Part One

BEHAVIORAL FACTORS

1

BRIEF HISTORY OF PERFORMANCE MANAGEMENT SYSTEMS

In this chapter, the history and the developments of performance management systems are examined, and the importance of behavioral factors for the design, implementation, and use of performance management systems is established.

PURPOSE OF PERFORMANCE MANAGEMENT SYSTEMS

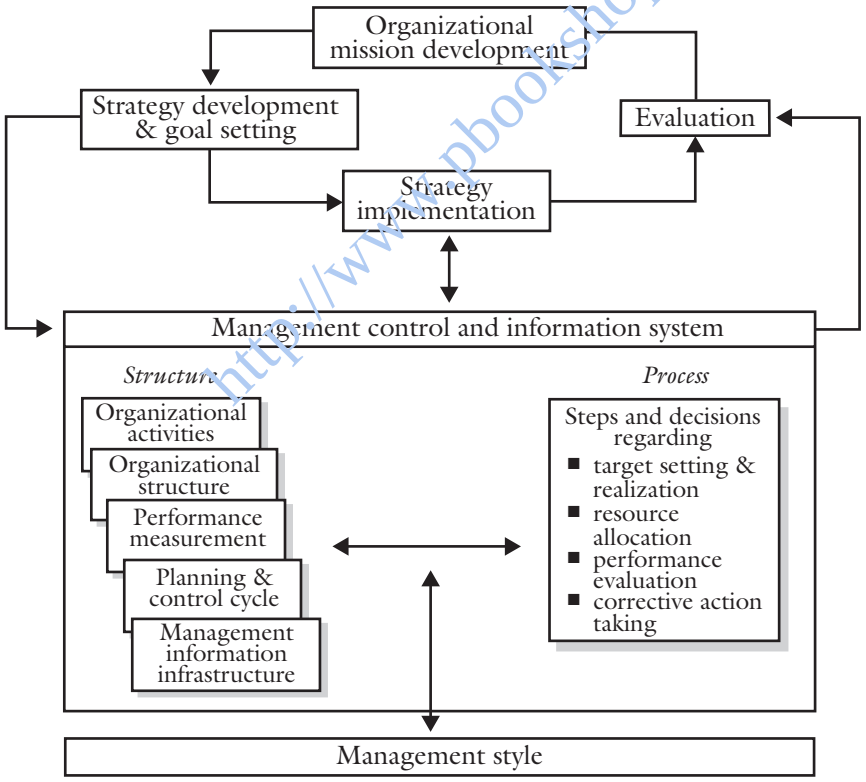
To be successful in the long run, an organization needs a clear and explicit management concept that is formulated by top management. This management concept is the basis for long-term development of the organizational strategy and strategic objectives. The strategy has to be translated at the lower levels of the organization into business unit plans, budgets, and operational action plans. The management concept must be supported through an unambiguous and well-organized planning and control cycle. This cycle gives clear feedback on the execution of the plans, using a so-called management control and information system. Having an effective planning and control cycle and management control and information system is critical for business success.

A management control and information system helps managers influence other members of an organization in such a way that the organization's mission and strategy are implemented, while simultaneously ensuring that resources are used effectively and efficiently.[1] A modern management control and information system distinguishes two components: (1) the management control structure, which states what the sys-

tem is; and (2) the management control process, which is what the system does (Exhibit 1.1).

The management control structure is defined as a combination of organizational activities (consisting of product–market combinations derived from the strategy), organizational structure (consisting of the division of authorities and responsibilities), standards of performance measurement and evaluation, infrastructure for the planning and control cycle, and infrastructure for management information. The management control process is defined as the steps and decisions taken when setting targets, allocating resources, evaluating performance, executing corrective actions, and realizing targets. Finally, the manner in which the man-

Exhibit 1.1 **Relationship Between Mission and Strategy of an Organization and Its Management Control Structure and Process**



Source: Based on Petri, R., and G. J. A. M. van der Vossen (1994). "Management control structure." *Handbook Management Accounting,* D1100:1–33.

agement control system is used by an organization is referred to as the organization's management style.

Management control process, structure, and style have to be formulated and organized in such a way that the realization of targets of every organizational entity and the organization as a whole is supported and advanced. For this purpose, the management control and information system needs to provide adequate management information.

Four categories of management information use can be distinguished: (1) scorecard keeping, usually a standardized reporting process, which is characterized by consistency between time periods so comparisons are easy to make; (2) improving, understanding, and consequently problem solving; (3) focusing organizational attention and learning; and (4) legitimizing decisions.[2] *Performance* management information is specifically intended to be used to support decision-making processes to control the organization (and not decision-making processes in general). The effectiveness of performance management information is related to its contribution to the performance of the organization (and not only to the satisfaction of the user of the information). In order to obtain performance management information, performance measurement has to take place.

Performance measurement is defined in the management literature as "the process of quantifying past action, in which measurement is the process of quantification and past action determines current performance. Organizations achieve their goals by satisfying their customers with greater efficiency and effectiveness than their competitors. Effectiveness refers to the extent to which customer requirements are met and efficiency is a measure of how economically the organization's resources are utilized when providing a given level of customer satisfaction. A performance measure can now be defined as a metric used to quantify the efficiency and/or effectiveness of a past action."[3]

However, the term *measurement* is not quite correct because the process of performance measurement does not automatically lead to performance improvements. It should always initiate action through the use of appropriate measures. For this reason, performance *management* and performance *management* system are considered better terms. A performance management system is defined as "the formal, information-based routines and procedures managers use to maintain or alter patterns in organizational activities. These systems focus on conveying financial and nonfinancial information that influence decision making and managerial action taking. The recording, analyzing, and distributing of this information is embedded in the rhythm of the organization and is often based on predetermined practices and at preset times in the business cycle. These systems are designed specifically to be used by managers."[4]

A performance management system has many aims and purposes: helping to achieve sustainable improvements in organizational performance; acting as a lever for change in developing a more performance-oriented culture; increasing the motivation and commitment of employees; enabling individuals to develop their abilities, increase their job satisfaction, and achieve their full potential to their own benefit and that of the organization as a whole; enhancing the development of team cohesion and performance; developing constructive and open relationships between individuals and their managers in a process of continuing dialogue that is linked to the work actually being done throughout the year; providing opportunities for individuals to express their aspirations and expectations about their work; creating continuous improvement; supporting planning of organizational activities; reinforcing management rhetoric; introducing pay for group performance; influencing employees' attitudes; performing benchmarks; introducing individual and organizational learning; and focusing and justifying investments.

After studying these aims and purposes, it can be noted that the use of a performance management system, in the context of the manager's work environment, resembles the planning and control cycle. The planning stage of the cycle starts after the long-term strategic objectives of the organization have been formulated and the corresponding management information needs have been defined. The purpose of this stage is to translate strategic plans into tangible, short-term action plans for each business unit. Management has at its disposal the results of the previous period(s) and the analysis of these results. These are used to make an action plan for the next period. It is crucial for people to use the analysis of the preceding period to learn from incorrect assessments or mistakes. Managers make use of a performance management system in the planning stage if: (1) they take the performance management system analysis of the preceding period as the basis for setting financial and nonfinancial targets for the next period(s); (2) they set priorities for the targets because these can be conflicting; (3) they determine which specific actions have to be taken to achieve these targets; (4) they allocate resources on the basis of planned actions and targets; and (5) they discuss the action planning with superiors and colleagues.

Making action plans is followed by implementing these plans. The manager has to make sure that this is done efficiently. The primary task of the manager in the control stage, therefore, is to communicate clearly the strategy, targets, and planned actions to all employees and to control their implementation. Additionally, the manager indicates which indicators need to be measured and the way in which this should be done. Managers make use of a performance management system in the control stage if they inform

employees through the performance management system about the strategy, targets, planned actions, and the results to be measured and reported, and if they motivate employees by regularly providing intermediate feedback via the performance management system on the organization's results.

The purpose of the measurement stage is to collect information on the results of activities so that management can determine if adjustment is required. The three basic steps in how people acquire and process information are: (1) determination of information needs, (2) information seeking, and (3) information use—each of which can be considered in terms of cognitive, emotional, and situational factors.[6] Information needs arise when people experience cognitive gaps that hinder their progress and induce uncertainty. To bridge these gaps, they seek good, accessible information sources. During and after execution of activities, management makes sure that the organization's results are collected and recorded in the performance management system. The performance management system is used to provide feedback (via screens or reports) to managers on the implemented action plans. The feedback is closely studied by management to identify areas for improvement or correction. Managers make use of a performance management system in the measurement stage when they collect information in the performance management system for feedback purposes, study the results of the financial and nonfinancial targets and compare these with the budget, provide feedback via the performance management system to employees on the results and discuss these with them so that employees achieve the defined targets, and determine if there is a need for further analysis of the performance management system and which adjustments to the action plans are needed.

In the feedback stage, managers identify, based on the organization's results, those areas that need further attention and detailed interpretation. Managers look for causal relationships between the various results and try to find causes for lagging results in the internal and external environments. Feedback on the results to the employees and formulation and execution of corrective and preventive action then takes place. The performance management system is used to discuss frequently (mostly monthly) the execution and adjustment of action plans. In addition, the validity of the formulated strategy is discussed in periodic (less frequent, e.g., quarterly) meetings. Managers make use of a performance management system in the feedback stage if: (1) they interpret the key performance indicator (KPI) results and look for causal relationships between the different variables in the performance management system; (2) they look into the internal and external environments for explanations for lagging results and then formulate corrective actions on the basis of this analysis; (3) they discuss the information in the performance management system and possible

adjustments to the action plans with colleagues; (4) they discuss the validity of the formulated strategy and check the underlying assumptions in quarterly meetings; (5) they share the information in the performance management system and the outcomes of periodic meetings with superiors and colleagues, thereby advising superiors about possible adjustments of strategic programs; and (6) they record important data from the discussions as well as of the outcomes of review and analysis meetings in the performance management system for future use and learning.

There are three key questions that must be answered when implementing a performance management system[7]:

1. *How can performance be measured in practice?* One has to look, among other things, at the definition of *results* and *result areas,* the validity of performance measures and indicators, and coverage of all relevant aspects.
2. *How involved are managers in a performance management system?* Under which conditions are managers willing to adapt a new system? This question is very relevant for the design of a performance management system because the purpose of this system is designed to influence managerial behavior.
3. *Have actual performance improvements been accomplished?* This is all about the tools and information managers need to be able to achieve quality improvements in their products and services.

To be able to answer the first question, we review in this chapter the history of performance management systems: the decline of the traditional management control and information system and the rise of a performance management system that is based on critical success factors (CSFs), KPIs, and the balanced scorecard (BSC). In addition, we look at the financial benefits and performance improvements an organization can expect from implementing such a performance management system, according to the literature. In Chapter 2, we turn to behavioral factors that are important for the design, implementation, and use of a performance management system that is based on CSFs, KPIs, and the BSC.

DEVELOPMENT OF PERFORMANCE MANAGEMENT SYSTEMS

Three stages can be distinguished in the development of management control and information systems, or performance management systems.[8] These stages are closely linked to industrial developments:

- *Stage 1: Very low system complexity.* Many of the earliest managed business organizations limited their attention to coordinating and controlling labor-intensive tasks in a few closely linked manufacturing processes that tended to produce fairly homogeneous product lines. Management control and information systems mainly focused on the collection of financial and nonfinancial data about efficiency of input and output conversion activities in processes, including nonaccounting data about cost of process outputs. Nineteenth-century firms measured their costs and revenues meticulously. However, they were careful to disclose very little information and often told their shareholders nothing about their performance.
- *Stage 2: Medium to high system complexity.* By the late nineteenth century, large-scale organizations integrated mass production with mass marketing and spanned a complex variety of intermediate and finished products. Frederick Taylor's scientific management was introduced around 1911, when it was argued that division and specialization of labor would lead to greater productivity. Standard production methods were used and standard costing techniques applied. In the period of 1920–1925, DuPont and General Motors experimented by introducing decentralized divisional structures with profit centers. As support for these reorganizations they also introduced the DuPont chart, and with it, the concept of return on investment (ROI). This meant that management was now also held responsible for the achievement of budgeted ROI, and therefore, not only focused on measures of margin and net income but also on return on investment.
- *Stage 3: Growing system complexity.* Between the 1920s and the 1980s, large business organizations had to cope with growing organizational complexity. They focused internal activities along product lines or geographic regions by creating multidivisional structures. Also, they increasingly decoupled functions and processes. This meant that the DuPont chart and the concept of ROI was used more and more. The principles of capital investment appraisal, budgeting, performance measurement, variance accounting, and ROI were introduced in the 1920s. By the 1930s, fully integrated cost and management accounting systems were developed, regulated, subjected to independent auditing, and linked to external financial operating systems. After the 1950s, management information systems focused on the growing use of accounting targets to control operating processes.

It can be stated that by the 1930s most standard cost accounting methods, such as budgeting, standard costing, transfer pricing, and the DuPont chart,

had been developed and incorporated in the accounting textbooks. Only in sporadic instances were new developments, such as the concepts of residual income and net present value, included in the textbooks. However, after World War II, it became increasingly apparent that management needed other information than that supplied by the traditional management control and information systems. This information was needed because the systems and procedures of cost accounting and managerial control in use at that time were devised for manufacturing organizations with mass production. In this type of organization, cost–price calculation and responsibility accounting systems mainly focused on recording labor costs and minimizing manufacturing costs. In the 1980s, the competitive environment changed dramatically through the appearance of new technologies, increased competition as a consequence of deregulations, and the emergence of foreign producers. Quality improvements, reduced inventory, more efficient production processes, and increased automation were needed to face this new environment. These changes reduced the direct and indirect labor content of products and services and increased overhead costs. The traditional management accounting and information systems were not suited for modern organizations that were characterized by customer specific production, short life cycles, computer-aided design/computer-aided manufacturing technology and (more) overhead, creating many problems. Among the most frequent occurring problems, many of which endure well into the twenty-first century, are:

- *One-sided information.* Management information is too financially oriented. This is caused by the fact that the management control and information systems have been designed to satisfy legal requirements. This means that the decision process is mainly based on financial measurements. Financial ratios, like ROI and working capital, are not used much. Nonfinancial information remains all too often restricted to personnel (number of full-time equivalents, absenteeism), project (i.e., status of large investments), and external (market share) information. Information about client satisfaction, vendor performance, innovation, product quality, and intellectual capital is insufficient or not available. The information is mainly internally focused on the activities of the organization itself. Information on competitors and environmental conditions is missing. Financial and nonfinancial targets are based on experiences in the past, not on client information or benchmark data. Information is often aimed at measuring the inputs, not the outputs. This focuses management on acquiring budgets instead of on the results that should be obtained by these budgets.

- *Low-quality information.* Management reports are often incomplete, causing many requests from management for additional information. The information is too aggregated. End results are measured, but not the processes causing these results. The management control and information system is often not linked to the supplying operational systems, causing much manual work to generate reports. Many managers do not use the reporting possibilities of the operational and management control and information systems adequately.
- *Tardy information.* Management information is too historically focused. Accurate measurement of past performance takes place, but forecasts of future performance are hardly made. This causes short-term behavior, going for the quick wins, instead of for long-term development and investment. The information is not supplied in appropriate time to management. Consequently, the value of the information decreases because necessary corrective actions are taken too late and the positive effects of these actions are delayed. Reports are still distributed in paper format, taking a long time. Another issue in this respect is that actions with a long-term effect are not executed because they negatively effect the short-term financial result.
- *Misaligned organizational concept.* Management control and information systems are often based on outdated organizational concepts. They have been devised for manufacturing companies, while nowadays many organizations are predominantly service providers. To deal with these changes, many systems have been adjusted to reflect these changed circumstances, making them increasingly difficult to maintain and support. Critical business processes and functions are inadequately supported and measured. The execution of the organizational strategy is not measured adequately at all levels of the organization.
- *Overload of data.* Management information does not contain ratios, trends, indicators, graphs, colors, and standardized layouts. The management control and information systems generate too much data. Conventional wisdom suggests that more data and more analysis lead to better decisions. However, research on information and decision making indicates that more is not always better. Also, the quality of analyses is low. Often, the figures are restated in text without giving an analysis of the real causes of the results. As a consequence, formulated actions cannot be effective because they do not address the real problems. Usually, the impact of these actions are not predicted either, so the organization has no

idea of the effectiveness of its action. This all decreases the user friendliness and effectiveness of information.

- *Lack of communication.* Communication about management information is not structured, causing insufficient discussions and action on organizational results. Reports are rarely used for communicating (strategic) results to the organization.
- *Misaligned culture.* A culture of trust and continuous improvement does not exist in the organization, causing inadequate action on measured results. Because the wrong things are measured, the management accounting and information systems foster the wrong behavior. After all, "what gets measured gets managed." The systems do not take into account the mental images of managers toward information, causing a mismatch between the delivered information and the information managers actually want.

Many of these problems are caused by organizations using management control and information systems that are basically the same as those that existed in the 1930s. However, in the last few decades a constant stream of new developments in production and processing techniques—such as flexible manufacturing systems, just-in-time production, materials requirements planning, enterprise requirements planning, supply chain management, and total quality assurance—has been matched by new management information and accounting techniques such as target costing, value engineering, strategic cost accounting, activity-based costing/management, kaizen costing, and nonfinancial performance indicators. Although many of these new accounting techniques are variations of older methods and ideas, they nonetheless provide a valuable contribution to managing an increasingly complex environment.

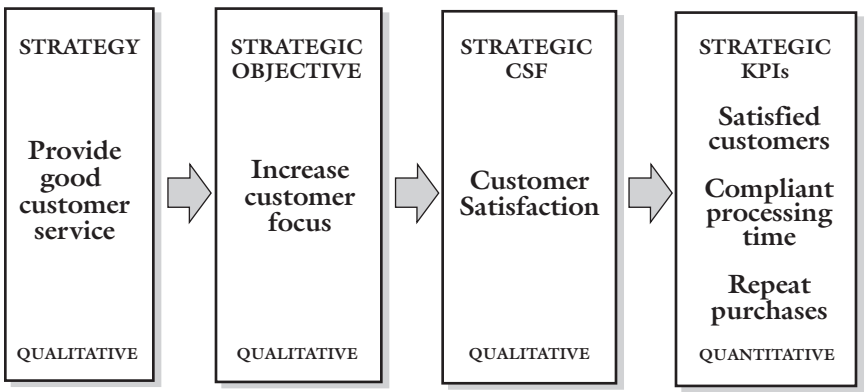
The idea of nonfinancial measures in itself was not new. In the 1950s, General Electric implemented a balanced set of performance measures. In 1961, research showed that many organizations were "plagued by a common problem: inadequate management information, not in the sense of there not being enough, but in terms of relevancy for setting objectives, for shaping alternative strategies, for making decisions, and for measuring results against planned goals."[9] It was proposed that an organization needed a combination of environmental, competitive, and internal information provided by financial and nonfinancial data. That idea did not really catch on; not in the literature or in the practice of the day can much reference be found to nonfinancial indicators. This was probably because the idea was too optimistic about the capabilities of computers of that time to deliver the right information. The result was that significant improvements in the delivery of management information failed to materialize.

Then, in 1979, a study described a new approach to improve management control and information systems.[10] It proposed a concept called CSFs: "Critical success factors thus are, for any business, the limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organization. They are the few key areas where things must go right for the business to flourish. If results in these areas are not adequate, the organization's efforts for the period will be less than desired. As a result, the critical success factors are areas of activity that should receive constant and careful management attention. The current status of performance in each area should be continually measured and that information should be made available." These CSFs should, according to the study, be measured with prime measures, in later publications referred to as KPIs.

A CSF is defined as a qualitative description of an element of the strategy in which the organization has to excel in order to be successful. The CSF is made quantifiable with a KPI. The use of CSFs and KPIs enables measurement and, thus, control of strategic objectives. If performance indicators that measure the execution of the strategy and the creation of value to the organization are not included in the performance management process, it will not be transparent whether or not strategic objectives and value creation are being achieved. Exhibit 1.2 gives an example of a CSF and its KPIs.

Providing good customer service is of critical importance for an organization's success. One of the ways to provide this service is by increasing the focus on the customer throughout the organization, thereby increas-

Exhibit 1.2 **CSF and Its Corresponding KPIs Example**



ing customer satisfaction. Whether customer service is satisfactory is reflected in the number of customers that repeatedly buy products or services (i.e., repeat purchases). Customer satisfaction can also be measured by proactively asking customers what they think of the services provided (i.e., satisfied customers). An important activity that helps to keep customers satisfied is to respond quickly to complaints (i.e., complaint processing time).

It seemed the CSF concept initially caught on. At the time, CSFs were seen as a breakthrough approach to help executives focus on a few simple areas that were critical in the attainment of larger organizational goals. The theme, therefore, was quickly picked up by other researchers. However, after the initial surge of interest, it once again became rather quiet on the implementation front because managers were searching for even more simplified ways to represent cause–effect relationships at companies. This relative silence lasted until the beginning of the 1990s. At that time, Eccles published an important article in the *Harvard Business Review,* in which he predicted that a performance measurement revolution would take place in the next five years.[11] During this revolution, traditional financial information systems would be replaced by nonfinancial information systems. According to Eccles, this revolution was needed to improve managers' satisfaction with the information they receive, and to satisfy the increased information requirements of modern-day organizations caused by new techniques like total quality management, focus on customer satisfaction, and benchmarking.

Kaplan and Norton extended the CSF concept by introducing the concept of the BSC through a series of articles in the *Harvard Business Review* and books.[12] The BSC is used to represent the financial and nonfinancial performance indicators in a user-friendly format. Traditionally, a BSC has four perspectives or areas:

1. The *Innovation* perspective measures how often an organization introduces new products, services, or (production) techniques. In this way, the organization makes sure it does not become complacent but continuously renews itself. Sometimes organizations include people aspects in this perspective. These are used to measure the well-being, commitment, and competence of people in the organization. People aspects measure cultural qualities like internal partnership, teamwork, and knowledge sharing, as well as aggregate individual qualities like leadership, competency, and use of technology.
2. The *Internal* (or *process*) perspective measures the effectiveness of the processes by which the organization creates value. It follows

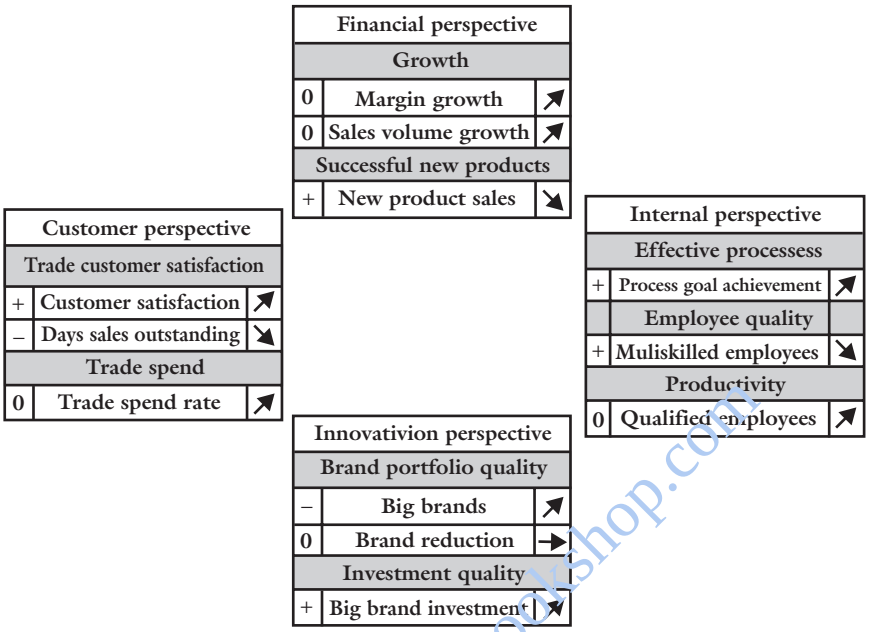
the innovation perspective because value is generally created in the production of new products, services, and techniques. The contribution of innovative people to the ability of the organization to create value consists of implementing and managing effective processes. The internal perspective measures how effectively processes operate. It precedes the customer perspective because efficient processes make it possible for an organization to stay or become more competitive.

3. The *Customer* perspective measures performance in terms of how the customer experiences the value created by the organization. It follows the internal perspective because value created by processes is meaningful only when it is perceived by the customer as being valuable.
4. The *Financial* perspective measures the bottom line, such as growth, ROI, and the other traditional measures of business performance. It is the last perspective because it is the final result of good, committed people; of implementing and operating effective processes; of the ability for renewal; and of creating value that customers have chosen to purchase.

In different organizations, the perspectives and the leading indicators can be different, but the idea of the BSC is to provide a balanced set of measurements that allow an organization to measure the cause-and-effect chain by which customer and shareholder value is created. If value is created by people working on and in processes to satisfy customers and to produce financial results, then managers must be able to measure and monitor all of these perspectives of value creation to effectively manage the business. By combining lagging and leading CSFs and KPIs, managers gain an understanding of where the organization was and where it is going. The "balanced" in the BSC can be found in several aspects: Nonfinancial data complements financial data, leading information (customer and innovative data) complements lagging information (financial and internal data), and internal information (financial, internal, and innovative data) complements external information (customer data). Exhibit 1.3 gives an example of the BSC.

The main benefit of managing with a combination of financial and nonfinancial information is that the use of leading, nonfinancial indicators facilitates proactive control and the ability to take preventive action. A balanced set of key financial and nonfinancial CSFs and KPIs enables management to focus on the really important issues that drive business performance and to monitor the achievement of strategic goals more closely. Using nonfinancial information improves the analysis capabilities

Exhibit 1.3 **BCS Example**



of managers because they can identify the root causes of financial performance. The nonfinancials can include external information, making it possible for management to compare the internal results with external trends and drivers.

It is interesting to see how Kaplan and Norton extended ideas proposed earlier by other authors. For instance, their lagging and leading indicators were mentioned by Rockart as monitoring and building CSFs. A well-known predecessor of the BSC is the Tableau de Bord. It emerged in France at the end of the nineteenth century, having been developed by process engineers who were looking for ways to improve the production process by understanding better the cause–effect relationships. The same principle was then applied at the top management level to give senior management a set of indicators that would allow them to monitor progress of the business, compare it to the goals that had been set, and give them the corrective actions needed. Each organizational unit had its own Tableau de Bord, which was not limited to financial indicators but extended with operational measures. Just as the BSC, the development of the Tableau de Bord involved translating an organizational unit's vision and mission into a set of objectives, from which the unit identified its CSFs that then were translated into a series of quantitative KPIs. To pro-

vide managers with the information they could use for decision making, the Tableau de Bord primarily contained performance indicators that largely were controllable by the organizational unit.

Many management writers and the business community at large firmly believe that the BSC is here to stay, mainly because the BSC is "an idea whose time has come" due to the growing frustration with traditional measurement systems, coupled with an increasing need to cope with an ever more complex world. The concept is also extremely well packaged and has been carefully marketed. Finally, the concept is easy to comprehend, which means that people reading about the BSC for the first time can immediately understand it.

This does not mean that the BSC is without weaknesses. One weakness is the emphasis on the customer perspective, implicitly ignoring the broader market perspective, which concentrates on how the organization looks to the customer in comparison with competitors. A second weakness of the BSC is the absence of any mention of suppliers. It is assumed that if the business itself excels, then all will be well, but in these days of increased outsourcing, business interdependencies are continually growing. Some organizations have had bad experiences with BSC implementations, in which they have abandoned their scorecards after a few years without consistent results or as a result of difficulties during the implementation phase. These organizations have reported problems in defining the measures, especially in areas where performance is more qualitative than quantitative, and in decomposing the measures to lower levels in the organizations. A final criticism of the BSC is the disregard for the human element, that is, the effect a BSC can have on managerial attitudes or the question of whether a BSC is suitable for every type of manager.

The developments in the field of performance management systems can be summarized as:

- *Organizations pay more attention to the design of the performance management system.* Until recently, many organizations would, while setting up a new performance management system, automatically have designed *ROI* criteria and deviation analyses without really looking at the effectiveness of these indicators. Nowadays, the choice of KPIs comes from a structured process, in which the strategy and CSFs of an organization take a central place.
- *Organizations broaden the CSF/KPI set in the performance management system.* In addition to the traditional financial indicators, CSFs and KPIs are now included in management reporting to monitor strategic goals like quality, delivery time, client satisfaction, competitor ranking, and employee retention.

- *Organizations go from absolute to relative KPIs and from separate indicators to a coherent set of indicators.* In the past, absolute targets were set for the KPIs that had to be achieved, no matter what. Nowadays, striving for continuous improvement causes targets to be changed regularly in an upward direction. The links between KPIs are also made more visible, and the KPIs are put in a balanced measurement system.

Why does the performance management system, based on CSFs, KPIs, and the BSC, now experience a breakthrough? One reason can be the recent developments in the area of information technology. Introducing CSFs, KPIs, and the BSC requires collecting, storing, and reporting a lot of new data. In the 1990s, an increasing number of software vendors came to market with special applications called executive information systems (EISs), which could better support the data and reporting requirements of CSFs and KPIs. These new applications, combined with dramatically improved price–performance ratios in hardware and breakthroughs in software and database technology, made it possible for organizations to generate, disseminate, analyze and store more information from more sources for more people more quickly and cheaply than ever before. With modern database technology, it is now possible to analyze information in a number of different ways and in effect to have different information systems for different purposes. In general, it can be stated that information is becoming more widely dispersed throughout the organization. Databases can be accessed through corporate networks, so that anybody within the organization can have easy access to the information database. This means that a manager with a PC on his desk can very easily access a whole range of corporate information, including accounting information. This has led to a decentralization of information.

Another reason for the final breakthrough is that due to the emphasis on total quality management (TQM) these last few decades, the significance of performance measurement did not really get highlighted until recent years. Organizations are just now realizing that they need to quantify the benefits of TQM by providing management information that clearly demonstrates its credibility as a concept.

A third reason can be found in the changing nature of the economy. In the traditional economy, which is dominated by tangible assets, financial measurements are adequate to record investments and expenses associated with inventory, property, and plant and equipment. However, in the new economy, in which intangible assets have become the major sources of competitive advantage, information tools are needed that

describe knowledge-based assets and the value-creating strategies that these assets make possible. A 1982 Brookings Institute study that showed that tangible book values represented 62% of industrial organizations' market values, while 10 years later this ratio had dropped to 38%.[13] Later studies estimated that by the end of the twentieth century, the book value of tangible assets accounted only for 10 to 15% of companies' market values. It can be concluded that a different kind of management information is needed, like the BSC, to capture the move that has taken place in the main sources of creating value. These are shifting from managing tangible assets to managing knowledge-based strategies that deploy an organization's intangible assets—customer relationships; innovative products and services; high-quality and responsive operating processes; information technology and databases; and employee capabilities, skills, and motivation.

This time the concept of performance indicators indeed seems here to stay: The introduction of nonfinancial performance measures is not a passing fad. This is because the size and scale of today's organizational operations are so complex that no chief executive officer (CEO) possesses the level of knowledge needed to manage all the company's operations and people. Consequently, today's CEO must incorporate additional sources of information in the decision-making process. What makes a further difference is that the combination of a strong, appealing concept developed by leading business school professors and the availability of supporting technology seems to be so appealing that many organizations decide to (finally) accept CSFs and KPIs. Maybe the rapid adaptation of the BSC by managers and consultants can be viewed as evidence that the revolution predicted by Eccles is indeed under way.

BENEFITS OF PERFORMANCE MANAGEMENT SYSTEMS

Applying CSFs, KPIs, and the BSC has a number of benefits, many of which address the problems encountered with the traditional management control and information systems as described in the previous section. These advantages are:

- *Better quality of information.* CSFs and KPIs support effective planning and budgeting processes because they make the relationship between functions and activities on the one hand and performance on the other hand more clear. Reports are more complete and give a better view of crucial business activities. CSFs and KPIs

translate organizational strategy into qualitative and quantitative measures on all management levels. Through this, the execution of the strategy can be continuously measured and adjusted. This alignment will result in higher organizational performance.

- *Timeliness of information.* When things go wrong, CSFs and KPIs function as an early warning system, giving signals about potential issues before these actually happen or become real (comprehensive) problems. Managers can, therefore, better anticipate new developments because they receive better information at an earlier stage, thereby significantly lowering the chance that the problems really become life threatening for the organization. Interesting to note is that a study of the key strategies of Europe's most successful companies found that managers of these organization used action-oriented philosophies to add value and that they do so within the shortest possible time frames.[14]
- *Better support of management.* CSFs and KPIs make the concepts of continuous improvement and the learning organization possible, by focusing people's attention on continuous improvement and development, and by continuously raising performance expectations. Total quality management is enforced by ensuring that the expectations of external and internal customers drive the activities and performance of the people in the organization. Because managers have a better insight into and a better grip on organizational performance, cost reduction, organizational improvements, product quality, and service improvements are made possible.
- *Better communication.* A set of clear CSFs and KPIs forms a common basis for communication and discussion in the organization. This makes information transferable between departments and organizational units, making information less prone to being used as a means of executing power.
- *Aligned culture.* The availability of high-quality information at all management levels makes management by delegation possible, which speeds up the decision-making process. Better reporting enhances managers' self-management and self-control. People are more motivated because their goals and what is expected from them in regard to their behavior and performance is clear, and they get regular feedback on how they are doing in these respects. The culture of an organization is impacted because the performance management process ensures that consistency exists between what an organization says it values and what is actually measured and rewarded. Also, information is more standardized, providing a better basis for discussion at all levels of the organization.

Managers are constantly under pressure to measure the performance of their organization, but there is little empirical evidence about the impact of such measurement on performance. On the one hand, the link between organizational effectiveness and performance measures has been widely recognized. On the other hand, explanations for this link are constrained by the lack of clear theoretical foundations to many measurement tools and techniques and an apparent preference for description and prescription on the part of writers in the field. Some studies do not find a clear link between the use of nonfinancial measures and organizational performance. This could be caused by the fact that organizations might consider changes to the performance management system less important than organizational structural arrangements or that the main benefits of increasing the use of nonfinancial measures is more motivational rather than instrumental, or that performance is a complex variable with a multiplicity of factors contributing to the level of global performance at any point in time. It is often easier to prove reverse causation: "We know that you cannot prove that X produces Y, but neither can you prove that it did not. For example, when a study claims to establish that there is a proven connection between performance management and measures of organizational performance, it is a matter of speculation as to whether the results in the most effective companies were created by performance management or whether the most effective companies were the ones most likely to introduce performance management."[15]

Nonetheless, an increasing body of anecdotal evidence can be found about the positive relation between the use of a performance management system, based on CSFs, KPIs, and the BSC, and the performance of the organization. According to the Institute of Management Accountants (IMA), some of the best companies in the world, such as AT&T, Bell-South, Bristol-Myers Squibb, Dun & Bradstreet, DuPont, Emerson Electric, General Electric, Hewlett-Packard, Johnson & Johnson, Merck, Motorola, Pepsico, Wal-Mart, and Xerox cite their integrated performance management system as one of the key drivers of their success.[16] The general tendency in the literature seems to be that organizations that have implemented and are using a performance management system perform better financially as well as nonfinancially than those organizations that are less performance management driven. This is explained by the fact that performance measures direct attention and motivate the organization to act in a strategically desirable way. They also help management to assess progress toward strategic goals. Finally, performance measures help an individual to see his or her part in the wider enterprise with greater clarity.

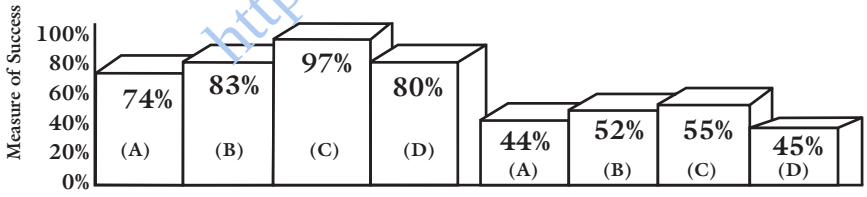
The case of Sears, Roebuck shows that the nonfinancial indicator "employee loyalty" is related to customer satisfaction, which in turn is

related to organization's growth and profits.[17] Statistical analysis of sales data at Sears, Roebuck showed that employee attitudes drive both customer satisfaction and changes in revenue. A 5% improvement in employee attitude results in a 1.3% improvement in customer satisfaction, which in turn results in a 0.5% increase in store revenue. Independent surveys showed that national retail customer satisfaction had fallen for several years, but in the time period for which the data was analyzed, employee satisfaction at Sears had risen by 4%, and customer satisfaction by almost 4%. This translated into more than $200 million in additional revenues for that year and increased Sears's market capitalization at that time by nearly one quarter of a billion dollars.

In a research study, senior executives from 58 organizations with a performance management system in place and operational that focused on measuring a set of financial and nonfinancial data were asked how their organizations were ranked compared to their peers in the industry.[18] The same question was asked of senior executives from 64 organizations without such a performance management system. The executives' opinions—1,000 in all—were juxtaposed with the three-year ROI of their organizations (Exhibit 1.4).

In this same study, it was observed that companies with a balanced performance management system, compared to their peers, displayed a number of cultural differences that are summarized in Exhibit 1.5.

Exhibit 1.4 **Relationship Between Performance Management and Organizational Performance**



(A) Perceived as an industry leader over the past 3 years
(B) Reported to be financially ranked in the top 3 of their industry
(C) Last major cultural or operational change judged to be very or moderately successful
(D) Three year ROI

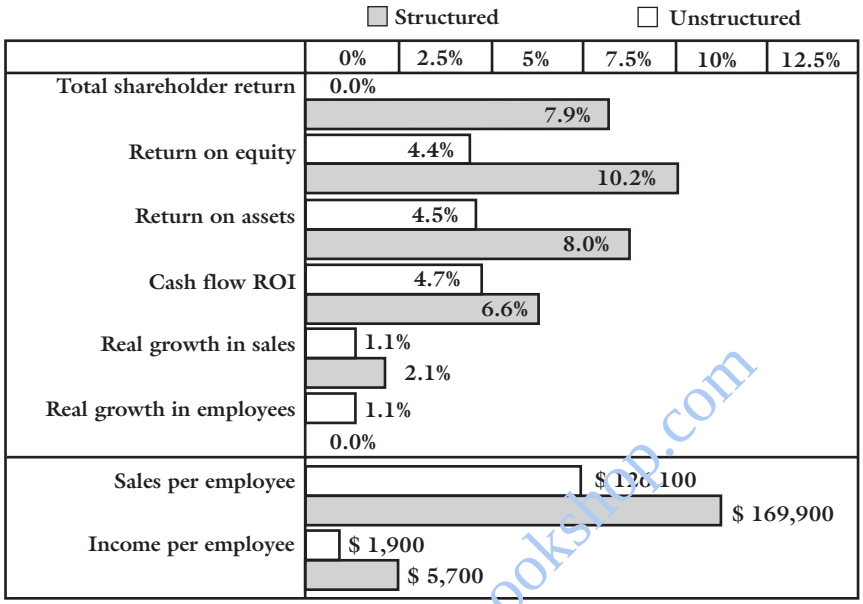
Source: Schiemann, W. A., and J. H. Lingle (1999). *Bullseye! Hitting your strategic targets through high-impact measurement.* New York: The Free Press.

Exhibit 1.5 **Organizations with Different Performance Management Systems Exhibit Different Cultures**

Indicator of Organizational Success	*Organizations with a* Balanced *Performance Management System (%)*	*Organizations with a* Nonbalanced *Performance Management System (%)*
Clear agreement on strategy among senior management	93	37
Good cooperation and teamwork among management	85	38
Unit performance measures are linked to strategic company measures	74	16
Information within the organization is shared openly and candidly	71	30
Effective communication of strategy to organization	60	8
Willingness by employees to take risks	52	22
Individual performance measures are linked to unit measures	52	11
High levels of self-monitoring of performance by employees	42	16

Source: Schiemann, W. A., and J. H. Lingle (1999). *Bullseye! Hitting your strategic targets through high-impact measurement.* New York: The Free Press.

Exhibit 1.6 **Comparison of Organizations with a Structured or an Unstructured Performance Management System**



In another study, the performance management processes and financial results of 437 publicly traded firms were studied.[19] Of the sample, 232 companies said they did not use a structured performance management system to continuously provide the organization with data about the performance of their employees but instead conducted only year-end evaluations or no evaluations at all. The other 205 companies said they did use a performance management system. The study looked at the three-year financial performance of these companies, showing a strong favorable result for the organizations with a structured performance management system (Exhibit 1.6).

In the same study, the average changes in financial ratios, before and after implementing a structured performance management system, provides evidence in favor of implementing a structured performance management system (Exhibit 1.7).

In yet another study, personnel managers from organizations with a process to structurally and continuously measure the performance of managers and employees were asked how effective this performance management system was in improving the overall performance of their organizations (Exhibit 1.8).[20] The majority of the respondents graded the effectiveness of the performance management system positively. This effectiveness was especially found in the achievement of financial targets,

Exhibit 1.7 **Changes in Financial Performance, Before and After Implementing a Structured Performance Management System**

Financial Ratio	*Average Before*	*Average After*	*Average Change*
Total shareholder return	– 5.1%	19.7%	24.8%
Stock return (relative to market index)	– 0.13%	0.18%	0.31%
Price/book value of total capital	0.03%	0.26%	0.23%
Real value/cost	– 0.06	0.13	0.19
Sales per employee ($1,000)	98.8	193.0	94.2

Source: Gubman, E. L. (1998). *The talent solution: Aligning strategy and people to achieve extraordinary results.* New York: McGraw-Hill.

development of skills and competencies, and improved customer care and process quality. The conclusion of the study was that the majority of the people polled believed it was well worth the effort and expense to install a performance management system.

A study performed by a consultancy firm showed that the majority of the interviewed organizations with a high financial return (measured in margin and profit) turned out to have a performance management system that contained financial as well as nonfinancial information, with an emphasis on exception reporting, and a strong focus on client satisfaction and market indicators.[21] A study of Australian manufacturing firms found that financial performance measures continued to be an important aspect of the performance management system.[22] However, these were being supplemented with a variety of nonfinancial measures. From these, high

Exhibit 1.8 **Degree of Impact of the Performance Management System on Organizational Performance**

Effectiveness of the Performance Management System	*Percentage of Organizations*
Very effective	7
Moderately effective	41
Slightly effective	29
Ineffective	8
Don't know/not stated	15

benefits were derived from customer satisfaction surveys and nonfinancial measures. Relatively moderate benefits were reported for ongoing supplier evaluations, BSCs, qualitative measures, and team performance measures.

An interesting sideline is that it seems that major investors' decisions are significantly influenced by nonfinancial performance information.[23] It turns out that over a third of the typical investor's allocation decisions is attributable not to the financials but to other information on performance areas perceived to be leading indicators of future profitability. These include perceptions of a company's strategic vision and the company's ability to execute it, the credibility of management, the prospects of innovations in the pipeline, the ability to attract talented people, and so on. It was found that those analysts who rely heavily on nonfinancial information are the ones producing the most accurate earnings forecasts. The major implication of this is that if a firm does not strategically manage, measure, and communicate about key areas of nonfinancial performance, its operating performance and the value of its securities can suffer. This result is also found for the relation between customer satisfaction measures and organizational performance and stock market performance.

In a survey conducted by the IMA, 40% of the respondents said they were in the process of changing their performance management system.[24] Of these, approximately 70% describe the change as a "major overhaul" or "replacement" of the performance management system. The BSC framework was reported as gaining support at many companies. Bain & Company was quoted to estimate that 55% of the U.S. companies they surveyed and 45% of the European companies used the BSC. According to the survey, approximately 40% of the respondents were currently using a BSC or planned to do so within the next year. Twelve percent of these companies had been using the BSC for more than two years with positive effects (Exhibit 1.9). In the survey, approximately 83% of the respon-

Exhibit 1.9 **Respondents Were Asked to Agree or Disagree with Statements About Their Performance Management System (1 = Strongly Disagree, 5 = Strongly Agree)**

Statement	*BSC Users*	*Non-BSC Users*
Our compensation/incentive programs are clearly tied to nonfinancial performance measurements	3.00	2.07
Our performance measurement system supports the corporate vision and strategies	3.31	2.83
There are clear linkages between performance measures in our performance measurement system	3.31	2.57

dents said that the BSC was worth implementing or "not yet, but will be"; the other 17% said "too early to tell."

Ten of the twelve companies that were the first users of the BSC were asked how they have done since the implementation of the BSC and what their experiences were.[25] Five of the companies reported their BSC implementation to be a "resounding success," measured either in financial or cultural terms. Clear differences were found among the 10 companies, which made it possible to divide them into two groups, each with distinct characteristics. One group mainly implemented the BSC to improve organizational performance in quantitative, financial terms (drive value). The other group focused on organizational performance improvement in qualitative, nonfinancial terms (drive values). The research results are summarized in Exhibit 1.10.

Exhibit 1.10 **Experience of the Original BSC Companies**

Question	*"Drive Value" Organizations*	*"Drive Values" Organizations*
Aim of scorecard	Drive financial success.	Effect cultural change.
Project approach	Explicit project, small team, proposal of measures, guide implementation.	Explicit project, small team, proposal of measures, guide implementation.
Layout and content of scorecard	Kaplan and Norton perspectives, with measures derived from the strategy.	Interactive process, based on a perceived, not a concise strategy, resulting in different number and sort of perspectives.
Sort of measures	Initially too many. Measures which are explicitly and quantifiably linked to the strategy. Nonfinancial measures that produce objective, accurate values. Index measures for trend analysis. Outcome measures.	Measures that "telegraph" what really matters to the organization's success. Outcome and activity measures.
Aggregation of measures	No, aggregation of financials obscure real performance. Seek or "logical" rather than arithmetic connection of division results to corporate performance.	No, aggregation of financials obscure real performance. Seek or "logical" rather than arithmetic connection of division results to corporate performance.

(continues)

Exhibit 1.10 **Continued**

Question	*"Drive Value" Organizations*	*"Drive Values" Organizations*
External disclosure of values	No, not yet. Legally too risky and investors look for other sources of nonfinancial information.	No, not yet. Legally too risky and investors look for other sources of nonfinancial information.
Link to individual pay	Yes, when previous performance management systems were already linked, otherwise no. If yes: specific linkages between pay and performance on the scorecard aspects.	Yes, when previous performance management systems were already linked, otherwise no. If yes: based on broadly based gain (and risk) sharing plans.
Replacement of old performance management systems	Many old measures are included (familiar, linked with human resource processes).	Many old measures are included (familiar, linked with human resource processes).
Resistance	Modest/evolutionary or full-scale replacement: little resistance.	Modest/evolutionary or full-scale replacement: little resistance.
Implementation worthwhile?	Half of the companies: "a resounding success." Bottom line has improved for some and for others not yet. Success in: ■ fundamentally changing the bottom line ■ focusing employee attention on strategic priorities and the leading indicators of financial success ■ new visibility and better management of the value chain	Half of the companies: "a resounding success." Bottom line has improved for some and for others not yet. Success in: ■ realizing substantive change in employee orientation and the corporate beliefs system ■ shift in organizational culture ■ employees better in prioritizing multiple change projects ■ boosts in employee morale, customer satisfaction, and product quality

In their latest book, Kaplan and Norton also revisit the pioneer organizations of the BSC. They report that these organizations "enjoyed substantial benefits from their new strategies early in their implementation

activities." Examples are given of organizations going from years of below-average performance to first in their niche or industry in both growth and profitability, with the turnaround accomplished within two years of introducing a new strategy, a new organization, and the BSC performance management process. Kaplan and Norton argue that "the BSC made the difference. Each organization executed strategies using the same physical and human resources that had previously produced failing performance. The strategies were executed with the same products, the same facilities, the same employees, and the same customers. The difference was a new senior management team using the BSC to focus all organizational resources on a new strategy."[26]

All in all, the literature starts to give more proof that implementing a performance management system can yield many benefits also in financial terms. This gives a compelling argument for organizations to implement such a system.

ISSUES WITH CRITICAL SUCCESS FACTORS, KEY PERFORMANCE INDICATORS, AND THE BALANCED SCORECARD

One may wonder why, if there are so many advantages of using CSFs, KPIs, and the BSC, every organization has not yet implemented these. This could be because the implementation and use of these types of measures are not easy and require special knowledge and training. Another aspect can be that, as soon as performance measures are used as a means of control, the people whose indicators are tracked begin to manage the performance on their indicators instead of the performance on their activities. The problems mentioned in relation to CSFs, KPIs, and the BSC can be divided into five categories:

1. *Behavioral displacement.* The performance management system encourages behaviors that are not consistent with the organization's strategy and objectives. There are many examples of this. Managers pursue narrow local objectives, at the expense of the objectives of the organization as a whole *(suboptimization)*. On top of this, the priority areas of strategic importance to the organization to target for performance measurement systems may be strongly contested. Also, many outputs are the result of team rather than individual efforts. As a result, if the implicit reward scheme is directed at individuals, suboptimization can arise. There is an inherent trade-off between the beneficial incentive effects of

a formal control mechanism and the dysfunctional consequences of suboptimization. Managers pursue short-term targets at the expense of legitimate long-term objectives *(myopia)*. This is caused by the fact that performance indicators are imperfect reflections of the efficacy of current management because they can indicate the results of managerial endeavor over many years, and they cannot always reflect the future consequences of current managerial actions. The problem is exacerbated by the short-term career perspectives of many workers. Managers emphasize measures of success rather than the underlying objective *(measure fixation)*. If a measure does not fully capture all dimensions of the associated objective, managers may be encouraged to pursue strategies that enhance the reported measure rather than further the associated objective. Finally, management emphasizes phenomena that are quantified in the performance management system at the expense of nonquantifiable aspects of performance *(tunnel vision)*. Most organizations usually hold a large number of diverse objectives and it is often impractical or impossible to identify and track all of these objectives. It is impossible to devise a managerial reward scheme that satisfactorily reflects achievement in more than three or four dimensions. Also, specifically for the public sector, ramifications of public sector services extend well beyond the immediate target of service delivery.

2. *Gamesmanship*. Managers take actions that are intended to improve their performance indicators without producing any positive economic effects for the organization. Managers deliberately manipulate data so that reported behavior differs from actual behavior. For instance, by minimizing the apparent scope for productivity improvements, any reported improvement in one year will result in increased expectations (and targets) for future years. Gaming can come in the form of "creative reporting" and fraud. If excessive reliance is placed on KPIs to control the organization, there is clearly an incentive for managers to manipulate the data under their control to show their organization's performance in the most advantageous light *(misrepresentation)*. Also, managers can adjust their activities in such a way that measurements on irrelevant KPIs lead to satisfactory results. This misrepresentation of results might lead to misallocation of resources and inequitable treatment of staff and clients. Although in possession of all the facts, the manager might systematically misinterpret them and, thereby, send the wrong signals to the superior *(misinterpretation)*. This can be caused because the KPI reporting that is pro-

vided by the financial department is incomprehensible for managers. Also, evaluation of performance measurement activities is often constrained by a lack of understanding of causal links between performance measurement and performance improvement. Finally, top management does not use the BSC consistently and reverts back to discussing financial measures when things go bad *(regression)*. This happens in part due to their ability with financial measures.

3. *Operating delays.* These are caused by administrative and bureaucratic procedures installed to exercise control, like requiring an excessive number of signatures on a requisition form. These delays create frustration with and resistance to the performance management system. A special form of delay, called *inertia,* occurs when there is not enough attention for following up on the results on KPIs. Employees are not given (enough) feedback on their results and action is not taken on lagging results. There are no other control mechanisms in place which support the performance management system, such as human resources systems that reward good results on KPIs, accountability structures that make clear who is responsible for which KPIs, and a regular review of the quality of management in dealing with KPIs. Organizational paralysis is brought about by an excessively rigid system of evaluation, thus inhibiting innovation. This danger arises due to the inevitable delay in designing and putting in place an evaluation scheme and the effort required to change it subsequently.
4. *Negative attitudes.* The performance management system causes negative attitudinal effects like job tension, conflict, frustration, and resistance because managers do not want to feel controlled or think that the performance management system is not effective, sensible, or ethical. Managers object to being evaluated and judged by outsiders or other people in the organization *(clouding the transparency)*. This is called "perceived reduction in autonomy." People object to sharing their knowledge of the processes they have been put in charge of. That is why they object to the KPIs, which make their performance transparent. In addition to this, managers constantly question the relevance of KPIs and also question the economical foundation of the KPI calculations *(beating the system)*. They simply label the management information as "plainly wrong." Managers also state that the KPIs are not an accurate representation of their activities, that targets have been set in the wrong way, or that measuring nonfinancial indicators does not lead to increased profitability or growth. Many

times managers have developed their own sources of information. Also, selecting relevant and valid approaches that are also culturally and politically acceptable in the organization can be highly problematic *(cultural mismatch)*. Cultural barriers can exist, where organizations approach performance measurement based on tradition and the accepted way of doing things. These traditions or embedded cultural norms are formidable barriers to change and can cause many negative feelings.

5. *Structural deficits.* Development methods that work well in some organizations may fail to deliver in apparently similar organizations *(incompatibility)*. However, organizations cannot go from the assumption that implementation can take place with a standard approach, it will stay made to measure for each organization. In addition, the system can be(come) too complex with too many separate measures causing *indicator overload*. In general, people can keep only about seven things in their heads at any one time. This means that having many indicators dilutes the attention people can pay to any single issue or even a small set of issues. Structural deficits can already be created during the implementation phase, when the provision of resources (time, skill, and information) for systematic implementation is resisted from above and below and, consequently, is inadequate for the implementation project *(resource shortage)*. Apart from that, many organizations have a track record of starting and later abandoning initiatives such as the BSC. Many employees may have grown weary of such change efforts.

Many of the problems described above can be seen as "facts of organizational life," which are related to change management, culture, and power.[27] These may be addressed merely by acknowledging these issues and being sensitive to them when designing performance measurement systems, applying techniques that have established theoretical bases together with managerial flair. The problems reflect the natural evolutionary cycle that is at work in the development of theory and practice in the field of performance management systems. In the late 1980s and early 1990s, managers were concerned that they were measuring the wrong things, so they began to explore and then adopt new and alternative measurement frameworks, such as the BSC. Throughout the 1990s, they struggled to implement these measurement frameworks. Now the most advanced organizations appear to be asking the next question in this natural evolutionary cycle: how to use the data provided by the new systems.[28]

IMPORTANCE OF BEHAVIORAL FACTORS

The answer to the question of how to use the data provided by the new performance management system may very well lie with the system users themselves. A common thread through the issues described above seems to be the way a manager views information, uses information, and deals with other people while utilizing information. Management styles, like knowledge, skills, and individual motives and experiences, are important to the use of management information. Several authors state that at the heart of the problem of performance measurement is the human element, and that this element appears to be the "make or break" factor for success.[29] Performance management systems can, therefore, not be designed without taking into account human behavior, and the successful implementation of performance measurement approaches depends on understanding and accommodating the human element in performance measurement.

The fields of study called behavioral accounting and reliance on accounting performance measures (RAPM) concentrate on the behavioral and organizational effects of using accounting information for the performance evaluation of subordinate managers.[30] These also signify the extent to which superiors rely on and emphasize those performance criteria that are qualified in accounting and financial terms and are prespecified as budget targets. RAPM is a substantial departure from the mechanical approach to performance measurement found in traditional management theory. Through RAPM, the issue of the human element receives more attention in literature, although a lot of this attention is still focused on its relationship to the budgeting system.

Personality factors have been mentioned before in the literature as important determinants of management styles and attitudinal reactions to budgeting. For this reason, likely candidates for investigation are personality variables related to individual preferences for risk and uncertainty. Thus, it is well worth exploring individual psychological responses to performance assessment and the nature of the systemic effects created by other formal and informal management control processes, such as reward, planning, training, and information systems. This would require synthesis of two levels of analysis (individual and system) as well as consideration of psychology, organizational behavior, behavioral accounting, and systems theory research.

Performance management systems can incite managers to display counterproductive behavior because managers are often ignored when a new system is set up. For example, the design of most BSCs is predominantly determined by the characteristics of the organization and

its strategy. The characteristics of performance management system users are generally not taken into account, although it would make sense to do so. The way managers handle information and their personalities could very well designate the design of the performance management system.

Special attention should then be paid to the behavioral issues surrounding the use of a performance management system. Unfortunately, there are not many concrete examples in the literature of the importance of the human element to the use of a performance management system. A reason for this lack may be the influence of the widely adopted definition of management control of Anthony.[31] Although Anthony specifically suggested that the study of control should be broadly based in the behavioral sciences, his work showed little evidence of borrowing from behavioral sciences. Consequently, control has popularly taken on the connotation of accounting control and the study of control systems has become overly narrow by remaining focused primarily upon accounting control mechanisms. Another reason may be that many organizations still operate using an oversimplified or incorrect model of human behavior, which has become institutionalized in certain types of measures and measurement systems. These systems have become a signal of competent management and are so widely diffused that firms are reluctant not to use them. However, I think that addressing these behavioral factors is crucial and beneficial for successful implementation and use of performance management systems.

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