04)14015-X

requires increased organizational performance and productivity (Box, 1999; OECD, 1997; Pavcnik, 2002). The achievement of these goals raises numerous questions about performance, however the “simplest” and preliminary ones are *what is performance, and how it can be enhanced*.

Current models on performance measurement view organizational performance as the thinking about the wants and needs of all the various organizations’ stakeholders and how to deliver value to all of them (Neely & Adams, 2000). Kaplan and Norton (2000) in their well-known model of performance measurement the “Business Balanced Scorecard – BBS” supplement traditional financial measures with criteria that measure performance from three additional perspectives – customer satisfaction, internal processes, organizational innovation and improvement activities.

Within the public sector, a regime of compliance with rules and regulations rather than an ethic of monitoring administrative procedures and controlling employee performance are fast becoming remnants of a past era (Box, 1999; Denhardt & Denhardt, 2000; Osborne & Gaebler, 1992). Today, organizations’ success depends more and more on innovation, adaptability, flexibility and creative thinking. To fulfill these difficult and complex roles, public managers turn to specific approaches practiced in the private sector, such as total quality management (TQM), business process reengineering (BPR), strategic management, benchmarking etc. (Holloway et al., 1999; Rosenhoover & Kuhn, 1996).

However, in the first instance, relatively little is known about the implementation of such performance management techniques in public agencies and even less about their success (Holloway et al., 1999; Mandell, 1997; Rosenhoover & Kuhn, 1996; Vinzant & Vinzant, 1996). Secondly, the relevance of these private sector models to the civil service remains questionable since research has shown that the introduction of these models is characterized by definitional inconsistencies, which demonstrate that the maturity and acceptance of these practices is still problematic (Holloway et al., 1999; Mandell, 1997; Rosenhoover & Kuhn, 1996; Vinzant & Vinzant, 1996).

Hence public sector performance depends on a meticulous examination of what government does and how it does it. We argue that government acts within two distinct but complementary roles: as *entrepreneur* and *guardian* of public interest. The first role is dictated by the need for public sector responsiveness to market conditions. The second stems from the public sector’s mission to ensure citizens’ rights and well being.

The aim of the present study is to examine to what extent the public sector performs these roles adequately. And also to investigate the variables which can lead to the public sector performance.

The “*STAIR* (Strategy-Targets-Assignment-Implementation-Results) – *model*” has been used in order to pursue these objectives (Zeppou & Sotirakou, 2002).

## **2. THE STAIR MODEL: A USEFUL TOOL FOR THE REALIZATION OF PUBLIC SECTOR’S DUAL ROLE**

Globalisation exerts powerful pressures on national governments and public administrations. Most distinctive are the pressures regarding public management effectiveness and the internationalization of the civil service.

Traditional bureaucracies are characterized by excessive rules allied to rigid budgeting and personnel systems and the preoccupation with control. Such bureaucracies are described as ignoring of citizens, a hindrance to innovation and as serving their own needs (Osborne & Gaebler, 1992). The OECD countries have come to the conclusion that effective and efficient policy making and policy implementation are the key to economic development and the key to attracting direct foreign investment or to retaining foreign investment within their countries (OECD, 1997).

Public organizations and agencies, in many countries, have initiated efforts to increase productivity and enhance performance at both national and international level. Rather than focusing on controlling bureaucracy and becoming preoccupied with roles and regulations in the delivery of services, public administrators have to be flexible, adaptable, effective, efficient and cost-conscious. In so doing, they have to introduce new, leaner institutions – setting targets and charting the road to achieving them (Kettl & DiIulio, 1995; Osborne & Gaebler, 1992; Osborne & Plastrik, 1997).

This includes the ability to define strategic goals and programmes, to allocate resources according to defined and agreed goals and to guide and evaluate public administration according to a result oriented and value for money approach.

However, in the rush to modernize we must not forget that government belongs to its citizens. As Denhardt and Denhardt (2000) suggest, public managers should focus on how to empower citizens, put them at the forefront and create a collective sense of the public interest through open dialogue, trust and collaboration.

The situation demands that traditional public administration be transformed into a managerial entrepreneurial entity without disregarding the government’s principal mission to protect and promote the public interest and democratic values. The public sector must act as an *entrepreneur* and as *guardian* of the public interest. Hence the dual role of public administration emerges.

The accomplishment of these roles requires that civil servants be equipped not only with knowledge and technical skills but that they are also instilled with the

ability to espouse the values and attitudes which promote the duality of the Public Sector role.

Moreover, increased globalization has brought about a fundamental rethinking of how to drive the public sector and how to lead complex organizations through a cycle of continuous improvement and innovation. Further to intra-organizational complexities, the external environment is equally complex and chaotic. Steering into the direction of global cohesion involves greater alignment of national policies and organizational cultures in line with international standards and practices.

Terry (1998) has suggested that public entrepreneurship threatens to undermine such democratic and constitutional values as fairness, justice, representation and participation. The dual role of the public administration implies a set of ideas in conflict with or contradictory to a governance system which struggles to place citizens at the centre.

The market environment within which the relationship between the public sector and citizens is taking place is understood to be influenced by self interest, involving transactions similar to those occurring in the market place. Within its entrepreneurial role, government also has a moral obligation to ensure solutions that are generated through processes that are fully consistent with the norms of justice, fairness and non-discrimination. The quest for public sector performance has obliged governments around the world to redefine standards and practices in the establishment of these new roles.

Striking the balance between the core public administration values of justice, transparency, openness, accessibility, non-discrimination and the changing public management requirements of citizen focus and results orientation, effectiveness, efficiency, quality in service delivery, is indeed the challenge for public administrators today.

As Nichols (1997) pointed out:

...seven out of every ten organizations hoping to reinvent themselves fail in the attempt...merely setting off on the road to reengineering does not guarantee reaching the destination (p. 405).

Organizational change and transformation in the public sector will not be sustainable and changes are likely to be transitory if modernization is not linked to performance measurement (Durst & Newell, 1999; Nichols, 1997). What is needed is a goal-driven performance measurement system – a hierarchy of performance goals and measures which tracks the strategy design and implementation. This can contribute to mission effectiveness, target accomplishment and overall organizational performance (Kaplan & Norton, 1992; Nichols, 1997).

Consequently, the development of a management and measurement performance framework for public administration can prove to be a valuable tool in



changing the way of running public organizations and helping them to adapt successfully to the post modern era (Ammons, 1996; Poister & Streib, 1999).

As a response to this challenge we offer the STAIR model – which incorporates the operations and values implied by the duality of the public sector role.

### *2.1. The Conceptualization of the STAIR Model*

In recent years, governments around the world have enthusiastically adopted the idea that the use of performance management and measurement systems can improve public sector performance (Ammons, 1996; Greimer, 1996). As governments face the demands for a result-oriented and cost-conscious public administration, which provides high quality services at affordable prices and satisfies citizens' needs, they have drawn on proverbs such as “what gets measured gets managed” and “you get what you inspect not what you expect” (Nichols, 1997; Norman, 2002; Simons, 1995).

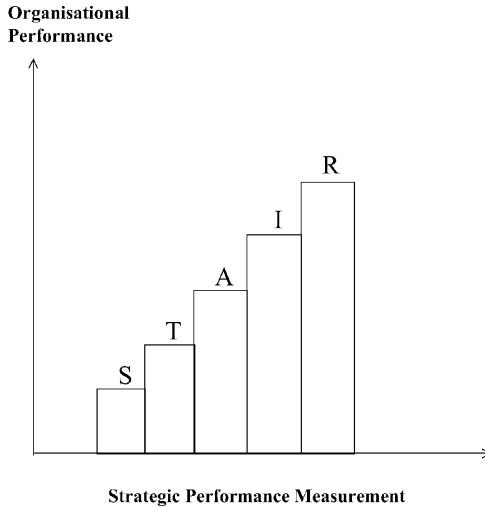
Restructuring government services and improving public sector performance depends on how able organizations are to design and implement their strategies as well as on the introduction of a performance measurement system, which effectively tracks the planning and delivery of these strategies (Nichols, 1997).

Kaplan and Norton (2000) in their book “The strategy focused organization” argue that strategy execution has become the corporate challenge of our times and the number one non-financial driver of future performance. In order to ensure the strategy gets executed, they continue, organizations must follow the five principals of a strategy focused organization:

- (a) translate the strategy into operational terms;
- (b) align the organization to the strategy;
- (c) make strategy everyone's everyday job;
- (d) make strategy a continual process;
- (e) mobilize change through executive leadership.

The results of a recent survey undertaken by the IMA (Institute of Management Accounts) on performance management and measurement systems, identify a gap in the effectiveness of performance measures in communicating and supporting strategy, due to the separation between performance measures and strategy (Frigo, 2002).

Additionally, a literature review on performance measurement leads to the realization that, although conceptual frameworks for performance measurement and management system design have been constructed, few are the contributions as to *how* to translate a continuous development process into a practice which can



*Fig. 1. STAIR Model.*

lead to performance improvement (Neely, 2002; Rentens et al., 2002). Therefore, there is still a need to develop and apply a step-by-step approach for deploying and implementing a comprehensive, integrated performance measurement and management system.

Following the above mentioned literature recommendations, we have devised the STAIR model (Fig. 1) which aims to offer a comprehensive tool for improving government's performance. Based on the results of the pilot implementation of the STAIR model in a Greek public administration department, we argue that STAIR is a step-by-step approach that bridges the gap between performance and strategic management and can lead to organizational success (Zeppou & Sotirakou, 2002).

According to the model's rationale the principal steps for changing organizational performance are:

- (S)trategy: design strategy, clarify strategy, communicate strategy and gain consensus
- (T)argets: translate strategy into specific objectives and clear concrete targets; operationalise targets; convert targets to performance indicators
- (A)ssignment: assign projects/targets to lower levels through a bottom-up process; develop specific action plans
- (I)mplementation: implement action plans through the alignment of all internal operational and cultural subsystems to the agreed strategy

(R)esults: track performance against the established strategic and operational goals, as described in the relevant action plans; review and take action based on results (Zeppou & Sotirakou, 2002).

The conceptualization of organizational performance in the public sector and the problems of performance measuring have produced a lot of writing on the subject (Jackson, 1995). The performance indicators published by government organizations have been criticized for their emphasis on the absolute level of output or input/output ratios rather than attempts to improve performance (Carter, 1989; Hoggett, 1991).

Although the need for performance measurement is great, the nature of public services makes their measurement very difficult. Mainly, service organizations experience difficulties in articulating a coherent set of objectives and also in defining customers and assessing their satisfaction (Kaplan & Norton, 2001; Moriarty & Kennedy, 2002).

STAIR considers organizational performance as a multidimensional concept, which is based on various elements such as goal accomplishment, service quality and standards, speed in service delivery, employee productivity, organizational learning and innovation. All the above dimensions have been extracted as critical factors in defining performance (Hoggett, 1991; Jackson, 1995; Shon, 1983).

In addition, STAIR views performance as a reflection of the strategy and suggests that the development of a performance measurement system – despite its difficulties, enables an organization to prioritize and understand what is important for its success. In other words, we argue that the measurement system must reflect the strategy and develop with the strategy. The measurement system isn't static, it should change and adapt as the strategy changes. As Zarifian (1997) has pointed out – an outdated performance measurement system could even block the benefits.

Recent literature in this field suggests new kinds of purposes for using performance measurement. These include using measurement to support the implementation of strategy and innovation as well as measuring key intangible assets (Frigo & Litma, 2002; Kaplan & Norton, 2000). Before setting up a measurement system, it is important to answer the question “what is the purpose of measuring” (control, improve, benchmarking, etc). Different goals of measurement require different approaches.

Up until the 1980s the emphasis was on financial and productivity measures and most development was related to traditional management accounting. The limitations of traditional performance measures e.g. measures are mainly focused on accounting and financial performance; use too many metrics; are not focused on customer and other stakeholders; lack alignment between operational metrics

and core organizational objectives and strategies; and utilize metrics that drive the wrong behaviors (Brown, 1996; Kaplan & Norton, 1996; Morgan & Schiemann, 1999), fuelled the demand for new and better performance systems.

In the 1990s, a great number of performance measurement frameworks were developed such as the balanced scorecard, the EFQM, the performance prism, the activity based costing, the cost of quality, benchmarking etc. that Neely (1999) labeled this movement a “performance measurement revolution.”

Very briefly, a review of the literature reveals that there was an evolution of the area of performance measurement moving from the phase of “measurement myopia” where it was realized that organizations were measuring the wrong things, to the phase of “measurement madness,” where organizations were obsessed with measurement and wanted to measure everything (Neely, 1999).

Performance measurement is widely discussed but it is rarely defined because of the many disciplines involved (managerial accounting, operations management, strategic management, human resource management, quality management etc), the existing literature is extensive (Neely, 1998). A good definition is:

a performance measurement system enables informed decisions to be made and actions to be taken because it quantifies the efficiency and effectiveness of past actions through the acquisition, collation, sorting, analysis, interpretation, and dissemination of appropriate data (Neely, 1998, p. 6).

However, more recently many authors have argued that a Performance Measurement System can be used as an organizational framework for successful strategy implementation and also as a useful device that assists strategic management, just like any other organizational system (Kaplan & Norton, 2000; Nicholson & Done, 2002). For example Kaplan and Norton (2001) state that:

... it's not just what is measured but how the measurements are used that determines organizational success (p. 149).

How performance measurement will be used to support decision making, decision taking, and decision evaluating processes plays a key role in organizational success (Martins, 2002).

The STAIR, while broadly accommodating existing frameworks, aims to create consistency of vision and action in a way that other frameworks do not suggest. In particular, the STAIR framework consists of three distinct but complementary stages: strategic planning (STA), strategic implementation (I), strategic results evaluation (R) (Fig. 2), which represent the three critical phases of an organization's production cycle.

STAIR is based on the principals of systemic management theory (Barnard, 1938) and incorporates the suggestions derived from systemic theory application in the public sector – viz. it takes into account the recommendations made

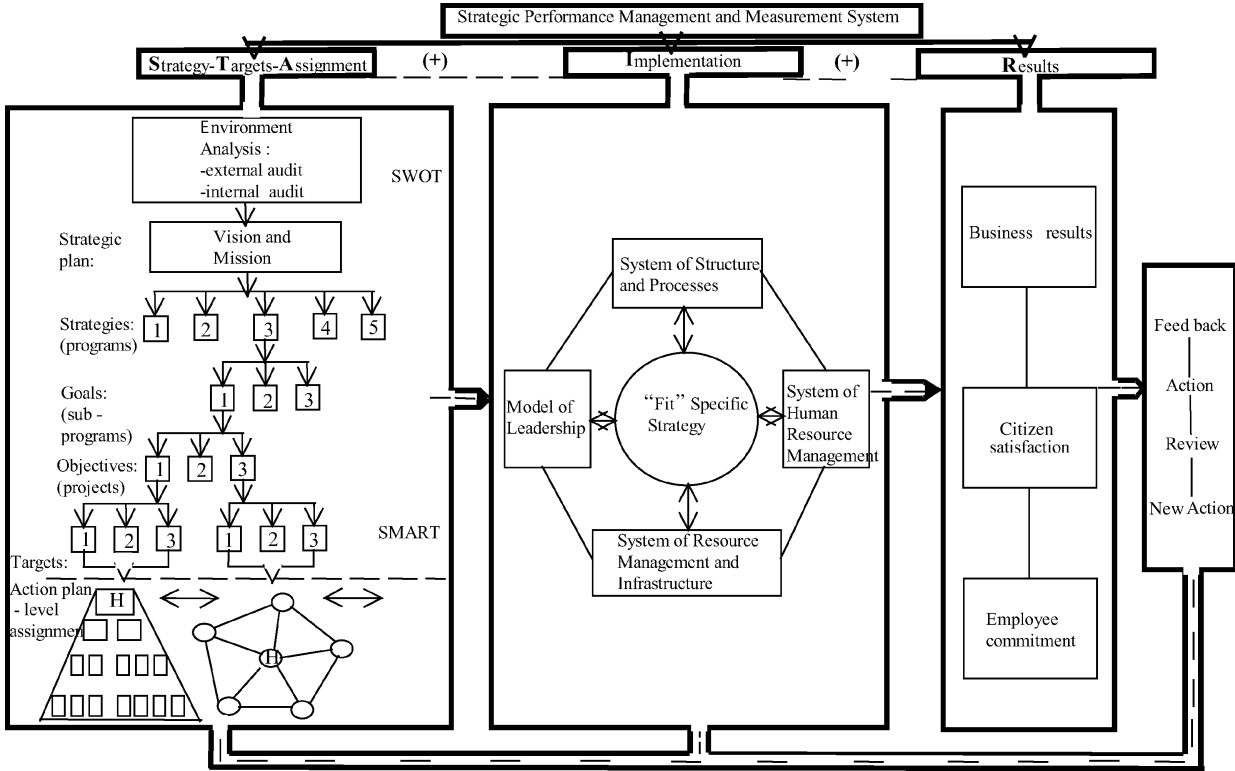


Fig. 2. STAIR Deployment.

from the implementation of various models in the public context, such as the Management by Objectives Model (Drucker, 1958), Total Quality Management Model (Deming, 1988; Juran, 1974), Excellence Model (EFQM, 1999), New Public Management Model (Osborne & Gaebler, 1992).

We argue that the STAIR is an overarching approach, which integrates contextual, procedural and assessment actions into a cohesive whole, such that public sector organizations can develop in a systemic and holistic way.

Especially, in the context of the public sector where contemporary demands call for a government that can steer rather than row, empower citizens rather than serve, prevent and be proactive rather than cure and just react, fund outputs and results rather inputs, be flexible, open, transparent and adaptable rather than rigid, prescriptive and procedural driven, a performance management and measurement system is required, which allows management to read and interpret performance from several perspectives simultaneously (Alford & Baird, 1997).

Thus, the STAIR performance model focuses on the whole organization in order to highlight how each and every single subsystem is performing and how it is contributing to the achievement of the organization's strategic goals.

More specifically the STAIR model is characterized by two mutually reinforced core elements: an operational and a cultural. The operational aspect of the model contains a set of activities that the organization must execute successfully in order to enhance its performance. While the cultural aspect includes the set of values that the organization must cultivate in order to achieve sustainable performance and lasting change.

## *2.2. Operational Core of the STAIR Model*

The operational core of STAIR comprises a cluster of activities for each of STAIR's phases, followed by specific measures to support the successful implementation of these activities. More specifically the activities are as follows.

### *2.2.1. Activities in (STA) Phase*

- scanning of the environment (SWOT analysis, trend analysis, benchmarking, etc);
- acknowledging needs of stakeholders;
- formulating strategic plans (based on external and internal environment audit);
- converting strategy to key goals/objectives and SMART targets;
- building consensus and understanding of the common goals amongst employees;
- assigning projects to lower levels through a bottom-up process;
- developing small scale feasible action plans.

### 2.2.2. Activities in (I) Phase

- implementing specific action plans through aligning the various sub-systems: (1) structure and process management system (e.g. identifying the critical internal process steps, measuring their performance and improving them; clarifying work roles and work flow etc.); (2) leadership system (e.g. team building, participation, justice and fairness; open communication, trust; inspiring and motivating; innovating and initiating change); (3) human resource management system (e.g. job involvement/responsibility/power/identification/accountability; job satisfaction); (4) infrastructure and other resources management systems (e.g. management of economic resources and infrastructure; technological support/speed in data processing/reliability and validity of data) to fit in with the specific targets developed;
- assessing progress in implementation; identifying the pitfalls; revealing the way things go (well or otherwise); formulating change or improvement plans if needed; acting on these plans.

### 2.2.3. Activities in (R) Phase

- measuring outputs
  - target accomplishment for each level
  - citizen satisfaction
  - employee commitment
- reviewing outputs
  - diagnose problems – identify solutions
  - feedback outputs to those responsible for action
  - take action based on outputs – introduce change – continue to improve

STAIR emphasizes the use of measurement not just as a tool in assisting the realisation of the three strategic management phases but as an important component of each collection of activities in every corresponding stage of the chain. Systematic and systemic thinking, measurement and action in terms of an organisation's context, inputs and outputs are the crucial factors for performance improvements and constitute the antecedent variables of the operational core of STAIR model.

An interesting argument underpinning the STAIR model development is that efforts in translating strategy to performance indicators encourage managers and staff to pose critical questions about strategy implementation and think about the links between measures (Neely, 2002) and their correspondence to STAIR's three phases. Namely, thoughts and team discussions about how targets can be translated into tangible outcomes can reinforce organizational success by clarifying strategic goals, creating a common language among employees

and cultivating a strategic dialogue (Sedecon Consulting, 2001). Measures operationalize strategy, so everyone understands “what” is happening, “why” it is happening, “where” it is happening, “who” is responsible for it, “when” it will be achieved, “how” it is measured and “how” it can be improved.

Too much focus on measurement can lead to goal displacement if staff concentrates on goal measurement as the end result, rather than viewing the process of measurement as a means to achieving goals (Norman, 2002). More quantification will not necessarily lead to results, thus public administrators need to know when to use the science of measurement and when to use the art of management (Waldersee, 1999). Ability in the right use of the STAIR can provide the required balance between measurement and management.

All in all STAIR simultaneously “manages and measures” strategy design, strategy execution and strategy evaluation in an effort to enhance government performance. In other words, the model suggests that organisational performance depends on how well a government organization can: manage its context (STA-variable); manage its inputs and processes (I-variable); and manage its outputs and feedback (R-variable) – namely, how competent the organisation is in climbing the steps of the STAIR.

### 2.3. *Cultural Core of the STAIR Model*

We further suggest that the STAIR is not just the implementation of new techniques but it carries with it a new set of values inherent to the dual public sector role mentioned above. It becomes evident that successful delivery of the chain of activities included in the operational core of the model implies an organizational culture that reinforces a collection of values quite different from those imposed by the bureaucratic governance system of public administration. The notion “from compliance to commitment” underpins the cultural core of the STAIR model and penetrates every single aspect of its whole process. The *value chain* can be analyzed as follows:

- citizen focus;
- result orientation;
- meritocracy, transparency;
- systemic and strategic thinking, acting and measuring;
- openness, collaboration, participation, consensus;
- employee empowerment, trust;
- flexibility, innovation, knowledge creation;
- continuous self assessment and self development.



However, organizational culture is not an easy or readily accessible concept to use. It is defined in a number of ways ranging from “it’s the way we do things around here” (Deal & Kennedy, 1982), to “a system of meanings” (Gregory, 1983). Many authors have emphasized that cultural values and norms do more than provide prescriptions and prohibitions. They provide a rationale for the members of the organization on how to conduct themselves towards one another and the organization as a whole in relation to the environment (Harrison, 1972; Hofstede, 1991, 2002). Cultural values and beliefs shape the behavior of people in organizations and exert a strong influence on the functioning of its whole system (Legge, 1995; Metcalfe & Richard, 1987).

To conceptualize a culture, it is necessary to focus and understand the underlying taken-for-granted assumptions that determine how staff members behave, perceive, think and feel within the organization’s environment (Schein, 1984). In other words, organizational culture can be viewed as a set of values, beliefs and social norms which tend to be shared by its members and in turn, tend to influence their thoughts and actions (Flamholz, 1983; Hofstede, 1991, 2002).

Concentrating on the cultural core of the STAIR it is apparent that the cultural values, which the model tries to reinforce, run counter to the traditions of public administration. Many authors have stressed that the bureaucratic values of the civil service clash with concepts such as satisfying citizens needs; measuring quality, efficiency and effectiveness in service production; building consensus through a bottom-up process and participation management; encouraging employee autonomy and initiation; reinforcing trust and collaboration relationships within and between internal and external environments (Denhardt & Denhardt, 2000; Gray & Jenkins, 1995; Ingraham et al., 2000; Osborne & Plastrik, 1997).

Reviews on the results of the various modernization efforts have shown that the prevailing bureaucratic culture overwhelmed by the dominant element of adherence to inflexible rules and regulations impose hidden constraints on performance. Namely, for the majority of organizations, pursuing modernization or reform initiatives the obstacles to change were the cultural assumptions (Denhardt & Denhardt, 2000; Dunleavy & Hood, 1994; Flynn, 1993; Fox & Miller, 1995; Frederickson, 1996; Metcalfe & Richard, 1987). Political pressure may override some of these obstacles but other more systematic interventions, designed to reduce resistance to change and mobilize support are needed.

Coping with such cultural assumptions requires the establishment of a “strong” institutional framework which instills the above mentioned values and norms of action. The importance of having a “strong” culture has been stressed by many well known authors who suggest that effective or “strong cultures possessing particular values, contribute to exceptional levels of organizational performance (Kanter, 1989; Morgan, 1988; Peters & Waterman, 1982).

We argue therefore, that the everyday use of the STAIR model can prove a valuable tool in overcoming such cultural difficulties. In particular, the enactment of the new roles and responsibilities generated by the operational core of STAIR, will influence the behavior of people working in the system.

Additionally, high levels of performance and effectiveness in managing large-scale cultural change is determined by the willing consent and active cooperation of public administrators at every level (Argyris & Shon, 1996; Metcalfe & Richard, 1987; Mowday et al., 1982; Peters & Waterman, 1982; Porter et al., 1974). Winning the support of those involved in implementing change depends on the rewards or incentives offered (Guest & Peccei, 1994; Legge, 1994; Pettigrew & Whipp, 1991).

Therefore, we further argue that the implantation of STAIR's values into appraisal and reward systems will, on the one hand, motivate employees to adapt to these new cultural assumptions and actively implement change, and on the other will assure continuity in use of STAIR on a daily basis. There is considerable research evidence that organizational capabilities such as flexibility, creativity, innovation, strategic thinking, active participation and initiation, continuous self-development and learning – embedded in STAIR's reward system – are the sources for sustainable high performance and lasting reform (Argyris & Shon, 1996; Beer, 2001; Collins & Porras, 1994; Pfeffer, 1998).

Consequently, in the present research we have used the STAIR model as a framework for changing public sector performance. More specifically, we argue that public organizations' effectiveness in the performance of their dual role depends heavily on how competent they are in climbing up the steps of the STAIR. In other words, "the more the competence in managing the operational and cultural core of the STAIR model the higher the performance," constitutes the basic proposition of the present study.

### **3. RESEARCH METHODOLOGY**

The Greek public sector was the context in which the research was undertaken. Greece, following the recommendations of the European Council of Lisbon 23–24/3/2000 and Feira 19–20/6/2000, formulated the Modernizing Government Act "Politia" published in 2001. The Act seeks to align Greek civil service policies and practices with those of other member states. In particular, the Act requires every public organization to set goals, to measure performance and report on accomplishments ("Politia Reform Act" – Ministry of Public Administration, 2001).

Within the context of the present research a survey was conducted – using the STAIR framework. In particular, a questionnaire was constructed which operationalised:

- (i) the dependent variable of the model – Organizational Performance as well as;
- (ii) the independent variables of the model – Competence in managing the operational core – viz. the activity variables per STA-I-R phases (see Section 2.2) and – Competence in managing the cultural core – viz. the value variables underpinning the STAIR model (see Section 2.3).

The questionnaire was administered to newly-appointed civil servants (1 to 3 years of service) – from various government departments, who participate in the introductory training program, an orientation of the “Politia Reform Act – 2001,” delivered by the Greek Civil Service College. The aim of the training is to familiarize the participants, who are actively involved in the implementation of the “Politia” reform program, with its principals as well as to help them to move the “Politia” strategy forward.

A draft of the questionnaire was pilot tested on a sample of 65 candidate participants in the “Politia” training program. In the light of their answers, some minor changes were made to the questionnaire items. The modified version of the questionnaire was then used in the main survey. The survey was conducted between February and June 2002. The number of participants in the 18 programs offered by the College was 365 civil servants. All of them were asked to contribute to the research by filling in the relevant questionnaire.

We received 348 fully answered questionnaires (response rate 95%). The respondents were asked to rate the degree of ability or influence or importance – depending on the content of the variable – according to their perception (choosing between five response categories). The characteristics of the respondents are presented in Table 1.

**Table 1.** Sample Characteristics.

Organization (%)	Job Description (%)	Education (%)
Ministry (33.4)	Management of projects (48.0)	PhD (2.3)
Agency (8.9)	Administrative support (22.0)	MA (14.4)
Local authority (19.3)	Medical & medicine related (2.5)	BA (21.0)
Hospital (38.5)	Nursing (18.5)	Diploma (36.5)
	Technical management of infrastructure (9.0)	Secondary education (25.6)
Total (100)	100	100

The statistical analysis performed on the data collected was based on three main techniques: factor analysis, correlation analysis and multiple regression.

## 4. RESULTS

This section presents the details of the statistical analyses performed on the data collected in order to test the survey objectives, namely:

*1st objective:* to identify the degree and nature of performance in the public sector.

*2nd objective:* to investigate the effects of the STAIR's operational and cultural variables on the public sector performance.

### 4.1. 1st Objective

*Dependent variable:* Organizational performance.

Organizational Performance (OP): was measured by asking respondents to rate their organization's level of performance on a six-item scale including the following performance criteria: goal accomplishment, service quality, time efficiency, employee productivity, organizational learning and innovation. The reliability of the scale was Alpha: 0.87. Factor analysis was used in order to search for and define the fundamental constructs or dimensions assumed to underlie the original OP variables (Table 2).

The analysis extracted one factor, which was labeled "organizational performance" and was responsible for 61% of the total variance in the data. The

**Table 2.** Component Matrix (OP) Variable.

Organizational Performance	Component 1
Service quality	0.865
Time efficiency in service delivery	0.813
Innovation	0.787
Organizational learning	0.769
Employee productivity	0.723
Goals accomplishment	0.706
% of Variance	Cumulative %
60.703	60.703
Mean score OP: 2.57	

high values of the factor loading corroborate the validity of the scale. Moreover, it was found that the level of public organizations' performance is low (mean score 2.57).

#### 4.2. 2nd Objective

*Independent variables:* Competence in managing operational core/STA-I-R activity variables and competence in managing cultural core/STAIR underlying values.

##### 4.2.1. Competence in Managing (STA) Variable

This variable was measured by asking the survey participants to indicate how capable (Honadle, 1981; Wang & Berman, 2000) the organization is of performing the set of the 14 activities, included in the (STA) phase of the model (see page 386). The reliability coefficient of the scale was Alpha: 0.88. Factor analysis was performed and two factors were identified (Table 3).

**Table 3.** Rotated Component Matrix (STA) Variable.

	Component	
	1	2
Strategic thinking		
Effectiveness in action plan design	0.845	
Effectiveness in bus plan design	0.838	
Effectiveness in strategy's communication	0.778	
Effective assignment of strategy	0.711	
Citizens requirements	0.630	
Agreeable targets	0.621	
Employees needs	0.612	
External environment trends	0.556	
Staff participation in objective setting	0.391	
Strategic measuring		
Realistic targets		0.704
Measurable targets		0.651
Specific targets		0.635
Time bound targets		0.583
Internal environment conditions		0.453
	% of Variance	Cumulative %
	34.015	34.015
	18.802	52.817

Factor 1 named as “strategic thinking” accounts for 34.01% of the total variance and factor 2 named “strategic measuring” accounts for 18.80% of the remaining variance. The results of correlation analysis between the two factors and organizational performance reveal that “organizational performance” is strongly influenced by “strategic thinking” ( $r: 0.65; p < 0.01$ ) and positively but not so highly influenced by “strategic measuring” ( $r: 0.24; p < 0.01$ ). Although both factors can be seen as important correlates of organizational performance, the ability of public organizations in strategic thinking and measuring is low (Mean: 2.60 and 2.75 respectively) (Table 7).

#### 4.2.2. *Competence in Managing (I) Variable*

This variable was measured by asking respondents to point out the effectiveness the organization has in implementing a set of 19 activities corresponding to the (I) phase of the STAIR model (see page 387). The reliability coefficient of the scale was Alpha: 0.93. The factor solution (Table 4) indicated that 61.27% of the total variance was represented by the information given in the factor matrix.

The first factor accounts for 35.80% of the total variance, the second factor accounts for 15.94% of the remaining variance and the third factor accounts for 9.52% of the variance remaining after the two previous factors had been extracted. Interpreting the factor matrix we name the factors as follows: “transformational leadership,” “e-process management” and “staff initiation.” Moreover, all of them have positive correlation with OP ranging from  $r: 0.58$  and  $p < 0.01$ ;  $r: 0.46$  and  $p < 0.01$  and  $r: 0.19$  and  $p < 0.01$  accordingly. Finally, public organizations were found to have medium to low competence in managing the above three factors (Mean: 2.30; 2.32; 3.07 respectively) (Table 7).

#### 4.2.3. *Competence in Managing (R) Variable*

Respondents were asked to rate the ability of their organization to evaluate results, citizen and staff views as well as their capability to feed back outcomes and introduce change. As we have already discussed, these activities constitute the (R) phase of the STAIR model (see page 387). The reliability coefficient of the scale was Alpha: 0.92. One factor was derived by the application of factor analysis on the 7-item scale, which explains the 67.40% of data variance (Table 5).

We label this factor as “stakeholders views,” since measuring and incorporating citizen and staff suggestions emerged as the more important underlying dimension of the factor. Strong and positive correlation found also between “stakeholders views” and OP ( $r: 0.66; p < 0.01$ ). However, the mean score of this variable was low: 2.5 indicating that public organizations are not used to measuring stakeholders’ views (Table 7).

**Table 4.** Rotated Component Matrix (I) Variable.

	Component		
	1	2	3
Transformational leadership			
Leadership effectiveness to rule by example & gain trust	0.829		
Leadership effectiveness to inspire and motivate staff	0.825		
Leadership effectiveness to communicate & listen staff views	0.817		
Leadership effectiveness to recognize & reward hard effort	0.815		
Leadership effectiveness to cultivate staff job autonomy & initiation	0.789		
Leadership effectiveness to manage projects implementation	0.739		
Strategic implementation effectiveness	0.696		
Leadership effectiveness to innovate & implement new ideas	0.680		
Staff involvement-initiation	0.621		
Objective job evaluation	0.607		
Flexibility in law interpretation	0.559		
Data openness – transparency	0.501		
e-Process management			
IT systems development		0.809	
Effective e-management		0.779	
Input efficiency		0.582	
Information flow effectiveness		0.547	
Ability in BPR		0.428	
Staff initiation			
Employee initiation			0.806
Employee accountability			0.745
		% of Variance	Cumulative %
		35.803	35.803
		15.943	51.746
		9.522	61.268

**4.2.4. Competence in Managing STAIR’s Underlying Cultural Values**

STAIR’s values were measured by a 20-item scale asking respondents to report how committed their organization is to a number of cultural values imported by the STAIR model and how much these values are appreciated by the organization (see page 388).

**Table 5.** Component Matrix (R) Variable.

	Component 1
Stakeholders view	
Ability to incorporate staff suggestions	0.848
Ability to incorporate citizens views	0.839
Ability to measure projects results-strategic evaluation	0.830
Ability to analyze & solve problems	0.825
Ability to conduct staff survey	0.821
Ability to carry out citizen survey	0.813
Ability to measure, manage, feedback results & introduce change	0.770
% of Variance	Cumulative %
67.405	67.405

The reliability coefficient of the scale was Alpha: 0.95. Factor analysis was conducted and three factors were produced which account for 66.4% of the total variance (Table 6).

First factor “reward values” represents 28.7% of the data variance and reflects the importance that the organization gives to certain incentive criteria. The second factor was named “behavioral values,” since it includes a set of attitudes that the organization should adopt in its internal behavioral system. This factor accounts for 22% of the remaining variability. Finally “creative & proactive values” is the label we assigned to the third factor, because it contains a set of values that the organization must cultivate in order to adapt and respond to external challenges. This factor accounts for the 16.32% of the remaining variance.

In addition correlation analysis showed that all the three cultural factors were positively correlated with OP, ranging from high “behavioral values” ( $r: 0.596$ ;  $p < 0.001$ ) to moderate “reward values” ( $r: 0.432$ ;  $p < 0.01$ ) and “creative & proactive values” ( $r: 0.406$ ;  $p < 0.01$ ) respectively (Table 7). However, as may be expected, public sector organizations are not yet influenced by these new cultural assumptions and thus exhibited low scores on each factor, viz. mean scores: 2.21; 2.43; 2.02 accordingly (Table 7).

#### 4.2.5. *The Influence of STAIR Operational and Cultural Variables on Organizational Performance*

In order to test how much influence each set of the above identified factor score variables/STAIR variables have on organizational performance the technique of regression analysis was employed. More specifically, four regression models have been produced and the results are presented in Tables 8–11.



**Table 6.** Rotated Component Matrix Cultural Variables.

Cultural Variables	Component		
	1	2	3
<b>Reward values</b>			
Staff reward for active participation – initiation	0.813		
Staff reward for continuous self assessment	0.792		
Staff reward for strategic/systemic/critical thinking	0.780		
Staff reward for flexibility	0.776		
Staff reward for adaptability	0.740		
Staff reward for creativity & innovation	0.713		
Staff reward for continuous self development	0.649		
<b>Behavioral values</b>			
Results oriented – cost conscious culture		0.796	
Citizen oriented culture		0.777	
Value-driven (transparency, meritocracy)		0.771	
Strategic thinking-acting-measuring organization		0.676	
Bottom up strategy – participation management		0.556	
Team-based operational structure		0.533	
Acceptance of staff suggestions		0.476	
<b>Creative &amp; proactive values</b>			
Research investment			0.823
Research orientation –organizational knowledge creation			0.686
Frequency of citizens need analysis			0.547
Climate of continuous organization learning & development –action based on output			0.513
Innovation – transform ideas into projects			0.509
Frequency of process simplification			0.425
		% of Variance	Cumulative %
		28.714	28.714
		21.387	50.101
		16.324	66.425

The results in Table 8 indicate that the STA-variable explains the 49% (adjusted *R* square) of the organizational performance. However, between the two dimensions of STA-variable, “strategic thinking” came out as the most important antecedent of performance (*t*: 16.028).

The results in Table 9 reveal that the I-variable influences performance and accounts for the 58% of its variability. Among the three factors of I-variable, “transformational leadership” has the greater effect o performance levels (*t*: 14.990), followed by “e-process management” (*t*: 12.090) and “staff initiation” (*t*: 4.910).

**Table 7.** STAIR Model Analysis.

Operational Core		
Factors: Set of Activities	Mean Score	<i>R</i> (Correlation Coefficient) with Organizational Performance
STA – variable		
• Strategic thinking	2.60	0.650**
• Strategic measuring	2.75	0.239**
<i>I</i> – variable		
• Transformational leadership	2.30	0.573**
• e-process management	2.32	0.461**
• Staff initiation	3.07	0.190**
<i>R</i> -variable		
• Stakeholders view	2.50	0.658**
Cultural Core		
Factors: Set of Values	Mean Score	<i>R</i> (Correlation Coefficient) with Organizational Performance
Culture variables		
• Behavioral values	2.21	0.596**
• Reward values	2.43	0.432**
• Creative & proactive values	2.02	0.406**

\*\* $p < 0.01$ .

The results in Table 10 show that the one dimension of *R*-variable, namely, the “stakeholders view” emerges as a key antecedent of organizational performance ( $t$ : 15.657) explaining the 43% of its variance.

Finally, the results in Table 11 point out that the three sets of variables underpinning the STAIR cultural core are key antecedents of organizational

**Table 8.** Regression Analysis.

Model	Beta	<i>t</i>	Sig.
Constant: 0.007		0.163	0.870
(STA) variable			
(a) Strategic thinking	0.654	16.028	0.000
(b) Strategic measuring	0.249	6.112	0.000
	<i>R</i>	<i>R</i> Square	Adjusted <i>R</i> Square
	0.696	0.484	0.481

Note: Dependent variable: Organizational performance. Independent variables: (STA) – variables.

**Table 9.** Regression Analysis.

Model	Beta	<i>t</i>	Sig.
Constant: -0.014		-0.370	0.712
<i>(I)</i> variable			
(a) Transformational leadership	0.573	14.990	0.000
(b) e-process management	0.462	12.090	0.000
(c) Staff initiation	0.188	4.910	0.000
	<i>R</i>	<i>R</i> Square	Adjusted <i>R</i> Square
	0.759	0.577	0.572

Note: Dependent variable: Organizational performance. Independent variables: (*I*) – variables.

**Table 10.** Regression Analysis.

Model	Beta	<i>t</i>	Sig.
Constant: -0.006		-0.133	0.894
<i>(R)</i> variable			
Stakeholders view	0.658	15.657	0.000
	<i>R</i>	<i>R</i> Square	Adjusted <i>R</i> Square
	0.658	0.433	0.431

Note: Dependent variable: Organizational performance. Independent variables: (*R*) – variable.

**Table 11.** Regression Analysis Cultural Core.

Model	Beta	<i>t</i>	Sig.
Constant: -0.32		-1.008	0.315
Cultural variables			
Reward values	0.422	12.998	0.000
Behavioral values	0.591	18.232	0.000
Creative & proactive values	0.408	12.596	0.000
	<i>R</i>	<i>R</i> Square	Adjusted <i>R</i> Square
	0.837	0.700	0.697

Note: Dependent variable: Organizational performance. Independent variables: (STAIR) – cultural variables.

performance and explain the 70% of its variance ( $R$ : 0.70). The most important is the “behavioral values” ( $t$ -value: 18.232) followed by “reward values” ( $t$ : 12.998) and by the almost equally important “creative & proactive values” ( $t$ : 12.596).

#### 4.2.6. *The Integrative Model*

Looking at the four regression models developed to investigate how operational and cultural STAIR variables influence performance, we see that the amount of variance of organizational performance explained by each of them was high enough,  $R$  square  $a = 0.48; 0.57; 0.43; 0.70$  respectively. This means that all variables entered in the four equations were key predictors of organizational performance.

However, we proceeded a step further to construct an integrative model in order to determine whether additional variance in performance could be explained when all of the independent variables were taken into consideration. More specifically, we combined all the explanatory variables – derived from the operational and cultural core of the STAIR into a single regression model (Table 12).

Indeed, the integrative model explained additional variance of organizational performance ( $R$  square  $a = 0.74$ ) and only 4 out of 9 variables were significant predictors of performance. In particular, we found that “behavioral values” emerged as the most important explanatory variable of public sector performance ( $t$ -value: 11.265) (Table 8) followed by “reward values” ( $t$ -value: 9.028), “creative & proactive values” ( $t$ -value: 7.945) and “e-process management” ( $t$ -value: 3.874).

What has become increasingly clear from this finding is that cultural change is the most critical factor in the process of improving public sector performance. The

**Table 12.** Integrative Model.

Model	Beta	$t$	Sig.
Constant: -0.26		-0.845	0.399
Strategic thinking	0.028	0.516	0.606
Strategic measuring	0.001	0.401	0.969
Transformational leadership	0.105	1.612	0.108
e-process management	0.160	3.874	0.000
Staff initiation	0.002	0.693	0.945
Stakeholders view	0.087	1.919	0.056
Reward values	0.451	9.028	0.000
Behavioral values	0.556	11.265	0.000
Creative & proactive values	0.345	7.945	0.000
	$R$	$R$ Square	Adjusted $R$ Square
	0.867	0.751	0.742

*Note:* Dependent variable: Organizational performance.

poor levels of performance identified by the data analysis can be attributed more to the lack of organizational competence in managing STAIR's cultural values.

#### 4.2.7. The STAIR Model as a Predictor of OP

Based on the research outcomes organizational performance can be predicted by using the following formula:

$$OP = -0.26 + 0.56X1 + 0.45X2 + 0.34X3 + 0.16X4$$

where: X1: "behavioral values," X2: "reward values," X3: "creative & proactive values," X4: "e-process management."

## 5. DISCUSSION

The results reveal that public sector performance is a multidimensional concept represented by a cluster of variables, such as "service quality," "time efficiency," "innovation," "organizational learning," "employee productivity" and "goal accomplishment" (see Table 2).

More specifically, in the current context the most important component of performance was found to be the provision of "quality" e.g. credibility of service and commitment to standards, along with "time efficiency in service delivery" e.g. speed in meeting deadlines and flexibility in handling administrative procedures. This finding may reflect the recent trend in public administration where the term "performance" has been substituted for the term "quality" (Kettl, 2000).

"Organizational learning and innovation" was also a crucial factor in determining the nature of performance, corroborating the results of other studies which argue that improved performance and lasting change depends heavily on organizational creativity, continuous learning and adaptation (Argyris & Shon, 1996; Fiorelli & Feller, 1994; Kaplan & Norton, 2000).

Some years ago Peter Drucker (1989) recognized that innovation rests on people and provides the only assured source of long term success and competitiveness. This argument is verified in this research by the emergence of "employee productivity" as another key concept in defining performance.

According to the respondents perceptions "goal accomplishment" appeared to be the least important dimension for the conceptualization of public sector performance. It is not unreasonable to suggest that clarifying, measuring and achieving long term goals remains a difficult process for public administration.

It has been argued that enhancing public sector outcomes requires a systematic and systemic approach which recognizes the multidimensionality of performance and the multiplicity of the organizational context (Reed & Savage, 2002). A

systemic mechanism for managing and measuring performance is necessary but fortification is required for performance improvement (Durst & Newell, 1999; Nichols, 1997). We have argued that organizational success is greatly affected by the underlying organizational capacities needed to run the system, as well as the underlying cultural values needed to support the system. The data demonstrate that competence in managing the operational and cultural core of the STAIR model is the precondition for changing public sector performance (see Tables 8–11).

With respect to the operational core of the STAIR model, the research reveals that performance depends heavily on the organization's capacity to "think, act and measure" in terms of strategy design, strategy execution and strategy results evaluation. In particular, "Strategic thinking," "strategic measuring," "transformational leadership," "e-process management," encouraging "employee initiation" and managing "stakeholders views" are the array of competences which were extracted as the most important components of STAIR's operational core (see Table 7). These competencies are the attributes that modern public organizations must possess for effective realization of their strategic targets, consolidating the evidence of previous studies (Beer, 2001; Wang & Berman, 2000).

With regard to the cultural core of the STAIR model, the data shows that performance is greatly affected by the organization's capability in managing STAIR's "behavioral," "reward" and "creative" values (Table 7). Namely, government performance is the outcome of an organization's competence in achieving results, in placing citizens at the center, in satisfying the various stakeholders along with establishing openness, transparency, justice and meritocracy. In addition, each organization must change its appraisal system to accommodate these values and reward employees who act and behave accordingly. Namely, according to the data, a reward system which values employees' initiative, employees' strategic thinking, acting and measuring, employees' flexibility, adaptability, creativity and continuous learning is an additional mechanism in enhancing organizational performance.

Additionally, the organization's ability to elicit commitment towards creative values emerged as a crucial dimension of performance improvement (see Table 11). For instance, creating knowledge capital through the implementation of research projects on specific administrative problems, through the analysis of citizens' and staff needs, through the process re-engineering projects on a continuous basis, establish a proactive rather than reactive public organization. A public organization that prevents rather than just cures problems.

However, what has become evident from the Integrative STAIR Model is that in the Greek context, public sector performance rests on the ability of public organizations to manage "culture" and "processes" effectively – while no emphasis has been given to the rest of the operational STAIR variables (see Table 12). The priority given to changing culture and processes as preconditions for enhancing

public sector performance – and not to the other operational variables such as “strategic thinking and measuring,” “transformational leadership,” “staff initiation” and “managing stakeholders view,” can be attributed to the fact that Greek public administration has for a long time been a rigid bureaucracy based on rules and inflexible administrative processes and that it is only recently (2001 – Modernizing Act) trying to become a more open system focusing on results and citizens’ satisfaction.

## 6. CONCLUSIONS

Public sector operates in an era characterized by complexity, uncertainty, unpredictability and ambiguity. Globalization, market competition, declining resources, high levels of unemployment and the revolution of information technology demand that public organizations must change rapidly if they are to survive and prosper. Despite the consensus about the need for modernization there is little knowledge and agreement about how to manage such change.

There are arguments for insisting on results and customer satisfaction through re-engineering, reorganization, restructuring, financial incentives, staff appraisal schemes, sophisticated performance measurement and management systems etc. However, arguments derived from organizational development theory suggest that these techniques are inadequate for gaining human commitment to change. According to this school of thought, a strong bottom-up culture, the active involvement of staff and not just financial incentives are the motivators for high performance and lasting change.

Building on the above arguments we devised the STAIR model as a viable alternative, which argues that these perspectives are not mutually exclusive, rather they are mutually reinforcing. Thus, STAIR supports the view that fundamental change will occur via a process that enables technical solutions, organizational capabilities and cultural values to evolve concurrently. Government transformation can be achieved if every member in a public organization has the commitment and skills required for the successful implementation of the STAIR model. Our research identified that competence in managing the operational and cultural core of the STAIR can enhance government performance.

More specifically, increasing public sector outcomes requires a systematic and systemic approach which recognizes the multidimensionality of performance and the multiplicity of the organizational context. The data indicate that STAIR fulfills this requirement since it comprehends: (a) the opportunities and threats of the external environment, the strengths and weaknesses of the internal environment; and (b) the interdependence of all sub-systems in the process of transforming inputs into productive outputs and results.

The research shows also that Greek public organizations may operate within the common framework of public administration and shared values but, in reality, different organizations are at different phases in responding to the modernization demands set out in the “Politia” Government Act.

Each public administration organization is unique and must follow its own path when building and implementing the STAIR model. The many individual organizations that make up the Greek Civil Service must formulate their own STAIR models to improve processes in accordance with their needs. Each organization will then evaluate the results, update its plans and set new targets, as appropriate, as part of the annual business STAIR cycle.

However even the most sophisticated framework for managing and measuring performance does not guarantee organizational success. The challenge is to use STAIR model in a way that enhances organizational performance rather than focusing the energies of the organization on serving the dictates of the model. This means that competence in managing the STAIR operational core, commitment in the values of the STAIR cultural core and continuity in the use of STAIR on a day-to-day basis are the most important preconditions for lasting change and continuous reform.

### *6.1. Implications*

We have already argued that by following the steps of the STAIR on a daily basis, public sector organizations transform themselves to strategically thinking, acting and measuring organizations in which each individual member learns from experience and continuously develops her/himself through the process of action, reflection in action and new action. The way we do things influences the way we think about things and in turn the way we behave in a given organizational context. Putting STAIR in practice gradually changes employees’ assumptions and principles with regard to acceptance of the new STAIR values. New competencies and commitment to new values cannot be acquired overnight. People resist anything new until they have actual experience of it.

But learning from experience or by doing is not enough. Competence in managing the operational and cultural core of the STAIR needs *strategic and systematic training* so that every member of the public organization becomes technically equipped and motivated to implement STAIR.

Having said that we must not ignore that cultural change apart from a well trained, adaptable and committed workforce requires a *redesign of the structural system* of the organization. Decentralization of power, high degrees of autonomy, responsibility and accountability, participation, meritocracy, openness,



communication, were identified by the present research as the characteristics of the structural processes needed for securing performance improvements. Collective leadership, collaboration and empowerment must be the norm inside the public service if we assume that the role of the public administration is to promote citizenship, public discourse, public interest and create a democratic society.

More specifically, the shift from a high “control” to a high “commitment” culture, which the cultural core of the STAIR implies, necessitates the *adaptation of the reward system* to the above structural trends. It became evident from the data analysis that the reward system must value qualities such as flexibility, adaptability, initiation, collaboration, strategic thinking, creativity, continuous self-assessment and development in order to support organizational change and renewal.

Last but not least the importance of *transformational leadership competencies* in handling the operational and the cultural core of STAIR was greatly recognized by the present research. It was highlighted that high performance and modernization of public services require new leadership qualities. Instead of rule by the book, public leaders at all levels must rule by vision, by reasoning and by collaboration.

In summary, competence, strong and consistent leadership, high degrees of autonomy, employee empowerment and commitment in implementing the three interdependent STAIR phases offer tremendous promise in enhancing organizational performance.

## 6.2. Future Research

Attempting to manage and measure performance in public administration is difficult, but when carefully planned, executed and monitored can prove highly valuable for public service customers – as well as being gratifying to its human assets. STAIR is far from being a panacea for changing organizational performance, but it is certainly a practical tool towards streamlining the public sector in Greece.

Widespread use and implementation of the STAIR is needed across the public sector in order to further corroborate the outcomes of the present research. How to achieve and maintain unity between the model’s two core elements (operational/cultural), presents a challenge for public sector administrators on a national and international level.

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# THE ADOPTION OF THE BALANCED SCORECARD IN GOVERNMENT-OWNED CORPORATIONS

Suresh S. Kalagnanam

## ABSTRACT

*This paper documents the adoption of the balanced scorecard in profit-seeking corporations owned by the Government of Saskatchewan (crown corporations). In particular, it focuses on the reasons underlying the implementation of the scorecard in the crown sector; the development of the model, and its uses. Following a crown sector review, the Crown Investments Corporation (CIC) adopted the balanced scorecard in 1997 as a governance/accountability mechanism. Over the years, the scorecard has evolved into a planning, control and reporting tool.*

## INTRODUCTION

Performance measurement has become a critical management task in all types of organizations, including private corporations, public sector agencies and even not-for-profit organizations. While the private companies are answerable to their shareholders, public sector agencies and not-for-profit organizations must also be accountable to their different stakeholders. Fiscal, environmental and social responsibility are important issues for all the three types of organizations. In

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**Performance Measurement and Management Control: Superior Organizational Performance**

**Studies in Managerial and Financial Accounting, Volume 14, 407–425**

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ISSN: 1479-3512/doi:10.1016/S1479-3512(04)14016-1

an effort to improve their understanding of performance management, many of these organizations are embracing new performance measurement methods/tools to assess how well they are achieving their objectives and fulfilling their responsibilities (Bernardi, 2003; Brignall & Modell, 2000; Hiroko, 2003; Lettieri et al., 2003). One such tool is Kaplan and Norton's (1992) balanced scorecard which has become popular among various types of organizations ranging from businesses to government departments, hospitals and educational institutions. An internet search with the key word "balanced scorecard" generates thousands of hits. Within Canada, numerous organizations within both the private and public sector have adopted the scorecard – e.g. financial institutions, hospitals and other businesses (Ellwood & Rixon, 2003; Theobalds & Lanfranconi, 1998).

This paper documents the adoption of the balanced scorecard in corporations owned by the Government of Saskatchewan (crown corporations).<sup>1</sup> In particular, it focuses on the reasons underlying the adoption of the scorecard in the crown sector, the development of the model, and its uses.

The next section discusses the balanced scorecard concept. Next the motivation for the study is presented, followed by an introduction to the structure of the crown sector. This is followed by a brief description of the research methodology, after which the main findings of the study are presented. The final section summarizes the paper.

## THE BALANCED SCORECARD

The term balanced scorecard perhaps needs no introduction; however, it is useful to ask what it really means. In particular, it raises the following question: "what makes the balanced scorecard a balanced scorecard?" Is it simply a set of ad hoc financial and nonfinancial measures or is it something else? Kaplan and Norton (2001) argue that it is much more than just a set of performance measures. According to them, the balanced scorecard is not simply a performance measurement system but a powerful strategic management weapon that organizations can use to effectively measure and implement strategy, thereby achieving significant gains. They state as follows (Kaplan & Norton, 2001, p. viii):

Executives of adopting organizations were using the Balanced Scorecard to align their business units, shared service units, teams and individuals around overall organizational goals. They were focusing key management processes – planning, resource allocation, budgeting, periodic reporting, and the management meeting – on the strategy. Vision, strategy, and resource allocation flowed down from the top; implementation, innovation, feedback, and learning flowed back up from the front lines and back offices. With their new focus, alignment and learning, the organizations enjoyed nonlinear performance breakthroughs. The whole truly became much more than the sum of its parts.

As a holistic system, it is a tool for the purposes of communication, coordination, evaluation and motivation, thereby aiding strategy implementation.

There are at least four aspects of the balanced scorecard that supposedly differentiate it from other ad hoc performance measurement systems. First, the scorecard's measures are derived from the organization's strategies unlike measures of local activity. The idea is that all measures should ultimately inform managers regarding the company's progress toward achieving its strategies (Govindarajan & Shank, 1992; Nanni et al., 1992). This idea underlies Nanni et al.'s (1992) integrated performance measurement framework; they state that "the nature of measures are contingent upon strategy. Performance measures communicate and operationalize these aspects of the company's strategy, integrating actions across the various functions" (Nanni et al., 1992, p. 11).

Second, the framework focuses on a balanced approach to measurement with respect to the number of performance dimensions and the number and types of measures. The idea behind emphasizing balance is that managers should not place excessive emphasis on just some dimensions of performance (or some measures). Several academics have proposed multi-dimensional frameworks for performance measurement (Fitzgerald et al., 1991; McNair et al., 1990; Nanni et al., 1992), and others reported the use of nonfinancial measures prior to the introduction of the balanced scorecard (e.g. Fisher, 1992; Johnson, 1990; Seed, 1988). For example, the basic assumptions underlying McNair et al.'s (1990) strategic measurement system framework are that the measures must have a strategic focus, they should be systematically focused, they should be integrated and should promote organizational learning. Consequently, their model promotes customer orientation, a holistic approach, integration among measures, and an opportunity for learning.

Third, the four individual perspectives of the balanced scorecard – financial, customer, internal business process, and learning and growth – are said to have a cause-effect relationship as depicted in Fig. 1; this relationship is considered to be "central to the balanced scorecard . . . [and] distinguishes the model from other approaches" (Nørreklit, 2000, p. 70). The organization's vision & strategy guides the development of financial objectives required to satisfy shareholders' expectations. The financial objectives lead to the customer objectives which, in turn, lead to internal business process objectives, and finally to learning and growth objectives. With respect to actual performance, progress achieved in the learning and growth perspective leads to improvements in the internal business process dimension which, in turn, leads to improving performance along the customer dimension and ultimately leading to achieving the desired financial performance.

Fourth, and following from the previous argument, the balanced scorecard framework forces managers to develop lead (driver) and lag (outcome) measures; thus, the metrics are causally linked. The measures in the learning and growth

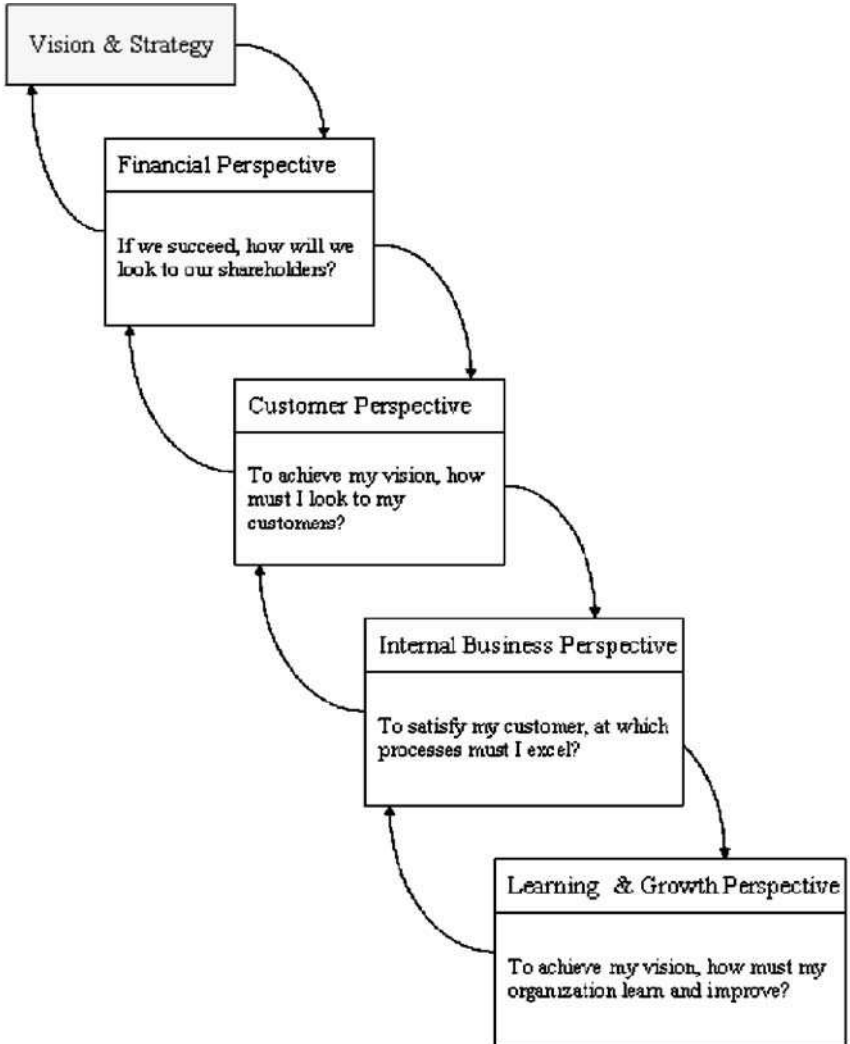


Fig. 1. Balanced Scorecard Cause-Effect Relationships. Source: Adapted and reprinted by permission of the Harvard Business School Press. From *The Strategy-Focused Organization* by Robert Kaplan and David Norton, p. 77. Copyright © 2001 HBS Publishing; all rights reserved.



dimension are supposed to be leading indicators of performance in the internal business process perspective; those in the internal business process perspective are supposed to be leading indicators of performance in the customer dimension, and finally the customer measures are supposed to be leading indicators of financial performance. Similarly, organizations can also develop leading and lagging indicators within individual perspectives. For example, number of training hours can be a leading indicator of skill development (both are metrics within the learning and growth perspective). Finally, there is a hierarchical relationship among the four dimensions (see Fig. 1); the scorecard supposedly clarifies this cause-effect hierarchy, thereby enabling managers to understand the links between action and results. The idea of cause-effect relationships among the different measures and the distinction among measures as lead and lag appear to be unique to the balanced scorecard framework.

In addition to the specifying the structure, Kaplan and Norton also specify the use of the scorecard. According to them, the scorecard is a communication tool, a planning and control tool, and above all a strategic learning tool. As a communication tool, it is supposed to not only clarify the organization's vision and strategy but also communicate the vision and strategy in simple terms to employees. As a planning and control tool, it is supposed to provide the basis for planning, budgeting, reporting and, above all, compensation. A white paper on *Beyond Budgeting* criticizes traditional models of budgeting and embraces the use of the scorecard for planning and budgeting (Hope & Fraser, 2001). With respect to compensation, Kaplan and Norton (2001) note that tying individual's incentives and rewards to the balanced scorecard is the final linkage between high-level strategy and day-to-day actions. Finally, the balanced scorecard supposedly facilitates what Argyris (1991) calls double-loop learning. In an organizational context, this implies that performance along the different dimensions of the balanced scorecard allow managers not only to probe into what went wrong in an attempt to simply fix things but more importantly to question the very strategy which is usually the basis (starting point) for developing measures and targets. This is equivalent to a thermostat asking "why am I set at 68 degrees?" and then [exploring] whether or not some other temperature might more economically achieve the goal of heating the room . . ." (Argyris, 1991, p. 100). Figure 2 attempts to capture Kaplan and Norton's (1992, 2001) version of the balanced scorecard model using a pyramid approach. The structure and scope for its use supposedly distinguishes it from any other performance measurement framework.

Despite the notion that the term balanced scorecard represents a specific model, it appears that ". . . in practice, consultants and managers use the term loosely to refer to any set of financial and nonfinancial measures" (CMA Canada, 1999, p. 2). One outcome of the word "balanced" in the concept is that it impresses upon

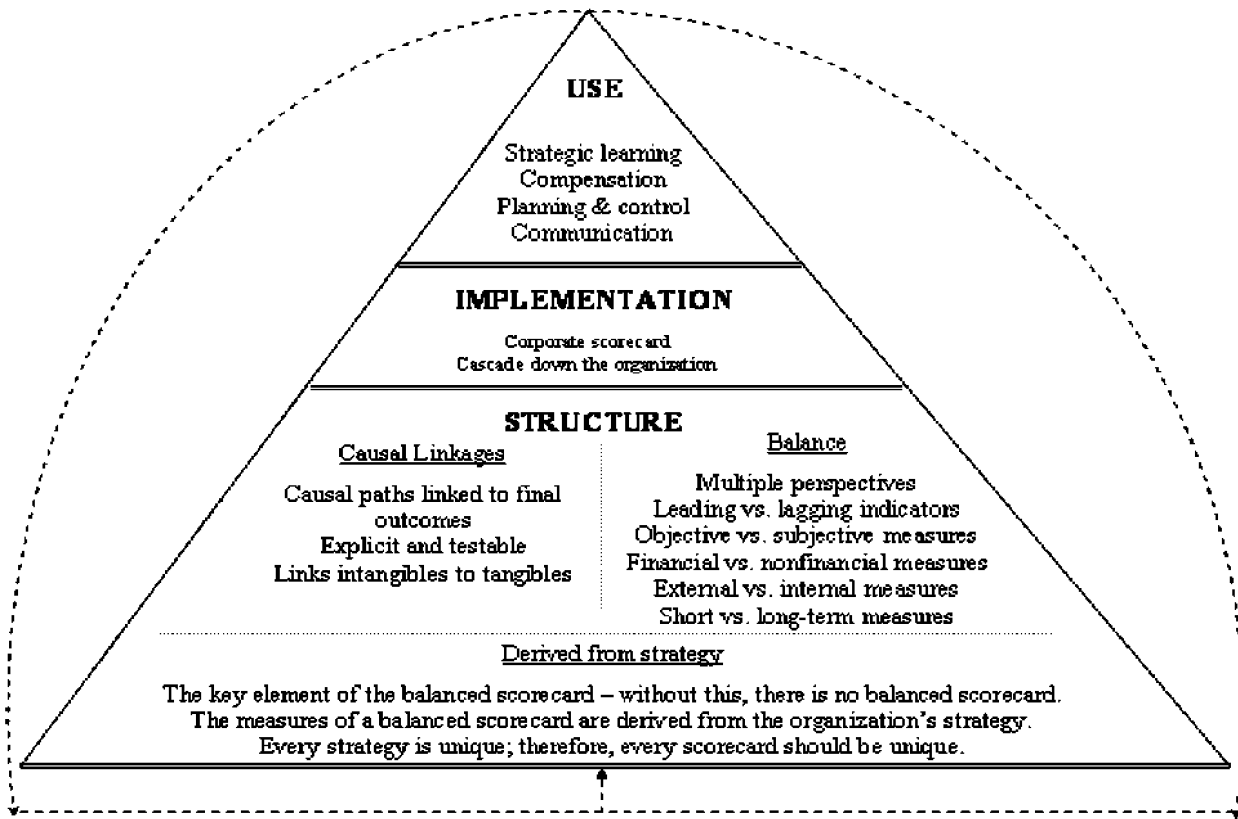


Fig. 2. The Balanced Scorecard Pyramid. *Source:* Developed by Marvin Soderberg for his M.Sc. (ACC) thesis currently in progress at the University of Saskatchewan.

managers that they must move away from an exclusive focus in one area to a more broad-based approach by considering several factors affecting performance (CMA Canada, 1999). One objective of this paper is also to assess whether the scorecard adopted by crown corporations fits within the specification of Kaplan and Norton's model.

## **MOTIVATION FOR THE STUDY**

Although the literature on the balanced scorecard is growing, and includes references to the implementation of the scorecard in the not for profit and government sectors (e.g. Chan & Ho, 2000; Kaplan, 1998, 1999), there are few papers (if any) on performance management in government-owned profit-seeking corporations (e.g. crown corporations). Studying crown corporations is interesting from at least two perspectives. First, the commercial crown sector has characteristics of both private sector corporations and public sector agencies. They are profit-seeking commercial businesses with a specific profit objective; they must provide a dividend to their shareholder, i.e. the provincial government.<sup>2</sup> However, like public sector organizations, they are owned by the citizens of the province and largely provide services to the very same citizens. They are bound by the public policy objectives established by the government and are restricted in some of the choices they have at their disposal (e.g. the utilities have to provide power & natural gas even to the most remote communities within the province). Second, the crown sector consists of some organizations that operate as a monopoly and others that face competition. That monopoly crowns do not face competitive pressures from other corporations does not imply that they do not face other kinds of pressures. In a democratic society, dissatisfied citizens can exert pressure on the government to change policies or run the risk of not being elected again. Therefore, survival pressures are different for individual corporations. Finally, crown corporations are generally under more public scrutiny compared to private sector corporations; efficiency and effectiveness of crown corporations is an important topic of debate within the province. Thus, these corporations must truly perform a *balancing act* to "look good" in the eyes of their stakeholders.

## **STRUCTURE OF THE CROWN SECTOR<sup>3</sup>**

In 1945, the Saskatchewan Government passed *The Crown Corporations Act* to provide a broad legal basis to create crown corporations. As of 1996, the Crown Investments Corporation of Saskatchewan (CIC) acted as a holding

company for nine commercial crown corporations operating in the province. Why crown corporations vs. private sector? A common reason for establishing crown corporations is to ensure that people have reasonable access to goods and services that are deemed essential, such as electricity, telephone service and transportation. Unlike their counterparts in the private sector that focus on commercial goals, crown corporations usually have both commercial and public policy objectives to fulfill. Consequently, crown corporations have additional survival challenges compared to the private sector.

The CIC is itself a crown corporation established under *The Crown Corporations Act*. According to a senior executive of CIC, it has all the powers, roles and responsibilities typically associated with a holding company. The CIC's main responsibility is to be accountable to the people of Saskatchewan, via the CIC Board of Directors whose members are all cabinet ministers, by providing good stewardship for its holdings on behalf of the people of the province.

## **RESEARCH METHODOLOGY**

This research project is based on data collected through interviews conducted with executives in six crown corporations over a two-year period (2001 and 2002). After a preliminary meeting with the Executive Director of Strategic Management at the CIC in summer 2000, the author met with the Director of Performance Management at CIC (who continues to be the main contact person) for further details on the crown sector's balanced scorecard project. Subsequently, and with the help of the main contact person, several individuals within the CIC and across other commercial crown corporations were contacted to set up interviews.<sup>4</sup> A standard protocol was developed to ensure that answers to key questions of interest were obtained from these individuals. This paper relies primarily on data collected from individuals within the CIC, as well as internal documents obtained from both the CIC and other crown corporations.

## **WHY THE BALANCED SCORECARD?**

In response to changes and challenges in the business environment during the early 1990s (e.g. deregulation, increasing competition, free trade, and new technologies), the province, in 1996, commissioned a comprehensive review to address fundamental issues concerning the future of crown sector management, including privatization. The primary purpose of the review was to ensure that the province could find ways to protect the investments of the people of Saskatchewan. The

first phase of the review examined five corporations, four of which were financially healthy. (One implication of initiating such a review is that the government was being proactive.) The review committee rejected the idea of privatization. However, it focused its attention on four important broad areas:

- Corporate governance – how crown corporations are controlled or managed.
- Financial reporting – sound financial reporting policies to help build stronger organizations, and increase accountability.
- Rate transparency – shows customers the actual costs of providing service and how rates are set.
- Human resource issues – move from a culture of a monopoly service provider to one that is more innovative and aggressive in acquiring and keeping its customers.

With respect to corporate governance and management, a significant recommendation made by the review committee was that the individual crown corporations be granted increased operational decision making autonomy (i.e. less political interference). Consequently, each of the individual crowns were forced to place increased emphasis on corporate governance at an operational level; this meant increased accountability and responsibility. The key then was to find a framework that would serve as an accountability/reporting tool, which the CIC Board (and ultimately the province) could also use to assess the performance of crown corporations.

CIC was charged with the responsibility of developing an accountability/governance model and came up with its version of the balanced scorecard. As we can see, the motivation to develop and implement a balanced scorecard was a result of the need to establish a performance management system, including a reporting mechanism, to fulfill an accountability/governance role at various levels within the crown sector.<sup>5</sup> This appears to contrast Kaplan and Norton's (1992) prescription that the scorecard should be implemented for the purposes of clarifying and implementing business strategy. However, as reported later in this paper, the scorecard evolved to serve other purposes.

In developing a governance model, CIC paid close attention to the fact that crown corporations had both business and public policy objectives to fulfill. With respect to the business (commercial) aspect, both the CIC and the individual crowns were expected to find ways to enhance value for their stakeholders, and to ensure financial viability. This involves balancing gains against risks, assessing the direction the corporation is headed, improving the value of the business and making sure that the shareholders receive a reasonable return on their investment.

From a public policy dimension, decisions are made with an economic or social development perspective in mind. Such decisions often contribute to the overall well-being of the residents of the province; however, they may not always

correspond with the objectives of the commercial aspect of the corporation. From purely a cost perspective, the decision to fulfill public policy objectives might not always be assessed as good business decisions because of the extra costs that the crown sector will likely incur to achieve those objectives. Crown corporations must therefore find a balance between the two sometimes conflicting mandates of earning a monetary profit and meeting public policy objectives. For this reason the performance of crown corporations cannot be measured based only on their profitability, as is often done with private-sector companies. Given that a balancing act was critical in fulfilling crown-sector objectives, the CIC found the balanced scorecard concept very appealing, and decided to adopt the approach and implement it over a five-year period starting 1997. The five-year time-line was chosen to ensure a smooth transition and to obtain buy-in from all key players.

### STRUCTURE OF THE CROWN-SECTOR BALANCED SCORECARD

CIC used Kaplan and Norton's (1992) generic model as a starting point to develop its own scorecard (see Fig. 3). There are two interesting and important differences between the structure of CIC's scorecard and that of Kaplan and Norton. First, the CIC scorecard has five dimensions instead of the four perspectives outlined in Kaplan and Norton's (1992) generic scorecard; these five are: (1) financial

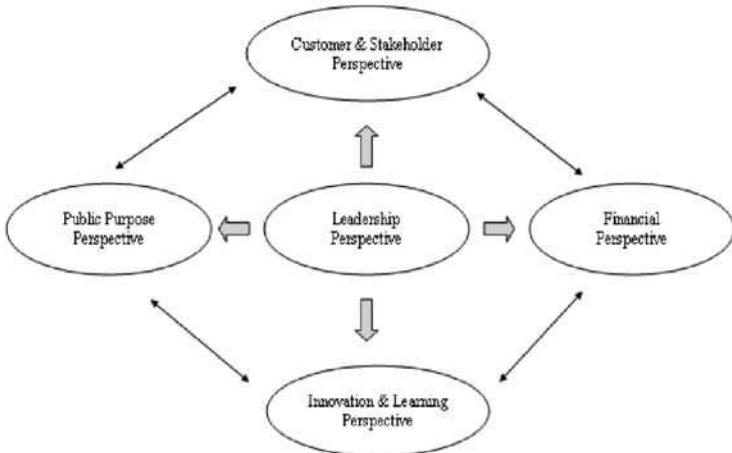


Fig. 3. Crown Investments Corporation (CIC) Balanced Scorecard. *Source:* Crown Investments Corporation (CIC, 1999): Internal Document.

perspective; (2) customer & stakeholder perspective; (3) innovation & learning perspective; (4) public purpose perspective; and (5) leadership perspective.

CIC's scorecard does not include the "internal business process" perspective; instead, it consists of two new dimensions: "public purpose" and "leadership." Given the crown sector's public policy objectives, it seems logical to include the public purpose dimension. As for the leadership perspective, this stems from CIC's holding company status and reflects an important responsibility which is to provide good stewardship for its holdings on behalf of the province. The exclusion of the internal business process perspective stands out as significant. When asked why the CIC scorecard did not include that dimension, the Director of Performance Management responded as follows:

We don't have one by name but the intent of the internal business process component of the scorecard is still there. . . . What we have done is that we have incorporated the elements that make a company functional, the HR issue of the company, the efficiency issue, the governance issue – we have put those in the other perspectives I believe. The reason we did that was we wanted to rename that perspective and introduce a new perspective called public policy, which is an element that is key to the crown . . . sector. . . . I [definitely] believe that success in the [internal business process] component is the key to enabling you to have success in all the rest of them. . . . But we have now incorporated that into our box called innovation and learning. . . . So, it is still key and it is still a fundamental element of our scorecard that has not been compromised, that has not been lost.

The exclusion of the internal business process dimension was also largely due to the holding company role as well as the fact that CIC does not have a tangible business output that lends itself to a quantitative measurement. Nonetheless, the CIC must carry out processes that result in its intangible outputs. On the one hand, including the internal business process perspective would lead to having a six-dimensional scorecard, which could be overwhelming.<sup>6</sup> However, the potential danger of not having a separate dimension is that it may diminish the attention paid by employees to business processes. Presumably, measures in other dimensions would focus on capturing outcomes (lag indicators) of business processes rather than drivers (lead indicators), thereby potentially reducing CIC's ability to efficiently and effectively improve its internal processes.

A second difference pertains to the cause-effect linkages among the different perspectives of the scorecard. As mentioned earlier, Kaplan and Norton's (2001) model suggests the existence of a hierarchical relationship among the four dimensions (see Fig. 1). In contrast, CIC's scorecard is more laterally structured. With respect to this issue, a senior analyst at CIC commented as follows:

In our case, we had to spread the model from the hierarchical structure of the Kaplan and Norton model because our Board of Directors consists of cabinet ministers representing the provincial government. As such, representing the diverse interests of government, one cabinet minister

may say financial aspects of what the crowns are doing is very important; . . . yet another minister may say no, it is [the] public purpose; another may say no it is customers and stakeholders. So, we (CIC) do not have one driving principle at the top, we have many driving principles at the top. We consider the balanced scorecard [as it is] literally; our fundamental principles are balanced between those five perspectives at the highest level.

The lack of one clear-cut objective appears to be an important difference between the private and crown sectors. In the private sector, shareholders expect a financial return; therefore, a causal hierarchy as illustrated in Exhibit 1 can potentially be established among the four perspectives of the scorecard. Building on this hierarchical framework, Sears attempted to quantify the relationship between employee satisfaction and customer satisfaction, and customer satisfaction and profitability (Rucci et al., 1998). However, establishing such causal relationships is certainly not easy because of the complexities involved in identifying these drivers and the fact that these drivers can change as the business environment changes. Ittner and Larcker (2003, p. 1) note that very few companies have “demonstrated a cause-effect link between improvements in . . . nonfinancial areas and in cash flow, profit, or stock price.” In fact, Nørreklit (2000) believes that Kaplan and Norton confuse logical relationships with causal relationships, and suggest that the four generic perspectives may be interdependent but causality cannot be established. With respect to the crown sector, the Government believes that the people of Saskatchewan expect more than just financial returns. If multiple objectives are considered as being equally important at the top most level, it can certainly be difficult to establish a cause-effect hierarchy among the different dimensions.

Although CIC developed the initial template of the crown sector scorecard and made its generic template available to its subsidiaries (the individual crowns)

**Table 1.** Comparison of Individual Crown Scorecards.

Corporation	Number of Dimensions on the Scorecard	Individual Dimensions
Crown No. 1	4	Financial; Operating/Process; Market; Public Policy/ Employees
Crown No. 2	4	Public Policy; Customer; Financial; Innovation & Growth
Crown No. 3	5	Financial; Customer; Internal; Learning & Innovation; Public Policy
Crown No. 4	6	Financial Management; Customer; Growth; People; Technology; Public Policy
Crown No. 5	7	Strengthening the Community; Employee Well-being; Investing for Growth; Shareholder Value; Customer Service Excellence; Competitive Rates; Safe & Reliable System



to enable them to develop their own scorecards, it did not force the individual crowns to use the same template. The CIC recognized the differences between itself and the individual crowns and also those across the individual crowns themselves. Consequently, the individual crown scorecards vary in structure – this was important for the different crowns to meet their individual needs. Table 1 presents a comparison of the scorecards of five individual crowns (these five were included in the initial crown review in 1996).

## **USE OF THE SCORECARD**

As stated earlier, the scorecard was initially developed as a framework which could be used: (1) by the CIC Board to set objectives and then assess the performance of the individual crowns (governance mechanism); and (2) by the individual crowns, the CIC Board, and ultimately the province as an accountability mechanism to report back to shareholders. With respect to the former, which is similar to the private sector, individual crowns submit quarterly reports to CIC which then reports to the CIC Board. In addition, CEOs of the individual crowns are required to present their annual performance in December each year to the CIC Board and representatives from the provincial government.<sup>7</sup>

The annual “Performance Management Day” is the time when CEOs and respective Board Chairs present their strategic objectives and measures, and received approvals for their plans and targets. These annual plans are prepared using the balanced scorecard format; thus, the scorecard transformed into a planning tool. Targets are established for each measure on the scorecard over a five-year rolling horizon. With respect to the use of the scorecard as a planning tool, the Director of Performance Management stated as follows:

We view performance management... as an important means of implementing high level strategy. In other words, we promote performance management planning, and the balanced scorecard management tool, as a very effective way of “actioning” broad strategy. I believe this is a significant accomplishment because it is otherwise not easy to implement broadly stated strategic objectives/goals.

Figure 4 captures the link between strategy and operational planning.<sup>8</sup> Thus, the scorecard plays the role of a planning and reporting tool, which is consistent with Kaplan and Norton (2001).

With respect to the accountability aspect of the scorecard, the CIC framed a disclosure policy in 2000 requiring each of the crowns to include the scorecards in their annual reports. The main intent of this policy is to improve its accountability to the crowns’ shareholders. Once again, given the crown sector’s financial and

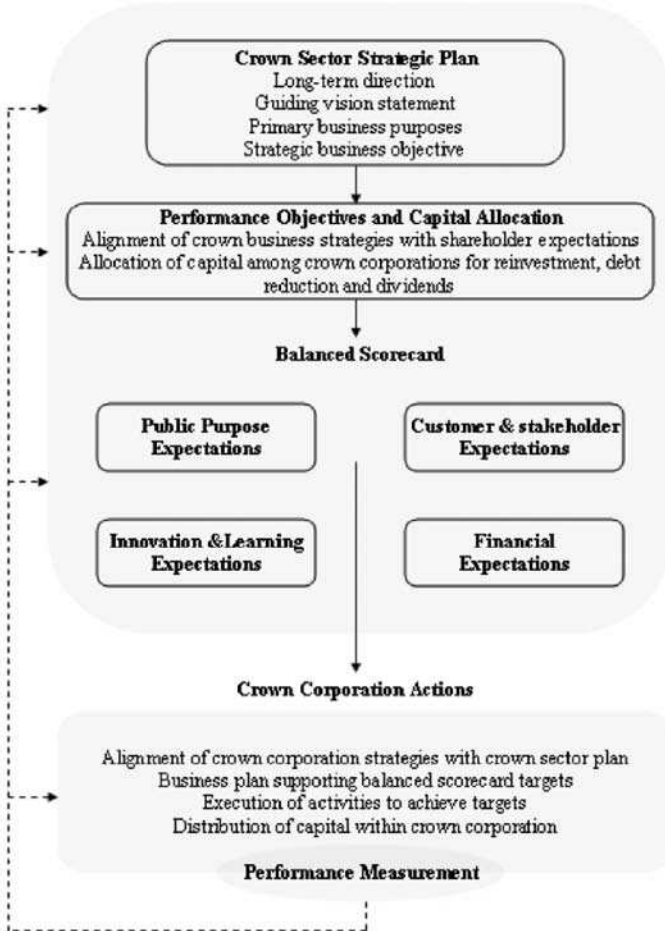


Fig. 4. Crown Sector Strategic and Performance Management Model. Source: Crown Investments Corporation (CIC, 2002): Annual Report.

public policy objectives, the CIC felt that merely disclosing financial statements does not provide a complete picture of the crowns' goals & objectives, and their achievements. For the 2000 annual reports, the minimum disclosure requirements were to provide:

- an overview and discussion of the key elements of the Crown Sector Strategic Plan, acknowledging that the corporation receives strategic direction from CIC;

- a demonstration of how the Crown Corporation business strategies are aligned with the Crown Sector Strategic Plan;
- a description of the Balanced Scorecard system of performance management implemented with the Crown corporation; and
- a description of the linkage between the Balanced Scorecard and Crown business initiatives.<sup>9</sup>

In the spirit of continuous improvement, the CIC decided to increase the disclosure requirements for future annual reports, keeping in mind that the individual crowns face varying degrees of competitive pressure and must therefore protect their positions in the marketplace. Consequently, disclosure practices vary across individual crown corporations. For example, in 2002, Crown No. 1 reported only 40% of the metrics listed in its 2002 performance plan. Some measures were consolidated in the annual report so as to not give away any details to potential competitors. In contrast, in its 2001 annual report, Crown No. 5 disclosed 85% of the metrics listed in its 2001 performance plan, as well as its annual targets up to 2005. With respect to accountability, the crown sector continues to make progress as envisioned by CIC's Executive Director of Strategic Management three years into the implementation of the scorecard:

In 1997, we talked about the Balanced Scorecard and . . . introduced it. Now . . . we are showing the public the type of measurements that we are introducing in the crown . . . sector. And our next step as we evolve is to begin letting the public know what our actual objectives are. The final step, when we are actually comfortable with it, is to show how we are establishing and measuring targets.

The disclosure policy addresses an important strategic goal which is to communicate effectively with stakeholders; it also reinforces the need for an open communication style between CIC and the individual crowns, and even within the crowns. One aspect of communication between the CIC and individual crowns is two-way reporting which did not exist. A business analyst at CIC explained this two-way process and as follows:

We continue to fine-tune the process [of] how we communicate quarterly results. The crowns submit their quarterly reports and we prepare a report to go [to] the CIC Board. We do some analysis on the information they send us. They did not always see what we reported to the CIC Board. So we have started to send back the information. You see, the information we give . . . to the CIC Board, we [also] send [to the individual] crowns so they can see what we are telling their shareholder.

This business analyst also explained that the outlook towards the scorecard has changed considerably over the years. In the eyes of the individual crowns, it has evolved from them seeing the scorecard as "something the CIC wants the crowns to report" to "this could be a valuable strategic management tool" which can

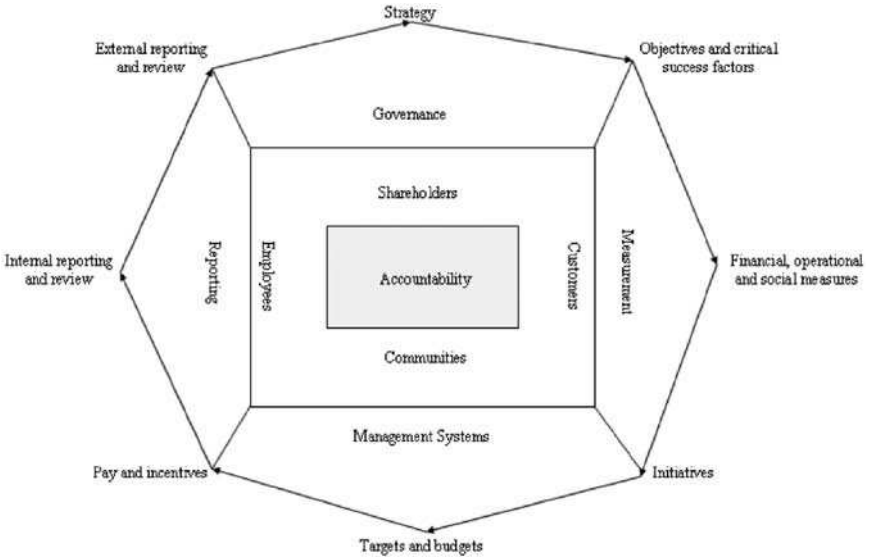


Fig. 5. The Accountability Cycle. *Source:* Epstein and Birchard (1999, p. 143).

be used to establish strategies, objectives and goals.<sup>10</sup> Using the scorecard as a governance mechanism, and as a tool for measurement, reporting and establishing management systems completes the accountability cycle as shown in Fig. 5 (Epstein & Birchard, 1999). One area, which is lacking, is the use of the scorecard to reward employees; the crown compensation does not include a performance bonus component. Given the nature and structure of crown corporations, using the scorecard for this purpose is potentially sensitive and requires careful consideration.

Preliminary analysis of the individual crown corporations suggests that although they are at different stages of understanding and implementation of the balanced scorecard concept, each one of them is continuing to improve its scorecard each year. Individual crowns are changing the mix of measures under one or more dimensions on their scorecards and reestablishing the targets for these measures. According to CIC's Director of Performance Management, "a concerted effort undertaken [recently] has been to improve the overall quality of balanced scorecards by making sure that the scorecards are aligned with key corporate strategic priorities by ensuring that measures include a mix of "leading" and "lagging" indicators, by clarifying the objectives of the public purpose perspective, and by promoting meaningful and challenging targets."

In doing so, the crowns are attempting to think along the lines of establishing cause-effect relationships at least within individual perspectives. This process of continuous refinement suggests that the crown sector is making the scorecard more strategically focused while at the same time making it more functional.

## **SUMMARY AND CONCLUSIONS**

This paper reports the adoption of the balanced scorecard in government-owned (crown) corporations. Unlike private corporations which generally tend to focus on financial performance, crown corporations have both financial and public policy objectives that they must achieve. Consequently, CIC carefully developed the structure of the balanced scorecard keeping the two objectives in mind. Although it is structurally different from Kaplan and Norton's (1992) four-dimension model, it is not necessarily inconsistent with their concept in that it is looking at more than just one perspective. However, it does not meet the cause-effect criteria which appears to be an integral aspect of the scorecard.

An interesting aspect about the crown sector scorecard is that it was initially developed as an accountability/governance tool and later transformed into a strategic management tool. Therefore, whether the initial set of measures followed strategy is perhaps questionable. With respect to the use of the scorecard, it is currently used as a planning and control/reporting tool. However, it is not used for the purposes of compensation/reward; it is therefore missing the "final linkage" which Kaplan and Norton (2001, p. 253) suggest as being important for the purposes of tying high level strategy to day-to-day actions. Finally, it is not clear to what extent the crown sector is using the scorecard for strategic learning although there have been changes in the measures used over the last five-year period. On a final note, it appears that the development of the scorecard addresses at least three of the four broad areas that the 1996 crown review committee focused on: (1) corporate governance (how crown corporations are controlled or managed); (2) financial reporting (sound financial reporting policies to help build stronger organizations and increase accountability); and (3) human resource issues (move from a culture of a monopoly service provider to one that is more innovative and aggressive in acquiring and keeping its customers).

This paper focused on the crown sector scorecard development from a macro level. Future research can be directed at understanding the development of measures, understanding the differences and similarities among individual crown scorecards, the factors underlying the dissimilarities and, more importantly, their successes with the scorecard.

## NOTES

1. Saskatchewan is a province in Western Canada.
2. The provincial government is the direct shareholder, whereas the people of Saskatchewan are the indirect shareholders in that they are a source of revenue to the government which it can invest in productive activities. Moreover, the people can vote a government out of its office. The use of the term stakeholder is perhaps more appropriate in this context.
3. Much of this section is taken from a 1996 document published by Crown Investment Corporation (CIC, 1996).
4. The required clearances from the university's ethics committee were obtained before these individuals were contacted.
5. One could perhaps argue that this was triggered by the increasing challenges in the environment and the fact that stakeholders want to know how these challenges are being met.
6. Having more than four dimensions on a scorecard is not necessarily inconsistent with Kaplan and Norton's (2001) conceptualization of the scorecard; according to them, the nature and number of dimensions and measures would be determined by the organization's strategy.
7. This day is referred to as "Performance Management Day."
8. The author was not allowed to be present at the Performance Management Day in December 2002, and is therefore unable to comment on the extent to which the balanced scorecard is discussed among the senior most executives of the crown sector.
9. CIC Internal Document, 2000.
10. This is not to suggest that implementation was easy; this is why the CIC decided to implement the scorecard a five-year implementation period.

## ACKNOWLEDGMENTS

I thank the Canadian Academic Accounting Association (CAAA) and CMA Canada for funding this study, executives of various crown corporations for their participation in the study, and Norman Sheehan and Ganesh Vaidyanathan for their valuable comments on the paper. I also thank Rupam Faruquee, Glen Kobussen and Lucy Vuong for their research assistance. Finally, I thank the participants at the Global Conference on Business & Economics, July 5–7, 2003, in London, and at the 2nd Conference on Performance Measurement and Management Control, September 18–19, 2003, in Nice.

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# MANAGEMENT ACCOUNTING IN PUBLIC AND PRIVATE HOSPITALS: A COMPARATIVE STUDY

Lars-Göran Aidemark and Lars Lindkvist

## ABSTRACT

*This paper investigates whether hospitals run as limited companies have more cost conscious and organizationally committed clinic superintendents when compared with public hospitals. Also, if the management accounting systems differ in the hospitals studied. Using a questionnaire, two hospital companies are compared with two hospitals controlled by political boards.*

*According to the analysis there are no significant differences between clinic superintendents in public hospitals and hospital companies. This is true in terms of organizational commitment and cost consciousness. However, the study indicates that participation in the hospital budget-setting process and satisfaction with financial information both affect the superintendents' cost consciousness.*

## INTRODUCTION

In Sweden the reorganization of public hospitals as limited companies is characterized by political decisions made on ideological considerations, even when justified by key words like "Freedom of Choice," "Multiplicity," "Health Care Quality"

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**Performance Measurement and Management Control: Superior Organizational Performance**

**Studies in Managerial and Financial Accounting, Volume 14, 427–445**

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ISSN: 1479-3512/doi:10.1016/S1479-3512(04)14017-3

and "Cost Efficiency." In other words, there is little sense in trying to explain or understand these reforms with the help of business administration and managerial economics theory. However, it is meaningful to study the effects of these reforms and what happens when a company takes over health and medical care.

A hospital run as a limited company is no longer governed by politically appointed boards or financed by allocations. The company is controlled by the Companies Act and its revenues are related to performance and regulated by contract. The reorganization of the two hospitals included in this study was put into effect on January 1st 2000 within the framework of a purchaser-provider model. In the contract between the procurement authority and the hospitals in question, the prices for different activities are regulated as well as the conditions that the hospital must fulfil as the provider. The reform is expected to lead to the dissolution of the fossilized organizational structure of the public hospital and the creation of a spirit of entrepreneurship and development optimism. It is also hoped that operations should turn out to be more cost efficient in a limited company than in a public utility.

The question addressed in this study is whether reorganization will lead to a stronger coupling between administrative structures and hospital operations in a limited company in a quasi-market (Ferlie et al., 1996) than in a traditional public hospital.<sup>1</sup> The heads of the medical clinics have a key role in this context<sup>2</sup> (Östergren & Sahlin-Andersson, 1998). They are responsible for the finance and administration, but also for health and medical care in their units. Thus they form an important link between the administration and the work of the hospital. In a comparative study the situation in two public hospitals is compared to that of two hospitals organized as limited companies. The question is whether there are differences between the way the heads of the medical clinics in the four hospitals look upon their organizational commitment and their cost consciousness and what importance the management accounting system has in this context.

Several studies point to the difficulties that public organizations have in achieving their reform goals. A loose coupling between the administrative decisions of the hospital and clinic work (March & Olsen, 1976; Weick, 1976) or de-coupling between the reforms of the hospital administration and hospital work (Meyer & Rowan, 1977) may be an alternative rational solution. However, the developments within the health care sector may very well penetrate the health care organizations shaping new lenses through which the heads of the medical clinics look at the world (Powell & DiMaggio, 1991, p. 13). Östergren and Sahlin-Andersson (1998) argue that heads of the medical clinics in Sweden have been influenced by an administrative and economic logic. They see changes in the cognitive, normative and regulative structures and activities within the entire health care sector as an explanation (cp. Scott, 1995). This could mean that "New Public Management"

(NPM) has colonized Swedish hospitals (Power, 1997, p. 97) and given birth to a clinical doctor both accountable and taking responsibility for financial and medical performance. In that case, reorganization of the hospitals that have been already colonized will not make any difference.

An empirically based and theoretically inspired hypothesis is that company formation and the purchaser-provider model are of no vital importance for the superintendents' cost consciousness and organizational commitment. The heads of the medical clinics both at public and limited company hospitals work under similar conditions from a management accounting perspective. This explanatory model based on institutional theory is tested here with quantitative methods. However, we also study the importance of the management accounting system to the clinical managers at the four hospitals.

According to the analyses of our data the explanatory model based on the institutional theory cannot be falsified. There are no significant differences, in cost consciousness or organizational commitment, between clinic superintendents in public and limited company hospitals. On the other hand, the study shows that the clinic superintendents claim to feel that the delegation of financial responsibility has a bearing on the organizational commitment. Furthermore, the study points out that more intensive participation in the hospital budget process and the access to satisfying financial information contributes to increasing the superintendents' cost consciousness. The conclusion is that management accounting is important in the hospitals studied. However, this importance is not linked to the current reorganization but rather seems to be the effect of an institutional change in the health care sector.

## **THEORY**

Early organization research indicates that doctors and nurses give top priority to their professional affiliation. In conflicts with the organizational interest, the professional interest will always get priority (Katz & Kahn, 1966). Ouchi (1979, 1980) coined the concept of "clan control" to describe this form of control not based on measurements of results or actions that characterize the control principles based on bureaucratic or market conditions. This means that administrative planning and operational activities are loosely coupled (March & Olsen, 1976; Weick, 1976) and that administrative reforms can be de-coupled from operational activities (Meyer & Rowan, 1977). The domain theory even regards administration and operations as two incompatible logical structures (Kouzes & Mico, 1979). But neither loose coupling nor de-coupling between administrative structures and operations need to be illogical or unsuitable. If the administrative structures

are modeled to create legitimacy in an environment with plenty of resources, while operational routines are practically and efficiently arranged, de-coupling may be a way of solving a problem (Meyer & Rowan, 1977). This organizational "hypocrisy" (Brunssons, 1989) may be rational in an organization dominated by conflicting demands.

However, in the economic downturns experienced by many countries in the Western world this became an increasing problem leading to much greater emphasis on the costs of health care and the opening up new space for accounting in health care (Chua & Preston, 1994). Bureaucratic- and market control mechanisms and a demand for measurement, leading to a coupling between economy and operational activities, challenged professional dominance.

"New Public Management" (Hood, 1991, 1995) is the umbrella term for many of the administrative reforms carried out within the public sector in the last decade. The concept not only includes the introduction of new company forms, competition, private sector management, clearer hierarchies and increasing emphasis on cost efficiency, but also the accentuation of measurements of performance and an emphasis on output control (Hood, 1991, pp. 4–5). This is, in other words, a reform agenda with rational overtones. Brunsson and Sahlin-Andersson (1997) also emphasize in their summary of the 20th century development of the public sector in Western Europe that the reforms share certain characteristics. They look upon the development as the construction of organizations. Public agencies and socially regulated and professionally dominated arenas are re-structured as traditional organizations.

According to Östergren and Sahlin-Andersson's (1998) analysis of the development of the hospital sector in Sweden, clinic superintendents today are influenced to a far greater extent than before by administrative cognitive, normative and regulative structures (cp. Scott, 1995).

This in turn has entailed that administrative regulation, norms and cognition influence are mixed with the political and professional systems. It also seems to follow from this that the head of the medical clinic who adapts to the administrative logic and uses administrative/economic language obtains more legitimacy for his/her actions and consequently more power (Östergren & Sahlin-Andersson, 1998, p. 189, own translation).

These ideas are confirmed by other research reports. Ferlie et al. (1996, p. 183) show that the introduction of market-oriented principles has entailed certain changes for heads of the medical clinics in the National Health Service and the structural conditions they work under. However, a new management style has not led to an unambiguous and inevitable power shift from professionals to managers. In many cases the professionals have instead achieved new influential roles on several levels.

The implementation of a market framework in health care, and the concomitant changes to structure and roles which this has entailed, has led to significantly greater professional involvement in the management process at both strategic and operational levels within units. Thus for senior management the movement to a market-based system may involve some sharing or loss of control to professionals (Ferlie et al., 1996, p. 183).

In the context of the New Public Management reforms in Finland Kurunmäki (2003) uses the term “hybridization” to characterize the outcome of this process. This implies that medical professionals have obtained much of the calculatory skills often regarded as reserved for and protected by management accountants.

Pragmatic adaptation to a new institutional system need not necessarily constitute a threat to the professional’s operational power. Several studies demonstrate that the economic report may lack detailed information about patients or treatments and thus cannot form the basis of operational control or follow-up (Aidemark, 1998; Lapsley, 1997; Modell & Lee, 2001; Pettersen, 2001), even though budget restrictions naturally aim at restricting the scope of action.

Clinical managers may very well have been able to adopt an administrative and economic logic and attain the power that follows from double competence. This occurs without any external observer being able to evaluate how or to what degree. Power (1997, p. 106) calls this an “inverse decoupling.”

The effects of the company formation and the introduction of a purchaser-provider model need to be studied empirically. This is not easily done, however. For one thing, the reforms may turn out to have no effect whatsoever. A publicly owned hospital reorganized as a limited company in a quasi-market may not lead to changes either in the administrative structure or in operational conditions. Secondly, the effects expected to result from the reforms may well take place without reforms. They may be the consequence of a new institutional order within the health care field (Powell & DiMaggio, 1991; Scott, 1995, 2000). The general socio-economic development has not only encouraged the increasing tightening of resources within the public sector at large but also caused savings programs and demands for economic planning and follow-up within healthcare. Today, company formation may not add anything new to the field if New Public Management already colonizes it.

As early as 1987, Coombs noticed certain effects of management accounting reforms in the Swedish health care system. He studied changes in the patient-administrative system, the accounting-system (including budget frames) and the personnel-administrative system (at the clinic level) in two hospitals in Sweden. Among the questions he asks is whether changes in these systems may affect motivation and attitudes among doctors. Coombs observed some tendency toward a growth of common interest between administrators and teams of physicians. The approaches especially took the form of doctors adopting economic rationality

arguments and trying to reflect the relations between operations and resource consumption. Coombs was of the opinion that heads of the medical clinics in Sweden had attitudes revealing that they were willing to take part in the development and also in new accounting solutions. This change could also strengthen the superintendents' possibilities to act as advocates for the work carried out. Ten years later the expectations expressed by Coombs (1987) seem to have been redeemed (Östergren & Sahlin-Andersson, 1998). The heads of the medical clinics have developed and adopted administrative views and techniques, even though criticizing the control and follow-up systems as being insufficient.

However, it is just as difficult for us to draw any general conclusions from this development now as it was for Power some years ago.

However, at the time of writing it is too early to say whether decoupling or colonizing tendencies or, most likely, a mix of the two, will harden into institutionally stable arrangements. What can be said with some confidence is that, as with financial and other forms of audit, medical audit remains a contested field (Power, 1997, p. 108).

This study addresses the question concerning the importance that the reorganization has on a quasi-market to the colonization process by comparing the clinic superintendents' situation in two hospitals operating as limited companies according to a purchaser-provider model with two public hospitals using traditional budget control.

## HYPOTHESES

The question is whether different corporate and financial forms will affect clinic superintendents' cost-consciousness and commitment to the hospital where they work. Has the company hospital, working under a purchaser-provider model, a different management accounting system and, if that is the case, what is the importance of this system in practice (Robert & Scapens, 1985)? It is interesting to study whether the company formation and the purchaser-provider model affect the situation of the head of the medical clinic (clinic superintendent) directly and whether different management accounting systems may play an indirect role in the hospitals. Of course, it is also interesting *per se* to study the contextual dependence of the management accounting system.

The head of the medical clinic forms the most tangible link between the management accounting system and the operational activities at the hospital. The question is whether he is influenced by an administrative and economic logic and to what degree the conditions studied are of importance to the operational activities of the organization. The theoretical starting-points discussed above

and the empirical studies made of the heads of the medical clinics in Swedish healthcare lead to three hypotheses.

- (1) *Company formation in a quasi market is of no vital importance to the cost consciousness and the organizational commitment of clinic superintendents.* If this hypothesis is false we may conclude that the actual reforms have added something directly to the two dependent variables.
- (2) *There are no significant differences in the management accounting system at clinic level in public hospitals and hospital companies.* The term system refers to the system in practice (Robert & Scapens, 1985). If this hypothesis is false we must analyze what the actual reforms may have added to the two dependent variables, indirectly, via a different management accounting system.
- (3) *The management accounting system is of vital importance to the cost consciousness and the organizational commitment of clinic superintendents.* If this hypothesis is false we may conclude that the hospitals still can be characterized by a loose coupling between the management accounting system and health care activities.

If, however, the three hypotheses cannot be falsified we have to accept the interpretation that development during recent decades within the health care field has been important to the cost consciousness and organizational commitment of the clinical managers. Clinical managers are influenced by developments in the health care field and have accepted an administrative and economic logic, both in private and public hospitals. Furthermore, it means that forming hospitals into limited companies and the introduction of a purchaser-provider model early in 2000 have not led to any significant differences to the dependent variables, at least not in a three-year perspective.

## METHOD

What now remains is the strategy of trying to falsify these hypotheses (Popper, 1959). A failure in these falsifying ambitions means that we have not been able to dismiss the hypotheses with the help of the empirical material, but have to accept their plausibility. Practically, the research method entails using statistical methods to verify the hypotheses that a statistically significant relation between company/financing form and the dependent variables does exist, directly or via a different management accounting system. We also try to show that there is no correlation between the management accounting system and the dependent variables. All the variables are measured by well-tested measurement instruments (Abernethy & Vagnoni, 2001). These instruments have been adapted to the special

situation, but the verifying factor analysis and reliability tests indicate that the revised instruments are valid for the purpose.

The ambition to study differences in management accounting systems between limited company and public hospitals has several grounds. Studies have demonstrated that the structure of responsibility, influence in the budget-setting process and information about economy and performance may all be of importance to performance. Govindarajan (1988) notes that previous research supports the assumption that decentralization is an important structural mechanism for effectively implementing company strategy (with reference to Chandler, 1962; Rumelt, 1974; Vancil, 1980) and the appropriate response to increasing uncertainty (with reference to, among others, Burns & Stalker, 1961; Galbraith, 1973; Lawrence & Lorsch, 1967).

Hofstede (1967) drew the conclusion from his studies that participation in the budgetary process was a variable with a strong effect on motivation. Similarly, Milani (1975, p. 281) discovers a significant association between budget setting and performance. Shields and Young (1994) also find in their study a significant correlation between cost consciousness and both cost knowledge and budget-setting participation. However, we do not assume that a higher degree of budget-setting participation is generally preferable to a lower one (Swieringa & Moncur, 1975). We do not close our eyes either to the possibility that Llewellyn (1998, p. 305) may be right in drawing the conclusion that "Delegating budgets in social services has failed to create individualized responsibilities." Instead we are interested in whether differences exist between the hospitals in this variable and whether this flagship of management accounting control has gained new respect among heads of the medical clinics in general (Östergren & Sahlin-Andersson, 1998, p. 59).

The importance of information about economy and performance for whoever is to take responsibility in these areas is hardly questioned in organizational contexts. Even if everyone does not agree with Kaplan and Norton's statement: "If you can't measure it, you can't manage it" (Kaplan & Norton, 1996, p. 21), the value of measurement is central. "Organizations stay tied together by means of controls in the form of incentives and measurement" (Weick, 1995, p. 3). Measurement may make visible that which has previously been concealed or disregarded (Miller, 1994). It may also result in figures providing the most convincing rhetoric in the organization (Czarniawska-Joerges, 1992).

## SAMPLE

A questionnaire was distributed to 56 clinic superintendents who are administratively, financially and medically responsible for the clinics (or the equivalent) at



**Table 1.** The Frequency of Responses.

Hospital	A + C	B + D
Number of questionnaire	35	21
Number of responses	27	17
Frequency of responses	77%	81%

four hospitals. Two of these hospitals (A and B) are run as limited companies, two as Public hospitals (C and D). Two of them (A and C) are county hospitals and the other two (B and D) local hospitals. These hospitals were particularly suited for the study since they are comparable in pairs with regard to size and operational activities. Furthermore, they belong to an area in southern Sweden that has had a joint agreement about a free choice of health care and a joint price-list for patients coming from outside the county for more than 10 years. A and B are run as independent companies under the leadership of a board with members appointed from the business community. These two companies work according to a purchaser-provider model and charge the patient's own health care district for treatment in accordance with a previously determined price-list. Hospital C and D have a board of elected politicians and follow traditional budget discipline involving an annually fixed allocation from the county council. A total of 44 usable questionnaires were returned, yielding a response rate of 79% (Table 1).

## VARIABLES

To begin with, 5 variables were followed up by a questionnaire to all the clinic superintendents at the four hospitals: delegation of financial decision-making authority,<sup>3</sup> budget-setting participation, access to financial and performance information, cost consciousness and organizational commitment to the hospital. Abernethy and Vagnoni (2001) provided a guide to the selection of these variables and measures.

The questions on cost consciousness are based on an instrument developed by Shields and Young (1994). In their study they measured cost consciousness by summarizing the answers to seven questions (Cronbach Alpha 0.85) intended to assess whether the respondents were knowledgeable about costs, considered costs important and took costs into consideration. The questionnaire also seems to be usable in this study (Cronbach Alpha 0.74). After a verifying factor analysis in SPSS, however, only four unambiguous questions remain; all with a factor loading above 0.6. These formed two different factors and were, to begin with, treated in the study as such; cost awareness (two questions with

Cronbach Alpha 0.91) and cost-informed actions (two questions with Cronbach Alpha 0.73).

An instrument developed by O'Reilly and Chatman (1986) was adopted to capture the organizational commitment dimension. In a verifying factor analysis the questions, which in O'Reilly and Chatman's (1986) study measured identification and internalization, formed one dimension; organizational commitment (all questions having a factor loading of  $>0.6$  and Cronbach Alpha 0.89).

The measurement of authority structure delegation is based on a measuring instrument used by Govindarajan (1988). The instrument contains four questions and focuses on the delegation of responsibility in connection with the acquisition of operational resources (Cronbach Alpha 0.85). Govindarajan (1988) studies the degree of authority in decision-making delegated to the management of strategic decision units in big companies with the help of a measuring instrument developed by Vancil (1980) using an approach similar to that of Hofstede (1967). The idea is to study whether this decentralization is of importance to the performance of the management. In this study, too, the reliability of the measuring instrument turns out to be strong (Cronbach Alpha 0.87). In a verifying factor analysis three of the items form a factor where no factor loading falls below 0.6. One item in the measuring instrument concerning the pricing of the performance of the hospital formed a factor on its own and was left out of the continued analysis.

The "participation in budget-setting" dimension was measured by means of a questionnaire adopted from Milani (1975) and Shields and Young (1994). The instrument developed contains four items (Cronbach Alpha 0.88). In a verifying factor analysis these questions constitute a factor where all the factor loadings exceed 0.6.

The "economy and performance information" factor was measured by an instrument based on Doll and Torkzadeh (1988) and from end-users' satisfaction with the resulting reports. Out of the perspectives on end-user satisfaction adopted by Doll and Torkzadeh, this test includes the question whether information is received at the right time and includes the required contents. Out of the four questions asked, three constituted a factor in the verifying factor analysis (all factor loadings being  $>0.7$  and Cronbach Alpha 0.90). These three items were summarized to make up the index for the continued analysis.

## STATISTICAL ANALYSIS

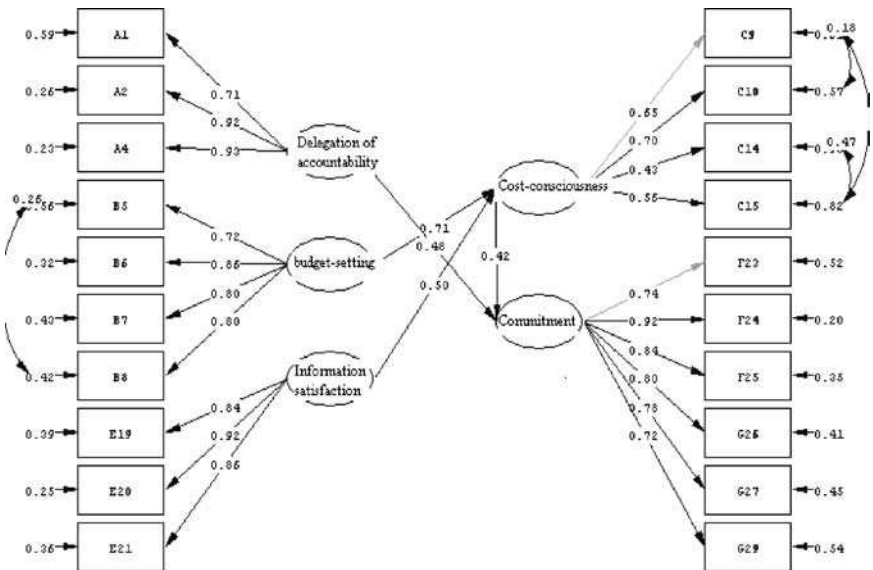
Factor analysis has primarily been used to test that the statements formulated are usable as test items for the variables in question. The measuring instruments have been tested in previous studies, but not especially on the heads of the medical

**Table 2.** Cronbach Alpha.

Factor	1 Commitment	2 Information Satisfaction	3 Participation in Budget- Setting	4 Delegation of Accountability	5 Cost- Consciousness, Action	6 Cost- Consciousness, Knowledge
Cronbach alpha	0.89	0.90	0.88	0.87	0.73	0.91

clinics, whose responsibility is financial, administrative and professional medical. In the first step factors with the “Eigen value” of >1 were chosen. Even though the analysis produced six factors in the very first step, it also indicated that 6 out of 26 items could be left out. These items were either too light (factor coefficient <0.5) or too heavy on two of the factors. The remaining 20 items constituted six factors. All the items used to measure the six variables included in the analysis have a factor loading above 0.6. The factors (delegation of authority, budget-setting participation, satisfaction with economic information, cost-consciousness knowledge, cost-conscious performance and organizational commitment) together explain 79% of the variance in the empirical material. Each instrument displayed high reliability (Cronbach Alpha lying between 0.73 and 0.91, see Table 2).). By means of the

**Table 3.** Confirming Factor Analysis in LISREL.



Chi-Square=186.36, df=160, P-value=0.07546, RMSEA=0.063

factor loadings the indices used in the continued analysis were formed. Differences between various categories of respondents (company and Public hospitals) are tested with the help of the Mann-Whitney test. The correlation discussed in the third counter-hypothesis is tested e.g. with Spearman's ranking correlation method. Finally LISREL was used to analyze the relationships between the dependent and all the non-dependent variables. This analysis included a confirming factor and regression analysis based on the items left after the reduction mentioned above. Here cost-consciousness formed one single variable (see Table 3).

## RESULTS

There are no statistically significant differences between heads of the medical clinics in hospitals reorganized as limited companies and those in public hospitals. This applies both to cost consciousness and organizational commitment. The Mann-Whitney test did not show any tendency towards there being any differences. The  $P$  value varied between 0.247 and 0.450. In other words we have not been able to falsify the first hypothesis and may draw the conclusion that *company formation in a quasi market is of no vital importance to the cost consciousness and the organizational commitment of clinic superintendents.*

In addition, we can establish that there are no statistically significant differences either between company and public hospitals concerning delegation of financial authority, budget-setting participation, or evaluation of the economic reports received by the heads of the medical clinics. The Mann-Whitney test did not show any evidence towards there being any differences. The  $P$  value varied between 0.519 and 0.656. In other words we have not been able to falsify the second hypothesis and may draw the conclusion that according to clinical managers *there are no significant differences in the management accounting system at clinic level in public hospitals and hospital companies* (see Table 4).

**Table 4.** Test of the Difference Between Public Hospitals and Hospital Companies.

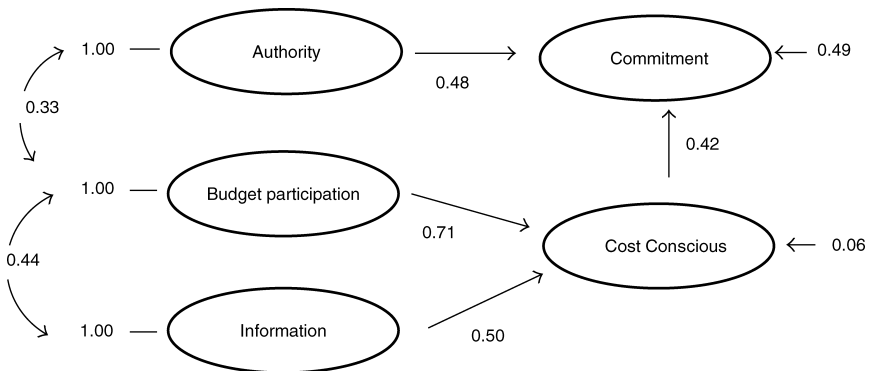
	Mann-Whitney $U$	Wilcoxon $W$	$Z$	Asymp. Sig. (2-Tailed)
Commitment	187,000	622,000	-0.755	0.450
Information satisfaction	191,500	311,500	-0.646	0.519
Participation in budget-setting	199,500	319,500	-0.446	0.656
Delegation of accountability	194,500	314,500	-0.574	0.566
Cost-consciousness, action	171,500	291,500	-1.158	0.247
Cost-consciousness, knowledge	177,500	612,500	-1.020	0.308

This implies that neither the company formations nor the introduction of the purchaser-provider model, directly or via a different management accounting system, add something of significant importance to the cost consciousness and organizational commitment of clinical managers.

However, we can discuss some very interesting relationships in a management accounting perspective. Organizational commitment is measured by six questions, which indicate the superintendents' identification with their hospital and the congruence between individual and organizational values (internalization). The study shows statistically significant relations between this variable and the delegation of authority and budget-setting participation (Spearman rank correlation coefficient,  $r = 0.479$  and  $0.475$  respectively,  $p < 0.01$  for both). The study also shows statistically significant relations between cost consciousness in acting (supply and equipment acquisition) and budget-setting participation (Spearman  $r = 0.366$ ,  $p < 0.05$ ).

The material also reveals a statistically significant and perhaps self-evident relation between satisfaction with economic information and the superintendent's knowledge of budgeted money and money spent (Spearman  $r = 0.526$ ,  $p < 0.01$ ). However, it may be more interesting to be able to establish a statistically significant relation between cost consciousness knowledge and budget-setting participation (Spearman  $r = 0.441$ ,  $p < 0.01$ ).

Consequently, we have not been able to falsify the third hypothesis and may draw the following conclusion. The management accounting system is of vital importance to the cost consciousness and the organizational commitment of clinic superintendents.



chi-Square=186.36, df=160, p-value=0.07546, RMSEA=0.063

Fig. 1. Results of Model (Significant Relations According to LISREL Analysis).

However, a LISREL analysis is used to eliminate the indirect interference between non-dependent variables and to test the relationships between cost consciousness, organizational commitment and the non-dependent variables. The result of this analysis is presented in Fig. 1.

To delegate authority in financial decision-making stands out as the most important part of the management accounting system if the object is to increase the organizational commitment of clinical managers. Budget-setting participation and satisfying economic information are important for cost-consciousness and in turn cost-consciousness affects organizational commitment in a positive way.

## DISCUSSION AND CONCLUSIONS

The question addressed is whether new organizational and financing conditions add anything directly or indirectly to the clinic superintendents' cost consciousness and organizational commitment. What is the importance of the reorganization of hospitals as limited companies? Is there a stronger coupling between the management accounting system and clinic superintendents' cost consciousness and organizational commitment in the hospital companies than the public hospitals?

The analysis of the empirical data shows that the management accounting system is of vital importance to clinic superintendents' cost consciousness and organizational commitment both in the hospital-companies and the public hospitals. However, the reorganization of hospitals as limited companies in a quasi market did not influence these dependent variables in a statistically significant way. The reforms do not seem to lead to a different management accounting system that could indirectly affect the clinic managers' cost consciousness and organizational commitment.

Consequently, the study supports the interpretation that changes in the health care field as a whole have given rise to the increasing acceptance of management accounting techniques (Östergren & Sahlin-Andersson, 1998; Powell & DiMaggio, 1991; Scott et al., 2000). However, the study does not provide any interpretation of the explanatory power of the model based on new institutional theory. It may be that all the reforms carried out during the 1990s in the spirit of New Public Management have entailed that the key personnel of the healthcare system have also been increasingly influenced by economic and administrative logic. It may also be that socio-economic development and increasing demands from the state and the municipality for a more efficient use of resources have contributed to the development (cf. Scott et al., 2000). Anyway, the introduction of the limited company construction and a quasi-market does not seem to constitute an important, decisive reform significantly increasing the cost consciousness

and organizational commitment of heads of the medical clinics – at least not in a three-year perspective.

Furthermore, we can confirm the observations made by Ferlie et al. (1996). The new economic and administrative logic is of importance to heads of the medical clinics and above all to the hospital where they work – even if we cannot confirm that this is related to the introduction of market logic (Ferlie et al., 1996, p. 183). The study indicates that the clinic superintendents' authority in financial decision-making is an important mechanism leading to increasing commitment. Furthermore, the results indicate that both financial planning (participation in the budget setting process) and follow-up routines (satisfaction with economic information) affect cost-consciousness and that this also leads to increasing commitment.

To conclude, this means that the question is no longer whether “decoupling” or “colonizing” has hardened into stable institutional arrangements. Instead, the question is whether “inverse-decoupling” (Power, 1997, p. 106) or “colonizing” is characterizing the relation between the management accounting system and operational activities. Power writes about “inverse decoupling” that “instead of defusing external evaluatory initiatives by ritualistic compliance, the mechanics of evaluation are co-opted into core practices and made invisible to external monitoring agencies, other than by assertions that audit has taken place” (ibid.).

The aggregated reports of performance and outcome do not allow these monitoring agencies to decide whether inverse decoupling or colonizing or a mix of these two are concepts describing the relation between the management accounting system and operational activities in the hospitals studied. Besides, the lack of reliable and all-inclusive measurements may be an operational problem too, at least, if the measuring is dominated by aggregated financial follow-ups. There are studies (Aidemark, 2001, 2002) which show that professionals are active in advocating a development towards more detailed and more inclusive evaluations and measurements of health care performance. This will enable them to emphasize the importance and comprehensiveness of work done in health care and to argue for necessary resources being allotted to this work. This transparency may reveal more about the relation between management accounting systems and hospital performance.

## NOTES

1. In earlier studies the authors have shown that the first years of operation for the companies led to increased production and shorter waiting times (Aidemark & Lindkvist, 2002).
2. According to a 1991 regulation, the head of the medical clinic had the responsibility for medical, economic and administrative functions. Today, even a person without medical

competence can be the head of the clinic but without medical responsibility. However, this study only includes clinic superintendents with medical competence and responsibility.

3. This variable is alternately called “Delegation of responsibility” and “Decentralization.”

## ACKNOWLEDGMENTS

This research is supported by the Knowledge Foundation (KK-Stiftelsen) and The Swedish Federation of County Councils (Landstingsförbundet).

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## APPENDIX

A verifying factor analysis was performed for the 6 variables included in the main hypothesis. On the basis of the factor analysis five items were excluded. One of the four items used to measure the “Authority Structure” variable was left out. It concerned superintendents’ influence over prices. It is completely understandable that this item is less relevant to heads of the medical clinics in hospitals. Three of seven items from the “Cost Consciousness” variable were also omitted. These items concern whether heads of the medical clinics discuss the cost situation with others or if they go through the cost budget with a superior manager. The factor analysis indicated that these items were not relevant in practice (factor loading <0.5). The remaining four items in the “Cost Consciousness” variable formed two factors, one connected with the clinic superintendents’ knowledge about costs, another with their cost-related actions. In the continued analysis these two aspects of cost consciousness make up two different variables. One item out of four in the “Importance of Information” variable was left out since it carried great weight within several factors. For the same reason one item was excluded from those concerning “Identification” within the “Commitment” variable. Even though the items used to measure this variable were expected to constitute two factors, “Identification” and “Internalization” (O’Reilly & Chatman, 1986), we can establish that in the factor analysis they formed a factor with an overall high loading. The reliability of the measuring instruments used in the continued analysis was Cronbach Alpha-tested with very good results (Table 2).

Differences between various categories of respondents (company and public hospitals) are tested with the help of the Mann-Whitney test. The Mann-Whitney test did not show any tendency towards there being any differences. The  $p$  value varied between 0.247 and 0.450.

The relations discussed in the third counter-hypothesis were tested with the LISREL method. LISREL used the database after the exclusion of the six items discussed above. The analysis starts with a factor analysis that confirms that the items form variables as intended.

The interactive regression analysis reveals the direct and indirect relations between the dependent and non-dependent variables as shown in Fig. 1.

