



# **Performance Measurement and Management at the Operational Level**

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## **Abstract**

This thesis describes an empirical investigation of performance measurement management at the operational level of five organizations, ranging in size from annual revenues of under US\$100 million to over US\$8 billion.

In attempting to identify what advice there is for operational level managers, the literature review revealed that much of the existing research does not specifically address the operational level and does not consider the distinct characteristics of the operational level. An additional literature review identified that the operational level characteristics include a real-time, short-term focus, having many brief and fragmented activities and being frequently interrupted.

An empirical investigation was undertaken to investigate the characteristics of the operational level and to identify how managers at this level manage the performance of their groups. The empirical data revealed that operational level characteristics identified in the literature were valid for the participants. In particular, the participating operational level managers face severe time constraints and are responsible for as many as 75 activities at one time, all of which require objectives and measures. The conclusion drawn was that any method used to develop objectives and measures by the participating operational level managers would be used many times and should be simpler and quicker to use than those methods described in the literature.

The most thorough method described in the literature was identified and selected as the basis for a set of guidelines, which was then evaluated by the participants. The conclusions from the evaluation were that the guidelines are correct, in principle, but were still not simple enough to be used by the participants.

The findings of this research can only be said to be valid for the participants, however, the author believes that they may be more widely applicable. Further research is needed to determine how widely the findings might apply.

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# **Chapter One**

## **Introduction**

### **1.1 Background**

Performance measurement and management is on the research agenda for one main reason. Traditional performance measurement and management systems, which focus primarily of financial measures, are inadequate in today's competitive environment.

Modern organizations are forced to compete on more criteria than simply price, as was the case when the financial measurement systems that exist today were developed. Modern organizations must not only be cost-effective, they must address the customer requirements of quality, product features, delivery time and delivery reliability, not to mention the requirements of both governments and communities. The objectives developed by organizations must reflect these competitive priorities. As Larson and Callahan (1990) identified measurement plays a vital role in implementing objectives. This awareness is not new however, as long ago as 1951, GE developed a comprehensive set of key corporate measures that included profitability, market share, productivity, employee attitudes, public responsibility and a balance between short and long term goals (Eccles 1991).

Academic interest in performance measurement and management systems began in earnest in the 1980's, with such researchers as Johnson (1981), Hayes and Abernathy (1981), Kaplan (1983, 1984), Globerson (1985), Galloway and Waldron (1988) and Hayes et al. (1988), and the academic and practitioner interest has continued to grow since then.

Despite the growing interest in the field of performance measurement and management, a review of the literature reveals that much of the research has been conducted at the strategic levels of large organizations. Take the balanced scorecard as an example. Kaplan and Norton (1996) developed the balanced scorecard with collaborators that included Advanced Micro Devices, Apple Computer and Bell South. These organizations had 1996 revenues of \$1.9 billion, \$2.3 billion and \$38.4 billion respectively. Tenhunen et al. (2002) and Ukko et al. (2002) noticed this trend and discuss the need for different approaches to the implementation of performance measurement system development procedures in small- and medium-sized enterprises (SMEs). This need has been specifically addressed by Hudson (2001, p. 16) who states that ‘... business research generally provides solutions that have been developed both in and for large companies.’

Evidence of the need to focus research effort on the lower organizational levels is hinted at by Beischel and Smith (1990), who commented on the differences in frequency and span between measures at various organizational levels, and from Ghalayini and Noble (1996) and Blossom and Bradley (2005).

However, the author was unable to identify any research into performance measurement and management at the operational levels of organizations. This lack of research into performance measurement and management at the operational levels of organizations constitutes a major gap in the current body of knowledge. It is this gap in the existing knowledge that this thesis intends to address.

## **1.2 Field of Research**

During this research it became clear that, as stated by Neely (1995) this subject draws on many disciplines: including accounting for financial performance measurement; human resources because of the implications of measuring and rewarding individuals; sociology to better understand the organizational structure and culture; management information systems to design a better performance measurement system; and performance measurement itself. However, to include all



of these within the scope of this thesis would not have been practical, if even possible.

This research is primarily concerned with investigating performance measurement and management at the operational levels of organizations. The performance measurement and management literature is therefore of particular interest in this research and constitutes the major source for the background literature. Literature relating to the operational level is also of particular interest in this research to enable an understanding of the characteristics of the operational level and discern any differences between the strategic and operational levels.

The empirical evidence made it clear that the prevailing culture of the participating organizations and the style of the individual managers both have a part to play in measuring and managing performance. The empirical evidence also showed that the participating organizations use their appraisal systems to communicate objectives to their employees, thus drawing Human Resources into the research. This research is a tentative look at performance management at the operational levels. As little is currently known about this subject, the research remains focused on the mechanics of the performance management system. While an organization's culture, management style and human resources are equally valid, to include them in this research would have resulted in a loss of focus. Therefore, these areas are not researched extensively in this research, rather their significance is noted and they are suggested as areas for future work.

Similarly, the author defined the performance measurement system as an information system. However, information systems were not included in the research as this would again have resulted in a loss of focus.

The bulk of the literature on performance measurement is concerned with performance measurement and management in a manufacturing environment. This is the case because the original impetus to investigate performance measurement arose from the realization that the then existing state of performance measurement was

inadequate in manufacturing organizations. As the research into performance measurement continued the field expanded to include service organizations, see Brignall et al. (1991) and Brignall and Ballantine (1996) for example, and non-profit organizations and government institutions (Kaplan 2001a). This expansion of the field of performance measurement, to include non-manufacturing organizations, is largely because the principles developed in the manufacturing-related research apply equally to all organizations.

While the author's preference would have been to focus the research on the operational levels of manufacturing organizations, for simplicity of analysis, the problem of gaining access to the real world, as explained in Section 3.7.3, prevented this. As a result, the interviewees included managers involved in sales, engineering support and manufacturing. However, the diversity of functions represented by the interviewees added breadth to the research, and the findings were almost identical across all functions which, in turn, adds to the validity of the research.

The author also made a number of fundamental assumptions in carrying out this research. In particular, that all business objectives should be based on the organization's strategy and that organizations and their management structure are hierarchical. The performance measurement and management literature, for the most part, also makes these assumptions, and the author believes them to be valid for most cases. However, that author recognizes that there may be situations where these assumptions are not valid.

### **1.3 Aims, objectives and research questions**

As described in Section 1.1, above, that the operational levels of organizations have not been considered in the general performance measurement and management literature constitutes a major gap in the body of knowledge. The aim of this research was therefore to address this gap by investigating performance measurement and management at the operational levels of organizations. The resulting initial objective of this research is:

## Initial Research Objective

To investigate how operational level managers develop objectives and performance measures.

This research objective gave rise to a number of specific research questions, which were divided into three categories, as shown in Table 1.1 below.

<b>Questions related to the operational level</b>	
1	What are the characteristics of the operational level in the participating organizations that might have an impact on the choice of method to develop objectives and measures?
<b>Research questions related to the performance management and measurement systems</b>	
2	Do the participating organizations have well developed performance management systems at the operational level?
3	How do the participating operational-level managers develop objectives and measures?
4	Do the desirable characteristics, as identified in the literature, exist at the operational level of the participating organizations? If they exist, is it as a result of the system or the manager?
<b>General analysis question</b>	
5	In light of the characteristics identified by RQ #1, are the existing methods to develop objectives and measures suitable for use at the operational level of the participating organizations?

**Table 1.1 - Research questions**

As the research progressed and the literature review grew more in-depth, additional research objectives were developed:

Additional research objectives:

1. To identify the managerial requirements imposed on any method(s) used to select objectives and performance measures at the operational levels of an organization.
2. To develop a method that would be both useful to, and usable by operational level managers.

3. To provide a useful definition for the terms 'performance measurement system' and 'performance management system'.
4. Given the newly developed definitions for the terms 'performance measurement system' and 'performance management system', to identify all of the desirable characteristics for each.

As a result of the research described in this thesis a tentative theory has been formulated. The emerging theory is that the existing methods to develop objectives and performance measures, which were developed at, and for, the strategic level, are not suitable for use at the operational level because of the different characteristics of the operational level. Specifically, managers at the operational level operate in real-time, have a short-term focus and are involved in many more activities that require objectives and measures that their counterparts at the strategic level. As a result, they develop objectives and measures more frequently than strategic level managers and receive feedback on the appropriateness of the objectives and measures very quickly. This suggests that the rigorous and time consuming methods that are appropriate at the strategic level are not entirely appropriate at the operational level.

#### **1.4 Research Methodology**

The impetus for this research came from the author's pre-understanding of performance measurement, gained from participation in a related research project, and his observations of performance measurement and management in action at the operational levels. The author was involved in an EPSRC (Engineering and Physical Sciences Research Council) funded project, Grant number GR/K/48174, that had as its aim the development of a performance measurement reference model and audit method. During this research the author gained an understanding of the principles of performance measurement and management. However, the author's observations during his subsequent employment in a major US-based organization gave rise to a desire to understand why theory and practice diverged so significantly.

In Chapter 3, the author's philosophy is identified as being neither positivist nor social constructionist, instead it lies somewhere in the middle, being guided by the practical needs of the research. Based on a review of the methodological literature the author's philosophy was identified as being pragmatic.

Given the nature of the research, namely the investigation of a particular problem in a real world setting, and the desire to develop and test a solution to the problem, with input from those being investigated, the type of research clearly fell in the action research category. Action research was a necessary and appropriate choice because of the fact that the author specifically intended to intervene in the organizational elements being observed (Gummesson 1991). Specifically, a method was developed to address the specific issues and constraints that exist at the operational level. The method was evaluated by the participants and their suggestions used to modify the original method. Finally, the method was assessed by the author in terms of whether it would assist in developing better (more integrated, comprehensive and relevant) measures and whether it was easy to use.

The use of the case study was deemed most appropriate for action research and this strategy included the use of interviews, observations and documentary evidence to gather the empirical data. The case study was chosen as the research strategy because, as Yin (2003, p. 13) points out:

A case study is an empirical enquiry that

- Investigates a contemporary phenomenon within its real-life context, especially when
- The boundaries between phenomenon and context are not clearly evident

Given the need to understand the real conditions under which operational level managers operate, the case study is the logical choice. Whereas an experiment, for example, could not completely and accurately recreate the operational level environment and so would not result in accurate and real empirical data. The case

studies were developed and completed with reference to Yin (2003) and Eisenhardt (1989).

The analysis of the empirical data began by analyzing the interview transcripts using content analysis. The use of content analysis is described by Patton (2002, p. 453) as any ‘...qualitative data reduction and sense-making effort that takes a volume of qualitative material and attempts to identify core consistencies and meanings.’ Each of the interview transcripts was read several times, on each pass marginal remarks (Miles and Huberman 1994, p. 66) were used to record specific observations. This first-pass analysis represented within-case analysis (Eisenhardt 1989). The choice of observation to record was guided by the original research questions and proposition (Yin 2003, p. 111). Thematic coding was used for the cross-case analysis, with the codes developed based on the content of the passages and the author’s interpretation of the content in light of the original research questions.

## **1.5 Thesis Structure**

Chapter 2 contains the literature review. It begins by reviewing the failings of traditional, financially oriented, performance measures and then goes on to review the desirable attributes of both performance measures and performance measurement systems.

Chapter 3 describes a review of the methodological literature. In doing so, it identifies the author’s philosophy and selects the most suitable research strategy and methods.

Chapter 4 re-examines the literature to firstly develop a working definition for the terms ‘performance measure’, ‘performance measurement system’ and ‘performance management system’. Secondly, the desirable characteristics of performance measures, performance measurement systems and performance management systems are identified.

Chapter 5 introduces the participants and their organizations by providing a brief description of each. The interviews are described and then the empirical data, as it relates to the operational level is presented. Observations are made and their implications for performance measurement and management are tentatively explored. The findings are that the characteristics as identified in the literature review are valid as described and the implication is that a set of guidelines is most likely to succeed at this level.

Chapter 6 presents a more detailed description of how the participants manage performance at the operational level. The extent to which the desirable characteristics exist at the operational level is explored and assessed. The main finding was that the participants lacked well developed performance measurement and management systems, and as a result of the lack of structured guidance the individual manager's abilities become critical in how and whether objectives are achieved and how performance is measured.

Chapter 7 examines the empirical data again, from a general perspective, and makes additional observations. Further support is added for the finding that operational level managers need structured methods. The overall findings, as they relate to the choice of a method to use at the operational level, are revisited. Having built the case for developing a set of guidelines, the chapter examines eight of the more commonly referenced methods in the literature. Three possible candidates are identified and examined in more detail, with the result that the Cambridge process (Neely et al. 2002) is selected.

Chapter 8 examines the Cambridge process (Neely et al. 2002) in more detail and then develops the initial set of guidelines, based on this process.

Chapter 9 assesses the research and presents areas for future work, as well as the contribution of the research.

## **1.6 Summary**

This chapter introduced the background to the research by presenting a brief overview of the performance measurement literature, identifying why performance measurement is on the research agenda and highlighting the gap in research that lead to this research.

The field of research was described as necessarily restricted to the mechanics of performance measurement and management at the operational levels. The field of research was restricted mainly because this research represents the first detailed examination of performance measurement and management at the operational level. Therefore, the main concern was to begin to build a picture of how performance is measured and managed at this level. That organizational culture and manager style are factors was acknowledged and identified as areas for future research.

The aims and objectives of the research were outlined, as was the research methodology and finally, the structure of the thesis was presented.



## **Chapter Two**

### **Literature Review**

#### **2.1 Introduction**

This chapter begins by addressing the importance of performance measurement and then describes the failings of traditional, financially-oriented performance measurement systems. The chapter then goes on to briefly examine what advice there is in the literature on how to develop performance measures and measurement systems. Several gaps are identified and discussed. Research objectives are formed that will address the gaps that were identified in the literature and a research hypothesis is developed.

#### **2.2 Why is performance measurement important?**

There is empirical evidence to suggest that what gets measured really does get managed. Larson and Callahan (1990) found that measuring the performance of test subjects increased their performance on a monitored activity but to the detriment of the activity not being monitored. An additional performance improvement was observed when results were regularly fed back to the test subjects. This suggests that in order to achieve an organization's strategic objectives, those objectives must be measured and that the results should be communicated to all involved. Brown (1994) provides further support for this and suggests that measurement contributes to the implementation of objectives most effectively when the results of measurement are used to make decisions and to drive improvement efforts. Anecdotal evidence of the positive impact of measuring performance is provided by Sink (1991). The author has also observed this phenomenon in practice, when marked improvements in performance were gained simply because measurements were initiated. As was to

be expected, the level of performance dropped off significantly when measurement ceased.

Lingle and Schiemann (1996), reporting on the results of a survey of executives in the US concluded that class-leading organizations all have the following characteristics in common:

- Agreed upon measures that managers understand
- A balance of financial and non-financial measures
- Linking strategic measures to operational measures
- Reviewing and updating their strategic ‘scorecard’
- Clearly communicating measures and progress to all employees

Kaydos (1999, pp. 1-14) provides a number of benefits from measuring performance, for both managers and for employees, these benefits are presented in Table 2.1, below.

<b>Benefits of Measures for Managers</b>	<b>Benefits of Measures for Employees</b>
Improved control	Clear responsibilities and objectives
Clear responsibilities and objectives	Seeing accomplishments and receiving recognition
Strategic alignment of objectives	Being evaluated objectively
Understanding business processes	More empowerment
Knowing the capabilities of a process	
Improved quality and productivity	
More efficient allocation of resources	
Better planning and forecasting	
The freedom to delegate	
CYA and defending your position	
Changing a company’s culture	

**Table 2.1 - Benefits of performance measurement for managers and employees  
(Kaydos, 1999 pp. 1-14)**

Knowing that measuring performance has such significant benefits, the question arises as to whether performance measurement should be performed as part of a structured and formal approach, or be left up to individual managers in the organization. To this end, the answer is provided by a survey of small and medium sized manufacturing enterprises (SMEs), conducted by Neely et al. (1996b). They identified that those organizations with formal processes for the development of performance measurement systems found it easier to:

1. Decide what they should be measuring;
2. Decide how to measure it;
3. Collect the appropriate data; and
4. Eliminate conflict in their measurement system.

This being the case then, there is an obvious need for organizations to formally measure those things that they need, or want, to achieve. Unfortunately, as Blenkinsop and Burns (1992), Bititci (1994) and Neely et al. (1999) pointed out, many organizations still rely on financially-biased performance measurement systems to make operational decisions, and many of those organizations that have attempted to change their performance measurement systems have not done so in a structured manner. As Sink (1986) pointed out when discussing some of his observations regarding performance measurement in US companies 'American managers have a habit of measuring A while hoping for B'.

### **2.3 What is wrong with 'traditional' performance measurement?**

The following brief history of financial accounting is summarized from Johnson and Kaplan (1987, p. 6-12). The earliest accounting records can be traced back thousands of years to early civilizations that recorded transactions on stone tablets. A Venetian monk, Fra Pacioli, developed the accounting methods that form the basis of today's double entry bookkeeping over 500 years ago. Management accounting methods are more recent, having been developed in response to the need for more detailed information to manage the first hierarchical organizations in the early

1800's. However, the advent of diversified multi-activity organizations, such as DuPont in 1903, required the further development of management accounting in order that the most profitable allocation of capital, across the various activities, might be determined. The development of management accounting had more or less ceased by 1925, at which time '...virtually all management accounting practices used today had been developed...' (Johnson and Kaplan 1987, p. 12). Maskell (1989, part 2) adds that the concepts of cost and management accounting had been fully formalized by 1930.

Modern manufacturing organizations however, did not cease to develop and have changed drastically since the early 1900's, in response to changing customer requirements. Customers are no longer concerned only with the price they pay for products. They want feature-loaded products that are built to exacting quality specifications and they want the products to be available on demand. These customer requirements are typically summarized as Quality, Cost, Delivery and Flexibility.

In addition, stakeholders, such as regulatory agencies, communities, activists and employees, all impose requirements on how organizations treat the environment and their people.

Despite these changes in customer and stakeholder requirements and the resulting changes in manufacturing organizations, the systems used to gather information, in order that managers might make decisions, have changed very little. This is essentially the realization that emerged and gave rise to the current interest in performance measurement and management in the late 1970's and early 1980's.

As a result, there has been a growing trend since the early 1980's to investigate non-financial performance measurement. Among the earliest proponents of a major change in the basis of performance measurement was Kaplan (Kaplan 1983, 1984). Kaplan and later Johnson and Kaplan (Johnson and Kaplan 1987) were among the

first to focus their research efforts on the problems of traditional accounting information which they identified as being that:

Today's management accounting information...is too late, too aggregated and too distorted to be relevant for manager's planning and control decisions. With increased emphasis on meeting quarterly or annual earnings targets, internal accounting systems focus narrowly on producing a monthly earnings report. And despite the considerable resources devoted to computing a monthly or quarterly income figure, the figure does not measure the actual increase or decrease in economic value that has occurred during the period. (Johnson and Kaplan 1987, p. 1)

Johnson and Kaplan (1987, pp. 1-3) identified three major consequences of the failings of traditional financial reporting systems. Firstly, the information does not assist managers in making decisions that will help to achieve process improvements. The managers frequently do not understand the content of the reports, which in any case, have no bearing on the operations for which the managers are responsible. Additionally, the reports make assumptions that are fundamentally flawed, for example assigning overhead according to direct labor, which is no longer a major contributor to cost in many modern manufacturing environments. Not only does this focus attention on an insignificant issue, it diverts attention from more critical issues. Schmenner and Vollmann (1994) refer to these situations as 'gaps' and 'false alarms'. Specifically, a 'gap' is the term applied to the situation when attention is not focused on important issues, whereas a 'false alarm' occurs when attention is being directed at a less than important issue.

Secondly, management accounting systems provide inaccurate information regarding product costs. Overhead costs are absorbed according to simplistic and out-of-date financial models. Many of the models on which today's financial metrics are based were developed before Henry Ford's first assembly line, for example, return on investment (ROI) was developed by the DuPont cousins around 1903 (Johnson and Kaplan 1987, p. 11). The characteristics of production in those days, as pointed out

by Kaplan (1990, p. 16), were very different to those of many modern production facilities. This fact is epitomized by Henry Ford's alleged but immortal line '...any color you want, as long as it's black'. Variety was not an issue for the manufacturers of Henry Ford's day. Production was characterized by long runs of products with constant characteristics and specifications; even automated work was labor intensive. As Drucker (1990) pointed out, cost accounting is based on the realities of the 1920's, at which time direct labour accounted for 80% of manufacturing costs. Contrast that to the situation in modern production facilities where direct labour typically accounts for only 8-12% of the total manufacturing costs of a product (Drucker 1990). Kaplan (1983) pointed out that traditional cost accounting systems which are based on long production runs of a standard product, with labor-intensive production methods, are no longer relevant in modern manufacturing environments. He states that measures of quality, inventory, flexibility and innovation are needed to help companies develop a competitive advantage. An extension of this problem, identified by Eccles (1991), is that financial measures are incorrectly assumed to be comparable across organizations, divisions, etc. The fact that different accounting conventions are used and that different interpretations are applied to the implementation of the various conventions means that financial measures are not truly comparable. The term 'Generally Accepted Accounting Principles' (GAAP) should provide a clue as to this fact.

Thirdly, managers are forced to think in the short term because of the monthly profit and loss statements and quarterly earnings reports. As a result investment in long term projects, which may be essential to the firm's survival, may be postponed or even cancelled in order to achieve short term budgetary targets.

The problems associated with using only financial measures have long been recognized. In 1951 GE developed a comprehensive set of key corporate measures that included profitability, market share, productivity, employee attitudes, public responsibility and a balance between short and long term goals (Eccles 1991). A system called the Tableau de Bord has evolved in France since the early 1960's as a result of the needs of manufacturing engineers and managers (Lebas 1994). The

Tableau de Bord monitors both financial and non-financial indicators to assess and anticipate performance. The Tableau de Bord is a set of ascending and descending information that feeds three levels of management – strategy, management and operations (Lebas 1994). However, the need for a change in performance measurement, specifically to supplement financial measures with non-financial measures, has really only been on the research agenda since the early 1980's (Kaplan 1983, 1984, Miller and Vollmann 1985, Maskell 1989). Despite the early recognition of the need to change how organizations measure their performance and the fact that researchers have been busy in the field since the early 1980's, the interest in the field of balanced or integrated performance measurement systems did not peak until the mid-1990's. As Neely et al. (1999) identified, between 1994 and 1996 there were 3,615 articles published on the subject of Performance Measurement. In addition, in 1996 books concerned with the subject were being published at a rate of one every two weeks in the US and in the UK alone there were 23 conferences on Performance Measurement between 1994 and 1999. Neely et al. (1999) share the opinion put forth by Eccles (1991) that there is currently a performance measurement revolution underway and this certainly seems to be supported by the above facts.

Neely (1999) suggests that there are seven reasons why performance measurement is now firmly on the research agenda, these are:

1. The changing nature of work. Direct labour accounts for a very small portion of the cost of goods sold;
2. Increasing competition. The amount and type of competition firms face has lead them to change the basis on which they compete and as a result firms now need to measure attributes other than cost alone;
3. Specific improvement initiatives. The implementation of just in time (JIT) manufacturing, total quality management (TQM), etc. lead to an awareness of the need for non-financial measures because traditional financial measures were not capturing the benefits of these initiatives;

4. National and international awards. Awards such as the Malcolm Baldrige award and the European Foundation for Quality Management (EFQM) require entrants to assess themselves against several non-financial criteria, such as policies, organization, human resources, quality assurance and improvement. The need to assess oneself against these criteria requires a non-financial performance measurement system;
5. Changing organizational roles. The recognition of the need for non-financial measures is causing many organizations to expand the responsibilities of their management accountants to include assisting in the development of non-financial measures. Other functions are also being included, for example Human Resources;
6. Changing external demands. Regulatory agencies, consumer interest groups and investors are starting to make demands of organizations that require the collection, analysis and publishing of non-financial data; and
7. The power of information technology. The proliferation of powerful computers and networking has made it possible to collect and analyze more information than has ever been previously possible.

As a result of the proliferation of articles concerned with performance measurement, as reported by Neely et al. (1999), the shortcomings of financial measures are now well documented in the literature and provide one of the few areas of consensus among the many researchers and practitioners in the field of Performance Measurement. In addition to those failings identified earlier by Kaplan and Johnson (1987, pp. 1-3), other, more specific, failings have since been added to the list. These shortcomings are briefly re-visited in the following paragraphs.

Financial measures are out of date. As discussed above, many of the accounting conventions in use today were fully developed during the first half of the 20<sup>th</sup> century, at a time when manufacturing was radically different from today's highly automated plants. For example, overhead allocations no longer make sense because of the level of automation involved in most modern manufacturing (Kaplan 1983, 1984; Miller and Vollmann, 1985; Maskell, 1989 part 2; Eccles, 1991). When the



accounting practices that are in use today were developed, manufacturing was time-consuming and labor intensive, a few standard products were mass produced so it made sense to allocate overhead to direct labor. However, modern manufacturing uses so little labour that in some examples, it has almost become negligible and it is no longer appropriate to allocate overhead to direct labour (Hayes et al., 1988).

Financial measures promote a short-term focus (Banks and Wheelwright 1979, Hayes and Abernathy 1981, Kaplan 1984, Hayes et al., 1988, Eccles 1991, Eccles et al. 1992). Investments that would benefit the long-term profitability of an organization are frequently postponed, or even ignored, in order to satisfy quarterly earnings reports.

Financial measures are reactive or lagging (Maskell 1989, Eccles 1991, Eccles and Pyburn 1992). Traditional financial measures reflect the consequences of decisions that were made in the past. They show the results of past actions and decisions. It typically takes one week after the end of the month to prepare and distribute the monthly financial reports. By this time it is far too late to take any sort of corrective action. This time lag is more acceptable at the higher, strategic, levels where the time scale may be measured in years but is unacceptable at the operational level where the time scale may be months, weeks or even days.

Financial measures do not encourage the adoption of improvement programs such as the Just-In-Time (JIT) manufacturing philosophy (Maskell, 1989 part 2, Keegan et al., 1989, Dixon et al., 1990; Green et al., 1991, Beischel and Smith, 1991, Macrinac and Vitale, 1993). The successful implementation of JIT, and other improvement programs such as Total Quality Management (TQM), Flexible Manufacturing Systems (FMS), etc., cannot be measured in terms of existing financial measures. For example, a successful JIT implementation will reduce inventories, increase inventory turns and reduce product delivery lead time. All of these are positive benefits; however, labor efficiency often looks worse because of JIT implementation. In a JIT environment products are produced only as required, this might mean that operators are not constantly producing products. Their free time should theoretically

be used to identify and implement improvements, for training and learning, for routine maintenance or general house keeping. However, the financial measure 'labor efficiency' would indicate that the operators were not being fully utilized and the JIT program could be sabotaged. The benefits arising from the free time would be lost and inventories would start to accumulate again to satisfy the labor efficiency measure.

They tell what has happened but give no insight into why it may have happened (Maskell 1989, Eccles and Pyburn 1992). Financial measures are not relevant for the control of most organizations. Measures that are concerned with variances, costs, profit and so on provide no useful information to assist in the day-to-day running of an organization, where people are more likely to be concerned with on-time delivery, quality, yield, equipment availability and so on. As Lebas (1995) put it '... the financial model, especially, is quite aggregated, very far removed from the "original cause."'

They do not promote such strategic objectives as customer satisfaction, market share and 'quality' (Maskell 1989, Dixon 1990, Eccles and Pyburn 1992). Maskell (1989, part 3) identified five categories of competitive criteria for world class manufacturing organizations; these are Quality, Delivery, Production Process Times, Flexibility and Costs. McNair and Mosconi (1987) have identified four similar criteria, which they refer to as critical success factors (CSF's): People, Quality, Delivery and Cost. Similarly, Beischel and Smith (1991) propose four CSF's: Quality, Customer Service, Resource Management, Cost and Flexibility. Customers are increasingly less concerned about price and more concerned about criteria such as reliability, features and delivery, these are the criteria that now offer a competitive advantage to manufacturers. Financial measures do not encourage employees to focus on these criteria that will ultimately provide a competitive advantage.

Financial measures are subject to manipulation to reflect what the shareholders want to see (Beer 1972, Kaplan 1983, Maskell 1989 part 2, Eccles 1991). This point was demonstrated very clearly by the recent accounting scandals involving several major

US corporations (Enron, WorldCom and Global Crossing), which resulted in the Sarbanes-Oxley Act in the United States. The Sarbanes-Oxley Act imposes much stricter reporting requirements on publicly traded companies, including making the Chief Executive Officer and Chief Financial Officer personally responsible for the accuracy of the annual reports and SEC (Securities and Exchange Commission) filings. The penalty for knowingly filing a false certification is up to a \$1 million fine and/or ten years of imprisonment. This is not to suggest that non-financial measures cannot be manipulated. They can be, however, a manager who falsely claims to have achieved, for example, all delivery targets is likely to be found out quite quickly when the customer complains or takes their business elsewhere.

Financial measures have an internal focus as opposed to an external focus. An external focus is essential in today's environment where customers are ever more demanding and competition is fierce (Eccles and Pyburn 1992). Financial measures for one period are typically compared to those of a past period. This offers no insight into the organization's true performance in the marketplace – if sales increased, was it because of a superior product or because a competitor went out of business? Did market share also increase? Financial measures give no assistance in answering these questions.

Kaplan and Norton (2001, p66) present another point of view, that of assessing value. They point out that existing financial methods were designed when businesses added value by acquiring and transforming tangible assets. However, modern businesses create value by developing intangible assets, such as employee skills and knowledge, information technology that links suppliers and customers to an organization, and an organizational climate that promotes innovation, problem solving and improvement. The existing financial methods cannot measure these intangible assets, for four reasons:

1. Value is indirect. Intangible assets such as employee skills and knowledge typically impact revenue and profit indirectly, through a series of cause and effect relationships. For example, an investment in employee training, leads

to better customer service, which in turn leads to higher customer satisfaction, which leads to better customer loyalty, which leads to higher sales, revenue and profit.

2. Value is contextual. The value of an intangible asset depends on the context in which the asset exists and the strategy that has been developed to use the asset. Kaplan and Norton (2001) provide an example: A senior investment banker with a firm such as Goldman Sachs has a valuable capability to develop and manager customer relationships because of his knowledge and understanding of the markets. The same investment banker would offer little in the way of value to an online brokerage that specializes in low-cost online trading.
3. Value is potential. Tangible assets can be valued based on known prices such as current market value or historical prices. However, intangible assets have a potential value that requires various processes, such as design, delivery and service, to transform the intangible asset into revenue. How well the process is executed will determine the amount of revenue, and hence the value, that is generated.
4. Assets are bundled. Intangible assets on their own cannot generate revenue; they can only do so when bundled with other assets, both tangible and intangible.

Given all of the problems associated with using non-financial measures, the question as to whether financial measures should be abandoned altogether has been discussed by some authors (Maskell 1989, part 2, Dixon et al 1991, Blenkinsop and Burns 1992, Kaplan and Norton 1996). Organizations typically exist not just to make money but to make as much of it as possible, this is certainly the desire of shareholders and analysts who readily sell their shares of company stock when earnings do not meet expectations. To this end financial measures are essential in order to track revenue, costs and profit. Kaplan and Norton (1996) discuss whether financial measures should be abandoned altogether and conclude that they should not. Improving quality, customer satisfaction, productivity and other criteria are the means to an end, not the end itself. Not all strategies are profitable and the financial

measures will show whether the current strategy is profitable, or not. Strategies that do not generate improvements in the bottom line must be revisited in order to identify what went wrong. Maskell (1989, part2) adds that cost and financial accounting are necessary for ‘...valuation of inventory, integration with the financial accounts, external reporting and pricing’. In addition, as pointed out by Blenkinsop and Burns (1992), companies facing economic hardship need to pay particular attention to their financial measures.

As seen in the above discussion, financial and non-financial measures both have a place in modern organizations and neither should be used alone for control purposes.

## **2.4 What methods exist to develop performance measures?**

The benefits of using a structured approach to developing balanced performance measures were discussed in Section 2.2. These benefits, in conjunction with the failings of financial performance measures clearly indicate the need for organizations to implement balanced and integrated performance measures. This section begins by discussing ‘balance’ and ‘integration’ in the context of performance management and then goes on to examine some of the work that is currently being carried out by researchers, into the development of balanced and integrated performance measurement and management systems. Some gaps are identified in the literature and these gaps are then discussed, as they form the basis of this thesis.

### **2.4.1 Balanced Performance Measures**

In the literature there are almost as many suggestions on how to develop balanced and integrated performance measures as there are researchers in the field. In simple terms ‘balance’ could be considered to mean that non-financial measures are used to supplement the financial measures in use within an organization. However, there are other considerations that can increase the degree of balance in a performance measurement or management system. The most widely known of the balanced performance measurement systems is without doubt Kaplan and Norton’s Balanced Scorecard (Kaplan and Norton 1996). In the Balanced Scorecard (BSC) there are

four perspectives in which measures are developed for an organization. The four perspectives are:

1. Financial perspective
2. Customer perspective
3. Internal Business Process perspective
4. Growth and Learning perspective

Kaplan and Norton suggest that developing objectives and measures in each of the four perspectives, that are based on the organization's strategy will lead to a balanced performance measurement system and also to the successful implementation of the strategy.

A more recent offering that addresses the need for balance is the Performance Prism (Neely et al. 2002). The Performance Prism is described as a 'thinking aid', as opposed to a 'prescriptive framework' (ibid. p. xv), and it provides a structure that allows executives to answer the five fundamental questions faced by organizations today:

1. Who are our stakeholders and what do they want and need?
2. What do we want and need from our stakeholders?
3. What strategies do we need to put in place to satisfy these sets of wants and needs?
4. What processes do we need to put in place to enable us to execute our strategies?
5. What capabilities – bundles of people, practices, technology and infrastructure – do we need to put in place to allow us to operate our processes more effectively and efficiently?

The Balanced Scorecard has been criticized for not specifically considering employees and other stakeholders (Neely et al. 2002), and as Neely et al. (2002) point out: '...the only sustainable way of delivering shareholder value in the 21<sup>st</sup>

century is to deliver stakeholder value and this means enhancing, maintaining and defending the company's reputation on a broad range of fronts.'

Considering this point, and the examples of the negative impact that a small number of disenfranchised stakeholders can have on an organization (Neely et al. 2002, pp. 2-3), there is a clear need for organizations to achieve balance by including every stakeholder when they create and execute their strategies and policies.

#### **2.4.2 Integrated Performance Measures**

In the context of performance measurement "integration" is usefully defined as follows: 'Integration is achieved by the communication of, and adherence to, corporate strategic objectives throughout an enterprise, thereby allowing these objectives to dictate the real time operational activities of the enterprise' (Carrie and MacIntosh 1992).

Implicit in the above definition is the need to integrate vertically and horizontally, that is, functions must communicate with each other as well as with their superiors, which finds support in the literature (Witcher and Butterworth 1996, Grady 1991). There has been a tendency in the past for functions and/or departments to attempt to contribute to the strategic objectives in contradictory ways (Meyer 1994, De Toni et al. 1994). This lack of inter-functional communication prevents horizontal integration which, as organizations become flatter and as we continue to move into the information age, is likely to become more important than vertical integration (Dumond 1994). Neely et al. (1995), in their extensive literature review, report that there is a great deal of support for using the performance measurement system to deploy strategy throughout an organization. This use of the performance measurement system to communicate strategy-based objectives and measures will achieve vertical and horizontal integration, if done properly.

### **2.4.3 Advice in the literature on how to develop balanced and integrated measures**

The literature contains much discussion on the desirable characteristics, and on how they might be achieved. This section describes the most commonly referenced writings in the literature.

Globerson (1985) suggests that there are four stages in developing what he referred to as a 'Performance Criteria' system, these stages are:

1. choosing the preferred set of performance criteria (PCs);
2. measuring the chosen PCs;
3. assigning standards to the PCs; and,
4. designing a feedback loop to respond to discrepancies between standards and actual performance.

Suggestions are provided for choosing the preferred set of PCs including, among others, that they be derived from the company's objectives (which is taken to mean strategic objectives), that the purpose of the PCs be clear and that the methods of calculating the PCs be clearly defined. Globerson suggests that the performance criteria system can include criteria for individuals or for the organization as a whole and for the micro (operational) level or for the macro level by integrating micro PCs. Globerson does not specifically state the need for non-financial measures but this may be inferred from his guidelines that the criteria should be selected through discussion with those involved and that they should be under the control of those being evaluated.

Sink (1986) provides a five-part methodology that starts with strategic planning, and then clearly defines the scope and purpose of the organization, it next conducts roadblock identification, analysis and removal, then selects measures and finally communicates the results. This methodology is notable because in the second step it requires that management clearly understand their organization in terms of its mission and objectives, its customers and products and the processes involved in



creating the outputs of the organization. Similar to Globerson (1985), Sink suggests that measures be developed by consensus. In a later paper Sink and Tuttle (1990) described a more evolved and comprehensive version of the methodology which they described as a performance management process.

McNair and Mosconi (1987) specifically state that financial measures need to be supplemented by measures that address all of the critical success factors that they identified as consisting of People, Quality, Delivery and Costs. They state that the performance measurement system provides the first step on the path to manufacturing excellence. They also state that the measures should capture the key elements in the manufacturing strategy, expose non-value added costs to aid in their removal, provide accurate and timely data on cost drivers, and serve as accurate records for product costing decisions. They suggest that their criteria for evaluating management accounting and control systems provide a framework for designing a performance measurement system to integrate and coordinate the activities in an organization. They also suggest that a performance measurement system should monitor changes in market demands, establish and evaluate progress towards business objectives, ensure attainment of performance targets at the plant level, and serve as performance indicators on the manufacturing process itself. McNair and Mosconi's (1987) method clearly addresses both balance and integration. It is also interesting as it identifies the need to look outside the organization to changing market demands. This seems to be suggesting that the performance measurement system has an important part to play in strategy development by providing the necessary external information to assess whether the strategy is still valid, or whether it needs to be modified.

Maskell (1989, part1) identified seven common characteristics of the performance measures being used by world class manufacturing companies, specifically the measures: are directly related to the manufacturing strategy; are non-financial; vary between locations; change over time; are simple and easy to use; provide fast feedback; and, are intended to teach rather than monitor. An important concept in Maskell's list is that performance measures are not written in stone, that is, they

should vary between locations and change over time as circumstances change. Aside from this Maskell clearly stresses the need for non-financial measures, he does not, however specifically address integration.

Crawford and Cox (1990) discuss the design of performance measurement systems for just-in-time (JIT) manufacturing organizations and present the results of a study of six organizations. Based on the study they provide 10 propositions for the development of measures in JIT environments. While some of the propositions are specifically concerned with JIT operations, several are applicable to performance measurement in general. The four propositions that are applicable to performance measurement in general are:

1. Performance criteria must be measured in ways that are easily understood by those whose performance is being evaluated
2. Performance data should be collected, where possible, by those whose performance is being evaluated
3. Graphs should be the primary method of reporting performance data
4. Performance data should be available for constant review

That measures should be understood and developed by, as well as under the control of those being measured is becoming a common theme, as both Globerson (1985) and Sink (1986) recommend the same.

McNair et al. (1990) also discuss the failings of traditional financial measures in a JIT environment and identify the tension that can arise when operational improvements are not reflected in the financial measures. They present a performance pyramid, based on concepts of total quality management, industrial engineering and activity accounting. The pyramid provides a framework that communicates the corporate vision down throughout the organization, in the form of objectives and measures, to the operational level. Specific objectives and measures are developed for the business units, business operating systems (processes, such as order fulfillment) and at the department or work center (activity) level. In this way

all employees contribute to the strategic objectives and receive timely and relevant feedback on their performance. This is another work that clearly identifies the need for balance and integration.

In a similar fashion, Azzone et al. (1991) provide guidelines for developing measures in organizations that compete on a time basis. While similar in concept to the JIT philosophy, they suggest that time-based strategies are broader as they aim to impact the entire organization and not just the manufacturing operations. They provide a matrix of internal versus external configuration for each of the macro activities (processes) that could provide a competitive advantage. In this context 'internal' refers to specific activities within the processes, while 'external' refers to the broader processes themselves. They provide three general steps in developing measures. They begin by identifying the strategic role of time in the organization, they then identify the critical activities that will create a competitive time-based advantage and finally determine improvement initiatives and measures for those activities.

Beischel and Smith (1990) also offer a framework, based on two fundamental premises:

1. Manufacturing performance can and should be linked to company financial performance; and
2. All manufacturing measures, at all organizational levels, should be linked to ensure constancy of purpose among organizational levels and to point to cause-and-effect relationships so all employees can attack the problems that cause poor performance and continue practices that cause good performance.

The first step is to identify the critical success factors for manufacturing, they defined these as '... items so important to the company that, without any one of them, the company would fail.' The critical success factors (CSFs) need to be carefully measured and they need to be linked to the activity measures at the operational level. The next step is to develop a series of scorecards that report the actual level of performance being achieved to those being measured. One notable

item in this work is that measures vary at different organizational levels in two important ways. The frequency of measure and the span of control are very different at various levels. At the shop floor the frequency of measure is high, whereas at the upper organizational levels the frequency of measure is much less. Similarly, the span of control at the shop floor level is narrow and focused but the span of control at the upper levels is broader.

Dixon et al. (1990) provided five attributes of good measurement systems, regardless of which competitive priorities are being pursued by the organization. They suggest that measurement systems should:

1. Be mutually supportive and consistent with the business's operating goals, objectives, critical success factors and programs.
2. Convey information through as few and as simple a set of measures as possible.
3. Reveal how effectively customers' needs and expectations are satisfied. Focus on measures that customers can see.
4. Provide a set of measurements for each organizational component that allows all members of the organization to understand how their decisions and activities affect the entire business.
5. Support organizational learning and continuous improvement.

The last point is a particularly interesting one. That the performance measurement system could be used to support organizational learning and continuous improvement was both novel and ahead of its time.

Brignall et al. (1991) introduced a new concept, that of results and determinants. They also identified six dimensions of performance based on a two and a half year research project into for-profit service businesses. These six dimensions of performance may be likened to the critical success factors mentioned by other authors, such as McNair and Mosconi (1987), Beischel and Smith (1990) and Azzone et al. (1991). Two of the six dimensions, competitiveness and financial

performance, are considered to result from the other four dimensions. Consequently, quality of service, flexibility, resource utilization and innovation are the determinants.

Wisner and Fawcett (1991) propose nine steps in developing non-financial performance measures. They begin with the firm's mission statement; next they identify strategic objectives, functional objectives and measures and then more specific lower level objectives and measures. They suggest the measures be used to identify the competitive position, locate problem areas, assist in updating the strategic objectives and making tactical decisions to achieve those objectives and then to provide feedback after the decisions are implemented. The final step is to periodically evaluate the measures and to update them as the strategic priorities change. This last step is similar to Maskell's (1989, part1) assertion that measures need to change over time. Wisner and Fawcett (1991) specifically address the need for integration and suggest that 'An effective performance measurement system should lead to the integration of operations, marketing, finance, engineering and accounting so that they act as one coordinated value-adding system.'

Similar to McNair and Mosconi (1987), Wisner and Fawcett suggest the use of measures to look outside the organization to the competitive position and to adapt the strategy based on the information provided by the performance measurement system.

Another advocate of using performance measures to achieve vertical and horizontal integration is Grady (1991). He states that performance measures must be derived from strategy, be developed to support business objectives, be collected and reported at numerous levels in the organization and be linked cross functionally. He also points out that performance measures must change as the strategy changes. Further, he identifies the need for cost and non-cost measures, as well as process measures and result measures. These latter measures are similar to the result and determinant measures identified by Brignall et al. (1991).

The greatest proponents of 'balance' in performance measurement are Kaplan and Norton (1992, 1996a, 1996b). Their balanced scorecard (BSC) was developed as a result of a year-long research project conducted as a collaborative effort between the Harvard Business School and 12 companies '...at the leading edge of performance measurement...' (Kaplan and Norton, 1992). They devised the BSC which presents goals and measures for four different perspectives, these perspectives are the Customer, Internal, Innovation and Learning and Financial perspectives. Over the years since the introduction of the BSC they increased the number of collaborative organizations to over 200 (Kaplan and Norton 2001a), and transitioned from only manufacturing organizations to non-profit, government and health care organizations (Kaplan and Norton 2001c). As a result of their continued development of the BSC they claim that the BSC has evolved from a performance measurement system to become the organizing framework for a strategic management system (Kaplan and Norton 1996a, 2001a). However, as mentioned above the Balanced Scorecard does not go far enough in addressing balance (Neely et al. 2002).

Eccles and Pyburn (1992) suggest that many managers have difficulty developing balanced performance measurement systems because they omit a crucial first step, that is, to define and agree on a business performance model of the organization. The managers need to understand the relationship between their actions and the results of their actions. This business performance model is very similar to Kaplan and Norton's (1996a) assertion that the measurement system should make the cause and effect relationships among objectives and measures explicit. In a similar fashion Sink (1986) suggests that management need to clearly define and understand the scope and purpose of the organization. Eccles and Pyburn (1992) introduced the notion that trade-offs may be necessary among measures. This requires a thorough understanding of the business model in order that the trade-offs may be understood and that the measures may be prioritized. In common with other authors mentioned above, they also note that the measurement system should evolve over time as circumstances change, a point also supported by Gregory (1993). Eccles and Pyburn (1992) also briefly touch on the importance of measuring external as well as internal performance. An additional noteworthy point is that Eccles and Pyburn (1992)

suggest linking the reward system to the performance measurement system but they also acknowledge that this may be met with some resistance.

Neely et al. (1995, 1996b) were the first to take an objective look at performance measurement and to consider that measures and the measurement system are separate and that they may have different characteristics. To this end they developed the following definitions (Neely et al. 1995):

- Performance measurement can be defined as the process of quantifying the efficiency and effectiveness of action;
- A performance measure can be defined as a metric used to quantify the efficiency and/or effectiveness of an action;
- A performance measurement system (PMS) can be defined as the set of metrics used to quantify both the efficiency and effectiveness of actions.

They examined the performance measurement system (PMS) at three levels, those of the individual measures, the set of performance measures and the relationship between the PMS and the environment in which it operates. This research is therefore interesting because it raises the question, at least in the author's mind, of what exactly a performance measurement system is. There seems to be some confusion in the literature regarding this question. For example, Neely et al (1996a, 2000) developed a process to design performance measurement systems. The process begins by grouping products into strategically compatible groupings, then agreeing business objectives and measures for those groupings (Neely et al. 1996c, 2000). Kaplan and Norton (1996a, 2001a) in describing the similar but less prescriptive application of the balanced scorecard, refer to their system as a strategic management system. Sink and Tuttle (1990) describe a similar process and refer to it as a performance management process. If Neely et al.'s (1995, 1996b) definition of a performance measurement system as a 'set of metrics' is valid, then perhaps the process they describe should be referred to as a process for the development of a performance management system, and not that for a performance measurement system.

Brignall et al. (1991) suggest that measuring performance is an integral and fundamental part of the Management Information System (MIS):

The major function of the MIS is to provide information to help management plan, control and make decisions in their organizations. Such systems should support corporate objectives and the competitive strategies adopted to attain them. Organizational control is the process of ensuring that an organization is pursuing actions and strategies that will enable it to achieve its goals. The measurement of performance is central to control, and means asking three questions. What has happened? Why has it happened? What are we going to do about it? (Brignall et al., 1991)

From this we may infer that the performance measurement system is an information system, and this would correlate with Neely et al.'s definition of a PMS as a set of metrics.

Although not specifically considering performance measurement systems, Drucker (1995) provides some useful comments on information systems and their role in modern organizations: 'To manage in the future, executives will need an information system integrated with strategy, rather than individual tools that so far have been used largely to record the past.'

Sink (1991) provides five steps in developing performance measurement systems for world class competition, three of the five steps are:

1. Identify users and their information requirements, as they support performance measurement.
2. Identify data requirements for required information, and
3. Develop collection, storage, retrieval processing, and portrayal tools and techniques.

It can be seen from this list that Sink is thinking of the performance measurement system purely in terms of an information system. Somewhat similarly Sieger (1992)



refers to a performance measurement system as a communication tool that helps lower-level management decide on what actions to take in support of strategy.

In describing three case studies of the implementation of the balanced scorecard, Letza (1996) identified six criteria for the balanced scorecard (BSC), the first of which was that the BSC should 'deliver information which is the backbone of the strategy'.

Bititci et al. (1997) specifically addressed the performance measurement system as an information system, which lies at the heart of the performance management process. They suggest that the performance measurement system forms a closed loop system that deploys the vision, objectives and strategic goals down through an organization and provides upward feedback of actual performance. Bititci et al. (1997) adopted a different approach than that of other researchers in the field. While other researchers, or practitioners, identify the desirable characteristics of performance measurement systems (McNair and Mosconi 1987, Maskell 1989 part 1, Dixon et al. 1990), or suggest methods (steps, guidelines and frameworks) for how to achieve those characteristics (Globerson 1985, Sink 1986, Beischel and Smith 1990), Bititci et al. (1997) identified the elements that a performance measurement system should possess. These are presented in the form of a reference model. They went on to develop a complementary audit method that has been used to assess existing performance measurement systems against the reference model and as a result to identify deficiencies in the existing performance measurement systems (Bititci et al. 1998).

At this point the system that we are concerned with, that is, the performance measurement system has been referred to as a performance measurement system, a performance management system and as an information system. Furthermore it has been attributed a greater role than simply measuring the performance of the organization and its employees – it has been suggested that the PMS should look outside the organization to collect and analyze external information in order to determine whether the strategy is still valid (McNair and Mosconi 1987, Wisner and

Fawcett 1991); it has been suggested that the PMS should be used to communicate that strategy (Sink 1986, Maskell 1989, McNair et al. 1990); and that the PMS develop objectives for every employee in an organization, assess progress towards those objectives through the use of measures, and then initiate action in the event that the objectives are not met (Globerson 1985) That's an impressive set of demands for a system that Neely et al. (1995) defined as '...a set of metrics...'

There is therefore clearly a need, in the author's opinion, to expand on Neely et al.'s definitions and to provide a more comprehensive set of definitions for the terms 'performance measurement system' and 'performance management system'.

Another trend that emerges from a brief review of the literature is that the current research focus is almost exclusively on large organizations; what is more, the focus is on the strategic levels of those large organizations. Take for example Kaplan and Norton's (1996) collaborators, which included Advanced Micro Devices, Apple Computer and Bell South. These organizations had 1996 revenues of \$1.9 billion, \$2.3 billion and \$38.4 billion respectively. The trend that becomes apparent is that these are all large organizations that have sufficient resources to devote large amounts of executive time to the process of overhauling their performance measurement system. Tenhunen et al. (2002) and Ukko et al. (2002) support this point and discuss the need for different approaches to the implementation of performance measurement system development procedures in small- and medium-sized enterprises (SMEs). This need has been specifically addressed by Hudson (2001, p. 16) who states that '... business research generally provides solutions that have been developed both in and for large companies.' A notable exception that is specifically aimed at the operational level is the work of Kaydos (1999). However, while this work provides much useful information, guidance and tools, it does not do so in a readily easily usable manner, such as that provided by Neely et al. (2002).

In addition to these facts, consider Kaplan and Norton's (1996, p36) guidelines for where the balanced scorecard (BSC) should be used. They suggest that the BSC is best used in clearly defined strategic business units: 'An ideal strategic business unit

for a balanced scorecard conducts activities across an entire value chain: innovation, operations, marketing, distribution, selling, and service.’ (Kaplan and Norton, 1996 p36)

They go on to suggest the strategic business unit (SBU) balanced scorecard can then be used as the basis for developing scorecards for departments and functional units. In this way the higher level objectives and measures contained in the SBU scorecard are cascaded downwards, thus ‘...allowing all responsibility centers to work coherently towards the SBU objectives.’ (Kaplan and Norton, 1996 p36)

However, their criteria for whether or not a department or function should have a balanced scorecard are contained in the following:

The relevant question for whether a department or functional unit should have a Balanced Scorecard is whether that organizational unit has (or should have) a mission, a strategy, customers (internal or external), and internal processes that enable it to accomplish its mission and strategy. If it does, the unit is a valid candidate for a Balanced Scorecard. (Kaplan and Norton, 1996 p36)

This latter guidance seems to be suggesting that certain departments or functions should not have a balanced scorecard. If a department or function is missing any one of the above criteria should it forego the benefits of having a balanced scorecard? If the managers choose to develop a balanced scorecard contrary to the above advice will the balanced scorecard they develop be useful?

In light of these statements the Balanced Scorecard (BSC) seems to have been developed in large organizations and for use at the higher organizational levels. The BSC is not alone in this trait, as identified by Hudson et al. (2001) who conducted a case study of the use of the Cambridge Process (Neely et al. 1996c, 2002) to develop a performance measurement system in a SME. The objective of the case study was to determine the appropriateness of the Cambridge PM process to application in SMEs. The Cambridge PM Process was chosen as it was demonstrated to be the most thorough method available, based on criteria identified by Hudson et al. in the

literature under three categories: development process requirements; characteristics of performance measures; and, dimensions of performance. One of the outcomes of the case study was that the Cambridge PM process was not suitable for use in SMEs, despite being the most complete and thorough method described in the literature. For a number of reasons, including a restructuring of the organization in which the case study took place, the performance measurement system redesign project was not completed. Part of this failure was attributed to the resource intensive and strategically focused nature of the process.

Further evidence of the need to focus research effort on the lower organizational levels is gained from Beischel and Smith (1990), who commented on the differences in frequency and span between measures at various organizational levels, and from Ghalayini and Noble (1996) and Bradley and Blossom (2005).

In order to better understand whether the operational level is sufficiently different from the strategic level to warrant a different approach, the next section reviews the literature to identify the characteristics of the operational level.

## **2.5 The Operational Level**

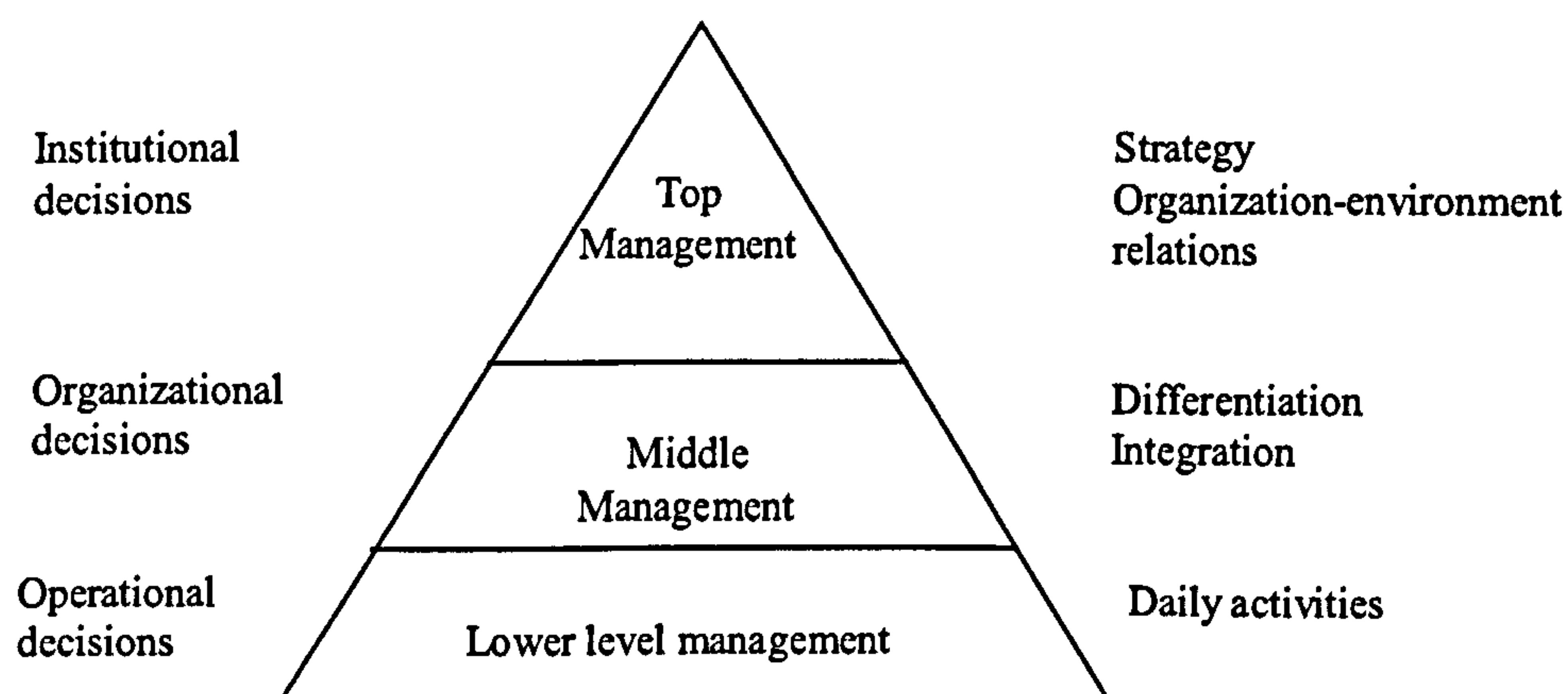
In order to better understand whether the operational level might have characteristics that are different from the strategic level, it is necessary to examine the operational. To achieve this, a further review of the literature was carried out, specifically to identify the characteristics of the operational level. This section describes that literature review.

### **2.5.1 What is the operational level of an organization?**

McNair et al. (1990) suggest the organization be considered as three general levels: Business unit; Business operating systems (more commonly referred to as business processes); and, departments and work centers. They refer to the Department and Work Center level as the operating level of the organization.

Dixon et al. (1990, p. 120) also view the organization in terms of three general levels which they referred to as ‘... the standard hierarchy of strategic, tactical and operational control.’ Lebas (1994) adopted a different terminology but also chose three organizational levels: strategy, management and operations.

Hatch (1997) describes the hierarchical organization as having three levels, depicted in Figure 5.1, below. The three levels are top, middle and lower level management. The general description given by Hatch (*ibid.*) is that ‘Top management focuses on strategic decision making, middle managers emphasize decisions about internal structural arrangement and coordination among units, and lower level managers are responsible for decisions about day-to-day operational activities within their assigned units.’



**Figure 2.1 - Decision making in the hierarchical organization  
(Hatch 1997)**

These descriptions agree with the author’s understanding of the operational level of organizations. The focus of this research is on the managers at the lowest level of the organization who are responsible for the day-to-day operations. As a result, the

operational level of the organization is defined, at least for the purposes of this thesis, as:

The operational level of the organization is the level at which the day-to-day activities are planned and executed.

The performance measurement literature, and this research, assumes that all organizations are organized hierarchically, as evidenced by much advice to cascade measures downwards level by level. However, this is not necessarily the case, Hatch (1997, pp. 183-192) describes a variety of potential organizational structures. These include the functional, multi-divisional, matrix, hybrid and network structures.

Despite the various alternatives, and the current support in the literature for 'flatter' structures, for example Dumond (1993), most organizations have not abandoned the traditional hierarchical structure (Tata and Prasad, 2004). Instead, despite much support to develop better organizational structures, '...hierarchy remains the basic structure of most, if not all, large, ongoing human organizations' (Leavitt, 2003).

Additionally, even in the extreme example, where an organization might have only one level, the principles discussed in this thesis are believed to remain applicable. For example, even if an organization has only one level, then objectives and measures for the entire organization will still need to be determined, either by an individual or by a group, and these objectives and measures will still need to be communicated to every individual in the organization.

Despite the above definition of the operational level, there is still some difficulty in discerning at which point a manager ceases to be an 'operational' level manager and becomes a middle or tactical level manager. This becomes an issue when attempting to identify managers that might be approached to participate in the research. For simplicity, operational level managers are considered to be those managers who spend greater than fifty percent of their time on the day-to-day issues. Fifty percent was chosen arbitrarily but it ensures that those managers who participated in the

research spent the bulk of their time dealing with operational level issues and could therefore easily be referred to as operational level managers.

### **2.5.2 What are the inherent characteristics of the operational level?**

Mintzberg (1973, pp. 55-94) defined ten roles that managers at all organizational levels perform. The ten roles are divided among Interpersonal, Informational and Decisional groups. Table 5.1, below, shows the groups and their roles.

Mintzberg (1973, pp. 109-113) suggests that managers at all organizational levels perform all of the ten roles, the difference between the various levels being in the amount of emphasis placed on the roles at different organizational levels. In analyzing the work of Chapple and Sayles (1961), who observed the activities of works superintendents, Mintzberg (1973, p. 111) identified nine of the ten roles. The missing role was that of the Figurehead, Mintzberg (*ibid.*) suggested that this role was also applicable at the lower organizational levels, albeit with lesser emphasis than at the higher levels. In contrast, the Disturbance Handler and Negotiator have a much greater emphasis and form the major roles of operational level managers.

Among the characteristics identified by Mintzberg (1973, p. 110) as existing at the operational level is the concern with the maintenance of workflows, which ‘...leads them (operational level managers) to emphasize the “real-time” aspects of their jobs.’ In addition, ‘brevity and fragmentation’ are more pronounced at the lower levels (*ibid.*, p. 112). Mintzberg also found evidence that the issues faced by operational level managers are more current and specific than those faced by higher level managers, and that decisions made by operational level managers were more continuous (*ibid.*, referencing Martin, 1956).

MacKerron et al. (2003) point out that information at the operational level is ‘...much more hands-on, non-financial and short term...’ The short term nature of operational level information is related to issues being current and specific.

Beischel and Smith (1991) identified the frequency of measurement and the span of control as two important differences between measures at the various organizational levels. At the operational level measurements ‘... are performed daily or even

continuously to prompt immediate action'. The span of control at the operational level is more specific and narrow than at the higher levels, therefore the measures need to provide narrow and specific information.

Dixon et al. (1990, p. 123) offer some insight into the characteristics at each level. They suggest that at the operational level of management '... the feedback mechanism should elicit immediate operational solutions'. This agrees with Mintzberg's (1973) assertion of the need for 'real-time' data at the operational level.

<b>Role</b>	<b>Description</b>	<b>Activities</b>
<b>Interpersonal</b>		
Figurehead	Symbolic head, obliged to perform a number of routine duties of a legal or social nature	Ceremony, status requests, solicitations
Leader	Responsible for the motivation and activation of subordinates; responsible for staffing, training and associated duties	Virtually all managerial activities involving subordinates
Liaison	Maintains self-developed network of outside contacts and informers who provide favours and information	Acknowledgements of mail; external board work; other activities involving outsiders
<b>Informational</b>		
Monitor	Seeks and receives wide variety of special information (much of it current) to develop thorough understanding of organization and environment; emerges as nerve center of internal and external information of the organization	Handling all mail and contacts categorized primarily as concerned with receiving information (e.g., periodical news, observational tours)
Disseminator	Transmits information received from outsiders or from other subordinates to members of the organization; some information factual, some involving interpretation and integration of diverse value positions of organizational influences	Forwarding mail into organization for informational purposes, verbal contacts involving information flow to subordinates (e.g., review sessions, instant communication flows)
Spokesman	Transmits information to outsiders on organization's plans, policies, actions, results, etc.; serves as expert on organization's industry	Board meetings, handling mail and contacts involving transmission of information to outsiders
<b>Decisional</b>		
Entrepreneur	Searches organization and its environment for opportunities and initiates "improvement projects" to bring about change; supervises design of certain projects as well	Strategy and review sessions involving initiation or design of improvement projects
		(Continued overleaf)



Disturbance Handler	Responsible for corrective action when organization faces important, unexpected disturbances	Strategy and review sessions involving disturbances and crises
Resource Allocator	Responsible for the allocation of organizational resources of all kinds – in effect the making or approval of all significant organizational decisions	Scheduling; requests for authorization; any activity involving budgeting and the programming of subordinates' work
Negotiator	Responsible for representing the organization at major negotiations	Negotiation

**Table 2.2 - Mintzberg's ten managerial roles  
(Mintzberg 1973, pp. 55-94)**

Kaydos (1998, p. 126) advises that performance measures at the lower levels will exhibit greater variation than measures higher up the organization. In addition, the time taken to see changes in performance levels is also shorter at the operational level, a fact that supports both the need for rapid feedback and for rapid decision making.

The characteristics of the operational level identified in the above discussion are summarized below:

- Real-time focus
- Brevity and fragmentation of activities
- Current and specific issues
- Continuous and rapid decision making
- Short term focus

## **2.6 Research Objectives**

From the above review of the literature it is clear that there is a general consensus regarding the nature and requirements of performance measures and measurement systems. However, it is equally clear that there is a considerable amount of confusion regarding the definitions and scope of performance measurement and performance management systems. In addition, there is consensus that strategy-

based measures should be cascaded throughout an organization, to include every employee. However, most authors assume that the strategy or CSFs are a given and suggest their use to define the highest level of objectives and measures. More usefully, Neely et al. (1996c, 2000) and Kaplan and Norton (1992, 1996a, 1996b) begin the development of performance measures by clarifying and defining or redefining the strategy and strategic objectives.

There are many active researchers involved in the field of performance measurement and each researcher has their own suggestions regarding what a performance measure or performance measurement system should be or achieve. However, as Neely et al. (2002) pointed out after a substantial review of the literature all of the available methods (processes, frameworks and guidelines) are superficial and generic and offered little ‘...specific and actionable advice’ (Neely et al. 2000). Despite the widespread academic interest in developing balanced and integrated performance measurement and/or management systems several gaps were identified in the literature. These gaps are summarized as follows:

- There has not been a research focus on the specific performance measurement needs at the lower organizational levels. In this context lower organizational levels are considered to the operational levels. Current research is focused on the higher, strategic, levels of large organizations.
- There is confusion in the literature as to the definitions for performance measurement and performance management.
- Given the need to develop new definitions for performance measurement and performance management, there is also a need to revisit the desirable characteristics of performance measurement systems and performance management systems, in light of the new definitions.

As a result of the gaps in the literature identified above, the initial objective of this thesis is:

To investigate how operational level managers develop objectives and performance measures.

This research objective gave rise, in turn, to the research questions listed in Table 2.3, below.

<b>Questions related to the operational level</b>	
1	What are the characteristics of the operational level in the participating organizations that might have an impact on the choice of method to develop objectives and measures?
<b>Research questions related to the performance management and measurement systems</b>	
2	Do the participating organizations have well developed performance management systems at the operational level?
3	How do the participating operational-level managers develop objectives and measures?
4	Do the desirable characteristics, as identified in the literature, exist at the operational level of the participating organizations? If they exist, is it as a result of the system or the manager?
<b>General analysis question</b>	
5	In light of the characteristics identified by RQ #1, are the existing methods to develop objectives and measures suitable for use at the operational level of the participating organizations?

**Table 2.3 - Research questions**

In order to satisfy the main research objective, it became clear that other objectives would also need to be addressed during the course of the research, these are:

Additional research objectives:

1. To identify the managerial requirements imposed on any method(s) used to select objectives and performance measures at the operational levels of an organization.
2. To develop a method that is both useful to, and usable by operational level managers.
3. To provide a useful definition for the terms ‘performance measurement system’ and ‘performance management system’.
4. Given the newly developed definitions for the terms ‘performance measurement system’ and ‘performance management system’, to identify all of the desirable characteristics for each.

In addition to identifying the needs of operational level managers, it is also necessary to identify the desirable characteristics of performance measures and measurement systems, in order that these characteristics may be achieved. There is much advice in the literature on the desirable characteristics of measures and measurement systems. While these authors provide a starting point, they do so based by the extant understanding of what a performance measurement system is. However, as identified above there is some degree of confusion surrounding the performance measurement and management systems, particularly in terms of which system achieves certain desired outcomes. As a result, the author believes that there is a need to redefine the terms performance measurement system and performance management system.

An important assumption associated with this research is that the requirements for developing performance measures are significantly different at the lower organizational levels, than they are at the higher levels. If they are not, then this work is unnecessary as those methods whose focus has been identified as being on the upper levels of organizations, specifically Kaplan and Norton's (1992, 1996a, 1996b) balanced scorecard and the Cambridge performance measurement system design process developed by Neely et al. (1996c, 2000), can be applied at all organizational levels. This assumption is believed to be valid because of the differences in the timescales, risks and responsibilities at the top and bottom of an organization. There is some evidence of this offered by Beischel and Smith (1990).

The emerging theory is that the existing methods are not suitable because of the different characteristics of the operational level. Specifically, managers at the operational level operate in real-time and have a short-term focus. This suggests that they will develop measures more frequently than strategic level managers and will receive feedback on the appropriateness of the measures very quickly.

## **2.7 Summary**

This chapter began by asking why performance measurement is important and found evidence provided by Larson and Callahan (1990), Sink (1991) and Lingle and Schiemann (1996) that what gets measured really does get managed. The chapter then went on to identify the failings of traditional, financially-based performance measurement systems.

The review of the literature then showed that despite the knowledge of the detrimental effects of relying solely on financial performance measures, many organizations still rely heavily on financial measures and many of those organizations that have recognized the need to use non-financial measures do not approach the issue in a structured manner (Blenkinsop and Burns 1992, Bititci 1994, Neely 1999).

The chapter next looked to the literature for advice on developing integrated and balanced performance measures and performance measurement systems. A gap in the available literature was identified in that there is no research that specifically examines the performance measurement needs at the lowest organizational levels. This gap exists despite the fact that the people that make up the lowest levels of organizations are the most under-utilized resources in business (Kaydos 1991, p. 48). Consequently, the main research objectives are firstly, to identify the differences, if any, between the upper and lower organizational levels, in terms of performance measurement; and secondly, to determine what influence these differences might have on the choice of methods to develop objectives and measures at the operational level.

In order to determine whether the operational level is substantially different from the strategic level, a further review of the literature was carried out. The operation level specific literature review was then detailed.

In addition to the gap regarding the operational level, a considerable degree of confusion was identified in the literature regarding the nature and scope of the

performance measurement system. As a result a third research objective was developed to clearly define the role and scope of the performance measurement system and the performance management system, and a fourth and final objectives was developed to reconsider the desirable attributes of performance measures and performance measurement systems, in light of the new definitions.

## **Chapter Three**

### **Research Methodology**

#### **3.1 Introduction**

This chapter begins by providing a brief overview of the purpose, scope and context of the research. The chapter next presents the research objectives and questions. It then goes on to describe the development of the research framework that guided the research. To this end, research philosophies, strategies and methods are discussed and a selection of each is made, based on both the needs of this particular project as well as on the inclination of the author. This is broadly in line with Creswell's (2003) guidance on designing research. Creswell (2003 p. 3) advocates the use of a general framework to '... provide guidance on all facets...' of a research study and suggests that the researcher needs to consider three framework elements:

1. Philosophical assumptions about what constitutes knowledge claims;
2. General procedures of research (strategies of enquiry); and,
3. Detailed procedures of data collection, analysis and writing (methods).

An additional step has been added by the author between steps one and two, that of examining the type of research. This has been done because the type of research being conducted has a considerable influence on the chosen strategy and methods.

#### **3.2 Purpose, scope and context of the research**

There is both a pragmatic purpose and an academic purpose to this research. Firstly, the author intends to investigate performance measurement and management at the operational levels of organizations, with the ultimate aim of developing a method suitable for use at the operational level. Secondly, the author also intends to add to

the body of knowledge concerned with performance measurement, by investigating a previously under-researcher area. To satisfy the first objective, the method must be both useful to, and usable by, operational level managers. To address the second objective the research must be conducted in an academically rigorous manner, such that it will be deemed sufficient for the award of a doctorate degree.

The scope of the research is confined to investigating the development of performance measures at the operational levels of organizations. There are two areas that must be addressed within the scope of this research. Firstly, performance measurement and secondly, the operational levels of organizations.

The context within which this research was conducted is the operational level of a variety of organizations. The 'operational level' was defined in Section 2.5.2, page 38, as 'the level at which the day-to-day activities are planned and executed'. There were seven interviewees in six organizations and this empirical data was supplemented by the author's observations in the organization in which he was employed while conducting the research.

### **3.3 Research objectives and questions**

Based on the author's personal experience in manufacturing and service organizations, along with experience gained from researching performance measurement systems (Bititci et al. 1997), a gap in current research was identified. The gap is that the existing methods that have been developed to assist organizations in designing and implementing performance measurement systems were developed at the strategic levels of large organizations, and therefore might not be appropriate for use at the operational levels of organizations. The operational level is, for the purposes of this research, the managerial level that is responsible for the day to day operations of an organization. As a result, the operational level of management will typically be the lowest level of management.



The existing methods are focused on the strategic and tactical levels of management, in large organizations, whose criteria and constraints are very different to those of the operational levels in any organization. In particular, operational level managers cannot afford the long periods of dedicated effort involved in implementing methods designed for the strategic and tactical levels of management. In addition, operational level managers are faced with much shorter timescales than their counterparts at the strategic and tactical organizational levels. This emerging gap gave rise to the following research objective:

#### Initial Research Objective

To investigate how operational level managers develop objectives and performance measures.

To provide guidance and focus while addressing the primary research objective, a number of specific research questions were developed, these questions are listed in Table 3.1, below.

<b>Questions related to the operational level</b>	
1	What are the characteristics of the operational level in the participating organizations that might have an impact on the choice of method to develop objectives and measures?
<b>Research questions related to the performance management and measurement systems</b>	
2	Do the participating organizations have well developed performance management systems at the operational level?
3	How do the participating operational-level managers develop objectives and measures?
4	Do the desirable characteristics, as identified in the literature, exist at the operational level of the participating organizations? If they exist, is it as a result of the system or the manager?
<b>General analysis question</b>	
5	In light of the characteristics identified by RQ #1, are the existing methods to develop objectives and measures suitable for use at the operational level of the participating organizations?

**Table 3.1 - Research questions**

In order to satisfy the main research objective, it became clear that other objectives would also need to be addressed during the course of the research, these are:

Additional research objectives:

1. To identify the managerial requirements imposed on any method(s) used to select objectives and performance measures at the operational levels of an organization.
2. To provide a useful definition for the terms 'performance measurement system' and 'performance management system'.
3. Given the newly developed definitions for the terms 'performance measurement system' and 'performance management system', to identify all of the desirable characteristics for each.

The emerging theory is that the existing methods are not suitable because of the different characteristics of the operational level. Specifically, as identified in Section 2.5, managers at the operational level operate in real-time and have a short-term focus. In addition, they are involved in many more activities, all of which require objectives and performance measures, than their counterparts at the strategic level. This suggests that they will develop objectives and measures more frequently than strategic level managers and will receive feedback on the appropriateness of the measures very quickly.

### **3.4 Research philosophies**

Generally speaking, there are two contrasting philosophies, or knowledge claims, these are referred to variously as positivism and social constructionism (Easterby-Smith et al. 2002 p. 28); positivistic and hermeneutic paradigms (Gummesson 2000 p. 19); and, positivistic and ethnographic approaches (Robson 1993 p. 18). Creswell (2003) described postpositive and socially constructed knowledge claims but also considered advocacy/participatory and pragmatic knowledge claims. There are other ontological and epistemological variants, however, these largely belong in the realm of the philosophical debate, and as Easterby-Smith et al. (2002 p. 31) advised

‘...these wider issues are not central to the design of management research...’ The four knowledge claims or philosophies, mentioned above, are described in the following sections.

### **3.4.1 Positivism and postpositivism**

Positivism is a branch of foundationalism, which is considered to be the oldest western philosophy. According to Phillips and Burbules (2000, p. 5) ‘until the end of the nineteenth century, all major western philosophies were foundationalist.’ The two branches of foundationalism are rationalism and empiricism, each being represented by René Descartes and John Locke respectively (ibid. p. 6). Descartes identified the foundation of his knowledge by his ability to reason, he believed that knowledge was true if it could not be rationally doubted and that if something seemed indubitably true, then it must be true. Locke on the other hand believed that the secure foundation of knowledge was experience, which is gained through the human senses of sight, hearing, touch, etc. (ibid. p. 6). Positivism is an extension of empiricism, and as such it can be understood why researchers who adopt the positivist approach rely heavily on quantitative methods, as will be discussed below.

Positivists believe that the social world is external to the researcher and that the properties of this external world should be measured objectively (Easterby-Smith et al. 2002, p. 28). That is, the researcher is independent to and detached from the phenomenon of interest which is being observed. According to Gill and Johnson (2002, p. 174):

...positivist epistemology limits its conception of valid or warranted knowledge (i.e. science) to what is taken to be unproblematically observable “sense-data”. If a theory corresponds with a researcher’s observations of these facts its truthfulness is taken to be established. If it fails to correspond, it is discarded as fallacious. Thus, the theory of truth that is proposed, implicitly and explicitly, is a correspondence theory of truth. Such a view of truth is made viable only through the prior assumption that it is possible to observe the facts of the external world neutrally and objectively by the

application of rigorous procedures and protocols. This latter assumption is often called the assumption of a theory-neutral observational language.

The positivist conducts research in a deductive manner by developing a theory or hypothesis, based on existing knowledge, and then collects quantitative data to test the theory or hypothesis. For this reason, research based on the positivist tradition is sometimes referred to as hypothetico-deductive research (Gill and Johnson 2002, p. 39). Positivists believe that human action is a result of external stimuli, hence the best method to observe these actions is the experiment. In the classical experiment two groups are randomly populated, one is designated the 'control' group and the other is designated the 'experimental' group. The experimental group will be subjected to an intervention (the independent variable), or stimulus of some sort, and the control group will not (Easterby-Smith et al. 2002, p. 48). Pre- and post-measurements of the dependent variable (the phenomenon of interest) will be compared and any post-intervention difference between the two groups will be attributed to the intervention. The ideal setting for this type of research is the laboratory, where tight control can be maintained over the conditions and the subjects.

Foundationalist epistemologies have a number of serious issues for social-science research, given that positivism is a branch of foundationalism these issues also apply to positivism. Phillips and Burbules (2000, pp. 14-25) describe the following six issues of foundationalist epistemologies, issues that caused some researchers to pursue a non-foundationalist philosophy, and consequently to adopt what has become known as postpositivism:

1. **The relativity of the 'light of reason'**. What is indubitable or obvious to one person may not be so to another because of the differing backgrounds and intellectual abilities of the individuals concerned. As a result, basing 'knowledge' on what appears to be obvious to the researcher is not a sound basis on which to make research claims.

2. **Theory-laden perception.** Empiricists and positivists believe that knowledge claims can only be based on what is observed or perceived. They also believe that the researcher, while engaged in observation, must remain neutral. However, it has been shown that observation cannot be neutral, that is, a researcher's understanding of what he/she observes is referenced against what he/she has experienced in the past. As a result, his/her observations are theory-laden and not theory-neutral.
3. **The under-determination of theory by evidence.** A theory cannot be unequivocally claimed to be true based on the observed evidence because there could be many other theories to adequately describe and explain the observed events.
4. **The Duhem-Quine thesis and auxiliary assumptions.** This thesis suggests that any one of a researcher's beliefs could be erroneous and as such lead to either the development of a faulty hypothesis, or to a faulty test of that hypothesis. Phillips and Burbules (2000, p. 20) give the following example:

Think of all your knowledge, of all the theories you accept, as being interrelated and as forming one large network; this whole network is present whenever you make observations or collect data. Now suppose that you are carrying out a test of some hypothesis and you find a recalcitrant piece of data that apparently refutes this (hypothesis). Do you have to abandon or at least change the now challenged hypothesis? Not at all; certainly you have to make some accommodating change somewhere, but perhaps the problem is not with your hypothesis but with some other part of your network of beliefs. To test your hypothesis you may have accepted some other data, then made calculations on this, then used instrumentation of some sort to set up the test of the prediction you have made. The error could well have entered somewhere during this complex process. ...The point of the Duhem-Quine thesis is that evidence relates to all of the network of beliefs, not just to one isolated part; all our beliefs are "up-for-grabs" during the test of any one of

them – we can save one assumption or belief if we are willing to jettison another one.

5. **The problem of induction.** The problem of induction is the longest standing issue for empiricists and positivists and is often referred to as ‘Hume’s problem of induction’ because it was first discussed by the philosopher David Hume, in the mid 1700’s. Essentially, the problem is that no matter how much evidence there is to support a theory, one cannot be absolutely certain that there is no evidence, as yet undiscovered, to refute the theory. Therefore, one cannot be absolutely certain that the theory is absolutely true.
6. **The social nature of scientific research.** Both empiricists and positivists consider knowledge to be obtained and tested in solitude. The experiences that lead to the formation of knowledge for the empiricist and the reasoning that leads to knowledge for the rationalist are those of the researcher. However, the community to which the researcher belongs has as much to do with determining what methods are acceptable, what evidence is acceptable and what form a theory should take. Hence, scientific research is social in nature and is not oriented towards individuals, as the early empiricists and rationalists believed.

These six issues caused some researchers to move away from the foundational epistemology and towards a non-foundational postpositive approach. As Phillips and Burbules (2000, pp. 25-26) expressed it, ‘...this new position is an “orientation”, not a unifying “school of thought”, for there are many issues on which postpositivists disagree. But they are united in believing that human knowledge is not based on unchallengeable, rock-solid foundations – it is conjectural.’

The key assumptions of postpositivism are usefully summarized by Creswell (2003, pp. 7-8), as identified in Phillips and Burbules (2000), these are:

1. That knowledge is conjectural (and anti-foundational) – absolute truth can never be found. Thus, evidence established in research is always imperfect

and fallible. It is for this reason that researchers do not prove hypotheses and instead indicate a failure to reject.

2. Research is the process of making claims and then refining or abandoning some of them for other claims more strongly warranted. Most quantitative research, for example, starts with the test of a theory.
3. Data, evidence, and rational considerations shape knowledge. In practice, the researcher collects information on instruments based on measures completed by the participants or by observations recorded by the researcher.
4. Research seeks to develop relevant true statements, ones that can serve to explain the situation that is of concern or that describes the causal relationships of interest. In quantitative studies, researchers advance the relationship among variables and pose this in terms of questions or hypotheses.
5. Being objective is an essential aspect of competent enquiry, and for this reason researchers must examine methods and conclusions for bias. For example, standards of validity and reliability are important in quantitative research.

### **3.4.2 Social Constructionism**

Social Constructionism on the other hand is the antithesis of positivism. Researchers who adhere to this philosophy believe ‘...that “reality” is determined by people rather than by objective and external factors’ (Easterby-Smith et al. 2002, p. 30). The researcher should immerse her/himself into the research setting to better understand why people behave and make decisions as they do. The preferred approach is the inductive one, in which researchers enter the study with no preconceived ideas or opinions and gather data which they use to develop research questions. The research solutions will subsequently be developed with input from the study participants. The data obtained during such a research study is highly qualitative and its analysis is obviously highly subjective when compared to the statistical analyses of positivist research. However, the criticism of the qualitative approach has led to an increased emphasis on the rigor with which qualitative data

are analyzed (Dey 1993, p. 5). The characteristics of both philosophies are contrasted in tables 3.2 and 3.3, below.

<b>Positivistic Paradigm</b>	<b>Hermeneutic Paradigm</b>
Research concentrates on description and explanation.	Research concentrates on understanding and interpretation.
Well defined, narrow studies.	Narrow as well as total studies (holistic view).
The vantage point is primarily deductive; thought is governed by explicitly stated theories and hypotheses.	The vantage point is primarily inductive; researchers' attention is less focused and is allowed to "float" more widely.
Research concentrates on generalization and abstraction.	Research concentrates on the specific and concrete ("local theory") but also attempts generalizations.
Researchers seek to maintain a clear distinction between facts and value judgments; search for objectivity.	Distinction between facts and value judgments is less clear; recognition of subjectivity.
Researchers strive to use a consistently rational, verbal, and logical approach to their object of research.	Preunderstanding that often cannot be articulated in words or is not entirely conscious – tacit knowledge takes on an important role.
Statistical and mathematical techniques for quantitative processing of data are central.	Data are primarily non-quantitative.
Researchers are detached – i.e., they maintain a distance between themselves and the object of research; take on the role of the external observer.	Both distance and involvement; researchers are actors who also want to experience what they are studying from the inside.
Distinction between science and personal experience.	Researchers accept influence from both science and personal experience; they use their personality as an instrument.
Researchers try to be emotionally neutral and make a clear distinction between reason and feeling.	Researchers allow both feelings and reason to govern their actions.
Researchers discover an object of research external to themselves rather than "creating" the actual object of study.	Researchers partially create what they study, for example, the meaning of a process or a document.

**Table 3.2 - Positivistic versus Hermeneutic Paradigms**  
(Gummesson 2000, p. 178)



	<b>Positivism</b>	<b>Social Constructionism</b>
The observer	Must be independent	is part of what is being observed
Human interests	should be irrelevant	are the main drivers of science
Explanations	Must demonstrate causality	Aim to increase general understanding of the situation
Research progresses through	hypotheses and deductions	gathering rich data from which ideas are induced
Concepts	Need to be operationalized so that they can be measured	should incorporate stakeholder perspectives
Units of analysis	should be reduced to the simplest terms	May include the complexity of 'whole' situations
Generalization through	statistical probability	theoretical abstraction
Sampling requires	large number selected randomly	small numbers of cases chosen for specific reasons

**Table 3.3 – Classical positivism versus social constructionism  
(Easterby-Smith et al. 2002, p. 30)**

### **3.4.3 Advocacy/Participatory Knowledge Claims**

According to Creswell (2003, p. 9) this approach developed ‘... during the 1980’s and 1990’s from individuals who felt that the post-positivist assumptions imposed structural laws and theories that did not fit marginalized individuals and groups or did not adequately address issues of social justice.’ As a result this approach is sometimes referred to as ‘emancipatory’. Researchers of this philosophy also believed that social constructionism did not sufficiently advocate an ‘action agenda’ (ibid. p. 9) for marginalized groups. The intent of these researchers was to include a political agenda along with an action agenda to implement positive reforms for the oppressed. In particular the issues of concern for these researchers include empowerment, inequality, oppression, domination, suppression and alienation. As the name implies the researcher and the ‘victim’ collaborate, in a participatory manner, in all stages of the research.

### **3.4.4 Pragmatic Knowledge Claims**

This philosophy is held by those who are more concerned with ‘... actions, situations, and consequences rather than antecedent conditions (as in postpositivism)’ (Creswell 2003, p. 11). Pragmatists are more concerned with developing solutions to problems and instead of the methods being important the problem and its resultant solution are most important. The following points are taken from Creswell (2003, p.

12) who summarized Cherryholmes (1992) and Murphy (1990) as well as adding his own interpretations:

1. Pragmatism is not committed to any one system of philosophy and reality. This applies to mixed methods research in that inquirers draw liberally from both quantitative and qualitative assumptions when engaged in their research.
2. Individual researchers have a freedom of choice. They are 'free' to choose the methods, techniques and procedures of research that best meet their needs and purpose.
3. Pragmatists do not see the world as an absolute unity. In a similar way, mixed methods researchers look to many approaches to collecting and analyzing data rather than subscribing to only one way (e.g. quantitative or qualitative).
4. Truth is what works at the time; it is not based in a strict dualism between the mind and a reality completely independent of the mind. Thus, in mixed methods research, investigators use both quantitative and qualitative data because they work to provide the best understanding of a research problem.
5. Pragmatist researchers look to the 'what' and 'how' to research based on its intended consequences – where they want to go with it. Mixed methods researchers need to establish a purpose for their 'mixing', a rationale for the reasons why quantitative and qualitative data need to be mixed in the first place.
6. Pragmatists always agree that research occurs in social, historical, political and other contexts. In this way mixed methods studies may include a postmodern turn, a theoretical lens that is reflexive of social justice and political aims.
7. Pragmatists believe (Cherryholmes, 1992) that we need to stop asking questions about reality and the laws of nature. "They would simply like to change the subject" (Rorty 1983, p. xiv).

Gill and Johnson (2002, pp. 183-188) also discuss the pragmatic approach. They state that knowledge is evaluated in terms of how well it guides action towards the

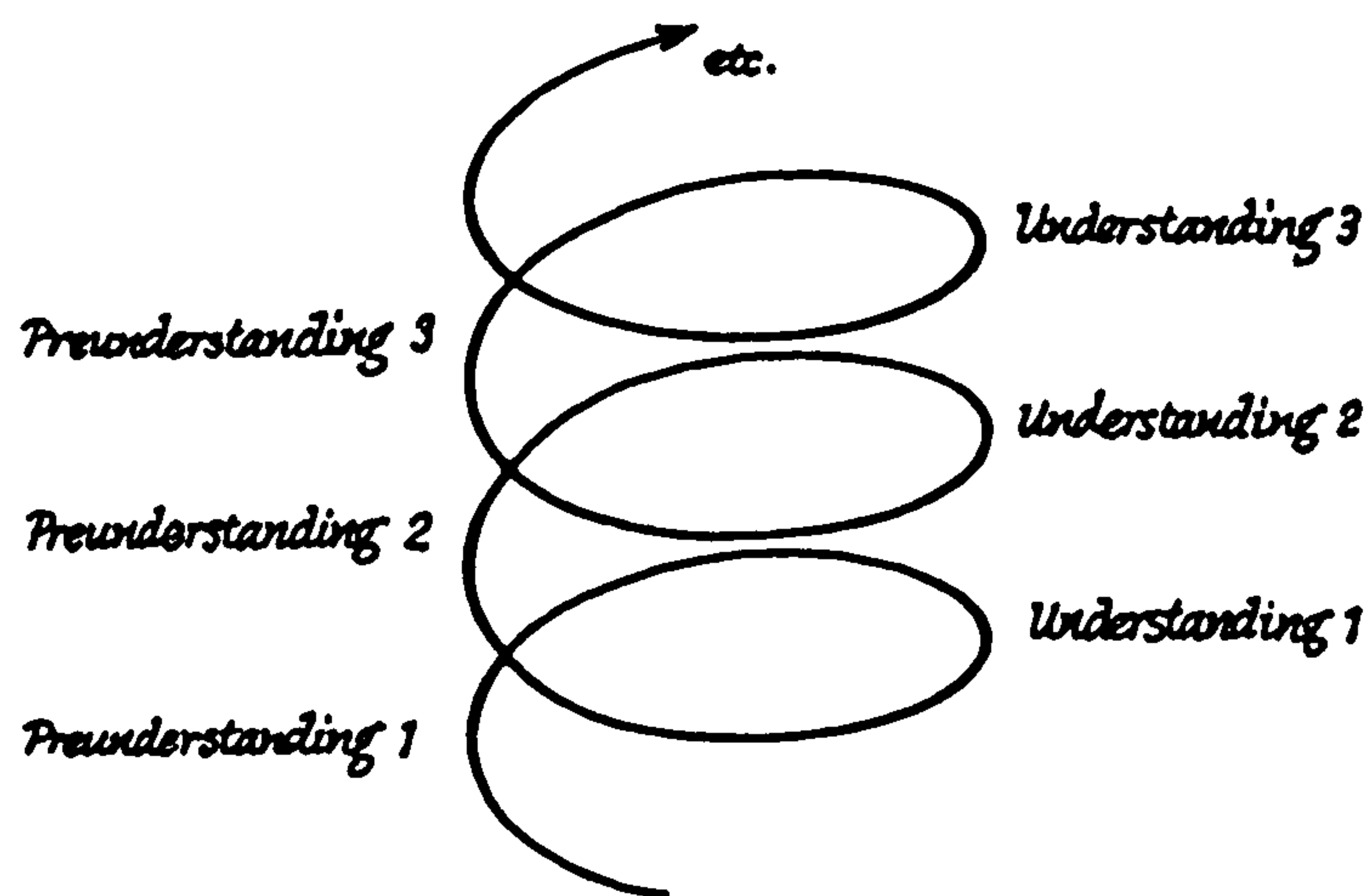
solution of a particular problem. Furthermore, they state that the researcher must be very clear in describing the practical ramifications of their theories and the practices that should be used to test those theories. This philosophy is obviously held, at least to some degree, by action researchers (as will be discussed later), who intervene in real-life situations to develop solutions to practical problems. One of the key beliefs of the pragmatist is that solutions be developed democratically, with input from all those concerned in the research study. The distinction between the advocacy/participatory approach and the pragmatic approach is largely one of context. The pragmatist is not concerned solely with the oppressed and will use quantitative as well as qualitative methods, whereas advocacy/participatory researchers are exclusively concerned with the oppressed and rely exclusively on qualitative methods.

#### **3.4.5 The research philosophy underlying this thesis**

The author's philosophy lies somewhere between postpositivism and social constructionism, and might be referred to as pragmatism. For example, in terms of identifying the research problem the postpositivist position could be claimed because the problem had been identified, at least at a tacit level, before this research had begun and the subsequent development of the problem was done based on existing knowledge and the author's personal experience and observations. Therefore the approach could be said to be deductive and counter to the social constructionist philosophy which advocates entering the research setting, gathering data and then formulating the problem.

However, the author rejects the positivist, and to some degree the social constructionist (Gill and Johnson 2002, p. 180), assertion that observation can be theory-neutral. That is, that the researcher can remain completely neutral and objective when collecting and analyzing data. The alternative, to which the author subscribes, is that observation is theory-laden (Gill and Johnson 2002, p179, Phillips and Burbules 2000, p. 15) a belief that is closely allied with non-positivist philosophies. The theory-laden concept is well summarized by the hermeneutic circle, or as Gummesson (2000, p. 70) more accurately refers to it the hermeneutic

spiral, which is represented in Figure 3.1, below. Gummesson (ibid., p. 57) suggests that ‘pre-understanding refers to things such as people’s knowledge, insights, and experience before they engage in a research program...’ The researcher begins a program of research with certain knowledge, beliefs and assumptions that form the pre-understanding. By participating in the program of research the researcher gains new insights and knowledge through firsthand experience, and simultaneously may gain secondhand knowledge and insights from the experience of others by, for example, reviewing the literature. Thus the researcher progresses from pre-understanding to understanding.



**Figure 3.1 - The Hermeneutic Spiral**  
(Gummesson 2000, p. 71)

While pre-understanding can be ‘blocked’, that is the knowledge and methods used are prejudiced and skewed to arrive at a preferred outcome, this can be avoided if the researcher is aware of the danger and is therefore ‘... mature, open and honest’ (Gummesson 2000, p. 66). Furthermore, ‘pre-understanding is a resource to be used when called for, not a filter to bias an investigation.’ (ibid., p. 121)

As a result of the acceptance of the theory-laden nature of observation, the author brings certain beliefs, assumptions and knowledge to the research that will impact on the collection and analysis of the data. This also results in a rejection of the social constructionist point of view that a researcher can enter into a study with no preconceived ideas of what will be learned, or how it will be learned.

Given the lack of existing research into performance measurement at the operational levels of organizations, the author concedes that the best way to ascertain the needs of operational managers is to ask the managers directly. Again this contravenes the positivist approach and favors the social constructionist approach.

The author also believes that the nature of the problem should dictate the methods used, instead of choosing one method over another with no regard for the most appropriate data for a given problem. As will be identified later, the nature of the research described in this thesis is action research, in this case Gummesson (2000, p. 120) provides some guidance as to the appropriate philosophy: 'It is obvious that the demands of the positivist paradigm are not applicable to action science...' However, he later added, somewhat contrarily that: 'The action-oriented researcher, however, needs to make use of both positivistic and hermeneutic knowledge' (Gummesson 2000, p. 203). This latter point is what might be referred to as methodological pluralism (Gill and Johnson 2002, p. 168), and may be considered a pragmatic research philosophy.

As a consequence, the underlying philosophy is neither positivist nor social constructionist and lies somewhere in the middle, being guided by the practical needs of the research. Hence, the author's claim that the philosophy underlying the research is largely pragmatic.

### **3.5 Types of research**

It will prove useful at this point to identify the type of research to be conducted during this research project as this provides much guidance on the appropriate

methods that should be used during the data collection and analysis. To this end Easterby-Smith et al. (2002, pp. 8-11) describe three types of research, namely pure, applied and action research, with each being ‘...distinguished primarily by the outcomes that are assumed to emerge...’ (ibid., p. 8) Each type is discussed briefly below.

### **3.5.1 Pure, applied and action research**

Pure research is the term used when the research is intended to primarily lead to theoretical development and when there is little concern with the practical implications of the theory. Robson (1993, p. 438) suggests that the role of pure scientific research is to describe, understand and explain, and that traditional laboratory-derived research styles aim to minimize the involvement of the researcher in order to promote objectivity. Easterby-Smith et al. (2002, p. 9-10) distinguish between three forms of pure research. The first is concerned with the *discovery* of a totally new idea or explanation. The second is *invention*, in which a new technique, method or idea is created to deal with a certain type of problem. The third form is *reflection*, in which the researcher re-examines an existing theory, technique or idea but in a different context. One of the key features of pure research is that the research is disseminated to a predominantly academic audience. Because the research is less concerned with practical applications, and therefore less concerned with practical testing, a significant measure of the quality of the research is in the prestige of the publishing journals.

Applied research, as the name suggests, is more concerned with the application of theory rather than with the development of theory. Although, depending on the intended audience, it is still necessary to thoroughly explain the rationale behind the research process. According to Easterby-Smith et al. (ibid., p. 10) a common form of applied research is the evaluation of the process and results of a particular course of action, for example the implementation of a new management system in an organization. Because the client is more likely to have identified the problem and commissioned the research there can be concern regarding the motivations of the

client. In particular, care needs to be taken in how information obtained from participants is reported to the clients.

The final type of research is action research. In this type of research the researcher becomes actively involved in the process being studied, in pure and applied research the researcher strives to maintain distance from the process being studied, in order to promote objectivity. Described more succinctly, participant observation with direct intervention is known as action research or action science (Gummesson 2000, p. 83). The main underlying principle in action research is that the best way to understand, and learn about, a process is to try to change it (Easterby-Smith et al. 2002, p. 10, Gill and Johnson 2002, p. 75). Gill and Johnson (2002, p. 76) define action research as follows: 'Action research aims to contribute both to the practical concerns of people in an immediate problematic situation and to the goals of science by joint collaboration within a mutually acceptable ethical framework.'

Eden and Huxham (1996) provide various accounts of action research, based on their review of the related literature. They identified the following approaches:

- Hypothesis-testing action research. This was the approach used by Kurt Lewin, who is credited with being the first person to use the term (Gill and Johnson 2002, p. 72, Lee 1990)
- Action-learning is not a research approach, it is an educational process that makes use of action research methods (Easterby-Smith et al. 2002, p. 10). It is a form of self-development as it is concerned with the individual practitioner, who in this case becomes the researcher, researched and final audience (Eden and Huxham 1996).
- Participatory action research. According to Eden and Huxham (1996), participatory action research has two central principles:
  1. Some members of the organization being studied should actively participate in the research process, rather than just being subjects of the study, and

2. There should be intent to take action (the central principle of all action research).

The research objectives, as listed in the chapter introduction, could be summarized as identifying what managers want in a method to develop performance measures and subsequently developing the method according to the managers' requirements, and testing it with their assistance. This obviously has some implications for the type of research that will be undertaken.

Firstly, the managers will be asked for their input on the best method for them to choose performance measures. This seems entirely reasonable for three reasons;

1. The method will help the managers to perform one of their key duties. As this is a duty that they already perform the managers themselves are likely to have a better understanding of their needs, with regard to the method, than the researcher.
2. Secondly, since the method is intended to be used by managers, there is a greater likelihood of its adoption if managers help to develop it.
3. There has been no substantive research in this particular area in the past and there is therefore no guidance in the literature on what operational level managers need from a method to develop performance measures.

Secondly, in order for the method to be proved useful and usable it must be evaluated and tested by managers in a real life setting.

In summary, practicing managers will participate in both the development and assessment of the method. Given that both the researcher and the collaborating managers will be closely involved in developing and testing the method both pure and applied research can be ruled out. The overriding emphasis within this research is to develop a practical method that managers will want to use because it develops appropriate measures (is useful) and does so as easily as possible (is usable).



Phillips and Burbules (2000) provide further evidence to support a research approach that includes action. Specifically, Phillips and Burbules (2000, p. 3) presented an argument in favor of postpositivism in educational research, and in doing so they identify the need to test research findings and theories in practice, they quoted Dewey (1938) to support the point: 'Dewey's point was that we must seek beliefs that are well warranted (in more conventional language, beliefs that are strongly enough supported to be confidently acted on), for of course false beliefs are likely to let us down when we act on them to solve the problems that face us!' This clearly suggests the need to test research theories in their intended setting, in order to ascertain that they are valid, or at least that they are valid under the test conditions. Testing the method will obviously require that managers use it in its intended setting, i.e. to develop performance measures at the operational level of an organization.

Given the research objectives, and in light of the above discussion, the nature of this research is clearly action research, with the consequence that certain research strategies are more appropriate than others, as will be seen in the following sections.

### **3.5.2 Action research**

Having established that the type of research to be used is action research this section will describe action research more thoroughly and examine its implications with regards to research methods.

The action researcher aims to both take action and to contribute to knowledge (Coughlan and Coughlan 2002). Gummesson (2000, pp. 119-123) specified ten points regarding management action science (Gummesson prefers the term action science to action research, 2000 p.116). The following ten points are summarized from Gummesson (2000, pp. 119-123).

1. Action scientists take action. The concept of action science is reserved for the situations in which researchers assume the role of change agents of the processes and events they are simultaneously studying. In contrast to the

- mainstream scientist who is serenely detached, the action scientist is deeply involved.
2. Action science has dual goals: both to contribute to the client and to contribute to science. ...It means they must address both the client's interests and the interests of science. They must contribute to the general and theoretical developments in business disciplines. This requires them to juxtapose their findings to previous research and literature and to disseminate them through reports, articles and lectures.
  3. Action science is interactive. It requires cooperation between researchers and client personnel and continuous adjustment to new information and new events. The researchers interact closely with the people and the environment they are studying. Those involved – the researchers and the organization's personnel – solve problems and learn from each other and develop their competence.
  4. The understanding developed during an action science project aims at being holistic, recognizing complexities. The mainstream scientist would single out one or a few factors and study these in detail. The action scientist must focus on the totality of a problem, but still make it simple enough to engage those involved.
  5. Action science is applicable to the understanding, planning and implementation of change in business firms and other organizations. Change processes are often complex, influenced by a multitude of factors that are interconnected in seemingly chaotic patterns; verbal and non-verbal cues abound, and the informal is as important as the formal. Being a resident in the organization and an actor onstage gives the researcher a unique access to change processes.
  6. It is essential to understand the ethical framework and the values and norms within which action science is used in a particular project. Because this is a management action science concept, it does not, per se, focus on the societal issues of solidarity and aid to underprivileged groups. There are areas of common interest, however. For example, corporations progressively begin to understand the need to use the capacity and motivation of all employees.

7. Action science can include all types of data-generating methods but requires the total involvement of the researcher. To understand the nature of action science, it is necessary to examine other methods of access. Qualitative, informal, in-depth interviews and the ethnographic methods of observation and participation are also important as part of action science. A variety of existing material as well as quantitative survey techniques and other statistical methods may also be useful. Action science adds the dimension of the researchers who become active participants influencing the process under study; they become change agents.
8. Constructively applied pre-understanding of the corporate environment and the conditions of business is essential. ...Researchers in intervention processes often... don't provide specific expertise on a technical issue as such, but they provide specific expertise on how to inspire processes of change. Others are experts on specific issues, such as manufacturing systems or key account management. Whichever role they assume, pre-understanding of corporate environments and the conditions of business is mandatory. This pre-understanding can be based both on firsthand understanding through personal experience and on secondhand understanding through reports and other intermediaries.
9. Management action science should preferably be conducted in real time, but retrospective action science is also an option. The literature requires the researcher/consultant to consciously and systematically be doing action science in the course of the daily work in a project. We have, however, a wealth of information stored in the minds of people who have lived through important and often dramatic changes.
10. The management action science paradigm requires its own quality criteria. Action science should be governed by the hermeneutic paradigm, although elements from the positivistic paradigm may be included. Management action science cannot be evaluated by the same criteria that currently dominate research at most business schools and other research institutions. Furthermore, it cannot be evaluated solely by the criteria emanating from the

scientific paradigm; equal consideration has to be given to the practical consequences for the client organization and the consultant paradigm.

The above ten points serve to define action research, or science, and as mentioned previously, action research is the strategy that will guide this research. Having chosen action research as the guiding strategy there are, as is suggested by step seven above and as will be seen later, some implications for the subsequent choice of research methods.

### 3.6 General procedures, or strategies, of research

Creswell (2003, p. 13) considers two main quantitative strategies and five qualitative strategies, although he acknowledges that there are many possible strategies of inquiry he focuses on the seven major, most commonly used in the social sciences. Table 3.3, below, presents these strategies.

Similarly, Gill and Johnson (2002) describe experiments, quasi-experiments, surveys, action research (described earlier as a ‘type’ of research and not as a strategy), and ethnography. Ordered as they are above these methods form a methodological continuum (ibid. p. 44), starting with deductive nomothetic approaches and moving gradually towards inductive, ideographic methods.

Quantitative Research Strategies	Qualitative Research Strategies
Experiments	Ethnographies
Surveys	Grounded theory
	Case studies
	Phenomenological studies
	Narrative research

**Table 3.3 - Quantitative and qualitative research strategies  
(Creswell 2003, p. 13)**

Creswell (ibid. p. 15) also considers three mixed methods strategies which use traditional quantitative and qualitative methods, as deemed appropriate, in sequential, concurrent or transformative procedures. Each of these strategies is discussed in the following sections.

### **3.6.1 Experiments**

This strategy includes true experiments and quasi-experiments. In a true experiment subjects are assigned randomly and the experiment is typically conducted in a laboratory setting where close control can be maintained over the conditions that affect the subjects or participants. Quasi-experiments are less rigorous and structured. The subjects are not chosen randomly and the experiment takes place in the natural setting, thus some control over extraneous variables is lost (Creswell, 2003 p. 14, Gill and Johnson, 2002 p. 66).

### **3.6.2 Surveys**

Although surveys are listed above as a quantitative strategy, they can include questionnaires and interviews that rely on either open or closed questions, and their purpose can be either to test a theory or to gather general information to allow the development of a theory. Hence, surveys can in reality be either quantitative or qualitative (Gill and Johnson 2002, p. 97-98). Surveys include cross-sectional and longitudinal studies using questionnaires and structured interviews. The intent is to generalize from the sample to the wider population (Creswell, 2003 p. 14).

### **3.6.3 Ethnographies**

In ethnographies the researcher immerses him/herself completely in the natural setting to become part of the group, in order that he/she might better understand the significance and meaning of events to the group members. The data collection method is primarily observation (Creswell, 2003 p. 14) or participant observation and supplemented with in-depth interviews and documentary evidence (Gummesson, 2000 p. 132).

### **3.6.4 Grounded Theory**

This strategy is described by Creswell (2003 p. 14) as attempting ‘... to derive a general, abstract theory of a process, action or interaction grounded in the views of participants in a study.’ Grounded theorists attempt to develop theory through what is referred to as comparative method. Using the comparative method, the same process, action or interaction is examined and compared in different settings or situations (Easterby-Smith et al. 2002, p. 46).

### **3.6.5 Case Studies**

Creswell (2003 p. 15) describes case studies as the in-depth exploration of an event, an activity, a process or one or more individuals. Easterby-Smith et al. (2002, p. 49) agree that the case study is an in-depth study of a single, or small number of organizations, generally over time. Robson (1993, p. 146) defines the case study as: ‘... an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence.’ Yin (2003, pp. 13-14) provides a similar definition, with regard, in particular, to the case study being a study of a contemporary phenomenon, in its real life context and in using multiple sources of evidence. Eisenhardt (1989) suggests that the case study is a research strategy that ‘... focuses on understanding the dynamics present within single settings.’

### **3.6.6 Phenomenology**

Creswell (2003 p. 15) describes phenomenology as an extensive and prolonged engagement, with the study participants, to develop patterns and relationships of meaning, with the ultimate objective of identifying the ‘essence’ of human experience. According to Gummesson (2000 p. 175) ‘...phenomenologists would register all cues in an effort to understand the respondent.’ This would include recording not only what the respondent said but also such other information as the postures and gestures of body language, as well as changes in the tone and pitch of voice.

### **3.6.7 Narratives**

In the course of a narrative study the respondents provide stories about the events of interest. These stories are then retold by the researcher in a chronological narrative (Creswell 2003 p. 15).

### **3.6.8 Mixed Methods Procedures**

Creswell (2003 pp. 15-16) identified the original reason for using a mixed methods approach as being that all methods have limitations, as a result the weaknesses of a particular method could be strengthened by using another method. This gave rise to triangulating methods which greatly enhance the validity of research. Creswell (ibid. p. 16) suggests three general mixed methods strategies:

1. In Sequential mixed methods research, the researcher would use one method to expand on the findings generated by another method. For example, using qualitative methods in the exploratory stages of research and then using quantitative methods to include a large sample in order to better generalize to the wider population.
2. Concurrent Mixed Methods provide a comprehensive analysis of a research problem by achieving convergence through the simultaneous use of both qualitative and quantitative methods.
3. Transformative Mixed Methods Procedures, in which the researcher uses a theoretical lens as the guiding framework. Qualitative and quantitative methods can be used in either a sequential or concurrent manner.

### **3.6.9 Choosing a strategy**

Following the above, albeit brief discussion, it is possible to narrow the choice of research strategies to be used in this research. This research aims to identify the needs of operational managers with regard to developing objectives and performance measures, and based on these needs to develop an appropriate method to assist in developing objectives and measures. To achieve this, managers will be asked how they currently develop objectives and measures, and their current methods will be

qualitatively assessed, by the author, against the desirable characteristics identified in the literature.

Some of the existing methods will then be assessed against the identified needs of the managers, which will involve a mechanistic, quantitative analysis. The method best matching the managers' requirements will be modified if necessary, and evaluated by practicing managers. This last step will rely more on a qualitative assessment than a quantitative measurement.

At the outset the researcher may speculate as to what the operational managers' needs might be, however, to obtain the most accurate representation of these needs the best course of action will be to ask the managers directly. Given the lack of research on this particular subject, and hence the lack of specific knowledge, open-ended and probing questions will be necessary. While the survey strategy can use either questionnaires or interviews, each of which can include open-ended or closed questions, they lack the ability to immediately follow up on an answer. That is, they do not afford the researcher the ability to probe deeper into the respondents answers, to further address unforeseen ideas or issues or to gain further insight into an answer.

Additionally, as Robson (1993, p. 127) points out, most surveys are used for descriptive purposes. As the nature of this research is exploratory (how do operational level managers develop performance measures?) and explanatory (why do operational level managers develop measures as they do?), a survey strategy is not suitable. As a result, the survey strategy is not considered further.

As a general research strategy, experiments are appealing to the author, perhaps revealing a positivistic tendency. At the outset experiments, or more accurately quasi-experiments, were considered in order to test the newly developed method for selecting performance measures. In this case two managers would be approached to collaborate. One manager would be given the newly developed method and instructed in its use and the other manager would not. Both managers would then be asked to develop a set of performance measures for their subordinates. The resulting



sets of measures would be assessed against the desirable characteristics of performance measures identified in a later chapter.

Obviously, it would be hoped that the set of measures developed by the manager who used the author's method would be vastly superior in terms of the chosen criteria. However, this might not be the case for any number of reasons, largely due to the lack of control that the author would have over the situation. For example, the level of commitment held by each manager would likely differ; the manager without the author's method might be more committed and therefore spend more time in developing what might amount to 'better' measures. The very fact that the managers are engaged in the research, with the consent of their own managers, would free the managers of other duties and therefore allow them more time to develop measures. In this case the manager without the method may have a better understanding of the process of developing performance measures, through prior experience, and the fact that he/she was now afforded sufficient time to develop measures might result in a better set of measures than those developed by the manager with the method but whose understanding of the process is less well developed. Given this lack of control experiments are rejected as a research strategy for this research.

Ethnographies, while having some desirable traits for this research, namely total immersion in an environment to better understand the participants, is also rejected. Robson (1993, p. 148) describes ethnography as seeking to: '... provide a written description of the implicit rules and traditions of a group. An ethnographer, through involvement with the group, tries to work out these rules. The intention is to provide a rich, or "thick" description which interprets the experiences of people in the group from their own perspectives.' Gummesson (2000, p. 132) describes ethnography as '... the branch of anthropology that is of prime interest to the management researcher/consultant. The ethnographic approach is concerned with descriptions of social patterns. The ethnographer learns from others about their culture...'

From these descriptions it is clear that ethnography is more generally associated with the 'softer' issue of culture than with the 'harder' issues of mechanistic managerial

processes. A method to develop performance measures is by its very nature mechanistic and intends to remove subjectivity from performance assessment. While cultural issues will no doubt impact on the parts of this research that are conducted in collaborating organizations, and will have an impact on how performance measures are used, this is not a study of culture. As a result the ethnographic research strategy is also rejected.

Phenomenology, is described by Creswell (2003 p. 15) as having ‘...the ultimate objective of identifying the ‘essence’ of human experience.’ Clearly, the phenomenological approach is also not suitable for this research.

The remaining two strategies are case studies and grounded theory, each of which would appear to be appropriate based on their descriptions given earlier. In this context grounded theory and case studies have been described as mutually exclusive research strategies, which is representative of the literature. However, this is not necessarily the case. For example, in developing guidelines for building theory from case studies, Eisenhardt (1989) relied heavily on the work of Glaser and Strauss (1967), and later that of Strauss (1987), Glaser and Strauss being the co-authors of grounded theory. This possibly suggests that grounded theory is a method rather than a strategy. That grounded theory is a methodology, that is, a set of procedures and methods, is clear from Strauss and Corbin (1998, p. 14):

This book offers both a methodology and a set of methods for building theory. ...We emphasize strongly that techniques and procedures, however necessary, are only a means to an end. They are not meant to be used rigidly in a step-by-step fashion. Rather, their intent is to provide researchers with a set of tools that enable them to approach analysis with confidence and to enhance the creativity that is innate, but often underdeveloped, in all of us.

Grounded theory was developed by Glaser and Strauss (Easterby-Smith et al. 2002, p. 46, Gummesson 2000, p. 183) and advocated that theory should emerge from the data gathered during a study, that is, their approach is purely inductive. They

advocate developing theory through the 'comparative method', by gathering and analyzing data from one setting and comparing the findings with similar data from other settings. Easterby-Smith et al. (2002, p. 46) consider Glaser and Strauss's 1967 work to be a classic, however Easterby-Smith et al. (ibid.) also point out that Glaser and Strauss subsequently went their separate ways and were engaged in an 'acrimonious' debate over the execution of their method. Glaser continues to advocate the 'data-then-theory' approach, while Strauss now believes that researchers cannot avoid having some pre-conceptions regarding their field of study.

As a result, the author has concluded that grounded theory is not a research strategy and will not be considered as such during this research.

The literature provides some guidance on the choice of research strategy for an action research project. For example, Robson (1993, p. 439) suggests that 'the emphasis on a specific situation, of looking at practice in a particular context and trying to produce change in that context, puts action research firmly within the case study strategy...' Similarly, Gill and Johnson (2002 p. 79) suggest that 'by definition most action research projects are pursued through the medium of the case study...'

The case study is therefore chosen as the most appropriate strategy for this research.

### **3.7 Data collection**

At this stage the author has identified three pertinent characteristics of this research, namely that the research philosophy is a pragmatic one, that the nature of the research is action oriented and that the case study is the best strategy for conducting this particular research project. According to Creswell's (2003 p. 3) guidance for the design of research, the final element is primarily concerned with the collection and analysis of the data. Having identified the author's pragmatic philosophy and having selected the case study as the strategy, the author is free to choose the most suitable data collection methods (Eisenhardt 1989, Gummesson 2000, p. 121).

### **3.7.1 What data to gather?**

The primary research objective in this project is to investigate how operational level managers measure and manage performance, that is, how they identify objectives and performance measures. Data concerning how managers develop objectives and measures must be gathered directly from the managers themselves. The desirable characteristics of measures, performance measurement systems and performance management system will be identified from the literature. The data provided by the managers will be used to compare their existing systems against the desirable characteristics. In addition, it will be necessary to gather data regarding the characteristics of the operational level, to determine whether the characteristics identified in the literature are valid.

### **3.7.2 How to gather the data?**

As identified in the previous section data regarding the how and why of developing operational level measures will be gathered directly from the participating managers. Having come to this conclusion the researcher has four choices for the method of gathering data. These are observations, interviews, documents and visuals (Creswell 2003, p. 185). It is intended to make use of only the first three methods, as the use of visual material, e.g. photographs, video, art objects, etc. are not considered to be applicable to this research. Each of the three methods to be used will be discussed in the following sections.

#### **3.7.2.1 Observations**

According to Creswell (2003, p. 185) during observation the researcher takes field notes on the behavior and activities of the participants. In conducting observations, the researcher can be a participant or a non-participant (Creswell 2003, p. 188, Gill and Johnson 2002, p. 144), each approach having its own advantages and disadvantages. The main advantage of both approaches is that the researcher gets a firsthand view and does not have to rely on the honesty and integrity of an informant. The main disadvantage of non-participation is that the researcher might not truly understand the situation. On the other hand the main disadvantage of participation is that the researcher might 'go native' and therefore lose his/her objectivity (Gill and

Johnson 2002, p. 145). When a noteworthy event is observed the researcher should make full notes as soon as possible after the observation. The researcher should bear in mind the research questions in order to determine what events are relevant, however, the researcher should also analyze observations as they occur to determine the validity of the research questions and whether any modifications are needed. As events unfold it might be necessary to revise the fundamental research questions or new questions to ask of the respondents might come to mind (Stake 1995, p. 62).

The role of observation in this research was, for the most part, limited to identifying that the performance measurement and management system in the author's employer are not as efficient or as effective as they could be. This observation gave rise to the entire research project. Specific observations from the author's employer are included throughout the text as examples of the problems that exist in the performance measurement and management system at the operational level.

### **3.7.2.2 Interviews**

Yin (2003, p. 90) suggests that case study interviews typically ask open-ended questions that pursue the researcher's line of inquiry but that are asked in a friendly and non-threatening manner. The questions ask the respondent for both the facts of a matter as well as their opinions on how and why certain events took place. Robson (1993, p. 225) identified three types of interview: structured, unstructured and semi-structured. Patton (2002, p. 342) referred to the three types of interview as: the informal conversational interview; the general interview guide; and, the standardized open-ended interview.

The informal conversational interview (Patton 2002, pp. 342-343) provides the interviewer with the most flexibility of the three approaches. This approach allows the interviewer to ask questions in response to specific observations or conversational topics. The questions typically arise from the immediate context and as such, in most circumstances, there cannot be a predetermined set of questions. The nature of the questions is constrained only by the purpose of the research inquiry. The major advantages of this approach are the flexibility, spontaneity and

responsiveness to individual differences and situational changes (ibid. p. 343). However, the major weakness is that because a more structured approach is not adopted it may take several interviews to ask all of the pertinent questions. Additionally, this approach makes it difficult to ask multiple interviewees the exact same set of questions, which in turn makes cross-case analysis and comparison more difficult. A further weakness is that this approach relies heavily on the skills of the interviewer, making it more susceptible to leading questions and interviewer biases.

The interview guide (ibid. pp. 343-344) provides a list of topics or general questions to be asked during an interview. The level of detail included in the guide will be determined by the researcher's ability to specify the important topics in advance. The main purpose of the guide is to ensure that the focus remains on the general areas of interest. Provided the researcher remains focused on these topics, he or she is free to ask questions as dictated by the situation. The advantages of this approach are that the available time is used more efficiently and interviewing a number of people is more systematic. The disadvantage is that topics not recognized as being important before the interview would not be addressed and might not emerge during the interview. However, if the topic is raised by the interviewee in response to a question, the interviewer does have the flexibility to pursue that topic.

The standardized open-ended interview approach (ibid. pp. 344-347) is the most structured approach, in that the questions to be asked are carefully thought out and worded in advance of the interview. Not only are the questions prepared in advance, the probes and any clarifications that might be required are also carefully documented as part of the interview. This approach makes certain that every interviewee is asked the same questions, in the same way and in the same order. There are four main advantages to this approach (ibid. p. 346):

1. The exact instrument used in the evaluation is available for inspection by those who will use the findings of the study.
2. Variation among interviewers can be minimized where a number of different interviewers must be used.

3. The interview is highly focused so that interviewee time is used efficiently.
4. Analysis is facilitated by making responses easy to find and compare.

The weakness of this method is that the interviewer does not have any flexibility to pursue lines of inquiry that might arise during an interview but that were unforeseen and therefore not addressed by the interview questions. Differences in the circumstances or motives of interviewees also cannot be probed during the interview, unless specifically addressed by the interview questions.

Patton (ibid. p. 347) also describes the various possible combinations of the three interview approaches. The approaches may be combined within a single interview, or over the duration of a research program. For example, a standardized interview format may be used but the researcher can be allowed to respond to topics not included in the interview instrument. Alternatively, over the course of a research project interviews may be conducted in the sequence described above, by first identifying the pertinent topics through the use of informal conversational interviews. Subsequent interviews can then use progressively more structured approaches as the topics become better understood by the researcher(s). Given the pragmatic nature of the author, combining the interview guide approach with the standardized approach is appealing. Asking specific questions has the advantages of being more efficient with managers' time and ensuring all respondents are asked the same questions, thus facilitating easier analysis. Given that the general principles of performance management and measurement are well documented in the literature it is possible to develop specific questions. The unknown aspect that is being investigated by this research is how the general principles are applied at the operational levels of organizations. However, the author is aware of the possibility that relevant issues may be overlooked while preparing the interview questions. Therefore, being flexible to pursue new lines of inquiry during the interviews is also desirable.

Some authors (Easterby-Smith et al. 2002, p. 92) prescribe the recording of interviews to aid the listening process, provide an unbiased record of the interview, to facilitate accurate transcription and in case the researcher missed hearing

something at the time of the interview. However, tape recording of interviews is not necessary according to Stake (1995, p. 66) as the exact words are not important, the real importance is in what the respondent meant. It is therefore crucial to ensure that the interviewee has said what he/she meant and that the researcher has accurately captured what the interviewee meant. To this end, notes of the interview should be made as soon after the interview as possible and then given to the respondent to check for accuracy. Despite this advice from Stake (*ibid.*) the researcher chose to record the interviews where possible, as it allows the researcher to focus on the interviewee and what is being conveyed, either verbally or otherwise (Patton 2002, p. 381).

### **3.7.2.3 Documents**

The final data gathering method that will be used is reviewing documentary evidence. In reviewing any relevant documentary evidence the researcher needs to follow the same line of thinking as in observing or interviewing. Specifically, 'One needs to have one's mind organized, yet be open for unexpected clues' (Stake, p. 68). Documentary evidence will be used largely to validate the answers provided by the interviewees.

### **3.7.3 Where to gather the data? The 'access' problem.**

Large organizations were selected for study and approached to participate in this research for two main reasons.

Firstly, large organizations are more likely to have recognized the need for a structured performance measurement or management system and are also more likely to have the resources needed to develop and implement a structured performance measurement and management system. Support for this assumption is gained from Hudson (2001, p. 83) who found '...that SME (small and medium sized enterprise) managers have failed to coordinate the development of performance measures in a structured and coherent way.'



Secondly, interviewing managers whose organizations have in place a structured system is likely to provide better information to answer the research questions. The research questions ask how and why operational level managers develop performance measures in a certain way, as well as what requirements they might have for a method to assist in the development of measures. Managers with experience of a structured system are likely to have a greater awareness of the issues involved and would therefore be in a better position to discuss the issues. They would also have a better awareness of what they would want in a method to assist in developing measures.

There are a number of possibilities available to choose subjects for a research program. While it would be nice to include all potential candidates in a study, time and other resources prohibit such thoroughness. As a result, random sampling is typically used to choose a representative sub-set of the entire research population (Gill and Johnson, 2002 p. 101) to study. If chosen carefully, the group will possess all of the characteristics found in the entire population. However, given the need to study only large organizations with structured performance measurement and management systems, true random sampling might not return suitable candidates for study. An alternative is referred to as stratified sampling (*ibid.*, p. 102), in which all suitable subjects would be identified and then a random sample would be selected from the list of suitable candidates. This would be the ideal scenario, however, even stratified sampling might return unsuitable candidates for study. For example, resource constraints might make it impossible for the researcher to get to some, or all, of the subjects. Additionally, there is no guarantee that the subjects would be willing to participate, as was the case with the author's employer. To address this possibility there is another form of sampling, known as purposeful sampling (Patton 2002, pp. 230-242). Patton (*ibid.*, p. 230) points out that the:

...logic and power of purposeful sampling lie in selecting *information-rich cases* for study in-depth. Information-rich cases are those from which one can learn a great deal about issues of central importance to the purpose of the inquiry, thus the term *purposeful sampling*' (Italics in the original).

Patton (2002, pp. 230-242) offers ten choices of strategy for purposeful sampling, these are presented in Table 3.4 below.

<b>Purposeful sampling strategy</b>	<b>Description</b>
Extreme or deviant case sampling	Cases are selected because they are unusual or special in some way, for example outstanding successes or failures.
Intensity sampling	An intensity sample consists of information-rich cases that manifest the phenomenon of interest intensely but not extremely. The extreme or deviant case might possess the phenomenon of interest to the extent that it is distorted.
Maximum variation sampling	Aims at capturing the central themes that exist in widely varying cases, in the belief that common patterns will be of interest.
Homogenous samples	In contrast to maximum variation sampling, this strategy aims to studying a small, homogenous group in great depth
Typical case sampling	Usually done to provide a qualitative profile of one or more typical cases.
Critical case sampling	These cases make a point dramatically or are, for some reason, critical to the study. A clue to the existence of a critical case is the statement 'if it happens there, it will happen anywhere'.
Snowball or chain sampling	An approach for identifying and locating information-rich, key informants. The researcher begins by asking of one person 'who would know about...' or 'who should I ask about...'
Criterion sampling	All cases that meet some predetermined criterion are reviewed and studied.
Theory-based sampling, operational construct sampling and theoretical sampling	A theory-based strategy chooses the sample based on the potential manifestation or representation of a theoretical construct. Operational construct sampling chooses real-world examples of the construct of interest. Theoretical sampling is used in Grounded Theory to conduct constant comparative analysis.
Confirming and disconfirming cases	Towards the end of a study cases are sought both to confirm and disconfirm a theory.
Stratified purposeful sampling	The entire population is grouped meaningfully and then samples are selected from within each group.
Opportunistic or emergent sampling	The researcher chooses suitable cases as the opportunity to do so arises. This allows the researcher to follow where the data leads them.
Purposeful random sampling	All suitable cases are identified, a random sample is then selected from the group of suitable cases
Sampling politically important cases	Politically sensitive cases or sites are selected for analysis, this has the advantage of being more likely to gain attention.
Convenience sampling	Cases are chosen because they are fast of convenient. This choice is decried as the least desirable by Patton as it is neither purposeful nor strategic to choose cases based solely on convenience.

**Table 3.4 - Purposeful sampling strategies  
(Patton, 2002 pp. 233–242)**

The sampling strategy used for the research documented within this thesis is opportunistic, although not entirely as defined by Patton (2002, p. 242). Patton did not consider the problem of access, which is a closely related concern for real-world researchers. For example, Robson (1993, p. 296) refers to Buchanan et al. (1988) who recommend using friends, relatives and contacts whenever possible, and who stressed that ‘... in real world enquiry, the contest between what is theoretically desirable and practically possible must be won by the practical.’ Easterby-Smith et al. (2002, p. 71) advise that in their experience it is best to rely on personal contacts to at least gain the initial access to suitable organizations. This issue presented itself to the researcher in the early stages of the data collection. At that time the author was employed by an organization that met the criteria discussed above. The organization was large (2004 revenues of approximately \$8 billion and with 12000 employees worldwide) and the organization had a formal performance measurement and management system. What is more, based on the author’s observations of the performance measurement and management systems in action there were a number of deficiencies that would have been useful to study. The author decided that a formal approach would be best and emailed the vice president of the division in which he worked to ask permission to interview some of the managers. The study was briefly described and the benefits of participation, as perceived by the author, were explained. These were the identification of any problems that might exist; that the solutions would be developed in-house and would therefore be more likely to succeed; and, that merely participating in the study would raise awareness and cause the managers to reflect on the issues. The vice president declined permission without giving a reason. The author replied and asked why permission had been declined. This time the vice president delegated the matter to one of her managers who replied that allowing such an activity might result in conflict because the author was ‘one of the team’.

Fortunately, the author had a number of acquaintances in other suitable organizations who were willing to participate, hence the sampling strategy is an opportunistic purposeful one. This access was informal as official permission was not sought from the organization’s senior management. This approach is potentially more risky as it

might incur the wrath of senior management for both the researcher and the participants. However, the author could not take the risk of receiving another rejection. As a result of the author's need to rely on acquaintances, all of the participants did not meet the criteria that their organizations be 'large', which is not entirely without benefit as it added breadth to the research and the findings were remarkably similar across all of the participants.

Another aspect of the access problem was experienced during the course of this study, in that even willing participants have to give up their time. This is a problem for busy managers who find it difficult to schedule time for unofficial activities, which essentially amount to doing a friend a favour. All of the interviews had to be scheduled several weeks in advance to find an available slot in the managers' schedules and even then several interviews had to be re-scheduled because issues of greater importance to the managers came up.

### **3.8 The research framework**

The research was conducted in five general phases, as listed below and depicted in Figure 3.3.

1. Problem conception and development
2. Design of the research methodology
3. Empirical data collection and analysis
4. Development and assessment of a new method
5. Assessment of the research

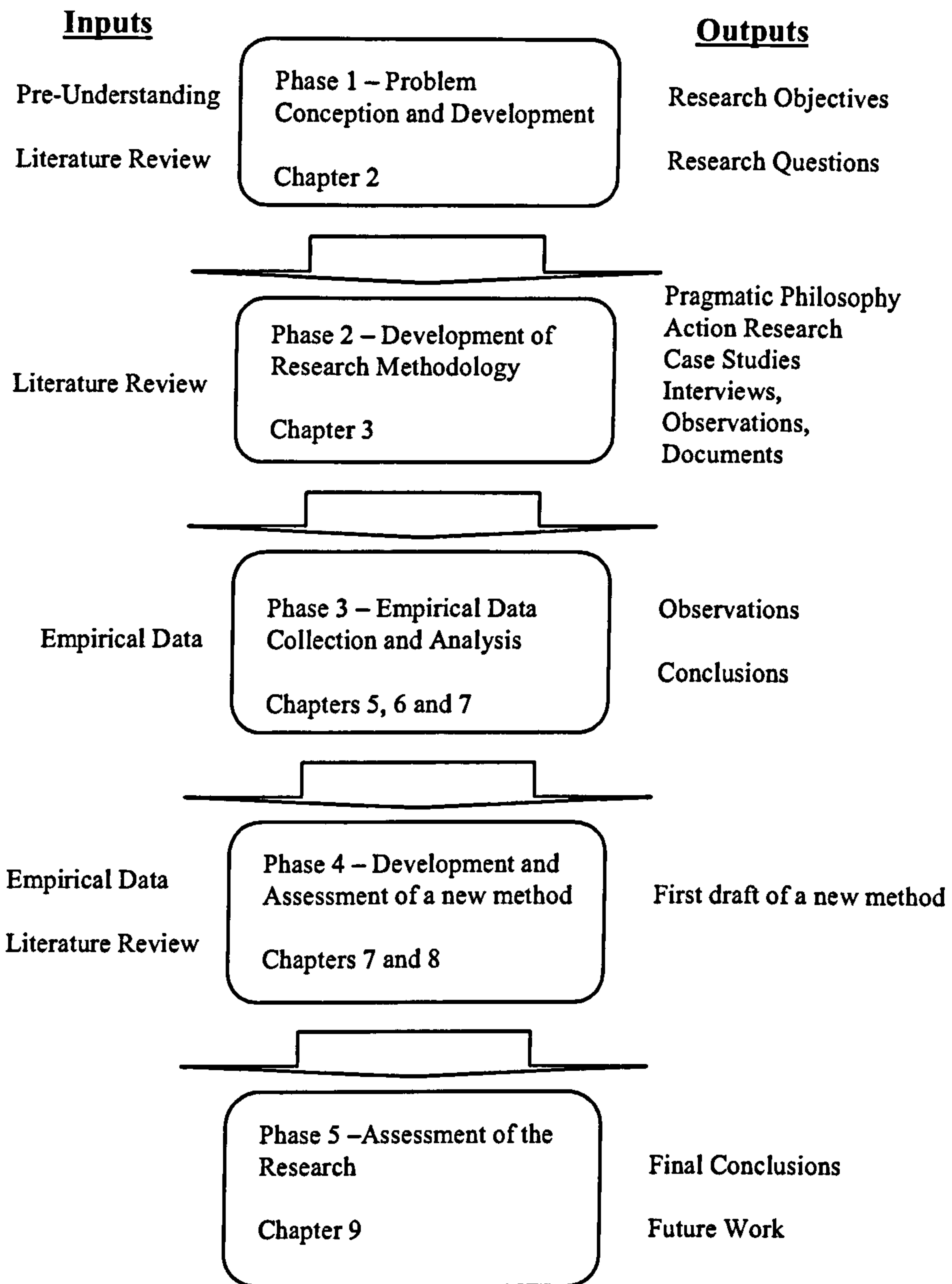
The problem conception was based on the author's pre-understanding of performance measurement and operational level measurement activities. A subsequent review of the literature allowed the problem to be better articulated and confirmed. Phase 1 is contained in Chapter Two, the literature review, and resulted in the research objectives and research questions.

The second phase, described by Chapter Three, involved a review of the methodological literature and resulted in the identification of the author's research philosophy as a pragmatic one. In addition, the research was categorized as action research, the case study was selected as the research strategy and interviews were chosen as the primary data collection method, to be supported by observation and documentary evidence where possible.

The third phase collected and analyzed the empirical evidence with a focus on answering the research questions. In addition to answering the research questions, a number of general observations were made, based on the empirical data. Chapters Five, Six and Seven present the empirical data, its analysis and the observations made during the analysis.

The fourth phase was concerned with the development of a new method to assist operational-level managers in developing objectives and measures. A review of the literature identified the most thorough existing method, in terms of criteria established during the research. This method was then used as the basis for a set of guidelines, which formed the new method. The guidelines were then assessed by the participating managers. Chapters Seven and Eight detail this phase.

Chapter Nine describes the fifth and final phase, which conducts an assessment of the research against the initial research objectives and draws conclusions regarding the contribution of the research to both theory and practice. The weaknesses of both the method and the research are identified and areas for future work are discussed.



**Figure 3.3 - The Research framework**

### **3.9 Assessing the quality of the research**

Possibly the most important aspect of research design is that which deals with the quality of the research. As Robson (1993, p. 67) pointed out 'Central to the scientific approach is a degree of skepticism about our findings and their meaning (and an even greater skepticism about other people's!)' To address this Robson (ibid. p. 66-75) described the fundamental issues of validity, including reliability, internal validity and construct validity, generalizability, objectivity and credibility. In discussing criteria for judging the quality of research, Yin (2003, p. 37) considered reliability and three types of validity, namely construct, internal and external validity. These are discussed in the following paragraphs.

#### **3.9.1 Reliability**

Yin (2003, p. 37) describes reliability as an attempt to minimize the errors and biases in a study, so that a later investigator conducting the same case study would arrive at the same conclusions. Yin placed an emphasis on doing the same case study and not attempting to replicate the results of one study by doing another case study. To achieve this Yin (ibid. p. 38) advises carefully documenting the procedures followed during a case study. Robson (1993, p. 67) in describing reliability discussed four dimensions that can cause a lack of reliability: subject error; subject bias; observer error; and observer bias.

- Subject error may be introduced to an intervention for any number of reasons. The subject may be more or less inclined to cooperate on certain days, depending on their mood, blood sugar levels, whether they feel appreciated at work and so on.
- Subject bias can be introduced when the subject has their own agenda or when they are concerned about how their answers may be used.
- In a similar manner to subject error, observer error can be introduced depending on the mood of the researcher.
- Observer bias can be introduced either consciously or subconsciously, based on the researcher's beliefs and opinions.

To address subject error and bias multiple sources of evidence can be used. Yin (2003 p. 99) advocates multiple sources of evidence to corroborate the same fact or phenomenon. Addressing observer error and bias is more difficult and requires that the researcher constantly evaluate his/her conclusions carefully. Perhaps the best way to avoid observer error and bias is to use multiple researchers (investigator triangulation) and to analyze the differences between the researchers' conclusions. This option was not possible in the current research; as a result, the researcher's descriptions and conclusions were either reviewed by the respondents or by other academics to determine their reliability. This method attempts to replicate investigator triangulation.

A further form of triangulation is provided by examining different types of organizations, for example small and large organizations, and by examining organizations in different industries.

### **3.9.2 Validity**

Construct validity is concerned with ensuring that the operational measures of the research actually measure what the researcher intends them to measure. Yin (2003 p. 35) recommends two steps to ensure construct validity.

1. Select the specific types of changes that are to be studied (and relate them to the original objectives of the study), and
2. Demonstrate that the selected measures of these changes do indeed reflect the specific types of changes that have been selected.

For the purposes of this research the construct is the process of developing objectives and performance measures at the operational level of organizations. Therefore, the key operational measures are:

1. Operational level; and
2. Developing objectives and performance measures.



The author has interpreted the test of construct validity as a need to demonstrate that the research studied what the author set out to study. Therefore, the author must demonstrate that he interviewed operational level managers and that he investigated how they develop objectives and measure performance. To this end, the author defined an operational level manager as one who spends greater than 50% of his or her time in dealing with the day-to-day activities performed as the lowest organizational level. This is a reasonable definition of the operational level, which is discussed in Section 2.5.1. In addition, the interview questions asked and the documentary evidence sought, were reviewed several times and by several people, in light of the research questions. Whether or not the research achieved construct validity is discussed further in Section 9.6.2.

According to Yin (2003 p. 36) internal validity is only of concern in causal or explanatory case studies. Robson (1993 p. 69) also describes internal validity as relating to the causal relationship between treatment and outcome. Yin (2003, p. 3) suggests that case studies may be used at any, or all of the phases of research, those phases being exploratory, descriptive and explanatory. Gummesson (2000, p. 86) correctly points out that this distinction is less than ideal because for example, descriptions may be either theory-generating or explanatory. However, the nature of this research is predominantly exploratory. There will be descriptive elements as well as explanatory elements, yet the emphasis is on exploring how operational level manager develop performance measures.

### **3.9.3 Generalizability**

Generalizability is also referred to as external validity (Robson 1993 p. 72). External validity is a measure of how widely generalizable a study's findings are beyond the immediate case (Yin 2003 p. 37, Robson 1993 p. 72). Yin (2003 p. 37) defends the case study against its critics by stating that the case study relies on analytic generalizations to a broader theory. The theory must be tested in later case studies, by direct replication, to provide further evidence of support for the theory.

### **3.9.4 Objectivity**

Objectivity is a positivist measure and is achieved by the researcher remaining distant from the research subjects and setting. Remaining distant from the research setting is clearly not possible in this research and so a measure for objectivity is not considered. Instead, inter-subjective agreement is sought between the researcher, the participants and other academics, in a triangulating fashion.

### **3.9.5 Credibility**

Traditionally, this has been demanded only from researchers engaged in quantitative studies, however, according to Robson (1993 pp. 74-75) there is a strong case to make this demand of qualitative researchers because of the lack of formalized procedures for conducting qualitative research. Silverman (2001 p.221) agrees and states that 'if qualitative research is to be judged by whether it produces valid knowledge, then we should properly ask highly critical questions about any piece of research. And these questions should be no less probing and critical than we ask about any quantitative research.' Credibility can be achieved, at least to some extent, by providing sufficient detail on how the evidence is produced to allow the reader to carry out an exact replication of the study (Robson *ibid.*).

### **3.10 Conclusion**

This chapter has described some of the various research philosophies, types of research, research strategies and research methods, and made the most appropriate selections of each for the purposes of this study. The author has a pragmatic philosophy, the type of research is action oriented, for which case studies are appropriate and interviews, observation and documentary evidence will be used to gather the data.

The validity and reliability of the research will be protected by various methods of triangulation. The use of multiple data sources is preferred as one method of triangulation. In addition, all observations will be validated by the observed and all

conclusions will be validated by the research participants and by academics to which the author has access.

## **Chapter Four**

### **Definitions and attributes**

#### **4.1 Introduction**

This research aims to identify how operational level managers choose performance measures and then to develop a method to assist them in selecting measures. Having identified how operational level managers currently develop performance measures, it will be necessary to assess both how they choose the measures and the measures themselves, against the criteria identified in the literature. Identifying those criteria is the main purpose of this chapter.

Unfortunately, even a brief review of the performance measurement literature reveals that there is considerable overlap and confusion regarding whether it is measures or the measurement system that achieve certain desired outcomes, and therefore which should possess certain essential characteristics. In order to distinguish the roles of measures and the measurement system, a new working definition is developed for 'performance measures' and for 'performance measurement systems'. As will be seen though, having developed these definitions there was a void. This void was filled by considering the performance management system. Consequently, a definition was also developed for the term 'performance management system'.

Thereafter, this chapter identifies the desirable attributes of measures, the performance measurement system and the performance management system from the literature, and in light of the new definitions, re-assigns the essential attributes.

## **4.2 A working definition of measures, measurement and management**

As mentioned above, there is some degree of confusion regarding whether measures and/or the measurement system achieve certain desirable outcomes. For example, Sink (1986), McNair and Mosconi (1987) and Grady (1991) agree that measures should provide (rapid) feedback to those being measured as well as to those making the decisions. Globerson (1985) and Brignall (1991), among others, suggest that the performance measurement system should provide or enable rapid feedback. To clarify this situation, exact definitions are needed for each term that will better explain the scope of each, and as such will allow the role of each to be identified and consequently will allow the attributes of each to be identified.

The only author to previously consider it necessary to provide definitions for these terms was Neely (1995), whose definitions are used as the basis of the definitions developed here. Consider Neely's (1995) definition of a performance measure as '... a metric used to quantify the efficiency and/or effectiveness of an action'. This was subsequently modified to the following (Neely et al 2002, p. xiii):

A performance measure can be defined as a parameter used to quantify the efficiency and/or effectiveness of past actions.

And a performance metric is defined as:

A performance metric is the definition of the scope, content and component parts of a broadly-based performance measure.

From these definitions it can be seen that performance measures can be considered as data, and that an individual measure is therefore a datum, which is defined by the Oxford English Dictionary (2003) as:

A thing given or granted; something known or assumed as fact, and made the basis of reasoning or calculation; an assumption or premiss from which inferences are drawn.

The American Heritage Dictionary of the English Language (2000) defines data as 'Factual information, especially information organized for analysis or used to reason or make decisions.'

The latter definition is particularly suitable in this research as the measures, or data, are intended to facilitate managerial decision-making. As such Neely's (1995) definition seems reasonable and many of the attributes claimed for measures in the wider literature seem excessive. Information in and of itself is of little use and '... performance measures will accomplish nothing by themselves' (Kaydos, 1999 p. 139). In order for information, or a performance measure, to be of use it must be used as part of a structured system.

Neely (1995) defined a performance measurement system as 'the set of metrics used to quantify both the efficiency and effectiveness of actions'. Neely et al. (2002, p. xiii) later modified the original definition (Neely et al. 1995) of a performance measurement system to the following:

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 and interpretation of appropriate data.

Given the earlier interpretation of measures as data, and the definition of 'data' as factual information, then according to Neely's (1995, 2002, p. xiii) definitions the performance measurement system is really an information system. Considering the performance measurement system as an information system is not a new idea. Kaydos (1991, p. 69) states that 'A "good" (performance measurement) system is one that provides a manager with timely, reliable information which is relevant to the decisions he or she must make.' Eccles (1991) suggested five activities that need to be addressed when overhauling a performance measurement system, the first of which was to 'Develop an information architecture'. The work reported by Bititci et

al. (1997) considered the performance measurement system to be an information system that lies at the heart of the performance management process.

The performance measurement system communicates strategic objectives downwards, level-by-level, making the objectives and measures more specific and locally meaningful at each lower level. The same system is also used to collect data, perform any necessary calculations and then communicate the results upwards. As a result, Neely's (1995) definition is modified as follows:

A performance measurement system is an information system that communicates strategy, initiatives, plans, objectives and targets throughout an organization and also collects, and makes available, the actual values of performance measures.

At this stage the definitions have provided for a system that communicates information downwards, in the form of objectives and measures, and communicates information laterally and upwards, in the form of feedback. The definitions have not yet addressed the system that chooses the objectives and measures in the first place, that interprets the measured results, and that decides on new objectives and measures based on the measured results. Bititci et al. (1997) suggested that the Performance Management Process performs this function. According to Bititci *et al.* (1997) the Performance Management Process takes the organization's strategy, breaks it down into its constituent parts and communicates specific objectives and measures to the relevant divisions, plants, processes and so on, until every individual has been included. The performance measurement system communicates these objectives and measures throughout the organization and then measures actual performance and communicates the results. The results can be used by individuals to guide their own decisions and actions as well as being used by management to determine the efficiency and effectiveness of the current objectives.

The Performance Management System (PMgtS) is therefore defined as follows:

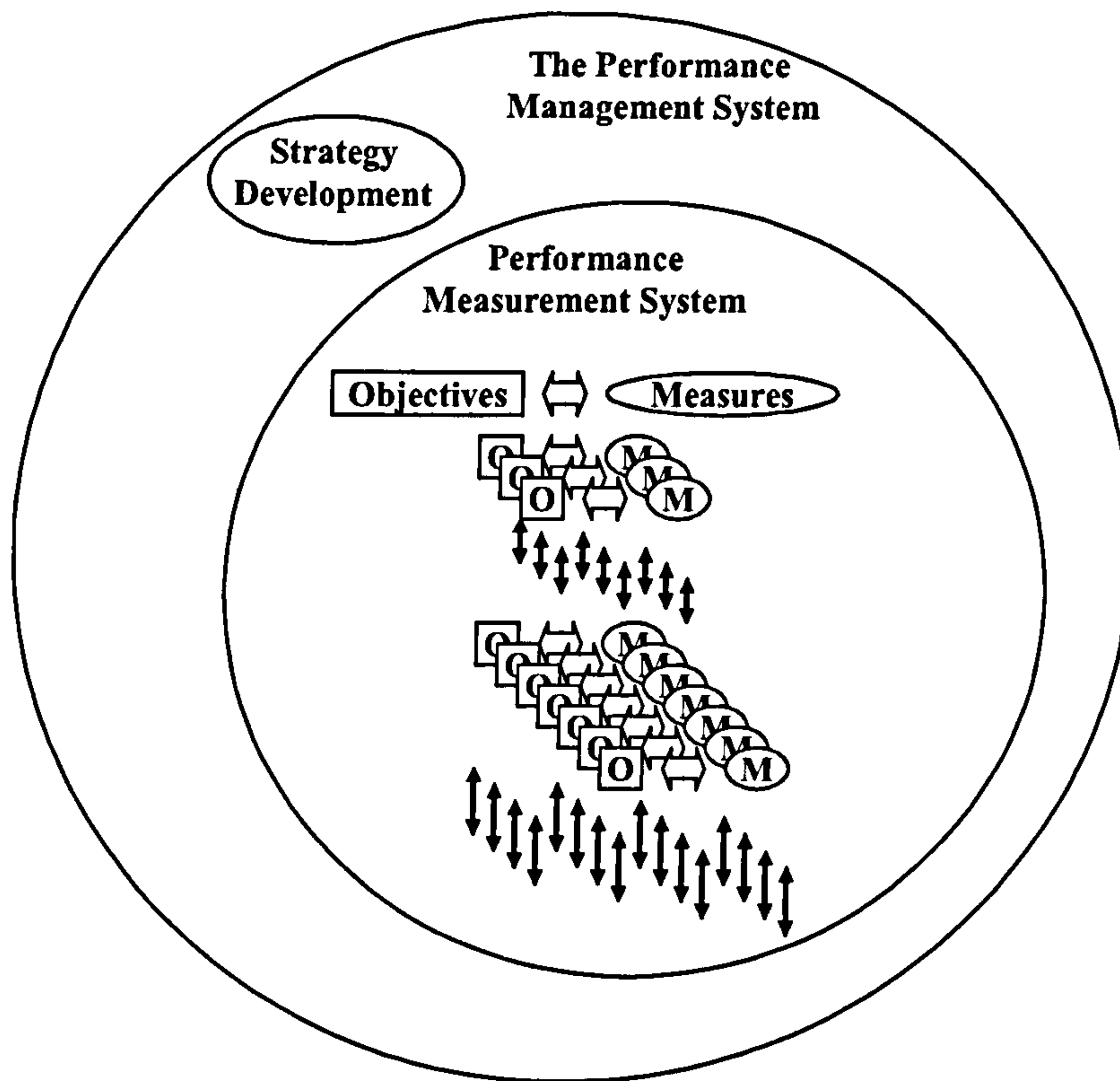
A performance management system is the system that develops an organization's strategy and strategic objectives. It then defines objectives and measures for the entire organization, based on the organization's strategic objectives. It uses the performance measurement system to deploy objectives and performance measures throughout an organization to both guide decision making and to assess progress towards the strategic objectives. The performance management system periodically re-evaluates and updates performance measures and the performance measurement system.

These definitions, summarized in Table 4.1 below, lead to a conceptual model such as that represented in Figure 4.1, below.

<p>A <b>performance measure</b> is a metric used to quantify the efficiency and/or effectiveness of an action (Neely 1995)</p>
<p>A <b>performance measurement system</b> is an information system that communicates strategy, initiatives, plans, objectives and targets throughout an organization and also collects, and makes available, the actual values of performance measures</p>
<p>A <b>performance management system</b> is the system that develops an organization's strategy and strategic objectives. It then defines objectives and measures for the entire organization, based on the organization's strategic objectives. It uses the performance measurement system to deploy objectives and performance measures throughout an organization to both guide decision making and to assess progress towards the strategic objectives. The performance management system periodically re-evaluates and updates performance measures and the performance measurement system.</p>

**Table 4.1 - Practical definitions**





**Figure 4.1 - A conceptual model of the performance management system**

The performance management system receives its input from the strategy development process, in the form of strategic objectives. The performance management system then defines measures for the strategic objectives and deploys these measures to those that are responsible for, and can control the achievement of the objectives. These corporate objectives are then cascaded level-by-level, throughout the organization, in the form of objectives and measures, for all of the lower levels in the organization.

This brief and somewhat simplistic definition and model does little to capture the complexity of measuring performance in an organizational setting, however it facilitates a clearer understanding of the distinctions that need to be drawn between performance measures, performance measurement systems and performance management systems.

The next section describes a review of the literature to identify the essential characteristics that measures and performance measurement and management systems should possess. Following that, the attributes are assigned appropriately according to the new definitions.

### **4.3 The desirable attributes of performance measures**

As Neely (1999) identified, much has been written about performance measurement. In particular, much has been written about the desirable characteristics that measures and performance measurement systems should have. This section examines the literature to identify the characteristics that performance measures should possess. The attributes of performance measurement systems are considered in the next section.

Globerson (1985) provides nine selection guidelines for choosing performance measures:

1. Measures should be derived from strategy
2. Measures must facilitate the benchmarking of organizations in the same business
3. The purpose of the measure must be clear
4. Data collection and measure calculation methods must be clear
5. Ratio measures are preferred over absolute numbers
6. Measures must be under the control of those being measured
7. Measures are selected based on discussion with those involved
8. Objective measures are preferred to subjective measures
9. The value of the measure must be the same for same performance at different times

Several other authors agree with many of these guidelines, indeed there is consensus in the literature that performance measures should be based on an organization's strategy and/or business objectives. Globerson (1985), Sink (1986), McNair and Mosconi (1987), Keegan et al (1989), Maskell (1989), Neely et al. (1994), Kaplan

and Norton (1996, p10) and Kaydos (1999, p. 74), to name but a few authors, all agree that performance measures should be derived from an organization's strategy. In fact the only exceptions to this are those authors who suggest that measures should be based on an organization's critical success factors, for example Azzone et al. (1991) and Beischel and Smith (1991). Critical Success Factors (CSF's) are those '... few key areas where things "must go right" for the business to flourish' (Rockart 1979). As such, the CSFs can be interpreted as being determined by an organization's strategy. Consequently, it can be said that there is unanimous agreement in the literature that performance measures should be derived from strategy.

Criteria three, four, five and eight, from above, are equivalent to Wisner and Fawcett's (1991) suggestion that performance criteria (measures) should be flexible, easy to implement, timely and clearly defined at all levels. Azzone et al. (1991) agree and state that measures should be simple and relevant. Globerson's (1985) ninth guideline is concerned with the accuracy of the measures, a point that also was of concern to Young (1993). Kaydos (1999, pp. 3, 4 and 13) agrees that measures should be objective rather than subjective, and that ratios are preferred to absolute numbers because ratios provide long-term consistency that overcome changes in volume, mix, costs, etc. (Kaydos, 1999 p. 55).

Globerson (1985) gave more specific advice on five issues that must be dealt with in actually measuring the chosen measures. These are:

1. The unit of measurement. This should be chosen according to need and the preference of those involved.
2. The level of aggregation. The more aggregated the measure the lower will the associated measurement cost be. However, if the measure is too highly aggregated its reporting accuracy will be compromised and management's ability to respond to problems will be diminished.

3. The measurement accuracy. There are two considerations in this issue, firstly, the discrepancy between the reported value and the actual value. Secondly, how quickly after the fact the data is reported.
4. A crosscheck mechanism. This is particularly necessary if individuals are to be evaluated on the basis of the measure. Ideally there should be no way for an individual to modify the measurement itself or the measured result to better reflect their own performance.
5. Data collection and analysis method. There are two approaches to collecting and analyzing data. The built-in approach is preferable because the measurement is built-in to the process being measured and requires no additional resources or effort. The other approach is to deploy additional resources to collect and analyze the data and to report on the results, this method also has more scope for error.

Evidence of the need for a crosscheck mechanism is provided by Kaydos (1999, p. 46), although in this case it was referred to as 'wholeness'. A manufacturing manager's performance was assessed based on the percentage of orders that were behind schedule. In response, the manager increased the number of orders released into the production process. The effect was that although the percentage of orders behind schedule appeared to decrease it was only because there were more orders released to the production schedule, many of which were inactive. A particularly detrimental effect was that inventory value increased by 30% because material was ordered for all of the released orders, even though many of the orders had been released well in advance of schedule.

Maskell (1989, part 1) identified seven common characteristics of new performance measures being used by World Class Manufacturing companies. These characteristics of new measures are listed below with a brief description. New performance measures should:

- be directly related to the manufacturing strategy. Measures need to be based on strategy for two main reasons. The first is that the organization needs to know if

it is improving or getting worse in terms of the strategic objectives. Secondly, the old adage 'what gets measured gets managed' is true - people focus on the things that are measured.

- be non-financial in nature. Financial measures are needed for external reporting to shareholders and investors and to provide internal reporting on costs, however, the short-term control is best handled with the use of non-financial measures because of the documented failing of financial measures.
- vary between locations. It is unlikely that any two facilities will have the same objectives and/or chosen path to achieve those objectives. So, it follows that different facilities should have different measures.
- change over time. The notion of continuous improvement is fundamental to world-class manufacturing. As one set of objectives is achieved, a new set will be developed and the new set of objectives will obviously need complimentary measures.
- be simple and easy to use. If people do not understand the measures or how to use them they are unlikely to adopt them and integrate them into their daily routines. As a result, the measures will not drive performance towards the intended objective.
- provide rapid feedback. In order to deal with problems as they arise, which is one goal of world class manufacturing, it is necessary to receive information in a timely manner, not one or two weeks after the fact when it is too late to intervene and fix the problem in it's early stages.
- be intended to teach rather than to monitor. From a motivational point of view, the measures should be used to identify where improvement has been achieved and where greater improvement is possible. The measures should not be used simply to monitor performance and to punish poorer performers.

These points are all supported in the literature. That measures should be strategy-based was discussed above. That an organization should have non-financial in place is also widely supported (Skinner 1969, McNair and Mosconi 1987, Keegan et al. 1989, Azzone et al. 1991, Green et al. 1991, Wisner and Fawcett 1991, Grady 1991,

Eccles and Pyburn 1992, Sieger 1992, Lockamy 1994, Meyer 1994 and Neely et al. 1994).

The ability to link measures to strategy requires an understanding of the relationships between measures, this is a point not always acknowledged in the literature, as evidenced above by Globerson (1985) and Maskell (1989 part 1). However, later authors recognized the need for the relationships between measures to be understood, in order that they be mutually supportive and not contradict each other (Beischel and Smith 1991, Grady 1991, Eccles and Pyburn 1992, Kaydos 1999, pp. 35-44). Kaplan (1996) adds that measures should be chosen to reflect the cause and effect relationships between all activities in the organization.

Not only will identifying the relationships between the measures promote a better understanding of how the organization works but it will also contribute to promoting appropriate behavior by identifying and resolving differences of opinion (Neely 2000). Several authors have identified the need for measures to promote appropriate behavior, or at least not promote dysfunctional behavior (Keegan et al. 1989, Kaydos 1991 p. 74, Gregory 1993, Schmenner and Vollmann 1994, Fry 1995, Dumond 1994). Inappropriate behavior can take a number of forms. Firstly, poorly thought out measures can lead to behavior that is inconsistent with, or counter to the strategic objectives (Neely and Bourne 2002). Secondly, as McNair et al. (1990) identified, the inappropriate application of financial measures to operating managers is a major source of tension, which ‘...clouds action, and often polarizes factions within companies.’ Another way of looking at this same point is that the measures must be relevant and appropriate to the specific situation. Expressed slightly differently, a standard set of measures is not appropriate across multiple entities (Brignall et al. 1991, Beischel and Smith 1991, Sieger 1992, Gregory 1993).

Sink (1986), McNair and Mosconi (1987), McNair et al. (1990) and Grady (1991) agree with Maskell (1989, part 1) that measures should provide (rapid) feedback to those being measured as well as those making the decisions.

McNair et al. (1990) also agree with Maskell's last point that the measures should be intended to teach, rather than to monitor. As McNair et al. (1990) put it management accounting should switch from scorekeeper to coach. Kaydos (1999, p. 14) also agrees with Maskell's last point, and suggests that if measures are used to find fault and punish individuals, then morale will be lowered. However, if measures are used in a positive manner to highlight and praise accomplishments then they become a powerful motivator.

Minimizing the number of measures in use was not considered by earlier authors but the need to do so is becoming more apparent and is recommended by DeFeo (2000) and Schneiderman (2001), as well as Brown (1996), who agrees that many organizations have too many measures and stated that '... measuring more things doesn't get more quality or guarantee quality.' The work of Meyer (1994) and Neely et al. (1995) has shown that in their efforts to measure the "right" things, many businesses measure everything, or at least a very long list of things. Measuring too many variables is undesirable (Neely et al 1994b, Burcher and Stevens, 1996), in particular because it leads to poor decision making as the human brain is only capable of accurately considering the implications of limited numbers of factors (Busby 1995). In the case of objectives, giving an individual too many will result in a loss of focus, as a result the Japanese method Hoshin Kanri gives each individual no more than four to six objectives to work on during a year, (Witcher and Butterworth 1996). To ensure that focus on the strategic objectives is maintained the number of objectives, and their related measures, should be kept to as few as possible. To this end, the performance measurement (management) system should help managers to identify the minimum number of 'right' objectives and measures and show where to deploy them to achieve the maximum effect. Schmenner and Vollman (1993) point out that there is a difference between using the wrong measures and not using the right measures. In the former case, called a "false alarm", the wrong things are emphasized. Clearly then, a performance management system must provide some means of ensuring that false alarms and gaps do not occur.

A final point is that measures should be integrated across business functions as well as hierarchically (Keegan et al. 1989, Grady 1991). It has been recognized that in order to survive, let alone to succeed, in today's highly competitive global market it is absolutely necessary that businesses integrate their operations to ensure that all functions strive to achieve common objectives (Rhodes 1988, Wisner and Fawcett 1991, Bititci and Carrie 1994, Bititci 1995).

From the above it will be seen that there is general agreement in the literature on the attributes that measures should have and/or encourage. These attributes have been summarized into the following list (Table 4.2, below).

Attribute	Author
Be related to strategy and therefore situation specific – vary between locations and change over time. Include internal/external, cost/non-cost as appropriate. Identify and eliminate gaps and false alarms	Skinner (1969), Globerson (1985), McNair and Mosconi (1987), Keegan et al. (1989), Maskell (1989, part 1), Green et al. (1991), Beischel and Smith (1991), Azzone et al. (1991), Wisner and Fawcett (1991), Grady (1991), Eccles and Pyburn (1992), Sieger (1992), Lockamy (1994), Meyer (1994) and Neely et al. (1994, 1996), Gregory (1993), Kaydos (1999, p. 74)
Be flexible, simple, timely and easy to use, understand and implement. Objective measures, expressed as ratios are preferred. Collection and calculation method should be clear. Identify the appropriate unit of measure and level of aggregation.	Maskell (1989, part 1), Wisner and Fawcett (1991), Azzone et al. (1991), Globerson (1985), Kaydos (1999)
Provide rapid feedback to those being measured and those making the decisions, intended to teach, not to monitor	Maskell (1989, part 1), Sink (1986), McNair and Mosconi (1987), McNair et al. (1990) and Grady (1991), Kaydos (1999)
Be as few as possible	DeFeo (2000), Brown (1996), Busby (1995), Neely et al 1994b, Burcher and Stevens, 1996, Witcher and Butterworth (1996)  (Continued overleaf)



The relationships between measures should be understood, measures should be mutually supportive, try to include a cross-check mechanism	Beischel and Smith 1991, Grady (1991), Eccles and Pyburn 1992), Kaplan (1996), Globerson (1985), Kaydos (1999)
Measures should promote appropriate behavior	Keegan et al. (1989), Gregory (1993), Fry (1995), Dumond (1994), McNair et al. (1990)
Measures should be selected by and under the control of those being measured	Globerson (1985)
The result of the measurement must be accurate and repeatable/consistent	Globerson (1985), Young (1993), Kaydos (1999)
Measures should integrate vertically and horizontally	(Keegan et al. 1989, Grady 1991)

**Table 4.2 - The desirable attributes of performance measures**

In the light of the newly developed definitions, all of these attributes are no longer applicable to performance measures. These discrepancies are dealt with in Section 4.5.

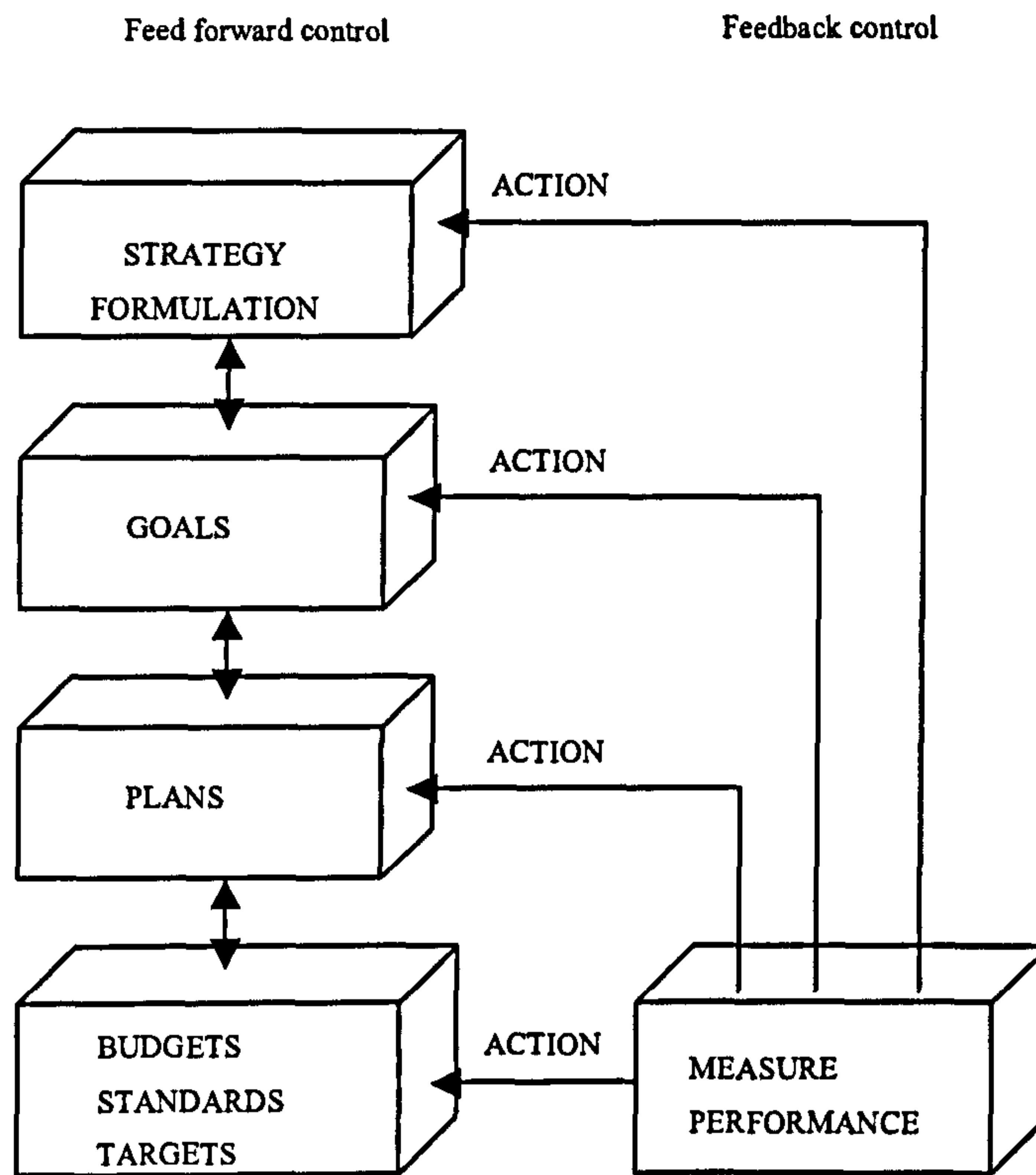
This section identified and examined the attributes that a performance measure should possess. In a similar manner, the next section explores the attributes that a performance measurement system should possess.

#### **4.4 The desirable attributes of performance measurement systems**

This section is concerned with the attributes of performance measurement systems. A review of the literature is described and the attributes that performance measurement systems should have, or encourage, are identified.

One of the earliest and most comprehensive studies of performance measurement was that funded by the Chartered Institute of Management Accountants (CIMA) in the UK. The research was conducted over two and a half years, in for-profit service

organizations (Brignall et al. 1991). As a result of that study Brignall et al. (1991) identified that the measurement system should include financial and non-financial measures and internal and external measures. They proposed a control model (Figure 4.2, below) that includes feed-forward control, through plans, budgets, standards and targets and feedback control through investigation of variances between target/plan and actual performance. They identified six general dimensions of performance, which they categorized as being either Results or Determinants, see Table 4.3 below. Measures in the 'Results' category relate to and reflect the chosen strategy, that is, they demonstrate how successful the chosen strategy is. On the other hand, measures in the 'Determinants' category relate to the factors that cause the results to be what they are. Brignall et al (1991) also suggest the concept of input, process and output measures as a means to better understand the organization and its components. Brown (1996) took this concept a step further by consider measures of outcome, as well as measures of output. Measures of outcome address the impact that the achieved performance (output) has on the customer. For example, if a product is not delivered on time (output), then the customer will not be satisfied (outcome).



**Figure 4.2 - Feed-forward/feedback control model  
(Brignall et al. 1991)**

Brignall et al. (1991) suggest that using the six dimensions of performance measures will make the relationships and trade-offs between the measures explicit. As examples they quote the trade-off between short-term profit and long-term market share and the trade-off between resource utilization and quality.

	<b>Dimensions of Performance</b>	<b>Types of Measure</b>
Results	Competitiveness	Relative market share Sales growth
	Financial performance	Profitability Liquidity Capital structure Market ratios
Determinants	Quality of service	Reliability Responsiveness Aesthetics/Appearance Etc.
	Flexibility	Volume flexibility Delivery speed flexibility Specification flexibility
	Resource utilization	Productivity Efficiency
	Innovation	Performance of the innovation process Performance of individual innovators

**Table 4.3 - Six dimensions of performance measures  
(Brignall et al. 1991)**

Globerson (1985) suggests that developing a PMS should undergo the following four stages:

1. Choosing the preferred performance criteria (measures)
2. Measuring the chosen criteria
3. Assigning standards to the criteria
4. Designing a feedback loop to respond to discrepancies between standard and actual performance

He suggests some guidelines for selecting the measures (these were listed in section 4.3) and suggests that a weighting system be used to select the most relevant measures. Suggestions are also given for deciding how to use the chosen measures, assign standards and implementing and using a feedback loop.

Sink (1986) describes a five-step methodology for analyzing existing measurement and evaluation systems and for developing improved systems.

Step 1 in Sink's methodology is the Strategic Planning Process. This process should identify what the organization should look like in two-to-five years in order to remain competitive, and develop the objectives, goals, plans and teams needed to ensure the organization gets to where it needs to be. The plan should attend to the components, programs, techniques, interventions and systems that will be needed to achieve the objectives. In addition, the specifics of the performance and productivity measurement and evaluation system should be identified during this step.

Step 2 involves an analysis of the inputs and outputs. This step is necessary to develop a better understanding of the system in which the participants are involved. There are eight sub-steps involved in this analysis:

- i. Identify the mission, purpose, goals, objectives and measures of the system being analyzed.
- ii. Identify and discuss the domain of the system
- iii. Identify and evaluate the output of the system
- iv. Identify and evaluate the processes involved in generating the output
- v. Identify and evaluate the resources used in those processes
- vi. Audit the measurement and evaluation systems
- vii. Audit the control and improvement systems
- viii. Audit the productivity management effort as a whole

Step 3 is the Roadblock Identification, Analysis and Removal Technique (RIART). This step is designed to identify any roadblocks or obstacles to achieving the desired level of productivity or performance. Once identified, the roadblocks are analyzed to understand the 'who, what, how and when' regarding removing the roadblock. This step has nine sub-steps:

- i. Selection of the work group or business unit
- ii. Orientation and background training and development session

- iii. Identification and prioritization of performance roadblocks
- iv. Formation of action teams to analyze roadblocks/barriers
- v. Development of action plan to remove roadblocks
- vi. Implementation
- vii. Development of scoreboards to track and evaluate the success of the implementation
- viii. Integration with productivity development goals and objectives action teams and results from Step 1
- ix. Visibility room development

Step 4 is the Normative Performance Measurement Methodology. This step is concerned with how to evaluate the overall performance of the work group or business unit being analyzed. The Nominal Group Technique (NGT) is used to develop consensual measures of performance for the work group, department or function. Individuals suggest measures that might be used, the group then discusses these suggestions and a consensus is arrived at.

Step 5 is the final step in Sink's methodology and involves disseminating and communicating the efforts and results. The 'Visibility Room' is a concept used to promote the open communication between departments or groups. Groups develop charts of the performance towards objectives and place the charts in the visibility room.

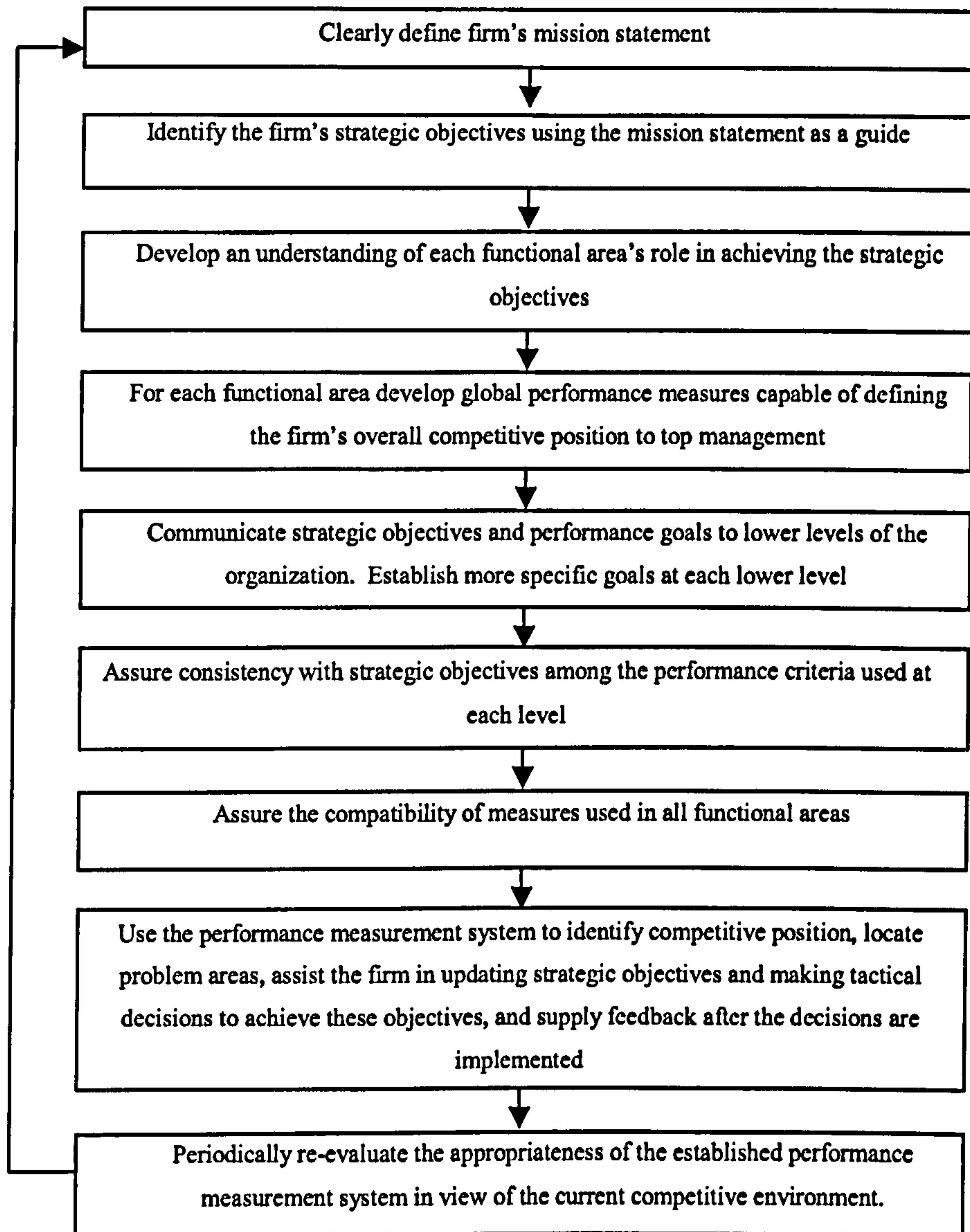
McNair and Mosconi (1987) suggest that a performance measurement system should be designed to monitor market changes, establish and evaluate progress towards business objectives and ensure attainment of performance targets at the Market, Business, Plant and Shop level. In addition, the PMS should:

- Provide rapid feedback
- Be sensitive to the profit contributions of various activities and products
- Be flexible and migratory
- Incorporate holistic product costing and control measures

- Identify, measure and eliminate non-value-added costs
- Focus on reducing variances in quality, cycle time and product complexity
- Reclassify costs based on assignability and value-adding characteristics
- Enhance the traceability of costs to specific products and processes to decrease allocations and the distortion of allocations.

McNair and Mosconi (1987), while clearly having a cost and accounting orientation are notable as they specifically suggest monitoring the external environment. Their later work is described shortly.

Wisner and Fawcett (1991) provide nine steps for developing a performance measurement system; the steps are shown in the flow diagram in Figure 4.3, below. This method is different from those mentioned earlier in that it was the first to suggest a periodic re-evaluation of the measures to ensure they remain appropriate.

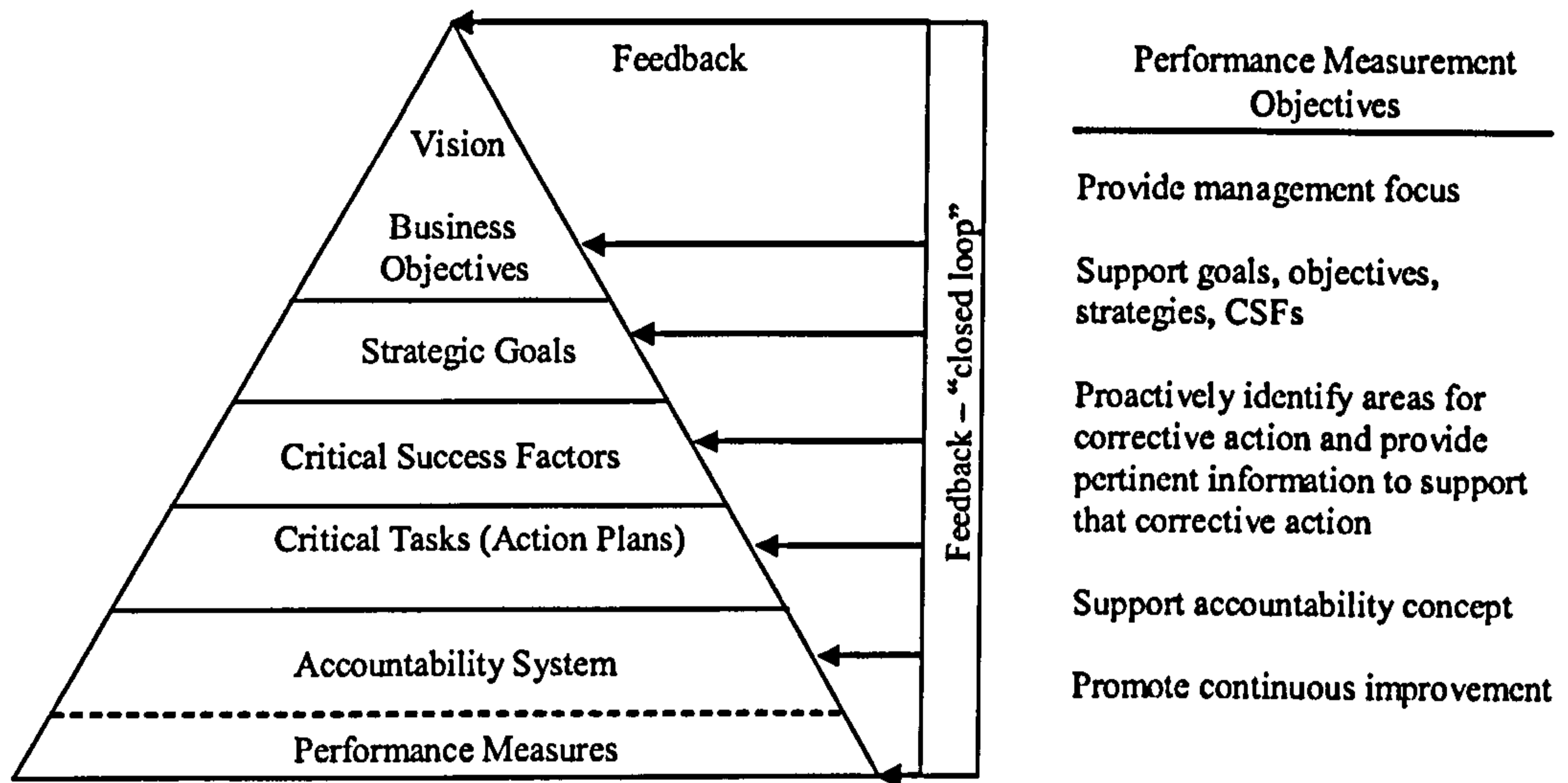


**Figure 4.3 - Steps for developing an effective performance measurement system  
(Wisner and Fawcett 1991)**

Grady (1991) developed the framework depicted in Figure 4.4, below. This framework stresses the feedback loop from the operational level to all other levels. Grady's framework emphasizes the need to balance cost and non-cost measures and to distinguish between process measures and result measures. That is, process



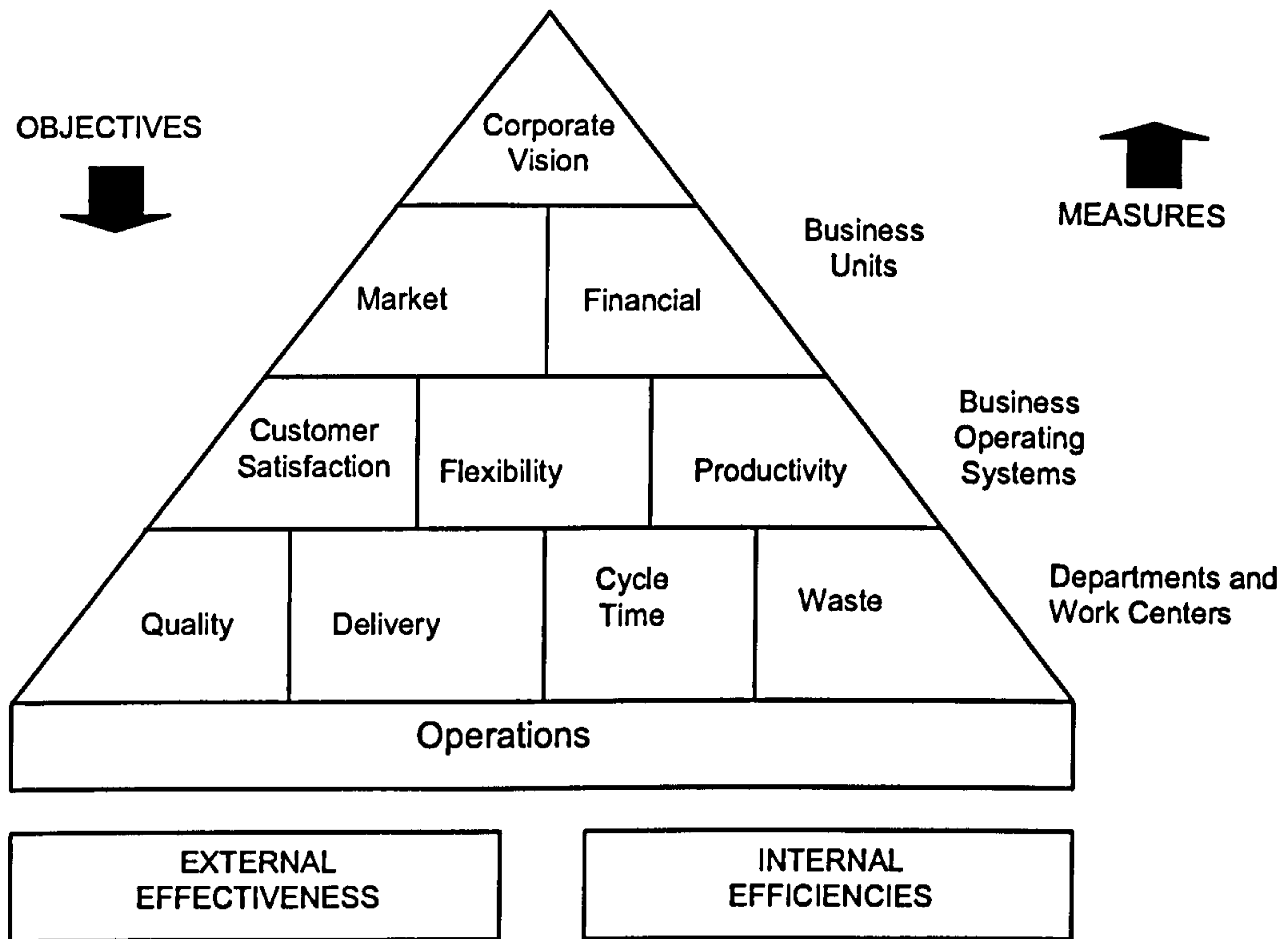
measures that assess the performance of the unit, as opposed to result measures that assess the output from the unit. The process measures drive the result measures.



**Figure 4.4 - Grady's Performance Management Feedback System  
(Grady 1991)**

Grady's (1991) framework is similar to the SMART (Strategic Measurement Analysis and Reporting Technique) Pyramid, developed at Wang laboratories, which is described by McNair et al. (1990) and Lynch and Cross (1995), in that both recommend a boundary-spanning, cross-functional approach. Both frameworks start with the vision and both consider the organization to have three general levels. However, the McNair et al. (1990) framework is more prescriptive in terms of how the organization should be considered and the general categories of measures to be used. The McNair et al. (1990) framework is shown in Figure 4.5, below. The corporate vision determines which markets the organization will compete in and the products/services offered. This vision leads to goals for the marketplace and financial goals, which are considered strategic business objectives. These strategic business objectives in turn lead to the business operating systems' objectives, and

these in turn lead to objectives for the departments and work centers. As mentioned above, this approach requires that more emphasis be placed on the business processes and how departments and/or work centers cooperate, than on the traditional business functions, such as Marketing, Research and Development, Purchasing and so on.



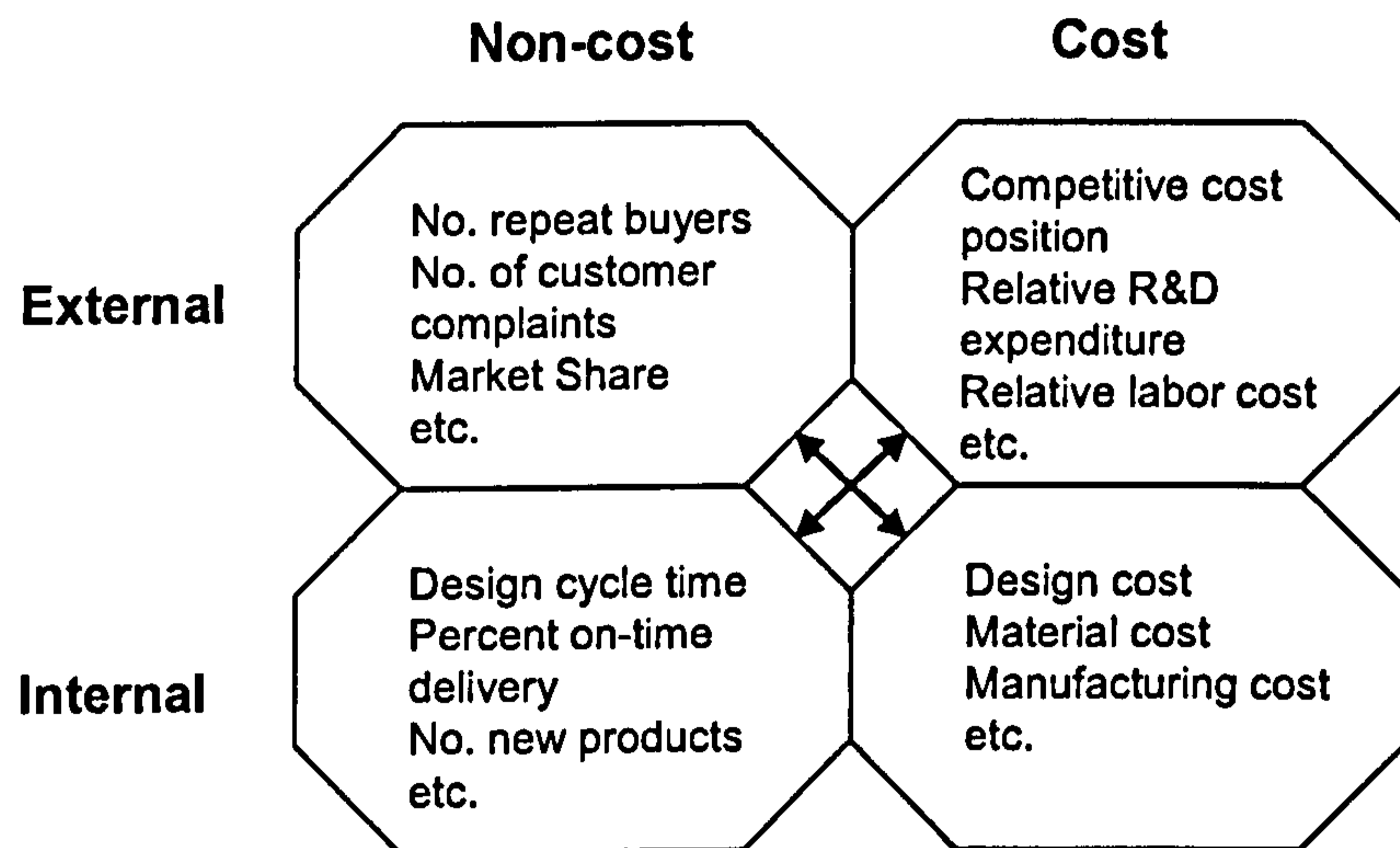
**Figure 4.5 - The McNair et al. framework  
(McNair 1990)**

Dixon et al. (1990, p 41), Keegan et al. (1989) and Lockamy (1994) all agree that the performance measurement system must facilitate the management of horizontal, cross-functional process flows. This requires that management clearly understand the unique issues in each group and how the groups relate to each other and is akin to understanding the relationships and tradeoffs (Brignall 1991), conducting input/output analysis (Sink 1986) and understanding each functions' role in achieving the strategy (Wisner and Fawcett 1991).

Keegan et al. (1989) suggests a matrix of measures based on cost/non-cost and internal/external measures see Figure 4.6, below. This is a simple framework but the combination of these four specific issues draw attention to two fundamental concepts:

1. Organizations need to know what is happening in the 'outside world'; and
2. Organizations cannot focus on financial issues only

As such, this framework is a good basis for any additional work, and as Neely et al. (1995) put it, this framework should be capable of capturing any measure.



**Figure 4.6 - The Performance Measurement Matrix  
(Keegan 1989)**

Eccles (1991) identified five areas of activity that must be addressed in order to redesign a performance measurement system. These five activities are:

1. Develop an information architecture
2. Put the technology in place to support the new architecture

3. Align incentives with the new system
4. Draw on outside resources, and
5. Design a process to ensure the other four occur.

According to Eccles (1991) the three elements of developing an information architecture are firstly, identifying the data needed, secondly, deciding how to generate the data and finally, developing the rules that govern the flow of information. Putting the technology in place is typically the domain of the IS&T (information system and technology) function of an organization, and Bourne (2000) recommends involving the IS&T function at an early stage in the redesign of a performance measurement system. Aligning the reward and incentive system with the new measurement system would typically involve the Human Resources (HR) function. Drawing on outside resources has much in common with benchmarking but is also concerned with obtaining information that will aid in the development of the organization's strategy. Within the context of the research reported in this thesis Eccles' (1991) last point would involve designing the performance management system, it might therefore be better to attend to this item first.

A different perspective is provided by Blenkinsop and Burns (1992), who point out that revising a performance measurement system to improve existing processes involves change. They go on to say 'Change in organizations is a very complicated process... It involves a psychological shift in the basic assumptions, beliefs and values held within the organization.' In order for a PMS implementation to succeed (Blenkinsop and Burns 1992):

- The duties (data collection, analysis and preparation of results) must be assigned to specific people and must become part of their job responsibilities.
- The new measures must be given equal or greater importance than the traditional financial measures and this importance must be demonstrated to all employees
- Data must be available in a timely and accurate manner

- If a mechanism for collecting the data does not exist, then a new mechanism must be implemented

Other requirements for the PMS are (Blenkinsop and Burns 1992.):

- Departmental goal-setting without creating inconsistencies in policy or excessive interdepartmental conflict
- An appropriate mix of integration and differentiation, i.e. goals are set both horizontally and vertically within the framework of the organizational chart
- A thorough understanding of the existing measurement system, both formal and informal, spoken and unspoken
- Management consensus about where the organization is going and what means it has at its disposal for getting there
- A corporate vision, communicated and internalized by every one of its employees
- Long-, short- and medium-term goals, not a fixation with this year's/month's/week's financial performance.

A PMS should lead to integration throughout the entire organization so that every employee knows and understands what is to be achieved and how it is to be achieved (Gregory 1993). Dumond (1994) defines a performance measurement system as a combination of goals, measures and feedback and found that clear objectives, mutually supportive measures and feedback are all necessary to achieve the desired outcome, i.e. the strategic objectives. Lebas (1995) concluded that a powerful performance management system is one that is built on – and supports – measures that:

- Give autonomy to individuals within their span of control;
- Reflect cause and effect relationships
- Empower and involve individuals

- Create a basis for discussion, and thus support continuous improvement
- Support decision making

Lingle and Schiemann (1996) reported that, based on a national survey (in the US) of a cross-section of executives ‘...organizations which are tops in their industry, stellar financial performers and adept change leaders, distinguish themselves by the following characteristics: having agreed-upon measures that managers understand; balancing financial and non-financial measurement; linking strategic measures to operational ones; updating their strategic scorecard regularly; and, clearly communicating measures and progress to all employees.’ They concluded that measurement-managed companies outperform less disciplined companies for four reasons:

- **Agreement on strategy.** The act of translating strategy into measurable objectives forces management to be specific, disagreements arise and are dealt with and a consensus is arrived at.
- **Clarity of communication.** The agreed strategy and related objectives are communicated to all employees.
- **Focus and alignment efforts.** Group and individual performance measures are linked to strategic objectives. There are reviewed regularly and changed if necessary.
- **Organizational culture.** Successful organizations foster attitudes and behaviors that sustain competitiveness, such as teamwork. Employees are included in developing their performance measures and agreeing standards.

Kaplan (1991) states that an effective operational control and performance measurement system should provide timely and accurate feedback on the efficiency and effectiveness of operations. The system should provide information that may be used to encourage employees to strive for continuous improvement through experimentation and learning. Both the financial and non-financial data should be shown as trends and not compared against standards. Financial measures should be

supplemented by non-financial measures because the non-financial measures are more relevant in striving for continuous improvement. Kaplan and Norton's solution to the problem of traditional performance measurement systems was to develop the Balanced Scorecard (1992, 1996, 2001(a) and (b)). The Balanced Scorecard (BSC) combines financial measures and non-financial measures into four perspectives of performance in a single framework. The four perspectives are the Financial, Customer, Innovation and Learning and Internal Business perspectives. The BSC is discussed further in a later chapter.

In some of their early work, Neely et al. (1996a) concluded that a process based approach to designing, or redesigning, performance measurement systems made it easier for firms to:

- decide what to measure;
- decide how to measure it;
- collect the appropriate data; and
- eliminate conflict in their measurement system.

As a result they developed a process to design performance measurement systems. The process was then tested, and revised, with collaboration from several industrial partners (Neely et al. 1996a, 1996b, 2000). Their process consists of ten phases that guide the user from identifying and agreeing strategic business objectives and related measures, through cascading those measures to the key drivers of performance.

Dixon et al. (1990, p165) suggest that good measurement systems should:

1. Be mutually supportive of, and consistent with the business's operating goals, objectives, critical success factors and programs.
2. Convey information through as few and as simple a set of measures as possible.
3. Reveal how effectively customers' needs and expectations are being satisfied. Focus on measures that customers can see.
4. Provide a set of measurements for each organizational component that allows all members of the organization to understand how their decision and activities affect the entire business.

## 5. Support organizational learning and continuous improvement.

In reviewing the literature to identify the attributes that performance measurement systems should possess, another issue becomes clear. That issue is that new performance measurement initiatives frequently do not succeed. This is an issue of the utmost importance because if a performance measurement initiative is to succeed it must address the reasons that might cause it to fail. Sieger (1992) identified the elimination of 'old', obsolete measures as a source of strong organizational resistance because they are familiar to managers. Eccles (1991) pointed out that the CEO must be committed to the implementation of a performance measurement system redesign and that it would require a 'special effort' to keep the momentum going. Chatwin (1996) identified the lack of senior executive commitment to follow through on the implementation of new performance measurement systems and measures as the main reason that new PMSs fail. Neely et al. (2000) identified that the real challenges in designing a performance measurement system is not in deciding what to measure but in implementing the chosen measures. During the implementation of measures, managers encounter fear, politics and subversion (Neely et al. 2000). Bourne (2000) agrees that deciding what to measure is only the first step and identified other issues that impede the implementation of new performance measurement initiatives:

- a) A resistance to the new measurement system. This may be because the new PMS requires open communication of information and releasing information changes the balance of power
- b) Computer system issues. This can be overcome by involving IS&T earlier in the project so that the systems can be online when the measures are ready to be used.
- c) Senior management attention being distracted by other issues.

Lingle and Schiemann (1996) found the four main barriers to effective measurement to be:

- Fuzzy objectives. Failure to clearly define objectives causes confusion and poor decision making.



- Unjustified trust in informal feedback systems. Sound data, provided by well-defined and implemented measures is a source of more accurate and reliable information than simply relying on informal feedback.
- Entrenched measurement systems. Resistance to change can impair, if not prevent the implementation of a new performance measurement system.
- The activity trap. Too many measures lead to a lack of focus and a loss of faith in the new measures.

All of the attributes and requirements, relating to performance measurement systems, which were identified in the literature and have been discussed above, are summarized in Table 4.4, below. The next section re-examines the attributes of measures and performance measurement systems in terms of the new definitions for those terms and for the term 'performance management system'. The attributes of measures and measurement systems, as listed in Tables 4.2 and 4.4, are re-assigned according to the new definitions.

Attribute	Author
The performance measurement system should:	
Conduct strategic planning	Sink (1986), Globerson (1985), Brignall et al. (1991), Wisner and Fawcett (1991)
Communicate plans, budgets, standards and targets downward, as well as communicating results upward	Globerson 1985, Brignall et al. 1991, Wisner and Fawcett (1994), Dixon et al. (1990), Kaplan (1991)
Identify and remove roadblocks	Sink (1986), Neely et al. (2000), Lingle and Schiemann (1996)
Develop consensual measures, give autonomy to and empower individuals	Sink (1986), Globerson (1985), Lebas (1995)
Promote open communication of initiatives, efforts and results (feedback) to every employee on a locally relevant timescale	Sink (1986), Globerson (1985), McNair and Mosconi (1987), Wisner and Fawcett (1991), Blenkinsop and Burns (1992)
Monitor the external environment as well as the internal one	McNair and Mosconi (1987), Keegan et al. (1989)
Balance cost and non-cost measures	Grady (1991), Keegan et al. (1989), Lingle and Schiemann (1996)
Measure results, determinants, inputs, processes, outputs and outcomes	Brignall et al. (1991), Brown (1996), Sink (1986), Grady (1991)
(Continued overleaf)	

Analyze inputs and outputs to facilitate an understanding of the relationships between organizational units, i.e. manage processes, and assess the compatibility of measures in all areas to understand the cause & effect relationships and trade-offs	Brignall et al. (1991), Wisner and Fawcett (1991), Dixon et al. (1990), Blenkinsop and Burns (1992), Keegan et al. (1989), Lockamy (1994), Lebas (1995), Kaplan (1991)
Periodically reevaluate the strategy and the measures, delete obsolete measures	Wisner and Fawcett (1991), Lingle and Schiemann (1996), Sieger 1992
Produce clear and consistent goals and measures	Blenkinsop and Burns (1992), Dumond (1994), Lingle and Schiemann (1996),
Consider the informal measurement system	Blenkinsop and Burns (1992), Lingle and Schiemann (1996)
Involve IS&T at an early stage in development of a new system	Bourne (2000)
Prioritize the many and then focus on the few	Globerson 1985, Dixon et al. (1990), Lingle and Schiemann (1996)
Support organizational learning and continuous improvement	Dixon et al. (1990), Kaplan (1991), Lingle and Schiemann 1996

**Table 4.4 - The desirable attributes of performance measurement systems**

#### **4.5 The attributes reconsidered in light of the new definitions**

This section takes another look at the desirable attributes of performance measures and performance measurement systems and reassigns the attributes in light of the definitions developed in section 4.2, and shown again in Table 4.5, below, for the convenience of the reader. It should be noted that specific guidance in the literature on cost and financial related measures, for example that of McNair and Mosconi (1987), has been omitted. This research is concerned with the development of non-financial measures at the operational level of organizations. Systems to deploy, monitor and report financial measures are already well developed and well entrenched in organizations. While these systems are not considered within this thesis, it is acknowledged that they are a necessary part of the management information system. Furthermore, it is suggested that any organization-wide performance measurement, or management, system must be able to accept input from the financial systems and to deliver that information to those individuals that require it.

A **performance measure** is a metric used to quantify the efficiency and/or effectiveness of an action (Neely 1995)

A **performance measurement system** is an information system that communicates strategy, initiatives, plans, objectives and targets throughout an organization and also collects, and makes available, the actual values of performance measures

A **performance management system** is the system that defines objectives and measures for the entire organization, based on the organization's strategic objectives. It uses the performance measurement system to deploy performance measures throughout an organization to both guide decision making and to assess progress towards the strategic objectives. The performance management system periodically re-evaluates and updates performance measures and the performance measurement system.

### **Table 4.5 - Practical definitions**

For the sake of brevity the original lists of attributes are not shown in the following sections. The newly designated lists are shown and a brief explanation of the reasons for the designation is provided.

#### **4.5.1 The desirable attributes of performance measures**

The desirable attributes of performance measures, as identified in the literature, were described in Section 4.3 and presented in Table 4.2, the revised list is presented below in Table 4.6.

To increase the likelihood of measures being used, they should be simple and easy to understand. Reducing the number of measures used to a manageable set will ensure that employees remain focused on the truly important issues.

Using ratio-based measures provides 'at-a-glance' understanding of the level of performance being achieved, whereas an absolute number would convey little meaning without looking up the related target and measurement details. For example, expressing units shipped as a percentage of the target (80% or 800 of 1000

units) instantly conveys the level of performance, this is not the case if the actual quantity shipped is quoted (800 units).

Performance Measures should:

Be simple and easy to understand, for example, be ratio based in preference to absolute numbers, show a trend	Maskell (1989, part 1), Wisner and Fawcett (1991), Azzone et al. (1991), Globerson (1985)
Have appropriate accuracy, units of measure and levels of aggregation	Globerson (1985), Young (1993)
Be objective or subjective as appropriate	Globerson (1985), Kaydos (1999), Anderson and Fagerhaug (2002)
Be defined with input from, and under the control of those being 'measured'	Globerson (1985)

**Table 4.6 - The new list of attributes for measures**

Measures should have appropriate accuracy, units and levels of aggregation. This is dependent upon the objective, situation and level of the organization. For example, the CEO of an organization doesn't necessarily need to know that the shipment to customer A was short by 12 units, that the order to customer B was two days late and that customer C was shipped the wrong product. Instead, the CEO might prefer to receive the information as a percentage of orders shipped correctly. Conversely, an operator on the assembly line is not concerned with direct labor variances.

Subjective measures rely on an individual's interpretation of the situation. An individual's experience, knowledge and mood will mold this interpretation. This makes consistent decision-making more difficult than if objective measures were to be used. However, as Anderson and Fagerhaug (2002, p. 23) point out it is not always possible to use objective measures, for example, when assessing 'quality of

work life'. For these reasons, subjective measures can be used but objective measures are more desirable.

Including the group to be measured in actually deciding what to measure is a useful step. Aside from greater acceptance due to an increased sense of ownership, including the group being measured in defining their measures will lead to a better understanding of the organization's strategy and the group's role in achieving that strategy. Being involved in defining the measures also facilitates the previous point, that is, the need for all employees to understand them. The activities being measured must be under the control of those being measured to avoid making the employees apathetic and disgruntled at being measured against criteria that are not under their control.

#### **4.5.2 The desirable attributes of performance measurement systems**

Considering the performance measurement system as an information system opens up another dimension to the attributes required. Specifically, the technical aspects also need to be considered, including issues of security and access. This thesis is concerned with the attributes of the information system that impacts on performance measurement, the technical considerations are outside the scope of this thesis.

The new definition of a performance measurement system as an information system has a considerable impact on the list of attributes that has previously been assigned to performance measurement systems. This information system should provide employees with access to the strategy and associated objectives, as well as their own objectives. This constitutes the feed-forward part of the closed loop information system. The same system should also provide access to real-time results of actual performance, compared against targets.

The performance measurement system should:

Be accessible by every employee	Sink (1986), Globerson (1985), McNair and Mosconi (1987), Wisner and Fawcett (1991), Blenkinsop and Burns (1992)
Provide downward and lateral communication of strategy, initiatives, plans, objectives and targets	Globerson 1985, Brignall et al. 1991, Wisner and Fawcett (1994), Dixon et al. (1990), Kaplan (1991)
Provide rapid lateral and upward communication (feedback) of actual performance against targets	Sink (1986), Globerson (1985), McNair and Mosconi (1987), Wisner and Fawcett (1991), Blenkinsop and Burns (1992)
Be capable of including cost and non-cost measures	Grady (1991), Keegan et al. (1989), Lingle and Schiemann (1996)
Facilitate an understanding of the relationship between measures (for example, by presenting and linking measures graphically)	Brignall et al. (1991), Wisner and Fawcett (1991), Dixon et al. (1990), Blenkinsop and Burns (1992), Keegan et al. (1989), Lockamy (1994), Lebas (1995), Kaplan (1991)

**Table 4.7 - The new list of attributes for measurement systems**

Clearly, if every employee is expected to work towards achieving the strategic objectives, then every employee should be able to access the performance measurement system.

The downward and lateral communication of strategy, initiatives, plans, objectives and targets is also somewhat self explanatory. In order for every employee to know what they should be doing and how they should be doing it, the 'what' and 'how' must be communicated to them. The term 'lateral' communication is intended to express two concepts. Firstly, the feedback of actual performance against target to the individual performing a task, and secondly, the communication of all relevant team or business process related information to all individuals on a team or involved in a process.

If the performance measurement system, as an information system, is to be accepted and used by every employee, then for the sake of simplicity of use it should contain all the information that a user might need access to. Hence, the performance measurement system should include the organization's financial data. The performance measurement system should therefore be able to capture the financial data from the existing financial control and reporting systems.

Finally, in order to promote a true understanding of the relationships between objectives and measures it would be useful if the performance measurement system could show these relationships graphically.

#### **4.5.3 The desirable attributes and actions of the performance management system**

The performance management system is the system that defines objectives and measures and uses the performance measurement system, as an information system, to communicate objectives downwards and results laterally and upwards. The attributes of the performance management system have been summarized, in some cases combined, and are listed in Table 4.8 below and then discussed.

The performance management system operates at every level of the organization. At the highest level it conducts strategic planning and develops strategic objectives and measures. It communicates these strategic objectives to the next lower level, which conducts its own planning and develops a new set of objectives and measures. This iteration continues until every level of the organization has a set of objectives and measures derived from the strategic objectives.

**The performance management system should:**

Monitor both the internal and external environments	McNair and Mosconi (1987), Keegan et al. (1989)
Conduct strategic planning and define strategic objectives	Sink (1986), Globerson (1985), Brignall et al. (1991), Wisner and Fawcett (1991)
Understand the relationships between the organizational units by considering the input, process and output of each	Brignall et al. (1991), Wisner and Fawcett (1991), Dixon et al. (1990), Blenkinsop and Burns (1992), Keegan et al. (1989), Lockamy (1994), Lebas (1995), Kaplan (1991)
Encourage cross-functional interaction and communication to promote a better understanding of how units affect each other	Sink (1986), Globerson (1985), McNair and Mosconi (1987), Wisner and Fawcett (1991), Blenkinsop and Burns (1992)
Identify how the major units at the next lower level can contribute to the strategic objectives	Sink (1986), Globerson (1985), Brignall et al. (1991), Wisner and Fawcett (1991)
Define consensual objectives and measures for every level, based on the strategic objectives. Use as few objectives and measures as possible	DeFeo (2000), Brown (1996), Busby (1995), Neely et al 1994b, Burcher and Stevens, 1996, Witcher and Butterworth (1996)
Clearly define the data collection method and the measure calculation method	Maskell (1989, part 1), Wisner and Fawcett (1991), Azzone et al. (1991), Globerson (1985)
Ensure that the objectives and measures for each unit are clear, consistent and compatible, and will not promote dysfunctional behaviour between the units	Keegan et al. (1989), Gregory (1993), Fry (1995), Dumond (1994), McNair et al. (1990) Globerson (1985), Young (1993)
Identify and eliminate roadblocks to the successful implementation of the objectives and measures	Sink (1986), Neely et al. (2000), Lingle and Schiemann (1996)
Use the performance measurement system to openly communicate strategy, initiatives, objectives and targets downwards	Sink (1986), Globerson (1985), McNair and Mosconi (1987), Wisner and Fawcett (1991), Blenkinsop and Burns (1992)
Ensure the results of the measurement are fed back to those executing the actions as well as to their superiors	Maskell (1989, part 1), Sink (1986), McNair and Mosconi (1987), McNair et al. (1990) and Grady (1991)
Empower employees by promoting autonomy, as far as possible, in determining corrective actions	Sink (1986), Globerson (1985), Lebas (1995)
	(Continued overleaf)



Use the measurement results to stimulate continuous improvement and organizational learning	Dixon et al. (1990), Kaplan (1991), Lingle and Schiemann 1996
Be aware of the informal measurement system, to counter it, tie rewards to the formal system	Blenkinsop and Burns (1992), Lingle and Schiemann (1996)
Periodically reevaluate the objectives and measures, delete obsolete measures	Wisner and Fawcett (1991), Lingle and Schiemann (1996), Sieger 1992

**Table 4.8 - The new list of attributes and actions of the performance management system**

In order to develop a successful strategy an organization needs to know what is going on in the external environment. This includes identifying customer requirements, monitoring competitors and addressing regulatory, community and pressure group requirements. All of these factors are included, along with the owner's or board's requirements for the future of the organization, in developing the strategy. From the strategy comes a series of key objectives that, if achieved, will ensure achievement of the strategy.

To develop achievable objectives requires an understanding of how the various units within an organization function and interact. However, the detail required depends upon the size of the organization and the level within the organization. For example, in a small organization the owner or Chief Executive Officer (CEO) might well possess a sound understanding of every aspect of the organization. On the other hand, the CEO of a major organization cannot be expected to know and understand the interactions of every activity at the bottom of the organization. For the CEO and board members of a large organization, who are concerned with developing the strategic objectives, it will likely be sufficient to understand how the strategic business units (SBUs) combine and interact with the external environment. During the gradual disaggregation of the objectives and measures, as they cascade throughout the organization, those developing the objectives and measures require an understanding of the interrelationships at their own level and at the level below them. So, for the CEO understanding the relationships between SBUs is sufficient, however

for a plant manager it is essential to understand the relationships between the various functions or processes within the plant. This understanding is an essential requirement to ensure that objectives and measures are compatible and do not promote dysfunctional behaviour.

Encouraging cross-functional interaction and communication will promote a better understanding of how the various units affect each other. If the organizational units at every level communicate with each other to explain their requirements and if this is done in light of the strategic objectives, then this will lead to a much better understanding of the relationships between organizational units. This improved understanding of the relationships between the units will better facilitate the identification of how those units can contribute to the strategic objectives.

When the contribution of each unit to the objectives at the next higher level has been identified, a new set of objectives and measures can be developed for the units in question. These objectives and measures should be consensual in the sense that those who will be responsible for achieving the desired performance should be involved in selecting the objective and the measure. This will include determining the data collection and measure calculation methods, as well as the measurement unit and frequency. There should be as few objectives and measures as possible, no more than six per individual, in order to maintain focus on the key objectives. The objectives and measures should be clear, consistent and compatible and should not encourage dysfunctional behaviour. They should also be prioritized to assist in making trade-off decisions.

Roadblocks to the implementation of the objectives and measures might not be immediately apparent. If they are, then those responsible for achieving the objective and those with knowledge of the roadblock should discuss the issue and attempt to arrive at a mutually acceptable conclusion. If that is not possible, then those responsible for setting the objectives must determine the most appropriate outcome.

The performance measurement system should be used to communicate the objectives to those responsible for achieving them. This information should always be available and accessible. In addition, the performance measurement system communicates the results of the measurement back to those executing the actions, as well as to those at the higher levels. In discussing 'information systems' there is a tendency to assume that computers are involved. However, depending on the size of the organization this need not be the case. Communicating the objectives to an individual and making them available could be as simple as printing out a sheet of paper containing the objectives and measures and giving the paper to the individual.

Empowering employees and promoting continuous improvement and organizational learning are closely related. The performance measurement system should not be used to monitor, control and punish. It should be used to allow employees to identify their current level of performance and to compare it to the desired level of performance. The performance management system should also have put a system in place to allow the employee to determine an appropriate course of action to correct the performance variance. Autonomy and empowerment should obviously be tempered by reason.

The informal measurement system consists of the measurements that individual managers perform, that are unrelated to the formal system. For example, a department manager might have a number of objectives that are assessed by the organization's formal performance measurement system. However, the same manager might choose to assess the performance of those in the department against his/her own criteria, with the result that performance compatible with the strategic objectives might not be rewarded, and might therefore be discouraged. Open and honest communication throughout an organization should help to minimize the reliance on an informal measurement system. In addition, if senior management demonstrate their commitment to the formal system through consistency of action, then using an informal system should be seen to be unnecessary as the formal system can be configured to provide whatever information is needed.

Finally, the performance management system should evaluate the objectives and measures periodically to ensure they are still relevant and appropriate. The frequency of the re-evaluation will depend upon the level in the organization and would typically take place as an appropriate multiple of the reporting cycle.

#### **4.6 Conclusions**

This chapter began by developing new definitions for the terms ‘performance measure’, ‘performance measurement system’ and ‘performance management system’. The chapter continued by reviewing the literature to identify the attributes and actions that measures and measurement systems should possess and perform. These attributes and actions were re-assigned according to the new definitions. As a result, many of the actions and attributes previously assigned to the performance measurement system are more accurately assigned to the performance management system.

According to the list of actions and attributes in Table 4.8, the performance management system is not simply another system, or process, that exists within an organization. In addition, it is not a system or process that can be added or removed at will. Instead, it is the central guidance system within an organization. It decides what needs to be done, and how it needs to be done to ensure the success of the organization. All other systems and processes exist to support the performance management system.

The next chapter describes the participating managers and their organizations and begins the examination of the empirical data.

## **Chapter Five**

### **Empirical Evidence**

#### **5.1 Introduction**

This chapter begins by explaining the rationale for choosing the participants and presents a brief description of the organizations and the managers who form the case studies.

The chapter then goes on to describe the structure of the interviews and presents an overview of the analysis, which was guided by the research questions and hypothesis.

Finally, the empirical evidence as it pertains to the operational level is discussed. Having established that the operational level characteristics identified in the literature are indeed valid, the chapter moves on to begin the discussion of the implications this has for performance management at the operational level.

#### **5.2 The interviewees, who and why?**

As identified in the literature review, most of the research that has been carried out into performance measurement and management systems has been done at the higher levels of large organizations. More recently, some researchers have examined performance management in small and medium sized organizations, for example Hudson (2001). However, this research was also focused at the higher levels of those organizations. This represents a gap in the literature, as performance management at the operational levels has not been investigated.

To address this gap, this research is concerned with performance management at the operational levels of organizations. Having determined the focus of the research, the author was presented with a number of choices concerning where the empirical evidence might be gathered. For example, whether large or small organizations should be investigated, what type of organization might offer the most useful data and which functions at the operational level to investigate?

As discussed in Section 3.7.3, making use of personal contacts to gain access to organizations is frequently the best approach (Easterby-Smith et al. 2002, p. 71, Patton 2002, p. 242). The author was not in a position to gain access to organizations with which the university had already established a relationship. Therefore, using personal contacts to gain access to organizations was preferred because of the greater likelihood of being granted access by personal contacts than by managers to whom the author was unknown. Because the author's observations, as an employee, provided the initial impetus for this research, it seemed natural to the author that the organization in which he was employed at the time should be studied. A direct approach to gaining formal access to the organization was deemed most suitable. Unfortunately, permission to investigate the author's employer, specifically to interview managers, was not granted. Fortunately, the author had a number of acquaintances in other organizations who were willing to participate, albeit informally. As there is no reason to consider the author's acquaintances as anything other than normal, this sampling strategy may also be considered to be typical case sampling (Patton 2002, p. 236, Miles and Huberman 1994, p. 28). The main drawback from using personal contacts as the interview subjects, is that the choice of which organizations, and which functional areas within those organizations, to include in the study is limited.

It seemed logical to the author that the research should examine the operational levels of large organizations. Large organizations are likely to have the resources to devote to developing advanced systems and to devote to training in the use of those systems. As a result, they should be able to offer insight into what could be considered best practice. If these organizations have sophisticated and well

developed performance management systems at the operational level, then it would be possible to conclude that, at least, large organizations have well developed performance management systems. On the other hand, if large organizations have not yet proliferated advanced performance management system to the operational level then it might be possible to conclude that a great deal of work remains to be done on convincing practitioners of the value of integrated performance management systems. The author was granted access to two 'large' organizations, both with annual revenues of over US\$5 billion. At this point, the author had to make a decision whether to investigate these organizations in great depth or to add breadth to the study by including other organizations in the study. As the findings from Companies B and D were closely related to the author's own observations in Company A, the decision was made to pursue breadth. At this time, the author was presented with the opportunity to investigate two smaller companies. This represented an opportunity not only to provide breadth but also to add an element of triangulation by investigating both large and small companies. As a result, the type of participating organization was expanded to include both large and small companies.

The author was also fortunate enough to become acquainted with a Vice President in a large multi-national organization, interviewing this individual provided an opportunity to add further evidence of the difference between the strategic and operational levels. Prior to this interview the characteristics of the strategic level were largely speculative as they had been identified in the literature and had not been substantiated.

### **5.2.1 The participants**

This section presents a brief description of each the participating organizations. The descriptions of the participating organizations are deliberately vague because formal access was not sought. As a result, the descriptions and references have been worded to protect the identity of the participants and their organizations.

### **5.2.1.1 Company A**

Company A designs, manufactures and services equipment that is used by a wide range of customers to manufacture components in the 'high tech' industry.

Company A has been in business for over 30 years. It had 2000 revenues of around \$10 billion with over 20000 employees. This fell to a recent low of around \$4 billion, with a net loss, in 2003. They have since recovered with 2004 revenues in excess of \$8 billion and a net income of over \$1 billion, with 12000 full-time employees. Much of the recovery is due to increased demand for their products, which is in turn driven by consumer demand for the products manufactured by Company A's customers. There has also been a change in leadership, numerous reorganizations and relentless cost-cutting.

The only interview for which permission was granted in Company A was with a Human Resource manager, who explained how Company A's communicates objectives and measures performance. However, as an employee of Company A, the author was able to make use of observations to supplement the findings in other organizations.

### **5.2.1.2 Company B**

Company B has been operating for 50 years and is a leading manufacturer of semiconductor products for multiple consumer and industrial markets. The company had 2004 revenues of over \$5 billion and employs over 20000 people worldwide. During the recent downturn Company B closed or sold over half of its manufacturing facilities and reduced its workforce by over 30% between 2000 and 2004. Company B has recently returned to profitable operations, due in large part to the global economic recovery. The aggressive focus on cost reduction and productivity improvement has also contributed.

Manager 1 has been in the industry for over nine years and in his current position for almost two years, having held a number of technical positions in Company B.



Manager 1 is responsible for the processes run on one type of equipment, his group includes seven engineers and eight technicians.

Manager 2 has been in the industry for over 15 years and in his current position for almost two years. He has held a variety of technical and supervisory positions in two companies in this industry. Manager 2 is an Equipment manager, his group consists of 26 technicians and five supervisors, with responsibility for all of the equipment in one particular group.

#### **5.2.1.3 Company C**

Company C has been a supplier of a range of highly specialized products and services to the semiconductor industry, for over 40 years. Company C had 2004 annual operating revenue of around \$200 million and employs less than 1000 people worldwide, with a presence in Europe, Japan, China and the United States.

Like all companies in the semiconductor industry, Company C is recovering from the worst ever downturn in the industry. For example, their 2001 sales revenue fell by over 50% on the previous year and they swung from a profit in 2000, to a loss in 2001. The lessons learned from this downturn have resulted in a strategic change in Company C, part of which is an increased focus on performance measurement and management with new performance measurement and management systems currently being implemented.

Manager 1 is a Regional Account Manager with responsibility for a major territory in the United States. Manager 1 has been in the industry for over 12 years and in his current position for over six years. He has a total of 5 direct reports.

#### **5.2.1.4 Company D**

Company D designs and manufactures a wide variety of products for a range of industries, including semiconductor, pharmaceutical and gas and chemical processing. Company D is a division of a multinational conglomerate, having been bought out over 30 years ago. The parent company has been operating for over 80

years, had 2004 revenues of approximately \$7 billion and employs over 43000 people worldwide. The division for which Manager 1 works had 2004 revenues of approximately \$1 billion and employs around 3000 people.

Manager 1 is a Regional Account Manager with a total of seven reports. He has been in the industry and with Company D for 15 years and in his current position for nine years. Manager D now reports directly to the President of the company but still qualifies as an operational-level manager because for more than 50% of the time he is concerned with day-to-day issues.

#### **5.2.1.5 Company E**

Company E has been operating for approximately 80 years and is a designer and manufacturer of a wide range of entertainment and educational products that are primarily aimed at children. Company E has over 5000 employees with a presence in Europe, North America and Asia, and had 2004 revenues of over \$3 billion.

Manager 1 is the Vice President of Operations and Planning and has a staff of over 140 people. He has over nine years in this particular industry and has been in his current position for over five years.

#### **5.2.1.6 Company F**

Company F designs and manufactures a range of fresh and frozen meals for a variety of markets and has been in operation for approximately 20 years. The company has a workforce of around 400 people and had 2004 sales in the region of \$100 million.

The company is currently faced with reduced sales due to the loss of a major customer and changing market conditions. As a result, Company F has recently closed its second plant and integrated those operations into its primary plant.

Manager 1 has a total of 6 direct reports and is responsible for 260 indirect reports. He has been in the industry for over 20 years and has held a variety of management and senior management positions in a number of organizations. Manager 1 has been

with Company F for approximately a year as the Plant Manager and is responsible for production and maintenance.

### **5.3 The Interviews**

Each of the interviewees was initially contacted and asked if they would be willing to participate. During this initial contact a brief overview of the research was provided and assurances were given that no confidential information would be sought and that anonymity would be guaranteed. In the case of all but one of the participants, Manager 1 in Company F, the participants were known to the author either personally or professionally. Manager 1 in Company F was contacted via a colleague of his, with whom the author is personally acquainted.

Each of the interviews began by explaining the purpose of the research, including how the need for the research was identified in the literature and the intended outcomes of the research. A diagram was used to show the general structure of the research and to highlight where in the research the empirical evidence would be gathered.

In the case of all but one of the interviewees at least two interviews was conducted over a period of several months. The purpose of the follow-up interviews was mainly to gather additional information, for two main reasons. In some cases the author did not probe deeply enough during the first interview, either because of inexperience in interviewing or because the interviewee made a comment which caused the author to probe another direction. In addition, during the analysis further questions were raised which required a return visit to the interviewees. However, two of the follow-up interviews were needed because the interviewees did not have time to allow the author to ask all of the questions in a single session. The interview schedule is shown in Table 5.1 below, and includes the approximate time spent with each interviewee.

Manager 1 in Company E, the Vice President, was interviewed only once as the purpose of this interview was to contrast the environment of the senior management, or strategic level with that of the operational level. Sufficient detail was gathered during the first interview to confirm that there are significant differences between the two levels.

<b>Interviewee</b>	<b>Date</b>	<b>Duration</b>
Company A (HR Line Manager)	November 2004	55 minutes
Manager B1	11/19/2004 12/10/2004 03/11/2005 05/02/2005	75 minutes 85 minutes 40 minutes 40 minutes
Manager B2	11/19/2004 12/10/2004 04/21/2005	70 minutes 55 minutes 65 minutes
Manager C1	1/14/2005 3/30/2005	120 minutes 55 minutes
Manager D1	1/2/2005 03/26/2005 04/22/2005	130 minutes 30 minutes 105 minutes
Manager E1	04/28/2005	65 minutes
Manager F1	2/7/2005 04/27/2005	105 minutes 60 minutes

**Table 5.1 - Interview dates and durations**

Each of the interviews was transcribed and summarized, a copy of the summary was then returned to each of the participants to verify its accuracy. Yin (2003, p. 36 and 159) points out that having the participants review a draft of the case reports is not only a professional courtesy but also helps to increase the construct validity of the case. The manager in company D made a minor adjustment to the wording of one descriptive sentence in his summary, and the managers in Company B requested that

certain details be removed from the summaries of their interviews to ensure that their organization could not be identified. No substantive changes were required.

#### 5.4 Analysis of the empirical data

The interview transcripts were examined from the perspective of the research questions, using Content Analysis and Pattern Matching. The analysis first sought to identify the characteristics of the operational levels. Further analysis was aimed at understanding how the participating managers at the operational level develop objectives and measures, and to what extent the desirable characteristics espoused in the literature actually exist at the operational level of the participating organizations. Subsequent analysis looked for other observations that might provide answers to the research. The research questions are listed in Table 5.2 below, as can be seen they are divided among three categories.

<b>Questions related to the operational level</b>	
1	What are the characteristics of the operational level in the participating organizations that might have an impact on the choice of method to develop objectives and measures?
<b>Research questions related to the performance management and measurement systems</b>	
2	Do the participating organizations have well developed performance management systems at the operational level?
3	How do the participating operational-level managers develop objectives and measures?
4	Do the desirable characteristics, as identified in the literature, exist at the operational level of the participating organizations? If they exist, is it as a result of the system or the manager?
<b>General analysis question</b>	
5	In light of the characteristics identified by RQ #1, are the existing methods to develop objectives and measures suitable for use at the operational level of the participating organizations?

**Table 5.2 - Research questions**

The three categories of questions are concerned, firstly, with the characteristics of the operational level and in particular what those characteristics might mean for developing objectives and measures. The second category is concerned with identifying how managers at the operational levels of organizations develop objectives and measures. The final category is referred to as a 'general analysis' category and contains what is possibly the most important question of all, as it asks whether the existing methods are suitable for use at the operational level.

The analysis of the empirical data began by analyzing the individual interview transcripts using content analysis. The use of content analysis is described by Patton (2002, p. 453) as any '...qualitative data reduction and sense-making effort that takes a volume of qualitative material and attempts to identify core consistencies and meanings.' Each of the interview transcripts was read several times, on each pass marginal remarks (Miles and Huberman 1994, p. 66) were used to record specific observations. The choice of observation to record was guided by the original research questions and (Yin 2003, p. 111).

Each of the individual cases were analyzed first and then a cross-case analysis was conducted, using pattern matching (Robson 1993, p. 379) to identify the similarities and differences across all of the cases. Patton (2002, p. 453) suggests that the core meanings identified through content analysis are often referred to as patterns or themes. While Patton (ibid.) points out that there are no hard and fast definitions for patterns and themes, patterns are generally considered to be a descriptive finding, whereas themes are more categorical or topical in nature.

This chapter contains the details of the analysis of the interview transcripts from the perspective of the operational level characteristics. Chapter Six examines the empirical data from the perspective of the desirable characteristics of performance management systems and their components.

## **5.5 Empirical evidence of the characteristics of the operational level**

This section examines the empirical data to determine to what extent the characteristics of the operational level, as identified in the literature, are valid.

### **5.5.1 Empirical evidence of the operational level characteristics**

The research question that is specifically concerned with the operational level is stated below.

RQ #1. What are the characteristics of the operational level that might have an impact on the choice of method to develop objectives and measures?

This section describes the empirical evidence, as provided by the participants, to answer this question.

The characteristics of the operational level were exactly as identified by Mintzberg (1973, p. 110). These characteristics were originally identified during the literature review and discussed in Section 2.5.2 on page 43. As discussed in the following paragraphs, all of the interviewees provided evidence that the following characteristics are valid at the operational level:

- Real-time, short-term focus
- Current and specific issues
- Brevity and fragmentation of activities
- Continuous and rapid decision making

The longest term that any of the interviewees are concerned with is planning for the year ahead. Those planning activities take place over a period of from several weeks in Company B, to three months in Company F, after which the managers turn their attention back to the short-term, which can be as little as one day.

Manager 1 in Company B spends most of his time dealing with issues that require immediate attention. He stated that he can have from five to 15 activities ongoing at

any one time, for each of his five main business goals, these activities can last from one week up to six months. However, on most improvement projects there is a sense of immediacy and results are required as soon as possible, for example in improving the availability of equipment. Manager 1 estimated that he makes 60-70% of his decisions on the spot because the decision has to be made immediately. He also admitted that his activities are frequently interrupted because more urgent or important issues crop up unexpectedly, and that he is usually working on five or six problems simultaneously.

Manager 2 in Company B described a similar situation. He is constantly working on multiple issues and admitted that none of them are as 'high quality' as they could be simply because he does not have enough time to spend on them. He stated that he could have as many as 30 activities underway at any one time and that their duration could be from one week to six months. He also pointed out that, in general, people are more focused on their daily and weekly goals, and that they care little about next week. If Manager 2 has to spend several hours on an activity without being interrupted he will take the work home because it would not be possible to get it done during regular business hours, due to the constant interruptions.

The interviewee in Company C said that his time is divided into three categories, which are personnel issues, the day-to-day 'silly stuff' and strategic business issues. Manager C claimed to be lucky in that he has a good team and that only approximately 10% of his time is spent on personnel issues, he pointed out that other managers are not so fortunate. The 'day-to-day silly stuff', which includes internal politics, dealing with internal and external customers and any issues that arise takes approximately 50% of his time. The remaining 40% of his time is spent on strategic issues, including writing his business summary for 2004 and developing plans to win new business accounts and to win back lost accounts. He pointed out that he works on the strategic issues after 6:00 pm when the phones have stopped ringing and when the constant interruptions have stopped. Manager C also pointed out that as he does a lot of traveling he gets a great deal of work done in airports and on planes, again because he is not interrupted during these times.



Manager D suggested that his job should consist of some short-term, mostly medium-term and a little long-term focus. However, he pointed out that, 'like everybody else', he finds that the medium- and long-term focus is subsumed by '... an endless stream of short term' issues. Although, he pointed out that he changes his focus, depending on where he is in the fiscal calendar. For the last three to four months of the year Manager D's focus is drawn to the medium-term by working on the coming year's budget and overhead cost structure. Manager D also finds that he is concerned with medium term issues after every monthly management meeting, however this medium-term focus quickly fades away as the short-term issues take precedence. Manager D is aware of the fact that if he had time to spend on medium-term planning, many of the short-term issues that he is faced with would not arise. One of his goals is to get his team to deal with more of the short-term issues to free up his own time for medium-term planning. When asked about decision-making, Manager D stated that rapid decision-making is not something that Company D is good at and that not much is done without the President's approval. Manager D is also constantly interrupted, if he needs to spend several hours on something, without being interrupted, he will take the work home. Interestingly, Manager D also claimed to get a great deal of work done when travelling and suggested that he gets behind on his administrative duties when he travels less.

Manager F was somewhat of an anomaly in that he spends greater than 50% of his time on day-to-day operational issues but is actually a senior manager and as such is also involved in the annual planning sessions with the senior management team. One of his previous positions was that of Vice President of Manufacturing in a previous organization and he was therefore in a unique position to discuss the differences between the operational and the strategic levels. At present Manager F spends approximately 50 to 60% of his time on the production floor, dealing with general production issues, such as material availability and equipment issues. The remainder of his time is spent working with the scheduler, examining the cost structure and on budgeting. Manager F is also constantly interrupted and is forced to deal with a multitude of issues, all at the same time. Developing the annual budget in Company D takes approximately three months, during those three months approximately 50%

of Manager F's time is spent working on the annual budget with the senior management team.

Manager F was asked about the difference between the strategic level and the operational level and pointed out that the main difference is in the time available. At the strategic level, he had time to plan activities and to visit the various manufacturing plants for which he was responsible. For example, he might decide to examine one particular aspect of the supply chain to determine whether the costs were appropriate. He would then gather information from his team, review the information and make a decision. In his current position, he is forced to spend more time on day-to-day activities because his team lacks experience, as a result he no longer has time for planning. In terms of the number of activities or projects that Manager F is involved in, he stated that he could have anywhere from eight to fifteen projects running concurrently and that they might last from two weeks to three months, depending on their complexity.

Support for Manager F's assessment of the differences between the strategic level and the operational level was gained from Manager E. Manager E, the Vice President of Operations and Planning, typically works on three projects at one time and these projects have a duration of six months to one year but with an expected pay-off of two-to-three years. He does not make 'on-the-spot' decisions, instead he will take the time to investigate the issue, get as many facts as possible, talk to those concerned and then make an informed decision. Manager F can set aside time whenever he likes, for example, the interview with Manager F was the only interview that was scheduled for a time that was convenient for the author.

### **5.5.2 Observations from the analysis of the operational level empirical data**

The previous section examined the empirical data to identify the characteristics of the operational level. This section further examines the empirical data to make some specific observations that the author believes are pertinent to the development of objectives and measures at the operational level.

The participating operational-level managers' time is spent on many activities, with few opportunities to spend a substantial amount of time on any single issue, unless they choose to take their work home with them. A substantial amount of time is considered to be several hours. Clear examples of the frequency of interruption were seen when the participants' phones or pagers interrupted each interview several times. The only exception was Manager D, who was interviewed at home on a Saturday, as this was the only time that he would be available for approximately six weeks. Manager E, the Vice President, on the other hand, can easily set aside time to work on activities and will not be interrupted, as mentioned above, the interview with Manager E was scheduled at a time suggested by the author and was the only interview that did not require multiple attempts to schedule. In addition, of the 15 interviews only seven were conducted when originally scheduled, the remaining eight interviews were scheduled 23 times.

The projects or initiatives that the participants are involved in typically last from a few weeks, or less, to several months. These projects are intended to contribute to achieving the manager's or group's objectives, and each project will have a specific objective. For example, Manager B2 has as many as 30 activities or projects underway at any one time, these projects typically have a lifespan of from one week to six months; Manager F has from eight to 15 projects or activities underway at any one time, with a lifespan of from two weeks to three months. This can be compared with Manager E, a Vice President, who will be involved in a maximum of three projects at any one time, each of which will have a duration of six months to one year, for which progress is reviewed quarterly and for which the expected pay-off is two-to-three years away.

Clearly then, for the participants, the process of deciding what projects or initiatives to undertake, how best to execute them and what specific objectives and measures to set for each project is repeated many more times at the operational level than at the strategic level.

The participating operational managers have daily and weekly meetings to discuss performance against weekly targets, thus forcing their attention to the short-term. The next time horizon, after weekly goals, is monthly and then quarterly.

Issues and incidents arise that require immediate attention and rapid decision making, for example when problems arise in production that halt a production line, or when materials are not available. Managers B1, C and D all made a number of comments indicating that their environments are subject to constant and rapid changes. Manager B1 pointed out that manufacturing is fast moving, Manager C stated that his environment is 'fluid' and Manager D made five references to market and customer demands changing rapidly. When problems arise for Manager E, the Vice President, he expects to develop a solution over several days, whereas the other interviewees are expected to develop solutions immediately.

Given that time is such a critical issue for operational level managers, it is important that they spend their time productively. However, it is not clear that this is the case in practice as there are few formal and structured procedures in place to help managers identify appropriate initiatives and activities and to develop objectives and measures. Despite the author's opinion that operational level managers need more structured methods, all of the participants expressed a desire for guidelines, as opposed to any more rigid or time consuming method.

The observations discussed above are summarized below:

- The participating operational level managers work in a fluid and rapidly changing environment.
- The participants suffer from frequent interruptions and unexpected issues that require immediate resolution or that change the priority of activities.
- The participating operational level managers are forced to focus on the short term by their weekly and monthly targets.
- The participating operational level managers are involved in many more projects, of much shorter duration, than strategic level managers. Therefore,

choosing projects and setting objectives and measures for those projects is repeated often at the operational level.

- The result objectives at the operational level of the participating organizations rarely change from one year to the next, instead only the targets change.
- The participating operational level managers need more structured methods but prefer guidelines.
- A set of guidelines is most likely to succeed at the operational level of the participating organizations.

The participating operational level managers operate in a fast-moving, rapidly changing environment where their priorities can change quickly and frequently. The participants do not have the luxury of spending long durations of time on individual issues because they are working on many issues concurrently. Manager B2 pointed out that none of his activities are as 'high quality' as they could be because he never has enough time to thoroughly complete them. In contrast to the strategic level managers, Manager E and Manager F in his previous roles, who focus on a few projects or activities of much longer duration, typically greater than a year.

The main objectives at the operational level of the participating organizations change little from one year to the next, for example, salespeople have to sell as much as possible and manufacturing personnel have to make the product as efficiently as possible. The participants at the operational level do not have to spend much time trying to decide what is important or what they should be trying to achieve. In general, they already know what is important, they need to reduce costs and increase efficiencies. Their personal objectives reflect these priorities. For example, Managers B1 and B2 have goals, for themselves and for their groups, in five specific categories: Scrap, Costs, Equipment Availability, SPC and Particles. These categories do not change from one year to the next, however, the targets associated with each category do change from year to year and the order of importance may also change. Manager C's and Manager D's primary focus is on increasing sales, Manager D has the specific objective of achieving double-digit sales growth each year. Manager F has only three objectives: Order Completion; Labour Variance;

and, Material Variance. Therefore, operational level managers are more concerned with how to achieve what is important, rather than determining what is important.

To suggest that the participating operational level managers are only concerned with costs and efficiencies is obviously a simplification of their circumstances. They have additional concerns, such as safety, environmental compliance, employee satisfaction and so on. However, the empirical evidence suggests that the main concern of the interviewees is increasing revenues and cutting costs.

### **5.5.3 Implications of the operational level characteristics for a method to develop objectives and measures**

It seems clear to the author that operational level managers need more formal and structured methods to develop objectives and measures and there is evidence to support this.

Firstly, as discussed in greater detail in Sections 6.4 and 7.2, the empirical evidence showed, in the absence of formal methods, the individual manager's abilities are the determining factor in whether or not objectives are achieved.

Secondly, the participating operational level managers spend a great deal of time in meetings, discussing both how to achieve their objectives and, actual performance against those objectives. However, because none of the participants use any formal methods to guide their choice of objectives and decision making, it is unlikely that they are as effective or as efficient as they could be. As a result it seems that operational level managers are caught in a 'catch 22' situation. They don't have time to plan because they are constantly reacting to short-term issues. However, if they did more planning the short-term issues would not arise and they would have more time.

These findings suggest that operational level managers need formal, structured methods to help them translate their 'result' objectives into 'determinant' objectives.

The terms 'result' and 'determinant' objectives are being used because it is clear from the empirical data that all of the interviewees have two sets of objectives. The interviewees all had a set of objectives that they are tasked to achieve and these objectives are tied to the incentive system, these are the 'result' objectives. The 'determinant' objectives are the objectives that the managers set for their group members that represent the things that must be done to achieve the result objectives. The determinant objectives are only occasionally linked to the incentive system.

It is the author's opinion that if the participants were to use more structured methods they would be more productive and more focused on contributing to the results objectives. At least one of the participants is aware of this fact and provided support for it. The interviewee in Company D suggested that his job should consist of some short-term focus, mostly medium-term and a little long-term focus. He pointed out that he is constantly trying to get his reports to deal with the short-term issues, so that he can spend more time on the medium-term issues, which in turn would prevent many of the short-term issues from arising in the first place.

However, all of the interviewees expressed a preference for a set of guidelines, as opposed to a step-by-step procedure or process. Manager B1 required a set of guidelines because it would allow managers to use 'a bit of leeway' and 'a personal touch', he suggested this is necessary because different managers have different styles. He also added that regardless of how structured a method might be, that the outcome would depend entirely on the manager because the manager has to be able, or inclined, to make his reports accountable.

Manager B2 would not commit to an answer on this questions but ruled out any form of workshop-based process because his technicians work 24 hours per day on four shifts. As a result, all of his technicians are never on-site at the same time and he could not sanction overtime to bring technicians in on their days off.

Manager C1 suggested that his environment is too fluid to use anything except general guidelines. He agreed that objectives should be developed in the same

manner by everybody but pointed out that people in different regions have different styles and therefore have to be managed in different ways.

Manager D1 expressed a preference for ‘an intuitive method, with a little help from guidelines’ because neither he nor his reports want to waste time on more structured methods.

Manager F pointed out that there are so many variables involved at the operational level that a rigid process could not capture them all and that guidelines are necessary to allow the manager to react to specific circumstances.

The previous section established two main differences between the strategic and operational levels, the most important difference from the perspective of this research is that there are many more activities and projects for which objectives and measures must be developed at the operational level. The implication of this finding is that any method to develop objectives and measures at the operational level must be quick and easy to use. This is supported by a unanimous desire among the participants for a set of guidelines.

As a result, it can be concluded that the methods designed for use at the strategic levels of large organizations are not suitable for use at the operational level. Instead, a set of guidelines should be developed that will promote all of the desirable characteristics of performance measures and measurement systems, as identified in the literature.

## **5.6 Conclusion**

This chapter described the participating organizations and managers and presented the rationale for choosing the specific participants. The structure of the interviews was described and an overview was presented of how the analysis of the empirical data was conducted.



The chapter then presented the empirical data as it relates to the operational level characteristics and identified that the characteristics identified in the literature are valid. Initial conclusions were drawn from the empirical data and the discussion of the implications of those characteristics was begun. In particular, that operational level managers do need more structured methods to help translate their result objectives into determinant objectives, was identified. However, because of the characteristics of the operational level and the preference of operational level managers, a set of guidelines is most likely to succeed.

The next chapter examines to what extent the desirable characteristics exist at the operational level and whether there are formal and structured performance management systems in place at the operational level.

## **Chapter Six**

### **Performance Management at the Operational Level**

#### **6.1 Introduction**

The main purpose of this research is to determine how managers at the operational level of organizations manage performance. That is, how they develop objectives and measure progress towards those objectives. That purpose raised a number of research questions, as discussed in Section 2.5. Research Question 1, which is concerned with the characteristics of the operational levels of organizations, was addressed in the previous chapter. The empirical data showed that the operational level characteristics have an impact on how the participants develop objectives and measures. In particular, the participating operational level managers are involved in many more activities than strategic level managers and the activities are of a much shorter duration at the operational level. The previous chapter also began to examine the implications of the operational level characteristics on the choice of a method to develop objectives and measures at the operational level.

This chapter addresses Research Questions Two, Three and Four, which are listed below:

- RQ #2. Do organizations have formal and structured methods, as part of the performance measurement and management system, in place at the operational level?
- RQ #3. How do operational-level managers develop objectives and measures?
- RQ #4. Do the desirable characteristics, as identified in the literature, exist at the operational level? If they exist, is it as a result of the system or the manager?

Research Question 2 can be answered quite simply. Based on the empirical evidence, none of the participating organizations have formal and structured methods in place at the operational level to help the participants to develop objectives and measures. However, all of the participating organizations have a structured appraisal system that helps to perform some of the activities that are associated with performance management systems. The empirical evidence, as it relates to research question 2, is discussed in greater detail in Section 6.3, below. However, research question 3 is addressed first, in order to provide an understanding of how the participants develop objectives and measures. To this end, the current systems are described in Section 6.2.

Having described the systems in the participating organizations and then discussed the author's conclusion that these systems are not formal and structured, the discussion continues by addressing Research Question 4 and examines the extent to which the desirable characteristics exist at the operational levels of the participating organizations.

## **6.2 How do operational level managers develop objectives and measures?**

There are two issues to consider when examining objectives at the operational level. Firstly, from where do the participating managers at this level get their objectives, and secondly, how do the participating operational level managers develop more detailed objectives for themselves and for their reports.

In general, the participating companies cascade objectives from the higher levels to the lower organizational levels. Although, how this is executed in practice differs from one organization to another. When the objectives have been developed for each group, the managers are left to their own devices to develop objectives and measures for their reports. The systems in each of the participating organizations are described in turn, in the following sections.

### **6.2.1 Developing objectives in Company A**

Company A recently redesigned its appraisal system, which it refers to as a performance management system, and used it for the first time in 2004. The structure of the system, as described by the interviewee, is presented below.

The Chief Executive Officer (CEO) and senior management team collectively decide on the Annual Operating Plan (AOP), which is a statement of the objectives that must be achieved over the coming year and is based on the organization's strategy. The strategy is not communicated throughout the organization, instead the core values are communicated periodically by the CEO.

Objectives are then set for the next lower level of managers based on the AOP. The managers at this second level are corporate Vice Presidents and General Managers, responsible for the major organizational units. The Vice Presidents and General Managers meet with their management teams to develop a set of Workgroup Objectives for each organizational unit. These higher level Workgroup Objectives are designed to contribute to the AOP and are communicated to every manager in the organizational unit. They are then used as the basis for developing the managers' objectives, which become lower-level Workgroup Objectives.

Finally, the managers', or lower-level Workgroup Objectives then become the basis of the Individual Performance Objectives for all remaining employees.

According to the advice on Company A's Performance Management intranet website, every employee should ask for a copy of their manager's objectives and should then develop their own objectives to contribute to those of their manager. These objectives should not only guide the day-to-day activities of every employee but should also be used to reward the employees.

There are also a number of mandatory objectives and measures, such as safety and human resource (HR) related issues. Every employee is required to complete at least 40 hours of training per year, the intention being to develop the employees. Safety is

a major concern at the corporate level as there are a number of inherent dangers involved in working on the equipment manufactured by Company A, in addition to the regular safety concerns involved in normal working conditions. To address these dangers there is mandatory annual safety training and re-certification for certain positions. A number of initiatives have recently been initiated to increase the communication between various business units, all of which are intended to streamline the business processes. There are also a number of information-sharing initiatives being developed.

In the author's experience, the objectives at the operational level are not developed according to the above structure. Additionally, the system provides no guidance on how to translate the objectives at any given level into objectives for the next lower level, or on how to measure progress towards those objectives. The only objectives communicated on a formal and regular basis are those included in the appraisal system. For appraisal purposes, the author has had the same generic set of objectives, every year, for at least the past three years. Based on discussions with his colleagues in the same group, the author has concluded that all of the people in the group have the same generic objectives. The objectives are too general and vague to be of use in guiding daily activities and decision making. In addition, the objectives are too vague to usefully appraise individuals, which suggests that appraisals are actually carried out using some other criteria.

There are only two objectives that are discussed with any frequency, these are cost reduction and equipment availability. The need to reduce costs is communicated almost daily, whereas equipment availability is only occasionally communicated to the engineers by their managers.

To provide 'regular and ongoing' feedback the system in Company A requires that managers should hold quarterly reviews with every employee. To help achieve this, a requirement has been added for managers to provide written documentation of quarterly reviews. However, in the author's experience the quarterly reviews do not take place unless specifically requested by an individual.

### **6.2.2 Developing objectives in Company B**

Company B has a slightly different approach to developing objectives at the operational level. All of the section managers, who collectively constitute the operational level management in Company B, meet several times towards the end of the year to set goals in each of five categories. The five categories are Scrap, Availability, Particles, SPC and Cost. The section managers collectively set the operational level objectives in each of these categories and then submit them to the Staff Managers, who are at the next level up in the hierarchy. When the Staff Managers are satisfied with the objectives, they are submitted to the Factory Manager for approval. The Factory Manager might accept the objectives as they are or he might make some changes. In the event that the Factory Manager does change some of the objectives he does not widely communicate the reasons for the changes.

Manager 1 suggested that the Factory Manager will make changes based on his knowledge of the strategic issues. Neither Manager 1 nor Manager 2 in Company B could clearly articulate the factory-level objectives, for which the Factory Manager is held accountable. They suggested that the factory-level objectives would probably include on-time delivery, new product introduction, safety and employee retention objectives, as well as a number of others. Manager 1 pointed out during the third interview, that safety was everybody's top priority. However, this was the first time that Manager 1 mentioned safety and it was as a result of a direct prompt, indicating that it is not at the forefront of his attention. Manager 2 mentioned there would be safety-related objectives but could not articulate what they are and also pointed out that they are 'secondary' goals. He suggested that the objectives in the five categories were the primary goals because if the factory did not achieve them then the factory would fail financially. However, the secondary goals, for example Environment Health and Safety (EHS) goals, would not lead to financial failure and are therefore secondary in nature. Combining the evidence from both managers suggests that the financial goals and goals that contribute directly to the bottom line, such as yield, are given the highest priority.

Manager 1 pointed out that no matter what the factory level objectives are, they will be encapsulated by the five categories for which the operational level managers develop objectives. However, it should be pointed out that the five categories mentioned above do not apply to every Section Manager. For example, they do not apply to the Manufacturing managers or to certain other managers in the factory. Manager 1 suggested that the Manufacturing managers would not have availability, Particle or SPC objectives because they do not have any control over those objectives. Instead they would have throughput and work-in-progress related objectives, although he did not know the specific goals.

Both Manager B1 and Manager B2 made it clear that the objectives in each of the five categories will be driven by the capacity model of the factory and the sales forecast for the coming year. However, neither Manager 1 nor 2 were completely clear on the exact process which translates the capacity model into operational level objectives.

There are cross-functional teams at the operational level for each of the five categories and each group has a 'champion' for each of the categories. These teams meet once per week for all categories except Availability, for which they meet 'as and when needed'. This is a sensible approach as representatives from each group are involved and can contribute to achieving the overall objective. However, no structured methods are used to identify and prioritize all of the possible solutions, or to ensure that all of the participants have an input. As a result, it is unlikely that the cross-functional teams are as effective as they could be.

### **6.2.3 Developing objectives in Company C**

Company C has recently changed its Chief Executive Officer (CEO) and the Vice President of Sales and Marketing. Company C has also developed a new strategy and is changing the focus of the organization.

In Company C, senior management set the overall objectives for the company and then verbally communicates the objectives to the individual business group leaders

who are Vice Presidents and General Managers. The General Managers and Vice Presidents of those business groups then take the business goals and develop their own quarterly and yearly goals for the business groups. The business group goals are then communicated to the account managers who develop their own yearly plans and goals.

The goals developed for sales managers and their accounts are dependent upon the type of territory and the type of customer that the sales manager has. For example, some territories are considered to be strategic in that they include important customers who contribute significantly to revenues either by buying large volumes or by taking products with a strategic significance. For a manager in a strategic territory, the goals are unlikely to include revenue or sales targets, instead, the manager is likely to be tasked with new product introduction and market penetration goals. The managers of non-strategic territories would be given revenue goals based on the capacity of the territory and historical revenues.

The goals developed for the Customer Support Engineers (CSEs) are changing to reflect the strategy change. They are now expected to expand the breadth of their expertise beyond Company C's own products and to build relationships with their customers to gain acceptance as fab-wide troubleshooters. This is a very significant departure from the previous measures of sales and customer satisfaction.

The interviewee in Company C claimed to determine approximately 70% of his own annual objectives, the remaining 30% are given to Manager C by his manager, based on his managers strategic perspective.

The interviewee in Company C was aware of the general strategy in Company C and was able to describe the general direction that the organization intended to move in. However, the interviewee also said that the current system does not provide enough guidance on what objectives to set or how to develop them and that he frequently does not have the information that he needs. Manager 1 stated that the engineers are



now being given strategically relevant objectives, however, these objectives do not seem to be well defined.

The lack of a formal and structured system could be as a result of the high degree of autonomy provided by Company C to its employees. The interviewee mentioned that the amount of autonomy afforded to individuals has, on a couple of occasions, been too great for some employees. These employees apparently needed more supervision and direction than they were getting and their employment was ultimately terminated. Company C clearly provides a great deal of autonomy to its employees, as a result employees are told what they need to do but not how to do it, it is up to the individual to decide how they achieve their goals.

#### **6.2.4 Developing objectives in Company D**

Company D has a sophisticated appraisal system that is used to communicate annual objectives from each level to the level below. The CEO and senior management team develop objectives which are used as the basis for the objectives at the next lower level of management. The senior managers send their objectives to their reports, who then develop their own objectives based on their manager's objectives and so on, for every level of the organization. The objectives communicated through this system are used for incentive purposes. As part of the annual appraisal system the manager and the individual are required to consider certain competencies that have been identified as important in the individual's position. The individual completes a self-assessment and the manager assesses the individual, the resulting differences, or gaps, are used as the basis of the discussion and to identify training requirements.

The final part of Company D's performance management system is a newly developed training system. The immediate portfolio of training contains 96 hours of on-line, computer-based training, which has to be taken in the first year. Most of the initial training for the salespeople is for safety, legal and policy related issues. For example, the salespeople's main training classes are concerned with Competition

Policy, Codes of Conduct, the transportation of hazardous goods and vehicular safety.

On the surface, Company D's system seems to be well-thought out and based on many of the desirable characteristics in the literature. For example, strategic objectives are cascaded from the higher levels, individuals have an input to their objectives, if goals cannot be objectively quantified then they are not used. The system also ensures that development needs are addressed and clearly makes safety the number one priority. However, as Manager D pointed out this system does not drive the day-to-day activities and is not used as intended. When asked what the performance management system meant to him, Manager D replied by saying that the performance management system is an '...administrative process, (which) in many cases, ends up being done for the sake of the process rather than actually becoming a worthwhile exercise'. He also stated that the system is not used as intended by those who designed it. For example:

- The CEO refuses to use the system because it results in the objectives of all of his direct reports being sent to him for review and approval; he believes this to be a waste of his time.
- The interviewee's manager has never completed his objectives before the deadline and as a result the interviewee has never based his own objectives on those of his manager.
- The Competencies section of the appraisal system is not used by the interviewee because it is not mandatory, and according to the interviewee, if it is not mandatory then nobody is looking at the information, therefore it must not be important.

A further complication is added for the interviewee and his reports. In this division of Company D there are approximately 3000 employees. Of the 3000 employees, there are seven employees who are commission-based salespeople, and they are all in Manager D's group. As a result, the primary objective of these employees, including the interviewee, is to 'sell more'.

When discussing the organization's strategy, Manager D said that if there was a strategy it was so vague and general to be of no use in guiding decision-making. He added that if he had to guess what the strategy was, based on what he sees and hears from his managers, then he would guess that it was to 'sell more and cut costs'.

#### **6.2.5 Developing objectives in Company F**

Company F does not have a well developed formal performance management system. The annual financial budget development process takes approximately 50% of the senior management's time for around three months. The interviewee pointed out that this is because the first few drafts of the budget are never accepted by everyone. Despite this lengthy and seemingly consensual process, the outcome is very often that the CEO will set departmental budgets without accepting input from the senior management team.

When the budget has been developed it is up to the individual managers to develop objectives that will help them to fulfill their duties within budget. However, the CEO sometimes gets involved again and sets objectives according to his own wishes or insight. For example, the interviewee and the CEO agreed that there should be no more than three objectives for manufacturing and agreed that the three objectives should be:

- 97% Product completion rate
- 6% labour standard variance
- 1.8% material standard variance

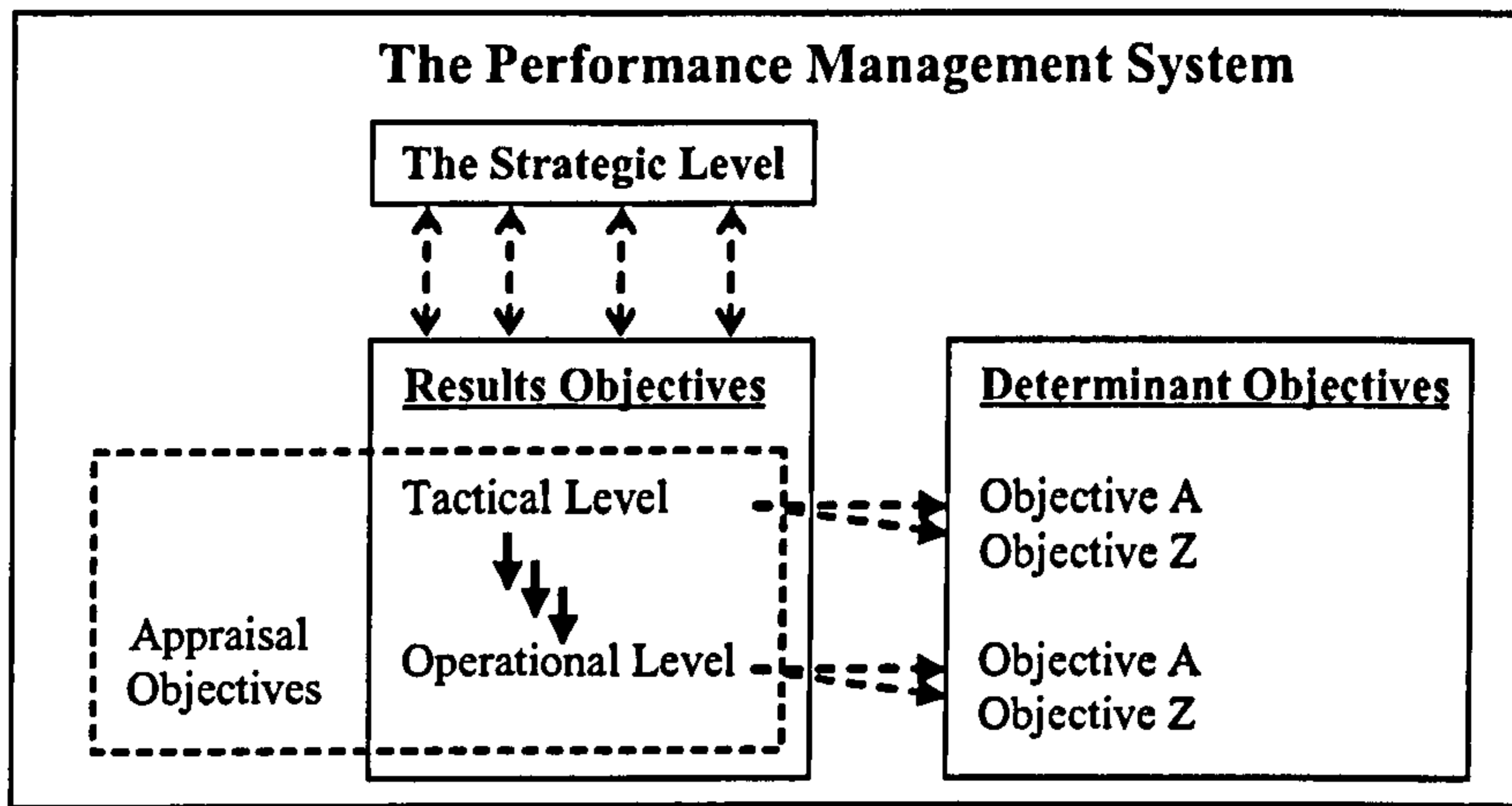
However, the CEO stipulated that the Product Completion Rate objective will be a 'qualifier'. As a result, if this objective is not achieved then there will be no bonus pay-out. This seems reasonable to ensure that this objective is prioritized but is unfair to those individuals who achieve the other objectives but miss this one through no fault of their own. This is currently the case for the manufacturing supervisors and the interviewee, who have made very significant improvements in the past year but

who frequently do not achieve the product completion target because of material shortages.

The product completion rate applies to Manufacturing, Maintenance, Warehousing and Purchasing because all of these departments have an influence on whether the product gets made and shipped as scheduled. These objectives are used both as the business objectives and as the appraisal-related objectives, as such they should act as the basis of all other objectives in the company. This is the case for the interviewee but did not appear to be the case for the interviewee's predecessor and it is not clear how well the other managers translate the result objectives into determinant objectives. For example, the interviewee has made enormous improvements in terms of change-over times, equipment availability and labour variance, in a very short space of time. His predecessor on the other hand did not even have a measure of equipment availability and clearly was not concerned with the changeover times or the labour variance.

### **6.3 Do organizations have formal and structured methods at the operational level?**

When asked about their performance management systems, the participating managers immediately consider their appraisal system. The empirical evidence suggests that the appraisal systems in the participating organizations are used to communicate objectives throughout the organizations. However, the objectives that are communicated by the appraisal systems are not always suitable to drive the day-to-day activities at the operational level, as is the case for Manager D. In some cases the objectives in the appraisal systems are not even suitable for appraisal purposes, as is the case in Company A. The objectives in the appraisal system are essentially 'result' objectives and the systems that are in place do not provide any guidance on how to translate the result objectives into 'determinant' objectives. The diagram in Figure 5.2 represents the general structure of these inter-related systems, as identified in the participating organizations.



**Figure 6.1 - How Performance Management Systems work in practice**

This represents a step forward in the evolution of real-world performance management systems because the systems in the participating organizations do address some of the desirable characteristics identified in the literature. Specifically, individuals are no longer assessed only against financial goals, objectives are to some extent derived from the objectives at the higher levels, and these objectives are tied to the reward system. However, none of the participating organizations communicate their strategies widely, which defies the one truly universal requirement in the literature.

The concept of result and determinant measures was developed by Brignall et al. (1991). The concept was used by Brignall et al. to classify certain dimensions of performance as either being related to a desired outcome, for example financial performance, or as contributing to the desired outcome, for example resource utilization. The concept has been adopted in this research to refer to the two levels of objectives that exist in the participating organizations. For example, Company B has a certain yield objective for the entire factory, this is considered by the author to be a result objective. Manager 1, for his part, has to develop specific determinant objectives for his group that will contribute to factory-level yield.

As can be seen from Figure 6.1, the main business objectives, referred to as the results objectives are, in theory, the same objectives as those used to reward employees. However, in practice achieving these objectives does not necessarily result in rewards, which is the case in Companies A, B and D. Additionally, the systems in the participating organizations do not provide any guidance to the managers, in the form of techniques or methods, to translate Result objectives and measures into Determinant objectives and measures. As a result, how the participating managers choose to achieve the Results objectives is very much up to the individual managers. Consequently, whether the objectives are achieved will also depend on the manager.

In Company A for example, the author interviewed a Human Resource (HR) Line Manager and asked her to describe the performance management system. The intended structure of Company A's system is logical and sensible and matches the structure described in the literature. However, the system does not include specific techniques to develop objectives and measures. Additionally, the interviewee acknowledged that the system was not used as intended by many of the managers. Because permission to interview managers in Company A was declined, it was not possible to gather detailed information on how the operational managers actually develop objectives and measures.

Company B's system requires the most cross-functional interaction of any of the systems involved in this study. The system affords the Section Managers sufficient empowerment to develop their own objectives, within fixed categories, through a consensual process. Each group has a 'champion' for each of the five categories for which objectives are developed. These champions form cross-functional teams and meet weekly to discuss performance and to develop plans. In the event of a major scrap incident, there is a formal procedure to investigate the incident and to share the findings with all engineers and managers. All of these combine to suggest a system with autonomy, empowerment, continuous improvement and organizational learning. However, this is not the case in many instances. The first failing of this system is that the organization's strategy is not communicated to any of the managers, for

example, if the factory manager makes changes to the objectives developed by the Section Managers he does not always explain his reasons. Another failing is that there are no structured methods used in the cross-functional team meetings, as a result it is unlikely that the teams are as effective as they could be if structured methods were used. The biggest failing of all in Company B is in the appraisal and incentive system. As discussed in the interview summary in Appendix 3, achieving or far exceeding objectives will not lead to rewards if an individual's manager does not put him/her in the top 40% category, or if they get into the top 40% category but are deemed to be earning at or above the national average. Added to this is the fact that, as pointed out by Manager 2, Company B is in the habit of severely punishing mistakes.

Company C has the general structure in place to communicate strategy throughout the organization and this appears to happen, at least to some extent. The interviewee in Company C was clear that empowerment, autonomy and a team approach are all very important in Company C. Feedback is given rapidly whenever needed and all employees can get input from their managers at any time if they feel they need it. The manufacturing operations in Company C maintain excellent records and have always been very good at measuring their activities, according to the interviewee. The field operations on the other hand have not been very good at measuring their activities. The interviewee pointed out that the sales-related objectives are always well explained by his senior management but that the technical objectives are typically vague and the system provides no guidance on how to translate the higher level objectives into more specific objectives for the field sales and engineering personnel. The interviewee also pointed out that while the organization is becoming more metric-driven, it has a long way to go and he frequently does not have the information that he needs. This is the case despite several initiatives to improve the quality of data and information in the organization.

Company D also has a well developed appraisal system in place and this system has the potential to drive the day-to-day activities in Company D, although it does not do so for the interviewee. The interviewee in Company D described the appraisal system as '...an administrative burden that has to be gone through...' The system

requires that individuals develop their objectives based on their manager's objectives but the interviewee stated that he has never seen his manager's objectives because his manager has never completed his objectives before the deadline. Aside from safety, which is clearly Company D's number one priority, the organization's strategy is either not well developed or not well communicated as the interviewee was unaware of the strategy and suggested that if one exists that it is so vague as to be of no use in guiding the day-to-day activities. Company D's system includes a 'competencies' section which was designed to develop employees by identifying training needs, however its use is not mandatory and the interviewee does not use it. The interviewee also pointed out that the appraisal system is probably more appropriate for those employees who are not commission-based, as it determines the amount of pay increase received every year.

Company F has the least well developed systems of all of the participants. The senior management team collectively develops the financial budget for the organization. If the team cannot agree on the budgets, or if the CEO does not like the budget developed by the senior management team, then the CEO will set the budget himself. Objectives are developed for each function either by the CEO or by the manager, if the manager can convince the CEO that his/her objectives have any merit. There are monthly senior management meetings and bi-annual plant-wide meetings to communicate and discuss performance. There are no other formal processes, procedures or methods used on a formal basis and it is essentially every manager for him-/herself. The interviewee suggested that all of the information that he needs is probably being collected but the trick is to find out who has the information and which reports it is contained in.

Based on the empirical evidence, the participating organizations do not have formal and structured methods in place at the operational level to help the operational level managers to develop objectives and measures. General objectives are communicated to the managers by the appraisal systems but the systems do not help to translate these general objectives into specific objectives and measures. The author has therefore concluded that the participating organizations do not have 'well developed'



performance management systems in place at the operational level. 'Well developed' in this context is considered to mean that formal and structured methods are in place and are used, as a matter of routine, to develop objectives and measures.

#### **6.4 Do the desirable characteristics exist at the operational level?**

As none of the participants have well developed performance management systems in place at the operational level, whether these characteristics exist or not will depend almost entirely on the individual manager, a fact mentioned multiple times by all of the interviewees. There were a number of exceptions however, for example, Company D's appraisal system specifically requires that goals be objective and have clear performance measures. This section examines the extent to which the desirable characteristics of performance measures exist in each of the participating companies. Table 6.1, below, contains an assessment of how well each of the managers and systems embody the desirable characteristics. The scoring system used is as follows:

- 1      there is no evidence that the characteristic exists.
- 5      there is some evidence that the characteristics exists, more likely informally
- 10     there is clear evidence that the characteristic exists and is required by the system

**M** represents the Manager

**S** represents the System

This scoring system is entirely subjective and is based on the author's personal assessment of the evidence provided by the interviewees. The author was careful to be consistent in the scoring and reviewed all of the transcripts several times to determine the appropriate score. In the event that the author had difficulty deciding between two scores he always chose the higher of the two.

Desirable Characteristic	Co. A		Co. B		Co. B		Co. C		Co. D		Co. F	
	M	S	M	S	M	S	M	S	M	S	M	S
<b>Performance Measures</b>												
Simple and easy to understand	5	5	5	1	5	1	5	5	10	10	10	1
Accuracy, unit of measure, aggregation	1	1	1	1	1	1	5	5	5	1	10	1
Objective as opposed to subjective	1	5	5	5	5	5	5	5	10	10	10	1
Consensual	1	5	5	1	1	1	5	5	5	5	5	5
<b>Performance Measurement System</b>												
Communicate downwards	5	5	10	5	10	5	10	5	10	5	10	5
Communicate laterally and upwards	5	1	10	10	10	10	10	5	10	5	10	1
Include cost and non-cost	10	10	10	10	10	10	10	10	10	10	10	10
Demonstrate relationship	1	1	5	1	5	1	10	1	10	5	10	1
<b>Performance Management System</b>												
Accessible to all	10	10	10	10	10	10	10	10	10	1	10	1
Monitor internal and external environment	5	5	5	5	5	5	10	5	10	5	10	1
Understand organizational relationships	5	5	5	10	5	10	10	10	10	10	5	1
Encourage cross-functional interaction	5	5	10	10	10	10	10	10	5	1	10	1
Use a few consensual measures	1	5	5	1	5	1	5	5	10	10	10	5
Define collection and calculation methods	1	5	5	5	1	5	10	5	10	10	5	1
Objectives are clear, consistent, compatible	1	5	5	5	5	5	10	5	10	10	10	1
Eliminate dysfunctional behaviour	1	1	1	1	1	1	5	5	5	5	10	1
Identify and eliminate roadblocks	1	1	1	1	1	1	1	1	1	1	10	1
Use PMS to communicate downwards	5	5	5	5	5	5	5	5	5	5	5	5
Use PMS to communicate upwards	5	1	5	5	5	5	10	5	10	10	10	1
Empower employees	5	5	5	5	5	5	10	10	5	5	10	1
Promote CI and Organizational Learning	1	5	5	5	5	5	10	5	10	10	10	1
Tie rewards to the formal system	1	5	5	5	5	5	10	10	10	10	10	5
Periodically re-evaluate/delete	1	1	1	1	1	1	1	1	1	1	1	1

**Table 6.1 - The author's assessment of the extent to which the desirable characteristics exist in the participating companies.**

Sections 6.4.1, 6.4.2 and 6.4.3 provide an explanation for the results in Table 6.1 by providing evidence from the interviews of the extent to which the desirable

characteristics of performance measures, performance measurement systems and performance management systems exist, respectively.

The data in Table 6.1 was further analyzed for patterns that would indicate whether the manager or the system has the greater influence on achieving the desirable characteristics, Table 6.2 below, shows the results. In Table 6.1, the number of attributes for which the manager scored higher, for which the system scored higher and for which the system and manager each scored the same were counted for each of the interviewees. Managers B1 and B2 scored closely to each other and both managers appear to have a slightly greater influence than the system on whether the characteristics are achieved. Managers C and D have a greater influence than their respective systems and a greater influence than both Managers B1 and B2. Finally, Manager F has the greatest influence of all on whether the desirable characteristics are achieved. This result is probably due to the fact that Manager F has the most experience of all the interviewees and has held the most senior management positions. The clear conclusion that may be drawn from this finding is that in the absence of formal methods, the manager's experience, abilities and style will determine how objectives and measures are developed and implemented, and whether or not the desirable characteristics are achieved.

<b>Has most influence</b>	<b>B1</b>	<b>B2</b>	<b>C</b>	<b>D</b>	<b>F</b>
Manager	5	4	8	7	20
System	1	2	0	0	0
Equal	17	17	15	16	3

**Table 6.2 - Influence on achieving the desirable characteristics**

#### **6.4.1 Performance measures**

This section examines the extent to which the desirable characteristics of performance measures exist, at the operational level in each of the participating organizations.

**Measures should be simple and easy to understand.** In general, the objectives and measures developed by all of the participants were simple and easy to understand. However, only Company D's system made this an explicit requirement.

From the author's perspective Company A uses a generic set of objectives, despite the fact that the system requires specific objectives to be developed based on the manager's own objectives. In Company B there are five categories for which objectives are developed for the entire factory, everybody understands what the objectives mean. In Company C the interviewee stated that the sales objectives are clear but that the technical objectives are frequently vague and left open to interpretation. Company D's system specifically requires that the manager and individual develop objectives that are understood by both parties and that are quantifiable. The manager in Company F has a few key measures in place that are easily understood and that provide him with the fundamental information that he needs.

It seems intuitive that objectives and measures need to be simple and easy to understand, if they are not then it is unlikely that they will be achieved.

**Consideration should be given to the accuracy, unit of measure and level of aggregation.** No specific attention is given to these characteristics in Companies A or B, both of which have a more or less fixed set of objectives and measures. Company C has had a number of initiatives in the past that were designed to improve the accuracy of their data, they do not however consider the unit of measure or the level of aggregation of their measures. The interviewee in Company D admitted that in the past they had not done well in achieving the accuracy that they would like, however they do consider the unit of measure and the level of aggregation. The

manager in Company F pointed out that the measures that were in place before he joined the company did not address these characteristics. He has made a point of developing new measures that provide a greater level of accuracy; he is also concerned with the unit of measure and level of aggregation.

**Measures should be objective.** All of the interviewees claimed that the goals and measures they develop are objective and this is the case for most of the activities and projects they are involved in. However, the objectives used for appraisal purposes rely on a great deal of subjectivity. Based on the author's personal experience and observations, most of the measures in place in Company A are subjective in nature as the objectives are frequently vague and poorly defined. Company B has objective primary goals and measures but the assessment of people for reward purposes is done subjectively, based on behavioural characteristics, by both of the interviewees. The interviewee in Company C ensures that the measures he has in place are objective. The system in Company D has an explicit requirement that the goals and measures be objective, although the system does allow for some subjectivity by providing what Manager D referred to a 'get out of jail free' card. At the bottom of the annual review form there is a question that asks if the assessment is based only on the objective goals that are listed on the form. The manager can select 'No', indicating that some subjective assessment has taken place. The interviewee in Company F also ensures that the objectives and measures that he develops for reward purposes are objective. He does, however, assess certain subjective criteria for development purposes.

**Measures should be consensual.** There is general agreement from the participants that objectives and measures should be consensual, however in practice this is only the case within certain boundaries. The degree of consensus for the participants is more or less limited to how to achieve the objective than with what the target should be or how to measure it.

#### **6.4.2 The Performance Measurement System (PMS)**

This section examines the desirable characteristics of performance measurement systems, as they exist in the participating companies. The theoretical distinction drawn between the performance measurement system, as an information system, and the performance management system is clearly theoretical. While the interviewees understood the distinction, their systems do not reflect it. In practice the participating organizations have a general information system that captures all manner of data pertaining to their daily operations; these systems vary in sophistication from company to company.

From the author's perspective in Company A the backbone of the information system is the email system, as most communication is delivered by email. There are a considerable number of intranet-based systems that are becoming increasingly sophisticated and integrated, for example SAP and Oracle database systems, however, it is still difficult to find information on the multiple systems that exist. The recent Intellectual Property (IP) initiatives in Company A are making it even more difficult to find information. For appraisal purposes objectives are communicated verbally at the start of the year and both an electronic and a paper-based record of the objectives is maintained by the manager and the Human Resource representative. There are no systems in Company A, that the author has access to, that contain any information about the author's performance.

Company B has a substantial computer-based system that monitors and records vast quantities of equipment related data, literally everything that can be measured on the equipment, is measured and recorded. The information gained from this system can be used to determine a group's performance in terms of scrap, availability, SPC and particles. Information for the cost category is maintained by the individual managers. For appraisal purposes, Company B's performance management system maintains a record of every individual's annual objectives. Individuals can access this system at any time to see their objectives.

Company C has recently started to use Salesforce.com as a means of communicating sales related information from the field, back to the central offices. Prior to the use of Salesforce.com, each manager maintained records and communicated information either monthly or when requested. The manufacturing operations of Company C have always maintained very detailed build records and monitored their equipment in the field over its useful life. The appraisal system is entirely paper-based and objectives and feedback are communicated verbally.

Company D has recently introduced SAP and is beginning to use this system as the main information system in the organization. Manager D maintains very detailed spreadsheets for each of his customers and communicates information to his manager as needed or during monthly meetings. Company D has the most sophisticated appraisal system of all the participants.

The interviewee in Company F suggested that whatever data or information he needs is probably being collected but that it is difficult to identify what report the data or information might be in, or who might have the report. It is therefore clear that there is not a central, integrated information system, as there is in all of the other participants. All objectives are communicated verbally and records are maintained by the managers.

Providing feedback is not an integral part of any of the performance measurement systems and is left entirely to the managers' discretion.

**The performance measurement system should be accessible to, and include all employees.** Only the system in Company B is truly accessible to all employees, as any employee can access the organization's intranet sites to find performance related information and charts. The appraisal systems of companies A, B, and C include every employee. However, the systems in companies D and F do not include the hourly-paid operators.

**The PMS should communicate strategy, objectives and initiatives downwards.** The appraisal systems of all of the participating companies are used only to communicate personal objectives. Strategy is not widely communicated in any of the participating companies. The only participants with any knowledge of their organization's strategy were the managers in companies C and F. Manager C is aware of the general strategic direction that the organization is taking but not the specific objectives. Manager F is aware of the organization's strategy because he operates at the strategic level, as well as spending more than half of his time at the operational level. The communication of general information is done by email and verbally at meetings or face-to-face.

**The PMS should communicate feedback laterally and upwards.** None of the performance measurement systems in the participating organizations provide feedback to either the individuals performing the various tasks and activities, or to their managers. If individuals want feedback they either have to get it for themselves or ask their managers. In the author's experience of Company A, feedback is most often provided in the event that something goes wrong or targets are not met. Company B has an intranet site that provides all manner of performance data but Manager 2 stated that the site is not well maintained and that getting information from the site is difficult. Manager 1 in Company B, on the other hand, believes that the intranet sites are useful and accurate. The managers in companies B, C, D, E and F all stated that they provide constant feedback to their people but that for the most part their people know where they stand in relation to their objectives.

**The PMS should balance cost and non-cost measures.** All of the participants included at least some non-cost measures, although in Company B for example, there is a clear link between all measures and costs.

**The performance measurement system should demonstrate the relationship between objectives and measures.** None of the systems in the participating organizations perform this function, whether the relationships between objectives



and measures are explained depends entirely on the manager. However, all of the interviewees claimed to explain the relationships, if necessary.

#### **6.4.3 The Performance Management System (PMgtS)**

Given that the performance management system, for the purposes of this research, is considered to be the system that decides what must be achieved and how it should be achieved, all of the participating companies can be said to have a performance management system, albeit fragmented and in some case informal.

**The PMgtS should monitor the internal and external environments.** Monitoring of the external environments is less applicable at the operational level than at the strategic level for manufacturing operations. The only evidence of monitoring the external environment among the participants was provided by Company C, in which the interviewee is an area account manager responsible for a sales team. The interviewee in Company C discussed his efforts to get information from customers, including what he referred to as 'stealth' data about other suppliers.

Monitoring of the internal environment seems to be reactionary in nature, that is, none of the participants provided any evidence that they monitor the internal environment for 'warning signs' that might indicate a problem is developing. This can be explained by the fact that the managers at this level are so pre-occupied with other details that they do not have time to meticulously plan for every eventuality.

**The PMgtS should encourage an understanding of organizational relationships.** Only Companies B and C showed any formal evidence of this criterion, although all of the participants were aware of the relationships between their functions and other functions that they interact with and have a direct impact on. Company B has daily meetings in which manufacturing, maintenance and process personnel participate. The meeting discusses the manufacturing priorities for the day ahead and any scrap issues that may have occurred in the past 24 hours. There are also cross-functional teams that meet regularly and are focused on how to achieve the goals in each of the five categories. Both of the participants in Company B stated that there is a lot of

informal communication between the various groups, the purpose of which is to resolve potential conflicts. Company C has a specific requirement that the salespeople contact manufacturing before accepting orders above a certain predetermined limit. The discussion will determine when the order can be fulfilled and the salesperson will then provide a quote to the customer based on the date given by manufacturing. From the author's observations in Company A this has been a major failing in the past, however, a number of initiatives have recently been launched that intend to increase the understanding of inter-functional relationships. The interviewee in Company D admitted that the disconnect between the various groups in Company D is one of their greatest weaknesses. Manager F is also aware of the inter-functional relationships but there is no specific requirement in Company F for the various functions to work together.

**The PMgtS should encourage cross-functional interaction.** This criterion is very closely related to the previous criterion. Again only companies B and C showed any evidence of formal cross-functional interaction.

**The PMgtS should use a few consensual objectives and measures.** The amount of consensus involved in determining objectives and measures varies across the participants but in general is limited to determining how the objectives will be achieved, rather than what the objectives and measures should be. The exception to this would be the interviewee in Company C who chooses approximately 70% of his objectives, the remaining 30% being dictated by his manager who provides the strategic input. Company D specifically requires that only five or six objectives be used and in Company F there are only three main business objectives.

**The PMgtS should clearly define the data collection and measure calculation methods.** The only system to have this as a specific requirement was that of Company D. None of the participants had any measures that required any calculation effort on the part of either the manager or the reports. Where calculations are necessary they are performed by automated systems.

**The PMgtS should ensure that objectives and measures are clear, consistent and compatible, attempt to eliminate dysfunctional behaviour and should identify and eliminate roadblocks.** These three criteria are being addressed together because they are all closely related; all of them are concerned with the development of objectives and measures. From the author's observations in Company A, none of these criteria are addressed. Company B does not specifically address these criteria when developing objectives and measures. If two individuals cannot resolve their conflicting objectives then the matter will be escalated to their managers, ultimately the conflict will be resolved based on a return-on-investment calculation. The participant in Company C ensures that the objectives are clear and consistent but does not look for roadblocks or dysfunctional behaviour that might arise as a result of the objectives and measures. For the manager in Company D dealing with conflict or dysfunctional behaviour is '...just part of the manager's job'. The objectives and measures are developed based on what has to be achieved and no particular analysis is done to see if the objectives or measures will cause conflict. Should conflict or roadblocks arise they will be dealt with at that time. The interviewee in Company F specifically looks for conflict between the objectives that he sets for his reports.

**The PMgtS should use the performance measurement system to communicate strategy, initiatives, objectives and targets.** Strategy is not communicated in any of the participating companies. The communication of incentive-related objectives is done at the start of the year by all of the companies, the communication of all other information is done either verbally or by email.

**The PMgtS should use the performance measurement system to provide feedback.** There are two types of feedback evident in all of the participating companies. Firstly there is feedback on the incentive-related objectives, and secondly feedback on general performance. The incentive related feedback is typically given at scheduled one-on-ones, whereas the feedback on general performance is provided as needed.

Company A's performance management system has a requirement that formal one-on-ones be conducted quarterly to provide feedback to all employees on their progress towards their formal objectives. In the author's experience these do not take place unless an individual specifically requests one, although managers in other groups are more diligent. Feedback on general performance very much depends on the manager. The author's current manager is very detached from daily operations and feedback is usually provided only when there has been an incident, or when the monthly budget has been exceeded. The customer will occasionally provide positive feedback to the manager and this feedback is forwarded by email to the engineers.

The managers in Company B have formal quarterly reviews with their reports to discuss performance. Manager 1 in Company B takes this a step further and has informal monthly meetings with all of his reports. These informal meetings are a forum for the reports to discuss whatever they like, including providing feedback on the managers performance. Both of the interviewees in Company B are closely involved in the day-to-day activities of their groups and provide immediate feedback to their reports.

Company C holds formal reviews at the end of the year, in which the past year's performance is discussed and the objectives for the coming year are set. The participant in Company C believes that more frequent formal reviews are not necessary because of the small size of Company C (535 employees), and the high degree of both visibility and accountability in the company. The interviewee in Company C is an area account manager, with his salespeople traveling all over the sales territory. As a result face-to-face communication does not take place very often. However, the manager and his reports speak to each other several times per week and communicate by email many times per day.

The manager in Company D has a formal quarterly review with his manager and holds formal reviews every six months for his reports. Performance in terms of the stated objectives is discussed during these reviews. As with Company C, the interviewee in Company D is an area account manager with salespeople in various

cities throughout the sales territory. The participant and his reports speak to each other several times per day and communicate more frequently by email.

Company F holds formal reviews once per year to discuss the past year's performance and the objectives for the year ahead. The managers have a weekly meeting in which they discuss performance and the interviewee holds daily meetings with his reports. The participant in Company F is closely involved in the daily activities of his group and provides immediate feedback as needed.

**The PMgtS should empower employees.** All of the participants promote autonomy and expect their reports to be able to deal with issues as they arise and to at least be able to suggest solutions. However, this does not seem to be a feature of any of the performance management systems and depends on the manager.

**The PMgtS should promote continuous improvement and organizational learning.** From the author's experience in Company A, the continuous improvement efforts are focused on reducing costs, improvement in other areas is driven by the customer. A number of initiatives have recently been launched that intend to increase the communication and interaction between various functions. These initiatives could be said to promote continuous improvement and organizational learning.

Company B is very cost-focused at present and all efforts are aimed at reducing costs and increasing both yield and efficiencies, which in turn lead to cost reductions. As far as the participants' groups are concerned the organizational learning consists of modifying procedures in response to incidents. When asked about organizational learning, Manager 2 stated that '...we prefer to re-invent the wheel...'

The interviewee in Company C did suggest that while there are efforts to continuously improve and to learn from mistakes that these efforts tend to be more reactive than proactive. When there are major incidents, training will be given to the

individuals where appropriate and changes will be made to the organizational processes to ensure that the incident is not repeated.

The manager in Company D suggested that continuous improvement and organizational learning is supposed to be inherent in the system. If objectives are not met then the reasons should be determined and either training should be provided or other changes should be made to ensure the objectives are achieved. However, whether this actually happens is debatable according to the interviewee.

The participant in Company F clearly strives for continuous improvement however there is no evidence that the system in Company F encourages this. Similarly, organizational learning is not a formal part of Company F's systems but the interviewee mentors his reports.

**The PMgtS should tie rewards to the formal objectives.** In theory all of the participating companies tie rewards to the formal objectives, however in practice there is a great deal of subjectivity involved in the assessments and appraisals. To the extent that achieving the formal objectives will not necessarily result in a good review.

In Company A, many of the author's objectives are so vague as to defy measurement, in other cases objectives depend on some external situation arising and frequently cannot be achieved. This would lead the author to believe that his appraisals are based almost entirely on subjective assessments.

The situation in Company B is very similar. Many of the objectives that the interviewees set for their reports are general in nature and the reports have little or no control over whether the objectives are achieved. For one group of his reports Manager 1 sets business goals but also assesses them in terms of seven other behavioural characteristics. He balances the subjectivity by weighting the business goals more heavily. For the other group of his reports the assessment is entirely subjective because the individuals do not have specific individual goals. Instead they

are assessed on their perceived contribution to the group's goals. Manager 2 in Company B sets business goals for all of his reports but assesses them based entirely on 11 behavioural characteristics.

Company C sets business objectives for all of its employees and bases their annual pay raise on whether or not they achieved their objectives. The interviewee in Company C stated that, aside from the sales goals, the goals in the past were subjective in nature but that the goals are increasingly being made objective and measurable. However, in the author's opinion the goals still seem to be very subjective in nature. For example, the customer support engineers are now being asked to build better relationships with their customers and to develop fab-wide expertise, that is, to increase their knowledge of equipment from other suppliers. Assessing these goals is likely to be very subjective in nature. The interviewee also pointed out that setting objectives and measuring progress in the manufacturing operations is easier to do because it is more 'black and white'.

Company D sets a small number of objectives for its people, typically five or six and assesses their annual performance in terms of these goals. However, the interviewee admitted that the final assessment is done subjectively. He justified this by pointing out that some people have all of the lucky breaks and achieve their goals without trying. While others might put their heart and soul into trying to achieve their goals but they fail because of circumstances outside of their control. As a result, during the final assessment Manager D tries to take such factors into account.

The interviewee in Company F performs the most objective assessment of all. For reward purposes his assessment is based entirely on whether the business goals are achieved. As part of the performance management system in Company F every employee is assessed in terms of eight behavioural criteria, although these are for development purposes only. The interviewee pointed out that the assessment against these criteria is subjective and that other managers might base the rewards on these criteria as well as on achieving the business objectives.

**The PMgtS should periodically re-evaluate objectives and measures and delete any that are obsolete.** None of the interviewees provided any evidence of periodically re-evaluating objectives and measures and deleting any that had become obsolete.

## **6.5 Conclusion**

This chapter sought to address Research Questions 2, 3 and 4. Specifically, the chapter was concerned with whether the operational levels of the participating organizations have well developed performance management systems, and how managers at the operational level develop objectives and measures. Research Question 4 was concerned with the extent to which the desirable characteristics exist at the operational level. The actual research questions are listed below:

- RQ #2. Do organizations have formal and structured methods, as part of the performance measurement and management system, in place at the operational level?
- RQ #3. How do operational-level managers develop objectives and measures?
- RQ #4. Do the desirable characteristics, as identified in the literature, exist at the operational level? If they exist, is it as a result of the system or the manager?

The empirical evidence showed that the participating organizations do not have formal and structured methods in their performance management systems at the operational level, where the systems have been designed with good intentions, they are not used as intended. The participating organizations have put more effort into their appraisal systems than into their performance management systems in general, they also place more emphasis on the objectives in the appraisal systems. However, the objectives used for reward purposes are not always rewarded in the event of successful achievement and rarely drive the day-to-day activities of the participants.



The operational level managers who participated in this research develop objectives based on the goals given to them through the appraisal system. The managers pass the appraisal objectives to their reports and strive to achieve them by identify areas that can be improved. However, there are no formal methods in place that assist the managers in this process. Additionally, no specific consideration is given to the performance measures that are used to monitor performance. The measure is assumed to exist when an objective has been chosen. There may be additional objectives for individuals, however, these are likely to be mandated by either the Human Resource group or the Safety group. Objectives are also given to individuals to address poor performance in terms of, for example, attendance.

In terms of the desirable attributes of performance management systems, very few of the attributes are specifically addressed by the systems in the participating organizations. The participating managers fared slightly better in that they expressed an understanding of the need for most of the attributes and presented some evidence that they try to achieve many of them.

In the participating organizations, performance management at the operational levels of organizations is left to the individual manager with little or no guidance provided by the systems. These conclusions are summarized below:

- Appraisal systems are being used by organizations to communicate the 'result' objectives throughout the organization.
- The appraisal systems have not yet become sophisticated enough to guide managers through identifying improvement activities and setting objectives and measures for those activities.
- In many cases, the 'result' objectives do not drive the day-to-day activities.
- The objectives in the appraisal system are intended to be used to reward individuals, however, there is still a great deal of subjectivity involved.
- The managers have a greater influence than the systems in determining whether or not the objectives are achieved and in whether or not the desirable characteristics are achieved.

The analysis of the empirical data continues in the next chapter and seeks to answer the final research question.

## **Chapter Seven**

### **Conclusions from the Empirical Evidence**

#### **7.1 Introduction**

The previous chapter examined the empirical data to determine how the participating operational level managers manage performance and to what extent the desirable characteristics of performance management systems exist at the operational level of the participating organizations. This chapter begins by discussing the empirical data, gathered from the participating organizations, in general terms and then goes on to make a number of observations and to draw some conclusions. Support for the observations is included in the text and also on Appendix Three, which contains the summaries of the interview transcripts. The chapter then goes on to discuss the implications of the observations and to address the last research question, which is:

RQ #5. In light of the characteristics identified by RQ #1, are the existing methods to develop objectives and measures suitable for use at the operational level?

#### **7.2 General Analysis of the Empirical Data**

Anderson and Fagerhaug (2002, p. 145) identified five main applications of performance measurement: monitoring performance levels; decision support; diagnostic self-assessment; benchmarking; and, to facilitate process improvement. Kaplan and Norton (2001, p. 8) suggest that performance measurement, and the Balanced Scorecard in particular, enables organizations to achieve focus on, and alignment with the organization's strategy. Without this focus and alignment organizations are simply not capable of competing in today's environment where intangible assets determine an organization's valuation and ability to succeed.

When asked what they thought the purpose of the performance management system is, the respondents provided some common themes. Their responses are summarized in table 7.1 below.

Manager	Rewards	Feedback	Accountability	Assign goals	Improvement
B1	✓	✓		✓	
B2		✓		✓	
C	✓	✓	✓		
D	✓			✓	
F		✓			✓

**Table 7.1**

**The purpose of the Performance Management System for the interviewees**

The responses in Table 7.1 suggest that for the participating managers the performance management system is used to set objectives, to provide feedback and to reward high performers. Only Manager F suggested that the performance management system could be used to improve performance.

None of the participants suggested that the performance management system is used for strategy execution (Kaplan and Norton 2001, p. 8), to gather general information to support decision making, or for the wider purposes suggested by Anderson and Fagerhaug (2002, p. 145). As a result, the author has concluded that:

- The performance management system is viewed, somewhat narrowly, only as an appraisal system in the participating organizations.

While none of the participants have well developed performance management systems, as described in the literature, their appraisal systems are clearly intended to perform some of the functions associated with performance management systems. It is interesting to note that the appraisal systems in the four largest participants, who

are also publicly traded, are in a state of flux, these are the companies with the most structured and formal systems.

Company A, in which a formal interview was not conducted with operational level managers but which the author personally observed as an employee, implemented a new appraisal system in 2004. This system should be fully implemented by mid-2005 and is still being modified. After a major reorganization, Company B recently ceased using its structured system while a new system is developed. In the interim, the managers are developing objectives and assessing performance as they see fit. The interviewee in Company C admitted that Company C's system is changing to become more 'metric driven' and that new systems are being put in place to develop specific, strategy-based objectives and measures for their field personnel. These systems have long existed for the manufacturing personnel. Company D has the most sophisticated system of all but recently added another two components.

The exception is Company F which is a privately owned company, in which the owner and chief executive officer (CEO) clearly manages the organization in an autocratic manner. The interviewee in Company F pointed out that if the CEO does not see value in, for example, developing more sophisticated management information systems, then he will not release the funds to do so. In addition, if the senior managers do not set budgets that the CEO approves of, then the CEO will set the budget himself.

The fact that the four largest participating organizations are actively changing the systems that they use to communicate and develop objectives suggests that they recognize the importance of these systems. This seems to be a common trend as identified by Frigo and Krumwiede (1998a). Based on a survey conducted by the Cost Management Group (CMG) of the Institute of Management Accountants, Frigo and Krumwiede reported that 55% of the companies surveyed are changing their performance measurement systems. This is particularly common for larger organizations (Frigo and Krumwiede 1999). Unfortunately, while the changes being implemented by the participants are a step in the right direction, they do not appear

to be thorough or comprehensive. For example, in Company A individuals are encouraged to obtain a copy of their manager's objectives and to develop their own objectives based on those of their manager. This is a step in the right direction because all of objectives would then be linked to the organization's strategy, however, this does not always happen in practice and Company A's system does not suggest any methods for how to develop the lower level objectives or criteria that the objectives should meet. A further failing of all of the systems, with the exception of Company D's, is that the measures are assumed to have been developed when the objectives have been set. No additional thought is given to the characteristics or attributes of the measures being used to assess performance. In Company D, the system requires that a clearly defined measure be developed for each goal or objective, if this cannot be done then the system suggests that another objective should be chosen.

This leads the author to the conclusion that while the participating organizations have recognized the importance of the performance management system, they have underestimated what is involved in translating strategic objectives into locally meaningful objectives for every employee. Additionally, the importance of performance measures is not appreciated in these organizations as measures are given no specific attention. Once an objective has been set the measure is assumed to exist automatically. These conclusions are summarized as:

- The participating organizations have recognized the importance of the performance management system, they have underestimated their complexity.
- The importance and complexity of performance measures has not been recognized in the participating organizations.

In the participating organizations, there are two distinct sets of objectives, these were referred to as results and determinants objectives in the previous chapter. The appraisal systems communicate the result objectives, that is, what each individual is expected to achieve and these result objectives are used to appraise the individual. The individual must then develop determinant objectives, which if achieved will

contribute to the result objectives. The determinant objectives are informal, in that they are not included in the formal system. All of the interviewees except the managers in Company B admitted to having informal objectives that were essentially outside of the formal, incentive-based objectives. All of the informal objectives were either developmental in nature or were designed to indirectly contribute to achieving the formal objectives.

The managers in Company B stated that all objectives must be formally documented, the justification for which was to maintain documentary evidence. This documentary evidence is needed so that in the event that an employee disputes their appraisal by claiming that they were not given certain objectives, then the manager can turn to the documentary evidence. Both Manager 1 and Manager 2 provided this answer and in doing so provided some insight into Company B's culture. Schein (1986) defined organizational culture as:

the pattern of basic assumptions that the group has invented, discovered or developed in learning to cope with its problems of external adaptation and internal integration, and that has worked well enough to be considered valid, and therefore, to be taught to new members as the correct way to perceive, think and feel in relation to those problems.

Based on the explanations provide by Manager B1 and B2, above, Company B's culture would seem to have resulted in a system that anticipates disputes with employees and that requires formal documentation of all objectives to settle those disputes. Perhaps disputes with employees over their performance assessments cannot be avoided, or perhaps this requirement was developed in response to past incidents. However, as discussed in Section 6.3, Company B does not necessarily reward its top performers and is in the habit of severely punishing mistakes. The details combine to give the author the distinct impression that Company B has a way of dealing with people that leads to disputes.

Despite this agreement between the two managers that all objectives must be formally documented the author does not believe this to be the case. For example, Manager 1 stated that he gives his engineers an availability goal for their equipment that is based on the group availability objective. It is unlikely that this is the lowest level of objective though, because certain other things must be done to ensure that the toolset achieves the availability target. These 'other things' that must be done will more than likely have objectives associated with them but there was no evidence provided during the interviews that these objectives are documented.

What happens in reality is that the appraisal system is used to give the manager and his group a set of objectives. The manager passes these objectives straight to the individuals in his group without considering how the objectives can be achieved. These objectives then form the basis for assessment of all members of the group. Subsequent meetings and discussions are concerned with how to achieve the objectives but the determining factors never become formal objectives and are not formally documented. This may arise from the fact that the organizations do not care, within reason, how the objectives are achieved, only that they are achieved. Both manager B1 and Manager D stated that they don't care how their reports achieve their objectives; they only care about whether or not they do achieve them.

- There are Result and Determinant objectives in the participating organizations. The Result objectives are formally documented within the appraisal system but the determinant objectives are documented only by the managers
- The participating organizations do not care, within reason, how objectives are achieved.

The result objectives that operational level managers are tasked to achieve do not change much from one year to the next, for the most part, only the targets change. The exception among the interviewees was Company C, which recently implemented a new strategy and is becoming what the interviewee referred to as 'more metric-



driven'. Because of the new strategy, new objectives have been set for many of Company C's employees, including Manager C and his team.

- In the participating organizations, the result objectives at the operational level change little from year to year.

Another failing identified in the participating organizations is that while a considerable number of non-financial objectives have been developed, the financial objectives take precedence and drive the day-to-day decision making. With the exception of Manager D, all of the participants pointed out that costs are the bottom line, that is, that costs are their top priority. Most of the objectives discussed during the interviews are cost-focused and there were few references to customer satisfaction, safety, employee satisfaction and so on. For example, the author's annual objectives have little to do with his daily activities and the overwhelming message communicated by the author's manager is to reduce costs wherever and whenever possible. Manager 1 in Company B pointed out that safety was everybody's number one priority, however he did so during the third interview and only as the result of a direct prompt that asked about safety. Manager 2 in Company B mentioned that there might be some safety goals in a 'sub-set' of objectives but they were not in his primary set of goals. The interviewee in Company D was very clear from the beginning that safety was the number one priority for Company D. He also stated that, as a salesman, customer satisfaction is his top priority but that Company D has stopped measuring customer satisfaction. In addition, while Manager D has five or six annual objectives, which include employee development, safety, a sales target and a number of project-based goals, he believes that achieving his sales target and cutting costs are the most important objectives. He did state, however, that safety taken very seriously in Company D and that achieving all safety objectives is mandatory. Only the interviewees in Companies C and F were clear that customer satisfaction, safety and a 'quality' product are important. This results in the following conclusions:

- The objectives communicated through the appraisal system, which is the primary method to communicate objectives, do not always drive the day-to-day activities in the participating organizations and cost-related objectives take precedence in most cases.

The clearest message from the empirical data is that the manager is the key element in determining whether or not an objective will be achieved, how it will be achieved and whether or not the desirable attributes will be achieved. Because the existing systems provide little guidance on how to develop objectives and measures it is entirely dependent on the manager's abilities and understanding of both how his/her operations actually work and the relationship between his/her operations and the rest of the organization. Table 7.2 below shows the total number of times that each interviewee said, or made some reference to aspects of performance management being manager dependent and to the manager's style being an issue.

	<b>B1</b>	<b>B2</b>	<b>C</b>	<b>D</b>	<b>F</b>
Depends on the manager	7	8	4	6	3
Manager style/personality	1	2	1	3	3

**Table 7.2 – Number of references to a dependence on the manager**

The manager's style will determine not only determine the extent to which the manager builds consensus, seeks input from his/her reports, explains the relationships between objectives and so on. The manager's style will also determine how involved the manager is in the operations of their group. Based on the author's experience and observations, manager involvement is vital to correctly identifying the areas that need improvement, setting realistic objectives and in assessing performance. If the manager is not involved then he/she will have to rely on secondhand information. In the author's experience secondhand information is not always accurate or well-intentioned. Without firsthand knowledge it is difficult to guide people and to focus improvement in the most rewarding areas. In addition, as Manager F pointed out several times, those performing the activities are usually too

involved in the details to see the 'big picture'. Therefore the manager should be closely enough involved to know all the activities that are taking place, how the activities relate to each other and how the group relates to other groups.

In the author's experience, managers who are actively involved in their operations not only command more respect but are also better able to manage their operations because they know how the group works. Manager B2 provided evidence of this when discussing appraisals that he and his colleagues have had in the past. He stated that when he was a technician working on the nightshift, some of his previous managers didn't even know his name! How then could these managers realistically appraise his performance? On the same subject he added that some of the worst employees that he had ever met regularly received 'good' appraisals, while some of the best employees regularly received 'bad' appraisals. This was again attributed to manager involvement by Manager B2. The most persuasive argument came from the interviewee in Company F, who has made drastic improvements in production efficiency by getting involved in the day-to-day activities and by focusing on a few key areas.

All of the participants were clearly very closely involved in the operations of their groups and with their reports. For example, Manager 1 in Company B has informal one-on-one with all 15 of his reports, every month, this is in addition to the formal one-on-ones every quarter. Manager 2 in Company B is also very serious about having informal meetings with every one of his 31 reports, to the extent that he goes to work at 2:00 o' clock in the morning, twice per month, to meet with the technicians who work on the nightshift. Keeping in touch with his team is more difficult for the manager in Company C because his reports are constantly traveling to customer sites. However, he speaks with every member of his team by telephone several times per week and communicates multiple times per day by email. He also meets with members of his team whenever either he, or the team member, feels the need to do so. The manager in Company D is in a similar situation with a geographically disbursed sales team, however Manager D also meets with his salesmen whenever either party feel the need. The manager in Company F is

probably the most closely involved in his operations, while Manager F is a senior manager he spends greater than 50% of his time on the shop floor.

In addition to the manager's style having a determining influence on how, and how well, he/she sets objectives and assesses performance, the organization's culture, defined in Section 7.2, was also observed to have an influence. For example, Manager C stated that his organization is becoming more 'metric driven' and that this is requiring a 'culture shift'. Company C promotes a great deal of autonomy for many of its employees, as a result these employees previously enjoyed the freedom of working with limited supervision and of working towards loosely defined goals. However, more specific goals and measures are now being set for employees, which in turn requires them to adjust to having less freedom than they are used to. Manager E, the Vice President, stated that all Company E employees below the director level get an annual bonus every year, regardless of their or the organization's performance. Above the director level the annual bonus is tied to the organization's performance. This is in stark contrast to Company B where employees who far exceeded their annual goals last year did not receive a bonus because the factory does not achieve its stated goals. At the same time the recently appointed Chief Executive Officer was awarded a multi-million dollar bonus. According to Manager B1, the intention is to encourage teamwork by making all employees do whatever is necessary to ensure the factory achieves its goals. The net result however, is that many employees have become apathetic because they have not been rewarded for excellence in the past and therefore see no incentive in continuing to excel.

This gives rise to the following observations:

- In the absence of formal methods, how well the determinant objectives are developed will depend on the participating manager's abilities. (All participants p. 194)
- The participating manager's style has an influence on how objectives are set, on how performance is measured and in particular on how performance appraisals are executed and rewards given. (All participants p. 195)

- Being closely involved in the operations of their groups helps the participating managers to better manage their groups. (All participants pp. 195-196)
- The participating organizations' culture has an influence on how performance is assessed and on how rewards are given. (Participants B, C and E pp. 196-197)

While discussing the need for his technicians to cross-train onto different types of equipment the author asked Manager B2 if he had considered implementing measures to track the progress of the technicians. The interviewee said that he had considered it but that it would be too difficult to track each technician's progress on performing various activities on the new equipment. Manager C pointed out that Company C's manufacturing operations have always been better at measuring their performance than other parts of the organization. He attributed this to the fact that it is easier to measure activities in manufacturing because the activities involved, and the outcomes, are more tangible. While measuring manufacturing performance might be relatively straightforward, the case is less simple in sales, which is the domain of two of the interviewees. The manager in Company C recognizes that measures such as market penetration are somewhat subjective but attempts to measure them nonetheless. The manager in Company D makes no attempt to measure such criteria because they are so subjective. In addition, while customer relationships are 'everything' to Manager D, neither he nor his company measure customer complaints, even though Manager D felt that the only objective measures related to the customer are orders and complaints. Also in Company D, the system requires that a clearly defined measure be developed for each goal or objective, if this cannot be done then the system suggests that another objective should be chosen, regardless of how necessary the objective might be. This leads to the conclusion that:

- the participating managers and organizations tend to measure what is easily measurable and shy away from measuring things which are difficult to measure.

Subjectivity is deeply entrenched into the appraisal systems of the participating organizations, in particular Companies A, B and D. In the author's experience in Company A the annual objectives are not sufficiently well developed to be used for appraisal purposes, therefore some other subjective criteria must be used to arrive at the assessment of individuals. Manager 1 in Company B makes an effort to reduce the subjectivity in his assessment of his reports by weighting and averaging but the overall process in Company B is very subjective in nature. Manager 2 in Company B ranks and rates his reports entirely subjectively, he also added that the ranking and rating process is '...almost like a popularity contest...' When each manager has completed the ranking and rating, all of the managers meet to rank and rate every employee in the factory and to assign them to one of two categories. There are a limited number of places in each category and in the event that there are too many candidates in a particular category, the managers discuss the merits of each candidate and ultimately rearrange the names until the quotas are satisfied. For appraisal purposes Manager D assesses his reports against the objective goals that were set at the start of the year, he then awards each report a final score. However, he admitted that the overall score will be based on his subjective assessment of the circumstances faced by each of his reports during the year. There is a checkbox at the bottom of the assessment which asks if the final score is based only on the performance against the objectives, thus allowing the managers to select 'No' and apply their judgment. Manager D also stated that there have been occasions when senior management have reviewed the scores and made adjustments. For example, they have 'squashed' all scores in the past to avoid having to give pay raises, and on other occasions they have increased the scores of some managers and decreased the scores of other managers to achieve a more balanced result.

The managers in Companies C and F also use subjective assessment but not for the purposes of incentives. The interviewee in Company C stated that the unofficial ranking and rating is shared between managers in order to determine whom to pick for promotions and special or sensitive projects. Manager C assesses both the business goals and certain behavioural characteristics but the business goals take precedence over the behavioural characteristics for assessment purposes. The

interviewee in Company D said that there wasn't really a ranking and rating but that all managers are aware of who their top performers are and suggested that a ranking and rating might be performed to determine whom to promote 'by appointment, rather than by application'. The interviewee in Company F stated that there is no ranking and rating but again suggested that he knows who his top performers are. There is a subjective assessment of ten behavioural characteristics used in Company F but it is used purely for developmental purposes. This results in the following observation:

- For most of the participants, assessing performance involves a great deal of subjectivity, even within the formal appraisal systems.

The observations discussed in the above paragraphs are listed below and their implications are then discussed:

- The performance management system is viewed, somewhat narrowly, only as an appraisal system in the participating organizations. (All participants, pp. 188-189)
- The participating organizations have recognized the importance of the performance management system, they have underestimated their complexity. (All participants, p. 189-191)
- The importance and complexity of performance measures has not been recognized in the participating organizations. (All participants, p. 189-191)
- There are Result and Determinant objectives in the participating organizations, the Result objectives are formally documented within the appraisal system but the determinant objectives are documented only by the managers. (All participants, pp. 191-193)
- The participating organizations don't seem to care, within reason, how objectives are achieved. (Managers B1 and D, pp. 192-193)
- In the participating organizations, the result objectives at the operational level change little from year to year. (All participants, p. 193)

- The objectives communicated through the appraisal system, which is the primary method to communicate objectives, do not always drive the day-to-day activities in the participating organizations and cost-related objectives take precedence in most cases. (All participants, pp. 193-194)
- In the absence of formal methods, how well the determinant objectives are developed will depend on the participating manager's abilities. (All participants, p. 194)
- The participating managers' styles have an influence on how objectives are set, on how performance is measured and in particular on how performance appraisals are executed and rewards given. (All participants, p. 195)
- Being closely involved in the operations of their groups helps the participating managers to better manage their groups. (All participants, pp. 195-196)
- The participating organizations' cultures have an influence on how performance is assessed and on how rewards are given. (Participants B, C and E, pp. 196-197)
- The participating managers and organizations tend to measure what is easily measurable and shy away from measuring things which are difficult to measure. (Manager B2 and D, pp. 196-197)
- For most of the participants, assessing performance involves a great deal of subjectivity, even within the formal appraisal systems. (Companies A, B and D, pp. 197-198)

Many of these observations are not specific to the operational level but to the participating organizations and their performance management systems in general, as such they lend support to the findings of other authors. The implications of these findings, as they relate specifically to the operational level, are discussed in the next section.



### **7.3 The implications of the observations from the empirical data**

This section revisits the observations from Chapters Five and Six and then adds the observations and conclusions from this chapter to the discussion, to form a set of conclusions and observations that are specific to the operational level. Finally, this section answers Research Question 5, whether the existing methods to develop performance measurement and management systems are suitable for use at the operational level.

The discussion in Chapter 5 was concerned with the operational level characteristics and identified that operational level managers operate in fast-moving and rapidly changing environments. Their work is frequently interrupted by issues that require immediate and rapid decision making, as a result their priorities can change at any time. They are forced to have a short-term focus and they rely on real-time information to make their decisions. They work on multiple projects or activities at the same time and most projects and activities are completed in a short timeframe. This indicates that while the result objectives do not change much from year to year the determinant objectives change frequently, as projects are identified, implemented and completed and then new projects are identified.

Operational level managers spend a great deal of time in meetings however they do not appear to use these meetings as effectively or efficiently as they could. In addition, it was identified that operational level managers are caught in a 'catch 22' situation, namely they don't have enough time to dedicate to planning because they don't do enough planning. All of the interviewees expressed a preference for guidelines. The reasons given were, in general, that the environment at the operational level is so dynamic that only guidelines are appropriate.

Chapter 6 examined performance management at the operational level in more detail and identified that the absence of formal methods makes the managers' abilities critical in the development of objectives and measures. This observation suggests the need for operational level managers to use structured methods to develop objectives and measures. The observations discussed in the previous sections of this

chapter all add further support to the conclusion that the participating organizations, and possibly many other organizations, need formal and structured methods to help them to develop effective determinant objectives and measures, as efficiently as possible.

This chapter identified that while the importance of performance management has been recognized the systems in the participating organizations are not yet sophisticated enough to include methods to help operational level managers develop objectives for their groups. As a result, the participating managers' styles and abilities, along with the prevailing organizational culture have a determining influence on how objectives are set and performance assessed and rewarded. The use of formal methods to develop objectives and measures would reduce this dependence on the manager, as well as offering the chance to reduce the amount of subjectivity and offering a chance to measure what is difficult to measure.

The main findings of this research that relate specifically to performance management at the operational level are:

1. The participating operational level managers would benefit from having formal, structured methods because using formal methods would reduce the dependence on the managers' abilities, would reduce the amount of subjectivity on appraising individuals and would help to measure what is currently felt to be too difficult to measure.
2. The activities that the participating operational level managers are involved in, and must develop objectives and measures for, change frequently.
3. The participating operational level managers don't have much time for planning.
4. The participating operational level managers expressed a preference for a set of guidelines.

To address the final research question, namely whether methods developed at the strategic level are appropriate for use at the operational level, findings two, three and

four are pivotal. The second finding, that determinant objectives, projects and activities change frequently at the operational level is particularly important. If the objectives change frequently, then the method used to set the objectives and measures will be used frequently. Given that the objectives and measures could change on a weekly basis it is not appropriate that the method used to develop the objectives and measures should take days or weeks to complete. In addition, operational level managers don't have much time to devote to long planning sessions because they are frequently interrupted and must immediately investigate situations to make rapid decisions. Finally, operational level managers expressed a preference for guidelines, suggesting that they are more likely to adopt guidelines than any other method.

Unfortunately, the existing methods to develop objectives and measures impose a considerable burden in terms of the amount of time required. The author was unable to find any examples describing the development of performance measurement systems at the operational level, however, there are descriptions of systems being developed at the strategic level. Bourne et al. (2000) suggest that implementing a new PMS at the higher organizational levels will take up to two years to get to the point where the measures are being used on a daily basis. Kaplan and Norton (1996b) quoted an insurance company that developed its balanced scorecard over a 30 month period, and that was after having developed a scorecard at the strategic level to help create a new vision for the organization.

A timescale of up to two years may be acceptable at the upper levels of organizations where the timescales for achieving objectives are measured in years. At the lower levels of organizations the timescales are measured in months, weeks or even days in some cases (Beischel and Smith 1991), so relying on a method to develop performance measures that takes months or years to complete is obviously inappropriate.

Developing a set of guidelines for use at the operational level represents a unique situation, which presents some inherent dangers. Firstly, suggesting the use of

guidelines might be seen to imply that translating objectives at one organizational level into more specific objectives at a lower level, and then developing complimentary performance measures, is a trivial activity. It is not a trivial activity and it is not the intention of the author to suggest otherwise. The participating operational level managers spend a great deal of time in meetings, discussing how to achieve their objectives. However, the empirical evidence suggests that these meetings are not efficient because formal methods are not used during the meetings to guide the managers' decision making. There is therefore, clearly a need for the participating managers to use structured methods to develop objectives and measures. However, all of the interviewees expressed a preference for a set of guidelines and it is likely that many other operational level managers would also resist the imposition of any method except guidelines. It is to be hoped though, that the benefits of using a structured method would quickly become apparent and might lead to a desire to use more structured methods, such as that described by Neely et al. (2002).

Another inherent danger in this approach is that if the objectives that have been set for the operational level manager are not consistent with the organization's strategy, then the manager will be working in a possibly counter-productive direction. Giving the operational level manager methods to make them more effective will cause them to diverge even further from the organization's strategy. This does not seem to be a concern for the participants as they do not communicate the organization's strategy, nonetheless it is a concern for the author. This danger is lessened considerably by the fact that the objectives at the operational level do not seem to change much from year to year, instead the targets change. This being the case, the operational level managers are not likely to stray too far from the general strategic direction.

As a result of the above discussion, the author has concluded that the existing methods to develop objectives and performance measures are too cumbersome and time consuming to be used at the operational level. There is, therefore, a clear need to develop more appropriate methods for use at the operational level. Much of the

remainder of this thesis describes the development of a set of guidelines and presents an assessment of the guidelines by the participating managers.

#### **7.4 Choosing a method on which to base the guidelines**

The discussion in the previous sections, and the previous chapters, identified the need to develop a set of guidelines that will help operational level managers to develop objectives and performance measures. While guidelines are not the best possible approach in general, the empirical evidence suggests that they are the most appropriate for use at the operational level and are most likely to be accepted by operational level managers.

The next issue to resolve is that of the actual guidelines themselves. As there are numerous methods described in the literature there seems little need to 're-invent the wheel', as a result the author's first preference would be to base the guidelines on an existing method.

A brief review of the literature reveals that there are a great many potential methods from which to choose, as evidenced by the discussions in sections 2.4 and 4.4. Unfortunately, as Neely (2000) pointed out few of the methods described in the literature offer '...specific, actionable advice'. As identified earlier, the manager's abilities are critical in achieving objectives when there is a lack of guidance provided by the performance management system. A lack of specific, actionable advice in any method will not help managers, at any level of an organization, to overcome the inconsistencies that already exist, either between managers or from one period to the next. Appendix 4 describes eight of the more commonly referenced methods in the literature, these methods, listed below, are assessed in the following paragraphs.

- The Balanced Scorecard (BSC) developed by Kaplan and Norton (1992, 1996),
- The 'Cambridge' Process (Neely et al. 1995, 1996, 2000, 2002),
- The Integrated Performance Measurement System (IPMS) reference model (Bititci et al., 1997)

- The Performance Pyramid (Lynch and Cross 1995)
- EFQM Model ([www.efqm.org](http://www.efqm.org))
- Hoshin Kanri (Witcher and Butterworth 1996, 1999 )
- Results and Determinants matrix (Brignall et al. 1991)
- Operational Performance Measurement (Kaydos 1999)

The most widely adopted method in practice is the Balanced Scorecard of Kaplan and Norton. The authors claim that since the BSC was updated to include strategy maps, that it can now be used as a ‘management system’ (Kaplan and Norton 2001a, 2001b and 2001c). The BSC has as its starting point the organization’s strategy but assumes that a strategy exists as it does not help to develop a strategy. The strategy maps are used to specify the critical elements of the organization and how they contribute to the strategy, in terms of each of the four perspectives (Financial, Customer, Internal Business Processes and Learning/Growth). The objectives are subsequently tracked with the use of the BSC.

The BSC has been criticized for not including other perspectives, such as a ‘Customer’ perspective (Neely 1995) and for lacking implementational detail (Hudson 2001, p. 51). The most damning criticism, from the perspective of this research is that the BSC does not readily connect the strategic level with the operational level (Ballantine and Brignall, 1994).

The creators of the BSC suggest that the BSC cannot be implemented at every level of an organization, pointing out that whether a function or department should have a balanced scorecard depends on whether or not it has ‘...a mission, a strategy, customers (internal or external), and internal processes that enable it to accomplish its mission and strategy’ (Kaplan and Norton 1996, p. 36). Kaplan and Norton (2001c, p. 103) also identified what they referred to as KPI scorecards and suggested that these are a lesser entity than the true strategic balanced scorecard. They went on to say that ‘Unless the link to strategy has been clearly thought through, however, the KPI scorecard can be a dangerous illusion.’

McAdam (2000) in discussing the implementation of the BSC in small- and medium-sized enterprises (SMEs) found that the BSC is too mechanistic and inflexible for use in SMEs. The operational level of organizations share some characteristics with SMEs, in particular, the operational level was described as 'fast-moving' and 'fluid' by the interviewees. It is unlikely then that the BSC would be suitable for use at the operational level. Interestingly, Witcher and Butterworth (1999) suggest that the balanced scorecard is based on the principles of Hoshin Kanri. However, they point out that the BSC does not have an organizing framework to deploy the strategic level objectives to the everyday, operational level.

The Cambridge method was found to provide a comprehensive structure for developing performance measures at both the strategic and operational levels (Hudson 2001a, p. 54). Hudson (2001b) also found that the Cambridge method was not entirely appropriate for use in small- and medium-sized enterprises (SMEs) because of the nature of SMEs. Despite being the most comprehensive method available, it has not been widely adopted (Neely et al. 2000), and of those cases where it has been adopted the complete implementation of the method was limited. This might be as a result of the desire for easy to implement, off the shelf solutions, as Neely et al. (2000) pointed out. There is some support for this from the empirical evidence, in that all of the interviewees expressed a desire for guidelines. As Bourne et al. (2000) suggested the low implementation rate of the Cambridge method might be associated with the length of time required to complete the process. Bourne et al. (2000) reported that the implementation of the process took four months to develop the measures and up to another 13 months to get to the point where the measures were regularly measured, reviewed and displayed. As a result of these two criticisms this method, in its current format, is unsuitable for use at the operational level.

The IPMS reference model suffers from the same problem as the other frameworks that are available in the literature. That is, it suggests what a performance measurement system should consist of, and achieve, but does not provide sufficient implementational detail on how it may be achieved (Neely 2000, Bititci et al. 2000). However, the IPMS reference model goes further than describing a mere

performance measurement system, the reference model describes a complete performance management system. The audit method associated with the reference model allows users to audit their existing performance management and measurement systems and to identify the gaps between the reference model and the actual performance measurement system. This approach, unlike others, is therefore very specific about identifying the aspects of the performance management and measurement systems that need to be addressed.

The Performance Pyramid (Lynch and Cross 1995) has the advantage that it provides an explicit deployment path from the strategic level, through the business units to the operational level and specifically addresses customer satisfaction, flexibility and productivity. It considers quality and delivery as the main components of customer satisfaction with some impact on delivery by the flexibility of the organization. Cycle time and waste are considered to be the two main components of productivity. The main problem with this method, as with many others, is that it does not provide specific guidance on how to achieve the many suggestions that it makes.

The EFQM (European Foundation for Quality Management) model for business excellence also suffers from a lack of specific guidance. The model suggests areas that are important for an 'excellent' organization but recognizes that there are many potential ways to achieve 'sustained excellence'. It does not therefore claim to be a prescriptive method.

Hoshin Kanri is specifically concerned with communicating the 'vital few' strategic objectives to the operational level. The catchball process is particularly useful as a method to achieve buy-in from the employees at the operational level. Achieving buy-in was expressed as particularly important to the interviewee in Company F. Unfortunately, the 'vital few' of Hoshin Kanri are in addition to the everyday objectives and are associated with making a breakthrough change in strategic direction. The methods associated with Hoshin Kanri, if sufficiently well documented, could potentially be used to implement and measure the everyday objectives, however this is not the purpose of Hoshin Kanri.



Among the benefits of the Results and Determinants model is that it recognizes that there are many potential contributions to competitive and financial success. It also proposes the use of the input-process-output model, which encourages cross-functional cooperation between groups. However, this method also lacks sufficient implementational detail to make it readily usable as the basis for a set of guidelines.

The Operations Performance Measurement method (Kaydos 1999) contains much useful advice, in particular it offers a more detailed view of organizations and their components as processes. It also considers the difficulties in measuring services, as compared with measuring manufacturing operations. As most of the interviewees in this research are involved in providing a service, either to internal customers (the interviewees in Company B) or selling and supporting products (the interviewees in Companies C and D), this method is of particular interest to this research. However, as with most of the other methods this approach does not provide sufficient implementational detail.

The two main criteria, from the author's perspective, for a method on which to base the guidelines are:

1. The method should specifically address the operational level;
2. The method should be sufficiently well developed to offer practical implementation advice.

Of the methods described in Appendix 4 and assessed above, only three specifically address the operational level. These are the Cambridge process (Neely et al. 2002), Hoshin Kanri (Witcher and Butterworth 1999) and Operational Performance Measurement (Kaydos 1999). Of these methods, only the Cambridge process is available as a 'ready to use' method, presented in workbook format with worksheets and specific implementational guidance, making it the preferred method to use as the basis for a set of guidelines.

However, there is also the question of whether the chosen method contains sufficient detail to address all of the desirable characteristics identified in Chapter 4. The Cambridge method is assessed in terms of these characteristics in Table 7.3 below.

<b>Characteristic</b>	<b>Inherent in:</b>		
	<b>Cambridge process?</b>	<b>Hoshin Kanri?</b>	<b>OPM?</b>
<b>Performance Measures</b>			
Simple and easy to understand, e.g., ratio based in preference to absolute numbers, show a trend	Yes	Potentially	Yes
Have appropriate accuracy, units of measure and levels of aggregation	Yes	Potentially	Yes
Be objective whenever possible	Yes	Yes	Potentially
Be defined with input from, and under the control of those being 'measured'	Yes	Yes	Yes
<b>The Performance Measurement System</b>			
Be accessible by every employee	Yes	Yes	Potentially
Provide downward and lateral communication of strategy, initiatives, plans, objectives and targets	Yes	Yes	Yes
Provide rapid lateral and upward communication (feedback) of actual performance against targets	Yes	Potentially	Potentially
Be capable of including cost and non-cost measures	Yes	Yes	Potentially
Facilitate an understanding of the relationship between measures (for example, by presenting and linking measures graphically)	Yes	Potentially	Yes
<b>The Performance Management System</b>			
Monitor both the internal and external environments	Yes	Potentially	Yes
Understand the relationships between the organizational units by considering the input, process and output of each	Yes	Yes	Yes

(Continued overleaf)

Encourage cross-functional interaction and communication to promote a better understanding of how units affect each other	Potentially	Yes	Yes
Define consensual objectives and measures for every level, based on the strategic objectives. Use as few objectives and measures as possible	Yes	Yes	Yes
Clearly define the data collection method and the measure calculation method	Yes	Potentially	Yes
Ensure that the objectives and measures for each unit are clear, consistent and compatible, and will not promote dysfunctional behaviour between the units	Yes	Potentially	Potentially
Identify and eliminate roadblocks to the successful implementation of the objectives and measures	Yes	Potentially	Potentially
Use the performance measurement system to openly communicate strategy, initiatives, objectives and targets downwards	Yes	Potentially	Yes
Ensure the results of the measurement are fed back to those executing the actions as well as to their superiors	Yes	Yes	Yes
Empower employees by promoting autonomy, as far as possible, in determining corrective actions	Potentially	Yes	Yes
Use the measurement results to stimulate continuous improvement and organizational learning	Potentially	Yes	Yes
Be aware of the informal measurement system, to counter it tie rewards to the formal system	Potentially	Potentially	Potentially
Periodically reevaluate the objectives and measures, delete obsolete measures	Yes	Yes	Yes

**Table 7.3 - Assessment of the Cambridge process against the desirable characteristics**

As can be seen from Table 7.3, more of the desirable characteristics are inherent in the Cambridge process than either Hoshin Kanri (Witcher and Butterworth 1999) or Operational Performance Measurement (Kaydos 1999). As neither Hoshin Kanri nor Operational Performance Measurement (OPM) are available in workbook format, it was more difficult to assess them against the desirable characteristics, than it was to assess the Cambridge method. To assess both Hoshin Kanri and OPM, the available literature was read and if a specific reference was made to one of the desirable characteristics, then the characteristic was considered to be inherent in that method. If a specific reference was not made to the desirable characteristic then the characteristic could potentially be promoted using this method, but would depend on the facilitator. Therefore the method scored a 'potentially' for that characteristic.

For the Cambridge method, there were a total of four characteristics for which the process scored a 'potentially'. These are listed and discussed below.

**Encourage cross-functional interaction and communication to promote a better understanding of how units affect each other.** Achieving this characteristic will depend on how the teams are chosen, the Cambridge method does not specifically require cross-functional teams for Phase 2 of the process, it does however include a brainstorming session that would likely identify inter-departmental issues.

**Empower employees by promoting autonomy, as far as possible, in determining corrective actions.** Again this is not an explicit requirement of the process and will depend on the prevailing culture in the organization, or the style of the manager.

**Use the measurement results to stimulate continuous improvement and organizational learning.** Achieving this characteristic is again outside the control of the process and will depend on how the measurement results are used, which in turn depends on the prevailing culture or manager style.

**Be aware of the informal system, to counter it tie rewards to the formal system.** The workbook offers an exercise to identify barriers to implementation which would

likely identify possible issues with informal measures, if there was an environment of open and honest communication. This is also dependent on the culture in the organization. Linking rewards to the objectives and measures developed through this process would certainly be sensible but is outside the control of the actual method.

Based on the above discussion, the Cambridge method was chosen to use as the basis for the guidelines for two reasons. Firstly, the Cambridge method addresses more of the desirable characteristics than both Hoshin Kanri (Witcher and Butterworth 1999) and Operational Performance Measurement (Kaydos 1999). Those desirable characteristics that the Cambridge method does not specifically support were found to be largely outside the control of the process. Secondly, for purely pragmatic reasons the Cambridge method is preferred because it is available in workbook format, which readily lends itself to application.

## **7.5 Conclusion**

This chapter began by conducting a general analysis of the empirical data and identified a number of common themes that emerged from the cross case analysis.

The observed themes are:

- The performance management system is viewed, somewhat narrowly, only as an appraisal system in the participating organizations. (All participants, pp. 188-189)
- The participating organizations have recognized the importance of the performance management system, they have underestimated their complexity. (All participants, p. 189-191)
- The importance and complexity of performance measures has not been recognized in the participating organizations. (All participants, p. 189-191)
- There are Result and Determinant objectives in the participating organizations, the Result objectives are formally documented within the appraisal system but the determinant objectives are documented only by the managers. (All participants, pp. 191-193)

- The participating organizations don't seem to care, within reason, how objectives are achieved. (Managers B1 and D, pp. 192-193)
- In the participating organizations, the result objectives at the operational level change little from year to year. (All participants, p. 193)
- The objectives communicated through the appraisal system, which is the primary method to communicate objectives, do not always drive the day-to-day activities in the participating organizations and cost-related objectives take precedence in most cases. (All participants, pp. 193-194)
- In the absence of formal methods, how well the determinant objectives are developed will depend on the participating manager's abilities. (All participants, p. 194)
- The participating managers' styles have an influence on how objectives are set, on how performance is measured and in particular on how performance appraisals are executed and rewards given. (All participants, p. 195)
- Being closely involved in the operations of their groups helps the participating managers to better manage their groups. (All participants, pp. 195-196)
- The participating organizations' cultures have an influence on how performance is assessed and on how rewards are given. (Participants B, C and E, pp. 196-197)
- The participating managers and organizations tend to measure what is easily measurable and shy away from measuring things which are difficult to measure. (Manager B2 and D, pp. 196-197)
- For most of the participants, assessing performance involves a great deal of subjectivity, even within the formal appraisal systems. (Companies A, B and D, pp. 197-198)

These general observations were combined with the findings of Chapters Five and Six, and then summarized into the following four findings that particularly impact the design of a method to help operational level managers to develop objectives and measures:

1. The participating operational level managers would benefit from having formal, structured methods because using formal methods would reduce the dependence on the managers' abilities, would reduce the amount of subjectivity on appraising individuals and would help to measure what is currently felt to be too difficult to measure.
2. The activities that the participating operational level managers are involved in, and must develop objectives and measures for, change frequently.
3. The participating operational level managers don't have much time for planning.
4. The participating operational level managers expressed a preference for a set of guidelines.

The chapter then went on to examine and assess eight of the most commonly referenced methods in the literature for developing performance measures. These methods were initially assessed against the specific criteria that they provide specific implementational advice and that they at least consider implementation at the operational level. Of the eight methods described, only three specifically consider the operational level, these are:

1. The Cambridge process (Neely et al. 2002);
2. Hoshin Kanri (Witcher and Butterworth 1999); and
3. Operational Performance Measurement (Kaydos 1999).

These three methods were next assessed from the pragmatic perspective of whether or not they were sufficiently well developed to be available in a 'ready to use' format. Only the Cambridge process is available in such a format. All three methods were evaluated against the desirable attributes identified in Chapter 4, the Cambridge method was found to inherently encourage more of the desirable characteristics than either Hoshin Kanri or the Operational Performance Measurement method. Of the four that the Cambridge process does not specifically address, three of these were found to depend on the culture of the organization.

The next chapter describes the Neely et al. method (2002) in more detail, develops a set of guidelines based on that method and then describes the testing of the guidelines by the interviewees.



## **Chapter Eight**

### **Developing and Assessing a Set of Guidelines**

#### **8.1 Introduction**

The previous chapter identified the Cambridge process (Neely et al. 2002) as being the most suitable method on which to base a set of guidelines. This chapter describes the Cambridge process in greater detail, develops a set of guidelines based on that method and describes the evaluation of the method by the participants.

#### **8.2 Developing a set of guidelines**

This section examines the Cambridge process (Neely et al. 2002) in more detail to identify the key activities and characteristics, in order to assign these to a set of guidelines. In addition, the desirable characteristics identified in Chapter 4 will be re-examined for the same purpose.

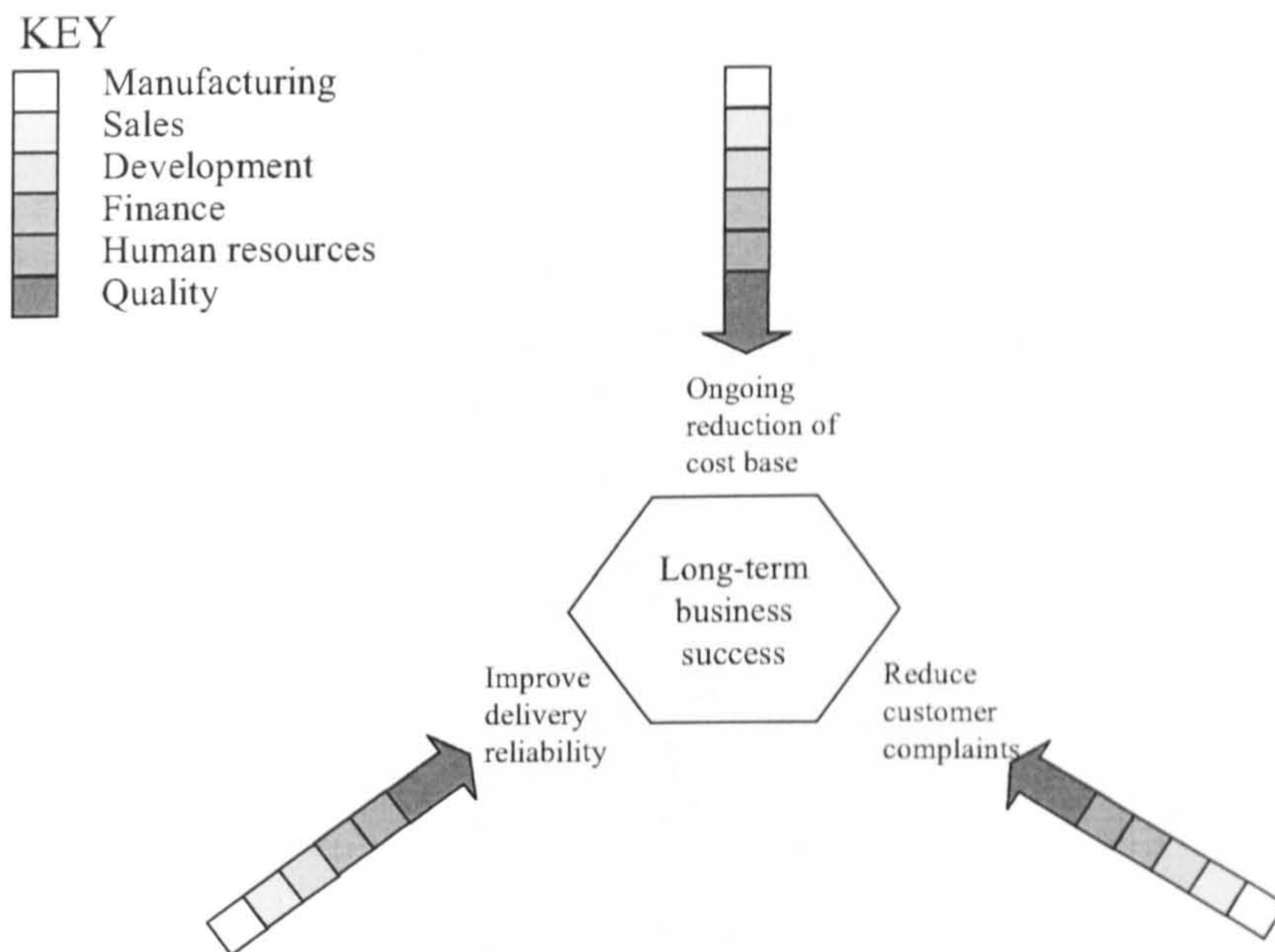
The part of the Cambridge process that is most appropriate for this research is the five steps contained in Phase Two. Phase Two is designed to communicate the top-level objectives throughout the organization by working with key business teams, such as sales or manufacturing cells. Each of the five steps are described in the following paragraphs.

##### **8.2.1 Step One, Phase Two of the Cambridge Process**

The first step is to take the top-level objectives identified in Phase One of the process and to identify how each business team can contribute to the top-level objectives. A polar fishbone chart is used to show how the teams in each business function contribute to the main objectives. An example is shown in Figure 8.1, below. The

team brainstorms ideas on what they can do, to help achieve the top-level objectives. The ideas are assigned to the top-level objective that they will have most impact on and are assigned to the functional area that is most involved in the suggested activity or initiative. When the team has run out of ideas on what activities can be performed to help achieve the top-level objectives the team is then asked for ideas on how each activity might be measured.

The output of this step is a list of activities and initiatives, with potential associated performance measures, that will contribute to the top-level objectives.



**Figure 8.1 - A polar fishbone diagram**  
(Neely et al. 2002, p. 102)

### 8.2.2 Step Two, Phase Two of the Cambridge Process

The second step in Phase Two of the process is to prioritize and evaluate the activities identified in the first step. Each team member is asked to classify all of the activities and initiatives identified in the previous step as either 'must do' or 'nice to do'. The top ten 'must do' activities are then combined into a single list and prioritized according to how frequently each activity or initiative appeared on the combined list. Each activity or initiative is then evaluated in terms of the impact that it will have on each of the top-level objectives. A five-level scoring system is used (Neely et al. 2002, p. 112):

Does this activity have:

- ++ a large positive effect on a business objective?
- + a positive effect on a business objective?
- 0 no discernible effect on a business objective?
- a negative effect on a business objective?
- a large negative effect on a business objective?

The evaluation of each activity or initiative is recorded on a worksheet such as that shown in Table 8.1, below.

Activity	Business Objectives				Develop Measure
	BO #1	BO #2	BO #3	BO #n	
Activity #1	++	0	+	0	Donald
Activity #2	0	++	0	++	Mickey
Activity #3	0	0	++	+	Goofy
Activity #4	+	0	++	0	Jack
Activity #5	++	0	-	+	Jill
Activity #6	++	0	0	++	Thomas

**Table 8.1 - Evaluation worksheet for activities and initiatives**

When a consensus has been reached on the evaluation, a performance measure must be developed for each activity or initiative. A specific individual should be assigned to develop a measure for each activity.

### 8.2.3 Step Three, Phase Two of the Cambridge Process

The third step is to fully develop the performance measures for each activity or initiative. Each measure should show actual performance in relation to the target and how quickly progress towards the target is being made, as well as being assessed to ensure that it stimulates appropriate behaviour. Each measure must address each of the items in Table 8.2, below. In the previous step a specific individual was nominated to develop each measure. The person responsible for each measure should complete a copy of the table and submit it to the facilitator or manager. The manager should then review each measure to ensure that it has been fully developed and that there are no gaps.

Measure	The title of the measure. A good title is self-explanatory, avoids jargon and explains what the measure is and why it is important.
Purpose	If a measure has no purpose then why introduce it? Example purposes: 1. To enable us to monitor the rate of improvement thereby driving down the total cost. 2. To ensure that ultimately all delayed orders are eliminated. 3. To stimulate improvement in our supplier's delivery performance. 4. To ensure that the new product introduction lead time is continually reduced
Relates to	Identify the business objectives that the measure relates to. As with 'Purpose', if the measure being considered does not relate to any business objective then why introduce it?
Target	Targets specify the levels of performance we need to achieve and the timescales within which we need to achieve them. Example targets: 1. X% improvement year on year. 2. Y% reduction during the next 12 months. 3. Achieve% delivery performance (on-time, in full) by the end of next year.
Formula	How we measure something will affect the way people behave. An appropriately defined formula should drive people towards good business practice. Beware of any formula that might stimulate behaviour we do not want!
	(Continued overleaf)

Frequency	The frequency with which performance should be recorded and reported is a function of the importance of the measure and the volume of data available.
Who measures?	This box should identify the person who is to collect and report the data.
Source of data	This box should specify where to get the data from. If we want to see how performance changes over time, then we must get our data from the same source each time.
Who acts on the data?	This box should identify the person who is going to act on the data.
What do they do?	Without some action here, the measure is pointless. We may not be able to detail the action to be taken if the performance proves either acceptable or unacceptable as the detail may depend on the context at the time. We can define in general the management process to be followed in the case of acceptable or unacceptable performance. Examples: 1. Set up a continuous improvement group to identify reasons for poor performance and to make recommendations as to how it can be improved. 2. Publish all performance data and an executive summary on the shop floor as a way of demonstrating commitment to empowerment. 3. Identify commonly occurring problems. 4. Set up a review team, consisting of Sales, Development and Manufacturing personnel to establish whether alternative materials can be used.
Notes and comments	Any specific features, outstanding issues, specific problems, to do with the measure.
Date/issue number	The date and issue number of the record sheet.

**Table 8.2 - Performance Measure Record Sheet**  
(Neely et al. 2002, p. 120)

#### **8.2.4 Step Four, Phase Two of the Cambridge Process**

The fourth step involves all members of the group convening to review and agree upon the fully developed performance measures, setting a schedule to review performance and then attempting to identify any barriers to the implementation of the measures. Every team member should be satisfied with all of the measures to ensure that they are fully embraced. The measures should be checked for compatibility with the current incentive system and compared with existing measures to determine

whether any conflict might occur. In addition, each measure should be reviewed by the entire team and assessed against the following criteria:

Truth	Is the measure measuring what it is supposed to measure?
Focus	Is the measure measuring only what it is meant to measure?
Consistency	Is the measure consistent whenever, and by whomever it is measured?
Clarity	Are the results open to ambiguous interpretation?
Access	Can the data be readily communicated and easily understood?
'So what?'	Can, and will, the measure be acted upon?
Cost	How expensive is it to collect, collate and analyze the data?
Timeliness	Can the data be collected and analyzed quickly enough?
Gaming	Will the measure encourage undesirable behaviour?

This encourages a complete analysis of every measure and helps to ensure complete agreement on each one. In the event that some measures need further development, additional measure review meetings can be scheduled for a later date.

The next activity is to establish a process to track the implementation of each measure. There are four stages in implementing a performance measure:

1. Design the measure
2. Review and accept the measure
3. Establish the data collection process(es)
4. Use the measure

A worksheet is provided that can be used to track the implementation progress of each measure. The final activity is to identify any potential barriers to the implementation of the measures. Each team member is asked to identify three-to-five potential barriers to implementing each measure. Typical barriers include conflict with the existing incentive system or a lack of resources. The team should also identify potential ways of making the implementation of the measure easier. The team should then brainstorm what can be done to eliminate the barriers.

### **8.2.5 Step Five, Phase Two of the Cambridge Process**

The final step is to actually begin to use the performance measures to drive improvement. This step involves agreeing on an agenda to review performance, agreeing on a mechanism to review the performance measurement system and conducting successful performance reviews.

Deciding on the agenda for performance reviews includes deciding how performance will be reviewed; how frequently it will be reviewed; who will be responsible for organizing the reviews; who will be involved; what will be on the agenda; and, when the first review will take place. One of the most important aspects of this review process is stimulating corrective action plans. Those responsible for the individual measures should be tasked with this responsibility.

The performance measurement system should also be reviewed to ensure that the measures are valid, if measures are no longer valid or attached to a specific objective then they should be deleted.

The final activity is to review actual performance towards the business objectives. If performance is not on target then corrective actions need to be taken. This activity can be dominated by finger-pointing or providing excuses, however this should not be allowed to happen. What is really important from this activity is that corrective action plans need to be developed.

### **8.2.6 Assessment of the Cambridge process for use at the operational level**

The findings from Chapter Seven that are relevant to the methods used at the operational level are:

1. Operational level managers need formal, structured methods.
2. The activities that operational level managers are involved in, and must develop objectives and measures for, change frequently.
3. Operational level managers don't have much time for planning.
4. Operational level managers want a set of guidelines.

While the Cambridge process is undoubtedly thorough, it does not reflect how the operational level actually works. In theory, operational level managers should spend time on the activities described above, however, in reality they do not and according to the empirical data they are not prepared to do so unless they are mandated to do so by their managers.

Bourne (2000, 2002) described the application of the first phase of the Cambridge process, to develop top-level measures, in six companies. The initial development of objectives and measures took between 15 and 26 weeks. The implementation of these top-level measures subsequently took between nine and 13 months. There is no evidence to suggest how long the second phase of the Cambridge process might take, however, given that each of the five steps might require multiple workshops and that each workshop requires a certain amount of preparation would suggest that it is not inconceivable that phase two might require several weeks, at a minimum. As a result, the Cambridge process is deemed to be inappropriate, in its current format, for use at the operational levels, and a much simpler and quicker version is needed.

### **8.3 Modifying the Cambridge method**

As identified in the previous section, the Cambridge method (Neely et al. 2002) is unsuitable for use, in its current format, at the operational level. This section will discuss the method and the operational level environment to identify the aspects of the Cambridge process that can be shortened or eliminated.

#### **8.3.1 Modified Step One of Phase Two of the Cambridge process**

For the purposes of this research, the result, or 'top-level', objectives would be those that have been assigned to the manager and/or his group. As identified earlier, these objectives change little from one year to the next. Therefore, most members of the group should be familiar with the objectives. As a first step the manager should prioritize all of the objectives for which he is responsible, this prioritized list can then be sent to all members of the group.



The first guideline then is for the manager to prioritize all of his, or the group's objectives. The second guideline is to communicate the prioritized list to all members of the group along with a request for at least one suggestion per objective from each group member, on how performance in terms of the objectives can be improved. The suggestions can be for improvements in the current activities or for new ways of performing the activities.

**Guidelines:**

- #1. List and prioritize all of the group's or manager's objectives
- #2. Communicate all of the objectives to every group member and ask for at least one suggestion per objective, from every group member, on how to improve performance in terms of each objective.

**8.3.2 Modified Step Two of Phase Two of the Cambridge process**

The second step is prioritizing and evaluating the activities or initiatives identified by the group. When the manager has received input from every group member, he or she should prioritize the list of suggested activities as the list could contain more activities than can be implemented immediately. The manager should determine how many activities or initiatives can be undertaken immediately and this number of activities or initiatives should be selected to work with. Each of the selected activities or initiatives should then be assessed for the impact each will have on all of the group's or manager's objectives. Some of the activities or initiatives might have a negative impact on one or more of the objectives, in which case it's application should be carefully considered. To perform the evaluation of each activity or initiative, Form 1 can be used. Form 1 is a copy of Form 12 from Neely et al. (2002, p. 112), Form 1 can be found in Appendix 5.

The completed list should be sent back to all of the group members to review and to see if they have anything additional to add. Any relevant comments can be integrated into the prioritized list and evaluation. An individual should be assigned responsibility for every activity or initiative, this can be done by asking for volunteers or by assigning the most appropriate individual.

#### **Guidelines:**

- #3. Using Form 1, prioritize the suggested activities/initiatives according to the contribution you think they will have on the business objectives.
- #4. Evaluate the impact of each suggested activity/initiative on all of the objectives.
- #5. Assign a specific individual who will be responsible for each activity or initiative.

#### **8.3.3 Modified Step Three of Phase Two of the Cambridge process**

This step involves developing performance measures for each activity or initiative that was identified as immediately implementable. The person responsible for each activity should be tasked to develop the measure and to complete Form 2 for each measure. Form 2 is a copy of Form 6 from Neely et al. (2002, p. 120) and is available in Appendix 5. When the measures have been fully developed, the manager should review each one against the criteria listed on the Performance Measure Criteria check sheet, a copy of which is contained in Appendix 5. This check sheet is based on the criteria listed by Neely et al. (2002, p. 122).

#### **Guidelines:**

- #6. Ask the person responsible for each activity or initiative to identify a suitable measure. To achieve this Form 2 should be completed for each measure.
- #7. Assess every measure against the criteria listed on the Performance Measure Criteria check sheet.

#### **8.3.4 Modified Step Four of Phase Two of the Cambridge process**

This step involves a final review of the activities and measures before they are implemented. The final list of activities or initiatives and measures should again be sent out to every member of the group with the intention that they review the activities and attempt to identify potential barriers to implementation or factors that would make implementation easier.

Every group member should be asked for suggestions that would prevent each activity or initiative from being successful, as well as suggestions to overcome the barriers. The same should be done for each measure. The replies from the group members can be used to populate Forms 3 and 4. These forms are based on Form 9 from Neely et al. (2002, p. 133).

**Guidelines:**

- #8. Ask every group member to perform a final review of each activity/initiative and performance measure.
- #9. Ask each group member to suggest factors that would either act to prevent or to help the implementation of the activities/initiatives and performance measures.

**8.3.5 Modified Step Five of Phase Two of the Cambridge process**

The final step is to review actual performance against the group's objectives and to review the performance measures. The activities or initiatives and performance measures that were developed in steps one to four are all determinants, the performance of the group, and the manager, is measured against the group's objectives, and not against the newly developed activities. If the manager were wise, he or she would choose to appraise the group members against the new performance measures and to assign rewards on this basis. This would be likely to happen in, for example, companies C and D but is unlikely to happen in companies B and F.

**Guidelines:**

- #10. Perform a periodic review of both the performance of the activity/initiative and the performance measures.
- #11. Immediately develop and implement corrective action plans for activities/initiatives that are not having the desired impact on the group objectives.
- #12. Immediately develop and implement a solution for any problems identified during the use of the performance measures.

### **8.3.6 The resulting guidelines**

The resulting list of 12 guidelines is shown below.

- #1. List and prioritize all of the group's or manager's objectives**
- #2. Communicate all of the objectives to every group member and ask for at least one suggestion per objective, from every group member, on how to improve performance in terms of each objective.**
- #3. Using Form 1, prioritize the suggested activities/initiatives according to the impact you think they will have on the business objectives. Decide which activities or initiatives can be implemented immediately.**
- #4. Evaluate the impact of each suggested activity/initiative on all of the objectives.**
- #5. Assign a specific individual who will be responsible for each activity or initiative.**
- #6. Ask the person responsible for each activity or initiative to identify a suitable measure. To achieve this Form 2 should be completed for each measure.**
- #7. Assess every measure against the criteria listed on the Performance Measure Criteria check sheet.**
- #8. Ask every group member to perform a final review of each activity/initiative and performance measure.**
- #9. Ask each group member to suggest factors that would either act to prevent or to help the implementation of the activities/initiatives and performance measures.**
- #10. Perform a periodic review of both the performance of the activity/initiative and the performance measures.**
- #11. Immediately develop and implement corrective action plans for activities/initiatives that are not having the desired impact on the group objectives.**
- #12. Immediately develop and implement a solution for any problems identified during the use of the performance measures.**

These guidelines are in effect statements of the activities that take place during each of the five steps in Phase Two of the Cambridge process. As such they are not entirely suitable for use at the operation level. Each guideline is now assessed in light of the empirical evidence, with the intention of eliminating any guidelines that would be deemed unnecessary by the interviewees.

The first guideline requires that the manager list and prioritize either his/her personal objectives, or the objectives of his/her group, as appropriate. The empirical evidence showed that, in general, the managers had the same set of objectives as their groups. However, in some cases the managers had additional personal objectives given to them by their managers. It would be left to the manager's discretion and judgment to determine whether to include their personal objectives in the list. Aside from this observation, the first guideline remains intact:

- #1. List and prioritize all of the group's or manager's objectives, these will act as the top-level objectives. Prepare one copy of Form 1 for each top-level objective.

The second guideline suggests that the group members be asked to suggest potential activities or initiatives that would help to achieve the group's objectives. Ideally, every member of the manager's group would brainstorm ideas on how the activities performed within the group might be improved, or on what new activities might be introduced, to better achieve the result objectives. Unfortunately, it is not possible for most of the interviewees to get all of their group members in one place, at one time, therefore conventional brainstorming is not possible. For example, Manager B1 is responsible for equipment maintenance and has technicians spread over four shift, providing coverage 24 hours per day, seven days per week. Both managers C and D have salespeople spread over substantial geographic areas. As a result, a slightly modified format would have to be used. To accommodate such situations the group's objectives would be communicated to every member of the group, probably by email. Every group member would be asked for ideas on how to

improve the current level of performance, the importance of participation should be stressed to every member of the group.

Achieving group consensus is desirable because, as Manager F pointed out, participation results in buy-in and ownership on the part of the team members. However, as Managers B1, B2, D and F all pointed out, some individuals are not inclined to get involved in activities outside the basic functions of their role. In practice, managers have a core group of people on whom they rely to get things done and in all likelihood it is this group of key individuals who will be expected to contribute most to the process. Depending on the manager and how strongly he or she feels about every group member participating, a measure could be added that tracks participation and that could be used as part of the appraisal process. This guideline is therefore changed only slightly, and now suggests communicating the guidelines to the group members, as opposed to every group member.

In addition, it is suggested that the group members be encouraged to look outside of their own group, either for ideas on what can be done differently or for ideas on how the group can help other groups that it interacts with. These changes result in the following guideline:

- #2. Communicate all of the top-level objectives to the group members and ask for at least one suggestion per objective, from each group member, on what can be done to improve performance in terms of each top-level objective. Encourage your group members to look to other groups for both general ideas on what can be improved, or specific ideas on how to help them.

Guidelines three, four and five are considered together in this discussion as they arise from the same step. Guideline three recommends prioritizing the suggested activities or initiatives according to the contribution each will make to the business objectives. Guideline four suggests that each activity or initiative should be evaluated in terms of the impact it will have on each of the objectives and guideline five requires that a specific individual be assigned to each of the selected activities to initiatives.

When the input has been received from the group the manager should list the activities or initiatives and assess their impact on each of the business objectives. The manager should also consider which of the activities or initiatives can be implemented immediately, based on his/her knowledge of the group's resources and constraints. While a group discussion to achieve the prioritization and assessment would be desirable in an ideal world, the reality is that the manager is likely to have a better idea of the resources and constraints than the group members. Therefore it is unnecessary to get the group members involved in a discussion that might be terminated by the manager pointing out that certain activities or initiatives cannot be implemented because of a lack of resources or constraints imposed by senior management. Additionally, the manager should have sufficient knowledge of the abilities of the group members to decide who is most appropriate to work with each of the activities or initiatives.

These guidelines are therefore reduced to the following:

- #3. When a list of activities or initiatives has been compiled, evaluate and prioritize them using Worksheet 2.
  - Evaluate the impact of each suggested activity or initiative on all of the objectives. Based on available resources, decide which activities or initiatives can be implemented immediately.
  - Prioritize the activities or initiatives according to the impact they will have on the objectives and according to which can be implemented immediately. It is recommended that you choose 3 to 5 activities to work with at one time, to avoid a loss of focus.
  - Transfer the activities that will be implemented immediately to the copy of Worksheet 1 for the appropriate top-level objective.

In the author's opinion there is a significant omission at this point of the Cambridge process, in that there is not a requirement to develop objectives for the newly identified activities or initiatives. For example, in the case of Manager 2 in Company B who has an Availability goal for the group, he might choose to increase

availability by cross-training his technicians. He would therefore set a cross-training objective for some of his technicians. This objective might require that a specific number of specific activities be completed, within a certain time-frame. Consequently, an additional guideline is added at this point:

- #4. For each activity or initiative that will be implemented immediately, develop a set of SMART (Specific, Measurable, Achievable, Relevant, Time-framed) objectives. Record these objectives on the appropriate copy of Worksheet 1.

Guideline six recommends that each individual responsible for an activity or initiative develop a suitable performance measure to monitor and track progress. Each individual responsible for an objective should develop a performance measure using Worksheet 3. No modifications are required for this step.

- #5. Assign a specific individual who will be responsible for each objective, record the individual's name on the right-hand column of Worksheet 1. Ask the person responsible for each objective to identify a suitable measure. To achieve this, Worksheet 3 should be completed for each measure.

Guideline seven recommends that each performance measure be assessed against the criteria in the Performance Measure Criteria check sheet. This activity should again be carried out by the manager based on his/her knowledge of the group and its workings. In addition, it is recommended that the completed copies of Worksheet 1 be communicated to all of the group members:

- #6. Assess every measure against the criteria listed on the Performance Measure Criteria check sheet on Worksheet 4. When you are satisfied with the measures add them to Worksheet 1 and communicate the completed worksheet to all of your group members.



Guideline eight requires that the group members perform a final review of the activities or initiatives and performance measures to ensure that they are satisfied with them. Guideline nine asks for each group member to suggest factors that would make each activity or initiative and performance measure either easier or more difficult to implement. The only one of the interviewees to perform this activity was the manager in Company F, as Manager D pointed out, dealing with barriers and obstacles is just part of the manager's job. Additionally, because the participants have distributed groups and would execute these steps by email, these two steps could add a significant amount of time to the process. As a result, these two guidelines are removed.

Guidelines 10, 11 and 12 are vital to the process and remain unchanged. In light of these changes, the revised list of guidelines is as follows:

- #1. List and prioritize all of the group's or manager's objectives, these will act as the top-level objectives. Prepare one copy of Form 1 for each top-level objective.
- #2. Communicate all of the top-level objectives to the group members and ask for at least one suggestion per objective, from each group member, on what can be done to improve performance in terms of each top-level objective. Encourage your group members to look to other groups for both general ideas on what can be improved, or specific ideas on how to help them.
- #3. When a list of activities or initiatives has been compiled, evaluate and prioritize them.
  - Evaluate the impact of each suggested activity or initiative on all of the objectives. Based on available resources, decide which activities or initiatives can be implemented immediately.
  - Prioritize the activities or initiatives according to the impact they will have on the objectives and according to which can be implemented immediately. It is recommended that you choose 3 to 5 activities to work with at one time, to avoid a loss of focus.

- Transfer the activities that will be implemented immediately to the copy of Worksheet 1 for the appropriate top-level objective.
- #4. For each activity or initiative that will be implemented immediately, develop a set of SMART (Specific, Measurable, Achievable, Relevant, Time-framed) objectives.
  - #5. Assign a specific individual who will be responsible for each objective, record the individual's name on the right-hand column of Form 1. Ask the person responsible for each objective to identify a suitable measure. To achieve this, Worksheet 3 should be completed for each measure.
  - #6. Assess every measure against the criteria listed on the Performance Measure Criteria check sheet on Worksheet 4. When you are satisfied with the measures add them to Worksheet 1 and communicate the completed worksheet to all of your group members.
  - #7. Perform a periodic review of both performance against the objectives and of the performance measures, communicate the results to all of the group members. When an activity or objective had been completed, stop using the measures developed for the specific activity or objective.
  - #8. Ask for group member input to develop and implement corrective action plans for the objectives that are not having the desired impact on the higher-level objectives.
  - #9. Ask for group member input to develop and implement a solution for any problems identified during the use of the performance measures.
  - #10. Consider using this system to determine as the basis of the group's incentive system.

#### **8.4 Ensuring the guidelines encourage the desirable characteristics**

To ensure that the guidelines address all of the desirable characteristics identified in the literature, the guidelines are assessed against the desirable characteristics in Table 8.3, below.

As can be seen from Table 8.3, all of the desirable characteristics are addressed by at least one guideline, except for the identification and elimination of roadblocks. Of

all the interviewees, only Manager F stated that he performed this activity. Manager D suggested that dealing with roadblocks is ‘...just part of the job...’ and that this step was therefore unnecessary. To accommodate this opinion, this step has not been attempted.

<b>Desirable Characteristic</b>	<b>Relevant Guideline</b>
<b>Performance Measures</b>	
Simple and easy to understand	#6
Have appropriate accuracy, units of measure and levels of aggregation	#6
Be objective or subjective as appropriate	#4, #6
Be defined with input from, and under the control of those being ‘measured’	#2, #5
<b>The Performance Measurement System</b>	
Be accessible by every employee	#2, #7
Provide downward and lateral communication of strategy, initiatives, plans, objectives and targets	#2
Provide rapid lateral and upward communication (feedback) of actual performance against targets	#7
Be capable of including cost and non-cost measures	#1
Facilitate an understanding of the relationship between measures (for example, by presenting and linking measures graphically)	Worksheet #4
<b>The Performance Management System</b>	
Monitor both the internal and external environments	#2
Understand the relationships between the organizational units by considering the input, process and output of each	#2
Encourage cross-functional interaction and communication to promote a better understanding of how units affect each other	#2
Define consensual objectives and measures for every level, based on the strategic objectives. Use as few objectives and measures as possible	#2, #5
Clearly define the data collection method and the measure calculation method	#5
Ensure that the objectives and measures for each unit are clear, consistent and compatible, and will not promote dysfunctional behaviour between the units	#5
Identify and eliminate roadblocks to the successful implementation of the objectives and measures	Not attempted
Use the performance measurement system to openly communicate strategy, initiatives, objectives and targets downwards	#6, #7
Ensure the results of the measurement are fed back to those executing the actions as well as to their superiors	#7
Empower employees by promoting autonomy, as far as possible, in determining corrective actions	#7, #8, #9
Use the measurement results to stimulate continuous improvement and organizational learning	#7, #8, #9
	(Continued over)

Be aware of the informal measurement system, to counter it, tie rewards to the formal system	#10
Periodically reevaluate the objectives and measures, delete obsolete measures	#7

**Table 8.3 - Assessing the guidelines against the desirable characteristics**

## **8.5 Evaluating the Guidelines**

The guidelines were given to the interviewees in companies B, C, D and F, to evaluate and use, if they were so inclined. This section describes their assessment of the guidelines and their feedback.

### **8.5.1 Company B, Manager 1**

Manager B1 agreed with all of the activities suggested by the guidelines but felt that the worksheets made the method too cumbersome to be used in practice. He suggested that he is already performing all of the activities suggested by the guidelines but not in as formal and structured a manner as that offered by the guidelines.

According to Manager B1, all of his engineers are 'too siloed' to be able to provide suggestions for anything other than their immediate area of responsibility but because their bonuses depend on achieving their specific goals, everybody will do their level best to achieve them. This includes identifying all possible activities that might contribute to achieving the group's goals, evaluating and prioritizing the activities according to which will have the biggest impact and then implementing the activities.

Manager B1 doesn't care how the group's goals are achieved, as long as they are achieved. He admitted during the first interview that he had been accused of 'micro managing' in the past, during the evaluation of the guidelines he stated that he doesn't want to 'micro manage', therefore he delegates responsibility for identifying improvement activities to his engineers. He stated that he has told his engineers to

get him involved only if they need additional resources or have run into roadblocks that they cannot overcome without his assistance.

The most unnecessary part of the guidelines was that aspect concerned with developing and assessing measures. Manager B1 felt that the level of analysis and development for the measures was overkill. Problems with measures not returning the anticipated data are quickly and easily overcome in practice, or if they are not the activity will be delayed slightly while waiting to gather new data. This type of delay is not likely to have any serious consequences. However, if an individual felt inclined to cheat with measures, Manager B1 believed that the individual would be found out reasonably quickly, and punished according to the severity of the dishonesty. Manager B1 again pointed out that because individuals are only rewarded if the business is successful, then it is in everybody's best interests to honestly report their achievements.

Manager B1 suggested that the worksheets could probably be reduced to a single sheet and suggested that the method would be more effective if it were computer based. He also suggested that the method should include a 'due date' and an 'actual date' section to determine whether the activity or project was completed on schedule.

In its current state Manager B1 would not be inclined to use the method.

### **8.5.2 Company B, Manager 2**

As with all of the other interviewees, Manager B2 also pointed out that he performs most of the guidelines at present, although in an informal manner. He tracks his major objectives, his group's activities and progress towards goals using computer-based spreadsheets. There are similarities between Manager B2's spreadsheet and Manager B1's spreadsheet. However, it was clear that while both managers work at the same level in the same organization, they do not use exactly the same methods to identify improvement activities and to track and record the activities and the performance of these activities against stated goals. As a result, it was clear that Company B does not have organization-wide, formal and structured methods that

guide managers in how to identify improvement activities and how to develop objectives and measures.

Manager B2's initial response was that filling in the forms would be too time consuming because many of the improvement activities performed by his group have a very short duration. Manager B2 suggested that he and his group usually have as many as 30 initiatives underway at one time and that these initiatives, or projects, last from one week up to six months.

He agreed to try out the guidelines on the condition that the author provided soft copies of the worksheets because he felt that a paper-based system would quickly become overwhelming. However, the reason he agreed to try out the guidelines was to assist the author and not because he saw value in the method over the way he already identifies and tracks improvement activities. Therefore the author suggested that the guidelines should be modified to a computer-based method before being used and did not request that Manager B2 use them in their present format.

### **8.5.3 Company C, Manager 1**

During the second interview Manager C was told of the guidelines and expressed interest in seeing and possibly using them. The author sent a copy of the guidelines to Manager C, however, the author was subsequently unable to contact Manager C and emails and phone calls were not returned.

### **8.5.4 Company D, Manager 1**

Manager D reviewed the guidelines and concluded that they make sense but that using them would 'kill' Manager D and his guys: 'HR people would just love this, or some control freak would love it! The trouble is that the real world catches up with you... it takes me all my time to do a half-yearly appraisal with my five guys.'

He suggested that if he were more involved in project based work then the guidelines would be more appropriate. Manager D stated that he has two main objectives, he has his sales target and safety objectives, he referred to the rest of his objectives as

'fluff'. Manager D has a sales target which he must make. Safety is increasingly important in Company D, as Manager D put it '... you can feel the tsunami of safety coming through...', however, he estimated that 80% of the annual objective is to make the sales budget. He will make allowances for all of the objectives except safety and sales. For example, one team member is 64 years of age and '...should be retired but doesn't want to.' He is almost computer illiterate but he is exceptionally good with customers. He never meets any of his objectives, such as training and completing visit reports but that is forgiven because he makes his sales numbers better than anybody in the past 50 years. There are some objectives, for example the annual driving safety recertification that must be completed, however Manager D will either ignore the other objectives or help the salesman to complete them.

He again referred to the '20-60-20' model in which the bottom 20% of people have no idea what is going on and don't work very hard, the 60% of the people in the middle are hard workers but need to be told what to do and the top 20% of the people drive all of the activities in the organization. He suggested that all of his guys are in the 60% category – none of them are in danger of losing their job so the objectives and measures are not that important to them and none of them are striving for advancement and so the objectives and measures are, again, not that important. His team members want to be told what to do, they will then go and do their best to achieve the objectives but they don't want to be burdened with additional procedures. Also, they all know that the sales target is weighted with 80% of the total annual appraisal.

He suggested that the only time that this method would be important would be when people are trying to demonstrate how valuable they are to advance in the organization, or when a manager is trying to build a case against an employee in order to terminate the individual's employment. The people in the 60% category don't care about putting the effort into this type of method. Manager D suggested that he would have to spend a great deal of time and effort getting his people to participate.

Manager D suggested that ‘In reality, we probably follow quite closely your model on the numbers and the budget...’ Manager D has a spreadsheet that contains all of the customers and the related objectives. He uses most of the steps included in the guidelines to specify what has to be achieved, how it might be achieved, how to measure it, and so on, to develop the sales goals for each account and customer. This process takes around two months at the start of each year. A lot of time is spent on this process because it is how Manager D and his team get paid and the organization has a revenue growth expectation of around 10% to 13% per year.

Manager D stated that talking to the author got him ‘enthused’ about objectives but ultimately he was not willing to use the guidelines because he felt they would be too burdensome.

#### **8.5.5 Company F, Manager 1**

Manager F suggested that the guidelines would be more appropriate in an organization that had more layers of management. He pointed out that one year ago the manufacturing function in Company F had a Vice President, a Plant Manager, a dayshift Production Manager and five line managers/supervisors, there is now the Plant manager and three line managers/supervisors. As a result, the remaining staff ‘wear many hats’ and the main focus is now on utilizing time efficiently. Filling in all of the worksheets associated with the guidelines was deemed to be a waste of time by Manager F. He also pointed out that the Vice President used to track all manner of data with various forms and graphs but that nobody ever used the information. Manager F therefore concluded that the entire data collection and analysis exercise was a waste of paper and time.

According to Manager F, if his production line supervisors were to get involved in the paperwork associated with the guidelines, they would get lost because they’re not accustomed to that type of approach: ‘...some of the reason too is these guys haven’t come up through a formalized system, all they have known is putting out fires...’ Manager F is working on putting senior line leaders in place, which will allow the



current line supervisors to take a step back and begin to perform some of the duties that Manager F currently performs.

Manager F claimed to do most, if not all, of the activities suggested by the guidelines, albeit in a less structured manner. He maintains a focus on labour and material variances and the production completion rate because he feels that these are the fundamental issues in manufacturing. He constantly monitors the top ten issues that impact each of these three measures and when he misses one of them he immediately investigates to find out why. Having identified the cause he will take steps to ensure that it does not happen again. He identifies activities that will reduce the impact of the top ten issues that prevent him from achieving his material and labour variances and production completion rate and prioritizes them according to which will have the greatest impact.

He believes that the simpler the method, the more likely that it is to be utilized. He also pointed out that with the reduction in headcount that many organizations have endured recently, people are focused on actually doing their jobs and that the paperwork has been allowed to fall to the wayside.

## **8.6 Discussion**

All of the interviewees who participated in evaluating the first draft of the guidelines claimed to perform most, if not all, of the activities suggested by the guidelines. This is notable because none of the participants could articulate the exact process by which they develop objectives and measures, until they saw the process on paper. There are two main reasons why this might have been the case:

1. The author did not ask the right questions;
2. All of the managers perform the tasks suggested by the guidelines informally and at a subconscious level, and therefore could not articulate how they develop objectives and measures, until they saw the method on paper.

At first glance, it seems more probable that the author did not ask the right questions because it is more likely that one person, the author, could make a mistake than five other people, the interviewees, would all make exactly the same mistake. However, the author believes that all of the interviewees were asked the right questions. In addition, Manager D was repeatedly asked, to the extent that it bordered on harassment, how he identified improvement activities. This prodding took place during an informal follow-up discussion and came about because the author had begun the analysis of the interview transcripts and was not entirely satisfied with the responses. Manager D's ultimate answer was that he simply knew what needed to improve because '...he learned it at the school of hard knocks.'

The other alternative, that all of the interviewees perform at least some of the activities suggested by the guidelines but for some reason could not describe these activities, is at least possible. Firstly, none of the participating organizations have a structured, formal system that guides a manager through identifying determinant objectives and measures. Therefore all of the managers are left to their own devices to develop their improvement activities, objectives and measures. Secondly, the interviewees are all talented and capable individuals who have demonstrated some skills in order to get into their current positions. Thirdly, the guidelines do not contain any earth-shattering revelations on how to identify improvement activities, or on how to develop objectives and measures. The guidelines are simply a step-by-step list of the logical activities involved in developing objectives and measures.

For these three reasons, combined with the fact that Manager D was thoroughly questioned on the matter, the author is satisfied that while the interviewees claim to perform most of the activities outlined by the guidelines, until they saw the guidelines on paper they could not coherently articulate how they develop objectives and measures.

Despite claiming to perform most of the activities suggested by the guidelines, all of the participants also stated that the first draft of guidelines imposed too great a paperwork burden to be of practical use to them, and that the method should be

computer-based. The repeated message was that the simpler the method, the better it would be.

There was also consensus among the participants that the level of detail to which measures are analyzed in the guidelines was unnecessary. This was another interesting outcome because the author witnessed an example of manipulating measures in both Company A and Company B.

Company A has a computer-based system that is used to report all of the non-conformances, such as missing or defective parts, associated with the installation of new equipment at customer sites. Traditionally, the number of non-conformance reports were not monitored but the non-conformances were analyzed to determine their cause and presumably to prevent their recurrence. To improve the performance of the manufacturing division of Company A, senior management decided to measure the number of non-conformance reports and to set a target of three non-conformance reports per install. After several months of attempting to achieve this, the engineers in the field received instructions, from their regional Quality Manager, that they were to submit a maximum of three non-conformance reports per install. In the event that there were more than three non-conformances the engineers were instructed to include the details of multiple non-conformances in each of the three reports.

Company B uses an automated system to monitor and record the status of the manufacturing equipment, this system provides for a number of equipment states, for example, running, idle, offline, scheduled maintenance and unscheduled maintenance. The availability of all manufacturing equipment is automatically calculated and reported by the system and all of the operational level managers have specific monthly availability targets for their equipment. The managers in one group came up with a novel approach to meeting their availability targets. They instructed their technicians not to change the equipment state to unscheduled maintenance under certain circumstances. The result was that they suddenly appeared to be consistently meeting their availability targets. Another result of this manipulation

was that the factory's capacity model became invalid and a major investigation was later conducted to identify why the department in question was not moving as much work-in-progress as the model suggested it should be.

So, while manipulating measures does happen in practice, it seems that it is not a concern for operational level managers. This might be because operational level managers are most frequently the perpetrators of measure manipulation, or, as is the case with Manager B1, because they believe that they will catch their reports in any dishonest reporting. However, it should be a concern for more senior managers because their organizational units might not actually be achieving the performance that they are reporting, which again lends weight to thorough, structured and formal methods being more appropriate at the higher levels of management.

All of the participants currently use spreadsheets to record their goals, activities, targets, due dates and current performance and they all suggested that the guidelines would be better if they were computer-based.

The empirical evidence also called into question the now de facto assumption that all annual goals should be included in the incentive system. Firstly, Manager D stated that his manager occasionally sets the target for his annual objective but that he most often sets the target himself. He also stated that when he is setting his own annual objectives he will try to ensure that the objective is achievable, despite the fact that Company D's appraisal system calls for the use of 'stretch' goals. The implication is that Manager D is not truly setting stretch goals for himself and his team, and is settling for less than optimal performance. Manager E, the Vice President, stated that in Company E an individual's annual goals are not tied to incentives because this discourages individuals from setting truly 'break through' goals for themselves. In Company E every employee receives an annual bonus, regardless of the individual's or the organization's performance and incentives are linked to annual objectives only for the director level and above, because only the director level and above can truly influence the direction and performance of the organization.

## **8.7 Conclusion**

As has been stated previously, the participating operational level managers do not operate in an environment where rigid and structured methods can be applied. While logical, step-by-step methods are intuitively appealing to the author, the empirical evidence suggests that they are not appropriate for use at the operational level. The idea that operational level managers can devote large amounts of time to identifying improvement activities, setting objectives, carefully analyzing the measures they choose and then systematically go about implementing, monitoring and tweaking the activities is not realistic.

The participating operational level managers know what their annual goals or objectives are, because they rarely change from one year to the next, and they do whatever they can to achieve those goals, particularly when the goals are tied to incentives. However, the participants operate in an ever-changing environment. Market conditions change rapidly and frequently, issues arise with equipment, employees, customers, other parts of the organization, suppliers, senior management, the weather and so on. All of these frequent changes mean that the priorities at the operational level also change frequently. What was of the highest priority one week ago, may pale into insignificance in the light of a new and unexpected crisis.

While brainstorming can generate ideas for what activities can be improved and how they might be improved, most ideas present themselves over a period of time as the day-to-day activities are performed. These ideas are discussed and evaluated informally and then implemented if they are deemed to be useful and if resources permit it. Objectives are set which are sometimes general, for example to 'improve' some parameter, and sometimes they are specific with an associated target and timescale, for example to achieve a five percent improvement in X over the next four weeks. Among the participants, the only organization to give specific attention to performance measures was Company D. The other participants assume that a measure exists when an objective has been articulated. For example, an initiative may be undertaken to improve the availability of equipment, in this case the measure will be 'equipment availability'. In Companies B, C and F, no further consideration

will be given to measuring the impact of the initiative unless a detrimental impact becomes apparent.

The performance of the activities is then monitored, recorded and tracked daily or weekly until the activity has run its course. Issues frequently arise that may cause all improvement activities to be postponed while the 'crisis' is resolved and these issues, or crises, are often the source of improvement ideas.

The guidelines developed as part of this research outline the steps involved in deciding how to achieve annual goals or objectives. The guidelines are believed to be accurate by the author because they have been validated against the criteria identified in the literature and because all of the participating managers claim to perform most, if not all, of the activities suggested by the guidelines. However, this latter point raises the question of whether or not the participating operational level managers need a method to help them identify improvement activities, objectives and measures to achieve their annual goals. The research identified that in the absence of formal methods the manager's abilities and talents become critical in doing these things, therefore, some managers will need the guidelines more than others. It can be assumed that in most cases managers are appointed because they have proven their ability to achieve goals, therefore it is likely that managers have already figured out how to identify and implement improvement activities. As a result the guidelines developed during this research could be used effectively to remind managers of all of the steps to take, or to use as a training tool for those who aspire to management.

The best possible use of the guidelines would be to incorporate them into a software package that implements the guidelines and performs all of the associated recording and reporting activities in a flexible and easy to use format. This will be discussed further in Section 9.4 which contains a discussion of possible future research activities.

While organizational culture, defined in Section 7.2, was not included within the scope of this research it became clear, both in Chapter 7 and in this chapter, that an

organization's culture has a role in determining how performance is managed. For example, Company B's appraisal system only rewards a few individuals, regardless of how many individuals achieve all of their goals; Company B severely punishes mistakes; and, individuals will not be rewarded for achieving all of their goals if the factory does not meet its goals. Not only does this system fail to encourage individuals to adopt truly 'break through' goals, it actively discourages them from doing any more than the minimum necessary to keep their jobs. There is a stark contrast between Company B and Company E, where employees receive an annual bonus regardless of their, or the organization's performance and where individuals willingly set break-through objectives for themselves.

This relationship between organizational culture and performance management has been noted by others, for example Stonich (1984), Lingle and Schiemann (1996) and Kennerley and Neely (2002). However, there has been little research specifically aimed at understanding this relationship (Bititci et al. 2004). This is examined in more detail in Section 9.4 which discusses areas of future research.

As a result of the above discussion, the author has drawn the following conclusions:

- Using formal and highly structured methods to develop objectives and measures would not be appropriate at the operational levels of the participating organizations.
- The degree of development and analysis involved in the guidelines is too great for use by the participating operational level managers. The method needs to be simpler and quicker.
- The prevailing culture in the participating organizations has a role to play in determining how performance is managed.
- Whether or not objectives should be linked to rewards is up for debate and is probably one of the areas of performance management that requires the most scrutiny to ensure that if rewards are linked to objectives that the rewards will encourage break-through performance and desirable behaviour.

- The guidelines should be incorporated into a software package that guides managers through identifying improvement activities, setting objectives and measures and providing a format for recording and reporting performance related data and information.



## **Chapter Nine**

### **Concluding the research**

#### **9.1 Introduction**

This thesis has described a program of research that was undertaken to investigate how five operational level managers measure and manage performance. The research began with the tentative proposition that the characteristics of the operational level are different to those of the strategic level. As a result of these differences, the methods to develop performance measurement and management systems, which were themselves developed at the strategic level, might not be suitable for use at the operational level.

The empirical evidence supported this proposition by confirming that the participating operational level managers must deal with fragmented activities, frequent interruptions and a real time, short-term focus. More importantly, the participants develop and measure objectives much more frequently than strategic level managers. A review of the literature revealed that none of the existing methods were developed with the operational level of organizations in mind, thus rendering these methods less appropriate for use at the operational level than methods designed for use at the operational level.

These findings combine to support the need for methods that have been specifically designed to develop objectives and measures at the operational level. The research continued by developing a set of guidelines, based on the Cambridge method (Neely et al. 2002), which was found to be the most suitable method on which to base a set of guidelines.

These guidelines were reviewed by the participants and were well received by the interviewees, to the extent that all of the participants claimed to be performing most or all of the activities suggested by the guidelines, albeit informally and intuitively. However, all of the interviewees also pointed out that the initial draft of guidelines imposed an unrealistic paperwork demand on the managers. In addition, the interviewees all pointed out that they currently track progress using spreadsheets and that the guidelines would be more useful if they were computer based.

The remainder of this chapter discusses the contribution of the research both to theory and to practice. The lessons learned by the author are discussed briefly and areas that need further research are presented.

The research itself is then assessed in terms of a number of methodological tests. Finally, the chapter, and research are concluded with some final observations from the author.

## **9.2 Contribution to theory and knowledge**

The analysis of the empirical data gave rise to a number of both general and specific observations which addressed the research objectives and questions. The research objectives are listed immediately below and the research objectives are listed in Table 9.1, below.

1. To investigate how operational level managers develop objectives and performance measures.
2. To identify the managerial requirements imposed on any method(s) used to select objectives and performance measures at the operational levels of an organization.
3. To develop a method that would be both useful to, and usable by operational level managers.
4. To provide a useful definition for the terms 'performance measurement system' and 'performance management system'.

5. Given the newly developed definitions for the terms 'performance measurement system' and 'performance management system', to identify all of the desirable characteristics for each.

The observations specific to the operational level were identified in Chapter Five and answered Research Question One. Chapter Six continued the examination of the empirical data and addressed Research Questions Two, Three and Four. Chapter Seven concluded the analysis of the empirical data and answered Research Question Five. In addition, Chapter Seven identified a number of general observations relating to the current state of performance measurement and management in the participating organizations.

The observations are presented below in the order in which they were discussed and the discussion surrounding the observations is briefly revisited. The research questions are then presented and some final, concluding remarks are made regarding the answers to the questions. The contribution of this research to the body of knowledge is then summarized.

The operational level-specific observations made during the research are:

- The participating operational level managers work in a fluid and rapidly changing environment.
- The participating operational level managers are frequently interrupted and unexpected issues arise that require immediate resolution or that change the priority of activities.
- The participating operational level managers are forced to focus on the short term by their weekly and monthly targets.
- The participating operational level managers are involved in many more projects, of much shorter duration, than strategic level managers. Therefore, choosing projects and setting objectives and measures for those projects is repeated often by the participants.

- Strategy is not communicated to the operational level in the participating organizations.
- The result objectives at the operational level of the participating organizations rarely change from one year to the next, instead only the targets change.
- The participating operational level managers would likely benefit from structured methods but prefer guidelines.
- A set of guidelines is most likely to succeed at the operational level.

The observations from chapters six and seven have been consolidated and are listed below:

- In the participating organizations, the importance of performance management has been recognized but underestimated and the performance management system is viewed narrowly as an appraisal system. Additionally, the importance and complexity of performance measures has not been recognized.
- The participating organizations use their appraisal systems to communicate result objectives to all employees and the result objectives are therefore formally documented. However, the appraisal systems do not provide any methods to translate the result objectives into determinant objectives and provide no guidance on how to develop performance measures.
- The result objectives at the operational level of the participating organizations change little from year to year and do not always drive the day-to-day activities.
- In the absence of structured methods, how well the determinant objectives are developed will depend on the participating manager's style and abilities. Also, the participating organization's culture will have an influence on how successes are rewarded.
- There is a tendency among the participants to measure what can easily be measured and not to measure what is difficult to measure, possibly because of the absence of structured methods.

- For the participants, more emphasis is placed on achieving the results than on how the results are achieved, possibly because of the absence of structured methods.
- Possibly as a result of the absence of structured methods, costs are still the main driver of all activities and are the deciding factor in decision making in the participating organizations.
- There is a great deal of subjectivity involved in assessing both group and individual performance in the participating organizations, even within the formal appraisal process, possibly because of the absence of structured methods.
- The participating managers continually assess their reports on an informal and subjective basis in order to identify their best people.
- Because of the significance of the participating manager's style and abilities in selecting determinant objectives, the manager should be closely involved in the operations of his/her group.

In general, the participating organizations have recognized the need to communicate non-subjective, non-financial goals and measures to their employees to both express what is important and to reward achievement. They are using their appraisal systems to communicate these non-subjective, non-financial goals, however, the appraisal systems are being used simply as a communication tool and, in general, are not sophisticated enough to help managers to identify improvement activities and to develop suitable objectives and measures.

Among the participants, the objectives communicated to the operational level by the appraisal systems seem to change little from one year to the next, and do not always drive the day-to-day activities of the participating operational level managers. From the author's observations in Company A and for Manager C, many objectives are vague and open to interpretation. This suggests that achieving the objectives is more important than how they are achieved, a fact that was explicitly stated by Managers B1 and D. Where non-business related objectives are included in the appraisal systems, for example employee development and Environment Health and Safety

(EHS) related objectives, these are considered to be of a lower priority than the business-, or cost-related objectives. This was stated by Manager B2 and may be inferred from Manager B1's interview. When specifically asked about the importance of cost related goals, all of the participants agreed that costs are still the main driver of all activities and decision making.

In addition, the lack of specific guidance on how to identify improvement activities, objectives and measures in the participants' systems results in a great deal of subjectivity and makes the participating managers' abilities and style critical in determining whether or not his group will achieve its goals. This fact was also explicitly stated by all of the interviewees. The pivotal nature of the manager's role suggests that the manager should be closely involved in all aspects of the group's activities to understand how the group works internally and how it interacts with other groups around it.

The prevailing culture in the participating organizations clearly has a role in determining how improvement activities are identified and how goals and measures are developed, and in particular how individuals are rewarded for achieving their goals. This is discussed further in Section 9.4 as an area for future work.

There was also a clear tendency among the participants to set objectives that can be easily achieved and to set measures for activities that can easily be measured. Both managers B2 and D provided explicit evidence of this as both stated that they have avoided certain objectives and measures because of the difficulty in measuring the activity. Most alarmingly, Manager D stated that his organization has stopped measuring customer satisfaction because of the difficulties in getting reliable information.

The empirical evidence suggests that the participating operational level managers would benefit from having structured methods to help them translate result objectives into determinant objectives. However, the research clearly identified the operational level characteristics that should be considered when designing a method for use at

this level. In particular, the many activities that the participating operational level managers are involved in suggest that the method will be used many times and should therefore be quick and easy to use. For example, Manager B1 claimed that his group could have as many as 75 activities underway at any one time and that these activities can have a duration of from two weeks to six months. As a result of the frequency with which the participants develop objectives and measures, combined with their preference for guidelines, it was concluded that guidelines are most likely to be adopted and succeed at the operational level.

As discussed in Section 8.6, all of the managers currently use spreadsheets to record their activities, goals and measures, to compile reports on actual performance and to communicate the results. To impose a paper-based system would not be well received in such an environment. In addition, the author suggested that the guidelines should be incorporated into a software application that performed all of the steps involved in recording and reporting on performance, as this would be more attractive to the end-user.

While all of the above observations and conclusions are valid, they lack focus unless considered in reference to the original research questions, listed below in Table 9.1.

<b>Questions related to the operational level</b>	
1	What are the characteristics of the operational level in the participating organizations that might have an impact on the choice of method to develop objectives and measures?
<b>Research questions related to the performance management and measurement systems</b>	
2	Do the participating organizations have well developed performance management systems at the operational level?
3	How do the participating operational-level managers develop objectives and measures?
4	Do the desirable characteristics, as identified in the literature, exist at the operational level of the participating organizations? If they exist, is it as a result of the system or the manager?
<b>General analysis question</b>	
5	In light of the characteristics identified by RQ #1, are the existing methods to develop objectives and measures suitable for use at the operational level of the participating organizations?

**Table 9.1 - The research questions**

### **Research Question 1**

The answer to the first research questions is that the characteristics of the operational level, as identified in Section 2.5.2 of the literature review and later validated by the empirical evidence in Section 5.5, are:

- Real-time focus
- Brevity and fragmentation of activities
- Current and specific issues
- Continuous and rapid decision making
- Short term focus

The participating operational level managers have a constant short-term focus, are involved in many activities simultaneously and suffer from frequent interruptions that often cause a change in priorities, albeit usually a temporary change.



## **Research Question 2**

The second research question asked if structured methods to develop objectives and measures have been deployed to the operational level of the participating organizations. The answer in this case was that the participating organizations have not deployed structured methods to the operational level. Whether or not they have structured methods at the strategic level was not investigated but there is no evidence to suggest that they do. The systems with the greatest degree of structure in all of the participating organizations are the appraisal systems, which are being used to execute some of the activities that the literature associates with the performance measurement or management system. However, there is a gap between the deployment of business goals and how those goals are to be achieved as none of the systems guide the managers through identifying improvement activities and then developing objectives and measures.

## **Research Question 3**

This question asked how the participants at the operational level develop objectives and measures. The answer to the third research question is that the interviewees do not spend much time on developing objectives and measures. As they go about their job they, or their reports, identify activities that will contribute to achieving the business goals that they have been tasked to achieve. In some case the activities have the general objective of moving some parameter closer to the target, in other case there are specific objectives and measures. The objectives usually include a target that the manager believes can be achieved, and once the objective has been determined the measure is assumed to exist automatically. Of all the criteria that Neely et al. (2002) suggest should be considered in developing measures, the only one identified among the participants was that measures should not conflict. Only Manager F considers conflict when setting measures and he does so based on his experience and not because Company F's system suggests that he should.

## **Research Question 4**

Research Question Four asked whether or not the desirable characteristics, as identified in the literature, exist at the operational level of the participating

organizations, and if they do exist, whether it is as a result of the systems or the individual manager. Table 6.1 assesses the extent to which the desirable characteristics are encouraged by the interviewees and by their systems. Where the desirable attributes were found to exist, they do so as a result of the manager more often than as a result of the system. In addition, the more experienced managers were found to promote more of the desirable characteristics than their less experienced counterparts.

### **Research Question 5**

The fifth, and final, research question asked whether the methods developed for the strategic level are appropriate for use at the operational level of the participating organizations. The answer to this question is that, based on the empirical evidence, they are not. The Cambridge method (Neely et al. 2002) was found to specifically address most of the desirable characteristics, making it the most thorough method available. However, it was also found to be wholly unsuitable for use at the operational level of the participating organizations because of its rigid structure and time consuming approach. This was found to be the case because it imposes too great a degree of analysis, is too structured and is therefore too time consuming.

The highly structured and formalized nature of the Cambridge method (ibid.), along with the numerous worksheets are more suitable for use at the strategic level, where managers have time to participate in workshops and to spend a great deal of time considering all of the options before settling on specific objectives and measures. The participating operational level managers do not have the luxury of being able to devote lengthy periods of time to this process. Even in what the author considered to be a greatly simplified version of the workbook, a mere shadow of its former self, the worksheets were considered to be burdensome and time consuming by the participants. Therefore, any method intended for use at the operational level must be simple and quick to implement. In addition to the lack of time, the participants operate in real-time and get feedback on their activities very quickly. The typical duration of an improvement activity for the participants, from beginning to completion, is approximately one month. The brevity of activities and the real-time

focus reduces the need to thoroughly think through measures, as is the case in the Cambridge method (ibid.) and at the strategic level.

The true significance of these findings is not that the participating organizations have not yet adopted and deployed structured methods to the operational level, it is the finding that one approach to developing objectives and measures is not appropriate at all organizational levels. Specifically, the Cambridge method (Neely et al. 2002) was found to be the most thorough method described in the literature, however, it is unsuitable for use at the operational level of the participating organizations.

Chapter Eight, which developed and assessed a set of guidelines intended for use at the operational level, resulted in the following conclusions:

- Formal and highly structured approaches are more appropriate at the strategic level than at the operational level of the participating organizations.
- The degree of development and analysis involved in the guidelines is too great for use by the participating operational level managers. The method needs to be simpler and quicker.
- Whether or not objectives should be linked to rewards is obviously up for debate and is probably one of the areas of performance management that requires the most scrutiny to ensure that if rewards are linked to objectives that will encourage break-through performance and desirable behaviour.
- The guidelines would be more appealing to the participants if they were computer based. To this end, they could be incorporated into an holistic software package that guides managers through identifying improvement activities, setting objectives and measures and providing a format for recording and reporting performance related data and information

The observations which the author believes are most relevant to the field of performance management, and therefore constitute the major contribution to the body of knowledge, are listed below:

1. Strategy is not being communicated to the operational level of the participating organizations, and therefore does not seem to guide actions and decision making at the operational level.
2. Costs are the main driver of improvement activities at the operational level of the participating organizations.
3. Rigid and highly structured methods are not appropriate for the participating operational level managers but the participants would likely benefit from some form of method to help them develop determinant objectives.
4. Whether or not objectives should be linked to rewards is up for debate and would seem to be influenced by the organization's culture.
5. Among the participants, there is no awareness of the attributes of performance measures and obviously no consideration is given to attending to these attributes.

The emerging theory is that the participating operational level managers do need structured methods to help them develop determinant objectives and measures. These structured methods would help the participating operational level managers to be more thorough and consistent. However, the existing methods to develop objectives and measures, and much of the advice in the literature that is concerned with doing so, are irrelevant for the participants. Because of the unique characteristics of the operational level in the participating organizations, and possibly many others, the managers at this level need methods that are quick and easy to use. A suitable method would suggest how the objectives should be developed but would not impose a rigid and time-consuming structure. Such a method would be particularly useful if it were included in a computer-based approach that allowed managers to track and report on their objectives.

### **9.3 Contribution to practice**

As a result of this research, a set of guidelines was developed and evaluated by the participating operational level managers. The guidelines themselves were well

received by the participants, as reflected by the fact that they claimed to perform most, if not all, of the activities suggested by the guidelines.

The guidelines provide a simple and quick method to follow that will ensure the most important criteria have been addressed in developing objectives and measures. Obviously, to achieve speed and simplicity a considerable amount of detail was lost. The characteristics of the operational level in the participating organizations are such that the omitted detail is neither wanted by the participants, nor needed by them.

However, the main failings of the method, in its current format, are that it is still not simple and quick enough, and that it is not computer-based. All of the participants rejected the high degree of scrutiny and analysis suggested by the guidelines because of the time required. Additionally, all of the participants currently use spreadsheets to track all of their business goals, activities, objectives and measures. They are, therefore, not inclined to revert to paper-based methods which they found cumbersome and wasteful and which would result in considerable duplication of effort by putting the details in the worksheets and then copying them to their spreadsheets.

For the guidelines to be used by the participants would require that they (the guidelines) be integrated into a computer-based approach, this is discussed further in Section 9.4, as an option for future work.

The guidelines developed during this research represent a first-pass at developing a suitable method for use at the operational level. Despite being rejected by the participants, they are comprehensive when assessed against the desirable characteristics identified in the literature for performance measures and measurement and management systems, and they still represent a contribution to practice. They are the first attempt at developing a suitable method and their assessment resulted in the knowledge that they are too cumbersome and should be computer-based. .

The next revision of the guidelines, whether developed by the author or by another researcher, will build on the current version and will have as their starting point a more informed position.

#### **9.4 Future work**

As discussed in Section 9.6, case study research generates findings that rely on analytic generalizations and not statistical generalizations. In addition, this research examined a small number of managers in a small number of organizations. Therefore, to identify whether the findings of this research are more widely applicable than to the participants alone, further research needs to be carried out into performance measurement and management at the operational levels.

The link between culture and performance management, including how appraisal systems are used to implement objectives and measures and to drive improvement efforts requires further investigation. Bititci et al. (2004) describe their initial investigation of these relationships through a retrospective study of their own past research. They examined the influence of culture and management style on performance measurement and management and found clear relationships between culture, style and the success or failure of performance management initiatives. Among their findings were that: an authoritative management style is needed to successfully implement a new performance management system; the organization's initial culture does not have an impact on the success or failure of a performance management initiative; however, the successful implementation of a performance management initiative will lead to a change in organizational culture, in particular, to an achievement oriented culture.

Little (2003) investigated the link between strategy deployment, performance measurement and the appraisal system and found that while these systems are related, they are not effectively linked in practice. The findings of this research support those of Little (ibid.) as strategy is not deployed in the participating organizations and their appraisal systems are not sophisticated enough to guide the

development of objectives and measures. Little (ibid.) developed an integrated model that was designed to explicitly link strategy deployment, performance measurement and performance appraisal.

However, as Bititci et al. (2004) stated, their initial investigation has ‘...just scratched the surface...’ of this topic, and Little (2003 p. 257) pointed out that his method requires further development. There is, therefore, still a need to investigate these relationships, in particular to investigate whether strategy needs to be deployed to the operational level. Of the five participants in this research, only Manager F was fully familiar with his organization’s strategy and that was because Manager F was actually a senior-level manager but was also performing the duties of an operational level manager. Managers B1, B2 and D were not at all familiar with their organizations strategy and Manager C was aware of the general strategic direction that his organization had recently adopted. This research found that the operation-level result objectives in the participating organizations do not change much from one year to the next, for example, salespeople are tasked to sell more and manufacturing managers are tasked to make more and increase yields while simultaneously cutting costs. If this is the case in many organizations, then perhaps strategy does not need to be communicated to the operational level.

An issue related to the organizational culture question is that concerned with the true impact of the performance management system. A question occurred to the author while considering the effectiveness of the performance management systems in the participating organizations. Specifically, the author was curious about the impact that unstructured performance management systems might have on an organization’s performance. It is now taken for granted that a structured performance measurement or management system will help organizations to better achieve their strategic objectives, however, none of the participating organizations have highly structured performance management systems. Whether or not the participants are successful is debatable and will depend on the choice of measure. If profitable operations are the chosen measure then the participants are currently successful, however, this is due in

large part to market conditions as they are all recovering from net losses in recent years.

Among the participants who have annual revenues of several billion dollars, Company E has the least structured performance management and appraisal systems. However, its profit margins and return on equity is not the lowest of the group. Manager E described the culture as entrepreneurial and innovative, and employee's annual objectives are not tied to rewards. According to Manager E, this encourages employees to set truly break-through objectives for themselves, which by all accounts they do willingly. This suggests that an organization's culture might have a greater impact on its success than the performance management system does.

Another question that the author would like to investigate is where in the organization the 'strategy disconnect' occurs, and why? Much of the literature advocates communicating strategy, or strategic objectives, throughout the organization. This clearly does not happen in the participating organizations. As a result it might be concluded that the operational level does not need to be aware of the strategy. Perhaps the operational level personnel need only to focus on improving the efficiency and effectiveness of what they do: sales people should sell more, manufacturing should make more and so on. The author does not believe this to be the case, decisions that need to be made on a daily basis can either support or undermine a strategy. If the operational level managers are not aware of the organization's strategy and related objectives, then their decisions cannot be expected to always support that strategy.

This brief discussion is not intended to denigrate the importance of the performance management and measurement systems, the author firmly believes that they are vital planning and communication tools. However, the system has yet to be designed that can address every eventuality, whereas, in an appropriate organizational culture, the people in the organization will take care of every eventuality, and will do so willingly.



Finally, as mentioned in the next section, gaining access to the 'real world' can be difficult. The consequence of this difficulty, along with the difficulties of resource and time limitations, is that researchers can rarely study enough cases to be certain that their conclusions are universally valid. This research involved five managers in four organizations and was supported by a brief interview with a sixth manager at the strategic level and the author's observations from the operational level. With one exception, the organizations involved in the research are all in, or serve, the same industry. The similarity between the four organizations in the same industry and the one organization in a different industry could be coincidental, although the author does not believe that it is. However, despite the author's confidence, further research is necessary to examine other organizations and other industries to either support or refute the author's findings.

While the author is confident that his observations and conclusions are valid for the participants and their organizations, these observations and conclusions may well be invalidated by the study of other managers in other organizations. Therefore, there is a need to continue the research into performance management at the operational level of organizations.

### **9.5 Reflective learning**

Aside from a better understanding of research techniques, in particular data gathering and analysis, the author learned three important lessons over the course of the research.

Firstly, the art of interviewing is not to be underestimated. In particular getting managers to answer the questions that the interviewer asked can be difficult. In several cases, follow-up visits were required to get answers to questions that had been asked during earlier interviews. The author's decision to use a tape recorder also had an impact on his ability to conduct the interview. The author occasionally noticed that his attention was drifting from the interviewee's answers and attributed

this to a reliance on the recording to make things clear during transcription. This was an issue that the author had to focus on during subsequent interviews.

Secondly, gaining access to the real world is also more difficult than might be initially anticipated. From the author's perspective being declined permission to study the author's employer came as a surprise. The author, somewhat naively, assumed that the benefit of participation would be obvious and that the author's employer would eagerly participate to reap those benefits. This was not the case.

The difficulty in gaining access to the participants was exacerbated by the characteristics of the operational level, that is, the characteristics being investigated by the research. The operational level managers who participated in the research are very busy people and scheduling interviews became an arduous task involving frequent postponement and much negotiating of dates.

Finally, there is also a considerable benefit in making direct contact with interviewees, before conducting the interview. The interview with Manager F was arranged through a mutual contact and as a result the purpose of the interview was not well communicated before the interview. The problem was compounded by the fact that the mutual contact was a director in Company F, and could be considered to hold a more senior position than the interviewee. The analysis of the interview transcript revealed that the interviewee seemed to be very defensive for the earlier part of the interview, however, he clearly became more relaxed as the interview proceeded. This evidence came in the form of the interviewee's answers, during the earlier part of the interview, being focused on the considerable improvements that he had made since joining the organization. His answers and choice of language towards the end of the interview were clearly more relaxed, despite the fact that the author did not analyze the interview transcript from this perspective. The author has surmised that the interviewee's defensiveness might have been as a result of the fact that the interview was requested by a senior manager. This could have engendered a feeling of resentment towards the author because the interviewee felt obliged to cooperate but felt that the interview would simply be a waste of his time.

Alternatively, the interviewee might have felt that any information he offered up could be used by the senior manager for his own agenda, whatever that might be.

## **9.6 Methodological reflection and tests**

An unexpected consequence of the author's employer refusing to participate in the research was that the research could no longer be considered to be action research.

At the outset the author intended to conduct a detailed investigation of performance measurement and management at the operational level of the organization in which he was employed, and to use a number of managers, each of whom would constitute a single case. The intention was that the participating managers would assist in the development of a method and that they would then implement the method in order to change how they develop objectives and measures. The participation of those being researched in the development of the method and the intention to stimulate change through action are the two main criteria of action research (Eden and Huxham 1996). The refusal of the author's employer to participate forced the author to identify other participants. As a result, the participants did not truly participate in the development of the method and due to time constraints the method was not used to prompt change. Therefore the research cannot be called action research.

Despite this setback, the use of case studies, interviews, observations and documentary evidence remain appropriate for the reasons discussed in Section 3.6.9. As little was known in advance about performance measurement and management it would not have been possible to use experiments or surveys, for example. The use of the interview, supported by observations and documentary evidence, as the main data gathering tool is also appropriate for the same reasons.

All of these data gathering methods worked well, with the exception of collecting documentary evidence. The author requested documentary evidence from all of the participants to support the interviews. However, only Managers B1 and B2 provided any documentary evidence and even they did not provide all of the evidence that the

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author would have liked. In all cases that documentary evidence was refused it was for confidentiality reasons. As this research was informal to the extent that official permission had not been sought from the participating organizations the participants' reticence to provide documentary evidence was understandable. In any case, the author had no choice but to accept what he was given.

### 9.6.1 Methodological tests

The most important aspect of research is that concerned with ensuring that the research is methodologically sound, in particular, a researcher must address the reliability, validity, generalizability and credibility of the research and its findings. This section describes the methodological requirements, how they can be achieved and explains how the author conducted the research in order to satisfy the requirements.

Table 9.2, below, summarizes the methodological criteria and how the author addressed each of them.

Reliability	subject error	Use multiple sources of evidence
	subject bias	Use multiple sources of evidence
	observer error	Review of summaries and findings by the interviewees.
	observer bias	Review of summaries and findings by the interviewees.
Validity	Construct validity (Is the research examining what the researcher intended it to examine?)	Remain focused at all times on the original research questions. Present the evidence, discuss the evidence and present the conclusions to allow the reader to see the process.
	Internal validity	Not applicable because the nature of this research is exploratory and not explanatory.
	External validity (generalizability)	Examination of organizations of different sizes, in different industries.  (Continued overleaf)

Objectivity		Not entirely applicable in this research as being objective requires the researcher to remain distant from the research. All findings and conclusions were shared with the interviewees to ensure that they agreed with the author's interpretation.
Credibility		The author provided examples from the interviews to support and justify all of his conclusions. In addition, the author can state that he interpreted the empirical data openly and honestly at all times and allowed the data to guide the conclusions.

**Table 9.2 - Methodological criteria and how they were addressed**

### **9.6.1 Reliability**

Yin (2003, p. 37) describes reliability as an attempt to minimize the errors and biases in a study, so that a later investigator conducting the same case study would arrive at the same conclusions. Although, Yin (ibid.) placed an emphasis on doing the same case study and not attempting to replicate the results of one study by doing another case study. To achieve this, Yin (ibid. p. 38) advises carefully documenting the procedures followed during a case study. Robson (1993, p. 67) in describing reliability discussed four dimensions that can cause a lack of reliability: subject error; subject bias; observer error; and observer bias.

- Subject error may be introduced to an intervention for any number of reasons. The subject may be more or less inclined to cooperate on certain days, depending on their mood, blood sugar levels, whether they feel appreciated at work and so on.
- Subject bias can be introduced when the subject has their own agenda or when they are concerned about how their answers may be used.
- In a similar manner to subject error, observer error can be introduced depending on the mood of the researcher.
- Observer bias can be introduced either consciously or subconsciously, based on the researcher's beliefs and opinions.

To address subject error and bias multiple sources of evidence can be used. Yin (2003 p. 99) advocates multiple sources of evidence to corroborate the same fact or phenomenon. Addressing observer error and bias is more difficult and requires that the researcher constantly evaluate his/her conclusions carefully. Perhaps the best way to avoid observer error and bias is to use multiple researchers (investigator triangulation) and to analyze the differences between the researchers' conclusions. This option was not possible in the current research; as a result, the researcher's descriptions and conclusions were either reviewed by the respondents or by other academics to determine their reliability. This method attempts to replicate investigator triangulation. Despite these efforts it is still possible that the observations made and conclusions drawn by the author were indeed biased by the author's understanding or preconceptions of the issues. For example, as discussed in Section 1.2 the author made two main assumptions during this research. Firstly, that organizations are hierarchical, and secondly, that objectives should be based on an organization's strategy and cascaded down through the hierarchy. The author recognizes that these assumptions will not be valid in all cases but they serve to simplify the research. The author believed it necessary to simplify the research as all circumstances cannot be addressed within this research and the author believes that these two key assumptions are valid for many, if not most, organizations. In addition to these two assumptions, or biases, there may be others that guided the author's conclusions but that the author is not consciously aware of. To address this, the author attempted to interpret the evidence honestly and to see only what was evident in the empirical data.

### **9.6.2 Validity**

According to Yin (2003 p. 35), the test of construct validity is '...especially problematic...' in case study research. Robson (1993 p. 68) agrees by pointing out that 'there is no easy, single, way of determining construct validity.' Yin (2003 p. 34) describes construct validity as 'establishing correct operational measures for the concepts being studied.' Again Robson (1993 p. 68) agrees by asking '...does it measure what you think it measures?'

Yin (2003 p. 35) recommends two steps to ensure construct validity:

1. Select the specific types of changes that are to be studied (and relate them to the original objectives of the study), and
2. Demonstrate that the selected measures of these changes do indeed reflect the specific types of changes that have been selected.

For reasons discussed in Section 9.6, this research cannot claim to be action research, therefore, no changes were made in the participating organizations and none can be studied or measured. However, the author has interpreted Yin's (2003 p. 34) requirements as ensuring that he actually did research what he set out to research.

Section 3.9.2 described the construct of this research as being performance measurement and management at the operational level. Therefore, to achieve construct validity the author must investigate performance measurement and management at the operational level. This results in two key operational measures:

1. Operational level; and
2. Developing objectives and performance measures.

Section 2.5.1 examined the operational level and found that there is agreement that the operational level is the lowest level of the organization and that the day-to-day activities are carried out there. Therefore, an operational level manager was arbitrarily defined as one who spends greater than fifty percent of his or her time in dealing with the day-to-day activities. All of the participants met this criterion, including Manager F who is actually a senior manager but who currently spends greater than fifty percent of his time in dealing with day-to-day issues in production and maintenance due to a recent reorganization.

To ensure that the research also focused on developing objectives and measures, the interview questions were reviewed several times and by several people to ensure that they asked questions relevant to the second operational measure. The research

questions were also reviewed several times and were used to guide the selection of interview questions and the analysis of the empirical data.

In addition to the above, Yin (2003 p. 34) provides further guidance to address the concern of Construct Validity, by suggests the following three tactics:

1. Use multiple sources of evidence;
2. Establish a chain of evidence; and,
3. Have key informants review draft case study reports.

The author used multiple sources of evidence, including multiple methods, whenever possible. The primary source of evidence for all of the cases except Company A was the open-ended interview. The author used documentary evidence to support his observations in Company A. In Company B the multiple sources included interviewing two managers and using documentary evidence to support the interviews. The author requested documentary evidence in companies C, D and F, however the requests were declined because of confidentiality concerns on the behalf of the interviewees. As the participation of the managers was informal, in that official permission was not sought from the senior management of the companies, the author had no recourse on this matter and had to accept whatever he was given.

The chain of evidence was created by sequencing the research in what the author believes to be a logical manner and by describing and discussing the evidence and then presenting the author's conclusions. This approach was based on Yin's (2003 p. 105) advice to create a chain of evidence, however, the author did not completely develop the case study protocol as described by Yin (2003 pp. 67-80) because he found himself presented with the very real threat of developing '...an unhealthy concentration on this aspect of carrying out an enquiry' (Robson 1993 p. 69).

In all cases the interviewees reviewed both the summary of the interview transcripts and the conclusions arrived at by the author after the analysis of the empirical data. None of the interviewees made substantial changes: Manager D made some changes



to the wording but not to the meaning of one paragraph; Managers B1 and B2 requested that the specific names of their systems be removed to ensure that their organization could not be identified. No other changes were requested.

Internal validity was not a major concern in this research because the author did not conduct experiments, or apply treatments, for which a specific outcome was predicted, which is the circumstance in which internal validity is of concern (Robson 1993 p. 69).

### **9.6.3 Generalizability**

Generalizability, or external validity, is a measure of how widely applicable a study's findings are beyond the immediate case (Yin 2003 p. 37, Robson 1993 p. 72). As Yin (2003 p. 37) points out, the case study relies on analytic generalizations to a broader theory, and not statistical generalizations to a larger universe. The theory must be tested in later case studies, by direct replication, to provide further evidence of support for the theory. However, direct replication presents a real problem for this type of research (Eden and Huxham 1996) because no two situations are exactly the same. Even if the exact same study were to be repeated, with the same participants, the outcome is likely to be different. Merely participating in the research has changed the participants and made them more aware of the issue addressed by the research, as was admitted by Manager D who stated that participating '...got him enthused...' about the subject.

As a result, the author can state with a high degree of confidence, only that the participants behave as described in the research, he cannot state with any degree of certainty that all operational level managers behave in this way. However, there are two facts that suggest the finding may be more widely applicable:

1. There is no reason to suspect that the participants are not representative of the wider population.
2. The research included managers in both sales and manufacturing, and also included organizations of different sizes, in different industries.

The operational level characteristics identified during the research might not apply in all organizations, for example, organizations in more mature and stable markets might exhibit more stable conditions at the operational level. In which case, the operational level managers would be in a position to use more structured methods than those suggested during this research. However, the author believes that the operational level characteristics identified during this research are widespread, and therefore the findings will apply to many other organizations.

Clearly, some organizations will have deployed structured methods at the operational level that help managers to identify improvement activities and to subsequently develop objectives and measures for those activities. However, there is no reason to believe that the organizations that participated in this research are unusual in any respect, and they are therefore probably representative of many organizations.

The fact that organizations of different sizes and in different industries exhibited such similar characteristics at the operational level and a lack of structured methods deployed to the operational level also suggests that the findings will apply to many organizations.

Ultimately, much more research remains to be done into performance management at the operational levels of organizations, and only after much more research will it be possible to state with certainty that the findings of this research are widely applicable, or not, as the case might be.

#### **9.6.4 Credibility**

Traditionally, this has been demanded only from researchers engaged in quantitative studies, however, according to Robson (1993 pp. 74-75) there is a strong case to make this demand of qualitative researchers because of the lack of formalized procedures for conducting qualitative research. Silverman (2001 p.221) agrees and states that 'if qualitative research is to be judged by whether it produces valid knowledge, then we should properly ask highly critical questions about any piece of research. And these questions should be no less probing and critical than we ask

about any quantitative research.' Credibility can be achieved, at least to some extent, by providing sufficient detail on how the evidence is produced to allow the reader to carry out an exact replication of the study (Robson *ibid.*).

## **9.7 Conclusion**

The operational level of organizations is the place where strategies are executed and achieved, or not, as the case might be. However, there has been little research into performance management at the operational levels in the past. The research documented by this thesis interviewed six managers in five organizations that varied in annual revenues from under US\$100 million to over US\$8 billion.

The research clearly showed that the characteristics of the operational level, in all of the participating organizations, are very different from those of the strategic level and that methods to manage performance that are developed at, and for, the strategic level are not suitable for use at the operational level.

The research also found that every one of the participating organizations use their appraisal systems to communicate objectives from the top of the organization to the lower levels. In addition, the appraisal systems in the participating organizations are getting increasingly complex as they try to address such issues as employee development, safety and legal compliance by building components that address these issues into their appraisal systems. Despite the increasing complexity of the appraisal systems, these systems do not yet provide guidance for managers on how to identify improvement activities, not on how to develop determinant objectives and complimentary performance measures. Of the systems in the participating organizations, only Company D's system provided any guidance on what objectives to set and how to measure performance. This guidance consists of stating that if an objective cannot be measured, then an alternative objective should be chosen.

The research developed a set of guidelines based on the Cambridge method (Neely et al. 2002), which was found to be the most thorough method described in the

literature. The guidelines included three worksheets and detailed criteria that performance measures should meet. While all of the participants agreed with the guidelines in principle, they all pointed out that the worksheets made the method too burdensome and time consuming and forced a duplication of effort. As a result, none of the participants were willing to use the guidelines in their current format.

In the immediate future the guidelines will be modified to reflect the comments of the participants and will be evaluated again.

## **References and Bibliography**

Adam, P. and Van de Water, R. (1995), Benchmarking and the bottom line: Translating business re-engineering into bottom line results, *Industrial Engineering*, February, pp 24-26

Adam, P. and Van de Water, Richard, Benchmarking and the bottom line: Translating Business Re-Engineering into Bottom Line Results, *Industrial Engineering*, February 1995, pp. 24-27

Ahmed, N.U. and Montagno, R.V., Operations strategy and organizational performance: an empirical study, *International Journal of Operations and Production Management*, Vol. 16, No. 5, 1996, pp. 41-53.

American Heritage Dictionary® of the English Language, Fourth Edition, 2000

Armistead, C., Harrison, A. and Rowlands, P., Business Process Re-engineering: lessons from operations management. *International Journal of Operations and Production Management*, Volume 15, Number 12, 1995, pp 46-58.

Anderson B. and Fagerhaug, T. F. (2002), *Performance Measurement Explained: Designing and Implementing Your State-Of-The-Art System*, American Society for Quality (ASQ) Quality Press, Milwaukee, 2002

Azzone, G., Masella, C. and Bertele, U., Design of Performance Measures for Time-Based Companies, *International Journal of Operations and Production Management*, Vol. 11, No. 3, 1991, pp. 77-85.

- Banks, J. M. and Stone, C. L., *Business Improvement Programs: Measuring the Times Top 500, TQM in Action*, Sheffield, July 1996
- Banks, R. L. and Wheelwright, S. C., *Operations vs. Strategy: trading tomorrow for today*, *Harvard Business Review*, May-June 1979, pp. 112-120
- Beer, S., *The Heart of Enterprise*, Chichester, 1979
- Beer, S., *Diagnosing the System for Organizations*, Chichester, 1985
- Beischel, M.E. and Smith, K.R., "Linking the Shop Floor to the Top Floor", *Management Accounting*, Vol. 73, October 1991, pp. 25-29
- Bititci, U. S. (1994), *Measuring the integrity of your business*. *International Journal of Management Decision*, Volume 33, Number 7, 1995, pp 10-18
- Bititci, U. S. and Carrie, A. S. (1995), *Benchmarking: The Performance Measurement Systems*. *ASI'95 Life Cycle Approaches to Production Systems*, Coscais, Portugal, June 1995
- Bititci, U. S., Carrie, A. S. and McDevitt, L., *Performance Measurement: A Business Process View*, *IFIP WG 5.7 Workshop on Modeling Techniques, Business Processes and Benchmarking*, Bordeaux, France, April 1996.
- Bititci, U. S., Carrie, A. S. and McDevitt, L., *Integrated Performance Measurement Systems: a development guide*, *International Journal of Operations and Production Management*, Vol. 17, No. 5, 1997, pp. 522-534.
- Bititci, U.S., *Modeling of Performance Measurement Systems in Manufacturing Enterprises*. *International Journal of Production Economics* 42 (1995), pp 137-147

Bititci, U. S., Carrie, A. S. and Turner, T., *Managing Enterprise Performance*,

Bititci, U. S., Carrie, A. S., Turner, T. and Lutz, S., *Integrated Performance Measurement Systems: Implementation Case Studies*. IFIP WG5.7 Annual Working Conference on Strategic Management of the Manufacturing Value Chain, Kluwer Academic Publications, Dordrecht, The Netherlands, 1998, pp 177-186

Bititci, U. S., Turner, T. J. and Bourne, M., *Reference Model versus Process: a case study*, PM2000, Cambridge, July 2000.

Bititci, U.S., Bourne, M. and MacBryde, J., *Performance Indicators for Sustainable Competitive Advantage*, International Working Conference on Strategic Manufacturing, 26-29 August, 2001, Aalborg, Denmark.

Bititci, U.S, Mendabil, K., Nudurapati, S., Turner, T. and Garengo, P., 2004, *The Interplay Between Performance Measurement, Organizational Culture and Management Styles*, *Measuring Business Excellence*, March, Volume 8, Number 3, pp. 28-41

Blenkinsop, S. A. and Burns, N., *Performance Measurement Revisited*, *International Journal of Operations and Production Management*, Vol. 12, No. 10, 1992, pp. 16-25.

Blossom, A.P. and Bradley, J.R. 2005, *Nine Mistakes Managers Can Make in Using Performance Measures to Motivate Employees*, Working Paper, S.C. Johnson Graduate School of Management, Cornell University, Ithaca, New York

Bourne, M., Mills, J., Wilcox, M., Neely, A. and Platts, K. (2000), *Designing, implementing and updating performance measurement systems*, *International Journal of Operations and Production Management*, Vol. 20 No.7, pp 754-771

Bourne, M., Neely, A., Platts, K. and Mills, J. (2002), The success and failure of performance measurement initiatives, Perceptions of participating managers, *International Journal of Operations and Production Management*, Vol. 22 No.11, pp 1288-1310

Bourne, M., Patience Charter, *Financial Management*, March 2002, pp 32

Bourne, M. and Neely, A., Cause and Effect, *Financial Management*, September 2002, pp 30-31

Brignall, T.J., Fitzgerald, L., Johnston, R. and Silvestro, R., Performance Measurement in Service Businesses, *Management Accounting (UK)* 1991, pp 34-36

Bromwich, M. and Bhimani, A., Management Accounting: Evolution not Revolution, *Management Accounting*, October 1989, pp 5-6

Brown, M.G., Is your measurement well balanced? *The Journal for Quality and Participation*, Cincinnati, Oct/Nov 1994, Volume 17, Issue 6, 1994, pp 6-11

Burcher, P. and Dupernex, S., The Road to Lean Repetitive Batch Manufacturing. Modeling planning system performance. *International Journal of Operations and Production Management*, Vol. 16 No.2, 1996, pp 210-220

Burcher, P. and Stevens, K., Measuring up to world class manufacturing, *International Journal of Operations and Production Management*, Vol. 16, No. 6, 1996, pp. 4-11

Butterworth, R. and Witcher, B. (2001), Realising the Vision: Translating Strategy into Action Through Policy Management, *Journal of the Institution of British Telecommunication Engineers*, Part 3, August



Carrie, A. S. and MacIntosh R. (1992), UK Research into Manufacturing Systems Integration Proceedings of the IFIP WG 5.7 Working Conference on Integration in Production Management Systems, Eindhoven, The Netherlands, August 1992.

Chatwin, H., Business performance measurement initiatives, Bulletin, The Foundation for Manufacturing and Industry, January 1996, pp 12-14

Chapple, E.D. and Sayles, L.R. (1961), The Measure of Management, New York,

Cherryholmes, C.H. 1992, Notes on Pragmatism and Scientific Realism, Educational Researcher, 14 August-September, pp 13-17

Covin, J.G., Entrepreneurial versus conservative firms: A comparison of strategies and performance, Journal of Management Studies, 28:5 September 1991

Crawford, K. M. and Cox, J. F., Designing performance measurement systems for just-in-time operations, International Journal of Production Research, Vol. 28, No. 11, 1990, pp 2025-2036

Creswell, J.W. (2003), Research Design, Qualitative, Quantitative and Mixed Methods Approaches (Second Edition), Sage, London

Crowe, T. J. and Cheng, CC, Using Quality Function Deployment in Manufacturing Strategic Planning, International Journal of Operations and Production Management, Vol. 16 No.4 1996, pp 35-48

Delbridge, R., Lowe, J. and Oliver, N., The Process of Benchmarking. A study from the automotive industry, International Journal of Operations and Production Management, Vol. 15 No.4, 1995, pp 50-62

DeFeo, J.A., Measuring What Matters, *Industrial Management*, May-June 2000, pp 31-33

De Ron, Ad J., Measures of manufacturing performance in advanced manufacturing systems, *International Journal of Production Economics* 41 (1995), pp 147-160

DeToni, A., Nassimbeni, G. and Tonchia, S., A Framework for Operations Performance Measurement in Management-By-Process Organizations. 1st International Conference of the European Operations Management Association, Cambridge, 1994, pp 79-84.

DeToni, A. and Tonchia, S., Lean Organization, Management By Process and Performance Measurement, *International Journal of Operations and Production Management*, Vol. 16 No.2 1996, pp 221-236

Dixon, J. R., Nanni, A. J. and Vollmann, T. E., *The New Performance Challenge. Measuring Operations for World-Class Competition.* Business One Irwin, New York, New York, 1990

Drucker, P. F. 1990, The Emerging Theory of Manufacturing, *Harvard Business Review*, May-June 1990, pp 94-102

Drucker, P. F. 1995, The Information Executives Truly Need, *Harvard Business Review*, January-February 1995, pp 54-62

Dumond, E.J., Making the best use of performance measures and information, *International Journal of Operations and Production Management*, Vol. 14, No. 9, 1994, pp. 16-31

Eccles, R. G., The Performance Measurement Manifesto, *Harvard Business Review*, January-February 1991, pp. 131-137.

Eccles, R. G. and Pyburn, P. J. (1992), Creating a Comprehensive Performance Measurement System, *Management Accounting*, Vol. 74, October 1992, pp. 41-44

Eden, C. and Huxham, C. (1996), Action Research for Management Research, *British Journal of Management* 1996, Vol. 7, pp, 75-86

Eisenhardt, K.M. (1989), Building Theories from Case Study Research, *Academy of Management Review*, 1989, Vol. 14, No. 4, pp. 532-550

Flapper, S.D.P., Fortuin, L. and Stoop, P.P.M., Towards consistent performance measurement systems, *International Journal of Operations and Production Management*, Vol. 16, No. 7, 1996, pp. 27-37

Forza, C., The Impact of information systems quality on quality performance, *International Journal of Operations and Production Management*, Vol. 15, No. 6, 1995, pp. 69-83

Frigo, M.L. and Krumwiede, K. 1998a, Performance Measures Are A' Changin', *Cost Management Update*, April, Issue 86

Frigo, M.L. and Krumwiede, K. 1998b, Tips on Implementing the Balanced Scorecard Approach, *Cost Management Update*, May, Issue 87

Frigo, M.L. and Krumwiede, K. 1999, Companies Continue Quest for Improvement, *Cost Management Update*, February, Issue 94

Fry, T.D, Japanese manufacturing performance criteria, *International Journal of Production research*, 1995, Vol. 33, No. 4, pp 933-954

Galloway, D. and Waldron, D., Throughput Accounting, the need for a new language for manufacturing. *Management Accounting*, November 1988, pp 34-35. (Article 1 of a series of five articles)

Ghalayini, A.M. and Noble, J.S., The changing basis of performance measurement, *International Journal of Operations and Production Management*, Vol. 16, No. 8, 1996, pp. 63-80

Gill, J. and Johnson, P., *Research Methods for Managers*, 3<sup>rd</sup> Edition, London, Sage 2002

Glaser, B.B.G. and Strauss, A.L. (1967) *The Discovery of Grounded Theory: Strategies for Qualitative Research*, New York: Aldine

Globerson, S., Issues in developing a performance criteria system for an organization, *International Journal of Production research*, Vol. 23, No. 4, 1985, pp 639-646

Grady, M.W., Performance Measurement: Implementing Strategy, *Management Accounting*, Vol. 72, June 1991, pp 49-53

Green, F. B., Amenkhienan, F. and Johnson, G., Performance Measures and JIT, *Management Accounting*, February 1991, pp. 50-53.

Gregory, M.J., Integrated Performance Measurement: A review of current practice and emerging trends. *International Journal of Production Economics*, 30-31 (1993), pp 281-296

Gummesson, E., *Qualitative Methods in Management Research*, 2<sup>nd</sup> Edition, London, Sage 2000

- Harrington, H.J., The fallacy of universal best practice, *The TQM magazine*, Vol. 9, No. 1, 1997, pp 61-75
- Hatch, M.J., *Organization Theory*, Oxford, 1997, p. 270
- Hayes, H. and Abernathy, W.J., Managing our way to economic decline, *The McKinsey Quarterly*, Spring 1981, pp 2-23
- Hayes, R. S., Wheelwright, S. C. and Clark, K. B., *Measuring Manufacturing Performance*, *Dynamic Manufacturing: creating the learning organization*, Free Press, New York, 1988, pp. 130-160
- Hazzel, M. and Morrow, M., Performance measurement and benchmarking, *Management Accounting*, Vol. 72, December 1992, pp 44-45
- Hudson, M., "Introducing Integrated Performance Measurement into Small and Medium Sized Organizations", University of Plymouth, Ph.D. thesis, 2001
- House, C.H. and Price, R.L., The Return Map: Tracking product Teams, *Harvard business Review*, January-February 1991, pp 92-100
- Hudson, M., Smart, A. and Bourne, M. (2001), Theory and practice in SME performance measurement systems, *International Journal of Operations and Production Management*, Vol. 21, No. 8, pp 1096-1115
- Johnson, H.T. (1981), Toward a New Understanding of Nineteenth-Century Cost Accounting. *The Accounting Review*, Vol. LVI, No. 3, July, pp. 510-518
- Johnson, H.T. and Kaplan, R.S. (1987), *Relevance Lost. The Rise and Fall of Management Accounting*, Harvard Business School Press, Boston, Massachusetts

Kaplan, R. S. (1983), Measuring Manufacturing Performance: A New Challenge for Managerial Accounting Research. *The Accounting Review*, Vol. LVIII, No. 4, October, pp. 686-705.

Kaplan, R. S. (1984), Yesterday's Accounting Undermines Production, *Harvard Business Review*, July-August, pp 95-101

Johnson, H.T. and Kaplan, R.S. (1987), *Relevance Lost. The Rise and Fall of Management Accounting*, Harvard Business School Press, Boston, Massachusetts

Kaplan, R. S. (1988), One Cost System Isn't Enough. *Harvard Business Review*, January-February, pp 61-66

Kaplan, R. S., (1990), *Measures for Manufacturing Excellence*, Harvard Business School Press, Boston, Massachusetts

Kaplan, R.S. (1991), New Systems for Measurement and Control, *The Engineering Economist*, Volume 36, No. 2, Spring, pp 201-218

Kaplan, R. S. and Norton, D. P. (1992), The Balanced Scorecard – Measures That Drive Performance. *Harvard Business Review*, January-February, pp. 71-79

Kaplan, R. S. and Norton, D. P. (1996a), *The Balanced Scorecard, translating strategy into action*. Harvard Business School Press, Boston, Massachusetts,

Kaplan, R. S. and Norton, D. P. (1996b), Using the Balanced Scorecard as a Strategic Management System, *Harvard Business Review*, January-February, pp.

Kaplan, R.S. and Norton, D.P. (2001a), Transforming the Balanced Scorecard from Performance Measurement to Strategic Management: Part I, Accounting Horizons, Volume 15, Number 1, March, pp 87-104

Kaplan, R.S. and Norton, D.P. (2001b), Transforming the Balanced Scorecard from Performance Measurement to Strategic Management: Part II, Accounting Horizons, Volume 15, Number 2, June, pp 147-160

Kaplan, R.S. and Norton, D.P. (2001c), The Strategy Focused Organization, Harvard Business School Press, Boston

Kaydos, W. (1999), Operational Performance Measurement, Increasing Total Productivity, St. Lucie Press, New York

Keegan, D. P., Eiler, R. G. and Jones, C. R. (1989), Are Your Performance Measures Obsolete? Management Accounting, June, pp. 45-50

Kennerley, M. and Neely, A., Performance Measurement Frameworks – a review

Kennerley, M. (2000), Performance Measurement and Cause and Effect Relationships within Inventory Management of Manufacturing Planning and Control Systems, PhD thesis, University of Manchester Institute of Science and Technology.

Kennerley, M. and Neely A. 2002, A Framework of the Factors Affecting the Evolution of Performance Measurement Systems, The International Journal of Operations and Production Management, Volume 22, Number 11, pp. 1222-1245

Kolay, M.K. and Sahu, K.C. (1995), Performance measurement as a surrogate value of organizational human resource, International Journal of Operations and Production Management, Vol. 15, No. 5, pp. 40-59

- Larson, J.R. and Callahan, C. (1990), Performance Monitoring: How It Affects Work Productivity, *Journal of Applied Psychology*, Vol. 75, No. 5, pp 530-538
- Leavitt, H.J. (2003), Why Hierarchies Thrive, *Harvard Business Review*, March, 2003, pp. 96-102
- Lebas, M., Managerial Accounting in France: Overview of past traditions and current practice, *European Accounting Review*, Part 3, No. 3, pp 471-487
- Lebas, M. (1995), Performance Measurement and Performance Management, *International Journal of Production Economics*, Vol. 41, pp 23-35
- Lee, C. (1990), Action Research: harnessing the power of participation, *Training: the Magazine of Human Resource Management*, January 1990, Vol. 27, No. 1, pp. 85-87
- Letza, S. R., The design and implementation of the balanced business scorecard. An analysis of three companies in practice. *Business Process Re-engineering and Management Journal*, Vol. 2 No 3, 1996, pp 54-76
- Lingle, J.H. and Schiemann, W.A., From balanced scorecard to strategic gauges: Is measurement worth it?, *American Management Association*, March 1996, pp 56-61
- Little, D. 2003, *The Strategy Deployment Paradox: Linking strategy, performance measurement systems to appraisals*, PhD thesis, Strathclyde University, Glasgow.
- Lockamy, A. 1994, A delivery performance measurement system framework for improved customer responsiveness, *Production and Inventory Management Journal*, 2<sup>nd</sup> Quarter, pp 17-21.



Lockamy, A. and Cox, J.P. 1995, An empirical study of division and plant performance measurement systems in selected world-class manufacturing firms: linkages for competitive advantage, *International Journal of Production Research*, Vol. 33, No. 1, pp 221-236

Lunio, P. 1991, A Measure of Success, *Engineering*, Dec, pp. 14-15

Lynch, R.L. and Cross, K.F. 1995, *Measure Up! How to measure corporate performance*, Second Edition, Blackwell, Oxford.

Martin, N.H. 1956, "Differential Decisions in the Management of an Industrial Plant", *Journal of Business*, Volume 29, pp. 249-260

Maskell, B.H. 1989, "Performance Measurement for World Class Manufacturing", Part 1. *Management Accounting*, May, pp 32-33

Maskell, B.H. 1989, "Performance Measurement for World Class Manufacturing", Part 2. *Management Accounting*, June, pp 32-33

Maskell, B.H. 1989, "Performance Measurement for World Class Manufacturing", Part 3. *Management Accounting*, July/August, pp 48-50

Maskell, B.H. 1989, "Performance Measurement for World Class Manufacturing", Part 4. *Management Accounting*, September, pp 64-66

Maul, R.S., Weaver, A.M., Childe, S.J., Smart, P.A., Bennett, J. 1995, "Current Issues in Business Process Re-engineering", *International Journal of Operations and Production Management*, Vol. 15, No. 11, pp. 37-52

MacKerron, G.C, Masson, R. and McGlynn, K. 2003, "Self-Assessment: Use at Operational Level to Promote Continuous Improvement", *Production Planning and Control*, Volume 14, Number 1, pp. 82-89

McDevitt, L. G., Carrie, A. S and Bititci, U. S. 1997, "Viable Performance Measurement Systems", *Managing Enterprises – Stakeholders, Engineering, Logistics and Achievement*, Loughborough University, Mechanical Engineering Publications Limited, London and Bury St. Edmunds, UK, pp. 287-293

McNair, C.J. and Mosconi, W., "Measuring Performance in an Advanced Manufacturing Environment, *Management Accounting*", Vol. 69, July 1987, pp 28-31

McNair, C.J., Lynch, R.L. and Cross, K.F., "Do Financial and Non-financial Performance Measures Have to Agree? *Management Accounting*, November 1990, pp 28-36

Meyer, C., "How the Right Measures Help Teams Excel", *Harvard Business Review*, May-June 1994, pp 95-103

Miller, J.G. and Vollman, T.E., *The hidden factory*, *Harvard Business Review*, Sept-Oct 1985, pp 142-150

Miller, J.G and Vollman, T.E., *The Hidden Factory*. *Harvard Business Review*, Sept-Oct 1985, pp 142-150

Mintzberg, H., *The Nature of Managerial Work*, Englewood Cliffs, 1973

Murphy, J.C. and Braund, S. L., *Management Accounting and New Manufacturing Technology*. *Management Accounting*, February 1990, pp 38-40

Murphy, J.P. and Rorty, R. 1990, *Pragmatism: From Peirce to Davidson*, Westview Press, Boulder CO., USA

Neely, A., Mills, J., Platts, K., Gregory, M. and Richards, H. 1994, Realizing Strategy Through Measurement. *International Journal of Operations and Production Management*, Vol. 14 No.3, pp 140-152

Neely, A., Gregory, M. and Platts, K. 1995, Performance Measurement System Design, A literature review and research agenda, *International Journal of Operations and Production Management*, Vol. 15, No. 4, pp. 80-116

Neely, A., Mills, J., Platts, K., Richards, H., Gregory, M. and Bourne, M., Developing and Testing a Process for Performance Measurement System Design, Proceedings of the 3<sup>rd</sup> EurOMA conference, London, 1996a, pp. 471-476

Neely, A., Mills, J., Platts, K., Gregory, M. and Richards, Huw, Performance measurement system design: Should process bases approaches be adopted? *International Journal of Production Economics* 46-47, 1996b, pp 423-431

Neely, A.D., Mills, J.F., Gregory, M.J., Richards, A.H., Platts, K.W. and Bourne, M.C.S., 1996c, *Getting the Measure of Your Business*, Findlay Publications, Horton Kirby

Neely, A. 1999, The performance measurement revolution: why now and what next? *International Journal of Operations and Production Management*, Vol. 19, No. 2, pp 205-228.

Neely, A., Mills, J., Platts, K., Richards, H., Gregory, M., Bourne, M. and Kennerley, M. (2000), Performance Measurement System Design: developing and testing a process-based approach. *International Journal of Operations and Production Management*, Vol. 20, No. 10, 2000, pp. 1119-1145

- Neely, A., Bourne, M. Mills, J., Platts, K. and Richards, H. (2002), *Getting the Measure of Your Business*, Cambridge University Press, Cambridge
- Neely, A. and Bourne, M., *Cause and Effect*, *Financial Management*, 2002, pp. 30-31
- Neely A, Adams, C. and Kennerley, M. 2002, *The Performance Prism*, Prentice Hall, London
- New, C.C. and Szwejczewski, M., *Performance measurement and the focused factory: empirical evidence*, *International Journal of Operations and Production Management*, Vol. 15, No. 4, 1995, pp. 63-79
- Noci, G., *Accounting and non-accounting based measures of quality-based performances in small firms*, *International Journal of Operations and Production Management*, Vol. 15, No. 7, 1995, pp. 78-105
- Oliver, N., Delbridge, R. and Lowe, J., *The European auto components industry. Manufacturing performance and practice*, *International Journal of Operations and Production Management*, Vol. 16, No. 11, 1996, pp. 85-97
- Oliver, N., Delbridge, R. and Lowe, J., *The correlates of high performance manufacturing: Management practices and wider context*. 1st International Conference of the European Operations Management Association, Cambridge, 1994, pp 13-18.
- Philips, M., Sander, P. and Govers, C., *Policy formulation by use of QFD techniques: A case study*, *International Journal of Quality and Reliability Management*, Vol. 11, No. 5, 1994, pp 46-58
- Phillips, D.C. and Burbules, N.C. (2000), *Postpositivism and Educational Research*, Rowman and Littlefield, Oxford.

Primrose, P.L. and Verter, V., Do companies need to measure their production flexibility? *International Journal of Operations and Production Management*, Vol. 16, No. 6, 1996, pp. 4-11

Rangone, A., An analytical hierarchy process framework for comparing the overall performance of manufacturing departments, *International Journal of Operations and Production Management*, Vol. 18 No. 8, 1996, pp. 104-119

Rhodes, D., Wright, M. and Jarrett, M., Management Control for Effective Corporate Planning, *Long Range Planning*, Vol. 17, No. 4, 1984, pp. 115-121

Rhodes, D. J., (1988), Integration Challenge for Small and Medium Companies, *BPICS Conference*, 2-4 November 1988, pp. 153-166

Ritzmann, L.P., King, B.E. and Krajewski, L.J. (1984), Manufacturing performance – pulling the right levers, *Harvard Business Review*, March-April, pp. 143-152

Robson, C., *Real World Research*, Oxford, Blackwell, 1993

Rockart, J.F., Chief executives define their own data needs, *Harvard Business Review*, March-April 1979, pp 81-93

Rorty, R. (1983), *Consequences of Pragmatism*, Minneapolis, University of Minnesota Press

Schein, Edgar H., What You Need to Know About Organizational Culture, *Training and Development Journal*, January 1986, pp. 30-33

Schmenner, R.W. and Vollmann, T.E.. Performance Measures: Gaps, False Alarms and the "usual suspects". *International Journal of Operations and Production Management*, Vol. 14 No. 12, 1994, pp. 58-69

Schneiderman, A.M., Time to Unbalance your Scorecard, Business and Strategy Magazine, Briefs, 3<sup>rd</sup> Quarter 2001, pp. 3-4

Shambu, G., Suresh, N.C. and Pegals, C.C., Performance evaluation of cellular manufacturing systems: a taxonomy and review of research, International Journal of Operations and Production Management, Vol. 16, No. 8, 1996, pp. 81-103

Sieger, J.M., Manage Your Numbers To Match Your Strategy, Management Review, February 1992, pp 46-48

Sink, D. Scott, Performance and Productivity Measurement: The art of developing creative scorecards, Industrial Engineer, January 1986

Sink, D. Scott and Tuttle, Thomas C., The Performance Management Question in The Organization Of the Future, Industrial Management, Jan-Feb 1990, Volume 32, Issue 1, pp 4-12

Stonich, P.J. 1984, The Performance Measurement and Reward System: Critical to Strategic Management, Organizational Dynamics, Winter, pp 45-46.

Sink, D. Scott, The Role of Measurement In Achieving World Class Quality and Productivity Management, Industrial Engineering, June 1991, Volume 23, No. 6, pp 23-29

Strauss, A. (1987), Qualitative Analysis for Social Scientists, Cambridge, England, Cambridge University Press

OED (Oxford English Dictionary) Online, The Oxford University Press, 2003

Tenhunen, J., Ukko, J. and Rantanen, H., Principles in the Implementation of a Performance Measurement System in SMEs, Proceedings of the 2<sup>nd</sup> International

Workshop on Performance Measurement, IFIP WG5.7, June 6-7, 2002, pp 111-118

Ukko, J., Tenhunen, J. and Rantanen, H., Dimensions and Metrics of Performance Measurement in SMEs, Proceedings of the 2<sup>nd</sup> International Workshop on Performance Measurement, IFIP WG5.7, June 6-7, 2002, pp 119-125

Van Der Wiele, A., Williams, A.R.T., Dale, B.G., Carter, G., Kolb, F., Luzon, D. M., Schmidt, A., and Wallace, M., Self Assessment, a study of progress in Europe's leading organizations in quality management practices, International Journal of Quality Research, Vol. 13, No. 1, 1995, pp 84-104

Walker, K. B. (1996), Corporate performance reporting revisited - the balanced scorecard and dynamic management. Industrial Management and Data Systems, 96/3 (1996), pp 24-30

Walley, P., Blenkinsop, S. and Duberley, J. (1994), The Adoption and non-Adoption of Modern Accounting Practices: A study of 20 manufacturing firms. International Journal of Production Economics 36, pp 19-27

Wisner, J. D. and Fawcett, S. E. (1991), Link Firm Strategy to Operating Decisions through Performance Measurement, Production and Inventory Management journal, Third Quarter, pp. 5-11

Witcher, B. and Butterworth, R., A Note on Hoshin Kanri, ESRC Innovation Programme, Cranfield, 11/12<sup>th</sup> September 1996

Witcher, B. and Butterworth, R. (1999), What is Hoshin Kanri, A Review, (<http://www.mgt.uea.ac.uk/research/witcher-b/WhatIsHK.pdf>)

White, G.P., A survey and taxonomy of strategy-related performance measures for manufacturing, International Journal of Operations and Production

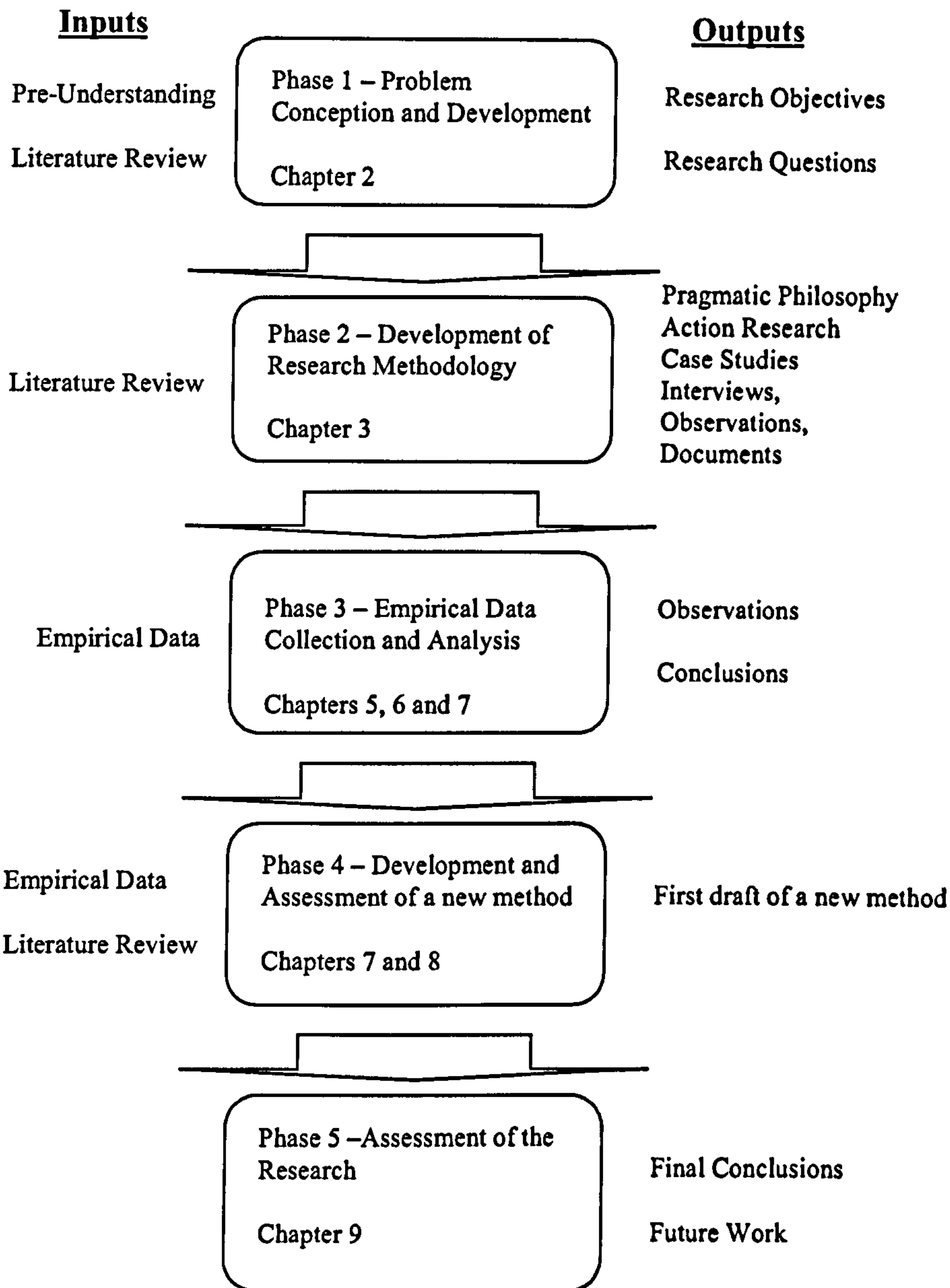
Management, Vol. 16, No. 3, 1996, pp. 42-61

Yin, R.K., Case Study Research, Design and Methods, 3<sup>rd</sup> Edition, London, Sage  
2003

Young, S., Checking performance with competitive benchmarking, Professional  
Engineering, February 1993, pp 14-15



# Appendix 1



## **Appendix 2**

### **Interview Questions**

## **First Draft of Interview Questions**

## Interview Questions

Company    A    B    C    D

Manager 1 2 3 4 5 6 7 8 9 10

### General information

No. of Employees _____	Manager's years in industry _____
Annual revenue _____	Manager's years in position _____
Years in business _____	No. of reports _____

## **The Performance Management System in general**

**Describe how the performance management system in your organization works.**

Prompt: How are group and individual objectives decided upon and by whom?  
Source of objectives? Strategy related?  
Frequency of review?

Who is involved?

Linked to reward system or separate?

**Are there any objectives/measures not included in the formal system?**

Prompt: How are they developed?  
Why aren't they included in the formal system?  
What are they used for?  
Who is involved in developing them?  
Who are they applied to?

**What would you say is the main purpose of the performance management/measurement system?**

**Are you happy with your performance management/measurement system?**

Prompt: Does it provide all of the information that you need?  
Are all employees included in the system?  
Are all operations included?  
How much guidance does it give you in developing objectives/measures?

## **The Performance Management System at the operational level**

**What are your personal objectives based on?**

**How is progress towards these objectives assessed?**

**Do you have any input into your objectives?**

**What do you base the objectives of your direct reports on?**

Prompt: Do you consider the organization's strategy?  
Do you consider the requirements of your suppliers and customers (internal)?  
Do you analyze the activities within your function?

**How do you select the objectives and measures?**

Prompt: Are the objectives consensual?  
Do you clearly define data collection and analysis methods?  
Assess objectives for counter-productive or conflicting behaviour?  
Identify and eliminate roadblocks in advance or as they occur?

**How do you use the objectives and measures?**

Prompt: Do you provide feedback to direct reports on a regular, on-going basis?  
Do you promote/encourage autonomy in choosing and implementing corrective actions?  
Use the measures for CI and org learning?

**Is there an informal performance measurement/management system?**

Prompt: Do you consider the informal measurement system?  
Link rewards to the formal system?

## **Objectives and Performance Measures**

**How do you choose performance measures to assess progress towards objectives?**

**Prompt:** Are the measures simple and easy to understand?  
Ratio based or absolute numbers?  
Do you consider the accuracy, unit of measure, level of aggregation?  
Are measures objective where possible, or subjective?  
Defined consensually and under the control of those being measured?

**Do you have any performance measures whose purpose is to gather data for decision making and planning, and not to measure progress towards objectives?**

**What information do you use to make general planning decisions?**

**Prompt:** Where do you get this information?  
How do you get the information?  
Do you validate the information?  
How do you validate it?  
Do they remain in use after they have served their purpose?

**What information do you use to make on-the-spot decisions in response to problems?**

**Prompt:** Where do you get this information?  
How do you get the information?  
Do you validate it?  
How do you validate it?  
Do you decide on courses of action independently or collaboratively with you direct reports?



## **The Performance Measurement System**

### **How are individual objectives communicated?**

Prompt:           Computer based, central system or paper based?  
                      How is feedback provided to individuals?  
                      Cost and non-cost measures?  
                      Is the relationship between objectives explained?

### **Operational level characteristics**

- Real-time focus
- Brevity and fragmentation of activities
- Current and specific issues
- Continuous and rapid decision making
- Short term focus

Are these characteristics true for your job?

How much time do you spend on performance management, i.e. developing objectives and measures? Is this amount of time appropriate?

### **Preference for a method**

How much time do you spend on developing objectives/measures for each direct report?

Would you like to spend more time on developing objectives/measures? Why don't you?

Are you completely satisfied with the objectives/measures that you develop?

Would you prefer to use a process, step-by-step instructions or a set of guidelines?

## **Second Draft of Interview Questions**

## **The Performance Management System in general**

**What would you say is the main purpose of the performance management/measurement system?**

**Are you happy with your performance management/measurement system?**

**Prompt: Does it provide all of the information that you need?**

**Are all employees included in the system?**

**Are all operations included?**

**How much guidance does it give you in developing objectives/measures?**

## **The Performance Management System at the operational level**

**What are your personal objectives based on?**

**Prompt: Do you know what the organization's strategy is?**

**Is the organization making progress towards its strategy?**

**Frequency of review?**

**Do you have any input?**

**Linked to reward system or separate?**

**Are these objectives the same as the area/function objectives?**

**Are there any objectives/measures not included in the formal system?**

**Prompt: How are they developed?**

**Why aren't they included in the formal system?**

**What are they used for?**

**Who is involved in developing them?**

**Who are they applied to?**

**How is progress towards the objectives assessed?**

**What do you base the objectives of your reports on?**

- Prompt: Do you consider the organization's strategy?  
Do you consider the requirements of your suppliers and customers (internal or external)?  
Do you analyze the activities within your function to decide where to focus improvement effort?

**How do you select the objectives and measures for your reports?**

- Prompt: Are the objectives consensual?  
Do you clearly define data collection and analysis methods?  
Assess objectives for counter-productive or conflicting behaviour?  
Identify and eliminate roadblocks in advance or as they occur?

**How do you use the objectives and measures?**

- Prompt: Do you provide feedback to direct reports on a regular, on-going basis?  
Do you promote/encourage autonomy in choosing and implementing corrective actions?  
Use the measures for CI and org learning?  
Rewards and recognition?

**Is there an informal performance measurement/management system?**

- Prompt: Do you consider the informal measurement system?  
Link rewards to the formal system?

## **Objectives and Performance Measures**

**What criteria/attributes do you consider when choosing performance measures to assess progress towards objectives?**

Prompt:        Are the measures simple and easy to understand?  
                  Ratio based or absolute numbers?  
                  Do you consider the accuracy, unit of measure, level of aggregation?  
                  Are measures objective where possible, or subjective?  
                  Defined consensually and under the control of those being measured?

**Do you have any performance measures whose purpose is to gather data for decision making and planning, and not to measure progress towards objectives?**

**What information do you use to decide what activities to improve and how to improve them?**

Prompt:        Where do you get this information?  
                  How do you get the information?  
                  Do you validate the information?  
                  How do you validate it?  
                  Do they remain in use after they have served their purpose?

**What information do you use to make on-the-spot decisions in response to problems?**

Prompt:        Where do you get this information?  
                  How do you get the information?  
                  Do you validate it?  
                  How do you validate it?  
                  Do you decide on courses of action independently or collaboratively with you direct reports?

# **The Performance Measurement System**

## **How are individual objectives communicated?**

Prompt:           Computer based, central system or paper based?  
                      How is feedback provided to individuals?  
                      Cost and non-cost measures?  
                      Is the relationship between objectives explained?

## **Operational level characteristics**

How would you describe your job in terms of the timescales of the issues that you face?

Do you ever have to make urgent decisions?

How often is this the case?

How much time do you get to spend on individual activities?

How many issues, or decisions are you faced with in a typical day?

Are your activities ever interrupted?

How much time do you spend on performance management, i.e. developing objectives and measures? Is this amount of time appropriate?

## **Preference for a method**

How much time do you spend on developing objectives/measures for each direct report?

Would you like to spend more time on developing objectives/measures? Why don't you?

Are you completely satisfied with the objectives/measures that you develop?

Would you prefer to use a process, step-by-step instructions or a set of guidelines?

## **Appendix 3 - Interview Summaries**

## **Company A**

### **Summary of interview with a Human Resource (HR) line manager**

The author has been employed by Company A for over seven years as a Field Service Engineer. The Vice President responsible for the division in which the author works was asked for permission to interview some of the managers in the company, for the purposes of this research. Permission was declined. However, it was suggested that the author talk to his HR representative to be given an overview of the Performance Management System.

This document is a summary of the discussion with the HR representative. The interview was informal and was not recorded. The interviewee was asked to describe the existing Performance Management System and was then asked to comment on the desirable characteristics of measures, performance measurement systems and performance management system, as described in Chapter 4.

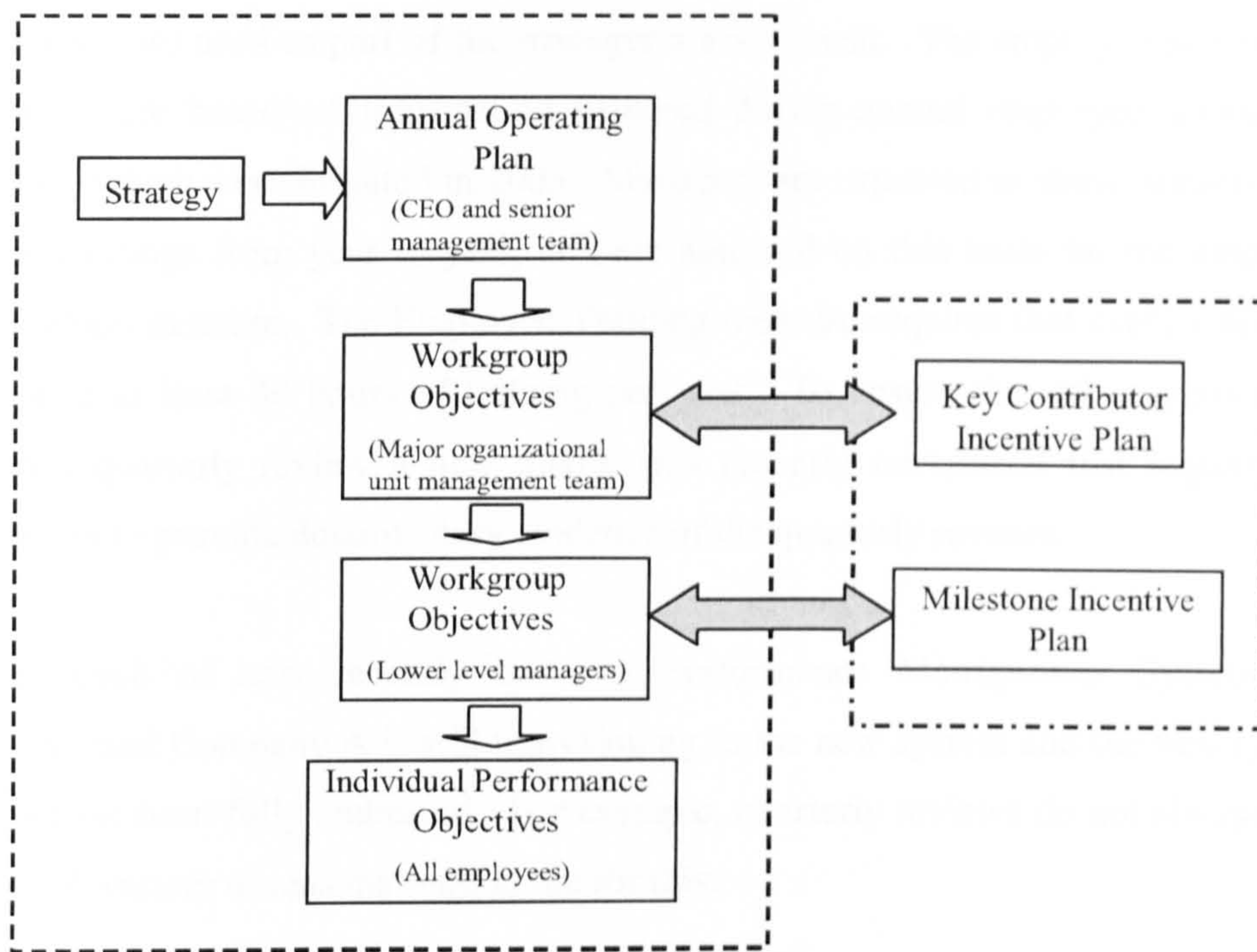
Company A designs, manufactures, installs and services equipment that is used to manufacture certain components used in the 'high tech' industry. They have a wide range of customers, some of the biggest of which are Texas Instruments, Intel and Samsung. Company A has been in business for over 30 years and is considered to be the biggest and best in their field. As with all companies involved in the high tech industry, Company A was hard-hit by the economic downturn that started around 2001. They had 2000 revenues of around \$10 billion with over 20000 employees. This fell to a recent low of around \$4 billion, with a net loss, in 2003. They have since recovered with 2004 revenues in excess of \$8 billion and a net income of over \$1 billion, with 12000 full-time employees. Much of the recovery is due to increased demand for their products, however there has also been a change in leadership, numerous reorganizations and relentless cost-cutting.



## **Summary of interview with HR representative.**

Company A implemented a new Performance Management System early in 2004. The new performance management system was developed in-house by members of the Human Resource function. The review of 2003's performance and the setting of objectives for 2004 were completed using the new system. In Company A there is one major review at the end of the year, as well as quarterly reviews with every employee to monitor progress towards objectives and address any issues that might arise, the intention being to provide regular and ongoing feedback.

The CEO and senior management team collectively decide on the Annual Operating Plan (AOP), which is a statement of the objectives that must be achieved over the coming year and is based on the organization's strategy. Objectives are then set for the next lower level of managers based on the AOP. The managers at this second level are corporate Vice Presidents and General Managers, responsible for the major organizational units. The Vice Presidents meet with their management team to develop a set of Workgroup Objectives for each organizational unit. These Workgroup Objectives are communicated to every manager in the organizational unit and are used as the basis for developing the managers' objectives. The managers' Workgroup Objectives then become the basis of the Individual Performance Objectives for all remaining employees. This structure is represented by the left hand side of Figure 1, below.



**Figure A3.1 - Company A's Performance Management System**

The Key Contributor and the Milestone incentive plans (the right-hand side of Figure 1) were developed by the management of one of the regions as a supplement to the main structure described above. At the Vice President and General Manager level the Key Contributor Incentive Plan includes a number of objectives for the managers, on which their annual bonuses are based. For all other managers the Milestone Incentive Plan contains the incentive related objectives. In the past these two systems had completely different objectives, however, the objectives for the incentive plans are increasingly taken from the mainstream performance management system.

The objectives and measures in the incentive plans are heavily biased towards meeting financial goals but there are also some mandatory HR measures, such as Employee Retention, Employee Satisfaction and 100% Completion of Safety and HR training. As part of the Employee Retention measure, departing employees are given an exit interview to identify the reasons for their departure and the results from these

interviews are used as part of the manager's assessment. The employee satisfaction measures are based on information gathered during annual employee satisfaction surveys, which were initiated in 2003. Managers are expected to show improvement in their ratings from year to year, and are assessed on this basis for the employee satisfaction measure. The Employee Training measure requires that every employee complete at least 40 hours of training per year. To ensure that all employees are given a quarterly review a new metric was recently introduced that requires the managers to provide documentary evidence of the quarterly reviews.

As a result of how recently the new Performance Management System was implemented Company A is still transitioning to the new system and the new system has not yet been fully embraced. For example, quarterly reviews do not always take place. A variety of reasons were given for this:

- Some managers do not feel comfortable conducting reviews and struggle with the writing of appraisals;
- Some managers get more closely involved in their operations than others;
- Many managers are too busy to spend the time on additional reviews;
- Some managers are too focused on their main objectives of increasing revenue and customer satisfaction.

Another example of the new system not being fully embraced is seen in the fact that many managers use a standard set of objectives for each job grade, instead of developing specific measures for each individual based on their specific circumstances. This is as a result of the previous system which had a set of core, standard objectives for many job titles, for example, assembler, manufacturing engineer, project manager, etc.

There is a wide range of skills and experience among the management of Company A. Many of the managers have technical backgrounds, having joined the organization as engineers and worked their way into management positions. As a result, some managers lack experience and skills in certain managerial duties, such as

review writing. When the new performance Management System was launched all managers were required to attend a training class which presented an overview of the new process, however, there is not a class on how to conduct and write reviews. To supplement this training there is a Performance Management web site on the organization's intranet. The site includes an overview of the process, as well as examples of objectives and measures for various job types and grades.

Two major failings of the current system were identified by the interviewee during the interview. These are that the objectives and review process depend on the individual manager's abilities, and that managers need to be allowed more time to spend on the review process.

Some managers struggle with the review process for a variety of reasons, as mentioned above. With regard to the amount of time available, the first use of the new Performance Management System was somewhat rushed. Employees were given little notice to write and submit their assessment of their past year's performance and the managers were given little time to write their assessment and to then conduct the face-to-face reviews. This resulted in a hasty implementation that did not make full use of the suggested methods associated with the new system.

There is an attempt to promote an understanding of the relationships between objectives, as implied by the intended cascading action of the objectives from the senior levels down but the interviewee acknowledged that the relationships were probably not widely understood. There is also the intention that the objectives and measures be as consensual as possible, however this was also acknowledged to be a limited practice.

In terms of the attributes of measurement and management systems, identified in the literature, the interviewee agreed that they were all reasonable but had no specific comments. The author described each of the characteristics of performance measures, performance measurement systems and performance management system to the interviewee. The interviewee agreed that all of the characteristics were

necessary, or at the very least desirable and suggested that a great many of them could exist within Company A's existing system. However, the interviewee admitted that the existing system provided little or no guidance that would help to achieve any of these characteristics and that without this guidance the results are entirely dependent on the individual manager.

# **Company B**

## **Manager 1 Interview Summary**

### **Manager Background**

Manager 1 has been in the industry, with Company B, for over nine years and in his current position for two years. He has previously held technical and engineering positions in the Equipment groups of a number of Company B's facilities.

Manager 1 is Process Manager for one particular type of equipment, his group includes seven process engineers and eight technicians. Manager 1 reports to a Staff Manager, who in turn reports to the Operations manager. The Operations Manager is responsible for the entire factory.

### **The Performance Management System**

Company B does not have a comprehensive performance management system, as defined in the literature. Company B has recently abandoned its structured and prescriptive appraisal system, which is referred to as the Performance Management System, in favour of allowing the individual managers to decide how to monitor and measure the performance of their reports. This will remain the case until the HR function and the senior management team decide on what system will be used in the future. According to Manager 1 this has resulted in a much simpler and better system because under the old appraisal system there was a new performance initiative every year, which frequently resulted in a new direction or focus.

There are few formal processes, procedures or tools and techniques used to develop objectives and measures. As a result there is little guidance available for the managers on how to develop lower-level objectives or how to measure and achieve them. The only evidence of any structure or guidance was found in cross functional teams and in the five general categories for which goals are developed. The operational level managers are required to develop objectives in five general

categories, which are Scrap, Availability, Particles, SPC and Cost, these are discussed briefly below.

- Availability is a measure of how much time the equipment is available to process wafers. There is also a measure referred to as 'Uptime'. Uptime quantifies how much time the equipment is not in a maintenance state but is still not available to process wafers. The equipment is 'Up' but not available when it is running the process quals, or when it is in an engineering state for experiments.
- Wafer fabrication facilities operate in extremely clean environments and are graded by the number of particles with a diameter of 0.3 microns, or greater, that are contained in one cubic meter of atmosphere within the clean-room environment. Company B's facilities are all Class 1 clean rooms, indicating that one particle per cubic meter is acceptable. Particles are a major source of yield loss and are carefully monitored both in the clean room and in the equipment. Particle checks are conducted during the process qualifications, which are a comprehensive test of the equipment that is performed periodically. These regular tests are referred to as process qualifications, or 'quals', and are conducted periodically based on the number of wafers run by the equipment.
- SPC, as the name implies, is concerned with the process parameters on the equipment. The equipment is tested regularly to ensure that the process parameters are within specified limits. The process parameters that are tested include the uniformity and thickness of the material either added or removed, depending on the process, as well as other properties of the material.
- In this case, 'Scrap' refers to wafers that get broken during processing. Each group set a goal for the maximum allowable number of wafers that can be scrapped. This goal is expressed as a number of wafers per 10,000 wafer

turns. For example, Manager 1's group is allowed to scrap 1.2 wafers for every 10,000 wafers that are processed by the group.

- The Cost category speaks for itself, each Section Manager is required to continually cut their costs.

Every operational level manager is required to participate in the annual goal setting for each of the five categories but the goals do not apply to all operational level managers. The Process and Equipment managers will have goals in all five areas, however, these goals are not relevant for other section managers, for example in the Device groups and in Manufacturing. These managers will have objectives that are specific to their areas. For example, the Manufacturing Managers will have daily turns objectives, turns to WIP objectives and turns per labour hour objectives.

For the annual goal setting, all of the Section Managers participate in a number of off-site meetings to set objectives in each of the five categories. The first draft of objectives is reviewed by the Staff Manager group, which is the next level up from the Section Managers, and the objectives are modified if deemed necessary. The goals are then reviewed by the Operations (factory-level) manager, who may make changes based on his strategic perspective. The reasons for any changes that he requests are not widely communicated. When the Operations Manager has given his approval the factory goals, in each of the five categories, have been determined for the year ahead.

Because the Section Managers develop the goals, without any strategic input, the new goals are initially based on historical performance and the managers' knowledge of their areas. Some strategic input might be achieved by the Operations manager who adjusts the goals according to his knowledge of the organization's strategic initiatives.

The factory-level objectives will not directly reflect the five categories described above, they will be more general in nature and will include, for example, employee



retention, safety and on-time delivery. Manager 1 was not aware of all of the factory-level objectives or the specific targets. He, like all section managers, is focused on the objectives that are specific to his area.

Once the factory-wide objectives have been determined in each of the five categories, the next step is to communicate these goals to the Section Managers' group members. The goals for Manager 1 and his section are the same, that is, Manager 1 does not have a different set of goals than the area for which he is responsible. He may, however, have some additional goals, depending on whether his manager has any specific, additional requirements for him.

The group level goals are transferred directly to the engineers in the group and become the goals for the engineers, each of whom is responsible for a particular type of equipment. The group-level Availability, SPC and Particle goals are modified slightly for each type of equipment, and these become the personal goals for the engineers. The Scrap and Cost goals will not be broken down into specific toolset goals, as the entire area shares the responsibility for these. For example, if the area Scrap goal is to scrap one wafer (or less) for every 10000 wafers that are processed, it doesn't matter what toolset scraps a wafer, the scrap counts against the area. The Availability, SPC and Particles goals are toolset specific because of the inherent capabilities of each toolset.

As part of the process to decide how to achieve the operational level goals there are cross-functional teams that meet weekly to discuss current performance and how the goals might be achieved. All of the groups have a 'champion' for each of the five categories and these champions attend the weekly meetings to represent their group. However, there was no evidence provided that formal methods are used to identify activities or initiatives and to develop objectives and performance measures.

There is also a System Breakdown Report, which is used to identify the cause of major scrap incidents and to communicate the finding to all of the engineering and staff and management.

### **The Performance Measurement System**

Company B has a central computer-based information system that measures all manner of equipment parameters. Every piece of equipment is included in the system and provides a real-time picture of the status of every piece of equipment. This system monitors and records the various states of the equipment, whether running, in process qualification, in scheduled maintenance, unscheduled maintenance, equipment upgrade or engineering. Reports can be obtained at any time that detail how long the equipment has been in each state and whether it is meeting its availability goal.

There are also a number of other systems that are used to track all manner of data, for example, the process characteristics, such as film thickness and uniformity, number of particles added and so on, which are measured with a frequency determined by the number of wafers run; the number of wafers processed on every piece of equipment, in every department, with turns to WIP, turns per direct labour hour being calculated. Each piece of equipment is also polled every second to gather equipment related information, such as power and temperature readings and processing times

Various reports are available from the intranet websites and are accessible by all employees.

Company B has a central, computer-based system that is referred to as the Performance Management System. When a manager and his/her report have decided on the goals and measures, the report enters the goals and measures into the Performance Management System. This system is not interactive, it merely contains a static record of an individual's goals for the coming year. The system does not communicate feedback and is not linked to other systems.

### **The Appraisal System**

According to Manager 1 the purpose of the appraisal system is twofold: firstly, to reward the high performers; and secondly, to help develop people by giving them feedback on their current level of performance.

Manager 1's group is comprised of seven engineers and eight technicians. Manager 1 appraises the performance of the engineers and the technicians separately and using different methods. The method used to assess the engineers is discussed first, this is followed by a discussion of how the technicians are assessed.

### **Assessing the engineers**

Manager 1 has two performance categories, which he divides as follows: 70% of an individual's performance review is based on achieving the business goals, and 30% is based on their behaviors. The 70% for the business goals is further divided and weighted as follows:

Availability	15%
Scrap	15%
SPC	15%
Particles	15%
Cost	10%

The 30% for behaviors is divided and weighted according to the list below:

Technical Ability	4%
Innovation	4%
Informal Leadership	5%
Communication	4%
Accountability	5%
Attitude	5%
Time Keeping	3%

The performance of the engineers is evaluated by Manager 1 by first considering the business goals. These are assessed by Manager 1 and assigned a score between 1 and 5. Even if an engineer achieved all of the business goals in the past year, he/she will not necessarily receive a score of 5, the score will depend on what the interviewee feels is appropriate given the individual's circumstances during the year. For example, if an engineer achieves all of his/her goals then the interviewee might

decide the goals were set too low, or that some other aspect, either tangible or intangible, might have been neglected.

The second aspect of the performance evaluation concerns the behaviour category. This category does not have any specific goals and so it is more subjective than the business goals category. The behaviors that are being examined are awarded a score between one and five. During the evaluation process the manager will take account of the individual's grade level and might modify the score accordingly, as more is expected of individuals at higher grades than of those at lower grades.

For both categories Manager 1 relies on his own observations, as well as seeking input from engineers, supervisors and managers in other groups who work with Manager 1's engineers. This helps to reduce the high level of subjectivity by effectively building a consensus.

Manager 1 is aware of the fact that assessing behaviors is based on the perception of individuals but believes that he is consistent over the course of the year, although he did admit to the possibility of being inconsistent over the shorter term. He also believes that his system is not subject to biases because of the weighting factors. Specifically, if Manager 1 were to give an individual a score of 1 (the lowest possible) for any one of the behavioural categories then the individual would have lost at most 4% of the total potential score.

### **Assessing the technicians**

Manager 1 assesses the performance of the technicians by gathering all of the engineers into a room and asking the engineers to score each technician on their contribution to the business goals and in each of four behavioural categories (the specific categories have been removed at the request of Manager 2). The scores provided by the engineers are averaged to arrive at a final score. The engineers assess the technicians entirely subjectively because the technicians do not have any specific goals. However, the subjectivity is countered by averaging the scores of all

of the engineers. The manager may also modify the score of a technician based on his own observations and feedback from others outside of his area. As with the engineers, the business goals are worth 70% and the four behavioural categories are worth 30%.

When all of the Section managers have completed the evaluations of all of their reports, the managers have a final meeting together to establish the ranking and rating of every employee in the factory. In previous years there were four performance categories, which were the top 15%, 60%, 20% and bottom 5%, however, this year individual are being assigned to either the top 40% category or the 60% category. The name of every employee will already be on the list and as the name is called out the individual's manager responds with which grade he feels the individual should be in. When all of the employees have been graded there may need to be some further discussion as there might be more names in the top 40% category than are allowed. For example, with 60 engineers there can be only 24 people in the top 40% category. If more than 24 people have been nominated for this category the managers will discuss the merits of each individual and choose whom to remove. During the discussions the managers will consider such factors as the individual's grade, whether they have led any factory-wide teams, what cost savings they may have generated, and so on, as well as their subjective impressions of the individual.

Only the individuals in the top 40% category are eligible for a bonus or pay raise, however, if the individuals are deemed to be at or above the national pay average for their position they will not be given a bonus or pay raise.

### **The Characteristics of Measures, the Performance Measurement and the Performance Management System.**

In terms of the desirable characteristics of performance measures, performance measurement systems and performance management systems, as found in the literature, Manager 1's system is evaluated in the table below. Because there is no

formal performance management system this evaluation is based on the author's subjective assessment of what he was told by the interviewee. The assessment in this section is confined to Manager 1 because whether the desirable characteristics are achieved or not is entirely dependent on the manager.

<b>Characteristic</b>	<b>Exists/Doesn't exist.</b>
<b>Performance Measures</b>	
Simple and easy to understand, e.g., ratio based in preference to absolute numbers, show a trend	This is true of the business measures which are well established and have long been in use. Additionally, as a result of the significant layoffs over the past four years the remaining employees are, for the most part, all very experienced and very good at what they do. However, the behavioural measures are very subjective in nature with no guidance provided by the performance management system on how to choose objectives or to measure performance.
Have appropriate accuracy, units of measure and levels of aggregation	There seems to be no overt effort to ensure the accuracy of the measures used for the business goals. The units of measure are derived from the specific goal, and the level of aggregation is considered to some extent for the engineers but is not considered for the technicians.
Be objective or subjective as appropriate	The business measures are objective and well defined and a great deal of effort is put into their measurement, this is not the case with the behavioural measures.
Be defined with input from, and under the control of those being 'measured'	The business goals, or objectives, are in pre-determined categories that do not change, the specific goals are selected by the managers with limited input from those being measured. In the case of the technicians, those being measured have no input on their objectives and no control over the criteria against which they are being measured.
<b>The Performance Measurement System (PMS)</b>	
Be accessible by every employee	This is true, every employee is included and has access to all manner of intranets that provide all kinds of performance data.
Provide downward and lateral communication of strategy, initiatives, plans, objectives and targets	The PMS does not achieve this. Strategy is not communicated at all. Manager 1 explains the importance of the goals to each individual and how the goals contribute to the health of the factory. The cross-functional teams and managers have weekly and daily meetings, many of which discuss current performance. General initiatives are communicated by managers and through notice boards and displays in high-traffic areas.
Provide rapid lateral and upward communication (feedback) of actual performance against targets	For the business goals there are systems in place where every employee can access performance data, if they choose to do so. This is obviously not the case for the behavioural goals.
Be capable of including cost and non-cost measures	The computer-based information system does not include cost information. Local costs are tracked by the managers and reported to the Finance group.
(Continued overleaf)	

Facilitate an understanding of the relationship between measures (for example, by presenting and linking measures graphically)	This is achieved only to the extent that the manager explains the relationships
<b>The Performance Management System (PMgtS)</b>	
Monitor both the internal and external environments	There is no evidence of monitoring the environment that is external to the factory. The Section Managers communicate informally and thereby achieve some level of monitoring the environment that is external to their own departments, but internal to the factory. Manager 1 seems to monitor the internal environment of his group very closely.
Understand the relationships between the organizational units by considering the input, process and output of each	There is an informal understanding of the relationships but as there is no performance management system this depends on the individual manager. There is no specific consideration of inputs, processes and outputs. There is informal communication between the various groups involved in each area, for example, the 'morning meetings' in which the Process, Equipment and Manufacturing supervisors and managers meet to discuss the previous day's performance and to communicate the priorities for the coming day.  There is much less communication between areas.
Encourage cross-functional interaction and communication to promote a better understanding of how units affect each other	There are cross-functional teams for each of the five categories, these teams meet once per week for Scrap, Particles, SPC and Cost but met 'as and when required' for Availability. There is some informal communication between managers but no formal system to achieve this.
Define consensual objectives and measures for every level, based on the strategic objectives. Use as few objectives and measures as possible	The goals are not consensual and they are not based on strategy. There is no indication given of a desire to minimize the number of goals. Also, the goals are discussed with the engineers but are not really consensual. For the technicians there is not even the illusion of having an input into their goals.
Clearly define the data collection method and the measure calculation method	True for the business goals but not for the behavioural goals.
Ensure that the objectives and measures for each unit are clear, consistent and compatible, and will not promote dysfunctional behaviour between the units	The business objectives are clear but there is no evidence of checking for dysfunctional behaviour or conflict. The behavioural categories are known to the reports but clear goals are not defined for behaviours.
Identify and eliminate roadblocks to the successful implementation of the objectives and measures	There is no evidence of this, problems are dealt with as they arise.
Use the performance measurement system to openly communicate strategy, initiatives, objectives and targets downwards	Strategy seems to be a closely guarded secret, goals are communicated at the start of the year and a high degree of focus is maintained by reporting on the priorities at daily and weekly meetings. Other initiatives are communicated by email and through displays and banners in high-traffic areas.
	(Continued overleaf)

Ensure the results of the measurement are fed back to those executing the actions as well as to their superiors	This is entirely dependent on the manager, and to some extent the individual. All managers are required to have formal quarterly meetings their reports. Manager 1 has formal quarterly meetings with all of his reports to discuss performance, as well as informal monthly meetings to discuss anything that is on the subordinate's mind. He also actively seeks feedback on his own performance.
Empower employees by promoting autonomy, as far as possible, in determining corrective actions	Dependent on the manager. Manager 1 does promote autonomy and empowerment within boundaries. The goals are fixed but he seeks input from his engineers on how the goals can be achieved.
Use the measurement results to stimulate continuous improvement and organizational learning	To the extent that procedures are modified, or created, after major incidents. The System Breakdown Report provides root cause analysis of problems and lessons learned, these presentations are attended by the engineers and managers.
Be aware of the informal measurement system, to counter it, tie rewards to the formal system	An informal system was not acknowledged to exist by Manager 1. All rewards are tied to objectives in the formal system.
Periodically re-evaluate the objectives and measures, delete obsolete measures	Goals are set annually, Manager 1 modifies the goals mid-year if necessary but there is no evidence of an attempt to remove obsolete measures.

**Table A3.1 - Company B's achievement of the desirable characteristics**

### **The Characteristics of the Operational Level**

In terms of the characteristics of his job Manager 1 believes that his job has a mix of both long-term and short-term issues. He admitted that many issues crop up on a daily basis but that this was balanced by the need to plan for up to 12 months ahead and that there were frequently projects and experiments that might take up to six months to complete.

Manager 1 admitted to having to spend 60 or 70% of his time in dealing with day-to-day issues that others often perceived to be urgent issues. These were issues that were urgent to somebody but which were described by Manager 1 as issues that had to be dealt with immediately as opposed to truly urgent.

He also admitted to having frequent interruptions because more important issues crop up all the time.



As for the amount of time spent on the performance appraisal process, Manager 1's initial response was 'too long!' However, he later qualified that statement by adding: 'No, it's important, people are, people are your assets...you can sink or swim by people's decisions, I think it's right that you spend time on their appraisal, appraisals and feedback sessions...because it's important to them, people need feedback... If you don't tell somebody what their weaknesses are, how are they ever going to improve?'

Manager 1's choice for a method to develop objectives and measures was a set of guidelines because guidelines would allow the individual manager some leeway in assessing his reports. This leeway is needed because individual managers have different styles and preferences. When the author suggested that a more detailed method might help to reduce the amount of subjectivity, Manager 1 replied that it's not possible to have a method so detailed that it would address every eventually and therefore could not eliminate subjectivity. Also, he pointed out that no matter how structured a process might be, the outcome will depend on the manager.

### **Discussion**

Company B has never had a comprehensive and integrated performance management system. The old appraisal system was used to fulfill some of the functions of a performance management system and had some general guidelines and structure but even this system left a great deal up to the individual manager.

Since beginning the organizational restructuring the structured appraisal system has been abandoned, in favour of allowing the individual managers to assess their reports as they see fit. As a result, whether the any of the desirable characteristics are achieved will depend on the manager, a fact frequently stated by Manager 1.

Manager 1 is aware of the fact that different managers will have different perspectives and styles, and that a single prescriptive system would lead to greater consistency, however, he believes that a prescriptive system would not overcome

these individual differences. He stated that 'If you don't have a manager that can drive their team and hold them accountable, ...it doesn't matter what system you've got in place... writing the objectives into a PM system... if you're not going to hold your people accountable it doesn't matter what, where, write it on the back of a cigarette packet, right? It doesn't matter. You've got to drive, help drive accountability to your people...'

The goals that are set every year are not strategy based and the strategy is not communicated throughout the organization. There is therefore no way for the employees to know if they are working towards the organization's strategy. If a guess had to be made as to what Company B's strategy is, the guess would be that the strategy is to reduce costs.

In general, Manager 1 is closely involved in the day-to-day activities in his group, this gives him a good understanding of the issues faced by the group, which helps guide his decisions and also helps in his assessment of his reports.

While the group's goals are pre-determined he does involve the engineers in discussing how these goals can be achieved. However, setting more specific objectives and measures is not a formalized process. Manager 1 pointed out that some groups perform better than others and that how well a group performs is determined by the group's manager.

In terms of the appraisal process, the process provides the illusion that the engineers have an input into their assessment. However, the assessment has been completed before any discussions take place. The positive in the process is that Manager 1 explains to his reports why he graded them as he did, as a result, his requirements are made clear. This allows his reports to understand his motives. Manager 1 maintains a good working relationship with his reports by having monthly informal one-on-ones with his reports. These one-on-ones are a chance for the reports to give feedback on the manager's performance and for the manager to have a general,

informal chat with his reports. Manager 1 also places a lot of emphasis on developing his reports and helping them to advance within the organization.

Manager 1 does a good job in general of managing the performance of his group but because there is not a formal and structured performance management system in Company B it is unlikely that he, or any of the other managers, is as efficient or as effective as he could be. When it comes to rewarding individuals with pay raises, the process is almost entirely subjective. The assessment of individuals is not standardized and therefore the assessment is not done on the same basis for everybody. Specifically, manager A might reward certain behavioural issues while overlooking poor performance against the business goals, while manager B might do the opposite.

## **Company B**

### **Manager 2**

#### **Manager Background**

Manager 2 has been in the industry for over 15 years and in his current position for over one year. He has held a variety of technical and supervisory positions in two companies in this industry.

Manager 2 reports to a Staff Manager, who in turn reports to the Operations, or Factory Manager. Manager 2's group is made up of 26 technicians and five supervisors, with responsibility for all of the equipment in one process group.

#### **The Performance Management System**

Company B does not have a comprehensive performance management system, as defined in the literature. Company B has recently abandoned its structured and prescriptive appraisal system, which is referred to as the Performance Management System, in favour of allowing the individual managers to decide how to monitor and measure the performance of their reports. This will remain the case until the HR function and the senior management team decide on what system will be used in the future.

As mentioned above, there is not a comprehensive performance management system in Company B. There are few formal processes, procedures or tools and techniques used to develop objectives and measures. As a result there is little guidance available for the managers on how to develop lower-level objectives or how to measure and achieve them. The only evidence of any structure or guidance was found in cross functional teams and in the five general categories for which goals are developed. The operational level managers are required to develop objectives in five general categories, which are Scrap, Availability, Particles, SPC and Cost, these are discussed briefly below. Every operational level manager is required to participate in

the annual goal setting for each of the five categories but the goals do not apply to all operational level managers. The Process and Equipment managers will have goals in all five areas, however, these goals are not relevant for other section managers, for example in the Device groups and in Manufacturing. These managers will have objectives that are specific to their areas. For example, the Manufacturing Managers will have daily turns objectives, turns to WIP objectives and turns per direct labour hour objectives.

- Availability is a measure of how much time the equipment is available to process wafers. There is also a measure referred to as 'Uptime'. Uptime quantifies how much time the equipment is not in a maintenance state but is still not available to process wafers. The equipment is 'Up' but not available when it is running the process quals, or when it is in an engineering state for experiments.
- Wafer fabrication facilities operate in extremely clean environments and are graded by the number of particles with a diameter of 0.3 microns, or greater, that are contained in one cubic meter of atmosphere within the clean-room environment. Company B's facilities are all Class 1 clean rooms, indicating that one particle per cubic meter is acceptable. Particles are a major source of yield loss and are carefully monitored both in the clean room and in the equipment. Particle checks are conducted during the process qualifications, which are a comprehensive test of the equipment that is performed periodically. These regular tests are referred to as process qualifications, or 'quals', and are conducted periodically based on the number of wafers run by the equipment.
- SPC, as the name implies, is concerned with the process parameters on the equipment. The equipment is tested regularly to ensure that the process parameters are within specified limits. The process parameters that are tested include the uniformity and thickness of the material either added or removed, depending on the process, as well as other properties of the material.

- In this case, 'Scrap' refers to wafers that get broken during processing. Each group set a goal for the maximum allowable number of wafers that can be scrapped. This goal is expressed as a number of wafers per 10,000 wafer turns. For example, Manager 1's group is allowed to scrap 1.2 wafers for every 10,000 wafers that are processed by the group.
- The Cost category speaks for itself, each Section Manager is required to continually cut their costs.

For the annual goal setting, all of the Section Managers participate in a number of off-site meetings to set objectives in each of the five categories. The first draft of objectives is reviewed by the Staff Manager group, which is the next level up from the Section Managers, and the objectives are modified if deemed necessary. The goals are then reviewed by the Operations (factory-level) manager, who may make changes based on his strategic perspective. The reasons for any changes that he requests are not widely communicated. When the Operations Manager has given his approval, the factory goals for the operational level, in each of the five categories, have been determined for the year ahead.

Because the Section Managers develop the goals, without any strategic input, the new goals are initially based on historical performance and the managers' knowledge of their areas. Some strategic input might be achieved by the Operations manager who adjusts the goals according to his knowledge of the organization's strategic initiatives.

The factory-level objectives will not directly reflect the five categories described above, they will be more general in nature and will include, for example, employee retention, safety and on-time delivery. Manager 2 was not aware of all of the factory-level objectives or the specific targets. He, like all section managers, is focused on the objectives that are specific to his area.

Once the factory-wide objectives have been determined in each of the five categories, the next step is to communicate these goals to the Section Managers' group members. The goals for Manager 2 and his section are the same, that is, Manager 2 does not have a different set of goals than the area for which he is responsible. He may, however, have some additional goals, depending on whether his manager has any specific, additional requirements for him.

The next step is to develop goals for the individuals in the section. In Manager 2's case there are five supervisors and 26 technicians. In many cases these goals are the same as the section's goals and in effect are general or 'blanket' goals. In addition to the blanket goals there may be some group-specific goals, for example to complete an equipment upgrade, that will contribute to the area goals. There could also be some specific development goals, depending on the individual, for example, additional training or attendance improvement.

As part of the process to decide how to achieve the operational level goals there are cross-functional teams that meet weekly to discuss current performance and how the goals might be achieved. All of the groups have a 'champion' for each of the five categories and these champions attend the weekly meetings to represent their group. However, there was no evidence provided that formal methods are used to identify activities or initiatives and to develop objectives and performance measures.

There is also a System Breakdown Report, which is used to identify the cause of major scrap incidents and to communicate the finding to all of the engineering and staff and management.

### **The Performance Measurement System**

Company B has a central computer-based information system that measures all manner of equipment parameters. Every piece of equipment is included in the system and provides a real-time picture of the status of every piece of equipment. This system monitors and records the various states of the equipment, whether

running, in process qualification, in scheduled maintenance, unscheduled maintenance, equipment upgrade or engineering. Reports can be obtained at any time that detail how long the equipment has been in each state and whether it is meeting its availability goal.

There are also a number of other systems that are used to track all manner of data, for example, the process characteristics, such as film thickness and uniformity, number of particles added and so on, which are measured with a frequency determined by the number of wafers run; the number of wafers processed on every piece of equipment, in every department, with turns to WIP, turns per direct labour hour being calculated. Each piece of equipment is also polled every second to gather equipment related information, such as power and temperature readings and processing times

Various reports are available from the intranet websites and are accessible by all employees.

Company B has a central, computer-based system that is referred to as the Performance Management System. When a manager and his/her report have decided on the goals and measures, the report enters the goals and measures into the Performance Management System. This system is not interactive, it merely contains a static record of an individual's goals for the coming year. The system does not communicate feedback and is not linked to other systems.

However, according to Manager 2 these sites are not well maintained and the information is sometimes inaccurate or incomplete. In addition, how to access the intranet sites and how to run the reports is not well communicated. As a result, individuals rely on their manager to provide feedback. Manager 2 admitted that it is common for employees, company-wide, to be surprised at the end of the year when they find out that the factory did not achieve its goals.



## **The Appraisal System**

Manager 2 uses 11 behavioural criteria to assess his reports. His assessment of his reports is based on their contribution to the factory goals the department goals and is done under 11 general criteria. The criteria are:

- Technical
- Cost Savings
- Co-operation
- EMS Comments (Communication)
- Toolsets
- Attendance
- Attitude
- Teamwork
- Adaptability
- Leadership
- Efficiency

Manager 2 assigns a score, from one to five, for each of these criteria and that score is based on his assessment of how the individual contributed to the various factory and section goals. The scores are used to 'Rank and Rate' every employee and the ranking and rating assignment determines the level of reward that an individual gets at the end of the year.

Manager 2 spends up to two hours preparing for each quarterly one-on-one, with 31 reports he admitted that while he would like the system to be more personal that there simply is not enough time.

When all of the Section managers have completed the evaluations of all of their reports, the managers have a final meeting together to establish the ranking and rating of every employee in the factory. In previous years there were four performance categories, which were the top 15%, 60%, 20% and bottom 5%, however, this year individual are being assigned to either the top 40% category or the 60% category. The name of every employee will already be on the list and as the

name is called out the individual's manager responds with which grade he feels the individual should be in. When all of the employees have been graded there may need to be some further discussion as there might be more names in the top 40% category than are allowed. For example, with 60 engineers there can be only 24 people in the top 40% category. If more than 24 people have been nominated for this category the managers will discuss the merits of each individual and choose whom to remove. During the discussions the managers will consider such factors as the individual's grade, whether they have led any factory-wide teams, what cost savings they may have generated, and so on, as well as their subjective impressions of the individual.

Only the individuals in the top 40% category are eligible for a bonus or pay raise, however, if the individuals are deemed to be at or above the national pay average for their position they will not be given a bonus or pay raise.

### **The Characteristics of Measures, the Performance Measurement and the Performance Management System.**

The characteristics of measures, measurement and management systems, as identified in the literature, and whether they exist for Manager 2, is assessed in Table 1 below. Because there is no formal performance management system, the assessment is of how well Manager 2 achieves the characteristics.

<b>Characteristic</b>	<b>Exists/Doesn't exist.</b>
<b>Performance Measures</b>	
Simple and easy to understand, e.g., ratio based in preference to absolute numbers, show a trend	No specific attention is paid to these characteristics. The factory goals are well understood by virtue of the fact that they have long been used. Much of the performance information available is chart-based.
Have appropriate accuracy, units of measure and levels of aggregation	These characteristics are not specifically considered by Manager 2.
Be objective or subjective as appropriate	No consideration is given to making the goals objective. The ultimate assessment of individuals' performance is very much subjective with personal relationships and politics playing a considerable role
	(Continued overleaf)

Be defined with input from, and under the control of those being 'measured'	The objectives and measures are determined by Manager 2, he does seek input from his reports on how to achieve the objectives.
<b>The Performance Measurement System (PMS)</b>	
Be accessible by every employee	All employees are included in the system.
Provide downward and lateral communication of strategy, initiatives, plans, objectives and targets	The organization's strategy is not communicated in Company B. The goals for the year ahead are communicated at the start of the year. In the event that new tasks are added during the year Manager 2 does not update the goals.
Provide rapid lateral and upward communication (feedback) of actual performance against targets	There are a number of intranet sites on which information is available regarding the factory performance. However, it is up to the individual to seek out that information. Also, the sites are not well maintained and how to access and use the sites is not well communicated. Manager 2 stated that individuals very often depend on their manager to provide feedback and that many individuals are surprised at the end of the year to find out that the factory did not achieve its objectives. This indicates that there is often no formal feedback.
Be capable of including cost and non-cost measures	There are both cost and non-cost objectives. The managers track their group's costs locally and report then to the Finance function.
Facilitate an understanding of the relationship between objectives and measures (for example, by presenting and linking measures graphically)	Manager 2 explains the relationships between objectives to his reports.
<b>The Performance Management System (PMgtS)</b>	
Monitor both the internal and external environments	There is no evidence of monitoring the environment that is external to the organization. Informal communication does exist between Manager 2 and the managers of other groups, indicating some monitoring of the environment external to the group but internal to the factory.
Understand the relationships between the organizational units by considering the input, process and output of each	Manager 2 does explain the relationships between the objectives and the success criteria of the factory.
Encourage cross-functional interaction and communication to promote a better understanding of how units affect each other	There is some formal cross-functional interaction. For example, each group has daily meetings that are attended by the Process, Equipment and Manufacturing managers, as well as certain supervisors and technicians. There are also weekly cross-functional meeting for Scrap, Cost, Particles and SPC teams. There is also informal communication when issues arise. There are no formal procedures for this communication.
Define consensual objectives and measures for every level, based on the strategic objectives. Use as few objectives and measures as possible	The goals are not consensual. Manager 2 did suggest that only a few key personal development goals will be added to the factory goals, however, this is more to limit the amount of data that Manager 2 needs to track than it is to allow individuals to maintain a focus.
(Continued overleaf)	

Clearly define the data collection method and the measure calculation method	This is not done because Manager 2 stated that much of his assessment of his reports is done subjectively. He monitors who is doing what based on feedback from the supervisors and the equipment monitoring system, in which the technicians make written comments.
Ensure that the objectives and measures for each unit are clear, consistent and compatible, and will not promote dysfunctional behaviour between the units	The objectives are inherently clear, this is not a feature of the system though. Manager 2 pointed out that various groups have conflicting goals and that the resolution is based on a return on investment analysis.
Identify and eliminate roadblocks to the successful implementation of the objectives and measures	There is no evidence of this.
Use the performance measurement system (PMS) to openly communicate strategy, initiatives, objectives and targets downwards	The PMS is not used for this purpose. Initiatives are communicated by the managers and by notice boards and banners in high-traffic areas.
Ensure the results of the measurements are fed back to those executing the actions as well as to their superiors	This depends on the individual and the manager. There are intranet sites that provide data if the individual chooses to look. However, the sites are not well maintained and how to use them is not well communicated. As a result, how well informed the individuals are is dependent on their manager. Manager 2 pointed out that people are often surprised to find out, at the end of the year, that the factory did not achieve its goals.
Empower employees by promoting autonomy, as far as possible, in determining corrective actions	Manager 2 expects his reports to develop or identify solutions to problems.
Use the measurement results to stimulate continuous improvement and organizational learning	There is limited evidence of this. Major scrap and safety incident are investigated and procedures may be changed as a result. Manager 2 stated that '...we prefer to re-invent the wheel...' when asked about this in relation to maintenance activities. Any efforts are localized and informal. There was also evidence that Manager 2 does not seek improvement in certain areas if the group is meeting its overall objectives.
Be aware of the informal measurement system, to counter it, tie rewards to the formal system	Manager 2 did not acknowledge that any informal goals or measures exist. All appraisal-related goals are formally documented to avoid recrimination.
Periodically reevaluate the objectives and measures, delete obsolete measures	There is no evidence to suggest that this happens.

**Table A3.2 - Company B's achievement of the desirable characteristics**

### **The Characteristics of the Operational Level**

Manager 2 agreed with the list of operational level characteristics. He agreed in particular that there is a short-term focus at the operational level.

He also agreed that there is brevity and fragmentation of activities, stating that his activities are not as 'high-quality' as they could be because there is never enough time to finish any activity properly. There are also frequent interruptions during the day and if Manager 2 needs to dedicate several hours to an activity, without being interrupted, he will either take the work home or complete it at the weekend when he is less likely to be disturbed.

### **Discussion**

Manager 2 was not clear on the process for developing objectives and measures. Additionally, he was not able to relate all of the factory level goals or the specific targets associated with those goals. Manager 2 did mention that there might be 'people' or safety goals at the factory level but did not articulate what these goals were, or whether he was assessed against them. The goals developed in each of the five categories (Scrap, Technology, SPC, Dow and Cost) are considered primary goals for Manager 2 because if these goals are not achieved then the factory will fail. However, if the secondary goals (people development, safety, etc.) are not achieved then the factory will not fail.

When asked what criteria he used to assess his reports, Manager 2 said that all objectives are taken into account, factory goals and sub-set goals, because if this were not the case then some people could sit back and let others do all the work to achieve the factory goals.

Of particular interest was the fact that Manager 2 pointed out the importance of not making mistakes, or upsetting the boss, in the last month or so before review time because doing so will adversely affect the review. He stated that he has seen many good employees receive bad reviews, or worse, because they made a mistake or upset their boss in the last few weeks before review time.

Manager 2 also made it clear that a manager should be closely involved in the day-to-day activities in his/her group. Not being involved has, in Manager 2's

experience, resulted in good employees receiving bad reviews and vice versa because the manager was unaware of what was really going on in his/her group. This is compounded by the fact that some people are better at the actual review process than other, and therefore are better able to sell themselves.

The other fact pointed out by Manager 2 is that networking, or 'office politics' is a very real and substantial part of the overall review process. Those who play the 'political game' are generally rated better than those who don't. The ranking and rating process was described by Manager 2 as almost a popularity contest because it is so subjective and dependent on politics.

Manager 2 identified as a failing of Company B the tendency to focus on the one negative incident instead of the 1000 positive incidents, when reviewing people or responding to issues. Manager 2 tries to consider the personal aspect of his reports lives when he assesses them but he did acknowledge that other managers are not so considerate. It seems to be a policy that Company B severely punishes mistakes.

When assessing whether his reports have achieved their sub-set of goals, for example learning a new tool-set, Manager 2 admitted that it is 'really a judgment call' as to whether or not they have done so. This is because measuring the amount of time spent on each toolset by the technicians would be very time consuming and is not done by Manager 2. Similarly, if two engineers work on a problem sequentially, one of them spends 75% of the time on it and the other spends 25% of the time on it, how can the 'quality' of the time spent on it be assessed? Who contributed most to fixing the issue? Much of what the technicians do is qualitative and not quantitative. Even on routine items Manager 2 believes that it is not possible to set standard times and to hold the technicians to the times because there are too few technicians and they are constantly being interrupted to take care of other issues as they arise. The bottom line is that the group achieves its availability goals, most of the time, as a result there is no need for further analysis.

Manager 2 made an interesting observation regarding how layoffs affect the performance appraisal process. He pointed out that every time there is a layoff, there

is a new bottom 10%. This has the affect of moving individuals who were once top performers further, and further down the list. As a result, individuals who once thought of themselves as among the best in a group are now being faced with the fact that they are at the bottom of the list. Manager 2 acknowledged the difficulty of pointing this out to certain people.

There is currently no formal performance management system of appraisal system, therefore there is no guidance for managers in developing objectives and measures. The only advice given by the old appraisal system was to describe the characteristics of the 4 E's (Envision, Edge, Energize and Execute), and to suggest their use to evaluate people's behaviours.

There is regular informal communication between Manager 2 and his customer (the manufacturing group), however, there are no specific (internal) customer satisfaction goals.

There is a considerable amount of conflict generated by various goals, although the conflict is between areas and not within them. The example given by Manager 2 was that of an individual whose goal is to increase yield and who had identified a particular toolset as causing the problem. This individual would be likely to request some form of expensive maintenance, which the equipment manager would not be inclined to undertake. This type of dispute arises frequently and if the dispute cannot be settled by the two individuals, it will be escalated to their bosses who will use some form of return-on-investment calculation to determine the solution.

Manager 2 tries to promote autonomy among his reports. In particular, if his technicians bring him a problem he expects the technician to propose at least one possible solution. It is made clear by Manager 2, to his technicians, that mistakes will not be punished.

Manager 2 expressed some dissatisfaction with the current Performance Management System, for the following reasons:

1. Firstly, with 26 technicians to track, Manager 2's point was that it is very difficult to set specific goals for every individual, to track all of the goals and to have detailed quarterly meetings with every individual. He also made it clear that it is difficult for the technicians also, as they are expected to keep track of all of their activities and to prepare quarterly reports of their own performance.
2. Secondly, certain individuals are better at preparing their performance reports than others. This can result in technicians who perform poorly in practice but who prepare detailed and comprehensive performance reports being scored higher than others who perform much better in practice but whose reports are inferior.
3. Thirdly, whether or not the factory met its goals is not communicated until the end of the year.
4. Finally, the current system can be used to penalize individuals by failing them for not having met their goals, simply because the factory did not meet its goals. Manager 2 pointed out that this is unfair and that the old system was better in that respect, as it gave individuals specific goals, which if achieved, resulted in a good performance review for the individual, regardless of how the area or the factory did.

### **Choice of a method**

Manager 2 would prefer guidelines because, in his situation, this is the only feasible method. His reports are spread across four shifts, working day and night. As a result it is not possible to gather everybody together at the same time for a workshop or other group goal-setting session.



# **Company C**

## **Manager 1**

### **Manager 1 Background**

Manager 1 is a Regional Account Manager with responsibility for a major territory in the United States. Manager 1 has been in the industry for over 12 years and in his current position for over six years. He has a total of 5 direct reports.

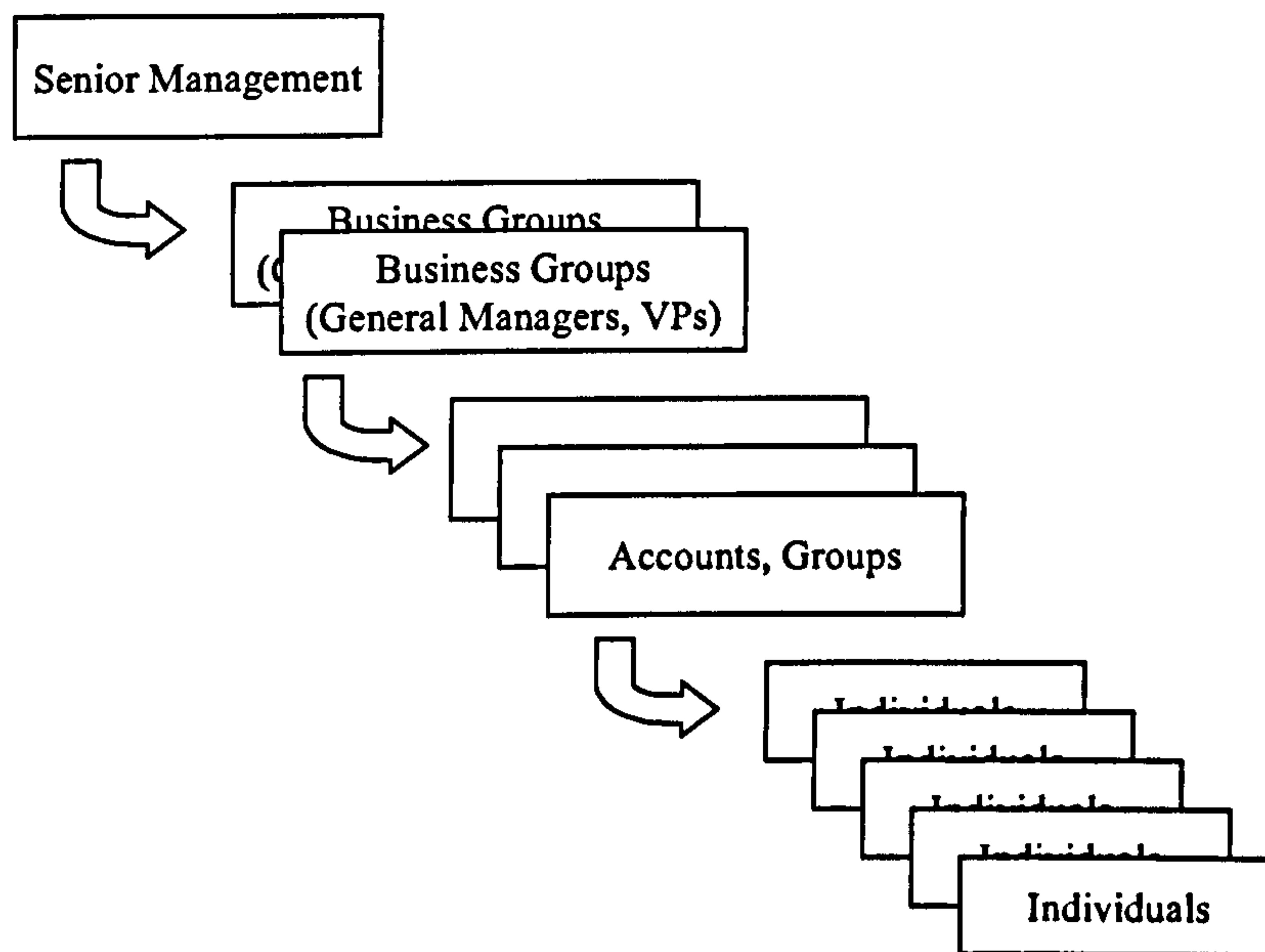
### **The Performance Management System**

Company C is undergoing a major re-organization, with a number of recent changes in the leadership of the organization. A new strategy has been developed and new initiatives are underway to improve both the performance of the organization and the performance management system itself. As part of the new strategy Company C has expanded its product range by acquiring a number of other organizations. Additionally, Company C has increased its range of services. Previously Company C's focus was only on its own products, however, as part of the strategy change the company is expanding its expertise and offering its services to customers on a wider range of issues and equipment.

The manufacturing operations have traditionally been subject to thorough data collection and analysis, much more so than the rest of the organization. Manager 1 attributed this to the fact that it is easier to measure manufacturing and assembly operations as the goals are based on more tangible manufacturing objectives. Company C maintains thorough build records that detail who performed what action during the assembly process. They also track their products in the field and maintain accurate failure records. The new performance management system is expanding to develop the same level of detail in the objectives and measures used in the rest of the organization, including Sales and Engineering. However, Manager 1 stated that despite the fact that the performance management system is evolving, it has a long way to go, in particular, Company C is getting better at collecting data but has yet to

develop efficient methods of getting information from the data and then using that information.

The sequence for developing goals is represented in Figure 1 below. The sequence was described by Manager 1 as a 'trickle-down' approach.



**Figure A3.2 - Objective development in Company C**

The performance management system is still a manual system. Senior management sets the overall objectives for the company and then verbally communicates the objectives to the individual business group leaders. The General Managers and Vice Presidents of those business groups then take the business goals and develop their own quarterly and yearly goals for the business groups. The business group goals are then communicated to the account managers who develop their own yearly plans and goals. There is not a central system that records these objectives and measures.

The goals developed for Sales managers and their accounts are dependent upon the type of territory and the type of customer that he/she has. For example, some territories are considered to be strategic in that they include important customers who contribute significantly to revenues either by buying large volumes or by taking

products with a strategic significance. For a manager in a strategic territory, the goals are unlikely to include revenue or sales targets, instead, the manager is likely to be tasked with new product introduction and market penetration goals. The managers of non-strategic territories would be given revenue goals based on the capacity of the territory and previous revenues.

The goals developed for the Customer Support Engineers (CSEs) are changing to reflect the strategy change. They are now expected to expand the breadth of their expertise beyond Company C's own products and to build relationships with their customers to gain acceptance as fab-wide troubleshooters. This is a very significant departure from the previous measures of sales and customer satisfaction.

Manager 1 described the main purpose of the performance management system as being twofold. Firstly, the performance management system provides accountability and guidance so that people know what they, and everybody else, are supposed to be doing in terms of the organizations direction and strategic goals. This also enables management to determine which employees are not performing as expected and helps to identify strengths and weaknesses. The second purpose of the performance management system is to ensure that every employee knows what is expected of him/her, and therefore to help in their development and advancement.

In terms of the performance management systems described in the literature, Company C does not have a well developed system. There are no formal procedures, processes, tools or techniques used in developing objectives and measures at the operational level, and there is no evidence that they exist at the higher levels either. As a result, whether the desirable characteristics of measures, measurement and management systems exist will depend on the individual manager's abilities.

### **The Performance Measurement System**

The bulk of the communication in Company B is done verbally and through email, as there is not a central information system that can be used to both communicate

downwards and upwards. Strategy is not widely communicated throughout the organization. Goals and initiatives are communicated verbally.

Manager 1 pointed out that because Company C is a small, team-driven organization there is a high degree of visibility in all aspects of the business and there is 'nowhere to hide'. Manager 1 is constantly assessing all manner of subjective criteria that are not included within the formal objectives, for example how well his team develop and maintain customer relationships. As a result of these characteristics there is also a great deal of communication and feedback is provided immediately if needed. In particular, if an issue arises it is dealt with as soon as possible.

The regional accounts have recently begun to use Salesforce.com as their primary communication tool. Salesforce.com is a web-based customer relationship management service that Company C uses to communicate the opportunities in each region with upper management. This software integrates all aspects of doing business with customers, including sales, marketing, documentations, service and so on. This system is now the central information system in Company C. There are also monthly Forecast, or Planning, meetings in which any information not captured by salesforce.com is communicated.

In discussing the current system Manager 1 pointed out that Company C is getting better at gathering data but that they have trouble getting useful information from that data. He also pointed out that the current system does not provide all of the needed information or guidance to align all employees in the direction that the organization wants to go. There is a general awareness of this problem and steps are being taken to correct it, for example by developing more specific and relevant objectives for every employee.

### **The Appraisal System**

Reviews are held once per year for every employee. The engineers have their reviews in March and the managers have theirs on the anniversary of their

employment. Goals are set annually for both the managers and the reports and these goals will not be updated over the course of the year. Quarterly reviews are deemed to be unnecessary in Company C because the small size of the company causes a high degree of visibility for all employees. As a result ‘...if an issue or a person strays it is very quickly realized by more than one individual. Especially if an issue strays because ... we have a pretty small focus ... so we really can’t afford to slip up. So when an issue strays it gets a lot of attention.’ Manager 1 also pointed out that there is a great deal of communication, between managers and their reports. In Manager 1’s case he communicates with his reports multiple times every day by various methods, regardless of where in the sales territory they are.

Aside from the business goals Manager 1 also assesses various behavioural characteristics of his reports. He admitted that the assessment of such characteristics as leadership skills, organizational skills, time management, interpersonal skills and the ability to form and maintain customer relationships is subjective but that they are vital. The business goals take precedence over the behavioural aspects for the purposes of performance evaluation at the end of the year but the behavioural characteristics enable people to achieve the business goals and that they are used to determine promotions.

Both the business results and the behavioural characteristics are used to rank all of the employees. The ranking is used to determine promotions and also to determine who to give the critical projects to. It is also used to determine who to layoff in the event that layoffs are necessary.

There are two types of reward in Company C. Firstly, pay raises and promotions are based on an individual’s performance against their goals in the past year. The second type of award is a recently launched program that allows any individual to be nominated by his/her manager for a special bonus. The manager is required to provide documentary evidence of the activities performed by the individual that merit a special award.

## Characteristics of Measures, Performance Measurement Systems and Performance Management Systems

The characteristics of measures, performance measurement and management systems, as identified in the literature, and how well Company C compares with them is presented in Table 2 below.

Characteristic	Exists/Doesn't exist.
<b>Performance Measures</b>	
Simple and easy to understand, e.g., ratio based in preference to absolute numbers, show a trend	For the business goals, Manager 1 ensures that his reports understand their goals and measures. However, certain behavioral characteristics are also assessed but there are no formal or specific goals for these.
Have appropriate accuracy, units of measure and levels of aggregation	The accuracy of their data and information is clearly a concern to Company C. There have been a number of exercises in the past that were designed to improve the accuracy of their data however Manager 1 suggested that this is something at which they still struggle.
Be objective or subjective as appropriate	The business goals are clearly stated and explained and are given precedence in assessing individuals. However, certain behavioral characteristics are also assessed which is done subjectively.
Be defined with input from, and under the control of those being 'measured'	There is clear evidence that this is done. Company C promotes a high degree of autonomy.
<b>The Performance Measurement System</b>	
Be accessible by every employee	Every employee has objectives which are assessed annually.
Provide downward and lateral communication of strategy, initiatives, plans, objectives and targets	The strategy is not widely communicated in Company C. Manager 1 clearly had a good understanding of the company's direction and new initiatives but stated that some of his personal goals are given to him based on knowledge that his manager has of higher-level issues.
(Continued overleaf)	

Provide rapid lateral and upward communication (feedback) of actual performance against targets	Manager 1 provides immediate feedback to his reports on their actions, in particular when performance is less than desired. However, there is no formal system for this.
Be capable of including cost and non-cost measures	There are both cost and non-cost objectives and measures.
Facilitate an understanding of the relationship between measures (for example, by presenting and linking measures graphically)	Manager 1 makes sure that his reports understand how they contribute to the account's goals and to Company C's goals but this is dependent on the individual manager.
<b>The Performance Management System</b>	
Monitor both the internal and external environments	Manager 1 clearly monitors both the internal and external environments, however, there are no formal systems in place to do this so it is dependent upon the individual manager.
Understand the relationships between the organizational units by considering the input, process and output of each	There are no formal processes for this however, there is evidence of cooperation between organizational units.
Encourage cross-functional interaction and communication to promote a better understanding of how units affect each other	Manager 1 described Company C as small and team-driven. There is a high degree of communication and co-operation between organizational units.
Define consensual objectives and measures for every level, based on the strategic objectives. Use as few objectives and measures as possible	There is clear evidence that this is the case. The objectives are consensual whenever possible and are always based on the company's strategy.
Clearly define the data collection method and the measure calculation method	Where applicable this is true
Ensure that the objectives and measures for each unit are clear, consistent and compatible, and will not promote dysfunctional behaviour between the units	Manager 1 ensures that the objectives are clear but there is no evidence of checking for dysfunctional behavior between individuals or organizational units.
	(Continued overleaf)

Identify and eliminate roadblocks to the successful implementation of the objectives and measures	No formal system or methods for this
Use the performance measurement system to openly communicate strategy, initiatives, objectives and targets downwards	Objectives are communicated verbally at review time, strategy is not widely communicated. All other communication is done either verbally or by email.
Ensure the results of the measurement are fed back to those executing the actions as well as to their superiors	Feedback is provided immediately, especially when performance deviates from the norm.
Empower employees by promoting autonomy, as far as possible, in determining corrective actions	There is a high degree of autonomy promoted in Company C.
Use the measurement results to stimulate continuous improvement and organizational learning	There is evidence of this although Manager 1 admitted that much of it is reactive.
Be aware of the informal measurement system, to counter it, tie rewards to the formal system	All incentive-related objectives are tied to the business goals.
Periodically reevaluate the objectives and measures, delete obsolete measures	There is no evidence of this. Reviews are held once per year and are not modified mid-year, even if an individual's goals and circumstances change.

**Table A3.3 - Company C's achievement of the desirable characteristics**

### **Characteristics of the Operational Level**

In terms of the operational level characteristics Manager 1 spends approximately 50% of his time dealing with the day-to-day issues, 10% of his time on personnel issues and the remaining 40% of his time on strategic business issues. He also pointed out that much of his work on the strategic business issues is done after 6:00 pm or at the weekend when he is not likely to be interrupted. Manager 1 estimated



that he has to make an average of two urgent decisions per day, for which he drops whatever he is currently working on and gives his full and immediate attention to the new issue.

Manager 1 spends a considerable amount of time traveling and pointed out that the time spent in airports and on planes allows him to catch up on the more strategic aspects of his work.

### **Discussion**

The organization's strategy is not widely communicated. More specifically, the general strategy is communicated to all employees but the specifics of the entire strategy are not communicated. It was clear that Manager 1 had a good grasp of the organization's new direction, however, when discussing how his personal goals are set he admitted that his manager and his manager's manager were involved in things that he was not aware of. As a result, Manager 1 develops approximately 70% of his objectives himself, the remaining 30% of Manager 1's goals are determined by his manager, based on his manager's more strategic perspective. Manager 1's personal goal is to continue to be the manager/territory that is targeted by his management for strategic projects. In addition to having goals based on the organization's strategy, Manager 1 is also responsible for a number of companies with whom the organization has licensing agreements or partnerships. Manager 1 sets revenue and quantity goals for these individuals and is then held accountable for achieving those goals.

Manager 1 acknowledged that informal objectives do exist within the organization. These informal objectives are developed, between reviews, in response to circumstances that require attention. The objectives remain informal until the next review, at which time they will be added to the formal review if they are still needed. For example, if during the course of a year a manager were to lose a service contract at a particular company, then he/she would develop a set of objectives for his sales team to get the business back. If the sales team had successfully won the business back by the time the next review came around then the objectives would not be

added to the formal review, however, if the business had not been won back then the objectives would be added to the formal review.

Manager 1 expressed some dissatisfaction with the current performance management system, despite the fact that it has improved considerably. Manager 1 identified the need to develop a simple, metric-driven system that is not labour intensive for the managers. Manager 1 is also aware of the need for a culture shift, especially give the recent changes in leadership and the strategic direction, and he is aware that this would be a 'painful' process.

The current system does not give any guidance on how managers should develop objectives and measures for their reports.

Manager 1 described Company C as having a very team-driven approach. Manager 1 sets the objectives for his reports based on his own objectives and both the Customer Support Engineers and the sales team work together to achieve the account's goals. This was summarized by Manager 1 as follows: '...the territory objectives flow down hill to everybody in that territory.'

In terms of supplier relationships, Manager 1 described a close working relationship with the organizations that are licensed by Company C to perform certain activities. These activities are mostly related to the recently expanded product and service line as Company C did not possess the necessary expertise in-house. It is critical to the success of the expanded products and services that they perform as expected and therefore the relationship with these suppliers is critical, a fact which is recognized by Company C. There is also a close internal supplier relationship, for example, before Manager 1 commits to large customer orders, he first discusses the order with the manufacturing managers to determine if and when the order can be fulfilled.

Company C and Manager 1 work hard to maintain their relationships with customers, however, Manager 1 pointed out that in the past the company developed products

and services that they thought the customer wanted. They now consult with the customer and develop their products according to specific customer requirements.

Improvement initiatives are based on specific needs, all of which are determined by the territory goals. The Customer Support Engineers are continually assessed against the required functionality of their position, their technical skills, the ability to communicate with the customer, troubleshooting, timely response to the customer, and so on. Anything that needs to be corrected is corrected right away. Feedback is provided immediately.

There is a great deal of autonomy in Company C, individuals are given goals and then expected to determine what is needed to achieve those goals. In the past, the high degree of autonomy has resulted in individuals being employed who did not fit in, these individuals needed more direction that Company C's style, or culture, provides. As a result these individuals were ultimately let go.

Continuous improvement and organizational learning are integral parts of Company C's management system, although on an informal level. Major issues are investigated and solutions are implemented to ensure that similar issues do not occur again. However, Manager 1 pointed out that Company C is not as proactive as it could be, they tend to wait for incidents to happen before taking action. For example, after a recent major incident at a customer's site the ensuing investigation looked at the value of service given to the customer by both the sales manager and the engineer. The term 'value' in this case is considered to be the amount of guidance, responsiveness, information and so on. As a result of the investigation Company C identified that there was an internal system breakdown at headquarters and that the sales manager made a critical mistake. The outcome was the development of a new procedure at headquarters and immediate training for certain personnel.

Manager 1 believes in the need to make objectives as simple and easy to understand as possible but stated that instructions from senior management, in particular

technical instructions are sometimes too vague and the interpretation of these instructions is left to the lower levels.

There is a considerable amount of effort spent in Company C on ensuring the accuracy of data and information, however Manager 1 pointed out that this is an area in which they struggle, in particular in obtaining 'stealth' information, which is understood to be information obtained surreptitiously about customers or competitors. Manager 1 also makes a conscious effort to make goals as objective as possible to ensure that his reports understand the goals and how they relate to the business goals. He has not previously considered the level of aggregation of goals. For example, he gives revenue goals to the licensed partners but does not specify any greater detail, preferring to leave this up to the individuals concerned. This again reflects the high degree of autonomy promoted in Company C.

Goals are developed consensually when possible and are under the control of those being measured.

There is a considerable amount of subjectivity involved in certain aspects of the assessment of individuals. For example, Manager 1 assesses his reports in terms of their leadership skills, organizational skills, time management skills and so on. He is assessed, and he assesses his reports in terms of the account penetration that they achieve. The Account penetration is looked at closely but is difficult to measure. It is important because the greater the account penetration the less chance there is of being displaced by a competitor and the easier it is to introduce new products with a short sell-cycle. The account penetration is assessed by how long it takes to introduce and complete new initiatives, whether a relationship existed at the beginning or if one had to be developed in order to introduce the new product. Each of the account managers also pays close attention to their list of contacts in each of the customer organizations. They continually work to develop and maintain relationships with the customers as far up the hierarchy as possible but at least to the Section Head level. This applies to the Customer Support Engineers as much as it does to the sales people because Manager 1 relies on the engineers to get information

that the salespeople cannot get. In particular, Manager 1 pointed out that some people will not deal with salespeople, in these cases the engineers are vital in obtaining information. An example given by Manager 1 is of an account where Company C lost all of its service contracts. The engineers and salespeople were subsequently able to find out that while cost was a contributor to losing the business, the real reason was that the person who made the decision had a personal relationship with people in the company that was subsequently awarded the business. This information allowed Manager 1 to develop a plan to win the business back. This plan is currently being executed.

Manager 1's personal preference for a method to develop objectives and measures was for a set of general guidelines. He agreed that all objectives should be developed in the same way and using the same information but that they should be implemented at the discretion of the manager because of regional, cultural and personal style differences.

# **Company D**

## **Manager 1**

### **Manager background**

Manager 1 is a Regional Account Manager with a total of seven reports. He has been in the industry and with Company D for 15 years and in his current position for nine years. Manager D now reports directly to the President of the company.

Company D is a division of a multinational conglomerate, having been bought out over 30 years ago. The parent company has been operating for over 80 years, had 2004 revenues of approximately \$7 billion and employs over 43000 people worldwide. The division for which Manager 1 works had 2004 revenues of approximately \$1 billion and employs around 3000 people.

### **The Performance Management System**

Company D's system has evolved from being paper-based, to standard organization-wide templates, to finally being redesigned as an interactive, web-based process.

The CEO and senior management team develop objectives which are used as the basis for the objectives at the next lower level of management. The senior managers send their objectives to their reports, who in turn develop their own objectives based on their manager's objectives and so on, for every level of the organization.

Another part of the performance management system is referred to the Competency section. This section is used to identify specific training requirements for every employee, based on a comparison of actual performance against a standard set of competencies for each job.

The final part of Company D's performance management system is referred to as Traccess. This is a newly developed training system. Under the newly launched

system all employees have to take a mandatory 96 hours of training in the first year. Most of the training is for safety and safety related issues. This requirement is somewhat unrealistic according to Manager 1 because of the time burden it imposes, however, because the training is mandatory it will be done, albeit at the expense of something more productive. Most of the training for the salesmen addresses legal and safety issues. For example, the salesmen's main training classes are concerned with Competition Policy, codes of conduct, the transportation of hazardous goods and vehicular safety.

A new overriding corporate principle called ACTS, (Accountability, Collaboration, Transparency and Stretch) has just been introduced in Company D. Under ACTS there are 10 development criteria for which objectives should also now be set. According to the interviewee this results in so many different objectives that the entire system has completely lost its focus and had become almost worthless.

On the surface, the only failing of the system would appear to be that hourly paid workers are not included.

### **The Performance Measurement System**

All of the business objectives are maintained in a central, web-based interactive system. A manager will enter his objectives into the system and then send them to his/her reports. When the reports log-in to the system they see their manager's objectives and use them as the basis for developing their own objectives. When the reports have developed their objectives they enter them in to the system and 'release' them. The next time the manager logs-in he will be presented with a 'red light' on his screen, notifying him that one of his reports has entered their objectives. The manager then reviews the objectives and either accepts them or rejects them. If accepted the subordinate will get a 'green light' when he/she next logs-in, otherwise they will get a 'red light' to draw their attention to the fact that the objectives were rejected.

Another portion of the system is referred to as the Competencies section. In this section a list of competencies is drawn up and entered for every job. The list is reviewed every two years to ensure that it is up to date. To use this section an individual will grade themselves against the competencies and their manager will also grade them. The resulting gaps, or differences, are used as the basis of a discussion and to identify any training requirements.

This system does not provide any feedback.

### **The Appraisal System**

At the end of the year the manager will review the performance of each of his reports and award them a mark out of five for each of their objectives. The manager then prints out a copy of the review, signs it and sends it to his manager. At the bottom of the review form there is a question and a checkbox. The question asks if the marks awarded to the individual are based entirely on the listed objectives. This allows the manager to use his judgment in determining whether the individual's overall mark.

At the end of the year the manager and report will get together to discuss the previous year's performance, both to review the general performance and specifically in terms of the business objectives.

The marks awarded will determine the amount of pay raise given to the individual.

### **Characteristics of Measures, Performance Measurement Systems and Performance Management Systems**

The characteristics identified in the literature as being desirable in performance measures, performance measurement system and performance management systems are listed in Table 1 below. The extent to which these characteristics exist in Company D's systems is assessed in the table.



<b>Characteristic</b>	<b>Exists/Doesn't exist.</b>
<b>Performance Measures</b>	
Simple and easy to understand, e.g., ratio based in preference to absolute numbers, show a trend	Measures are chosen to be simple and easy to understand.
Have appropriate accuracy, units of measure and levels of aggregation	This is inherent in the system, Manager 1 is clearly aware of the need to consider accuracy and unit of measure. The level of aggregation does not appear to be considered.
Be objective or subjective as appropriate	One of the few guidelines provided by the PMgtS is that if it can't be measured, don't give it as an objective. The objectives are specifically chosen to be objective. However, the final number given, by the manager, is not necessarily based on the objectives.
Be defined with input from, and under the control of those being 'measured'	The process ensures that objectives are consensual as much as possible. Manager 1 also makes the measures as consensual as possible.
<b>The Performance Measurement System</b>	
Be accessible by every employee	Only employees above a certain grade are included – hourly paid employees are not included, Manager 1 was not aware of how these employees are assessed.
Provide downward and lateral communication of strategy, initiatives, plans, objectives and targets	The strategy was described by the interviewee as either non-existent or so general as to be useless. Initiatives and plans are communicated by the managers as they arise, but not through the PMS
Provide rapid lateral and upward communication (feedback) of actual performance against targets	No real-time feedback of results within the system. Some KPIs and quantifiables might afford immediate feedback. Manager 1 provides 'appropriate, constructive and immediate' feedback.
Be capable of including cost and non-cost measures	Yes, to the extent that objectives can be cost-related
Facilitate an understanding of the relationship between measures (for example, by presenting and linking measures graphically)	This is not inherent in the system and depends on the manager. Manager 1 ensures that his reports understand the relationships.  (Continued overleaf)

<b>The Performance Management System</b>	
Monitor both the internal and external environments	This is not required by the system, Manager 1 pointed out that Company D is very 'inward-looking'
Understand the relationships between the organizational units by considering the input, process and output of each	Manager 1 understands the relationships between certain organizational units, this does not appear to be a part of the system though.
Encourage cross-functional interaction and communication to promote a better understanding of how units affect each other	There does not appear to be any cross-functional interaction or communication. Manager 1 pointed out that what Sales are required to do by senior management is often not compatible with what Manufacturing is required to do.
Define consensual objectives and measures for every level, based on the strategic objectives. Use as few objectives and measures as possible	The objectives and measures are consensual within boundaries. There is a general rule of thumb that only five or six objectives will be set for each individual
Clearly define the data collection method and the measure calculation method	Yes – as mentioned above, one of the few guidelines provided by the system is that if it can't be measured don't set it as an objective.
Ensure that the objectives and measures for each unit are clear, consistent and compatible, and will not promote dysfunctional behaviour between the units	The objectives are clear and compatible within the unit. However, there is conflict between various organizational units, for example, finished goods inventory is kept as low as possible which frequently hurts the salesmen.
Identify and eliminate roadblocks to the successful implementation of the objectives and measures	Not part of the system, overcoming obstacles is considered to be part of a manager's job by Manager 1.
Use the performance measurement system to openly communicate strategy, initiatives, objectives and targets downwards	This is not done with the performance measurement or management system, it is done through management meetings, verbally or via email.
Ensure the measurement results are fed back to those executing the actions as well as to their superiors	Feedback is given as needed and is immediate in the event of a serious issue. Determining what merits immediate feedback is sometimes subjective and will depend on the manager.  (Continued overleaf)

Empower employees by promoting autonomy, as far as possible, in determining corrective actions	This depends on the individual manager but the new management information system (SAP) removes a lot of autonomy. Manager 1 promotes as much autonomy as he can, within the boundaries imposed by the system.
Use the measurement results to stimulate continuous improvement and organizational learning	This is built into the system, in theory. However, the one part of the performance management system that was designed to ensure this is not used by Manager 1, or many of his colleagues.
Be aware of the informal measurement system, to counter it, tie rewards to the formal system	All rewards tied to the main objectives. However, there are numerous informal objectives according to Manager 1. While these are not formally tied to rewards they can impact an individual's review. The informal objectives might be referred to as Determinants, as their purpose is to contribute to achieving the formal objectives.
Periodically reevaluate the objectives and measures, delete obsolete measures	This does not appear to be done. The numbers are changed from year to year but not the objectives.

**Table A3.4 - Company D's achievement of the desirable characteristics**

### **The Characteristics of the Operational Level**

The bulk of Manager 1's time is spent on issues requiring immediate attention, with an increasing emphasis on the medium term towards the end of the fiscal year when the coming year's budget is being developed. Resulting in a short-term, real-time focus.

Manager 1 admitted to being constantly interrupted, resulting in brevity and fragmentation of activities.

### **Discussion**

Manager 1 suggested that the purpose of the performance management system is to assess people and to provide direction by telling them what they should be doing.

On the surface Company D appears to have an almost textbook Performance Management System as many of the features that are deemed to be desirable or necessary in the literature would appear to exist in Company D. The objectives at every level are dovetailed into the objectives at the level above. Employees have a small number (five or six) of consensual objectives, with accompanying KPIs (Key Performance Indicators) and metrics and achievement of the objectives determines an individual's rewards. The entire system is web-based and interactive. There are mandatory training classes and continuous improvement and organizational learning are intended to be inherent in the systems. Unfortunately, the honourable intentions of the system designers are not reflected in the real-world application of the system.

The performance management system is viewed by Manager 1 as being an administrative process that is done almost solely for the sake of the process. He does not view the entire process as being worthless but stated that for the effort and money that has been spent on it, it does not drive the day-to-day activities.

The failings of this system begin at the top of the organization. The CEO refuses to use the system because he doesn't want to be inundated with the objectives of his direct reports. This undermines the entire system. Manager 1's previous manager always developed his own personal objectives after the deadline for completion of the process. As a result, Manager 1 was forced to develop his personal objectives without ever seeing his manager's objectives. However, Manager 1's new manager makes better use of the system. Manager 1's still does not see his manager's objectives but gets specific advice on what his objectives should be. He is required to have at least one performance related objective (sales numbers), one safety objective, an information management (because of the recent adoption of SAP), one team development objective and a project-based objective.

According to Manager 1, the main benefit of the process is that it makes managers and their reports sit down together to discuss the past year's performance and the coming year's objectives. This has resulted in Manager 1 being surprised by how much his reports have actually done over the course of the period being reviewed, when they present their achievements. The manager should ensure that s/he has

completed all of the necessary preparatory work in a timely manner, the rest is up to the direct report. Manager 1 suggested that the people in an organization can be divided into three groups, which are top 20%, middle 60% and the bottom 20%. The bottom 20% of people have no idea what is going on, the 60% of the people in the middle are hard workers but need to be told what to do and the top 20% of the people drive all of the activities in the organization. He also suggested that it is for the two extreme groups that the performance management system is most appropriate. If the individual is in the top 20% and is serious about getting ahead then s/he can use the system to make their achievements known. Manager 1 also pointed out that the process can be used to help those who are under-performing by giving them clear instructions within a formal and documented process. Ultimately the system can then be used to terminate an employee's employment contract because their poor performance, and all attempts to improve it, have been documented.

Manager 1 also identified the process as being less applicable to his group than others because the salesmen in his group are paid on commission, while their business objectives are used to determine their pay raise. As a result, their primary objective is to 'sell more', if they meet this objective they will be better rewarded than for achieving any other objective. According to Manager 1 the objective to sell more ultimately overrides all other objectives, except the organization's safety objectives. For every other employee the PMgtS determines their annual pay raise and therefore the process is probably more meaningful to the non-commission employees.

One requirement of the system is that goals and measures must be clearly defined and cannot be subjective, the guiding rule is that 'if you can't measure it don't set it as an objective'. Despite this there is still a great deal of subjectivity in this system. Specifically, when all of the reviews have been done and all of his reports have been scored, Manager 1 will review the scores and amend them to change the order, if he feels certain individuals deserve to be moved up or down the order. A further degree of subjectivity is added by senior management. The interviewee admitted that when the managers submit the appraisals of their people they are not allowed to divulge the

scores to the individuals in question. This is because the scores will be manipulated by senior management to achieve consistency among all of the managers. So, for example, if one manager awarded all of his reports with 3.0, another manager awarded his people 4.0's, and both managers had achieved their objectives, then senior management would adjust the scores of both groups to 3.5. There are numerous informal objectives that are not tied directly to rewards, however, if these objectives are not achieved it can have an impact on an individual's review.

Manager 1 has 7 reports and suggested that if he had any more reports conducting the performance reviews would become his job.

Manager 1 suggested that the work environment is too dynamic for any system to be able to fully capture it. But that it might be different for production or manufacturing.

The PMgtS gives little guidance on the development on objectives and measures and what guidance it does give is subject to interpretation.

Using the Competency section of the performance management system is not mandatory and therefore Manager 1 and many of his colleagues do not use it. His objections are that if it is not mandatory then nobody is looking at the data, and if that is the case then nobody cares. Also, it takes up too much time and there is no training budget to pay for the training that was identified as a result of performing the Competency analysis.

According to Manager 1 his company would like to think they have a clear strategy and that everyone is working towards it. Unfortunately, Manager 1 believes that the message being sent out by senior management is to 'sell more and cut costs'. Manager 1 believes that the reason there is no specific strategy is that the organization's market changes so rapidly and frequently, and that the organization is so fragmented that nobody really has a vision of where Manager 1's division should be going. He added that if there is a vision or strategy that '...it's so complex and far

away from what the guys are doing on the ground as to be meaningless to the guys that are on the ground.'

Manager 1 sends his objectives out to his reports and tells them to base theirs on his. According to Manager 1 this practice is rare. According to Manager 1, Company D is very poor at inter-functional communication and cooperation. Company D places a great deal of emphasis on customer relationships but has made no effort to quantify them, preferring to write them off as being too subjective to measure. Similarly, inventories are not carried by Company D, despite the loss of business that this results in when customer want a product immediately. Company D would rather count the saved inventory costs.

Objectives and measures are not assessed for conflicting behaviour. That's the stuff that a manager has to sort out as he goes along. There is considerable conflict between various people's objectives, although not so much within groups as between groups. For example, inventory which the factory wants to minimize but the sales people would like to maximize. The lack of inventory impacts on the salespersons' ability to sell in some case, resulting in their assessment against criteria over which they don't always have control

Formal feedback is provided twice per year but informal feedback is provided continuously. A specific requirement of the PMgtS is that the face-to-face review is not a time to spring unpleasant surprises on individuals. However, this again depends to a large extent on the manager.

Manager 1 maintains a 'territory spreadsheet' which contains a much more detailed list of objectives than can be included in the formal PMgtS, because these things are important but could not be included in the formal process.

The amount of autonomy delegated to an individual depends on the manager and the individual, as well as on the company. For example, whether or not autonomy is promoted depends first and foremost on the manager. Manager 1 will delegate as much autonomy as he feels an individual can absorb. However, the recently

launched information system (SAP) removes autonomy in areas that previously were in the domain of the sales people. SAP has predetermined parameters that guide how to do business with the customer and the sales people do not have the authority to go outside of these parameters. Even the sales manager has limited authority.

The process is designed to promote continuous improvement and organizational learning although Manager 1 was unsure of how effective this aspect of the process is. Continuous improvement and organizational learning are intended to be achieved by setting objectives, determining training requirements and then providing feedback on actual performance.

The accuracy of the information that is being collected is not given much consideration until it is too late. There have been cases when the data that has been collected did not reveal the desired information. All salespeople in Company D are required to complete a 'Visit Report' whenever they visit a customer site. The report contains relevant data such as the customer, the product they were interested in, the prospects of getting a sale and so on. However, the salespeople do not like completing these reports as they see them as a nuisance. Manager 1 could make this a formal objective but chooses not to because some of the salespeople will use it against him. For example, by forcing the salespeople to complete Visit Reports they will have less time to actually go out and sell, as a result, a salesman can defend a poor sales record by saying 'well you made me do all these Visit Reports...'

Courses of action are decided upon collaboratively whenever possible and when being set in response to an event they are dealt with immediately. Manager 1 believes that feedback should be appropriate, constructive and immediate, he did acknowledge that whether it is or not will depend on the manager.

Manager 1 spends as little time as possible on the performance management system process. He estimated two working days per year to do his own reviews with his manager and two working days per year with each of his guys, to complete the formal process. This does not include regular and ongoing feedback. He sees the



actual review meeting as simply a brief recap of the year but mostly a chance for the employee to 'blow their trumpet' about all the things that they achieved during the year, and finally as a brief look ahead to the coming year.

In the event of a serious issue, Manager 1 will travel to see his reports, or the customer. For less serious issues where a phone call will suffice he will arrange a phone call in the evening or weekend so as to avoid interruptions.

Manager 1 is not completely satisfied with the current system and the objectives and measures that it results in as he feels that it is a game to some extent. The numbers change from year to year but the objectives remain the same. He also feels that the strategy should be communicated better and that there needs to be a better understanding of the strategy throughout the organization.

Manager 1 suggested that any method used to develop objectives should be as intuitive as possible, with a little help in terms of guidelines.

# **Company F**

## **Manager 1**

### **Manager F background**

Manager 1 has over 20 years of experience in this industry, although he has only held his current position for a little over 1 year. He has previously held a wide range of management positions in manufacturing at a variety of levels, including the position of vice president. Manager 1 is currently the Plant Manager for Company F, with responsibility for all production operations, including maintenance. He operates at all levels in Company F, from spending up to 50% of his day on the production floor some days to participating in the budget formulation as a part of the senior management team.

Manager F has six Line Supervisors reporting to him, each Line Supervisor has a number of line leaders who are responsible for coordinating the efforts of the operators. Manager F reports to the CEO. This hierarchy has arisen because of a recent re-organization, in response to the loss of a major customer and the general loss of sales because of the low-carb diet trend.

### **Performance Management System**

Company F does not have a well developed formal performance management system, as described for the purposes of this research. The purpose of the existing system is, according to Manager 1, to provide constructive feedback to employees, to either improve their overall performance or to improve the overall performance of the actual production line itself.

Manager F described the organization's strategy as:

'We want to be a lean manufacturer, we want to produce to order, we want 100% accuracy on fill rates and production completion rates. So the overall strategy is we

want to be efficient at what we do and in turn supply the customer, and through that whole process you're making quality products in a timely, safe manner.'

It is unclear who determined the strategy, however, the CEO decides on the organization's top-level objectives and targets. The objectives that apply to Manager 1 for this year these are:

- 97% Product completion rate
- 6% labour standard variance
- 1.8% material standard variance

These three objectives form the basis of the incentive plan for every employee in manufacturing, including Manager 1. The Product Completion Rate objective has been designated as a 'qualifier' by the CEO. That is, if this objective is not achieved then there will be no bonus pay-out, regardless of the circumstances. Each individual will also have other objectives to achieve during the course of the year but these other objectives are not used to calculate bonuses.

The annual budget development process takes approximately 50% of the senior management's time for around three months. This is because the first draft of the budget is never accepted by everyone, and then after all of that planning the decision very often comes down to 'here are your budget numbers'.

### **Performance Measurement System**

There is a great deal of information being collected but it is not done in an integrated and coherent manner and much of it is broad and general in nature. There are multiple systems collecting data, much of it is never seen and the rest of it is contained in reports, which many personnel do not even know exist. The only time Manager 1 can get a detailed financial report is at the quarterly plant-wide staff meeting. The Finance department prepares a comprehensive report for discussion at this meeting.

The incentive program objectives are communicated on paper. All other objectives are communicated through meetings, email or verbally as there is not a central, computer-based system to provide this function.

There is no effort underway to develop a comprehensive information system, largely because the CEO does not see the benefit of doing so. There is also a cost concern involved in the decision. Manager F summed up the current situation by pointing out that the truly important information, from his perspective, is concerned with labour efficiency, material variance, and the completion rate. Manager F doesn't need a comprehensive report to tell him if these have gone out of control because he will see it immediately on the production floor. While an integrated and comprehensive performance measurement system and a more thorough performance management system would be nice they are not essential.

### **The Appraisal System**

Employee evaluations are only conducted down to the line supervisor level, the actual line-worker level is not included in the appraisal and reward program.

There are two separate systems in Company F, the reward system and the appraisal system. Rewards are paid quarterly and are based solely on the organization's objectives. So, for Manager 1 and the manufacturing department the incentive-related objectives are:

- 97% Product completion rate
- 6% labour standard variance
- 1.8% material standard variance

The completion rate objective has been determined to be a qualifier by the CEO. That is, if the completion rate objective is not achieved there will be no bonus payout, regardless of whether an individual had control over the circumstances or whether the other objectives were met. If all three objectives are met the employees receive the basic bonus, there are incremental increases for exceeding the targets.

In addition to the bonus system there is a separate appraisal system. The appraisals are conducted by getting the employees to complete a self-assessment form to rate themselves against a number of criteria. The manager also completes an assessment of the employee against the same criteria. The resulting difference forms the basis of the discussion. Manager 1 stressed that there should not be any surprises during the appraisal and that if an employee had issues during the period under review he/she would have been made aware of them immediately. The criteria used for the appraisals are:

- priority setting
- thinking and problem solving,
- initiative and follow through,
- leadership abilities,
- working effectively with others,
- communication,
- creativity and innovation
- customer and business development.

Regular and ongoing feedback is provided to the supervisors and line leaders on a daily basis during production meetings in which performance is discussed against the organization's objectives. There is also a weekly meeting for the senior managers where the performance of the organization is discussed against its objectives.

Manager 1's only criticism of the bonus system is that the CEO has determined that the 97% Product Completion Rate is a qualifier. This can be unfair for the production employees because they do not have complete control over this metric. Specifically, if materials do not arrive at the plant on time then they will not be able to achieve this objective and the production personnel do not have control over whether materials arrive on time or not.

### **Characteristics of Measures, Performance Measurement Systems and Performance Management Systems**

The existence of the desirable characteristics for performance measures, performance measurement and performance management system in Company F's is summarized in Table 2 below.

Characteristic	Comment
<b>Performance Measures</b>	
Simple and easy to understand, e.g., ratio based in preference to absolute numbers, show a trend	This is the case for Manager 1 but there is no evidence to suggest that other managers in Company F achieve this
Have appropriate accuracy, units of measure and levels of aggregation	Not inherent to the system, there are several measures that Manager 1 would like to change
Be objective or subjective as appropriate	Only objective measures are used for reward/bonus purposes, there are subjective measures but these are used for development purposes.
Be defined with input from, and under the control of those being 'measured'	Objectives are not developed consensually for the most part and there is clear evidence that individuals are not always in control of their own objectives/measures
<b>The Performance Measurement System</b>	
Be accessible by every employee	This is not the case, the line operators are not included in the annual review cycle.
Provide downward and lateral communication of strategy, initiatives, plans, objectives and targets	This depends on the manager, Manager 1 openly communicates with his team.
Provide rapid lateral and upward communication (feedback) of actual performance against targets	Feedback against the objectives is provided at daily production meetings and weekly management meetings. Otherwise the level of feedback will depend on the manager, Manager 1 provides regular and on-going feedback.
Be capable of including cost and non-cost measures	Only to the extent that most objectives are cost related.  (Continued overleaf)

Facilitate an understanding of the relationship between measures (for example, by presenting and linking measures graphically)	This depends on the manager. Manager 1 makes a point of explaining the relationships to his team.
<b>The Performance Management System</b>	
Monitor both the internal and external environments	This is not inherent in the system and will depend on the manager, Manager 1 appears to be well aware of both the internal and external environments.
Understand the relationships between the organizational units by considering the input, process and output of each	This is not inherent in the system and depends on the manager, Manager 2 is aware of the inter-functional relationships.
Encourage cross-functional interaction and communication to promote a better understanding of how units affect each other	Manager 2 understands the impact that the various functions have on each other, however this does not appear to be an inherent part of the system.
Define consensual objectives and measures for every level, based on the strategic objectives. Use as few objectives and measures as possible	The primary objectives of all employees are based on the strategic objectives but they are not consensual. Relatively few objectives and measures are used.
Clearly define the data collection method and the measure calculation method	The existing system uses few objectives and measures and these are straightforward, if the system were more complex this characteristic would be more applicable.
Ensure that the objectives and measures for each unit are clear, consistent and compatible, and will not promote dysfunctional behaviour between the units	Manager 2 makes a concerted effort to ensure that objectives do not conflict and is aware of the potential conflict between certain functions. The existing system does not appear to address this characteristic.
Identify and eliminate roadblocks to the successful implementation of the objectives and measures	This is not inherent in the system and as such will depend on the manager. Manager 2 pointed out that dealing with obstacles as they arise is part of what the manager does.
	(Continued overleaf)

Use the performance measurement system to openly communicate strategy, initiatives, objectives and targets downwards	The existing performance measurement system, or information systems are not capable of achieving this. All communication is done verbally and therefore is dependent on the manager.
Ensure the results of the measurement are fed back to those executing the actions as well as to their superiors	Feedback is provided daily to production personnel and weekly to the management team. Manager 2 ensures that feedback on issues other than the high-level objectives is provided immediately.
Empower employees by promoting autonomy, as far as possible, in determining corrective actions	This is not inherent in the system but Manager 2 promotes as much autonomy as possible, however he does expect to be kept informed at all times. Manager 2 also understands the value of getting buy-in from his reports.
Use the measurement results to stimulate continuous improvement and organizational learning	This does not appear to be an integral part of the system but Manager 2 engenders continuous improvement and organizational learning.
Be aware of the informal measurement system, to counter it, tie rewards to the formal system	This is done effectively, all rewards are tied to the three primary objectives that were selected by the CEO.
Periodically reevaluate the objectives and measures, delete obsolete measures	This is not inherent in the system and will depend on the manager. Manager 2 measures the few fundamental objectives that he believes to be important and reevaluates the target periodically.

**Table A3.5 - Company F's achievement of the desirable characteristics**

### **Characteristics of the Operational Level**

Manager 1 was able to provide a unique insight into the differences between the operational level and the strategic level. Manager 1 has previously held the position of vice president in an organization that is in the same market and has approximately the same annual revenue as Company F. In addition to his senior management duties, his current position of Plant Manager requires that he get personally involved in the day-to-day operations because of the lack of experience and ability of his production team.



The main difference between the strategic or tactical level and the operational level is fundamentally one of time. Higher level managers have time to formally plan their activities, whereas operational level managers are forced to spend much of their time reacting to unforeseen events. During production days, when the line is running, Manager 1 spends 50-60% of his time on the production floor. This will likely decrease to some extent as Manager 2 continues to make improvements and as his team gains experience. Manager 1 would like to spend more time monitoring and planning.

Urgent decisions vary day-by-day, on some days there are no urgent issues and on other days 20% or more of Manager 1's time can be consumed with urgent issues, whether these be materials not arriving on time, production line issues, warehousing and shipping issues, and so on. Manager 1 finds that he is interrupted constantly. He schedules tasks that require uninterrupted attention for days when the production lines are not running, or he takes work home.

### **Discussion**

With the exception of Manager 1's efforts, all of the focus in Company F would appear to be on costs and financial measures. Support for this point of view is gained from the examples provided by Manager 1:

- Before Manager 1 joined the company there was no measurement of the time it took to change a production line from making one product to making another product, referred to as the 'changeover' time. On one particular line the changeover time was 48 minutes when Manager 1 started, it is now down to 18 minutes. Similarly, the other lines had changeover times of 8 to 10 minutes, these changeovers have been improved to 4 to 5 minutes. There are as many as 20 to 22 changeovers on a single line, per day, so these time savings represent a significant improvement.
- Before Manager 1 joined the company there was no preventive maintenance (PM) program in place and there was no measure of unscheduled downtime

as caused by mechanical issues. As a result there was no way of knowing that the unscheduled down time was running in the mid-to-high 20% range. By implementing a preventative maintenance program, by cross-training the maintenance technicians and by instilling a sense of pride and ownership in the maintenance technicians that has been reduced to 7% unscheduled downtime. Manager 1 believes that 3% is an achievable goal. Manager 1 has also implemented a number of other maintenance measures to help identify where improvements can be made.

- When Manager 1 first joined Company F, the production department was running at greater than 20% unfavourable standard labour variance. Due to Manager 1's efforts the production department is now running at around 0%, meaning that labour costs are exactly as budgeted.

The top-level objective setting is done by the CEO, with apparently little or no input from the senior management team. The senior management team has some input to the budget but there have been occasions where a budget has been given to managers with no discussion. Manager F inherited his current budget from his predecessor and is currently working on his next budget with the senior management team. Manager F has set the production department more aggressive goals than those set by the CEO, as shown in Table 2, below.

<b>CEO's targets</b>	<b>Manager F's targets</b>
97% Product Completion rate	97% Product Completion rate
6% Labour Standard Variance	0% Labour Standard Variance
1.8% Material Standard Variance	1.3% Material Standard Variance

**Table A3.6 - Manager F's aggressive target setting**

Manager F suggested that the more aggressive targets are necessary so that when next year's budget comes around and requires further efficiencies, then his

department will already be operating at the desired level and will be working on the next level. In this way he intends to keep his department focused on continuous improvement.

Manager 1 has set himself and his team a number of informal objectives. These are for the most part concerned with the development of his people. For example, Manager 1 implemented cross-training for both the equipment operators and the maintenance technicians so that they can move from production line to production line. Prior to this the operators and maintenance technicians were dedicated to a single production line. Manager 1 has also put in place informal objectives for the Line Supervisors. The supervisors are required to work with their Line Leaders to encourage them to step back and to identify improvement opportunities.

Manager 1 is starting to get the ground work done for implementing Six Sigma and 5S with the hope of doing so in the next three-to-four years. Six Sigma is a methodology that uses statistical methods to eliminate variability, defects and therefore waste in all manner of operations. 5S is a technique that is used to maintain a clean and organized environment. The five S's in question are derived from the Japanese for Organization, Neatness, Cleaning, Standardization and Discipline.

Manager 1 is aware of the organization's strategy and the need to align all objectives with it to avoid inter-departmental conflict. There is a potential for conflict, in particular between Purchasing whose main objective is to get the cheapest materials and Quality and Production who want to make a high quality product. However, Manager 1 did not elaborate on whether, or how much conflict actually exists.

Performance is reviewed weekly at a management meeting, at this meeting the managers discuss their performance against the three top-level objectives as well as their financial performance. Manager 1 holds daily production meetings where production personnel discuss the previous day's performance and the current day's priorities. This keeps everybody focused on their objectives.

The production personnel get rapid feedback by virtue of the fact that they have only three main objectives and performance towards those objectives is reported daily

during the daily production meetings. Feedback on other issues is provided immediately by Manager 1.

Manager 1 specifically looks for conflict between objectives. Roadblocks are dealt with as they arise. Manager F practices continuous improvement and organizational learning however it was unclear if the organization as a whole does, with the exception of aggressively controlling costs.

Manager 1 makes a conscious effort to ensure that the objectives he develops for his team are attainable. Unfortunately this is not the case company-wide. The 97% product completion rate objective applies to all of the production and maintenance employees. While they do have a significant part to play in achieving this objective they are not completely in control of it. For example, if materials are not available then the product cannot be made. Manager 1 also makes a conscious effort to ensure that the measures are simple and easy to understand.

Manager 1 prefers to use absolute numbers instead of ratios for objectives and measures but the absolute number targets are based on a trend and are always focused on improvement.

Manager 1 relies on his 'gut feel' in many instances because a comprehensive and integrated information system does not exist. There is some inaccuracy inherent in all data gathering, however Manager 1 makes allowances for this. There was apparently very little consideration of the unit of measure and the level of aggregation when choosing objectives and measures in Company F, prior to Manager 1. For example, Manager 1 would like to change the current cost basis from a percentage of sales to a per-unit or per-pound basis. The value of sales fluctuates from period to period which makes comparisons difficult, and therefore makes an assessment of progress difficult. Measuring costs on a per-unit or per-pound basis allows for easy and reliable comparison. Another measure that Manager 1 would like to change is the measure of production efficiency. Production efficiency is currently measured against a standard, whereas Manager 1 would like to measure

production efficiency on a units per labour hour basis. The standards are based on dubious historical data and do not give an accurate picture of production efficiency, as evidenced by the fact that efficiencies of greater than 100% are now being achieved. Again the unit per labour hour measurement will provide an accurate picture and allow for easy and reliable comparison from period to period.

Manager 1 fervently believes that the monetary rewards must be based on objective measures, to avoid the possibility of favouritism and other inconsistencies.

Manager 1 collects all manner of information for planning purposes, many of which are related to costs. For example, he monitors the purchase frequency of certain supplies, total headcount within production, laundry and uniform cost, cost of consumable supplies and so on. There are also measures related to safety, which include the number of lost time accidents, what type of accidents they were and the causes of those accidents. Other measures include those imposed by regulatory authorities such as the FDA (Food and Drug Administration), USDA (United States Department of Agriculture) and the EPA (Environment Protection Agency). Manager 1 was unable to go into greater detail than this for confidentiality reasons. Certain customers also impose certain measures and requirements on Company F.

For the most part Manager 1 is guided by the organization's objectives, however, costs are the main driver in Company F. For example, when necessary materials have not been received in time and Manager 1 is faced with a decision to either miss a shipment of product or to keep operators around for several extra hours, the line will be closed and the shipment will be missed. These decisions arise frequently for Manager 1 because Company F operates in a just-in-time (JIT) environment and material suppliers miss shipments frequently. The purchasing department can, and have taken action against suppliers in the past, including changing suppliers and imposing monetary penalties.

Manager 1 is constantly reviewing his team and always assessing where the team stands in relation to the organization's objectives and his own objectives.

Manager 1 is satisfied with the performance management system, except for the primary objective which is a qualifier for the other objectives. That is, if the product completion rate objective is not met then there will be no bonus pay-out, regardless of whether the other objectives were achieved and regardless of whether the individual had any control over the completion rate. Manager 1 is hoping that this situation will change as he continues to develop operational measures that will allow him to justify making an exception.

Manager 1 would prefer a set of guidelines because more structured methods cannot take all variables into account. While Manager 1 does believe that there should be both a performance management system and an integrated information system, he views these as luxury items and does not believe they are necessary.

## **Appendix 4**

### **A review of the main methods in the literature**

## **A4.1 Introduction**

A number of methods have been developed to address the shortcomings of financial measures and to develop comprehensive and integrated performance measurement systems. This appendix presents an overview of the most commonly referenced methods in the literature. The methods discussed are:

- The Balanced Scorecard (BSC) developed by Kaplan and Norton (1992, 1996),
- The 'Cambridge' Process (Neely et al. 1995, 1996, 2000, 2002),
- The Integrated Performance Measurement System (IPMS) reference model (Bititci et al., 1997)
- The Performance Pyramid (Lynch and Cross 1995)
- EFQM Model ([www.efqm.org](http://www.efqm.org))
- Hoshin Kanri (Witcher and Butterworth )
- Results and Determinants matrix (Brignall et al. 1991)
- Operational Performance Measurement (Kaydos 1999)



## **A4.2 The Balanced Scorecard (BSC)**

One of the earliest developments aimed at overcoming the problems associated with using only financial measures is the Balanced Scorecard (BSC), developed by Kaplan and Norton (Kaplan and Norton 1992, 1996). The BSC was developed during a 12-month research project, conducted by researchers at the Harvard Business School, with collaboration from 12 companies. The idea behind the BSC is that it combines financial measures and non-financial measures into a single document that can be used by senior executives to monitor all facets of their organization's performance.

As can be seen from Figure A4.1, below, there are four perspectives in the BSC, each of which are briefly discussed in the following paragraphs:

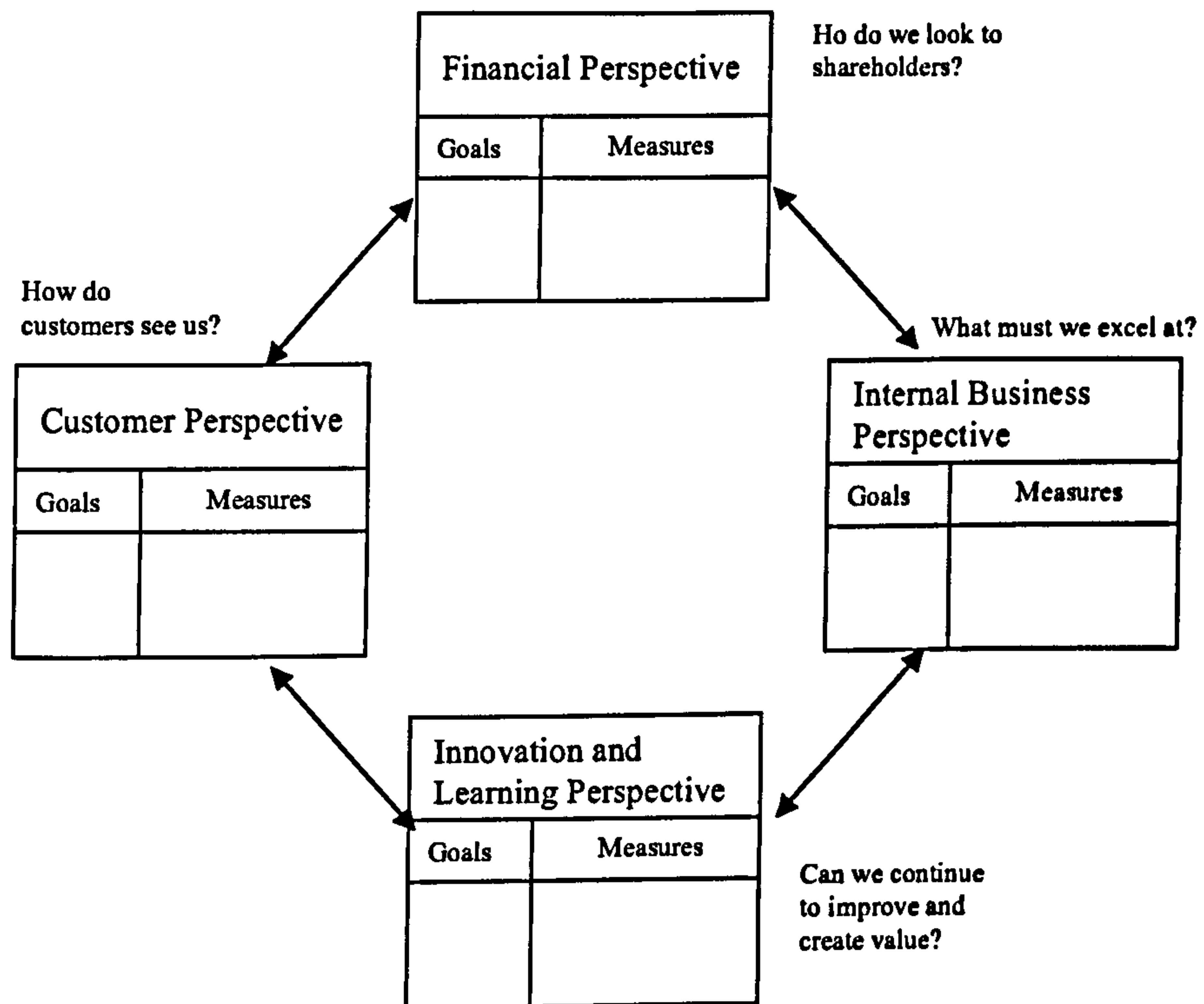
- Financial perspective,
- Customer perspective,
- Innovation and Learning perspective and the
- Internal Business perspective.

In the Financial perspective the question 'How do we look to our shareholders?' is asked. This perspective is based on existing financial measures and is used to assess the impact of strategy on bottom-line results.

For the Customer perspective, it is necessary to identify those attributes that the customer desires from the organization's products and services. Specific goals and measures must be identified to ensure that the customer is getting exactly what they want in terms of time, quality, product/service performance and cost.

The Innovation and Learning perspective attempts to ensure that the organization is taking steps to continually improve. Goals and measures that encourage new product development, reduced time-to-market, increased efficiencies and so on, are included in this part of the BSC.

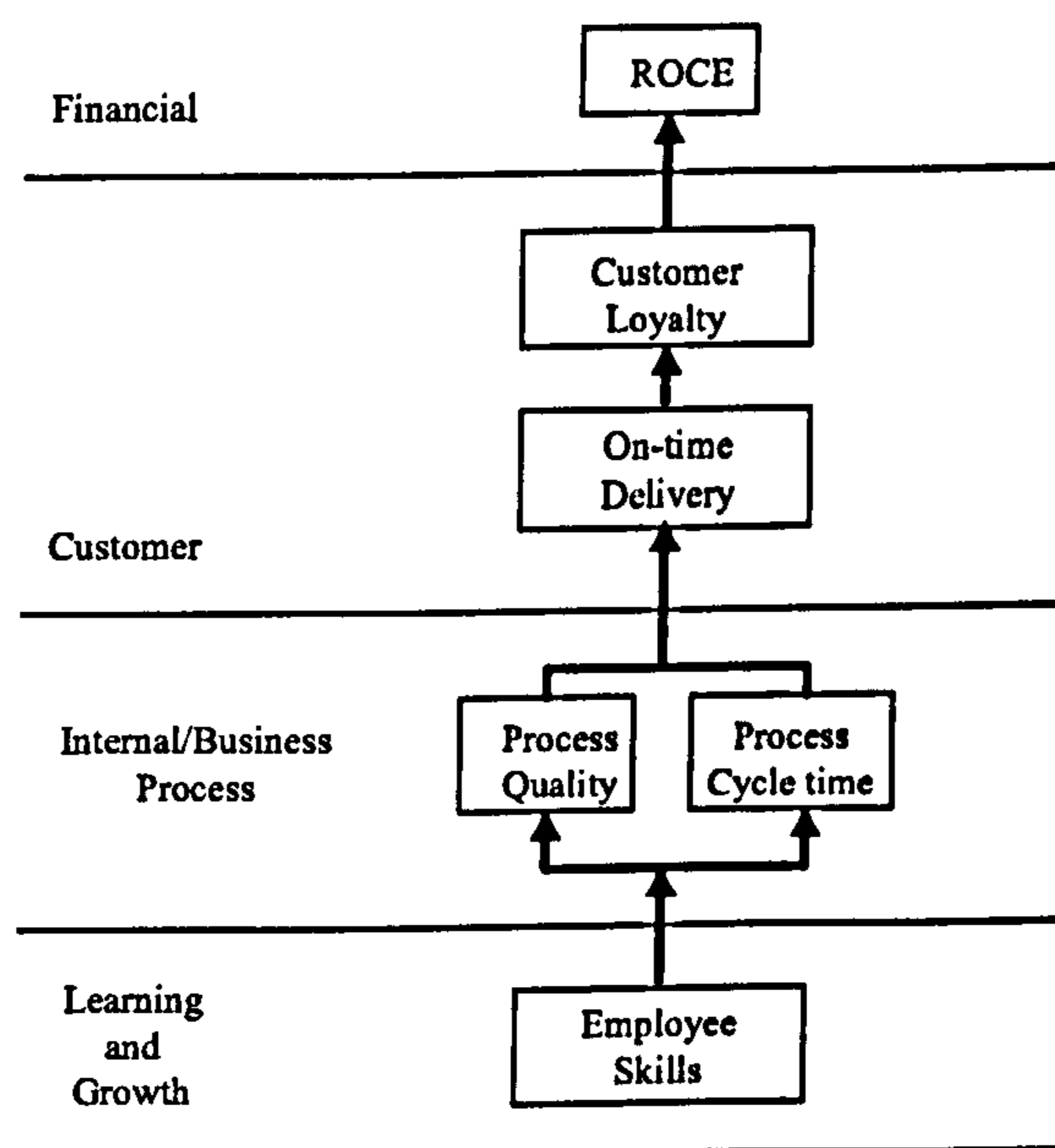
The Internal Business perspective provides goals and measures that answer the question 'what must we excel at?' This requires that the critical business processes be identified, these are the processes that contribute most to customer satisfaction, whether it be new product development, order fulfillment, etc. the processes must be identified and continually improved upon.



**Figure A4.1 - The Balanced Scorecard  
(Kaplan and Norton 1992)**

The BSC derives all of its goals and measures from the organization's vision and strategy. The four perspectives encourage executives to see the 'big picture' by focusing not only on their own function but also on other functions and how they relate to each other. This promotes cooperation that leads to a better understanding of functional inter-relationships, better process problem solving and decision-making. The measures used in the BSC should be chosen to reflect the cause and

effect relationships, and measures of performance outcomes as well as performance drivers. The example quoted in Kaplan and Norton (1996) is as follows: Return on capital employed (ROCE) is a measure in the financial perspective, the driver of ROCE may be found to be repeat and new sales from existing customers. As a result the measure 'customer loyalty' is added to the customer perspective of the BSC. An analysis of the customers' desires indicates that on-time delivery is the main criteria for purchasing the particular product, so a measure of 'on-time delivery' is added to the customer perspective. In determining the drivers of on-time delivery, it is found that shorter cycle times and improved process quality will contribute to hitting delivery schedules. Measures to capture cycle time and process quality are therefore added to the internal /business process perspective. Finally, a measure for employee training is included in the learning and growth perspective to ensure that the relevant employees can contribute to reduced cycle times. This is represented graphically in Figure A4.2, below.



**Figure A4.2 - Cause and Effect relationship between measures  
(Kaplan and Norton 1996, p. 31)**

In this way the BSC links the measures to strategy and identifies the causal relationships that form the hypotheses of the strategy.

The BSC was later updated (Kaplan and Norton 2001a, 2001b, 2001c) to include 'strategy maps'. Strategy maps are described by Kaplan and Norton (2001c, p69) as '...a generic architecture for describing a strategy'. Strategy maps define how the strategic objectives will be achieved by identifying the causal relationships, within the organization, that will impact the stated objectives.

### A4.3 The 'Cambridge' Process

After an extensive review of the literature Neely et al. (1995, 1996, 1999, 2000) concluded that all of the frameworks and methodologies in the literature offered little or no specific advice for how to develop and implement performance measures. While there was much advice in the literature, Neely et al. (2000) identified that the advice amounted to '...superficial and rather generic guidelines as opposed to specific and actionable advice'. Having reviewed the frameworks and guidelines available in the literature, Neely et al. concluded that the list of requirements for a PMS was so great that it would not be possible to design a single unifying framework (Neely et al. 1995). Instead they opted to develop a process for designing performance measurement systems. The process developed by Neely et al. is depicted in Figure A4.3, below.

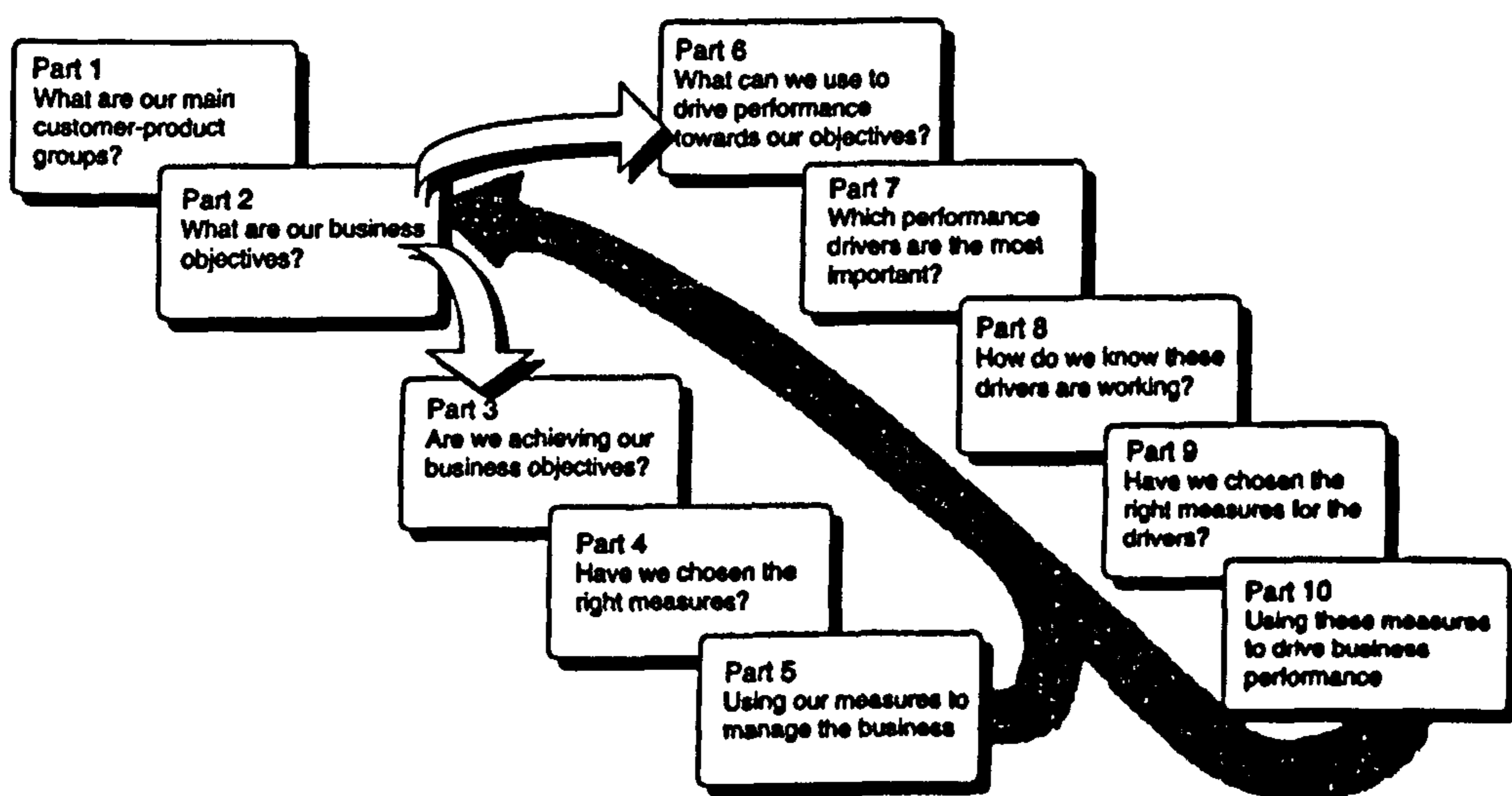


Figure A4.3 - The Cambridge PMS Design Process

From the literature they identified the existing processes, frameworks, principles and guidelines and, based on the advice in the literature, they identified a set of desirable

characteristics for the process of designing a performance measurement system (Neely et al. 2000).

Their research culminated in a ten-step, two-phase process that was documented in workbook format. Each of the ten steps are briefly described below, with greater emphasis on the five steps in the second phase, as the second phase is concerned with the lower organizational levels and is therefore more appropriate for this research.

The process begins by classifying an organizations products or customers into groups based on unique competitive requirements. This step is necessary to allow the organization to concentrate on the distinct requirements that each group might have and therefore promotes a greater degree of focus.

The next step requires the identification of a balanced set of business-level objectives for each customer or product group. The objectives should consider the requirements of all of the product/customer groups' stakeholders, as well as the needs of the organization.

The third step involves the development of performance measures for each objective. Defining a performance measure involves more than simply identifying a formula (Neely et al. 2002, p. 69).

The fourth step is a consensus-building step that ensures that all participants agree on the measures that have been chosen. This step also establishes a process to track the implementational progress of each measure and attempts to identify potential barriers to implementation.

The final step in Phase 1 is designed to ensure that the newly developed performance measures are used. This step requires the participants to develop an agenda for future performance reviews. In addition to reviewing organizational performance, the performance measurement system should also be reviewed, as not only will the measures need to be changed as objectives are changed but the actual process might need to be modified.

Phase 2 is concerned with communicating the objectives and measures, developed in Phase 1, throughout the organization. The first step in Phase 2, step six in the overall process, is to identify the drivers of performance, that is, the activities and initiatives that will contribute to the organization's objectives. Key business teams should be formed, which are comprised of individual groups, for example, sales teams, manufacturing cells or other similar groups. These teams then meet and have the process explained to them, if necessary. The teams are then asked for ideas on how they can contribute to the objectives. Having compiled a list of suggestions, the team is then asked for ideas on how each suggested activity might be measured.

Step seven takes the same teams used in step six and asks them to prioritize all of the activities identified, in terms of which will have the greatest impact on the organization's objectives. The teams are asked to classify the activities as either 'must do' or 'nice to do' and then the ten most important activities are selected from the 'must do' list. The team then discusses the top ten items and reduces the list to what they feel is a manageable set of activities.

Step eight identifies a performance measure for each of the activities on the list that came out of the previous step. For this step all of the items in Table A4.1, below, must be addressed and identified.

Measure	The title of the measure. A good title is self-explanatory, avoids jargon and explains what the measure is and why it is important.
Purpose	If a measure has no purpose then why introduce it? Example purposes: 1. To enable us to monitor the rate of improvement thereby driving down the total cost. 2. To ensure that ultimately all delayed orders are eliminated. 3. To stimulate improvement in our supplier's delivery performance. 4. To ensure that the new product introduction lead time is continually reduced
Relates to	Identify the business objectives that the measure relates to. As with 'Purpose', if the measure being considered does not relate to any business objective then why introduce it?
Target	Targets specify the levels of performance we need to achieve and the timescales within which we need to achieve them. Example targets: 1. X% improvement year on year. 2. Y% reduction during the next 12 months. 3. Achieve% delivery performance (on-time, in full) by the end of next year.
Formula	How we measure something will affect the way people behave. An appropriately defined formula should drive people towards good business practice. Beware of any formula that might stimulate behaviour we do not want!
Frequency	The frequency with which performance should be recorded and reported is a function of the importance of the measure and the volume of data available.
Who measures?	This box should identify the person who is to collect and report the data.
Source of data	This box should specify where to get the data from. If we want to see how performance changes over time, then we must get our data from the same source each time.
Who acts on the data?	This box should identify the person who is going to act on the data.
What do they do?	Without some action here, the measure is pointless. We may not be able to detail the action to be taken if the performance proves either acceptable or unacceptable as the detail may depend on the context at the time. We can define in general the management process to be followed in the case of acceptable or unacceptable performance. Examples: 1. Set up a continuous improvement group to identify reasons for poor performance and to make recommendations as to how it can be improved. 2. Publish all performance data and an executive summary on the shopfloor as a way of demonstrating commitment to empowerment. 3. Identify commonly occurring problems. 4. Set up a review team, consisting of Sales, Development and Manufacturing personnel to establish whether alternative materials can be used.  (Continued overleaf)



Notes and comments	Any specific features, outstanding issues, specific problems, to do with the measure.
Date/issue number	The date and issue number of the record sheet.

**Table A4.1 - Performance Measure Record Sheet**

(Neely et al. 2002, p. 120)

Step nine is concerned with getting consensus from every member of the team on the measures that were developed during step eight. As with step five in Phase one, this step also establishes a process to track the progress of each measure and attempts to identify potential barriers to implementation. During this step all of the members of the team meet again to assess measure in terms of a number of criteria:

Truth	Is the measure measuring what it is supposed to measure?
Focus	Is the measure measuring only what it is meant to measure?
Consistency	Is the measure consistent whenever, and by whomever it is measured?
Clarity	Are the results open to ambiguous interpretation?
Access	Can the data be readily communicated and easily understood?
'So what?'	Can, and will, the measure be acted upon?
Cost	How expensive is it to collect, collate and analyze the data?
Timeliness	Can the data be collected and analyzed quickly enough?
Gaming	Will the measure encourage undesirable behaviour?

When the measures have met all of the above criteria, the targets should also be checked for consensus. One individual should be chosen who will own each measure. The measure owner will not only monitor performance against the related objective but will also propose corrective action plans when necessary. The last item in this step is to identify potential barriers to the implementation of the measure. Having identified the potential barriers possible solutions should be identified.

Step ten is to agree upon an agenda to review performance and to review the performance measures. The issues to be considered here include how performance will be reviewed, the frequency of review, how the review will be conducted and so

on. An important point to noted, as identified by Neely et al. (2002, p. 137) is that these review meetings should focus the discussion on action plans and not on reviewing the past period's performance.

#### **A4.4 The Integrated Performance Measurement System (IPMS) reference model**

The IPMS reference model considers an organization at four levels:

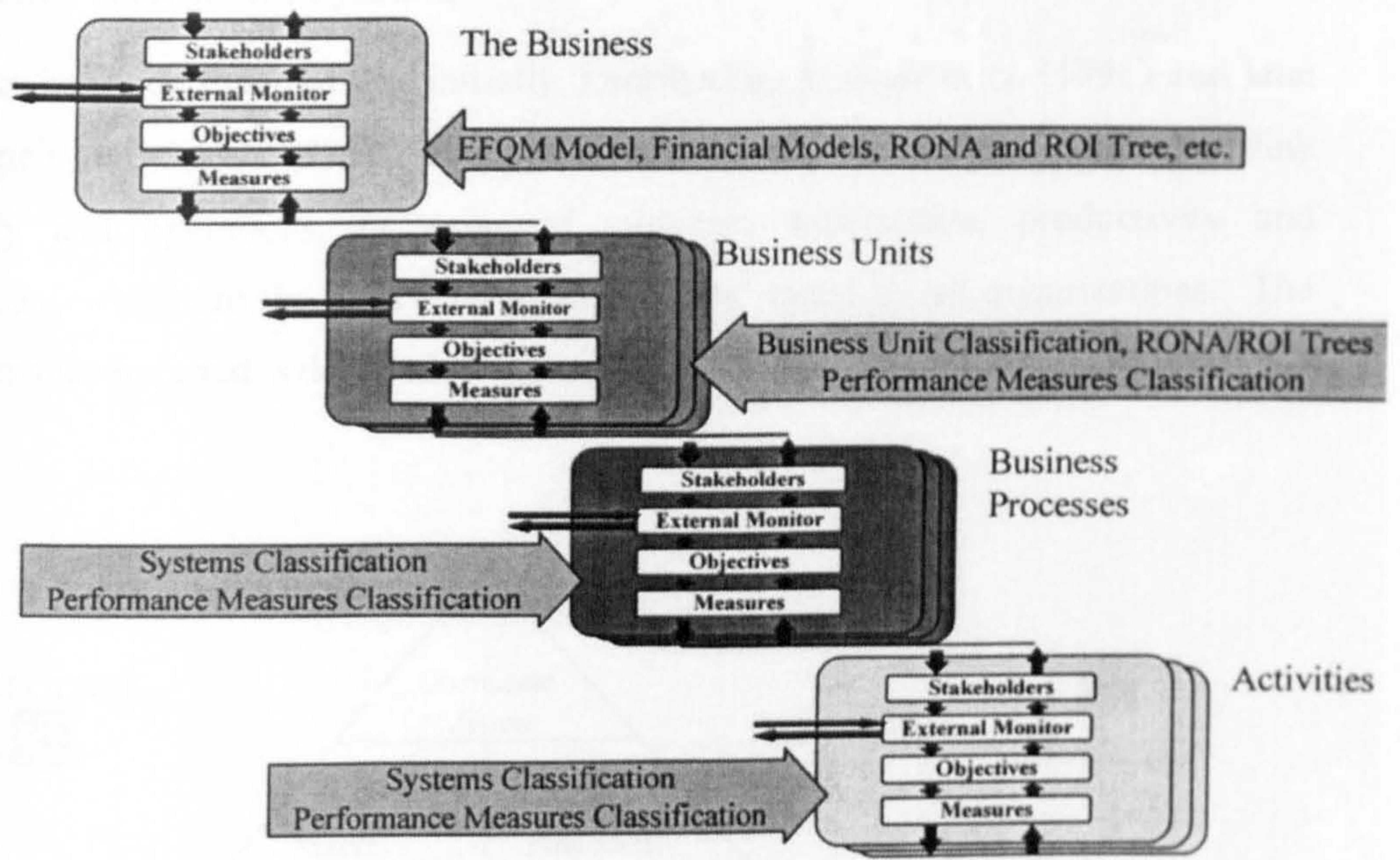
- The Business
- The Business Units
- The Processes
- The Activities.

According to the reference model the levels may be physical or logical, that is, the organization does not need to be physically structured in this manner in order for the reference model to be applied. A business may consist of a number of business units where business units are defined by particular market needs or demands. Within each business unit there will typically be a number of processes, for example Get Order, Develop Product, Fulfill Order and Support Product.

At each level of the reference model (business, business unit, process and activity) there are four elements to the reference model:

- **Stakeholder requirements:** at each level of the reference model the requirements of the stakeholders must be recognized and understood.
- **External monitor:** the external position must be monitored with respect to the stakeholder requirements, in order to assess competitors and to identify areas for improvement based on best practice.
- **Objectives:** objectives should be set based on the previous two elements, with appropriate targets and timescales.
- **Performance measures:** applying appropriate measures monitors progress towards the objectives.

The reference model is shown in Figure A4.4, below. The figure includes a number of references and concepts that may be used for guidance at each stage.



**Figure A4.4 - The IPMS Reference Model**

## A4.5 The Performance Pyramid

The Performance Pyramid was initially described by McNair et al. (1991) and later by Lynch and Cross (1995). The framework was developed as a method to link strategy and operations, in terms of customer satisfaction, productivity and flexibility, which are the three 'competitive fronts' faced by all organizations. The Performance pyramid is depicted in Figure A4.5 below.

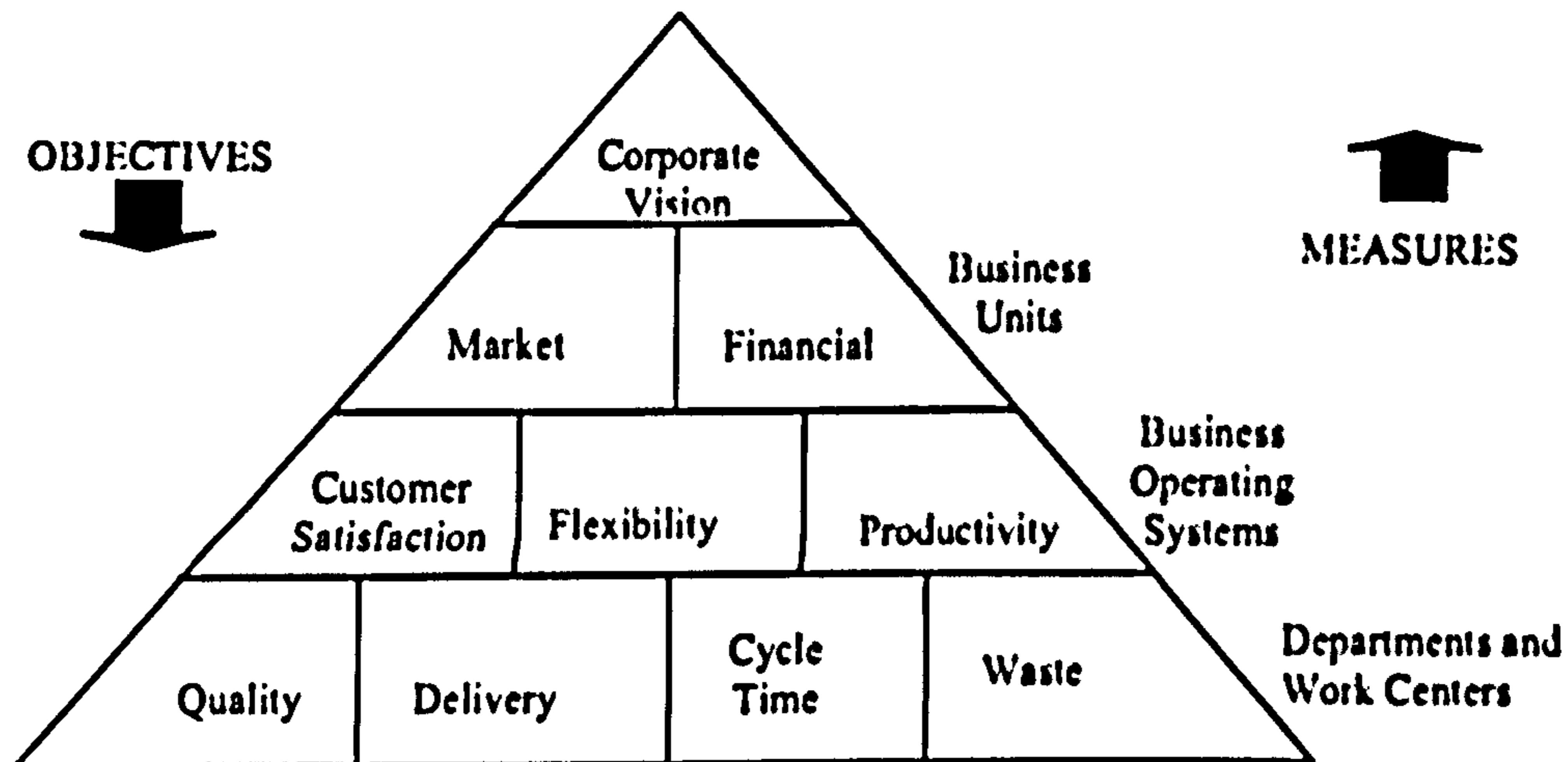


Figure A4.5 - The Performance Pyramid

The theory behind the pyramid is that a corporate vision is articulated by the organization's senior management. This vision is then translated into Market- and Finance-related objectives for each of the organization's major business units. Each business unit then develops a strategy that states how the business unit objectives will be achieved. At the next level down, the core business processes that support the business unit's strategy are identified. Specific objectives are developed in terms of customer satisfaction, flexibility and productivity for each core business process. Finally, the objectives associated with each core business process are translated into specific operational criteria under the headings of Quality, Delivery, Cycle Time and Waste, for each department or work centre of the business processes.

The vision should define the markets in which an organization wishes to compete as well as the basis on which it wishes to compete. The vision and organization-level strategy should be translated into how the organization plans to reach its goals and what measures are critical to the success of the vision and strategy.

Lynch and Cross (1995, p. 71) suggest that strategic business units (SBUs) should be defined to address the following situations:

- Differing business concepts and missions
- Separate and external competitors
- When conflicting strategies exist for products or markets

Separating the business units in large, diversified organizations is particularly useful as it allows independent decisions to be made for each business unit. Each business unit should develop its own strategy that complements and support the organization's strategy.

The core processes include all internal functions, activities, policies, procedures and supporting systems that are required to implement a strategy, and bridge the top-level and the day-to-day operations (Lynch and Cross 1995, p. 74). The functions included within the core business processes include the ability to develop, produce and provide specific products or services to the business unit's chosen market. Adopting a process approach allows departmental managers to focus their efforts on the effectiveness of the process, in terms of customer satisfaction, flexibility and productivity, instead of focusing on the effectiveness of the department in isolation.

At the department or work centre level the processes are examined in more detail in terms of quality, delivery, cycle time and waste to identify where improvements can be made.

## A4.6 EFQM Model

The EFQM model for business excellence was developed by the European Foundation for Quality Management as a non-prescriptive framework for assessing organizations for the European Quality Award.

The model itself is represented diagrammatically in Figure A4.6 below. It will be seen from the figure that the model is comprised of nine elements which are grouped into two sections, five 'enablers' and four 'results' criteria.

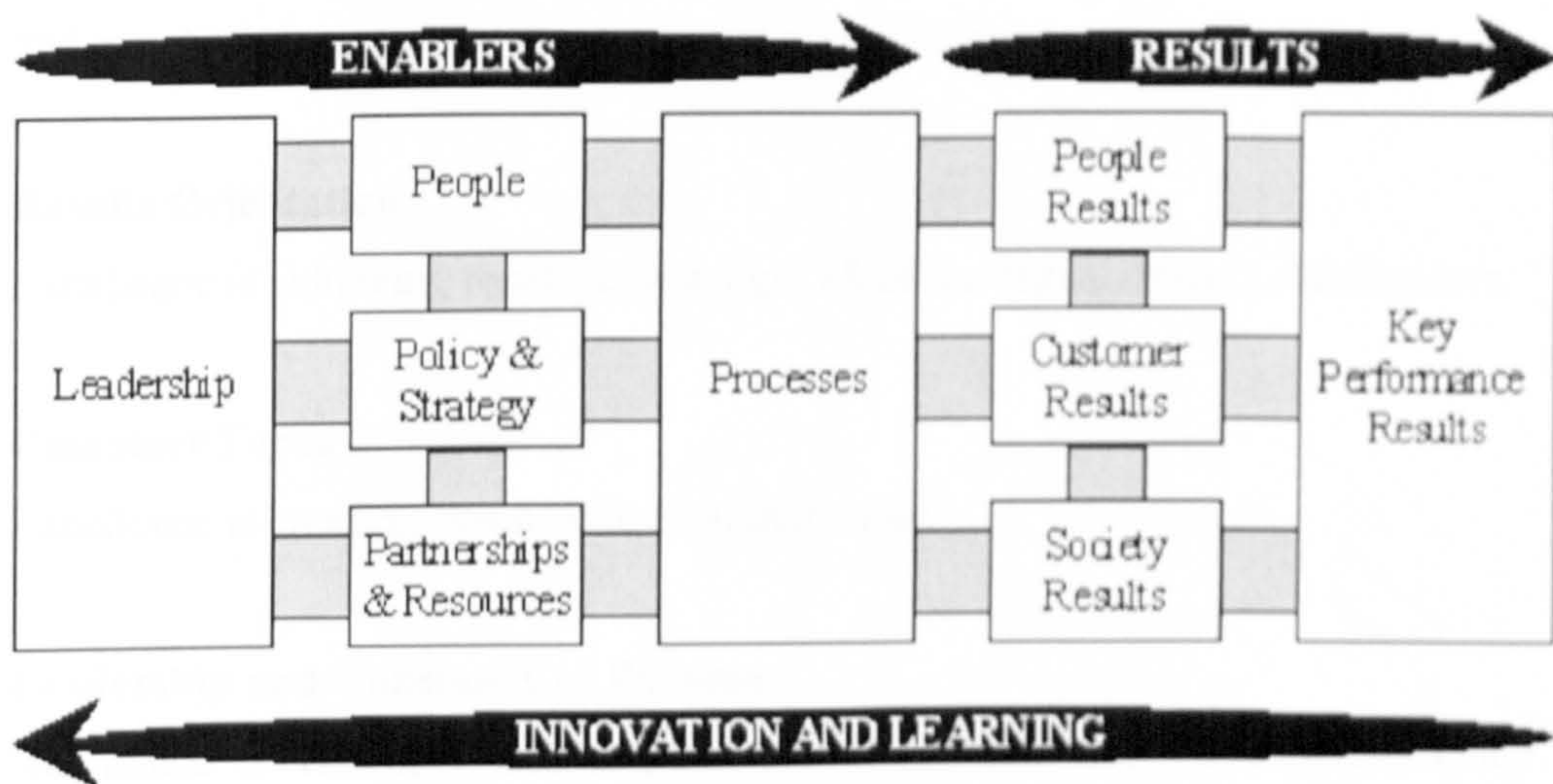


Figure A4.6 - The EFQM model for business excellence

The enablers criteria are concerned with how results are achieved, whereas the results criteria are concerned with what has, and is, being achieved by the organization. The EFQM is a non-prescriptive framework, it suggests that certain areas or activities are important but does not suggest actual methods, as implied by the following:

The Model, which recognizes there are many approaches to achieving sustainable excellence in all aspects of performance, is based on the premise that:

*Excellent results with respect to Performance, Customers, People and Society are achieved through Leadership driving Policy and Strategy, that is delivered through People, Partnerships and Resources, and Processes.*

(<http://www.cfqm.org/Default.aspx?tabid=35>)

The model is based on a number of fundamental principles; these are listed below and may be referenced at <http://www.cfqm.org/Default.aspx?tabid=36>:

### **Results Orientation**

Excellence is achieving results that delight all of the organization's stakeholders.

### **Customer Focus**

Excellence is creating sustainable customer value.

### **Leadership and Constancy of Purpose**

Excellence is visionary and inspirational leadership, coupled with constancy of purpose.

### **Management by Processes and Facts**

Excellence is managing the organization through a set of interdependent and interrelated systems, processes and facts.

### **People Development and Involvement**

Excellence is maximizing the contribution of employees through their development and involvement.



### **Continuous Learning, Innovation and Improvement**

Excellence is challenging the status quo and effecting change by utilizing learning to create innovation and improvement opportunities.

### **Partnership Development**

Excellence is developing and maintaining value-adding partnerships.

### **Corporate Social Responsibility**

Excellence is exceeding the minimum regulatory framework in which the organization operates and to strive to understand and respond to the expectations of their stakeholders in society.

#### A4.7 Hoshin Kanri

Hoshin Kanri is literally translated as 'policy management' and was developed in Japanese companies as a method to implement strategy through controlled organizational change.

The generic model of Hoshin Kanri developed by Witcher and Butterworth (1999) is shown in Figure A4.7 below.



**Figure A4.7 - A generic model for Hoshin Kanri  
(Witcher and Butterworth 1999)**

Witcher and Butterworth suggest that good strategic management performs four things, these are focus, align, integrate and review. These four activities are similar to the Plan, Do, Check, Act of the Deming cycle and the Total Quality Management (TQM) philosophy. Hoshin Kanri is dependent on the TQM principle of team-

working and cross-functional processes to work effectively. Witcher and Butterworth argue that while Hoshin Kanri might appear on the surface to be a form of management by objectives (MBO), that it is not because Hoshin Kanri puts much greater emphasis on the consensual development of plans. MBO on the other hand has been developed in Western organizations as a 'control and command for of performance management.'

As mentioned above the four key areas of Hoshin Kanri are focus, alignment, integration and review, each of these are briefly discussed below.

Focus is the term given to senior management deciding on the 'vital few' objectives that the organization should strive to achieve. The vital few are not the main organizational objectives that everybody is working towards in their normal activities, they are an additional set of objectives that will help the organization to achieve a desired change. The vital few are developed to complement the long- and medium-range plans, as well as to incorporate the review of the part period's performance.

Alignment takes place when the vital few have been communicated throughout the organization. Managers and their teams discuss how to implement the vital few, in the context of their other objectives, in a process referred to as catchball. This process involves all employees providing and discussing suggestions on how the vital few might and their normal objectives might be aligned. At the end of the catchball process the team members compile the plans for the year ahead. These plans are then used periodically to assess progress, although not for individual appraisal purposes.

Integration refers to integrating the vital few plan into everybody's daily activities, this connects the strategic level with the operational level. Where the vital few objectives cannot be easily integrated into the daily activities they are usually addressed as a project. The vital few must be carefully managed on a day-to-day basis, according to Butterworth and Witcher (2001) the daily processes must be

managed to ensure they are under control. Hence, TQM and Lean principles are fundamental to Hoshin Kanri. Regular reviews are required of both activities and the results of those activities to ensure the organization is being moved towards its objectives. The intention is that all processes are continually checked to ensure that they are under control. Deviations from the norm are dealt with immediately but if they persist are discussed at management meetings or by improvement teams.

The fourth step in the continuous cycle is the review activity. Reviews are conducted periodically during the year and at the end of the year. The periodic reviews are typically quarterly and are used to present results and plans to correct any deviation from the plan. The year-end review assesses both the Hoshin Kanri process as well as the outcome. This review is used to determine whether the vital few should be modified or whether the approach to their implementation should be adapted. The act of reviewing both the process and the outcome provide an opportunity to learn what worked well and what did not, without this activity annual planning is ‘...an empty and time consuming exercise.’ (Butterworth and Witcher 2001)

#### A4.8 Results and Determinants matrix

The Results and Determinants matrix was developed by Brignall et al. (1991) and is based on the premise that there are two types of performance measure, namely those concerned with results and those concerned with the determinants of those results. This is represented in Table A4.1 below.

	<b>Dimensions of Performance</b>	<b>Type of Measure</b>
<b>Results</b>	Competitiveness	Relative Market Share and Position Sales Growth Measures of the Customer Base
	Financial performance	Profitability Liquidity Capital Structure Market ratios
<b>Determinants</b>	Quality of service	Reliability Responsiveness Aesthetics/Appearance Cleanliness/Tidiness Comfort Friendliness Communication Courtesy Competence Access Availability Security
	Flexibility	Volume Flexibility Delivery Speed Flexibility Specification Flexibility
	Resource utilization	Productivity Efficiency
	Innovation	Performance of the Innovation Process Performance of Individual Innovations

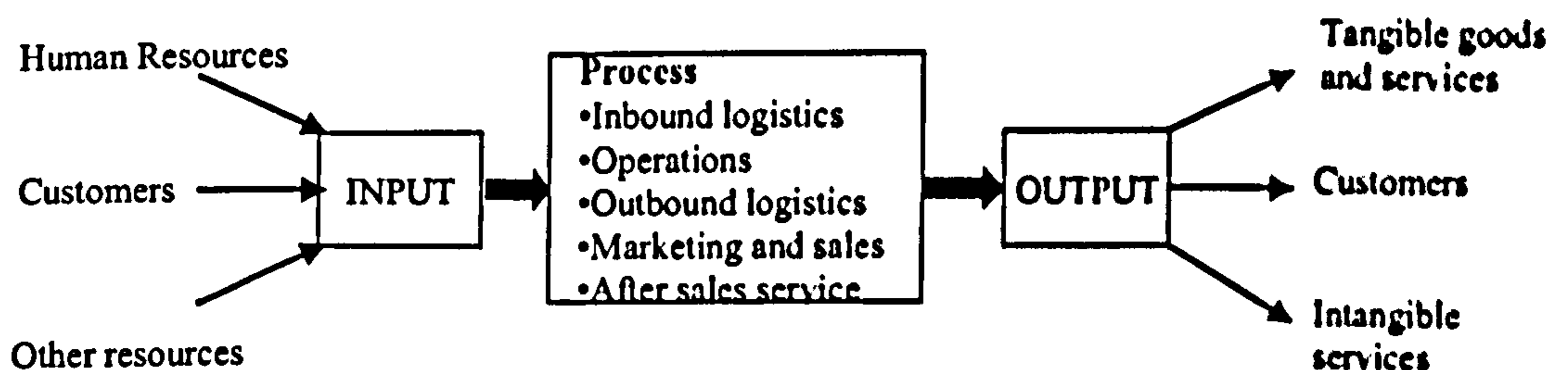
**Table A4.1 - The Results and Determinants Matrix  
(Brignall et al. 1991)**

Brignall et al. (1991) argue that the results that most organizations are interested in are, in general, the same and therefore measures of competitiveness and financial performance would differ little from one organization to another. The determinants

of success, on the other hand, will differ considerably from one organization to another, depending on the strategy that the individual organizations are pursuing. Therefore there should be a considerable difference between the determinant measures in different organizations.

One of the major benefits of this approach is that it makes clear the trade-offs that are necessary, for example between short-term profit and long-term market share. This approach advocates feedforward control by communicating goals and plans downward and feedback control by analyzing variance between goals and actual performance, in terms of the six generic dimensions of performance.

Another useful concept offered by this work is to consider organizations and their components as simple input-process-output models, as shown in A4.8 below. This allows any component of an organization to be examined in terms of taking a number of inputs and converting them by some process into outputs. The inputs include customer requirements and human and material resources, and the outputs are services and/or products.



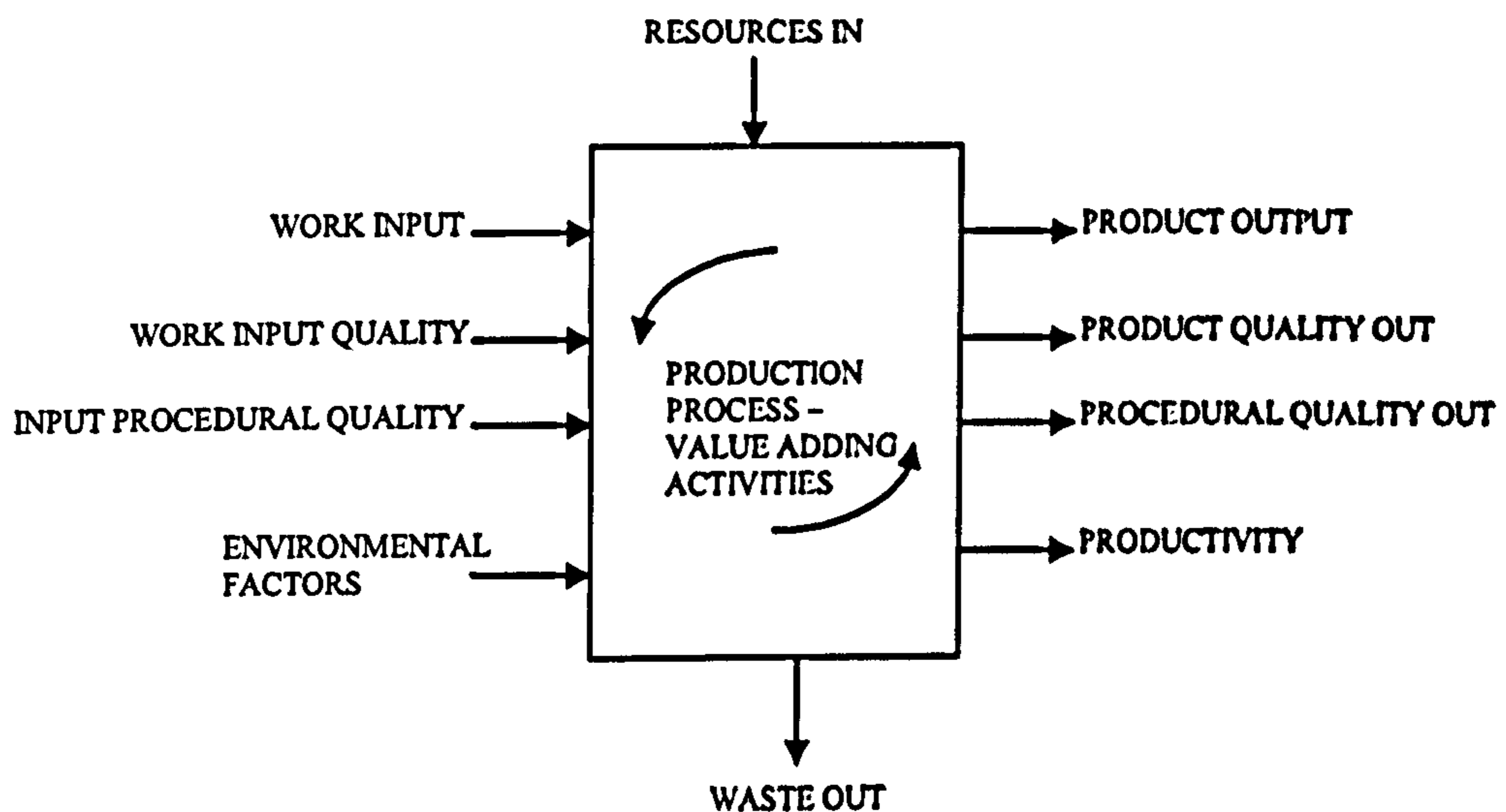
**Figure A4.8 - The Input-Process-Output Model**  
(Brignall et al. 1991)

#### **A4.9 Operational Performance Measurement**

Kaydos (1999) suggests that all the activities in an organization, whether dealing with tangible products or intangible services, can be considered as processes, and

that these processes can be viewed at a number of levels. Organizations consists of many processes and each process can be broken down into a greater level of detail so that the sub-processes within each process can be identified.

Kaydos (1999, p. 26) identified the inputs and outputs that must be identified in order to understand how a process is performing and why it is performing that way. The process model is shown in Figure A4.9, below, and each of the inputs and outputs are explained in the following paragraphs.



**Figure A4.9 - The Kaydos Process Model**  
(Kaydos 1999, p. 26)

### **Work Input**

Work input is concerned with the quantity of work to be undertaken by the process in a given time period.

## **Work Input Quality**

Work input quality is a measure of the quality of the work that feeds into the process from previous processes or suppliers. Kaydos (1999, p. 27) identifies some dimensions of quality that can be measured for products and services:

### **Products**

- **Conformance** – how well the product meets its specifications.
- **Performance** – how well the product does what it is supposed to do.
- **Features** – how many options, bells and whistles a product has.
- **Reliability** – the mean time between failure.
- **Durability** – how long the product lasts.
- **Serviceability** – how easily a product can be repaired.
- **Aesthetics** – look, feel and “sex appeal”.
- **Perception** – how people feel about the product, as opposed to its real qualities.

### **Services**

- **Tangibles** – what the customer sees in people, facilities and equipment.
- **Reliability** – being able to perform the service dependably and consistently.
- **Responsiveness** – promptness and willingness to help customers.
- **Assurance** – making customers feel they can have confidence in the company.
- **Empathy** – conveying a caring attitude to customers.

## **Input Procedural Quality**

This is a measure of the attributes associated with the product but not concerned directly with the product itself. For example, Kaydos (1999, p. 28) gives the example of sales receipts being the input and being completed correctly but being delivered too late for inclusion in a given week's computer run.



### **Product Output Quantity**

Product output quantity is the amount of product produced by the process in a given time period.

### **Product Output Quality**

This is a measure of the quality of the product or service provided by the process and would consider the same list of attributes considered for the work input quality, listed above.

### **Output Procedural Quality**

This is a measure of the procedural problems passed on by this process to the next process or to the customer.

### **Resources consumed**

This measure examines all of the resources, for example, labour, materials and energy, consumed by the process and is closely related to the next measure.

### **Waste**

Any resource that is consumed but does not add value to the product or service is wasted. There are many forms of waste that commonly occur apart from the most commonly measured form of scrap and rework, for example the unnecessary movement of material or people and idle time. Kaydos (1999, p. 29) also points out that doing things that should not need to be done in the first place is totally unproductive and wasteful.

### **Productivity**

Productivity is defined as the ratio of output to input, or products or services produced to resources consumed. However, as Kaydos (1999, p. 29) points out, poor productivity is a symptom of poor process quality, and therefore should really only be used as an indicator of how well the process is performing.

## **Environmental Factors**

These are any factor outside the control of the process but which directly impact on the ability of the process to perform as required. The example given by Kaydos (1999, p. 29) was the unemployment rate which can impact on absenteeism, turnover and the length of time it takes to hire new employees.

Kaydos (1999, p. 30) adds that the value-adding activities performed within the process are themselves processes and may need to be examined in the same level of detail in order to fully understand how the larger process works.

## **Appendix 5**

### **Work Sheets**

# **Worksheet 1 - Activity and Objective Record Worksheet**

Group Objective:				
Activities/Initiatives	Objectives	Metrics	Who	

Worksheet 1 – Activity and Objective Record Worksheet

- Specific**      What exactly are we going to do, with/for who?
- Measurable**      Is it measurable and can we measure it?
- Achievable**      Do we have the resources to get it done within the time frame?
- Relevant**      Will it lead to the desired result?
- Time-framed**      What is the target completion date?

## Worksheet 2 - Activity Evaluation Sheet



## **Worksheet 3 - Performance Measure Development Worksheet**



<b>Measure</b>	
<b>Purpose</b>	
<b>Relates to</b>	
<b>Target</b>	
<b>Formula</b>	
<b>Frequency</b>	
<b>Who measures?</b>	
<b>Source of data</b>	
<b>Who acts on the data?</b>	
<b>What do they do?</b>	
<b>Notes and comments</b>	
<b>Date / Issue number</b>	

## **Worksheet 4 - Performance Measure Criteria Check Sheet**

## **Performance Measure Criteria**

### **Measure**

What should the measure be called?

Does this title explain what the measure is?

Does it explain why the measure is important?

Is it a title that everyone will understand?

### **Purpose**

Why are we introducing the measure?

What do we want it to do?

### **Relates to**

Which of the group's objectives does this measure relate to?

### **Target**

What level of performance do we desire?

How long will it take us to reach this level of performance?

How does this compare with other groups?

How good are they currently?

How fast are they improving?

### **Formula**

How are we going to measure this dimension of performance?

Can the formula be defined in mathematical terms?

Is it clear?

Does it explain exactly what data are required?

What behaviour it will induce?

Are there any other behaviours that we want to induce?

Is the scale we are using appropriate?

How accurate will the data generated be?

Are they accurate enough?

If we use an average how much data will we lose?

Is this acceptable?

Do we need to know the spread of performance?

### **Frequency**

How often should this measure be made?

How often should it be reported?

Will we be able to collect and analyze the data rapidly enough?

How much delay will there be in improving performance along this dimension?

### **Who Measures?**

Who, by name, is responsible for making this measurement?

### **Source of data**

Where will they get the data from?

### **Who acts on the data?**

Who, by name, is actually responsible for ensuring that performance along this dimension improves?

### **What will they do?**

What actions will they be taking to do this?

