

# Statements on

## Management Accounting

Statement Number 4DD  
May 15, 1998

### PRACTICES AND TECHNIQUES:

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Tools and Techniques  
for Implementing Integrated  
Performance Management Systems

**ARTHUR  
ANDERSEN**



In accordance with the charge to the Management Accounting Practices (MAP) Committee to issue statements on management accounting principles and practices, Statements on Management Accounting are promulgated to reflect official positions of the Institute of Management Accountants (IMA). The work of the MAP Committee is based on a framework for management accounting, whose principal categories are:

1. Objectives
2. Terminology
3. Concepts
4. Practices and Techniques
5. Management of Accounting Activities

Statement on Management Accounting

Statement No. 4DD

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Practices and Techniques:  
Tools and Techniques for  
Implementing Integrated  
Performance Management Systems

*Institute of Management Accountants*  
*Arthur Andersen LLP*

*Published by*  
Institute of Management Accountants  
10 Paragon Drive  
Montvale, NJ 07645-1760

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IMA Publication Number 98332  
ISBN 0-86641-269-7

## ACKNOWLEDGMENTS

Statement 4DD, "Tools and Techniques for Implementing Integrated Performance Management Systems," was approved for issuance as a Statement on Management Accounting by the Management Accounting Committee (MAC) of the Institute of Management Accountants (IMA). IMA appreciates the collaborative efforts of the Cost Management Competency Center at Arthur Andersen LLP and the work of Dr. C. J. McNair, CMA, of Babson College, who drafted the manuscript.

Special thanks go to Randolph Holst, CMA, Knowledge Manager at Arthur Andersen, for his continuing oversight during the development of the Statement. IMA also thanks the members of the Management Accounting Committee for their contributions to this effort.

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## I. RATIONALE

- 1 Measurement is at the heart of the organizational process. What is measured becomes visible, what is rewarded gets done. Measurements define the playing field for organizational members, signaling how well the firm is playing the competitive game and linking past, present, and future actions into a cohesive whole. A firm's values, strategies, and progress are all reflected in what it chooses to measure and how those measures are used to influence behavior.
- 2 The global market and its rapid pace of change have increased the demand on measurement systems in modern corporations. The "command and control" function (previously served by performance measurement systems) has been transformed into a need to "predict and prepare" the organization to meet the next challenge and to create the next opportunity. Changes to the business context are also changing the nature of measurement. Process management emphasizing value and service to the customer is replacing traditional vertical and functional structures. Decision-making is increasingly being moved lower in the organization; self-directed work teams rather than individual managers now make decisions. Virtual corporate structures are creating the need to manage and measure performance across the value chain.<sup>1</sup> Each of these shifts has implications for the performance management system and its ability to effectively serve the organization and its stakeholders.
- 3 Since the key stakeholder in modern business is the customer, customer requirements have to play a pivotal role in defining the measurements used by an organization. Business processes should be designed to meet customer requirements, and performance measurements should be selected based on those requirements. As

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<sup>1</sup> John Shank and V. Govindarajan describe the value chain for any firm as the value-creating activities, from basic raw material sources and component suppliers through to the ultimate end-use product delivered into the final consumer's hands.

customer requirements filter through the organization the performance measures developed at the process and subprocess levels should reflect the customer's perspective and should also ensure high levels of customer satisfaction.

- 4 The performance management system must satisfy the following important objectives: measure performance against key customer requirements, make strategic objectives clear, focus on core processes, focus on critical variables, signal where performance is headed, identify which critical factors require attention, and provide an unambiguous basis for assessing and rewarding performance.

## II. SCOPE

- 5 This Statement on Management Accounting (SMA) has been written to facilitate the process of designing and implementing an integrated performance management system (I-PMS). This structured approach is founded on the principles of participatory management. The methods and principles presented in this SMA supplement the Institute of Management Accountants' SMA 4U, "Developing Comprehensive Performance Indicators," which describes the series of steps an organization would take to implement comprehensive performance indicators.
- 6 The objective of this SMA is to detail key phases in implementing an I-PMS. This Statement includes tools and techniques that can facilitate these efforts and cites some common key success factors to guide the process, as well as common pitfalls. Deployment of strategy is the underlying focus and assumption for these recommendations.
- 7 The discussion assumes an organization with some experience in developing and using performance measurement practices. It emphasizes issues of interest to organizations seeking to introduce new performance indicator concepts, as well as to those aspiring to integrate and improve existing performance management systems.

- 8 The information in this SMA will help management accountants and others:
- comprehend the basic issues in designing and implementing effective, customer-driven performance management systems;
  - discern the pitfalls and key success factors in implementation;
  - understand the tools and techniques that can be used to implement integrated performance management systems;
  - appreciate their roles and responsibilities in the new performance management process; and
  - broaden employee awareness and obtain their buy-in for the new performance management system.

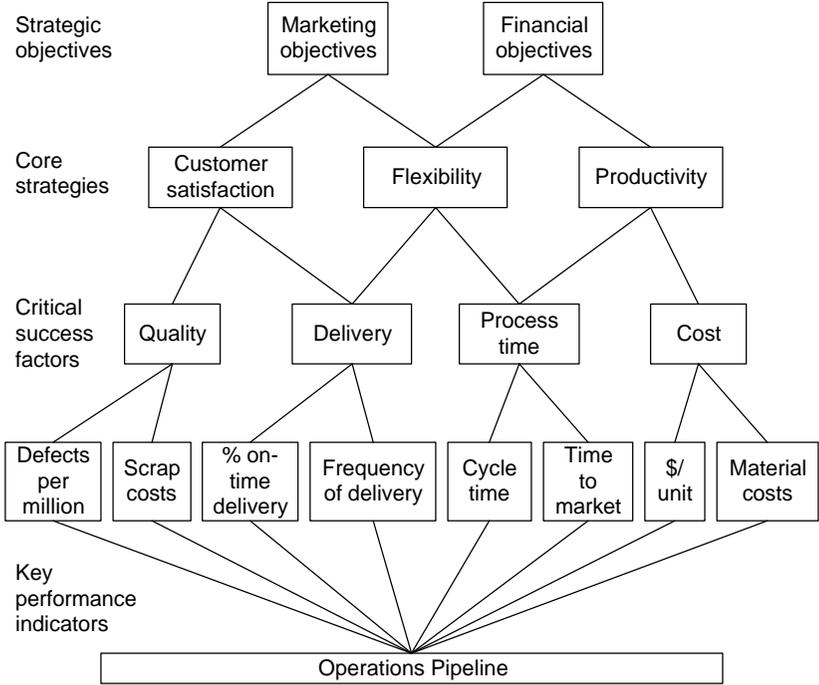
### III. PERFORMANCE MANAGEMENT OVERVIEW

- 9 Performance management provides a systematic link between organizational strategy, resources, and processes. It is a comprehensive management process framing the continuous improvement journey, by ensuring that everyone understands where the organization is and where it needs to go to meet stakeholder needs. Performance measurement is an integral part of performance management, but it is not enough simply to measure. Performance measurement in isolation is incomplete.
- 10 Traditional approaches to performance measurement fail for several basic reasons. First, traditional output measures alone are incomplete as management tools. They fail to tell executives how to improve. Second, traditional methods of performance measurement often do not help identify or increase understanding of the core issues driving current performance. Third, in most cases, these measures tend to be retrospective rather than proactive. While knowing the score is undoubtedly important, it would be better to be able to change a poor outcome. Finally, traditional methods of performance measurement review results instead of causes for those results.
- 11 These acknowledged weaknesses in traditional performance measurement are driving organizations to implement performance

management systems. This implementation brings several major benefits. First, a performance management system helps management deploy and institutionalize its strategy. Second, a performance management system provides focus for, and measures the success of, reengineering or total quality management (TQM) efforts. Third, a well-designed I-PMS helps coordinate efforts across other key management processes by providing a well-defined set of objectives that are cross-functional and process driven. Fourth, a performance management system provides a link between the efforts it measures and the achievements it rewards. Finally, an effective integrated performance management system helps an organization gain a competitive advantage by keeping everyone, at any level or in any job, focused on gaining and maintaining a core competence.

- 12 An I-PMS can be envisioned as an enterprise wide management system that links strategic objectives, core business strategies, critical success factors, and key performance indicators. An I-PMS is an ongoing process that focuses priorities on results, integrates measurement, facilitates analysis and action, encourages continuous improvement, and defines and reinforces accountability. Moving beyond traditional financial and productivity measures, an I-PMS emphasizes the core dimensions of performance as defined by strategy requirements. It also assists financial management by providing cost indicators as reliable estimators of downstream financial performance.
- 13 As suggested in Exhibit 1, integrated performance management systems rely on a comprehensive, integrated set of key performance indicators (KPIs) that manage performance throughout and across all levels of an organization. By integrating financial and nonfinancial performance measures, an I-PMS provides management with the leading indicators and timely feedback required to identify opportunities, as well as to take corrective action when problems arise. It also provides an unambiguous communication channel within the organization that facilitates effective action at all levels and functions.

Exhibit 1. Integrating Financial and Nonfinancial Performance Measures



Source: Adapted from Lynch and Cross, 1991.

- 14 Performance measures should be accessible to every member of the process or production team, thereby promoting ownership and improving motivation. By providing a balanced mix of measures, an I-PMS reduces organizational myopia and gamesmanship. The focus is on promoting an environment of continuous improvement by involving all members of the organization.
- 15 Individual organizations should develop their own unique set of performance indicators that reflect their strategy, structure, and needs. While no one right way to measure is applicable in all settings, for many organizations the core performance indicators provide information on environmental indicators, market/customer indicators,

competitor indicators, internal business process performance indicators, human resource indicators, and financial indicators.

- 16 An I-PMS should be simple in design, containing only those measures needed to direct attention and action. For example, at General Electric (GE), performance indicators are linked directly to a specific strategic objective as illustrated in Exhibit 2. A key shareholder concern, profitability, is measured by residual income. Personnel development, essential to GE's long-term growth, is captured by the measure "inventory of promotable people." Measurement at GE provides the vital link between current and future performance.

Exhibit 2. GE Performance Measures

<u>Goals</u>	<u>Performance Indicators</u>
Profitability	Residual income
Market position	Market share
Productivity	Output
Product leadership	Competitive standing
Personnel development	Inventory of promotable people
Employee attitudes	Percent of satisfied employees

- 17 An effective I-PMS should "make visible" the primary drivers of superior performance. It should focus attention on those critical activities that, if done well, will lead to a sustainable competitive advantage and long-term growth.
- 18 Some of the best companies in the world cite their I-PMS as one of the key drivers of their success. AT&T, BellSouth, Bristol-Myers Squibb, Dun & Bradstreet, DuPont, Emerson Electric, General Electric, Hewlett-Packard, Johnson & Johnson, Merck, Motorola, Pepsico, Wal-Mart, and Xerox are just a few of the organizations that are using an I-PMS to achieve superior performance.

#### IV. THE ROLE OF THE MANAGEMENT ACCOUNTANT

- 19 The implementation of an I-PMS requires the commitment of senior management as well as the support and involvement of individuals

from all areas of the organization, including accounting, marketing, product and process development, procurement, operations, distribution, sales, service, and information systems. The management accountant should play an active role in the design and implementation of the I-PMS. Specific ways the management accountant may be involved in the implementation and downstream maintenance of the I-PMS include:

- identifying the need for an integrated performance management system and educating others about that need;
- working with the I-PMS champion or team in assessing the performance of the current measurement system against the organization's critical success factors;
- assisting in developing the performance indicator architecture;
- reviewing and assessing current financial measures and reports for consistency and compatibility with overall I-PMS design, structure, and objectives;
- analyzing the potential behavioral impact of the performance indicators;
- developing methods for ensuring the integrity of the data used by the system;
- supporting the implementation by developing training and education programs;
- participating in planning and completing the conversion to the new system;
- participating in reevaluating the performance evaluation and the reward system; and
- identifying and implementing methods to ensure continual improvement of performance and the I-PMS that tracks it.

20 As part of the management team, management accountants should bring their unique talents, experience, and perspective to the challenging task of implementing a new performance management approach.

## V. PHASES IN IMPLEMENTING INTEGRATED PERFORMANCE MANAGEMENT SYSTEMS

- 21 The design and implementation of an I-PMS typically follows a three-phase approach as illustrated in Exhibit 3. Specific steps need to be completed during each of these phases.

Exhibit 3. I-PMS Implementation Phases

<i>Phases</i>	<i>Steps</i>
Conceptual design	<ul style="list-style-type: none"> <li>Ensuring senior management support and commitment</li> <li>Creating implementation teams</li> <li>Understanding the organization's goals and strategies</li> <li>Developing a draft performance model</li> <li>Defining critical success factors</li> <li>Defining key performance indicators</li> <li>Finalizing the integrated business performance model</li> <li>Planning KPI system design and implementation</li> </ul>
Detailed design/implementation	<ul style="list-style-type: none"> <li>Developing scoreboards</li> <li>Integrating with corporate information systems</li> <li>Identifying training and education requirements</li> <li>Developing an implementation plan</li> <li>Carrying out cost/benefit analysis</li> <li>Establishing the underlying technology</li> <li>Converting to the new system</li> </ul>
Ongoing support	<ul style="list-style-type: none"> <li>Ensuring continual improvement</li> </ul>

- 22 The *conceptual design* phase focuses on understanding the way the organization currently operates, and develops a shared vision of the way it intends to operate in the future. This phase uses modeling tools to develop consensus and assess the gaps between “as is” and “to be” environments.
- 23 The *detailed design/implementation* phase includes efforts to flesh out the details of the I-PMS design, architecture, and technology, as well as the issues surrounding full-scale implementation. Activities conducted during this phase should include the implementation of high-visibility, high-return pilot projects, training and education, change management, and, finally, system conversion.

- 24 The *ongoing support* phase focuses on realizing the full benefits of implementation by supporting and fine-tuning the newly changed environment, as well as facilitating continuous improvement in systems and performance.

## VI. TOOLS AND TECHNIQUES FOR IMPLEMENTATION

- 25 The implementation of performance management systems has been formalized by leading organizations. These firms use an integrated, systematic approach reflected in the following tools and techniques.

### *Conceptual Design Phase*

- 26 The main objective of the *conceptual design* phase is to identify a preliminary set of KPIs for each operating unit or organizational subunit being included in the performance management effort. To ensure that this effort yields effective measures for all users, the conceptual design process should take concurrent *top-down* and *bottom-up* approaches.
- 27 During the *top-down* analysis the focus is on becoming thoroughly familiar with the firm and its marketplace. Based on a review of existing documents and reports, as well as interviews with key individuals in the various organizational subunits, the *top-down* analysis ensures that the I-PMS addresses the customer perspective and the strategic issues confronting the organization.
- 28 During the *bottom-up* design efforts, attention shifts to identifying core activities and drivers that define operations. Process focused, the *bottom-up* analysis seeks to understand what factors affect cost and what major problems in the process or organization may act as barriers to meeting performance objectives. The final conceptual design for the I-PMS must combine these two organizational perspectives to ensure development of a consistent, unambiguous, strategically oriented set of measures.
- 29 Specifically, measures need to be developed matching decision-making requirements at the lowest level of the organization with

decision-making requirements in the corporate boardroom. This ensures the I-PMS addresses needs throughout the organization, aligns all performance measures, and achieves strategic and operational business objectives.

- 30 The *conceptual design* phase has eight primary steps. They are:
- ensuring senior management support and commitment;
  - creating implementation teams;
  - understanding the organization's goals and strategies;
  - developing a draft performance model;
  - defining the critical success factors;
  - defining the key performance indicators;
  - finalizing the integrated performance model; and
  - planning KPI system design and implementation.

#### Ensuring Senior Management Support and Commitment

- 31 Senior management can often exhibit significant reservations about implementing an I-PMS. The reasons for this resistance include: (1) they may be very familiar and comfortable with deeply entrenched measurement systems; (2) they are unsure how new measures will affect the actions and behavior of subordinates; (3) they know how to tie existing measures to overall financial performance to ensure that stakeholder expectations are met; and (4) existing measures provide time-tested, understandable signals of problems and opportunities within the organization.
- 32 A new performance management system cannot succeed without senior management support and commitment. To ensure this vital support, organizations can employ a technique known as the Awareness, Buy-in, Ownership (ABO) Continuum<sup>2</sup> to gauge the level of support and commitment among senior managers.
- 33 As illustrated in Exhibit 4, the first step in the ABO Continuum, *awareness*, occurs when executives show interest in the initiative and seek to gather more information about its implementation

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<sup>2</sup> The ABO Continuum is a term coined by Arthur Andersen and should not be used without the company's knowledge and appropriate attribution to the original source.

and potential benefits. During the *buy-in* stage, the executives begin to commit time and resources to the project, using performance measurement concepts in daily activities and actively and visibly supporting the I-PMS effort. Finally, when executives take *ownership* of the I-PMS, they take responsibility for the success of the performance measurement initiative and become role models in the process.

Exhibit 4. The ABO Continuum

<u><i>Awareness</i></u>	<u><i>Buy-in</i></u>	<u><i>Ownership</i></u>
<ul style="list-style-type: none"> <li>• Seeks to learn about performance measurement</li> <li>• Commits time to understand</li> <li>• Understands performance measurement concepts</li> <li>• Is passively supportive of performance measurement efforts</li> </ul>	<ul style="list-style-type: none"> <li>• Seeks guidance to act on performance measurement issues</li> <li>• Commits time and resources to be involved</li> <li>• Uses performance measurement concepts</li> <li>• Is actively supportive of performance measurement efforts</li> </ul>	<ul style="list-style-type: none"> <li>• Seeks and assumes responsibility for performance measurement issues</li> <li>• Recruits others to be involved</li> <li>• Applies and teaches performance measurement concepts</li> <li>• Initiates performance measurement efforts</li> </ul>

Source: Vital Signs, Steven M. Hronec

34 The ABO Continuum operationalizes the fuzzy concept of management commitment by assessing current levels of senior management commitment and by asking, “What steps need to be taken to move them to ownership?”

#### Creating Implementation Teams

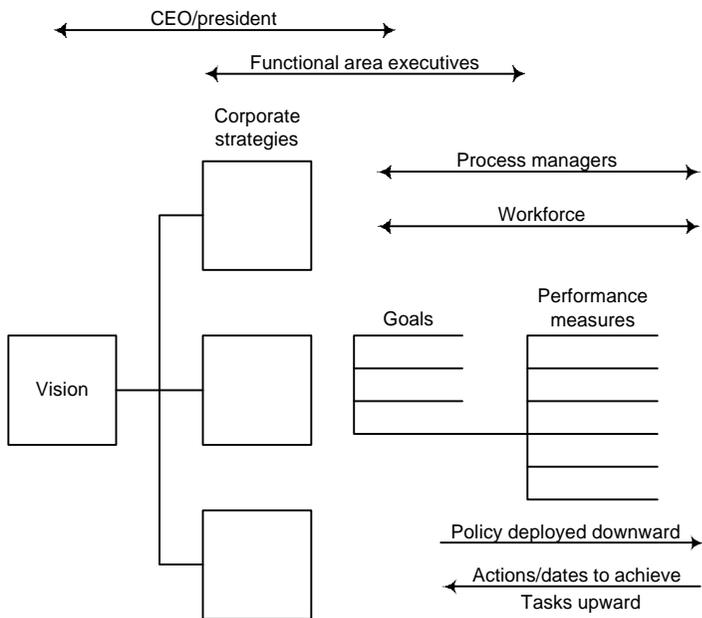
35 In structuring an I-PMS project, an overall steering team and an implementation design team for each operating unit need to be created. The steering team should be made up of the senior management of the organization and should include the chief executive officer, chief financial officer, and functional area executives. One steering team member should be selected as the leader of the team.

- 36 The steering team is responsible for leading and coordinating the effort throughout the organization. Team members must revisit and/or develop the organization's vision and strategy, identify performance goals and measures, and create awareness, buy-in, and ownership of the new performance measurement system among all employees.
- 37 The effective design and implementation of the I-PMS also calls for the use of a dedicated design team. This team's objective is to deliver a company-wide I-PMS in a timely manner. The criteria the design team should use to guide its efforts include ensuring that the final measurements meet company objectives and reflect current strategies and that the measurements seamlessly integrate both the *top-down* and *bottom-up* perspectives.
- 38 The design team should not be overly large, no more than three to five people. The composition of the team should be based on a careful assessment of where performance information is most needed to ensure performance improvements. For instance, at Labatt Breweries of Canada, the design team included a marketing manager, a sales manager, a finance manager, and two manufacturing managers. In a company where profitability was directly driven by market share, ensuring that the right beer was available in the right markets at the right times was critical. Marketing defined the critical success factors for the company; manufacturing ensured effective execution of the defined plans. The I-PMS had to serve both these management groups if company objectives for market share and profitability improvements were to be achieved.
- 39 Tasks that are the direct responsibility of the design team include:
- interviewing key personnel/resources;
  - documenting factors that affect an area's overall performance;
  - designing specific performance measures to meet unit objectives and reflect performance drivers for the area;
  - performing detailed cost and problem analysis;
  - developing business models to help define KPIs;

- writing user procedures;
- developing a communication plan for the implementation;
- training/educating users; and
- supporting the system after implementation.

40 Soliciting the active involvement of the organization's key process or production teams through each phase of the implementation process will improve the design of the I-PMS. Participation will also promote ownership and commitment to the finished product at all levels and areas. The ideal scenario is to have the process or production teams design and install the performance management system for their area with the support and guidance of the steering team and design team. Exhibit 5 shows some of the activities that need to be performed and who is responsible for each activity in the implementation process.

Exhibit 5. Division of Responsibility in I-PMS Implementation Process



Source: Vital Signs, Steven M. Hronec

- 41 The conceptual designs for all levels and areas affected by the I-PMS initiative should be developed concurrently. A concurrent approach enables the design team to identify the unique information needs at each level of the organization and understand their interrelationships. It also enables personnel at each level to provide input on the performance indicators for the levels both above and below them, as well as for their own operating unit.
- 42 It is imperative that people from all levels of the organization be actively involved in each phase of the process. The personnel who work in each area best understand the factors and problems that affect performance in their work cell or area. They will determine whether the full benefit of the effort is realized by how completely they adopt the new system.
- 43 Participation and communication help ensure consistency and integration of the measurements throughout the organization. They also aid in increasing the understanding of what the measurements mean, how they will be used, and how they link to support the attainment/achievement of organizational goals. This approach can reduce the uncertainty and risk people feel as the new system is implemented.

#### Understanding the Organization's Goals and Strategies

- 44 Before new performance measurements can be seriously considered, the design team must thoroughly understand the business and the marketplace. Both success factors that affect the majority of operating units, such as process quality, and the unique factors that affect only a single unit, such as availability of a key material or downtime of a critical machine, must be considered in the analysis.
- 45 Integrating these diverse measures into an effective, elegant I-PMS design can be facilitated by careful review and analysis of the relationships among strategic objectives, core business strategies, critical success factors, and key performance indicators. The following elements are potential sources of information for identifying the strategic objectives and critical success factors that are the foundation of an integrated business performance model:

- vision and mission statements;
  - strategic objectives;
  - customer requirements; and
  - compensation and reward systems.
- 46 Ensuring that these deployment mechanisms are consistent across functions and processes, as well as from one management level to the next, is critical if the I-PMS is to provide the desired benefits. In the following discussion, these vital components are developed in more depth.

### *Vision Statements*

- 47 A vision statement describes the basic goals, characteristics, and philosophies that will shape the strategic direction of the organization. The vision guides future improvement actions and aids in isolating opportunities to enhance the firm's competitive advantage. An effective vision statement also aligns actions throughout the organization by providing a clear signal to guide decisions and effort on a daily basis.
- 48 A vision statement is important because it helps employees focus their efforts on achieving the overall goals of the organization. It also improves coordination and communication with suppliers and customers, assuring that these stakeholders work with the organization. The vision defines what the organization is about, why it exists, in a way that all stakeholders can understand.
- 49 A well-defined vision statement has three major components. First, it contains a focused concept or value-creation promise that people can visualize. Second, it must have a sense of noble purpose. The vision statement must emphasize something that is worth doing, something that can create value for stakeholders, make a defined contribution to achieving stakeholder goals, and help the organization win people's commitment to the attainment of its strategic goals. Finally, an effective vision statement should have a plausible chance of success. The vision must represent something that people can realistically expect to achieve. The following illustrates examples of good vision statements:

- Starbucks: *“to be the premier purveyor of the finest coffee in the world.”*
- Microsoft: *“to create software that empowers the users of personal computers.”*

50 Each of these vision statements is an accurate reflection of the primary driving force of excellence within these unique organizations. They communicate quickly and precisely what the firm is about and how it is seeking to provide value to its customers. These are effective vision statements because they so clearly capture the essence of the organization in terms all stakeholders understand. Achieving the vision, though, requires a more elaborate definition of the how, what, who, where, and why questions that create a framework for action. The mission statement provides these answers.

### *Mission Statements*

51 An effective mission statement includes a clear statement about the specific customers’ needs the organization is attempting to meet—not what products or services are offered. To accomplish this goal, the mission statement has to define unambiguously who the organization’s primary customers are as well as how the organization plans to go about its business (e.g., what its primary technologies are). The mission statements used by Johnson & Johnson and Southwest Airlines Company are good examples of these points.

*“Johnson & Johnson is the world’s largest and most comprehensive manufacturer of health care products serving the consumer, pharmaceutical, and professional markets.”*

*“Southwest Airlines Company is the nation’s low-fare, high customer satisfaction airline. We primarily serve short-haul city pairs, providing single-class air transportation which targets the business commuter as well as leisure travelers.”*

- 52 There are several criteria for evaluating the effectiveness of a mission statement. First, the mission statement should be a cultural reflection of the values, beliefs, and philosophy of the organization. It should reflect who the organization is, not what it does. Second, the mission statement needs to be clear, brief, and understandable to all employees. If people do not understand the mission, they cannot use it to guide their activities and decisions.
- 53 Next, the mission statement should specify clearly what business the organization is in. It should leave no one in doubt about the organization's focus relating to its markets, customers, and products. Fourth, the mission statement should motivate the organization, serving as a source of energy as well as a rallying point. Finally, the mission statement should reflect the distinctive competence of the organization. It must set the organization apart from its competitors in ways the customer recognizes and values, if strategic objectives are to be met. When the overall mission of an organization is well defined along each of these dimensions, the organization can proceed to evaluate performance in a meaningful way.

### *Strategic Objectives*

- 54 At the heart of the performance management process is a clear, unambiguous set of strategic objectives that shape current and future actions and results. These objectives should reflect critical success factors along the primary dimensions of the competitive puzzle: people, customers, quality, financial performance, operation, products, and marketing as well as the organization's mission and vision.
- 55 Examples of strategic objectives for each of these primary dimensions of performance are illustrated on the next page.

Potential Strategic Objectives

Potential Strategic Objectives

People	<ul style="list-style-type: none"><li>• Develop a highly skilled workforce</li><li>• Minimize employee turnover</li></ul>
Customers	<ul style="list-style-type: none"><li>• Increase customer satisfaction</li><li>• Minimize lost customers</li><li>• Increase customer base</li></ul>
Quality	<ul style="list-style-type: none"><li>• Quality the first time, every time</li><li>• Minimize product returns</li></ul>
Financial performance	<ul style="list-style-type: none"><li>• Minimize product cost</li><li>• Maximize profitability</li><li>• Lead industry in sales per employee</li></ul>
Operations	<ul style="list-style-type: none"><li>• Minimize product lead time</li><li>• Minimize inventory levels</li><li>• Reduce the number of setups</li></ul>
Products	<ul style="list-style-type: none"><li>• Be the recognized market leader in new products</li><li>• Reduce the product development cycle</li></ul>

56 Each of these strategic objectives will direct employee attention to different elements of the business and define unique ways for enhancing performance. Bundled in a consistent way, they can help integrate the diverse activities of the organization into a powerful, focused, competitive force.

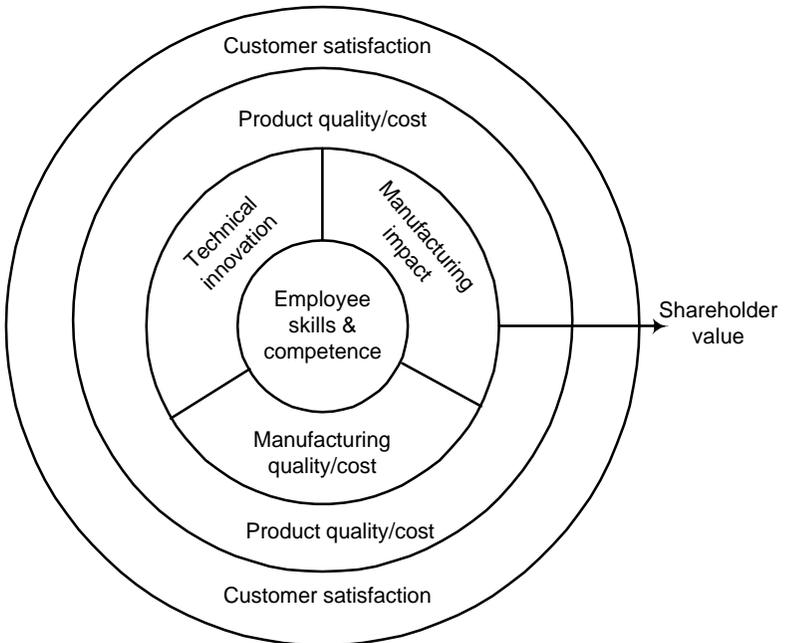
57 The strategic objectives of McDonald's illustrate these linkages. McDonald's strategic objectives are defined for the value it delivers to customers, the definition of quality service, the location where this value is delivered, the criteria for the foods offered, the goals for the customer experience, and the focus of the management process. Specifically, McDonald's strategic objectives are:

- Low prices and a quality experience;
- Fast, accurate, friendly, and hassle-free;
- Wherever customers live, work, shop, or gather;
- Good, hot, and easy to eat;
- Relationships and experiences with McDonald's that exceed customer expectations; and

- Ongoing performance improvement through creative leadership and management processes.

58 Harvard Professor Robert Eccles developed a framework for assessing the fit between a company's vision, mission, and defined strategic objectives. Driven by a recognition that employee skills and competence are the primary defining and constraining resource, his framework emphasizes the relationship between the organization's capabilities and its ability to create shareholder value by providing products and services that meet customer requirements. Using a generic business model based on this framework, as illustrated in Exhibit 6, can help managers focus on the key elements of the business. For each element in the model, organizations should ask, "How do we do that here, and what are the important aspects of performance?"

Exhibit 6. A Generic Business Model



- 59 In addition to the review of the firm's vision and mission statements and strategic objectives, the design team should conduct a series of interviews with key unit and subunit managers, engineers, supervisors, and other employees. A performance measurement questionnaire should be developed and used to understand the importance of various areas in the company and the applicability of possible performance measures. The questionnaire should be completed by all affected employees and the results compiled by the design team. The intent of this tool is to involve managers and functional employees in the design process and to use their input to create effective, actionable, and informative performance measures appropriate to the needs of I-PMS users.
- 60 The design of this performance measurement questionnaire should include such elements as:
- *general data*—classifies the respondents;
  - *production improvement*—focuses on competitive priorities and the current performance measurement system related to the core activity of the organization or department (for instance, manufacturing); and
  - *personal performance measures*—focuses on the respondents' perceptions of the most important measures for assessing individual performance. These measures should be judged in each of five time frames: daily, weekly, monthly, quarterly, and annually. Space should be included for general comments, so respondents can voice their feelings and opinions about the process.
- 61 The questionnaire can be supplemented by facilitated group sessions. These sessions can be used to debrief the survey results, seek clarification on specific issues and measures, and judge the overall reaction to the survey within the organization.

### *Customer Requirements*

- 62 Addressing the customer perspective is a critical part of understanding the goals and strategies of the organization. To

identify customers' key service and product requirements and to gauge current performance against these needs, customer interviews should be conducted to identify the following:

- performance requirements;
- critical success factors;
- relative weight/importance of various performance criteria;
- a performance baseline; and
- opportunities for improving.

63 Requirements identified during customer interviews typically focus on delivering high-quality products and services on time, and at a competitive cost, while maintaining a flexible organization responsive to changing customer needs.

64 For example, during the implementation of the I-PMS at Edmonton Telephone, their design team initiated an assessment of stakeholders' needs, focusing specifically on the expectations and requirements of customers. Specific customer needs were categorized on three dimensions: time, quality, and cost implications. The identified needs formed the basis for developing the core entity performance measures used to define the type, number, and focus of measures deployed throughout the organization.

### *Compensation and Reward*

65 Compensation and reward systems should not exist in a vacuum but should be related to the organization's strategy and short-term, medium-term, and long-term goals.

66 An important factor is the strategic role, in particular, the responsibilities of each organizational unit. Once the responsibilities of these units are determined, performance measures can be developed. Performance can be measured for the individual, a division, or the entire organization.

67 Some companies, believing that tying financial compensation to performance is a powerful lever, have established such a linkage. For example, a major American oil company uses its performance

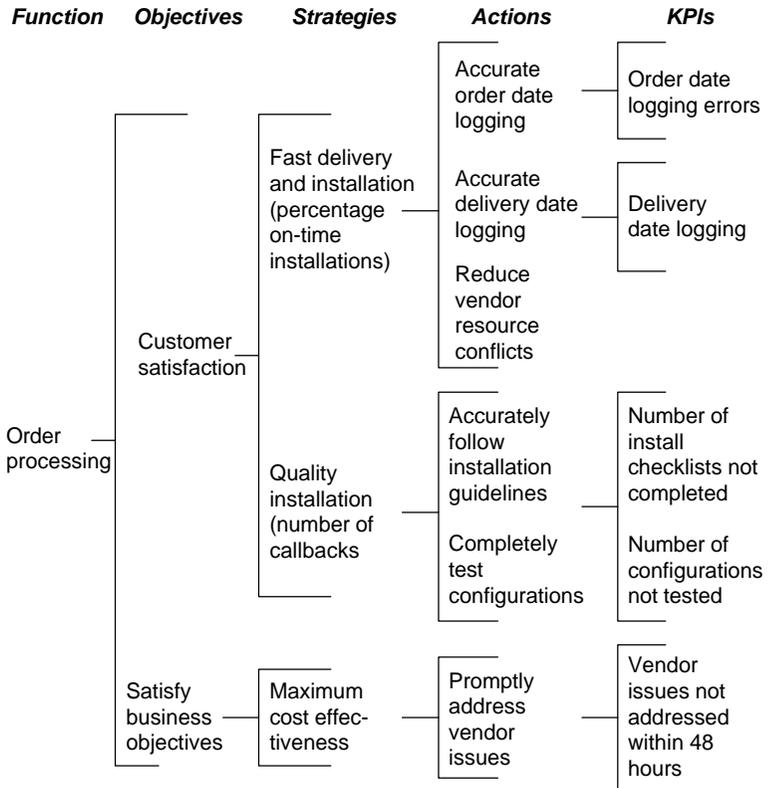
measurement system as the sole basis for computing incentive compensation. The company ties 60 percent of its executive bonuses to their achievement on ambitious targets for a weighted-average of four financial indicators: return on capital, profitability, cash flow, and operating cost. It bases the remaining 40 percent on indicators of customer satisfaction, dealer satisfaction, employee satisfaction, and environmental responsibility.

- 68 As attractive and as powerful as such a linkage is, it nevertheless carries risks. For instance, does the company have the right measures? Does it have valid and reliable data for the selected measures? Could there be unintended or unexpected consequences from the way the targets for the measures are achieved? These are important questions the design team should ask.

#### Developing a Draft Performance Model

- 69 The results of the questionnaires, interviews, and document reviews are combined to create a draft business performance model. A draft model makes the performance initiative come to life and become “real” to the persons using it. Effort should be taken to ensure that the identified measures are unambiguous and that the linkage between measures used at different levels of the organization is clear. An example of a draft model for the order fulfillment process is illustrated in Exhibit 7.

Exhibit 7. Draft Performance Model



70 Both financial and nonfinancial measures should be included in a draft performance model. Reporting and measuring frequencies should be noted as well as who (e.g., what area) is to receive the reports or use the measures. The more complete the draft model, the more effective it will be in communicating the focus and structure of the new performance management system to individuals at all levels of the organization. It is a draft model, though. This fact should be clearly communicated so that people feel free to challenge it and participate in modifying measures that fail to meet their needs.

### Defining the Critical Success Factors

- 71 Critical success factors (CSFs) focus attention on the key dimensions of performance the firm must excel at if it is to achieve its goals and meet customer requirements. Limited in number, CSFs emphasize the activities and processes that will have the most impact on total performance and that will drive accomplishment in supporting areas.
- 72 The emphasis is on the reporting system at the organization's highest levels. This system needs to reflect the relative importance of the different aspects of performance, as identified by the critical factors.
- 73 Typical enterprisewide CSFs include:
- producing products that customers perceive to be of the highest quality;
  - designing new products quickly;
  - keeping the cost of the product or service low; and
  - responding quickly and fully to customer requests.

### Defining the Key Performance Indicators

- 74 KPIs are the quantifiable performance measures that make the critical success factors actionable and understandable. They allow the organization to monitor and communicate performance continuously against desired results. Essential characteristics of KPIs and the questions they suggest include:

#### Characteristics

They are linked to strategic objectives.

The measured results are controllable.

The measures can be acted on.

#### Related Questions

Can the measure be aligned with an objective or specific customer value?

Can results be controlled or significantly influenced under a specific span of control?

Can action be taken to improve performance on the measured dimension?

The KPI can be accurately measured.	Can the desired performance measures be quantified in a meaningful, realistic way?
They are simple and few in number.	Can the measures be explained easily and clearly by employees? Do the measures focus employee attention on key areas?
The measures are credible.	Are the measures resistant to manipulation?
The measures are integrated.	Can the measures be cascaded or linked down through the organization? Are they compatible with related processes/functions?

75 To be effective in coordinating and directing action within the organization, KPIs must reflect a balance between cost, quality, time, or other key strategic categories. Balanced measures provide insurance against dysfunctional behavior by visibly tracking relationships that could be manipulated to reach desired ends. For example, achieving a cost objective can result in impaired quality or delivery unless cost improvements can be compared to their impact on other critical strategic imperatives. An airline's airport operation shows how these issues are played out through a well-balanced set of KPIs. Key dimensions of performance and related measures for this type of operation might be:

<i>KPI</i>	<i>Related Measure</i>
• Timeliness	• On-time departure percentage
• Quality	• Number of lost/misplaced bags
• Cost	• Cost per passenger boarded

76 If only one of these dimensions was measured, it could result in some very undesirable consequences. For instance, an overemphasis on timely departures might cause baggage handlers to rush and ultimately lose or misplace more baggage. Unintentionally, it might mean more passengers with short connection times miss their flights. In both cases, it is likely that costs would ultimately be driven up.

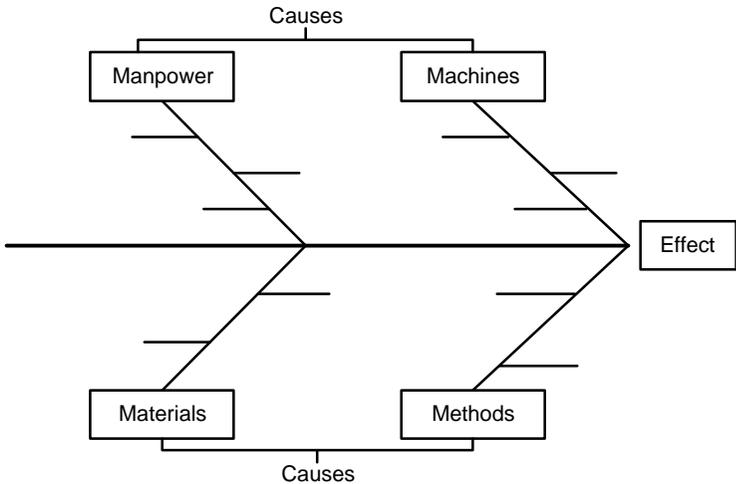
- 77 If, instead, the measures placed an overemphasis on eliminating lost or misplaced baggage, it is quite likely costs would increase and the probability of late departures would increase. Finally, a lack of balance might play out through an overemphasis on customer service and safety. Only by keeping all three measures clearly in sight (visibly linking the interrelationships among the critical success factors) can an organization reduce or eliminate undesirable consequences.
- 78 Balance is not the only issue that needs to be addressed in the development of an effective I-PMS. To achieve its strategic objectives, an organization must focus on identifying the right KPIs as well as on placing the right amount of emphasis on each specific measure. Areas to focus on when defining critical success factors and their corresponding KPIs include:
- *What are the cost drivers in today's business and where are they controlled?* If a company does a poor job identifying actual cost drivers, then it will be very difficult to develop effective KPIs.
  - *Which factors have the biggest impact on cost?* It is imperative that the KPIs target those areas where improvement is needed the most and the resulting impact will be greatest. Some areas that might be explored would be scrap, raw materials, and labor.
  - *What are the major problems in the process or organization that act as barriers to meeting performance objectives?* Problems such as excessive or unplanned machine downtime, absenteeism, and production or process bottlenecks can inhibit or prevent the attainment of strategic objectives.
  - *What things do we have to do correctly to retain our current customers?* Specifically, the organization needs to understand what factors are critical if desired growth objectives are to be met and what factors are really not very important in this regard.
- 79 While many different tools and techniques can be used to gather the information required to answer these questions, several specific

approaches have been found most useful: (1) the Ishikawa cause-and-effect diagram; (2) Pareto diagrams/analysis; and (3) targeted reviews of existing performance measures.

*The Ishikawa Cause-and-Effect Diagram*

- 80 The cause-and-effect diagram illustrated in Exhibit 8 is also known as a fishbone diagram. This diagram was developed to represent the relationship between some effect and all the possible causes influencing it. The effect of the problem is stated on the right side of the chart and the major influences or causes are listed to the left.

Exhibit 8. Ishikawa Cause-and-Effect Diagram



- 81 Cause-and-effect diagrams are drawn to illustrate clearly the various causes affecting a process by sorting out and relating the causes. The major causes might be summarized under four categories referred to as:

*In Manufacturing Plant Floor*

- Manpower
- Machines
- Methods
- Materials

*In Administration*

- People
- Equipment
- Procedures
- Policies

82 Typical of costly categories of root causes are:

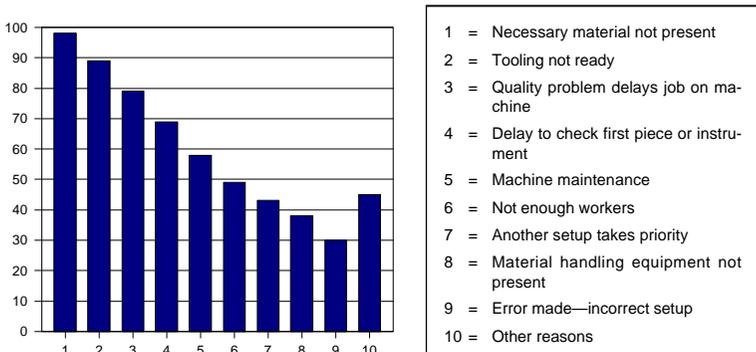
- processes that require sequential processing by many individuals;
- incompatible or redundant systems;
- organizational structures that distance work from its customers;
- unreliable operating capacity with frequent unplanned downtime; and
- lack of training or versatility in the workforce.

83 Once the fishbone diagram is developed and the most likely causes are identified and selected for further analysis, the design team should ask “why” each of the causes is occurring. By asking “why,” the design team can target recurring problems with their recommended KPIs.

### *Pareto Diagrams/Analysis*

84 Designing an effective, elegant performance management system builds from a deep understanding of what needs to go right to meet customer expectations and what things are most likely to go wrong. Where the Ishikawa fishbone identifies the drivers of performance and performance shortfalls, Pareto analysis, illustrated in Exhibit 9, details the frequency of specific problems.

Exhibit 9. Pareto Analysis of Manufacturing Delay



- 85 Specific performance measures should be created to target and eliminate the most common causes of performance shortfalls and problems. Reflecting Pareto's principle, namely that 80 percent of the problems can be traced back to 20 percent of the variables/causes, Pareto analysis aids in the selection of KPIs that will provide the greatest improvement against organizational goals and customer expectations.

### *Review of Existing Performance Measures*

- 86 Another approach for identifying KPIs is to review existing performance measures. This review often reveals key measurables that may not have been identified in the draft model but that play a vital role in tracking some key element of performance. The goal is to understand what is measured currently, why, by whom, and where. These measures should be evaluated to determine if they encourage constructive activity, support management strategy, are controllable within the operating unit, and are easily understood. Measures that are clear, actionable, controllable, and accepted should be identified and considered for inclusion in the draft model.
- 87 The combination of these tools allows the design team to identify and develop KPIs that will move a unit or process rapidly toward its performance goals. Much of the information needed to develop the analysis can come from questionnaires or current operating information (e.g., cost accounting systems, incident logs, and existing performance measures). The objective is to identify factors critical to the success of the organization that may not have surfaced during the *top-down* analysis.

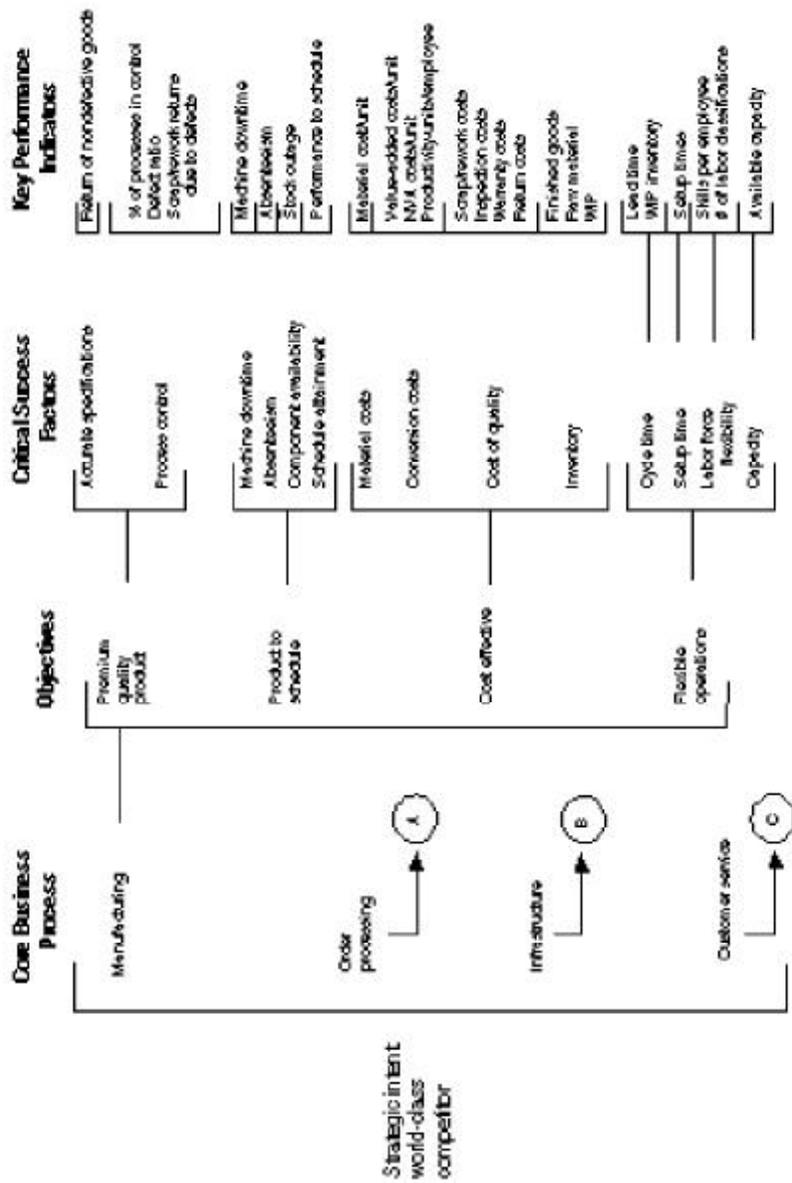
### Finalizing the Integrated Business Performance Model

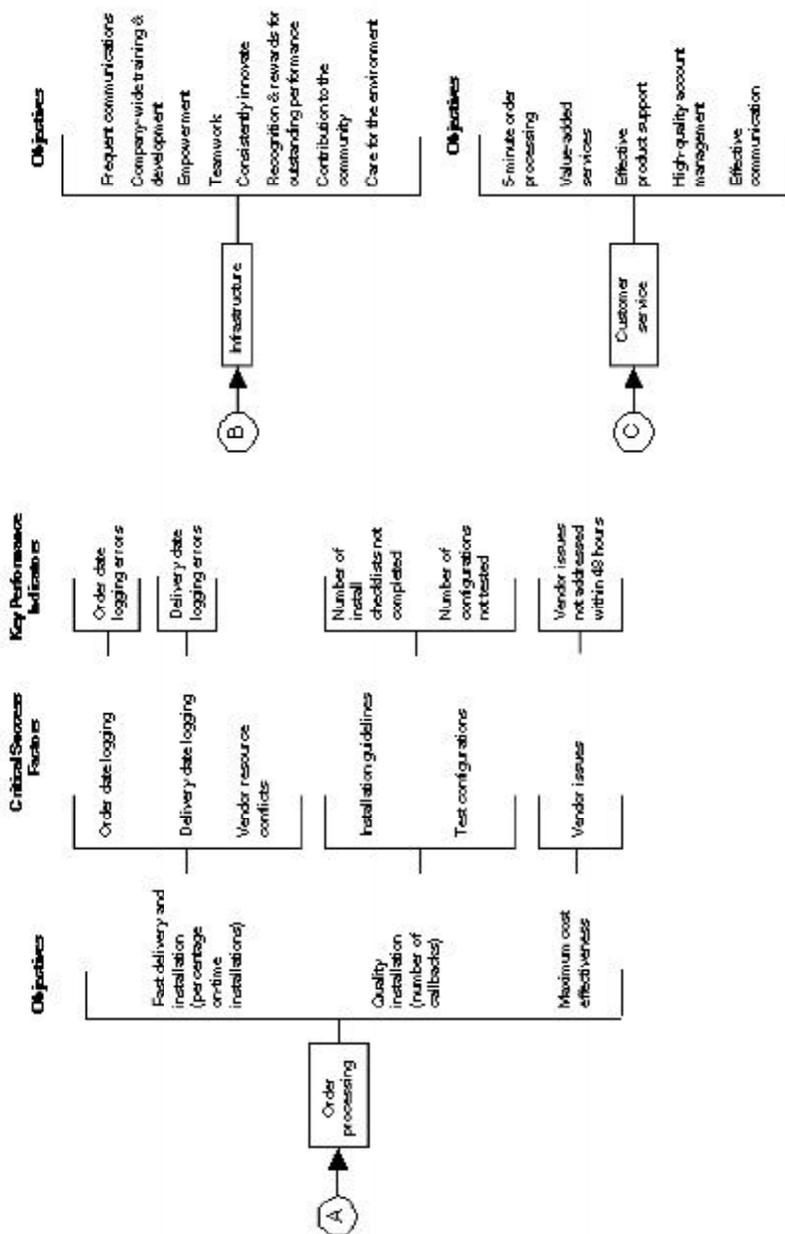
- 88 After reviewing current performance measures and performing the root cause and Pareto analysis, the design team should review the draft business model to identify any issues that may have been overlooked in the earlier design. It is important at this point to develop a systematic review process, in which critical success factors are matched against the KPIs in the draft model to identify overlaps, holes, and ambiguities. A KPI checklist may include details for all

critical success factors, as well as the measures being proposed to track them within each unit or for the organization as a whole. Care should be taken to ensure that measures supply vital information to track and motivate performance measurable against strategic objectives and related critical success factors.

- 89 Having ensured that logical, actionable measures are present for each critical success factor, the design team needs to turn its attention to *integrating* the objectives and information gathered from the *top-down* and *bottom-up* analyses. The draft model should be revised when necessary to reflect high-priority factors to be tracked with focused measures. The integration should deal specifically with the types of measures used at various levels of the organization (financial versus nonfinancial), potential performance baselines (historical average, standards, or best practice benchmarks), and the aggregation of measures both vertically and horizontally to support management analysis and control.
- 90 An integrated business performance model requires a clear definition of the firm's strategic intent. From this intent, the core business processes that will be used to gain the desired performance goals, the objectives they must deliver against, and the related critical success factors and KPIs must be identified. An integrated business performance model for a manufacturing firm is illustrated in Exhibit 10. As the subsequent detail suggests, each core business process is fleshed out, resulting in a comprehensive set of measures that define and coordinate performance across the organization.

Exhibit 1





- 91 The resulting integrated business performance model can be used in a variety of ways, including:
- as a starting point to identify areas to focus on during initial interviews;
  - during subsequent interviews to stimulate discussion and identify factors omitted from the draft model;
  - as a key input to the definition of KPIs by identifying the limited number of critical variables that must be monitored and managed to achieve strategic objectives; and
  - as a framework during the design of the presentation vehicle for the KPIs and to remind end users of the key objectives being addressed as well as the context in which the measures should be interpreted.

#### Planning KPI System Design and Implementation

- 92 After the initial determination of KPIs for each operating unit is completed, KPIs must be analyzed to define their data requirements. The first step is to isolate what data elements are needed to do the required calculations and where these data elements may be available. The design team should investigate where the required data already exists on a current system or if it is being gathered from any existing manually prepared reports. If the required data does not exist, routines for collecting it, including responsible individuals and the time interval for input, need to be developed.
- 93 Controls to ensure data integrity, such as periodic audits, should be added to the design at this point. Examples should be provided illustrating key points and potential areas of misunderstanding. Reconciling the collected data against information on another reporting system can also provide an effective way to catch errors or flaws in the system. The data collection and manipulation procedures developed should clearly identify:
- what needs to be done;
  - who is to perform the task;
  - when it is to be performed; and
  - what tools should be used (such as data logs).

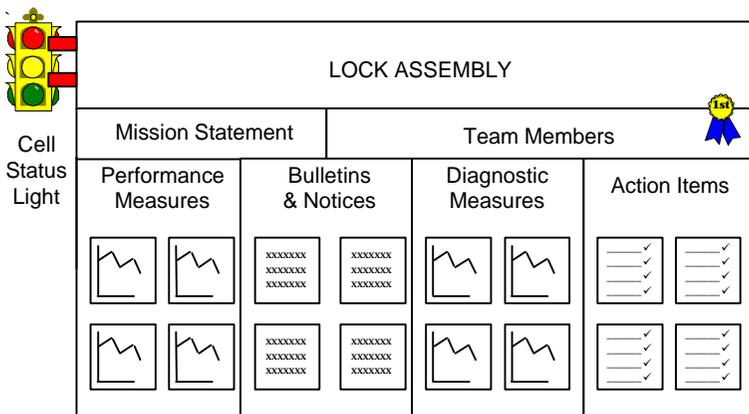
*Detailed Design/Implementation Phase*

94 After a preliminary set of operational KPIs has been identified, the implementation of the I-PMS turns toward the creation of a detailed design. Focused on identifying the specific KPIs that will be implemented at the firm, this phase yields the scoreboard, data collection and manipulation procedures, cost/benefit analysis, key training and education needs, and conversion to the new system. It is often best to address these issues at the cell or work team level before moving up to the process, subplant, and organizational levels. This allows for maximum flexibility and learning with minimal disruption of the organization. The lessons learned and steps undertaken are very similar as the scope of the detailed design widens.

Developing Scoreboards

95 Once the KPIs have been selected, a cell or team scoreboard becomes a useful tool. Scoreboards display information related to the key performance indicators, providing a highly visible, easily interpreted integration of the key measures driving performance in an area. As suggested by Exhibit 11, the scoreboard can also display or include the following items:

Exhibit 11. Cell or Team Scoreboards



*Title.* Each scoreboard should have a heading identifying what cell or team it is measuring.

*Mission statement.* Identifies the function and objectives of the cell or team, how it contributes to the end product or service, and the critical success factors for the area, providing useful information to help team members and others interpret the scoreboard.

*Team roster.* A list of team members can be included to reinforce an atmosphere of teamwork and recognize the members of the team.

*General bulletins and notices.* Posting information on the scoreboard of general interest to team members encourages them to view the board on a daily basis.

*Action items.* A team “to-do” list reinforcing the continuous improvement focus can be a useful addition to the scoreboard format.

*Stop light chart.* A stop light metaphor is frequently used to attract attention to KPIs that are performing unsatisfactorily. This visual technique is based on the principles of management by exception. Performance meeting these goals is considered green, indicating “all systems are go.” An acceptable level of variation from the goal is determined. Performance outside of the green range but within the acceptable level of variation is considered yellow, indicating “caution.” This level is not desirable and indicates the process must be closely monitored. Finally, any performance considered red or “out of control” demands immediate corrective action. The process must be stopped and corrected immediately. Exhibit 12 illustrates an exception report for a subplant that shows this system.

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Exhibit 12. Scoreboard Report

SUMMARY/EXCEPTION REPORT  
SUBPLANT  
WEEK ENDING MM-DD-YY

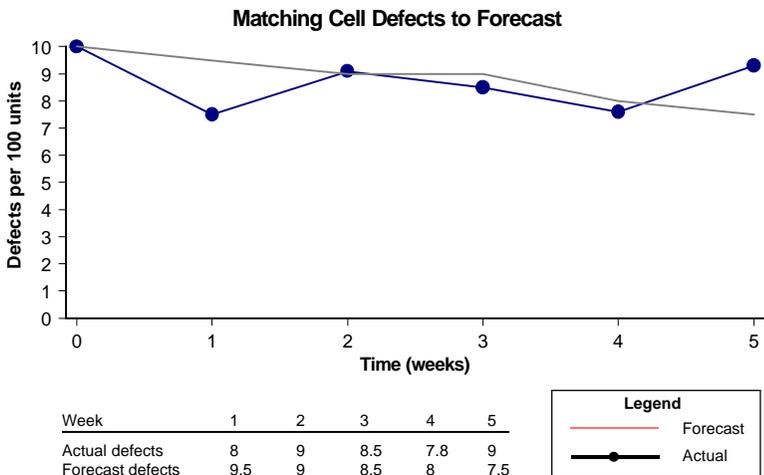
Key Performance Indicators	This Period			Year To Date		
	Goal	Actual	Status	Goal	Actual	Status
Subplant-level KPIs						
Customer satisfaction	95%	82%	RED	95%	96%	Green
Schedule performance	20000	19100	Yellow	19000	19500	Green
On-time delivery	95%	97%	Green	95%	96%	Green
Subplant cost rate	\$0.05	\$0.05	Green	\$0.06	\$0.06	Green
Productivity	850	883	Green	800	823	Green
Lead time	13	12	Green	14	13	Green
No. of scheduled orders/day	10	11	Green	9	10	Green
Percentage of setup	10%	15%	RED	10%	11%	Yellow
Available capacity	20%	18%	RED	20%	21%	Yellow

- 96 A scoreboard serves many useful functions. For instance, it can act as a source of information for the entire cell team as well as for any visitors. The scoreboard also promotes “management by walking around” by providing a visible, succinct, up-to-date status report. The scoreboard encourages participatory management as information is disseminated to the entire team. Teamwork is encouraged as team goals and achievements are stressed. Finally, a well-designed scoreboard broadcasts success stories and provides positive reinforcement of behavior through recognition of outstanding performance.
- 97 An I-PMS operates these scoreboards at several levels. For example, there may be scorecards for each product family as well as a senior management scorecard that summarizes the entire organization. By allowing this change in scope, this feature helps departments, process teams, and individuals focus on the measures and actions for which they are accountable.
- 98 When placing individual KPIs on a scoreboard, measures with close relationships should be grouped, providing for a simultaneous

review of their trend lines. These visual comparisons can lead to improved diagnostic and core problem analysis. While many different methods can be used to post measures, graphical presentation is the preferred approach. Placing a forecast line on the graph creates a visual trace of effectiveness of improvement efforts.

- 99 Exhibit 13 illustrates a graphical format used to display cell level “performance to schedule” for a machining cell in a manufacturing firm.

Exhibit 13. Graphical Format to Display KPIs



- 100 Although higher-level scoreboards are very similar to those designed at the cell or team level, several key differences should be kept in mind:

- data on subplant and plant scoreboards tends to be updated less often than cell or team scoreboards;
- subplant and plant scoreboards are viewed by more people than their cell or team counterparts;
- they are less interactive than on cell or team scoreboards; and

- they serve as public relations tools, as well as performance management tools. It may be important to make the board more attractive to make a positive, professional statement.

101 Organizations can choose from several scorecard approaches. Popular systems currently include Robert Kaplan and David Norton's Balanced Scorecard, the Vital Signs approach from Arthur Andersen, and the Baldrige Award criteria. Many organizations develop their own scoreboard/card approach that may be based on one of these systems or on their own unique perspective.

102 A useful tool to be used in conjunction with scoreboards is an *incident log*, illustrated in Exhibit 14. This tool provides a useful way to record problems that affect cell or team performance. By recording a description of the problem and its resulting solution on the log, cell or team members build a history or knowledge base that can help them identify recurring problems and determine their sources. Going beyond a simple measurement of the problem, incident logs allow the team members to take actions to improve performance by highlighting the root causes for ongoing problems.

Exhibit 14. Incident Log

Incident					
Date	Time	Name	Description	Result	Corrective Action
7/9	10:31	Jim	Hole punches went down due to lack of lubrication	Cell stopped for 3 hours--caused us to work OT	Set up frequent lubrication under PM program
10/19	2:20	Pete	Ran out of sheet metal	Cell stopped for 3 hours--caused daily schedule to be missed	Work with Procurement to eliminate raw material shortages
11/2	9:30	Helen	John absent due to family issue	Rest of team worked 2 hours OT	None

- 103 As the functional and technical designs are being completed, attention focuses on the integration with the organization's information systems, developing an implementation plan, cost/benefit analysis, and the training/education needs of affected individuals and teams. Specific details about each of these areas follow.

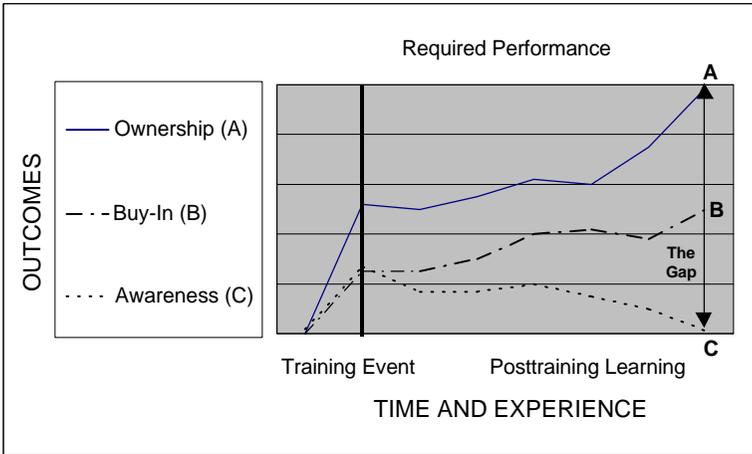
#### Integrating with Organizational Information Systems

- 104 The information used by the I-PMS needs to be integrated with the organization's information/operational systems. If the I-PMS is not directly integrated with the organization's operational systems, the information in the performance measurement system is likely to be inaccurate and out-of-date. Moreover, a great deal of time will be spent reconciling performance numbers with operational numbers, leading to waste and ineffectiveness. The I-PMS should derive its information directly from the organization's operational systems. Enabling technology should support the ability to integrate information across various management areas.

#### Identifying Training and Education Requirements

- 105 New performance measurements can significantly affect the way many jobs are performed. Often employees need new skills to meet the new demands (such as statistical process control, teamwork, communication skills, or data analysis techniques). These changes also affect the compensation and reward process. Training and education efforts can make or break the implementation because they affect individual and team ability to complete new activities successfully. Effective training is based on a set of learning principles that indicate that people typically forget 90 percent of what they learn within 72 hours. Therefore, immediate application is critical. Exhibit 15 illustrates these principles.

Exhibit 15. Training Principles



	Corporate Training	Practice	Support
A	X	X	X
B	X	X	X
C	X	X	X

Source: Vital Signs, Steven M. Hronec

- 106 In the exhibit, the C curve represents traditional training (lectures). Awareness is high during the training event, but the skills and issues are forgotten right after.
- 107 The B curve occurs when companies augment lectures with case studies and practice sessions. The effectiveness of training increases, as illustrated by the increase in performance.
- 108 The A curve represents all of the above training—lectures, case studies, and practice—plus support after the training to enable people to use their new skills immediately on the job. Obviously the A-type training is most costly to implement, but the benefits of the extra effort far outweigh the cost—and therefore, the client organization receives greater value. However, in many situations, the most effective training can be as simple as clearly communicated expectations and timely feedback on performance.

109 The design team should estimate the training/education development costs based on the number of employees requiring training and the number of hours each will need to reach the required skill level.

Developing an Implementation Plan

110 A detailed work plan needs to be developed to guide the implementation process. This plan should identify the tasks, the number of workdays to complete them, and the skill levels of participants. The implementation plan provides the basis for estimating the project costs, delivery timetable, and level of effort needed to meet it. An example of an individual action plan is illustrated in Exhibit 16.

Exhibit 16. Individual Action Plan

**Objective: improvement of the reliability of the welding installations in the car welding management center**

**Person responsible: maintenance supervisor**

Description of the Action	Person Responsible	Action Plan Indication	Month						
			J	F	M	A	M	J	D
Training of the welders. After training, welders will be able to do basic maintenance operations.	Welding management center	Number of trained welders	10	20	30	40	50		100
Installation of catchers to detect failures	Welding management center	% of equipped machines	20	50	70	100			100
Hiring of workers for the maintenance department	Maintenance	Number of workers hired	1	1	1	1	4		4
Use of preassembled spare parts	Maintenance	% of spare parts	5	10	20	30	40	50	50
Total benefits on the indicator (expressed in number of cars/month with unreliable welds)			500	400	300				50

- 111 Gantt charts<sup>3</sup> can be useful visual tools to coordinate the implementation across phases and areas of the organization. Key completion dates and deliverables should be clearly identified, and responsibility for their achievement assigned to key individuals on the team and within the affected area.
- 112 Meeting deadlines is key to keeping the I-PMS implementation on track; missing deadlines can destroy momentum. For this reason, it is important to ensure deadlines are reasonable and contingency plans are developed for handling potential problems as they occur. Finally, communication plays a key role in the effective implementation of an I-PMS.
- 113 It is impossible to overstate the importance of communication throughout the design and implementation of an I-PMS. New measurements bring uncertainty and often meet with resistance. The key to overcoming potential problems is to make sure that everyone is kept apprised of the progress, timetable, objectives, and results of the measurement project. The design team should ensure that communication takes place, assigning responsibility and action as suggested in Exhibit 17.

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<sup>3</sup> A Gantt chart is an activity chart that lays out tasks of a project in sequential order and shows when each must take place. The activities are related to the steps defined in the implementation plan.

Exhibit 17. Example of an I-PMS Communication Plan

Who	What/Why	When	How
Senior managers	Resolve issues and resources	Early in project and then monthly with key influencers	Large presentation to all
	Explain purpose of new performance measurements		
	Present project plan		
	Gain commitment		
	Alleviate concerns		
Supervisory	Explain purpose of new performance measurements	Start of project	Individual meetings
	Present project plan	Every week with a different department each time	Smaller department or team meetings
	Prepare people to participate		
	Answer questions		
	Alleviate concerns	Newsletter, bulletin board, project show-and-tell	Newsletter--monthly Bulletin--weekly Show and tell--first month
	Publicize programs		
Management accountants	Explain purpose of new performance measurements	Early in project schedule	Presentation and education classes
	Educate in performance measurement methods		
	Answer questions and alleviate concerns	Monthly	Department meetings
	Motivation and project process		

### Carrying Out Cost/Benefit Analysis

- 114 Many organizations require cost/benefit analysis for all major projects. While the benefits of an I-PMS may be difficult to quantify, tangible benefits such as reduction of scrap, increased productivity,

and reduced lead time and inventory levels can be estimated. Intangible benefits, such as improved employee morale, better customer service, and improved information flow can be estimated based on the problems (and costs) these improvements will avoid (such as recruitment, severance, training, and grievance costs). The cost/benefit analysis that results should be summarized in a concise format suitable for management review. In some organizations, performance measurement is seen simply as a part of doing business; its cost is justified as part of the ongoing effort to establish best practices.

#### Establishing the Underlying Technology

- 115 Information gathered in the *conceptual design* phase is useful in determining what delivery mechanism (manual, PC-based, or mainframe-based) would be most effective for the I-PMS. Both manual and automated systems are viable alternatives. The final choice should reflect the requirements as well as the constraints of the organization.
- 116 Several factors need to be considered when selecting a specific delivery mechanism. For instance, the breadth and complexity of the KPI data, both in terms of data collection and manipulation, can make manual or PC-based deliveries difficult. Relatedly, the roll-up, drill-down, and variety of “management by exception” needs the system must meet can move the choice away from manual and toward more sophisticated delivery approaches.
- 117 Another concern is the span of control or scope the I-PMS must incorporate. The broader the span, the more likely the need for some form of automated system. In a similar vein, the interactive feature requirements, such as integrated user comments and action plans, influence the choice of delivery mechanism. Integrated comments allow the person or team to explain performance variations. Action plans provide a way to develop and communicate improvement approaches. While improving communication and promoting user support of the system, the downside of these features is that they require a sophisticated delivery mechanism.

- 118 Finally, graphical requirements impact the choice of technology. If the design team feels manually prepared graphs may not be clear enough to read and simple enough to prepare, an automated approach may be chosen. Relatedly, if the underlying data are so complex that an automated solution is required to facilitate clear presentation in an effective, efficient manner, manual systems are an unlikely alternative.
- 119 A popular underlying technology today is the data warehouse, whereby the relevant information is extracted from the operational systems and loaded into a database. This technology makes data access easier, but the information needs to be processed and analyzed to create the required performance measurement reports and analysis.
- 120 Other organizations purchase a fully integrated, enterprise wide system from a single software vendor. The functionality of these systems in such areas as performance measurement and knowledge management is generally limited to executive information systems and report writers. Adapting these systems to changes in the corporate structure or data flows can be complex and time consuming. These systems can do an excellent job of integrating the organization's business processes and supporting financial and cost accounting methods, but they are not generally designed to support a flexible and strategically based performance management I-PMS approach.
- 121 Building an in-house performance measurement system is a route some organizations take. However, these can be expensive and time consuming to develop. They usually do not have the same flexibility and design integrity as systems that have been designed and developed by specialists in the field of performance management. The ongoing cost of the maintenance and support of these kinds of systems can be very high.
- 122 A detailed cost/benefit analysis may prove useful when determining the best delivery mechanism for a specific company or application. It is relatively easy to analyze the difference in cost between manual,

PC-based, and mainframe-based systems. The related benefits are more difficult to quantify but may be captured through estimates of the time required to develop, complete, and interpret information from a manual versus automated system. Relatedly, the cost savings from avoiding waste and reducing nonvalue-added activities can be used to estimate the benefits of one alternative over another. Once a choice is made, attention shifts to conversion to the new system.

### Converting to the New System

- 123 Conversion to a new I-PMS involves a variety of tasks that span the organization and that, if mishandled, can impair the effectiveness of the measurement initiative. Conversion requires the development of documentation and tools to help institutionalize the new system. Tasks making up the conversion phase are:
- finalizing functional and technical designs for manual or automated solutions;
  - installing the system, including hardware and software, for automated systems;
  - doing unit testing and system development; and
  - developing user training and education.
- 124 Management must be visibly involved and committed during the conversion phase. They should take an active role with the design team to coordinate the rollout and to define tangible targets for each KPI, as well as action plans for achieving them. The targets should encourage continuous improvement and reflect industry best practices where possible. It is also important to ensure that production or process teams be empowered and given the resources needed to achieve the identified goals to avoid downstream frustration and discontent.
- 125 Implementing an I-PMS means more than putting new KPIs in place. Full benefit can be gained from the measurements initiative only if the new measures become part of everyday life and if they support team and individual continuous improvement efforts. The true value of KPIs is unleashed by ensuring a culture that is proactive and encourages a participatory environment.

- 126 A key task to be performed during the conversion to the new system is user training/education. All members of the production teams (including management) need to thoroughly understand each KPI and the critical success factors it addresses.
- 127 The cell or team manager must have sound communication skills and a thorough understanding of proactive and participatory management principles. Other team members may require training/education in areas such as:
- data collection techniques;
  - problem-solving skills including statistical process control (SPC);
  - communication skills such as meeting facilitation;
  - team building;
  - participatory management; and
  - world-class manufacturing techniques including just-in-time (JIT), SPC, and total quality management (TQM).
- 128 Action and interaction support institutionalizing KPIs. Meetings at all levels of the organization should include a review and evaluation of performance against the KPIs as well as the progress of improvement projects designed to have a positive effect on this performance. If a KPI proves to be of no value, then that KPI should be eliminated or replaced with measures that the operational team feels will lead to improved decision making and performance.

### *Ongoing Support Phase*

- 129 After the I-PMS has been implemented, all members of the organization need to begin to rely on and use the data to drive continuous improvement in all areas of the business. This goal drives the *ongoing support* phase of the I-PMS initiative.

### Ensuring Continuous Improvement

- 130 The issues that need to be addressed during this phase include:
- human factors, such as subjective application of evaluation programs with the I-PMS, the adequacy of training initiatives to provide the skills needed to utilize the system fully, and the

available resources needed to meet goals and implement improvements identified by the KPIs;

- ongoing evaluation and updating of the KPIs to ensure that they continue to reflect and adequately measure critical success factors as the business and its environment change;
- focused measures to combat specific performance problems; these measures should complement operational KPIs and be discontinued once the problem is solved; and
- continuous revision of KPI targets to reflect continuous improvement efforts.

131 The I-PMS is a dynamic system; KPIs must be changed as the firm evolves. The *ongoing support* phase ensures the system remains relevant, providing timely information for decision analysis and action to an ever-changing set of users and requirements. The data collection, analysis, and presentation efforts should be made as flexible as possible, ensuring that building new measures and eliminating old ones can be done with minimal impact on ongoing activities and on the effectiveness of the firm and its management. Achieving this success starts with avoiding as many implementation pitfalls as possible.

## VII. IMPLEMENTATION PITFALLS & KEY SUCCESS FACTORS

132 The pitfalls in any implementation strategy represent the “don’ts,” while key success factors are the “do’s” that can smooth the effort and ensure success. Exhibit 18 summarizes these issues for an I-PMS.

Exhibit 18. The Do's and Don'ts of I-PMS Implementation

Critical Success Factors (“Do’s”)	Pitfalls (“Don’ts”)
Recruit a dedicated, senior executive to ensure top management participation.	Don't begin a project without senior management commitment.
Throw out old measures that are not necessary to the overall functioning of the business.	Don't retain old measures that confuse or don't add value.
Include KPIs as part of the new evaluation and compensation systems.	Don't continue to evaluate and compensate personnel based on obsolete performance goals.
Invite front-line employees to help define KPIs, and encourage use of KPIs as self-measurement and self-education tools, so there are no surprises at evaluation time.	Don't use KPIs as a weapon against personnel.
Develop concise, intuitively obvious KPIs focused on strategic goals.	Don't design too many, or too complex, KPIs – this may confuse employees.
Keep the big picture in mind when defining KPIs – all KPIs should work together to achieve strategic goals.	Don't define KPIs too narrowly – this may encourage suboptimization of specific segments.
Make sure that all KPIs can be influenced by the actions of the person or group whose performance they are measuring.	Don't design KPIs for areas that are not controllable by employees.
Pay attention to the cultural change caused by the new system. Keep communication open and train/educate employees to make best use of the system.	Don't implement a new performance management system without addressing change management issues.

- 133 The essential message embedded in the “don'ts” list is that the I-PMS must reflect a solid, effective management control strategy defined and supported by management. Measures have to be designed to support action, identify problems, highlight opportunities, and communicate performance against customer expectations.

- 134 Measures that don't add value or that confuse users are worse than no measures at all. A bad measure is one that is uncontrollable at the level held responsible for its achievement. When people are held accountable for things they cannot change, they become demotivated, often rejecting the whole measurement process as they rationalize their ongoing performance problems. Implementing a new or improved I-PMS requires active attention to change management issues, including providing solid attention to the risks and resistance change represents.
- 135 The "do's" of implementing an I-PMS have been detailed in the preceding pages. Linking performance evaluation and rewards to the KPIs is one of the fastest and most reliable ways to ensure the system is implemented and used. Aligning individual goals, incentives, and rewards with KPIs the employees can control is critical. Finally, the design of the I-PMS and the measures it uses must foster and reflect continuous improvement. Learning, not control, is the ultimate goal.

## VIII. CONCLUSION

- 136 Performance measurement and management define the current and future success of an organization. Measurement done well and integrated across processes and units can support the attainment of strategic and operational goals. Measurement done poorly, in fragmented ways, can destroy the momentum and culture of an organization.
- 137 Reflecting strategic goals (*top-down*) and operational realities (*bottom-up*), of an I-PMS supports the achievement of performance excellence at all levels of the organization. An effective I-PMS serves as a vital communication channel between individuals, teams, processes, management levels, and units, ensuring that they deliver a coordinated, focused set of products and services that meet or exceed customer requirements.
- 138 As companies take on new, competitive challenges in the global marketplace and create ever more responsive and flexible product/service bundles and delivery mechanisms, the importance of well-

designed measurements will increase. A living, dynamic snapshot of organizational health, an effective I-PMS should provide information for managing today's activities and planning tomorrow's opportunities and growth strategies.

## IX. APPENDIX

### Key Performance Indicators (KPIs) Definitions

- Thresholds Performance levels for a KPI, generally defined in relation to the short-term target (high, expected, warning, critical)
  - Direction Direction for a KPI to improve
  - Calculation Calculation method for year-to-date
  - Component Data element used to calculate a KPI
  - Formula Components, operators, and constants used to calculate a KPI
  - Frequency Time interval at which KPIs are calculated and reported
  - Format Numeric display of a KPI
- 

### Scorecard Terminology

- Balanced Scorecard Report displaying all KPIs owned by an executive, manager, or team
- Targets Short-term and long-term KPI goals
- Period Actual KPI calculated for all periods to date
- Year-to-date KPI calculated for all periods to date for a fiscal year
- Variance Percentage a KPI actual value is under or over the short-term target
- Status Level of KPI performance in comparison to the short-term target
- Trend Performance of a KPI in comparison to the prior period

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ISBN 0-86641-269-7

SMA 4DD-5/98