CHAPTER 5

The Balanced Scorecard Approach to Operations

SOURCE: © Michael Krinke/istockphoto.com

Learning Objectives

In this chapter we will

- Study the framework of the "balanced scorecard" (BSC)
- Review the 10 basic questions of the BSC
- Learn how to use the BSC
- Study the importance of the BSC to operations management
- Review applications of the BSC in governmental agencies
- Compare the BSC with a performance dashboard
- Study key performance indicators for academic departments
- Review a case of BSC implementation at a hospital

As a way to measure nonfinancial performance in an organization, the authors Kaplan and Norton (1996) introduced the "balanced scorecard" (BSC). The **balanced scorecard** approach "balances" customer, internal process, and learning and growth measures against traditional financial measures. Financial indicators never tell the entire story of an organization, since talent, organizational culture, and customer relationships go a long way toward dictating future financial performance.

The increase in adoption of the BSC approach has had an impact on operations management. One of the most important aspects of management is the ultimate question, "How well are we doing?" The BSC helps address the previously intangible aspects to give the manager a bigger picture of performance. This chapter concludes with a discussion of the application of the BSC to two U.S. governmental agencies: the Department of Defense and the Postal Service.

The Framework

The BSC framework has three performance aspects that combine with financial performance:

1. The customer value proposition: What do we offer our customers? Customer satisfaction, customer retention, and customer growth are important by-products of this proposition. That is, they follow directly if the customer values the products and services offered.

2. Internal processes deliver the value to customers. This aspect, discussed in Chapter 1, involved an effective manufacturing/delivery system to customers.

3. Learning and growth relate to the skills, knowledge, and culture of the organization. Also discussed in Chapter 1, this asset is critical to the ultimate success of the organization.

These three performance aspects traditionally have not been tracked to the extent that financial performance measures have been. However, without knowing how a company is doing in these areas, an organization is driving, more or less, without a GPS (Global Positioning System). Yes, the manager knows how to get there, but a GPS sure helps in a strange city!

Questions to Answer

Kaydos (1998) listed 10 basic questions that the BSC should address:

1. *Are we satisfying our customers?* Measures: customer satisfaction, retention, and behavior. Periodic checks of customer satisfaction should gauge the overall satisfaction with the product or service. It is often difficult to get customers to sit down for a survey, and response rates are low, so creative incentives can be used to encourage

an increased response. The larger the response, the more valid the survey. Customer retention, a measurement of whether customers will continue to buy or use the product or service, can be collected at the same time.

2. *Are we satisfying our shareholders?* Measures: financial returns. These measurements are reflected in investing behavior and profitability. If the company's stock is healthy and investors are realizing a nice gain in their investment, shareholders tend to be happy with the decisions of management.

3. *Are we satisfying our stakeholders?* Measures: stakeholder satisfaction and dissatisfaction, retention, and behavior. Since there are numerous stakeholders in a company, employees, customers, board members, the community, and so on, every effort should be made to understand their satisfaction with the help of surveys.

4. *What is happening to our customer base?* Measures: market potential and market growth rate. Marketing research can reveal the market potential and market share within an industry.

5. *Is our company strategy working?* Measures: market share, customer acquisition, customer profitability, product and service profitability, and external factors that affect customers.

6. *Are our individual strategies being properly executed?* Measures: strategic goals and the objectives necessary to achieve them.

7. *Are we serving our customers and stakeholders effectively?* Measures: product and service quality. Here, we use some of the key service quality indicators obtained from a thorough quality system.

8. *Are we operating efficiently?* Measures: process quality and capability, productivity, waste, and product and service costs. These quality measures reflect process indicators rather than customer service quality.

9. *Are stakeholders contributing what they should?* Measures: resource contribution and stakeholder contribution quality.

10. *Are we developing the abilities we need to execute our strategies?* Measures: organizational capabilities, stakeholder capabilities, and infrastructure capabilities. Answering this question requires an analysis of resources and a projection of future demand to make sure the company is prepared for the anticipated trends.

How to Use the BSC

Mobil Oil attributed much of its success in going from last to first in industry profitability to its use of the BSC. An article in the CIO magazine outlined the first steps in the implementation of the BSC:

- *Prepare the organization for change.* Many employees are resistant to change and rather jaded by previous failed efforts to implement programs. Employees have experienced one management fad after another over time, and they get rather tired of them.

- *Devise the right metrics.* Companies need to apply metrics (measurements) that really count toward customer and employee satisfaction, and managers should not measure for the simple love of measuring.

- *Get buy-in at all levels.* If all units are not involved in applying the BSC, there will be only sporadic success.

- *Plan to follow through to completion.* Like any program, checking that milestones are met and implemented is an important action.

First Energy used the following metrics to assess the customer side of the BSC:

- Percentage of projects completed on time and within the budget

- Percentage of projects released to the customer by the agreed-on delivery date

- Client satisfaction as indicated by customer surveys completed at the end of the project

Operations Management and the BSC

Kaplan and Norton (1996) listed four main operations management processes: supplier relationships, producing products and services, delivering products and services, and managing risk.

Examples of measures appropriate to these processes were given by Kaplan and Norton (1996, pp. 70–74):

Supplier relationships

- *Supplier ratings, quality, delivery, and cost:* As Deming points out, suppliers should be rated on more than price, and this provides an aggregate measure for their performance.
- *Cost of purchasing as percentage of purchase price:* This is the overall cost, including labor of the purchasing agents, receiving clerks, and so on.
- *Lead time:* This is the length of time it takes to get supplies from the supplier into the warehouse.
- *On-time delivery percentage:* This measures the actual delivery against the promised delivery date.
- *Percentage of late orders:* This is the percentage of orders that do not meet the promised dates.
- *Percentage of perfect orders received:* This measures the percentage of orders that are 100% complete.
- *Number of suppliers:* This is a number that, it is hoped, can be minimized, since the more suppliers dealt with, the more invoices to pay.
- *Number of outsourcing relationships:* This assumes that outsourcing is a positive step and looks for cost advantages.
- *Cost of purchasing materials:* This is the total cost, including labor cost and the actual cost of the supplies and parts.

Producing products and services

- *Marketing, selling, distribution, and administrative expenses as a percentage of total costs:* An effectiveness measure that it is desirable to minimize
- *Number of processes with substantial improvements:* A subjective measure of process improvements
- *Part-per-million defect rates:* A process quality measurement
- *Cost of inspection and testing:* Another quality measurement
- *Total cost of quality:* Cost of inspection, rework, and so on
- *Cycle time:* The length of time to produce one product
- *Process efficiency:* A proxy for cycle time
- *Percentage of capacity utilization:* Less important than quality but still showing a capability number
- *Equipment reliability:* The performance of machines
- *Flexibility:* The ability to adapt to changing product models
- *Inventory turnover:* The cost of goods sold divided by average inventory
- *Days in receivables:* A performance measurement for the accounts receivable—the lower the better
- *Percentage of stockouts:* An inventory scorecard

Distributing products and services

- *Lead times:* Measure of delivery time to customers
- *On-time delivery percentage:* Meeting promised dates
- *Percentage of items delivered with no defects:* A quality scorecard
- *Number of customer complaints:* A service scorecard
- *Risk management*
- *Bad-debt percentage:* Monitoring customer ability to pay
- *Percentage of uncollectible receivables:* Should be minimized
- *Inventory obsolescence:* Avoiding large inventory quantities of obsolete merchandise
- *Debt-to-equity ratio:* An accounting measure
- *Order backlog:* A good and a bad thing—good in that people want your product and bad in that you can't get it to them yet
- *Technology ranking of products and processes compared with competitors:* A benchmark against competitors

These measures comprise adequate information for a BSC.

Linking the BSC to Strategy

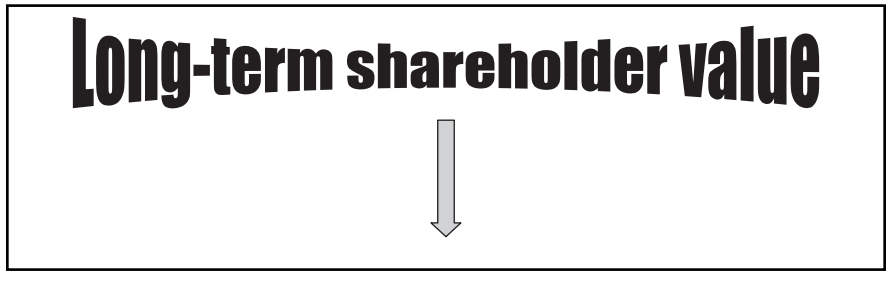

Figure 5.1 A Critical Managerial Target

Kaplan and Norton (2004) sought to show how to apply the BSC to strategy by using "**strategy maps**." These measures show how the financial perspective contributes to long-term value through improved cost structure, increased asset utilization, expanded revenue opportunities, and enhanced customer value. They illustrated this with an eight-stage continuum that led to **strategic outcomes**:

Stage 1. *Mission:* Why we exist

Stage 2. *Values:* What's important today

Stage 3. *Vision:* What we want to be

Stage 4. *Strategy:* Our game plan

Stage 5. *Strategy map:* Translate the strategy

Stage 6. *Balanced scorecard:* Measures and focus

Stage 7. *Targets and initiatives:* What we need to do

Stage 8. *Personal objectives:* What I need to do

Strategic outcomes are satisfied shareholders, delighted customers, efficient and effective processes, and a motivated and prepared workforce.

BSC Implementation

Niven (2003) noted the financial and time considerations a BSC implementation would require. These considerations are really the same as for other major software and programmatic improvements.

- *Employee time:* Employees have to continue with their work while they spend time putting the BSC system into operation.
- *Consulting*: A consultant is often needed to assist in the implementation.
- *Software:* BSC software should be purchased to maintain the scorecard.
- *Educational materials:* Employees will need training and attendance at BSC conferences.
- *Logistical expenses:* Niven (2003) recommends conducting the training offsite, which requires additional expenditures.

The BSC implementation team should include the following:

- *Executive sponsor:* A key executive who assumes ownership of the project and apprises the team of the contribution to the mission and the organization's mission
- *Champion:* The manager who schedules and conducts the meetings and is responsible for training and support

- *Team members:* Employees from different functional areas who help with the delineation of the measurements and are the actual implementers of the BSC
- *Change expert:* A consultant who works with the team and assists with the stress of change on the workforce

Applications of the BSC

Mathys and Thompson (2006) studied the application of the BSC at governmental agencies—the U.S. Post Office and the Department of Defense Financial and Accounting Office (DFAS). The mission and vision of the DFAS are defined in Figure 5.2.

The DFAS Mission and Vision

Mission: Provide responsive, professional finance and accounting services for the people who defend America.

Vision: Best value to our customers
- World-class provider of finance and accounting services
- Trusted, innovative financial partner
- One organization, one identity
- Employer of choice, providing a progressive and professional work environment

Figure 5.2 The DFAS Mission and Vision

The following paragraphs are excerpted from Mathys and Thompson's (2006) report.

> (DFAS) wrestled over the relationship among the four BSC perspectives. They finally agreed that because DFAS is a service, not-for-profit organization, the key driver was the customer and that the foundation was its people. Improving the skill level of its workforce would allow the talent of the employees to identify the "best" way to improve processes and would solve the problems or needs of the customer. The use of this intellectual talent would improve internal processes, reduce costs and ultimately achieve better customer service. The DFAS pyramidal BSC model [see Figure 5.3] was developed to explain the interrelationships among the perspectives to employees rather than to represent any hierarchy among each of the perspectives.
>
> One of the most difficult behavioral issues or challenges faced by DFAS in implementing the BSC process was the development of metrics. The Leadership Council had great difficulty determining goals and identifying appropriate measures. Finally, they reached a general consensus on 80% of the scorecard goals and measures and decided, rather than spending another 5 months debating the issue, that the BSC should be implemented

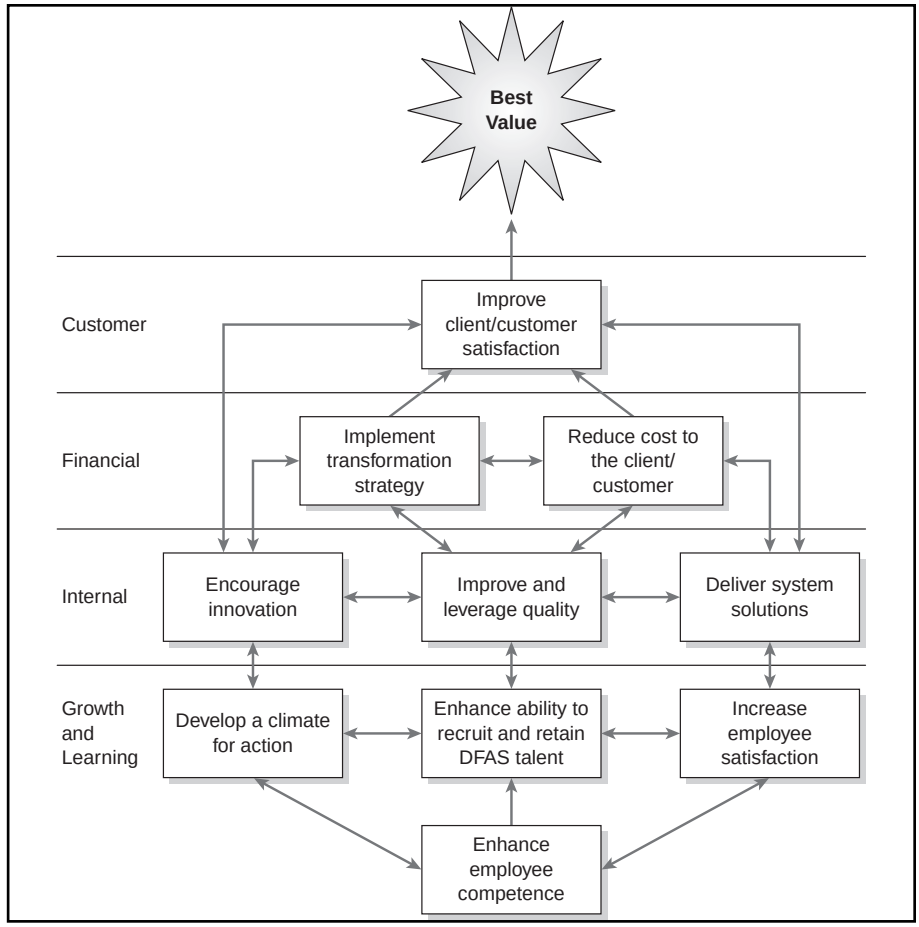

Figure 5.3 Balanced Scorecard Hierarchy

and monitored for potential problems and required changes. At times, what was thought to be the right measurement was found to be deficient—it wasn't measuring the right thing. Leadership realized that this initial scorecard was only a first step. It could be improved and adjusted over time. Continuous learning was the key and resulted in BSC revisions each year to include more meaningful metrics and provide a better indication of progress in meeting the overall strategic goals. (pp. 19–27)

While it was fairly easy to develop metrics for business lines that were revenue producing, it was (and continues to be) much more difficult to develop measures and objectives for supporting staff units that were not revenue producing (Figure 5.4).

BSC Benefits

The key benefit of the BSC has been to help managers and supervisors identify and focus on specific goals in order to achieve improved performance and, in doing so, to make them better managers. The BSC goals, in turn, were communicated to

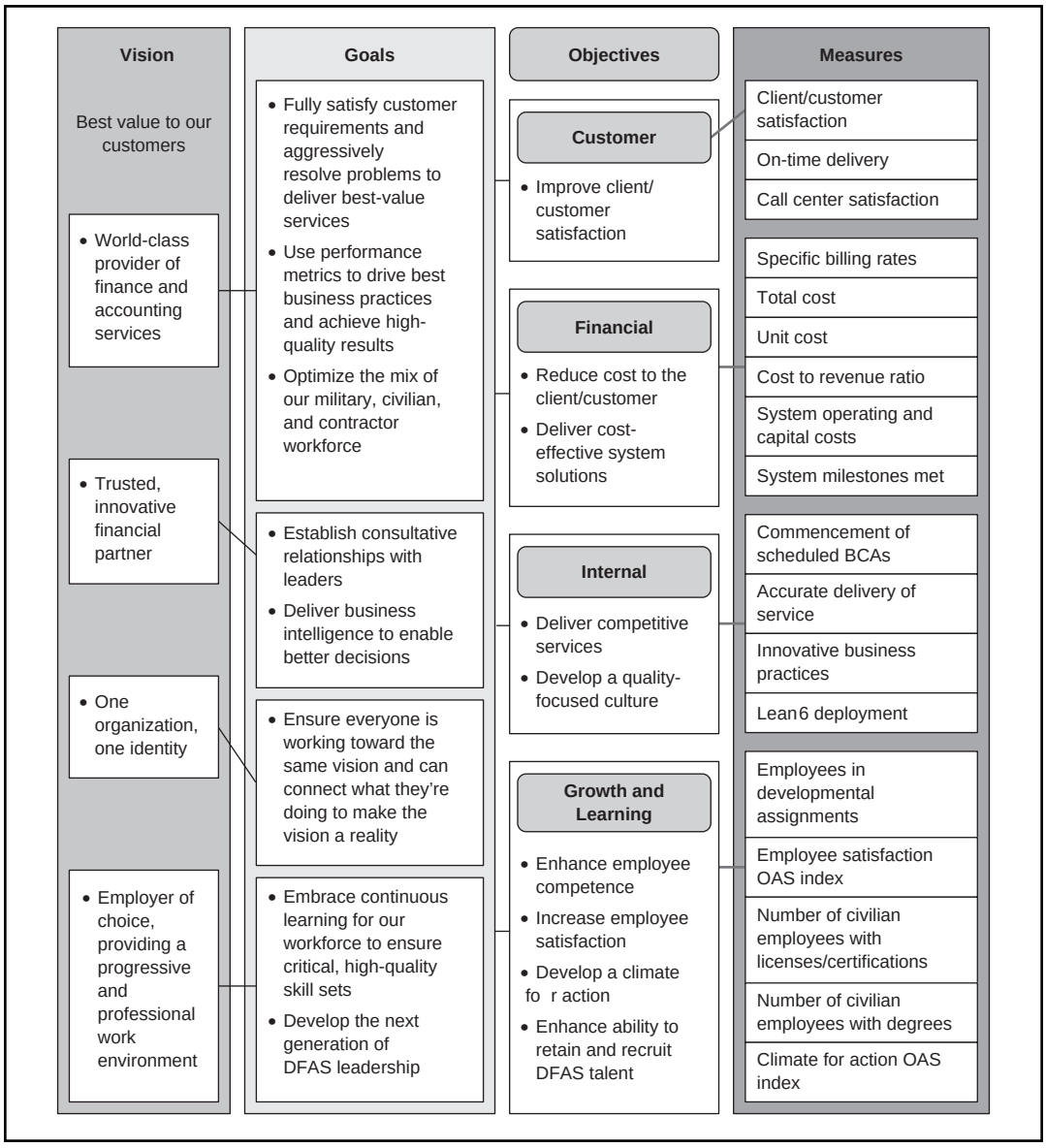

Figure 5.4 The Linkage Between Strategy and Measures

all employees, and they helped align managers and employees by making them focus on the same targets. When the BSC targets were achieved, DFAS performance improved, managers reduced costs, employees were proud of their accomplishments, and customers were more satisfied. Publishing the BSC results every month to all employees made the BSC process extremely visible. Everyone was able to see that the BSC was really used and that it really contributed to improvement in the agency. The BSC established a common language or platform, and no matter how much work areas and job functions differed, all managers still focused on the same goals. Even employees in rather unique areas were able to focus on group goals and actually pull together with the rest of the agency as a team to improve overall

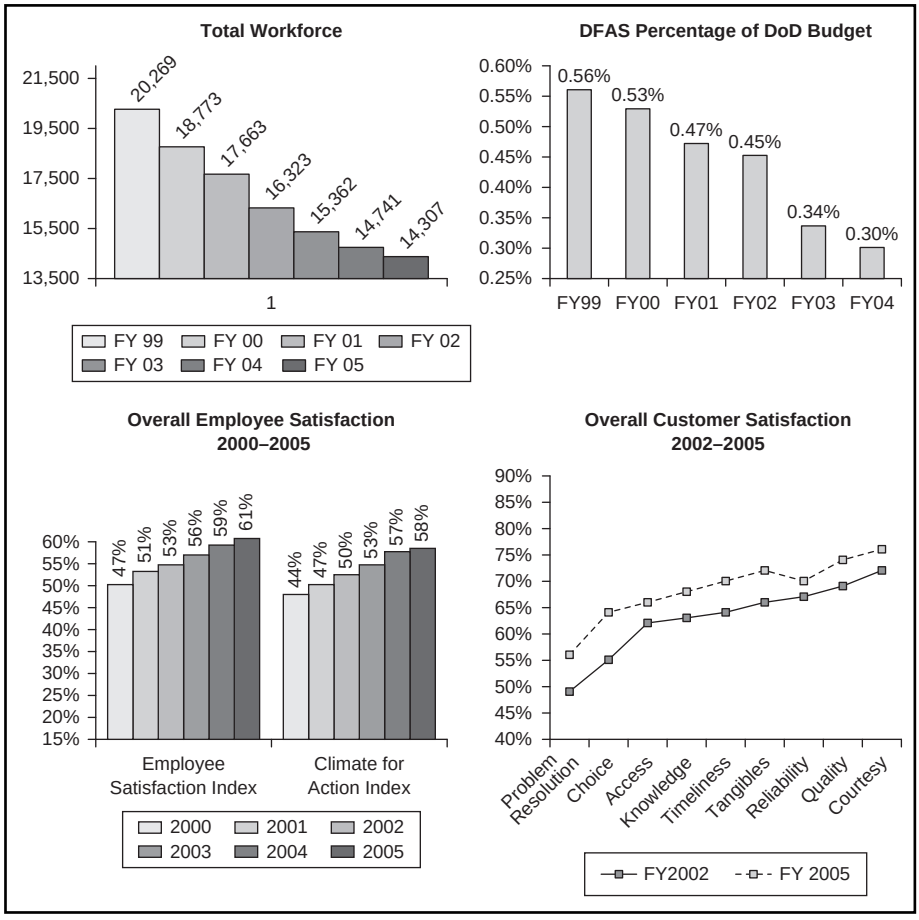

Figure 5.5 DFAS Organizational Results

agency performance. Figure 5.5 shows an example of the positive results achieved from FY 1999 to 2005. Despite a significant decline (roughly 30%) in the total workforce in the past 5 years, there has been consistent improvement in employee and customer satisfaction. At the same time, process costs to DoD (Department of Defense) have been cut almost in half.

One of DFAS's vision statements is "One organization and one identity." Actually, this vision grew from the fact that DFAS came into existence by consolidating many separate organizations, each serving a specific military service or defense agency. One of the Leadership Council's more important tasks was to unite all these various segments toward common goals. Implementing a corporate BSC linked to business line scorecards and individual performance plans was a key step in focusing all levels of the agency on common goals. The BSC was a natural step in the overall process to attain the corporate identity required to achieve its strategic goals and become a world-class provider of finance and accounting services. It provided a tool for senior leadership to focus on the most important issues. As one executive stated, "We take care of a very, very important customer base; people who defend America. So when improvements are made in

service deliveries we're doing it for very important people and that's rewarding" (Mathys & Thompson, 2006, p. 27).

The Performance Dashboard

Eckerson (2006) proposed a slightly different approach to measurement, the "**performance dashboard**." He defined the dashboard as "a multilayered application built on a business intelligence and data integration infrastructure that enables organizations to measure, monitor, and manage business performance more effectively" (p. 10).

Dashboards come in three types: operational, tactical, and strategic. Operational dashboards have the primary purpose of monitoring the organization. Tactical dashboards are used for analysis and strategic dashboards for management. Eckerson (2006) categorizes the BSC as a "strategic" dashboard (see Table 5.1).

Table 5.1 Performance Dashboard Versus Balanced Scorecard

	Dashboard	*Scorecard*
Purpose	Measures performance	Charts progress
Users	Supervisors	Executives, managers
Updates	Right time	Periodic snapshots
Data	Events	Summaries
Display	Visual graphs, raw data	Visual graphs, text

SOURCE: Eckerson (2006).

Eckerson (2006) gave the example of the application of dashboards for Quicken Loans. Loan managers receive a dashboard that shows their team measurements on five important measures. Executives receive a summary screen of six important charts from the loan managers.

Key Performance Indicators for Academic Departments

In setting up a dashboard or scorecard system for academic departments, it is important to start with defining the most important performance metrics. It would seem a difficult task to convert college professors into a scoring system, but it can be done.

Research Productivity

The accrediting bureau of collegiate business schools, AACSB (Association to Advance Collegiate Schools of Business), has two important measures. One measures academic and professional qualifications (AQ and PQ). The other measures the degree of participation the faculty member has with the institution (participating or supporting).

To define AQ, each institution has to come up with a measurable approach to the research productivity of its faculty. This is easiest measured by counting the number of articles in journals, the number of books published, and the number of presentations at conferences. A point system has to quantify these outputs. For example, it might be that to become academically qualified, a faculty member must achieve a total of three points in a 5-year period. One point is awarded for each published article or book. Conference presentations may be awarded a third of a point. So a faculty member with two articles and three presentations would score three points and be determined to be AQ.

The PQ designation would consist of a scoring system for full-time employment, consulting activities and service activities, plus educational credentials. This designation is designed to cover faculty who do not publish yet have much teaching experience. It would also cover faculty who do not have a PhD but have years of either consulting or employment experience. The AQ/PQ score would provide the research productivity information for a dashboard of an academic department.

Teaching Dashboard

Although it is argued that it does not tell the whole story, the "overall" teaching effectiveness of a course is the most important measurement on the dashboard for teaching effectiveness. Other considerations may be the number of different courses taught, the number of students taught, any new courses taught, and the number of teaching conferences attended.

One approach would be to award a score for the overall teaching and then add points for any of the above situations. The faculty member who averages 4.5 on a 5.0 score and teaches two different courses might be awarded a score of 4.6. If he or she teaches three different courses, the score might be 4.7, and so on.

Service Dashboard

The service of college professors is measured by their work inside the university and college, their work for the profession (usually reviewing papers and participating in conferences), and their work for the community. This is a difficult area to quantify and may be best served by a points system.

For example, a committee chairperson may be awarded two points, while a committee member who actively participates receives one point, and so on. Awarding points for service is similar to awarding class participation points in the classroom. It is hard to determine who does the most work, but the judge has to make a subjective call with the information given.

Sedona

A database that does a good job of giving college administrators a dashboard of sorts is Sedona™. Sedona offers a way to input all the information on a professor's activities. The database includes virtually all professorial activities and can convert the information into a scorecard of activity.

Conclusions

Kaplan and Norton's (1996) *Balanced Scorecard* has found acceptance with many organizations, both for-profit and not-for-profit. The scorecard provides a global approach to measurement, combining financial measures with important customer and employee measurements. It functions as both a financial and a productivity system and continues to grow in its application.

Financial measurements used to be the main measurement approach of organizations, but they ignored important customer and employee information that can be captured with the BSC. Operations management's performance is multidimensional, and the BSC is an approach that gives an overview of the important elements of production.

Summary

- The BSC provides a framework for performance leading to customer value and financial performance.
- The following are the 10 basic questions to ask when constructing a BSC:

  Are we satisfying our customers?

  Are we satisfying our shareholders?

  Are we satisfying our stakeholders?

  What is happening to our customer base?

  Is our company strategy working?

  Are our individual strategies being properly executed?

  Are we serving our customers and stakeholders effectively?

  Are we operating efficiently?

  Are stakeholders contributing what they should?

  Are we developing the abilities we need to execute our strategies?

- Mobil Oil found that getting the right metrics, getting buy-in from users, and follow-through are important for successful implementation of the BSC.
- Operations management contributes to the BSC through supplier relationships, producing products and services, delivering products and services, and managing risk.
- There is an eight-stage strategy continuum from the mission that leads to strategic outcomes.
- A key benefit of the BSC is that it can identify and focus on specific measures that lead to improved performance and better management.

Key Terms

Balanced scorecard

Performance dashboard

Strategic outcomes

Strategy map

Review Questions

1. How does the BSC compare with productivity measurement?
2. What would be the major differences of application of a BSC for a governmental agency versus a manufacturing firm?
3. What are the major metric areas in the BSC?
4. How can the use of a BSC improve a firm?
5. Is the BSC applicable to all firms? Is it applicable to your own place of employment?

Projects

1. Find an organization that uses a BSC, and interview employees about the effectiveness of the scorecard and whether its application meant a difference in performance.

2. Create a scorecard for your organization, or one you have access to. After listing possible measurements, review their appropriateness with another employee.

3. Create a BSC for a college athletic department.

CASE 1 Balanced Scorecard for a Hospital

Marge Oliphant, the administrator of the South Tifton Hospital, a 150-bed rural hospital, decided to implement the BSC in her hospital. Her approach was to do a pilot test in the materials management department, a nonpatient care area. The manager, Vernon Clance, was a good choice because he had already submitted reports on inventory levels.

Clance approached his department by breaking down the scorecard into its customary four areas: learning and growth, business processes, customer measures, and financial measures.

With his staff, Clance arrived at these measures:

- Learning and growth

  Staff turnover
  Job satisfaction
  Staff loyalty
  Education (dollars spent)

- Business Processes

  Inventory turnover
  Fill rate
  Accuracy rate
  Responsiveness
  Supplier fill rates
  Productivity (deliveries/labor hour)

- Customer

  Customer (hospital units) satisfaction

- Financial

  Inventory on hand
  Salary expenses
  $/purchase order

Oliphant was impressed with the measurement selection. Clance used job satisfaction and customer satisfaction measurements that he found in a book. Basically, they measured, on a scale from 1 to 5, how happy a person was with the present position, pay, facilities, and so on. The materials management customers were the individual units that received supplies on a daily business. They were surveyed on the responsiveness and accuracy of the supplies they received.

Clance did detect a 93% fill rate (the percentage of orders successfully filled) in the first month, and that became the target of improvement for the next month.

Oliphant then turned to a patient care unit, the intensive-care unit (ICU). This was a 12-bed unit, not as frenetically paced as the emergency room, although the patients were in serious condition. Bob Tallent was the unit manager, a business school graduate in charge of the administrative details of the unit. Bob relished the opportunity to come up with an organized measurement scheme and, with the assistance of the staff, devised these measurements:

- Learning and growth

  Nursing turnover
  Staff turnover
  Training and education dollars
  Job satisfaction
  Staff loyalty

- Clinical and business processes

  Medical errors
  Clerical errors
  In-processing
  Out-processing
  Billing speed
  Responsiveness
  Productivity index

- Customer

  Patient satisfaction
  Family satisfaction
  Physician satisfaction
- Financial

  Revenue per patient
  Cost per patient
  Salary expenses

After 2 months in the ICU and 4 months in materials management, Oliphant extended the trial to Accounts Receivable. The program was intended to go hospital-wide at the end of the year.

Discussion Questions

1. Do these areas give an accurate depiction of what is important in materials management and the ICU?
2. What issues in each area would be important to Accounts Receivable?
3. If the hospital administrator wanted a global scorecard, what would that look like?

CASE 2 Snow Removal in Cook County

Marv Elliott managed the Cook County Snow Removal efforts from November through April each year. In a typical snowstorm, 34 trucks and 3 graders are employed, using approximately 2,500 tons of salt. The drivers are employees of the Cook County Highway Maintenance department.

Marv wanted to set up a performance dashboard for his department. He identified these key issues:

- Reduction of accidents caused by snow and ice
- Speed of delivery of salt and graded roads
- Labor hours to service storms
- Labor hours related to the number of inches of snowfall
- Cost of fuel and miles driven (Cook County covers 577 street and freeway miles)

Assist Marv by designing a performance dashboard for the snow removal department.

Web Sites

The Balanced Scorecard Institute: www.balancedscorecard.org

CIO.com. (n.d.). *How to use the balanced scorecard.* Retrieved November 11, 2007, from www.cio.com/archive/051502/scorecard.html

Norton and Kaplan's BSC site: www.bscol.com

References

Eckerson, W. W. (2006). *Performance dashboards.* Hoboken, NJ: John Wiley & Sons.

Kaplan, R. S., & Norton, D. P. (1996). *The balanced scorecard.* Boston: HBS Press.

Kaplan, R. S., & Norton, D. P. (2004). *Strategy maps.* Boston: HBS Press.

Kaydos, W. (1998). *Operational performance measurement.* Boca Raton, FL: CRC Press.

Mathys, N. J., & Thompson, K. R. (2006). *Using the balanced scorecard at the U.S. Postal Service and the Department of Defense Finance and Accounting Service: Lessons learned.* Washington, DC: IBM Center for the Business of Government.

Niven, P. R. (2003). *Balanced scorecard for government and nonprofit agencies.* Hoboken, NJ: John Wiley & Sons.