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ACQUISITIONS

SEE: Mergers and Acquisitions

ACTIVITY-BASED COSTING

To support compliance with financial reporting requirements, a company's traditional cost-accounting system is often articulated with its general ledger system. In essence, this linkage is grounded in cost allocation. Typically, costs are allocated for either valuation purposes (i.e., financial statements for external uses) or decision-making purposes (i.e., internal uses) or both. However, in certain instances costs also are allocated for cost-reimbursement purposes (e.g., hospitals and defense contractors).

The traditional approach to cost-allocation consists of three basic steps: accumulate costs within a production or nonproduction department; allocate nonproduction department costs to production departments; and allocate the resulting (revised) production department costs to various products, services, or customers. Costs derived from this traditional allocation approach suffer from several defects that can result in distorted costs for decision-making purposes. For example, the traditional approach allocates the cost of idle capacity to products. Accordingly, such products are charged for resources that they did not use. Seeking to remedy such distortions, many companies have adopted a different cost-allocation approach called activity-based costing (ABC).

WHAT IS ACTIVITY-BASED COSTING?

In contrast to traditional cost-accounting systems, ABC systems first accumulate overhead costs for each organizational activity, and then assign the costs of the activities to the products, services, or customers (cost objects) causing that activity. As one might expect, the most critical aspect of ABC is activity analysis. Activity analysis is the processes of identifying appropriate output measures of activities and resources (cost drivers) and their effects on the costs of making a product or providing a service. Significantly, as discussed in the next section, activity analysis provides the foundation for remedying the distortions inherent in traditional cost-accounting systems.

TRADITIONAL COST-ACCOUNTING SYSTEMS VERSUS ABC

Geared toward compliance with financial reporting requirements, traditional cost-accounting systems often allocate costs based on single-volume measures such as direct-labor hours, direct-labor costs, or machine hours. While using a single volume measure as an overall cost driver seldom meets the cause-and-effect criterion desired in cost allocation, it provides a relatively cheap and convenient means of complying with financial reporting requirements.

In contrast to traditional cost-accounting systems, ABC systems are not inherently constrained by the tenets of financial reporting requirements. Rather, ABC systems have the inherent flexibility to provide special reports to facilitate management decisions regarding the costs of activities undertaken to design, produce, sell, and deliver a company's products or services. At the heart of this flexibility is the fact that ABC systems focus on accumulating costs via several

key activities, whereas traditional cost allocation focuses on accumulating costs via organizational units. By focusing on specific activities, ABC systems provide superior cost allocation information—especially when costs are caused by non-volume-based cost drivers. Even so, traditional cost-accounting systems will continue to be used to satisfy conventional financial reporting requirements. ABC systems will continue to supplement, rather than replace, traditional cost-accounting systems.

IMPLEMENTATION

In most cases, a company's traditional cost-accounting system adequately measures the direct costs of products and services, such as material and labor. As a result, ABC implementation typically focuses on indirect costs, such as manufacturing overhead and selling, general, and administrative costs. Given this focus, the primary goal of ABC implementation is to reclassify most, if not all, indirect costs (as specified by the traditional cost-accounting system) as direct costs. As a result of these reclassifications, the accuracy of the costs is greatly increased.

According to Ray H. Garrison and Eric W. Noreen, there are six basic steps required to implement an ABC system:

1. Identify and define activities and activity pools
2. Directly trace costs to activities (to the extent feasible)
3. Assign costs to activity cost pools
4. Calculate activity rates
5. Assign costs to cost objects using the activity rates and activity measures previously determined
6. Prepare and distribute management reports

COSTS AND BENEFITS

While ABC systems are rather complex and costly to implement, Charles T. Horngren, Gary L. Sundem, and William O. Stratton suggest that many companies, in both manufacturing and nonmanufacturing industries, are adopting ABC systems for a variety of reasons:

1. Margin accuracy for individual products and services, as well as customer classifications, is becoming increasingly difficult to achieve given that direct labor is rapidly being replaced with automated equipment. Accordingly, a

company's shared costs (i.e., indirect costs) are becoming the most significant portion of total cost.

2. Since the rapid pace of technological change continues to reduce product life cycles, companies do not have time to make price or cost adjustments once costing errors are detected.
3. Companies with inaccurate cost measurements tend to lose bids due to over-costed products, incur hidden losses due to under-costed products, and fail to detect activities that are not cost-effective.
4. Since computer technology costs are decreasing, the price of developing and operating ABC systems also has decreased.

In 2004 John Karolefski cited the following benefits realized by foodservice distributors and restaurants that have converted to activity-based costing practices:

1. Understanding the true costs and productivity of capital equipment
2. Understanding which products are most profitable and where to focus sales efforts
3. More accurate pricing and determination of minimum order size
4. Less time, money, and effort spent on the wrong products

Implementation costs are an obstacle to some, who feel that ABC is just a fad or will show little benefit. According to Karolefski, "ABC works better if it's kept simple" (2004, pp. 18). Nevertheless, when implemented properly ABC yields benefits to the company, its business partners, and to consumers.

ACTIVITY-BASED MANAGEMENT

In order to manage costs, a manager should focus on the activities that give rise to such costs. Accordingly, given the activity focus of ABC, managers should implement ABC systems in order to facilitate cost management. Using ABC systems to improve financial management is called activity-based management (ABM). The goal of ABM is to improve the value received by customers and, in doing so, to improve profits.

The key to ABM success is distinguishing between value-added costs and non-value-added costs. A value-added cost is the cost of an activity that cannot be eliminated without affecting a product's value to the customer. In contrast, a non-value-added cost is the cost of an activity that can be eliminated without diminishing value. Some value-added costs are always

necessary, as long as the activity that drives such costs is performed efficiently. However, non-value-added costs should always be minimized because they are assumed to be unnecessary. Examples of non-valued-added activities include storing and handling inventories; transporting raw materials or partly finished products, such as work-in-process inventory items, from one part of the plant to another; and redundancies in production-line configurations or other activities. Oftentimes, such non-value activities can be reduced or eliminated by careful redesign of the plant layout and the production process.

SEE ALSO: Cost Accounting; Inventory Management; Inventory Types; Process Management; Quality and Total Quality Management; Time-Based Competition

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AFFIRMATIVE ACTION

Affirmative action is a descriptive phrase for policies and programs designed to correct the effects of past discrimination and increase the representation of historically disadvantaged groups, including women

and African Americans. Affirmative action plans exist in the private and public sectors and involve the hiring of job applicants, the selection of contractors for government projects, and the admission of students to undergraduate and graduate educational institutions. Some employers, educational institutions, and government agencies are legally required by executive order to have affirmative action plans. Others may be ordered to develop affirmative action plans as part of a court finding that they have discriminated against individuals or groups. Still others voluntarily develop such plans because they believe it is good public policy, or that it provides them with a competitive advantage.

ORIGINS AND DEVELOPMENT OF AFFIRMATIVE ACTION

Although the roots of affirmative action in the United States go back to the nineteenth century, modern affirmative action plans originated with executive orders issued by Presidents John F. Kennedy, Lyndon B. Johnson, and Richard M. Nixon in the 1960s. Executive Order 11246, signed by President Johnson in 1965, required government agencies, contractors, and subcontractors to undertake affirmative action to remedy past discrimination in education, training, and employment. In 1969 President Nixon further strengthened affirmative action through Executive Order 11478, which required government contractors to develop goals for increasing the representation of historically disadvantaged groups and timetables for achieving them.

As amended in subsequent years, these executive orders eventually required all government agencies and contractors with annual contracts of \$10,000 or more to undertake affirmative action. They also required agencies and contractors with 50 employees and government business of \$50,000 or more to have written affirmative action plans. These written plans must include a utilization analysis, which compares the composition of the entity's workforce to the proportion of women and minorities in the available labor market. If underutilization is found, the agency or contractor must set specific goals and timetables for remedying the "imbalance" and develop specific plans for how this will be done. The use of affirmative action plans expanded greatly in the twenty years after the executive orders. Because most educational institutions and large organizations receive money and/or do business with the government, affirmative action plans are very common.

TYPES OF AFFIRMATIVE ACTION

In the employment context, affirmative action plans should be distinguished from equal employment opportunity (EEO) programs. EEO efforts focus on

the process involved in hiring and promoting employees and attempt to ensure that there is a level playing field for all involved. Conversely, affirmative action programs focus on the outcomes of recruiting, hiring, and promotion processes, and involve additional efforts to increase the proportion of women and minorities that are hired and promoted.

There are various types of affirmative action plans. Some plans simply try to increase the number of applicants from underrepresented groups. Such plans, which are sometimes called “pure” plans or “opportunity enhancement” plans, involve proactive efforts to locate and recruit a larger number of individuals from the affected groups. Other affirmative action plans can be termed “limited preference” or “tiebreak” plans. They go a step further than pure affirmative action plans by considering race or gender as a “plus” factor when evaluating the qualifications of applicants who essentially are equally qualified. Finally, the most aggressive affirmative action plans are “strong preferential treatment” or “quota” plans. In these plans, qualified members of a disadvantaged group may be preferred to more highly qualified individuals who are not in the affected group. Generally speaking, the more aggressive the affirmative action strategy employed, the more likely it is to generate challenges and the more difficult it is to defend legally.

Affirmative action plans are quite controversial and have been the subject of hundreds of lawsuits, several of which have gone to the U.S. Supreme Court. Lawsuits filed by those who believe they have been unfairly treated by affirmative action plans usually are called “reverse discrimination” lawsuits. Although the courts generally have agreed that affirmative action is legal if it meets certain criteria, court decisions in the 1990s and early 2000s seemed to reflect a trend toward restricting the more aggressive types of affirmative action programs, which may include preferences based on race or gender. Affirmative action is certain to be a contentious issue for years to come.

SEE ALSO: Discrimination; Diversity

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AGGREGATE PLANNING

Aggregate planning is the process of developing, analyzing, and maintaining a preliminary, approximate schedule of the overall operations of an organization. The aggregate plan generally contains targeted sales forecasts, production levels, inventory levels, and customer backlogs. This schedule is intended to satisfy the demand forecast at a minimum cost. Properly done, aggregate planning should minimize the effects of shortsighted, day-to-day scheduling, in which small amounts of material may be ordered one week, with an accompanying layoff of workers, followed by ordering larger amounts and rehiring workers the next week. This longer-term perspective on resource use can help minimize short-term requirements changes with a resulting cost savings.

In simple terms, aggregate planning is an attempt to balance capacity and demand in such a way that costs are minimized. The term “aggregate” is used because planning at this level includes all resources “in the aggregate;” for example, as a product line or family. Aggregate resources could be total number of workers, hours of machine time, or tons of raw materials. Aggregate units of output could include gallons, feet, pounds of output, as well as aggregate units appearing in service industries such as hours of service delivered, number of patients seen, etc.

Aggregate planning does not distinguish among sizes, colors, features, and so forth. For example, with automobile manufacturing, aggregate planning would consider the total number of cars planned for not the individual models, colors, or options. When units of aggregation are difficult to determine (for example, when the variation in output is extreme) equivalent units are usually determined. These equivalent units could be based on value, cost, worker hours, or some similar measure.

Aggregate planning is considered to be intermediate-term (as opposed to long- or short-term) in nature. Hence, most aggregate plans cover a period of three to 18 months. Aggregate plans serve as a foundation for future short-range type planning, such as production scheduling, sequencing, and loading.

The master production schedule (MPS) used in material requirements planning (MRP) has been described as the aggregate plan “disaggregated.”

Steps taken to produce an aggregate plan begin with the determination of demand and the determination of current capacity. Capacity is expressed as total number of units per time period that can be produced (this requires that an average number of units be computed since the total may include a product mix utilizing distinctly different production times). Demand is expressed as total number of units needed. If the two are not in balance (equal), the firm must decide whether to increase or decrease capacity to meet demand or increase or decrease demand to meet capacity. In order to accomplish this, a number of options are available.

Options for situations in which demand needs to be increased in order to match capacity include:

1. **Pricing.** Varying pricing to increase demand in periods when demand is less than peak. For example, matinee prices for movie theaters, off-season rates for hotels, weekend rates for telephone service, and pricing for items that experience seasonal demand.
2. **Promotion.** Advertising, direct marketing, and other forms of promotion are used to shift demand.
3. **Back ordering.** By postponing delivery on current orders demand is shifted to period when capacity is not fully utilized. This is really just a form of smoothing demand. Service industries are able to smooth demand by taking reservations or by making appointments in an attempt to avoid walk-in customers. Some refer to this as “partitioning” demand.
4. **New demand creation.** A new, but complementary demand is created for a product or service. When restaurant customers have to wait, they are frequently diverted into a complementary (but not complimentary) service, the bar. Other examples include the addition of video arcades within movie theaters, and the expansion of services at convenience stores.

Options which can be used to increase or decrease capacity to match current demand include:

1. **Hire/lay off.** By hiring additional workers as needed or by laying off workers not currently required to meet demand, firms can maintain a balance between capacity and demand.
2. **Overtime.** By asking or requiring workers to work extra hours a day or an extra day per

week, firms can create a temporary increase in capacity without the added expense of hiring additional workers.

3. **Part-time or casual labor.** By utilizing temporary workers or casual labor (workers who are considered permanent but only work when needed, on an on-call basis, and typically without the benefits given to full-time workers).
4. **Inventory.** Finished-goods inventory can be built up in periods of slack demand and then used to fill demand during periods of high demand. In this way no new workers have to be hired, no temporary or casual labor is needed, and no overtime is incurred.
5. **Subcontracting.** Frequently firms choose to allow another manufacturer or service provider to provide the product or service to the subcontracting firm’s customers. By subcontracting work to an alternative source, additional capacity is temporarily obtained.
6. **Cross-training.** Cross-trained employees may be able to perform tasks in several operations, creating some flexibility when scheduling capacity.
7. **Other methods.** While varying workforce size and utilization, inventory buildup/backlogging, and subcontracting are well-known alternatives, there are other, more novel ways that find use in industry. Among these options are sharing employees with counter-cyclical companies and attempting to find interesting and meaningful projects for employees to do during slack times.

AGGREGATE PLANNING STRATEGIES

There are two pure planning strategies available to the aggregate planner: a level strategy and a chase strategy. Firms may choose to utilize one of the pure strategies in isolation, or they may opt for a strategy that combines the two.

LEVEL STRATEGY. A level strategy seeks to produce an aggregate plan that maintains a steady production rate and/or a steady employment level. In order to satisfy changes in customer demand, the firm must raise or lower inventory levels in anticipation of increased or decreased levels of forecast demand. The firm maintains a level workforce and a steady rate of output when demand is somewhat low. This allows the firm to establish higher inventory levels than are currently needed. As demand increases, the firm is able to continue a steady production rate/steady employment level, while allowing the inventory surplus to absorb the increased demand.

A second alternative would be to use a backlog or backorder. A backorder is simply a promise to deliver the product at a later date when it is more readily available, usually when capacity begins to catch up with diminishing demand. In essence, the backorder is a device for moving demand from one period to another, preferably one in which demand is lower, thereby smoothing demand requirements over time.

A level strategy allows a firm to maintain a constant level of output and still meet demand. This is desirable from an employee relations standpoint. Negative results of the level strategy would include the cost of excess inventory, subcontracting or overtime costs, and backorder costs, which typically are the cost of expediting orders and the loss of customer goodwill.

CHASE STRATEGY. A chase strategy implies matching demand and capacity period by period. This could result in a considerable amount of hiring, firing or laying off of employees; insecure and unhappy employees; increased inventory carrying costs; problems with labor unions; and erratic utilization of plant and equipment. It also implies a great deal of flexibility on the firm's part. The major advantage of a chase strategy is that it allows inventory to be held to the lowest level possible, and for some firms this is a considerable savings. Most firms embracing the just-in-time production concept utilize a chase strategy approach to aggregate planning.

Most firms find it advantageous to utilize a combination of the level and chase strategy. A combination strategy (sometimes called a hybrid or mixed strategy) can be found to better meet organizational goals and policies and achieve lower costs than either of the pure strategies used independently.

TECHNIQUES FOR AGGREGATE PLANNING

Techniques for aggregate planning range from informal trial-and-error approaches, which usually utilize simple tables or graphs, to more formalized and advanced mathematical techniques. William Stevenson's textbook *Production/Operations Management* contains an informal but useful trial-and-error process for aggregate planning presented in outline form. This general procedure consists of the following steps:

1. Determine demand for each period.
2. Determine capacity for each period. This capacity should match demand, which means it may require the inclusion of overtime or subcontracting.
3. Identify company, departmental, or union policies that are pertinent. For example,

maintaining a certain safety stock level, maintaining a reasonably stable workforce, backorder policies, overtime policies, inventory level policies, and other less explicit rules such as the nature of employment with the individual industry, the possibility of a bad image, and the loss of goodwill.

4. Determine unit costs for units produced. These costs typically include the basic production costs (fixed and variable costs as well as direct and indirect labor costs). Also included are the costs associated with making changes in capacity. Inventory holding costs must also be considered, as should storage, insurance, taxes, spoilage, and obsolescence costs. Finally, backorder costs must be computed. While difficult to measure, this generally includes expediting costs, loss of customer goodwill, and revenue loss from cancelled orders.
5. Develop alternative plans and compute the cost for each.
6. If satisfactory plans emerge, select the one that best satisfies objectives. Frequently, this is the plan with the least cost. Otherwise, return to step 5.

An example of a completed informal aggregate plan can be seen in Figure 1. This plan is an example of a plan determined utilizing a level strategy. Notice that employment levels and output levels remain constant while inventory is allowed to build up in earlier periods only to be drawn back down in later periods as demand increases. Also, note that backorders are utilized in order to avoid overtime or subcontracting. The computed costs for the individual variables of the plan are as follows:

Output costs:

Regular time = \$5 per unit
Overtime = \$8 per unit
Subcontracted = \$12 per unit

Other costs:

Inventory carrying cost = \$3 per unit per period applied to average inventory
Backorders = \$10 per unit per period

Cost of aggregate plan utilizing a level strategy:

Output costs:

Regular time = $\$5 \times 1,500 = \$7,500$
Overtime = $\$8 \times 0 = 0$
Subcontracted = $\$10 \times 0 = 0$

Other costs:

Inventory carrying cost = $\$3 \times 850 = \$2,400$
Backorders = $\$10 \times 100 = \$1,000$
Total cost = \$10,900

A second example, shown in Figure 2, presents the same scenario as in Figure 1 but demonstrates the use of a combination strategy (i.e., a combination of level and chase) to meet demand and seek to minimize costs. For this example, let's assume that company

Figure 1

Period		1	2	3	4	5	6
Forecast		100	150	300	300	500	150
Output							
	Regular	250	250	250	250	250	250
	Overtime						
	Subcontract						
Output-forecast		150	100	-50	-50	-250	100
Inventory							
	Beginning	0	150	250	200	150	0
	Ending	150	250	200	150	0	100
	Average	75	200	225	175	75	50
Backlog	0	0	0	0	0	100	0

Cost of aggregate plan utilizing a level strategy:	
Output:	
Regular time	= \$ 5 X 1500 = \$7500
Overtime	= \$ 8 X 0 = 0
Subcontracted	= \$10 X 0 = 0
Inventory carrying cost	= \$ 3 X 850 = 2550
Backorders	= \$10 X 100 = 1000
Total Cost	\$11050

policy prevents us from utilizing backorders and limits our plan to no more than 50 units of overtime per period. Notice that the regular output level is constant, implying a level workforce, while overtime and subcontracting are used to meet demand on a period by period basis (chase strategy). One will notice that the cost of the combination plan is slightly lower than the cost of the level plan.

Output costs:

Regular time = \$5 × 1,200 = \$6,000

Overtime = \$8 × 100 = 800

Subcontracted = \$12 × 250 = 2,500

Other costs:

Inventory carrying cost = \$3 × 325 = 975

Backorders = \$10 × 0 = 0

Total cost = \$10,275

MATHEMATICAL APPROACHES TO AGGREGATE PLANNING

The following are some of the better known mathematical techniques that can be used in more complex aggregate planning applications.

LINEAR PROGRAMMING. Linear programming is an optimization technique that allows the user to find a maximum profit or revenue or a minimum cost based on the availability of limited resources and certain limitations known as constraints. A special type of linear programming known as the Transportation

Model can be used to obtain aggregate plans that would allow balanced capacity and demand and the minimization of costs. However, few real-world aggregate planning decisions are compatible with the linear assumptions of linear programming. *Supply Chain Management: Strategy, Planning and Operation*, by Sunil Chopra and Peter Meindl, provides an excellent example of the use of linear programming in aggregate planning.

MIXED-INTEGER PROGRAMMING. For aggregate plans that are prepared on a product family basis, where the plan is essentially the summation of the plans for individual product lines, mixed-integer programming may prove to be useful. Mixed-integer programming can provide a method for determining the number of units to be produced in each product family.

LINEAR DECISION RULE. Linear decision rule is another optimizing technique. It seeks to minimize total production costs (labor, overtime, hiring/lay off, inventory carrying cost) using a set of cost-approximating functions (three of which are quadratic) to obtain a single quadratic equation. Then, by using calculus, two linear equations can be derived from the quadratic equation, one to be used to plan the output for each period and the other for planning the workforce for each period.

MANAGEMENT COEFFICIENTS MODEL. The management coefficients model, formulated by E.H. Bowman, is based on the suggestion that the production rate for

Figure 2

Period		1	2	3	4	5	6
Forecast		100	150	300	300	500	150
Output							
	Regular	200	200	200	200	200	200
	Overtime				50	50	
	Subcontract					250	
Output-forecast		100	50	-100	-50	0	50
Inventory							
	Beginning	0	100	150	50	0	0
	Ending	100	150	50	0	0	50
	Average	50	125	100	25	0	25
Backlog	0	0	0	0	0	0	0

Output:							
Regular time	=	\$ 5	X	1200	=	\$6000	
Overtime	=	\$ 8	X	100	=	800	
Subcontracted	=	\$12	X	250	=	3000	
Inventory carrying cost	=	\$ 3	X	325	=	975	
Backorders	=	\$10	X	0	=	0	
Total Cost						\$10775	

any period would be set by this general decision rule:

$$P_t = aW_{t-1} - bI_{t-1} + cF_{t+1} + K, \text{ where}$$

- P_t = the production rate set for period t
- W_{t-1} = the workforce in the previous period
- I_{t-1} = the ending inventory for the previous period
- F_{t+1} = the forecast of demand for the next period
- $a, b, c,$ and K are constants

It then uses regression analysis to estimate the values of $a, b, c,$ and K . The end result is a decision rule based on past managerial behavior without any explicit cost functions, the assumption being that managers know what is important, even if they cannot readily state explicit costs. Essentially, this method supplements the application of experienced judgment.

SEARCH DECISION RULE. The search decision rule methodology overcomes some of the limitations of the linear cost assumptions of linear programming. The search decision rule allows the user to state cost data inputs in very general terms. It requires that a computer program be constructed that will unambiguously evaluate any production plan's cost. It then searches among alternative plans for the one with the minimum cost. However, unlike linear programming, there is no assurance of optimality.

SIMULATION. A number of simulation models can be used for aggregate planning. By developing an aggregate plan within the environment of a simulation model, it can be tested under a variety of conditions to find acceptable plans for consideration. These models

can also be incorporated into a decision support system, which can aid in planning and evaluating alternative control policies. These models can integrate the multiple conflicting objectives inherent in manufacturing strategy by using different quantitative measures of productivity, customer service, and flexibility.

FUNCTIONAL OBJECTIVE SEARCH APPROACH. The functional objective search (FOS) system is a computerized aggregate planning system that incorporates a broad range of actual planning conditions. It is capable of realistic, low-cost operating schedules that provide options for attaining different planning goals. The system works by comparing the planning load with available capacity. After management has chosen its desired actions and associated planning objectives for specific load conditions, the system weights each planning goal to reflect the functional emphasis behind its achievement at a certain load condition. The computer then uses a computer search to output a plan that minimizes costs and meets delivery deadlines.

AGGREGATE PLANNING IN SERVICES. For manufacturing firms the luxury of building up inventories during periods of slack demand allows coverage of an anticipated time when demand will exceed capacity. Services cannot be stockpiled or inventoried so they do not have this option. Also, since services are considered "perishable," any capacity that goes unused is essentially wasted. An empty hotel room or an empty seat on a flight cannot be held and sold later, as can a manufactured item held in inventory.

Service capacity can also be very difficult to measure. When capacity is dictated somewhat by machine capability, reasonably accurate measures of capacity are not extremely difficult to develop. However, services generally have variable processing requirements that make it difficult to establish a suitable measure of capacity.

Historically, services are much more labor intensive than manufacturing, where labor averages 10 percent (or less) of total cost. This labor intensity can actually be an advantage because of the variety of service requirements an individual can handle. This can provide quite a degree of flexibility that can make aggregate planning easier for services than manufacturing.

WHAT'S NEW IN AGGREGATE PLANNING. Rudy Hung, in his *Production and Inventory Management Journal* article entitled "Annualized Hours and Aggregate Planning," presents a new, useful idea for aggregate planning called Annualized Hours (AH). Under AH, employees are contracted to work for a certain number of hours (say 1,800 hours) per year, for a certain sum of money. Employees can be asked to put in more hours during busy periods and fewer hours in slow periods. Typically, employees receive equal monthly or weekly payments so that hourly workers in effect have gained salaried status. Overtime is paid only when employees have worked beyond their annual hours.

AH is also known as flexiyear, as it can be seen as an extension of flexitime, in which employees can vary their work hours within limits. This concept is used almost exclusively in Europe, particularly in the United Kingdom. The Scandinavian pulp and paper industries pioneered AH in the mid-1970s. Around that time, some West German firms, particularly those in the retail industry, also used AH.

AH gives employers much flexibility. AH serves to cut labor costs by offering employees an annual sum less than their previous annual earnings with overtime. Even though their total earnings may fall, their average earnings per hour would remain the same or even rise. Effective earnings could rise even more so if the employer is unable to consume all contracted hours. Employees have greater income security with no worries about layoffs. There is also increased morale because blue-collar workers are now salaried.

Another development affecting aggregate planning is postponement. This refers to delaying the "finish" of a product until the moment of sale. Firms that rely on the postponement strategy, such as PC-maker Dell Inc. or clothing franchise Benetton Group Sp.A., depend upon the availability of aggregate inventories of components that can be assembled to order shortly after, or even immediately, as an order is taken.

SEE ALSO: Capacity Planning; Planning; Simulation

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ANGELS AND VENTURE CAPITALISTS

SMALL BUSINESS FINANCE

The United States Small Business Administration (SBA) estimates that, as of 2003, there were approximately 23.7 million small businesses in the United States. The SBA defines a small business as "an independent business having fewer than 500 employees." Small businesses represent over 99 percent of all employers, and they employ more than half of all private sector employees. Moreover, small businesses employ about 40 percent of all high-tech personnel such as scientists, computer workers and engineers. These firms create anywhere from 60 percent to 80 percent of net new jobs each year, and they represent 97 percent of all exporters of goods. Small business create more than 50 percent of the private gross domestic product, and they pay about 45 percent of the total United States private payroll.

Clearly, small businesses play an important role in our business economy. It is important to note, however, that two-thirds of new small businesses survive at least two years, and about half survive at least four years. Owners of about one-third of the firms that closed said that their firm was successful at closure. Major factors contributing to a firm's success include an ample supply of capital, the fact that a firm is large enough to have employees, the owner's higher level of education, and the owner's reason for starting the firm

in the first place, such as freedom for family life or wanting to be one's own boss.

As noted above, a firm's supply of capital is often a major factor in the firm's ability to survive. Consequently, business owners place a substantial emphasis on finding sources of funding for their business. Capital is typically defined as any asset that can be used to generate resources for the business. Capital for most businesses is generally comprised of some combination of cash, inventory and fixed assets.

PLANNING FOR A FIRM'S CAPITAL NEEDS

When starting a business, business owners typically need three types of capital—working capital, fixed capital and expansion capital. Working capital supports a business' short-term operations, and it represents a business' short-term source of funds. It may be used to purchase inventory, pay bills, or take care of other unexpected emergencies. Fixed capital represents those funds that a business needs to purchase land, buildings, equipment, machinery, furniture or other fixed assets that will be used in the business. While working capital supports the business' short-term needs, fixed capital supports the business' more permanent needs. Businesses need expansion capital when they seek to finance growth, expansion, or other long-term initiatives.

SOURCES OF CAPITAL

As business owners assess their needs for all types of capital, they must also assess what sources of capital are available to them. Conventional wisdom has often noted that many start-up businesses tend to secure their capital from the four F's: founders, families, friends and fools. This humorous observation, while bearing a nugget of truth, merely scratches the surface when looking at all of the sources of financing available to businesses in need of capital.

Some businesses owners choose to finance their businesses with debt. Debt financing is capital that a business owner has borrowed and must repay with interest. Debt financing may include traditional bank loans, credit card debt, lines of credit, unsecured loans, financing from commercial finance companies, insurance policy loans, securing trade credit and Small Business Administration Loans.

Many business owners, however, are uncomfortable with debt, and they choose to pursue sources of equity financing. With equity financing, the people or entities who contribute capital to a business do so in exchange for a share of ownership in the business. The business owner gives the equity investor a share of ownership in the business since the equity investor is assuming the primary risk of losing his or her funds in

the business. If the business fails, all of the equity investors lose their investments. If the business succeeds, the founders and equity investors share in the benefits.

The types of equity investors that business owners typically pursue include themselves (via their personal savings), family members and friends, partners, shareholders, angels and venture capital investors.

ANGELS

Angels tend to be wealthy individuals, many times themselves entrepreneurs, who invest in new businesses in return for equity ownership interests in these new businesses. It is important to note, however, that angels do not make these investments out of the kindness of their hearts. Angels tend to be extremely savvy business men and women who seek to take calculated risks with business ventures that might enable them to generate tremendous gains when the businesses in which they invest "take off." Angels represent an outstanding source of financing for businesses that have grown too large to be financed by family and friends, but are still too small to attract the attention of venture capitalists.

Angels fill a substantial need in the capital market for young businesses. Typically, angels will finance new businesses with capital needs in the range \$10,000 to \$2 million.

ANGEL-HUNTING TIPS

1. Business angels are looking for investments capable of achieving a return of 20 percent or more, so make sure you can achieve this before you waste time chasing investors.
2. Angels tend to invest locally, so start your search within a 50-mile radius of your business premises.
3. Concentrate on successful individuals within your industry since angels prefer to look for investments in industries they know something about.
4. Use any contacts and networks you may have.
5. It may take six months to a year to find the right investor and another three to six months to negotiate the deal. Don't pressure investors—they may walk away.
6. The first meeting is the most important because business angels tend to place emphasis on the entrepreneur and management

team and how well they will be able to work with them.

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APPRENTICESHIP PROGRAMS

Apprenticeship programs involve on-the-job training coupled with in-class support for students before they directly enter the workforce. Apprenticeships also are called dual-training programs because participants receive training both in the workplace and at school. Apprenticeship programs have proven extremely effective in smoothly transferring school-related skills to pragmatic workforce application.

THE GERMAN MODEL

Apprenticeship programs were first developed in Germany, where they have received worldwide attention. As Gitter and Scheuer note: "The comprehensive German apprenticeship system is often seen as a model for an improved school-to-work transition" (1997). Perhaps the reason the German model is so successful is the commitment of time both parties invest in the apprenticeship—usually three or more years. This commitment recognizes apprenticeship as a critical educational and training crossroad.

Also contributing to the acceptance of the German model, the Federal Ministry of Education regulates each occupation's training requirements and the ultimate rewarding of completion certification to apprentices. It also provides the framework for the working agreements between apprentices and employers.

Wages for apprentices generally are one-third of the standard employment rate in a given occupation. These wages are fixed across companies regionally through collective agreement of participating employers.

Rainer Winkelmann identifies three hallmark features of the German apprenticeship model: "it is company-based, it relies on voluntary participation by firms, and it generates portable, occupation-specific skills" (1996). Additionally, apprenticeships are funded by the individual companies involved, rather than through state funding or payroll taxation. Actual pay varies greatly according to the nature of the apprenticeship.

Traditionally, apprentices must find their own apprenticeships. In Germany, this often is accomplished through the potential apprentice's own personal connections or initiative. Additionally, Germany's Federal Employment Agency helps to place applicants with firms seeking apprentices. A range of Web sites are available that provide databases of employers offering apprenticeships, searchable by occupation. Though apprenticeships are in no way guaranteed, the vast majority of Germans have participated in an apprenticeship. Indeed, 71 percent of the German labor force had undergone a formal apprenticeship in 1991. Moreover, this figure is misleadingly low, since it does not include those Germans participating in alternative on-the-job training in specialized training schools for health care professionals, hotel workers, or civil servants.

APPRENTICESHIPS VS. INTERNSHIPS

Apprenticeships differ from the internship model more commonly practiced in the United States and Canada. Internships offer essentially minor workplace exposure over a comparatively short time. The internship is seen as merely augmenting the more important coursework. The nature of the internship may not even be set by the employer; instead, it might be determined by the educational institution with the goodwill of the host company. The benefit to the employer in an internship is often negligible, with the long-range benefit of a better qualified employment pool. If the intern contributes to the organization in more than a superficial way, it is an added benefit rather than an expected outcome, although having an intern pool does allow a company to prescreen potential new employees before hiring them permanently. Finally, the internship tends to be an isolated, short-term project as opposed to the four- to five-year commitment of most apprenticeship programs.

In many respects, apprenticeships are the diametric opposite of internships (see Table 1). In an apprenticeship, the work-related experience is central, with the company, rather than the educational institution, determining the terms of study. In apprenticeships, the coursework is coequal (rather than supplemental) to the on-the-job training. In apprenticeships, the employer expects to receive an immediate tangible benefit from the work carried out by the apprentice, in addition to the long-range benefit of a better qualified employment pool.

BENEFITS OF THE GERMAN MODEL

Gitter and Scheuer credit apprenticeship for the fact that, "with the exception of those with a postsecondary education, the unemployment rates in the United States are more than double those in Germany

Table 1
Differences Between Apprenticeships and Internships

	Apprenticeships	Internships
On-the-job training	coequal to coursework	supplemental coursework
Time frame	4 to 5 years	6 months to a year
Training designer	employer	educational institution
Benefit to employer	tangible	coincidental
Procurement	individual participant	educational institution

for groups with a comparable education” (1997). Couch identified increased earnings for those participating in apprenticeship programs. In all, as Gitter summarizes, “The apprenticeship-trained worker is more likely to earn more money, work more hours per year, and rise to supervisory status than are workers who have learned the trade through other methods” (1994).

EUROPEAN CRITIQUES OF THE GERMAN SYSTEM

Germany has the longest history of apprenticeships, but it is not alone in its application. Several other European nations also have embraced the concept, most notably in Switzerland, Austria, Denmark, and in recent years, Great Britain. Yet, not all Europeans have embraced apprenticeships. Indeed, the apprenticeship system has come under attack within the European Union. As Roy Harrison indicated, the issue focuses on “the degree to which vocational qualifications should be harmonised at a European level” (1997).

While defenders of the apprenticeship system point to the tangential skills and work-related benefits of the model, they fail to address European-wide concerns that employers would favor the apprenticeship model, thus showing a preference for citizens of nations like Germany and Austria that support the system on a wide scale. Thus, in 1995 the European Council of Ministers met to discuss the difficulties imposed by the German model. In particular, the ministers expressed concern that apprenticeships disrupted the European goal of eliminating preferences for employees from one EU nation over another. The ministers, as Harrison explains, “stressed that a European area in qualifications and training cannot be established while countries continue to distrust the quality and value of each others’ qualifications” (1997).

GREAT BRITAIN’S APPROACH

In 1995 Great Britain introduced Modern Apprenticeship. Modern Apprenticeship added flexibility into the program, with no set duration of training as a req-

uisite for government funding. This helped to make apprenticeship more palatable to employers. Additionally, Great Britain does not nationally legislate apprenticeship as do other European countries. Rather, guidelines are sent out from the Department of Education and Skills that are left to open interpretation from varying geographic and occupational sectors.

While a small number of British apprentices obtain employment directly from an employer, most are directed through the government Learning and Skills Councils. Oftentimes, it is the training provider intermediary, rather than the employer, who conducts the assessment of the apprentice. However, complex requirements for receiving government funding for apprenticeship programs are often daunting to the private sector. Therefore many of the apprenticeships in Great Britain involve government-supported training programs and areas of occupation.

APPRENTICESHIP IN THE UNITED STATES

Even as apprenticeships have begun to come under debate in Europe, they have begun to gain wider acceptance in the United States. The apprenticeship programs taking root in the United States remain uncoordinated and hosted by a wide variety of sources. Some are sponsored by German companies themselves. For example, Siemens, the Munich-based multinational, has apprenticeship programs associated with its plants in Lake Mary, Florida; Franklin, Kentucky; and Wendell, North Carolina. Similarly, the Robert Bosch Corporation has set up apprenticeship programs linked to its Charleston, South Carolina, facility. Other German companies also have brought in apprenticeship programs in full or in part to their U.S. operations.

Other apprenticeship programs are sponsored by non-German companies. For example, Illinois-based Castwell Products (a division of Citation Corporation) runs an apprenticeship program for its foundry. As with several other U.S. apprenticeship programs, applicants come from the factory floor—not from secondary school. Nonetheless, the apprenticeship program imitates the German model in most other respects. Castwell’s participants undergo a four-year

apprenticeship involving eight college courses related to their work, and a rotation every six months for on-the-job training under a different tutor.

Other U.S. apprenticeship programs are cooperative efforts between secondary schools and companies, coordinated through trade associations. Such programs are not accurate representations of the German model, but tend to be modifications inspired by the European apprenticeship system. For example, the Tooling and Manufacturing Association of Park Ridge, Illinois, jointly set up apprenticeship programs with local high schools and manufacturing firms. The on-the-job training is coordinated with job-related coursework at the high school and culminates either in an associate's degree through the summer internship courses, or entry into the Illinois Institute of Technology's four-year manufacturing technology program at a junior standing. Bethany Paul, the association's apprenticeship manager, points to its success, indicating that "in Illinois only 17 percent of students finish college compared with over 90 percent who finish their four-year apprenticeship program."

Finally, in some U.S. apprenticeship programs governmental agencies have tried to plant the seeds for growing apprenticeship systems directly patterned on the German model. For example, the Rhode Island Departments of Labor and Education coordinated with the Rhode Island Teachers Union and private industry to send representatives directly to Germany and Switzerland to study their apprenticeship models. On their return in 1998, Rhode Island set in place a state-coordinated pilot apprenticeship program involving on-the-job training coordinated with business and technical coursework. In four to five years, the program culminated in a bachelor's degree.

Similarly, the Oklahoma Department of Human Services brought together local chambers of commerce, private companies, and public education organizations to form IndEx, a coordinating body for Tulsa-based apprenticeship programs. Unlike other vocational training, the IndEx programs are actual apprenticeships leading high-school juniors through four years of both academic and on-the-job training with pay for both studies and work training. As an incentive, the organization offers a \$1,200 bonus for maintaining a 3.1 grade point average or better (Rowley, et al.).

Yet despite the growing interest from a variety of quarters in apprenticeship programs in the United States, problems exist. Germany has provided apprenticeships of some sort since the Middle Ages. This has led to a cultural receptivity to apprenticeships that may not be as readily transferable to the United States. As Gitter and Scheuer (1997) note, "the key to Germany's success is the country's social consensus on the importance of workforce training for youths." In the end, that consensus may not be easily transferred to the United States.

Issues regarding insurance and liability are arguably much greater factors in the heavily litigious U.S. workplace. German, Austrian, and Danish child-labor laws do not view apprenticeships as child labor because the apprenticeship systems are so deeply entrenched into the cultural understanding of education in those countries. By contrast, in the United States, where apprenticeships are a new idea, no such clear differentiation exists separating firms employing middle-school-age apprentices from companies employing inexpensive and illegal child labor. Additionally, in Germany teachers view apprenticeships as normal. In the United States, teachers may feel threatened by the implication that traditional U.S. education (data notwithstanding) does not prepare students for jobs.

Perhaps the greatest potential impediment to the widespread acceptance of apprenticeships may come from the way in which such programs are seen by labor unions in the United States. In Germany, union ranks are filled with members who learned their occupations through apprenticeships. Moreover, considerably greater labor-management cooperation characterizes the German workplace than in the United States. U.S. labor leaders are likely to be suspicious of apprenticeship programs as a management ploy to employ non-unionized, underpaid student workers. Indiana, for instance, was forced to scrap, for these very reasons, a state-sponsored apprenticeship initiative when local steel unions opposed the program. Still, labor can be supportive as well. Wisconsin passed a state law establishing apprenticeship programs with the full cooperation of the AFL-CIO.

Apprenticeship systems have a long history of successful school-to-work transition in Germany. The German model has achieved considerable success in several other nations such as Austria and Switzerland. Though somewhat modified, it has also achieved success in variant forms in Denmark and Great Britain, although practiced by a considerably more limited number of apprentices and employers. Since the early 1990s the German apprenticeship model has achieved growing attention in the United States. To date, U.S. apprenticeships have been both limited and relatively uncoordinated. Still, the initial programs sponsored both by private and state organizations seem promising, though they face several potential obstacles

SEE ALSO: Continuing Education and Lifelong Learning Trends; Training Delivery Methods

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THE ART AND SCIENCE OF MANAGEMENT

One of the enduring questions in the field of management is whether it is an art or a science. Webster's College Dictionary defines an art as "skill in conducting any human activity" and science as "any skill or technique that reflects a precise application of facts or a principle." Reflected in the differences in these definitions is the use of precision in science, in that there is a particular, prescribed way in which a manager should act. Thus, management as a science would indicate that in practice, managers use a specific body of information and facts to guide their behaviors, but that management as an art requires no specific body of knowledge, only skill. Conversely, those who believe management is an art are likely to believe that there is no specific way to teach or understand management,

and that it is a skill borne of personality and ability. Those who believe in management as an art are likely to believe that certain people are more predisposed to be effective managers than are others, and that some people cannot be taught to be effective managers. That is, even with an understanding of management research and an education in management, some people will not be capable of being effective practicing managers.

FOUNDATIONS OF THE MANAGEMENT AS A SCIENCE PERSPECTIVE

Practicing managers who believe in management as a science are likely to believe that there are ideal managerial practices for certain situations. That is, when faced with a managerial dilemma, the manager who believes in the scientific foundation of his or her craft will expect that there is a rational and objective way to determine the correct course of action. This manager is likely to follow general principles and theories and also by creating and testing hypotheses. For instance, if a manager has a problem with an employee's poor work performance, the manager will look to specific means of performance improvement, expecting that certain principles will work in most situations. He or she may rely on concepts learned in business school or through a company training program when determining a course of action, perhaps paying less attention to political and social factors involved in the situation.

Many early management researchers subscribed to the vision of managers as scientists. The scientific management movement was the primary driver of this perspective. Scientific management, pioneered by Frederick W. Taylor, Frank and Lillian Gilbreth, and others, attempted to discover "the one best way" to perform jobs. They used scientific processes to evaluate and organize work so that it became more efficient and effective. Scientific management's emphasis on both reducing inefficiencies and on understanding the psychology of workers changed manager and employee attitudes towards the practice of management. See Exhibit 1 for a summary of the principles of scientific management.

FOUNDATIONS OF THE MANAGEMENT AS AN ART PERSPECTIVE

Practicing managers who believe in management as an art are unlikely to believe that scientific principles and theories will be able to implemented in actual managerial situations. Instead, these managers are likely to rely on the social and political environment surrounding the managerial issue, using their own knowledge of a situation, rather than generic rules, to determine a course of action. For example, as a contrast

Exhibit 1

Frederick W. Taylor's Principles of Scientific Management

1. Managers must study the way that workers perform their tasks and understand the job knowledge (formal and informal) that workers have, then find ways to improve how tasks are performed.
2. Managers must codify new methods of performing tasks into written work rules and standard operating procedures.
3. Managers should hire workers who have skills and abilities needed for the tasks to be completed, and should train them to perform the tasks according to the established procedures.
4. Managers must establish a level of performance for the task that is acceptable and fair and should link it to a pay system that reward workers who perform above the acceptable level.

to the example given previously, a manager who has a problem with an employee's poor work performance is likely to rely on his or her own experiences and judgment when addressing this issue. Rather than having a standard response to such a problem, this manager is likely to consider a broad range of social and political factors, and is likely to take different actions depending on the context of the problem.

Henry Mintzberg is probably the most well-known and prominent advocate of the school of thought that management is an art. Mintzberg is an academic researcher whose work capturing the actual daily tasks of real managers was ground breaking research for its time. Mintzberg, through his observation of actual managers in their daily work, determined that managers did not sit at their desks, thinking, evaluating, and deciding all day long, working for long, uninterrupted time periods. Rather, Mintzberg determined that managers engaged in very fragmented work, with constant interruptions and rare opportunities to quietly consider managerial issues. Thus, Mintzberg revolutionized thinking about managers at the time that his work was published, challenging the prior notion that managers behaved rationally and methodically. This was in line with the perspective of management as an art, because it indicated that managers did not necessarily have routine behaviors throughout their days, but instead used their own social and political skills to solve problems that arose throughout the course of work.

Another scholar that promoted the notion of management as an art was David E. Lilienthal, who in 1967 had his series of lectures titled *Management: A Humanist Art* published. In this set of published lectures, Lilienthal argues that management requires more than a mastery of techniques and skills; instead, it also requires that managers understand individuals and their motivations and help them achieve their goals. Lilienthal believed that combining management and leadership into practice, by not only getting work done but understanding the meaning behind the work, as effective managerial behavior. Thus, he promoted the idea of the manager as a motivator and facilitator of others. This manager as an artist was likely to

respond differently to each employee and situation, rather than use a prescribed set of responses dictated by set of known guidelines.

Another proponent of the management as art school of thought is Peter Drucker, famed management scholar who is best known for developing ideas related to total quality management. Drucker terms management "a liberal art," claiming that it is such because it deals with the fundamentals of knowledge, wisdom, and leadership, but because it is also concerned with practice and application. Drucker argues that the discipline (i.e., the science) of management attempts to create a paradigm for managers, in which facts are established, and exceptions to these facts are ignored as anomalies. He is critical of the assumptions that make up the management paradigm, because these assumptions change over time as society and the business environment change. Thus, management is more of an art, because scientific "facts" do not remain stable over time.

ART AND SCIENCE IN MANAGEMENT RESEARCH

Noted researcher Thomas Kuhn, in his book *The Structure of Scientific Revolutions*, addresses issues associated with the state of current scientific research and the opportunities for scientific discovery. Kuhn, in his previous editions of this text, drew distinctions between mature and immature fields of study. In mature fields of study, many of the central questions of that field have been answered, and strong consensus exists among researchers regarding the fundamental assumptions of that field. Conversely, in immature fields of study, there is still a great deal of debate on major questions in the field, and gains in knowledge come sporadically. In many ways, management is an immature science. While its foundations in psychology, sociology, and other related areas give it a long and rich history, the nature of the areas of study renders it immature. That is, due to the difficulties of studying human behavior in a number of disparate settings, the study of management is still very young when compared to other fields of research (e.g., in the

physical sciences). In fact, many scholars have argued that the social sciences (e.g., management research) suffer from envy of the physical sciences, in which “truths” are able to be determined through research. As such, social sciences researchers may strive to create a more “scientific” approach to their fields in order to grant them more legitimacy.

Despite its relative immaturity, some consistent answers have been developed in the field of management. In many ways this is due to the increased sophistication of management research. However, there are still a number of research gaps in management; despite our increased knowledge in some areas, there is still a great deal of disagreement and confusion in other areas. In these circumstances, the practice of management is likely to be dictated by the perspective of management as an art. Because there are no hard and fast rules in certain circumstances, individual managers’ experiences and skills must guide them.

Today, much of the management research conducted in academic institutions blends the notion of management as an art and as a science. Some of these trends in management research that have pushed the field in either direction—namely increased statistical sophistication and the emphasis on contextual influences—are described below.

INCREASED STATISTICAL SOPHISTICATION. As computer technology continues to improve, the ability of management researchers to conduct sophisticated statistical analyses has also been enhanced. Powerful statistical computing packages are now readily available for desktop computers, allowing for high-speed analysis of complex statistical models. Additionally, new statistical modeling techniques, such as structural equations modeling, have gained footing in management research. Thus, management researchers are now better able to empirically test more complex research hypotheses, and management as a science is perpetuated.

The improvement in researchers’ ability to analyze statistics more quickly has resulted in an increase in information about theories of management. Practicing managers may now know of certain relationships that have received strong support through decades of empirical research. Such “truths” may become guiding principles that practicing managers see as ideal solutions to a variety of situations. For instance, numerous empirical studies over several recent decades have supported the relationship between appropriate goal setting and higher work performance. This relationship has been tested in a variety of situations, with a number of contextual influences present, yet the statistical relationship holds in nearly all of them. Thus, a practicing manager may see this body of empirical research and, in a work situation, see the benefits of goal setting on performance as a scientific ideal. He or she may then implement

goal setting in a number of practical situations, bolstered by the confidence afforded by decades of research supporting such actions.

Meta-analysis, in particular, is a methodological procedure that has contributed significantly to the study of management. Meta-analysis is a statistical technique that allows a researcher to combine findings from multiple studies, correct for errors in study design, and determine an “average” statistical relationship among variables. Meta-analysis first gained a foothold in management research in studies of the validity of selection techniques for different jobs in different organizations. Before the application of meta-analysis to research on the validity of different selection techniques, there was a belief in the situational specificity of these selection methods. That is, studies of the accuracy of selection techniques in predicting subsequent job performance had such disparate results that academics concluded that validity of a standardized test, for example, would differ dramatically in each selection situation (e.g., with different job applicants, in different organizations, in different geographic regions). This myth was dispelled, however, with the application of meta-analysis to the results of the collected body of research on the validity of selection methods. The use of meta-analysis established that the differences in findings were due primarily to limitations of research design, such as small sample size, unreliability of measures, and other correctable problems. When meta-analysis was applied to this group of studies, they were combined to determine that validates of selection techniques were general across jobs and organizations. Thus, the use of meta-analysis helped to establish that cognitive ability tests and structured interviews were highly valid selection methods in nearly every job.

Meta-analysis has now been applied to many different areas of management research, including training, recruitment, fairness, and many other topics. Additionally, there have been a number of refinements to the statistical corrections used in meta-analysis. This increased acceptance of and use of meta-analysis in management research supports the notion of management as a science. Meta-analysis provides for “truths” in management—relationships between variables that hold strong regardless of the people or situation involved. For instance, one consistent finding is that structured selection interviews, ones in which applicants are asked the same set of predetermined questions, and in which responses are evaluated using the same criteria, are a more valid predictor of future job performance than are unstructured interviews, in which applicants are asked different questions and responses are evaluated using different criteria. Meta-analysis has been used to establish this finding, and thus a practicing manager may use this information as a scientific “fact” when conducting selection interviews.

CONTEXTUAL INFLUENCES. While improvements in management researchers' ability to conduct statistical analysis in their studies has promoted the notion of management as a science, in some ways it has also promoted management as an art. Because of the capability to statistically analyze and interpret larger, more complex models of behavior, researchers are now testing models with this increased complexity. In particular, there is an increased emphasis on contextual influences. That is, rather than focusing solely on how behaviors are linked to outcomes, many researchers now include individual, social, and political variables in research models to have a richer understanding of behavior. Thus, there are more complex recommendations that can be made from recent research, rather than basic "truths."

For example, one of the most prominent areas of contextual research in recent years is in person-organization fit. Person-organization fit is a part of the attraction-selection-attrition model that suggests that certain types of individuals are attracted to particular organizations, selected by those organizations, and either adapt to become an effective part of the organization, or leave if they do not fit with the organization. Person-organization fit (p-o fit) is the notion that the particular skills, attitudes, values, and preferences of an individual employee should fit with those of the organization in order for that employee to have high job satisfaction and performance. The p-o fit model indicates that this fit is likely to be as important as an assessment of applicants' abilities when hiring. Previous models of selection emphasized a strict interpretation of applicant skills, with the use of valid selection tests as most important. However, the p-o fit model indicates that, even if skills and abilities have been appropriately measured, that hiring the applicant with the best skills is not always the best course of action, but that hiring an individual who fits into the culture of the organization could be more advantageous.

This move towards including contextual influences in management research models promotes the notion of management as an art. Rather than indicating that there are specific principles and guidelines that can guide management practice, it suggests that managerial behavior should change based on the social and political context of the situation.

ART AND SCIENCE IN MANAGEMENT EDUCATION AND DEVELOPMENT

Management education and development, which attempt to prepare today's managers for organizational challenges, are guided by both the notion of management as an art and as a science. The approach to management education and development is likely to

differ dramatically depending on the belief one has as to the nature of the practice of management. The perspective of management as an art assumes to some extent that a manager has a disposition or experiences that guide him or her in managerial decisions and activities. Thus, with this perspective, many managers may be successful without any formal education or training in management. The perspective of management as a science, however, would indicate that management skills can be taught through an understanding of theory and principles of management. Many of today's educational institutions and workplaces blend the notion of management as a science and an art in their approach to preparing employees for management.

Primarily, formal management education for practicing managers, such as with bachelors and masters degrees, emphasizes the science of management. Management education in today's universities primarily emphasizes management as a science. Textbooks are used in management courses for bachelors' degrees, and these texts emphasize many of the consistent findings of many decades of management research. And, as these degrees increase in popularity, it is likely that more practicing managers will have a set of established management ideals with which they operate.

While formal management education may promote management as a science, many development efforts support the notion of management as an art. To cultivate management talent, organizations offer mentoring, overseas experiences, and job rotation. These activities allow managers to gain greater social and political insight and thus rely on their own judgment and abilities to improve their management style. Much of mentoring involves behavior modeling, in which a protégé may learn nuances of managerial behavior rather than a set of specific guidelines for managing. Overseas experiences are likely to involve a great deal of manager adaptation, and the general rules by which a manager might operate in one culture are likely to change when managing workers in other countries. Finally, job rotation is a technique that requires a manager to work in a variety of settings. Again, this encourages a manager to be flexible and adaptive, and likely rely more on his or her personal skill in managing.

The foundations of management as an art and management as a science are evident in today's educational institutions and work organizations. Management as a science was primarily influenced by researchers in the area of scientific management, such as Frederick Taylor, and continues today in much of the empirical research on management issues. Management as an art has been influenced by scholars such as Henry Mintzberg and Peter Drucker, and is often evident in complex theories of management. Many scholars and practitioners blend art and science to more effectively cultivate managerial talent. This is evident in recent

theories of management, research in workplaces, and education and development of managers.

SEE ALSO: Management Science; Management Thought; Organizational Behavior; Research Methods and Processes; Statistics

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ARTIFICIAL INTELLIGENCE

Artificial intelligence (AI) refers to computer software that exhibits intelligent behavior. The term "intelligence" is difficult to define, and has been the subject of heated debate by philosophers, educators, and psychologists for ages. Nevertheless, it is possible to enumerate many important characteristics of intelligent behavior. Intelligence includes the capacity to learn, maintain a large storehouse of knowledge, utilize commonsense reasoning, apply analytical abilities, discern relationships between facts, communicate ideas to others and understand communications from others, and perceive and make sense of the world around us. Thus, artificial intelligence systems are computer programs that exhibit one or more of these behaviors.

AI systems can be divided into two broad categories: knowledge representation systems and machine learning systems. Knowledge representation systems, also known as expert systems, provide a structure for

capturing and encoding the knowledge of a human expert in a particular domain. For example, the knowledge of medical doctors might be captured in a computerized model that can be used to help diagnose patient illnesses.

MACHINE LEARNING SYSTEMS

The second category of AI, machine learning systems, creates new knowledge by finding previously unknown patterns in data. In contrast to knowledge representation approaches, which model the problem-solving structure of human experts, machine learning systems derive solutions by "learning" patterns in data, with little or no intervention by an expert. There are three main machine learning techniques: neural networks, induction algorithms, and genetic algorithms.

NEURAL NETWORKS. Neural networks simulate the human nervous system. The concepts that guide neural network research and practice stem from studies of biological systems. These systems model the interaction between nerve cells. Components of a neural network include neurons (sometimes called "processing elements"), input lines to the neurons (called dendrites), and output lines from the neurons (called axons).

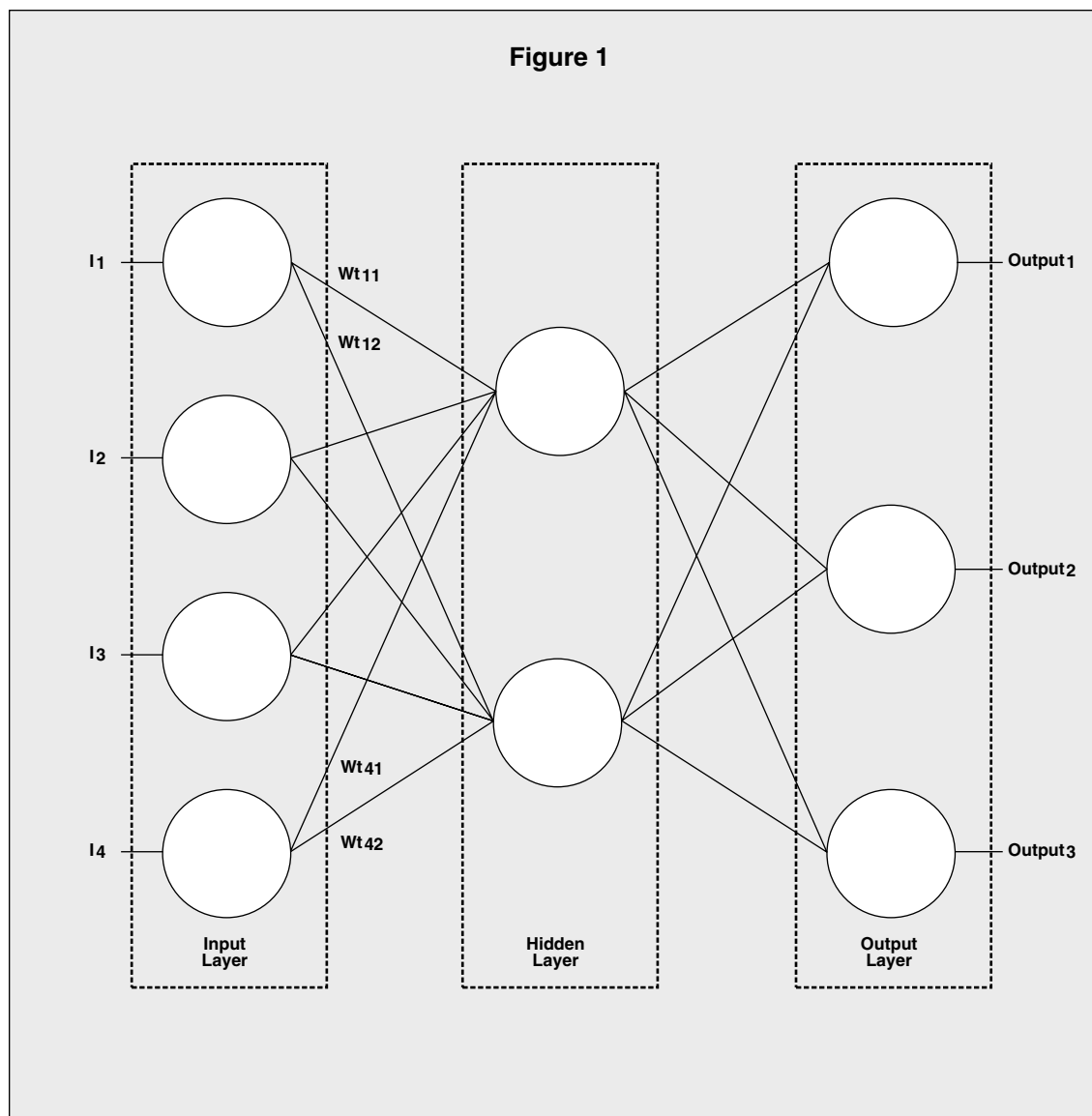
Neural networks are composed of richly connected sets of neurons forming layers. The neural network architecture consists of an input layer, which inputs data to the network; an output layer, which produces the resulting guess of the network; and a series of one or more hidden layers, which assist in propagating. This is illustrated in Figure 1.

During processing, each neuron performs a weighted sum of inputs from the neurons connecting to it; this is called activation. The neuron chooses to fire if the sum of inputs exceeds some previously set threshold value; this is called transfer.

Inputs with high weights tend to give greater activation to a neuron than inputs with low weights. The weight of an input is analogous to the strength of a synapse in a biological system. In biological systems, learning occurs by strengthening or weakening the synaptic connections between nerve cells. An artificial neural network simulates synaptic connection strength by increasing or decreasing the weight of input lines into neurons.

Neural networks are trained with a series of data points. The networks guess which response should be given, and the guess is compared against the correct answer for each data point. If errors occur, the weights into the neurons are adjusted and the process repeats itself. This learning approach is called backpropagation, and is similar to statistical regression.

Neural networks are used in a wide variety of business problems, including optical character recognition, financial forecasting, market demographics trend assessment, and various robotics applications.



INDUCTION ALGORITHMS. Induction algorithms form another approach to machine learning. In contrast to neural networks, which are highly mathematical in nature, induction approaches tend to involve symbolic data. As the name implies, these algorithms work by implementing inductive reasoning approaches. Induction is a reasoning method that can be characterized as “learning by example.” Unlike rule-based deduction, induction begins with a set of observations and constructs rules to account for these observations. Inductive reasoning attempts to find general patterns that can fully explain the observations. The system is presented with a large set of data consisting of several input variables and one decision variable. The system constructs a decision tree by recursively partitioning data sets based on the variables that best distinguish between the data elements. That is, it attempts to partition the data so that each partition contains data with the same value for a decision variable. It does this by

selecting the input variables that do the best job of dividing the data set into homogeneous partitions. For example, consider Figure 2, which contains the data set pertaining to decisions that were made on credit loan applications.

Figure 2
Artificial Intelligence & Expert Systems

	Salary	Credit History	Current Assets	Loan Decision
a)	High	Poor	High	Accept
b)	High	Poor	Low	Reject
c)	Low	Poor	Low	Reject
d)	Low	Good	Low	Accept
e)	Low	Good	High	Accept
f)	High	Good	Low	Accept

An induction algorithm would infer the rules in Figure 3 to explain this data.

Figure 3

If the credit history is good, then accept the loan application

If the credit history is poor and current assets are high, then accept the loan application

If the credit history is poor and current assets are low, then reject the loan application

As this example illustrates, an induction algorithm is able to induce rules that identify the general patterns in data. In doing so, these algorithms can prune out irrelevant or unnecessary attributes. In the example above, salary was irrelevant in terms of explaining the loan decision of the data set.

Induction algorithms are often used for data mining applications, such as marketing problems that help companies decide on the best market strategies for new product lines. Data mining is a common service included in data warehouses, which are frequently used as decision support tools.

GENETIC ALGORITHMS. Genetic algorithms use an evolutionary approach to solve optimization problems. These are based on Darwin's theory of evolution, and in particular the notion of survival of the fittest. Concepts such as reproduction, natural selection, mutation, chromosome, and gene are all included in the genetic algorithm approach.

Genetic algorithms are useful in optimization problems that must select from a very large number of possible solutions to a problem. A classic example of this is the traveling salesperson problem. Consider a salesman who must visit n cities. The salesman's problem is to find the shortest route by which to visit each of these n cities exactly once, so that the salesman will tour all the cities and return to the origin. For such a problem there are $(n - 1)!$ possible solutions, or $(n - 1)$ factorial. For six cities, this would mean $5 \times 4 \times 3 \times 2 \times 1 = 120$ possible solutions. Suppose that the salesman must travel to 100 cities. This would involve 99! possible solutions. This is such an astronomical number that if the world's most powerful computer began solving such a problem at the time that the universe had begun and worked continuously on it since, it would be less than one percent complete today!

Obviously, for this type of problem a brute strength method of exhaustively comparing all possible solutions will not work. This requires the use of heuristic methods, of which the genetic algorithm is a prime example. For the traveling salesperson problem, a chromosome would be one possible route through the cities, and a gene would be a city in a particular

sequence on the chromosome. The genetic algorithm would start with an initial population of chromosomes (routes) and measure each according to a fitness function (the total distance traveled in the route). Those with the best fitness functions would be selected and those with the worst would be discarded. Then random pairs of surviving chromosomes would mate, a process called crossover. This involves swapping city positions between the pair of chromosomes, resulting in a pair of child chromosomes. In addition, some random subset of the population would be mutated, such that some portion of the sequence of cities would be altered. The process of selection, crossover, and mutation results in a new population for the next generation. This procedure is repeated through as many generations as necessary in order to obtain an optimal solution.

Genetic algorithms are very effective at finding good solutions to optimization problems. Scheduling, configuration, and routing problems are good candidates for a genetic algorithm approach. Although genetic algorithms do not guarantee the absolute best solution, they do consistently arrive at very good solutions in a relatively short period of time.

AI IN THE TWENTY-FIRST CENTURY

Artificial intelligence systems provide a key component in many computer applications that serve the world of business. In fact, AI is so prevalent that many people encounter such applications on a daily basis without even being aware of it.

One of the most ubiquitous uses of AI can be found in network servers that route electronic mail. Expert systems are routinely utilized in the medical field, where they take the place of doctors in assessing the results of tests like mammograms or electrocardiograms. Neural networks are commonly used by credit card companies, banks, and insurance firms to help detect fraud. These AI systems can, for example, monitor consumer spending habits, detect patterns in the data, and alert the company when uncharacteristic patterns arise. Genetic algorithms serve logistics planning functions in airports, factories, and even military operations, where they are used to help solve incredibly complex resource-allocation problems. And perhaps most familiar, many companies employ AI systems to help monitor calls in their customer service call centers. These systems can analyze the emotional tones of callers' voices or listen for specific words, and route those calls to human supervisors for follow-up attention.

Although computer scientists have thus far failed to create machines that can function with the complex intelligence of human beings, they have succeeded in creating a wide range of AI applications that make people's lives simpler and more convenient.

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Revised by Rhoda L. Wilburn

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ASSESSMENT CENTERS

An assessment center is a process used to make personnel decisions in which participants engage in a variety of exercises and have their performance evaluated by multiple assessors. The goal of an assessment center is to simulate job tasks so that an applicant can demonstrate skills or characteristics that would be effective on the job.

According to the International Task Force on Assessment Center Guidelines, assessment centers:

- Conduct job analyses of relevant behaviors
- Classify participants' behaviors into meaningful and relevant categories
- Use techniques that are designed to provide information for evaluating the dimensions previously determined by the job analysis
- Involve multiple assessment techniques, such as tests, interviews, questionnaires, sociometric devices, and simulations
- Include a sufficient number of job-related simulations, allowing opportunities to observe the candidate's behavior related to each competency/dimension being assessed
- Utilize several assessors to evaluate each participant
- Employ thoroughly trained assessors

- Provide a means for assessors to record their observations of participants' behavior as it occurs
- Involve the preparation of an assessor's report
- Base the integration of behaviors on the pooling of assessors' information, or upon a statistical integration process validated in accordance with professionally accepted standards.

Behavioral dimensions that are frequently measured in assessment centers include planning and organizing, leadership, oral communication, tolerance for stress, and initiative. Participants have their performance on these and similar dimensions evaluated while they engaging in two or more of the following activities over a one- or two-day period:

- In-basket exercises, in which participants respond to a series of administrative problems that simulate typical managerial tasks
- Leaderless group discussions, in which a group of participants without an assigned leader must arrive at a group solution to a specified problem within a given time period
- Role-plays, in which participants are involved in a simulation of a situation that could occur on the job
- Interviews, in which participants typically are questioned about how they have handled particular work situations in the past and how they would respond to specific work situations in the future
- Management games, in which participants must work cooperatively to meet mental or physical challenges

Evaluations of assessment center participants can be used for employee selection decisions (hiring and promotion), and to help identify training and development needs. The most common use of assessment centers is to evaluate participants' management potential. When used for selection or promotion decisions, the emphasis is on identifying participants who do well on essential job performance dimensions. When used for training and development purposes, the focus is on identifying participant deficiencies on critical job dimensions. The feedback and employee development suggestions that result from an assessment form the basis for training programs that are designed to correct performance problems. For organizations, assessment centers can serve as needs assessment programs that identify employee development and hiring needs.

Early versions of assessment centers were used by the military in the 1940s. The first use of an assessment center in an industrial setting was in the 1950s,

when AT&T used the process in an attempt to evaluate participants' potential for managerial success. The results of this early assessment center application were encouraging, and assessment center use increased following AT&T's apparent success. According to one study by Gaugler, Rosenthal, Thornton, and Bentson, by 1987 more than 2,000 organizations, including Pepsico, IBM, Rubbermaid, and the FBI, used assessment centers to select and promote managers.

As the use of assessment centers increased during the 1960s and 1970s, researchers identified several ways in which their utility as a personnel selection tool could be improved. In 1973, Bender suggested that companies should undertake validation studies to ensure that assessment centers actually predicted managerial success. He also pointed out that assessors should be more thoroughly trained before they evaluated assessment center participants.

In an attempt to encourage uniformity and professionalism in assessment center practices, the Task Force on Assessment Center Guidelines published *Guidelines and Ethical Considerations for Assessment Center Operations* in 1989. These guidelines were updated in 2000 and endorsed by the International Congress on Assessment Center Methods. They spell out the essential elements of assessment centers and provide recommendations regarding the content of assessor training, information participants should receive before beginning the assessment center, data usage, and validation methods. In addition, these guidelines provide a standard for judging assessment center practices employed by organizations.

The preponderance of research evidence indicates that, when designed and conducted in a manner consistent with professional guidelines, assessment centers are valid predictors of future promotions and job performance. Additional research suggests that assessment centers have less adverse impact on women and minorities than many other commonly used selection tools, and courts generally have upheld the use of properly designed assessment centers.

The primary criticism of assessment centers is that they are very expensive in terms of both development and implementation, which makes their use infeasible for many small organizations. Other researchers question the convergent and discriminant validity of the measurement of behavioral dimensions in assessment centers. One method used to overcome the expense problem is to videotape the candidates' performance and have the assessors evaluate them later. This avoids costs and problems related to the logistics of assembling candidates and assessors. Another technique is to use "situational judgment tests," or written simulation tests. Candidates either choose the best course of action from a selection of choices or provide a written course of action. Research

indicates that situational judgment tests are good predictors of job performance.

SEE ALSO: Employee Evaluation and Performance Appraisals; Employee Recruitment Planning; Employee Screening and Selection

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ATTRIBUTION THEORY

Attribution theory is intended to help a person understand the causes of human behavior, be it their own or someone else's. The basis of attribution theory is that people want to know the reasons for the actions

that they and others take; they want to attribute causes to behaviors they see rather than assuming that these behaviors are random. This allows people to assume some feeling of control over their own behaviors and over situations. Psychologist Fritz Heider (1896–1988) first developed attribution theory in his 1958 book *The Psychology of Interpersonal Relations*. Heider proposed that what people perceived and believed about what they saw dictated how they would act, even if their beliefs about what they perceived were invalid.

Heider's proposed theory of attribution was further developed by psychologist Bernard Weiner and colleagues in the 1970s and 1980s, and this new theoretical framework has been used primarily in current attribution research. A final development to attribution theory was provided by psychologist Harold Kelley, who examined how consistency, distinctiveness, and consensus could be used by individuals to establish the validity of their perceptions.

Attributions are critical to management because perceived causes of behavior may influence managers' and employees' judgments and actions. For instance, managers must often observe employee performance and make related judgments. If a manager attributes an employee's poor performance to a lack of effort, then the outcome is likely to be negative for that employee; he or she may receive a poor performance appraisal rating or even be terminated from the job. Conversely, if a manager perceives that an employee's poor performance is due to a lack of skill, the manager may assign the employee to further training or provide more instruction or coaching. Making an inaccurate judgment about the causes of poor performance can have negative repercussions for the organization.

Attributions also may influence employee motivation. Employees who perceive the cause of their success to be outside of their control may be reluctant to attempt new tasks and may lose motivation to perform well in the workplace. Conversely, employees who attribute their success to themselves are more likely to have high motivation for work. Thus, understanding attributions that people make can have a strong effect on both employee performance and managerial effectiveness.

ATTRIBUTION PROCESS AND THE CAUSES OF BEHAVIOR

Attribution is considered to be a three-stage process. First, the behavior of an individual must be observed. Second, the perceiver must determine that the behavior they have observed is deliberate. That is, the person being observed is believed to have behaved intentionally. Finally, the observer attributes the observed behavior to either internal or external causes.

Internal causes are attributed to the person being observed, while external causes are attributed to outside factors. The two internal attributions one can make are that a person's ability or a person's effort determined the outcome. Task difficulty and luck are the external causes of behavior. When perceiving behavior, an observer will make a judgment as to which of these factors is the cause of behavior. However, when making a determination between internal and external causes of behavior, the perceiver must examine the elements of consistency, distinctiveness, and consensus.

Consistency describes whether the person being observed behaves the same way when faced with the same set of circumstances. If the person being observed acts the same way in the same type of situation, consistency is high; if they act differently each time, then consistency is low. Distinctiveness is whether the observed person acts the same way in different types of situations. If the person being observed exhibits the same behavior in a variety of contexts, then distinctiveness is low; if they have different behavior depending on the context, then distinctiveness is high. Finally, consensus is the degree to which other people, if in the same situation, would behave similarly to the person being observed. If the observer sees others acting the same way that the person being perceived acts, then consensus is high. However, if others behave differently in the type of situation, then consensus is low. Consistency, distinctiveness, and consensus are evaluated when observing behavior, and then a judgment about an internal versus external cause of behavior is made. When consistency, distinctiveness, and consensus are all high, the perceiver concludes that there is an external cause of behavior. When consistency is high, distinctiveness is low, and consensus is low, the perceiver will attribute the cause of behavior to internal factors.

To better understand consistency, distinctiveness, and consensus, consider a workplace example. Nancy, a manager, has assigned a team of employees to develop a custom sales training program for a client. As the project progresses, Nancy continues to see problems in the work produced by Jim, one of the team members. In order to determine why Jim's performance is not satisfactory, Nancy first considers consistency, or whether Jim has performed poorly on other similar team projects. A review of his past performance appraisals indicates that he has not had prior performance problems when creating custom sales training programs. This would lead Nancy to conclude that there was an external cause of the poor performance. Second, Nancy considers distinctiveness; she wants to know if Jim has performed poorly on different types of tasks. Again, in checking Jim's performance reviews, she finds that when he is on a team to accomplish a different type of task, such as developing

a selection interview, he has excelled. This further points to an external cause of Jim's poor performance. Finally, Nancy assesses consensus, or the behavior of others in this similar task. In asking the team members about their experiences with the current project, she finds that many of them have had difficulty in developing this custom sales training program. Thus, all indicators point to Jim's poor performance being caused by an external factor, such as a difficult task or a demanding client. Based on this attribution, Nancy may explore ways in which to minimize the negative effects of the external factors on Jim's performance rather than attempting to influence his level of effort or ability.

The prior example illustrated how consistency, distinctiveness, and consensus might point toward an external cause. However, these three factors also may lead an observer to attribute behavior to an internal cause, such as the observed person's effort or ability. Nancy, the observer from the previous example, also has experienced difficulties with a secretary named Kelly. Another manager has complained to Nancy that Kelly has not completed work on time and turns in work full of errors. Nancy observes Kelly for several days and finds that, when given work by this particular manager, Kelly continues to perform poorly, which indicates an internal cause (i.e., high consistency). Second, when performing work for other managers on other tasks, Kelly continues to do substandard work; this is distinctiveness, and it again points to an internal cause. Finally, Nancy observes that when other secretaries perform the work assigned by the manager who complained about Kelly, they are able to successfully perform their duties in a timely manner. This is consensus, and it also points to an internal cause. Based on these observations, Nancy can attribute Kelly's poor performance to an internal cause, or namely to Kelly's own lack of skill or effort.

FUNDAMENTAL ATTRIBUTION ERROR AND SELF-SERVING BIAS

People make attributions every day. However, these attributions are not always correct. One common problem in assigning cause is called the fundamental attribution error. This is the tendency of a person to overestimate the influence of personal factors and underestimate the influence of situational factors when assessing someone else's behavior. That is, when observing behavior, a person is more likely to assume that another person's behavior is primarily caused by them and not by the situation. In the workplace, this may mean that managers are more likely to assume that employees' poor performance is due to a lack of ability or effort rather than to task difficulty or luck. The fundamental attribution error, while prominent in North America, is not as common across the rest of the world. In other cultures, such as in India,

the fundamental attribution error is the opposite; people assume that others are more influenced by situation than by personal factors. Thus, while one can assume this error to be present in American managers' perceptions, this may not be the case for managers from other cultures.

As described previously, when a person perceives their own success or failure versus perceiving the success or failure of others, they assign one or more causes: effort, ability, task difficulty, or luck. Effort and ability are internal causes, and task difficulty and luck are external causes. Some researchers argue that it is human nature to have a self-serving bias, which is the tendency to credit one's own successes to internal factors and one's own failure to external factors. Thus, a common assessment of a person's own success might be: "I got a raise because I'm very skilled at my job" (ability), or "I was promoted because of all of the hours I've put into the job" (effort). Common assessments of a person's own failure might be: "I didn't finish the project on time because the deadline was unreasonable for the amount of work required" (task difficulty), or "I didn't make the sale because someone else happened to speak to the client first" (luck). Coupled with the fundamental attribution error, the self-serving bias indicates that people tend to make different attributions about their own successes and failures than the successes and failures of others.

While some researchers argue that the self-serving bias is widespread across most humans in most cultures, others argue that this is not so. Results from a meta-analysis (a method that statistically combines results of multiple empirical research studies) published in 2004 by Mezulis, Abramson, Hyde, and Hankin aimed to address this issue. In examining more than 500 published research studies, some of the results of this meta-analysis indicated that, in general, there were no differences between men and women in their self-serving biases; men and women were just as likely to make self-serving attributions. Additionally, these researchers found that the United States and other Western nations (Canada, the United Kingdom, Australia, New Zealand, and Western Europe) had a strong self-serving bias, which was more pronounced than in most other cultures on other continents. However, despite these strength-related differences, the researchers found that there was a positive self-serving bias in all cultures studied. Within the United States, there were no meaningful differences in self-serving bias among different racial and ethnic groups; no one race was more likely than the others to be more susceptible to this self-serving bias. The general conclusion of Mezulis and her colleagues was that there is a universal self-serving attributional bias that exists across gender, race, and even nation.

Attribution theory was developed to explain how people understand the causes of human behavior, be it

their own or someone else's. Managers often act based on their attributions and may act inappropriately if attributions are not valid. Managers who are aware of the attributional process, the types of internal and external attributions, and the presence of the fundamental attribution error and the self-serving bias can better understand their own and others' behavior.

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AUTONOMY

Autonomy is the degree to which a job provides an employee with the discretion and independence to schedule their work and determine how it is to be done. Higher levels of autonomy on the job have been shown to increase job satisfaction, and in some cases, motivation to perform the job. In traditional organizations, only those employees at higher levels had autonomy. However, new organizational structures, such as flatter organizations, have resulted in increased autonomy at lower levels. Additionally, many companies now make use of autonomous work teams. Autonomy in the workplace can have benefits for employees, teams, managers, and the company as a whole, but it also may have drawbacks. Information regarding both the pros and cons of autonomy for these groups is discussed below.

EMPLOYEE AUTONOMY

According to job design theories, increased autonomy should make employees feel a greater responsibility for the outcomes of their work, and therefore have increased work motivation. Research indicates that when employees have greater levels of autonomy, their personality traits (specifically conscientiousness and

extroversion) have a stronger impact on job performance. Thus, by giving employees more autonomy, they are better able to use their personal attributes to contribute to job performance.

Unfortunately, too much autonomy can lead to employee dissatisfaction. Each individual has a different level of need for autonomy in their job. Some workers prefer more direction from a manager and feel uncomfortable with autonomy; they may not want to exert effort or take the responsibility of having their name solely associated with a task, project, or product. Additionally, if employees are not well-equipped—either in training or in personality—to exercise autonomy, it may result in workplace tension and poor performance. Finally, when given autonomy, workers may believe that they have authority somewhat equal to that of their direct supervisor. This may cause them to resent the extra responsibility or feel that their pay should be increased. A related concern is that managers may feel marginalized when employee autonomy increases, particularly when there is a change to a traditional work environment. Managers may feel that by giving employees autonomy, they no longer contribute as much to the organization or that their jobs may be at stake.

MANAGERIAL AUTONOMY

Managers tend to have increased autonomy in organizations that are more decentralized. In such organizations, managers have more latitude to make decisions regarding the work of employees and even personnel decisions. For example, managers with increased autonomy may be able to assign merit raises to the employees in their unit at their discretion. As with employee autonomy, this freedom can result in feelings of motivation and satisfaction for the manager, who may be in a better position to reward and motivate employees. However, as with employee autonomy, managers who have autonomy may not be equipped to handle it. If managers make poor decisions, this may be harmful to employees and the organization as a whole. Using the example of autonomy in deciding pay raises, a manager may give merit pay increases that are significantly higher than those in other work units, which may cause problems across the organization.

TEAM AUTONOMY

In recent years, many organizations have made use of teams in the workplace, many of which operate autonomously. Self-managed work teams are those in which a supervisor gives little direction to the team, and the team members manage themselves. The success of such teams depends greatly on the team members, including their professional capabilities and their

ability to work together. Oftentimes, such autonomous teams can greatly enhance an organization's ability to be creative, flexible, and innovative. However, as with individuals, too much autonomy in a team can reduce productivity. When individuals work too independently, their lack of communication and monitoring of one another may result in poor team performance. Additionally, without supervision the team may pursue goals that are different from those of the organization. Thus, periodic meetings and supervision from a manager may be necessary to avoid problems associated with too much autonomy.

AUTONOMY AND THE ORGANIZATION

The autonomy of employees and managers is often dictated by an organization's structure and culture; traditional, bureaucratic organizations often have little autonomy, but newer, more organic structures rely on autonomy, empowerment, and participation to succeed. Employee autonomy is believed to have minimized some of the relational barriers between superiors and subordinates. Therefore, autonomy may improve workplace functions through the ideas and suggestions of employees, and foster relationships with a greater degree of trust between management and employees. However, increased autonomy in the

organization also may create disparity among units through different work practices and rules. In the worst case, increased autonomy may allow some employees to engage in unethical behavior. Thus, a certain amount of oversight is necessary in organizations to prevent wrongdoing that may go unnoticed when there are high levels of autonomy.

In conclusion, autonomy generally is a positive attribute for employees, managers, teams, and organizations as a whole. Employees typically desire autonomy, and its introduction can increase motivation and satisfaction. However, because too much autonomy can have organizational drawbacks, care should be taken when increasing it.

SEE ALSO: Empowerment

Marcia J. Simmering

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B

BALANCE SHEETS

The balance sheet, also known as the statement of financial position, is a snapshot of a company's financial condition at a single point in time. It presents a summary listing of a company's assets, liabilities, and owners' equity. The balance sheet is prepared as of the last day of the business year. Therefore, it corresponds to the end of the time period covered by the income statement.

To understand the balance sheet, its purpose, and its contents, several accounting concepts need to be examined. First of all, the balance sheet represents the *accounting equation* for a company. The accounting equation is a mathematical expression that states the following:

$$\text{Assets} = \text{Liabilities} + \text{Owners' Equity}$$

Stated more fully, this means that the dollar total of the assets equals the dollar total of the liabilities plus the dollar total of the owners' equity. The balance sheet presents a company's resources (i.e., assets, or anything the company owns that has monetary value) and the origin or source of these resources (i.e., through borrowing or through the contributions of the owners). By expressing the same dollar amount twice (once as the dollar total of the assets, then as the dollar total of where the assets came from or who has an equity interest in them), we see that the two amounts must be equal or balance at any given point in time.

An interesting observation about the balance sheet is the valuation at which assets are presented. The average person would assume that the assets listed on the balance sheet would be shown at their current

market values. In actuality, generally accepted accounting principles require that most assets be recorded and disclosed at their historical cost, or the original amount that the company paid to obtain ownership or control of the assets. As time passes, however, the current value of certain assets will drift further and further away from their historical cost. In an attempt to present useful information, financial statements show some assets (for which there is a definite market value) at their current market value. When there is no specific market value, historical values are used. An expanded discussion of this concept will follow.

A simple example of a balance sheet appears in Table 1.

ASSETS

As a category, assets include current assets, fixed or long-term assets, property, intangible assets, and other assets.

CURRENT ASSETS. Assets can be viewed as company-owned or controlled resources, from which the organization expects to gain a future benefit. Examples of assets for a typical company include cash, receivables from customers, inventory to be sold, land, and buildings. In order to make the balance sheet more readable, assets are grouped together based on similar characteristics and presented in totals, rather than as a long list of minor component parts.

The first grouping of assets is *current assets*. Current assets consist of cash, as well as other assets that will probably be converted to cash or used up within one year. The one-year horizon is the crucial issue in classifying assets as current. The concern is to

Table 1
Sample Balance Sheet

Assets		Liabilities and Owners' Equity	
Current assets	600,000	Current liabilities	280,000
Fixed Assets	90,000	Long-term debt	500,000
Property	800,000	Owners' equity	900,000
Intangible assets	50,000		
Other assets	140,000		
TOTAL ASSETS	1,680,000	TOTAL LIABILITIES AND OWNERS' EQUITY	1,680,000

present assets that will provide liquidity in the near future. Current assets should be listed on the balance sheet in the order of most liquid to least liquid. Therefore, the list of current assets begins with cash. Cash includes monies available in checking accounts and any cash on-hand at the business that can be used immediately as needed. Any cash funds or temporary investments that have restrictions on their withdrawals, or that have been set up to be spent beyond one year, should not be included in current assets.

Temporary investments known as trading securities are short-term investments that a company intends to trade actively for profit. These types of investments—common to the financial statements of insurance companies and banks—are shown on the balance sheet at their current market value as of the date of the balance sheet. Any increase or decrease in market value since the previous balance sheet is included in the calculation of net income on the income statement.

The next category on the list of current assets is accounts receivable, which includes funds that are to be collected within one year from the balance sheet date. *Accounts receivable* represent the historical amounts owed to the company by customers as a result of regular business operations. Many companies are unable to collect all of the receivables due from customers. In order to disclose the amount of the total receivables estimated to be collectible, companies deduct what is known as a *contra account*. A contra account has the opposite balance of the account from which it is subtracted. The specific account title might be “allowance for uncollectible accounts” or “allowance for bad debts,” and its balance represents the portion of the total receivables that will probably not be collected. The expense related to this is shown on the income statement as *bad debt expense*. The net amount of accounts receivable shown is referred to as the *book value*. Other receivables commonly included on the balance sheet are notes receivable (due within one year) and interest receivable.

Inventory is shown next in the current asset section of the balance sheet. If the company is a retailer or wholesaler, this asset represents goods that a com-

pany has purchased for resale to its customers. If the company is a manufacturer, it will have as many as three different inventory accounts depending on the extent to which the goods have been completed. Inventory classified as *raw materials* represents the basic components that enter into the manufacture of the finished product. For a tractor manufacturer, raw materials would include the engine, frame, tires, and other major parts that are directly traceable to the finished product. The second type of inventory for a manufacturer would be *goods in process*. As the name implies, this category represents products that have been started but are not fully completed. After the goods are completed, they are included in the final inventory classification known as *finished goods*. The value assigned to inventory is either its current market price or its cost to the manufacturer, whichever is lower. This is a conservative attempt to show inventory at its original cost, or at its lower market value if it has declined in value since it was purchased or manufactured.

The final group in the current assets section of the balance sheet is *prepaid expenses*. This group includes prepayments for such items as office supplies, postage, and insurance for the upcoming year. The total for these items is shown at historical cost.

FIXED OR LONG-TERM ASSETS. These assets differ from those listed under current assets because they are not intended for sale during the year following the balance sheet date; that is, they will be held for more than one year into the future. Such asset investments are classified under the headings of *held to maturity* for investments in debt instruments such as corporate or government bonds, and *available for sale* for investments in equity (stock) instruments of other companies or debt securities that will not be held to maturity. Held-to-maturity investments are disclosed in the balance sheet at their *carrying value*. The carrying value is initially equal to the historical cost of the investment; this amount is adjusted each accounting period so that, when the investment matures, its carrying value will then be equal to its maturity value. These adjustments are included in the calculation of income

for each accounting period. Available-for-sale investments are adjusted to market value at the end of each accounting period, and these adjustments are included in the calculation of owners' equity.

PROPERTY. Sometimes listed under the expanded heading *property, plant, and equipment*, this section of the balance sheet includes long-term, tangible assets that are used in the operation of the business. These assets have a long-term life and include such things as land, buildings, factory and office equipment, and computers. Land is listed first because it has an unlimited life, and it is shown at its historical cost. The other assets, such as buildings and equipment, are shown at book value. Book value is the original cost of the asset reduced by its total depreciation since being placed into service by a company. This net amount is frequently called net book value, and it represents the remaining cost of the asset to be depreciated over the remaining useful life of the asset.

Several methods are used to calculate depreciation (e.g., straight-line and accelerated), and each uses a mathematical formula to determine the portion of the original cost of the asset that is associated with the current year's operations. Note that depreciation is not an attempt to reduce a long-lived asset to its market value. Accountants use market value on the balance sheet when it is readily available and required for use by generally accepted accounting principles. However, in the case of many property items an unbiased estimate of market value may not be available. As a result, accountants use the asset's historical cost, reduced by the depreciation taken to date, as an indication of its remaining useful service potential.

INTANGIBLE ASSETS. Some long-lived assets of a company represent legal rights or intellectual property protections that are intangible by nature. Examples of this type of asset include a company's patents, copyrights, and trademarks. Each of these assets has a legally specified life and expires at the end of that period, although a few can be renewed. Accountants attempt to measure this decline in usefulness by amortizing the historical costs of these assets. This concept is the same as recording depreciation for items of tangible property discussed above.

One special type of intangible asset is known as *goodwill*. Goodwill is acquired when one company purchases another company and pays more than the estimated market value of the net assets held by the purchased company. The buying company might do this for a number of reasons, but it is often necessary in order to encourage the previous owners to sell, and to guarantee that the acquisition is successful. The difference between the purchase price and the market value of the assets also can be attributed to intangible factors in the purchased company's success, such as proprietary processes or customer relationships. Like

other intangible assets, the historical cost of goodwill is amortized over its future years. Accounting rules set a maximum life of 40 years for goodwill, but this rule will be reduced to 20 years in the future.

OTHER ASSETS. This final section covering the disclosure of assets on the balance sheet is a miscellaneous category that includes any long-lived asset that does not fit in any of the categories defined above. This category might include such assets as long-lived receivables (from customers or related companies) and long-lived prepaid insurance premiums (those paid for coverage beyond the next year from the balance sheet date). Another example is a deferred charge (such as a deferred tax asset), or an amount that has been prepaid based on generally accepted accounting principles and holds future benefit for the company.

LIABILITIES

Liabilities include current liabilities, as well as long-term debt.

CURRENT LIABILITIES. Current liabilities are debts that come due within one year following the balance sheet date. These debts usually require cash payments to another entity, and they often have the word "payable" as part of their name. *Accounts payable* are amounts owed to suppliers by a company that has purchased inventory or supplies on a credit basis. *Interest payable* represents interest that has accrued on notes payable or other interest-bearing payables since the last payment was made by a company; this type of payable might be included in a general group known as accrued expenses. Other current liabilities include estimated warranty payments, taxes payable, and the current year's portion of long-term debt that is coming due within one year from the balance sheet date.

LONG-TERM DEBT. Long-term debts are those that come due more than one year following the balance sheet date. They include bonds payable, mortgage payable, and long-term notes payable, all of which have a specific maturity date. *Deferred income taxes payable* might also be disclosed in this category. The latter item is rather technical and controversial; it arises when accounting rules used in preparing the financial statements for reporting to owners differ from rules used on income tax returns for income tax authorities. Deferred income taxes payable typically result from an item being deducted on the income tax return (as allowed by tax rules) before it is reported as an expense on the income statement (as allowed by generally accepted accounting principles). When these timing differences reverse in future years, the deferred income taxes payable category is removed as the actual payment to tax authorities is made.

OWNERS' EQUITY

This final section of the balance sheet is one of the most difficult to comprehend. It is known as *stockholders' equity* for a corporation and consists of several possible subdivisions: paid-in capital, adjustments for changes in value of certain investments in stocks of other companies, and retained earnings. The paid-in capital section discloses the investment made in the corporation by the stockholder-owners. It will include the amount paid into the corporation by the stockholders for different types of equity instruments that have been issued by the corporation, such as preferred stock equity and common stock equity. Paid-in capital usually is separated into two parts—the par value of the stock and the amount paid in excess of the par value—as required by generally accepted accounting principles.

Adjustments for market value changes in available-for-sale investments in other companies are shown as a component of owners' equity. These adjustments also are reported in comprehensive income, because they reflect a change in owners' equity that is not a part of net income. Changes in the value of trading securities, which are short-term investments, are included in the calculation of net income, whereas changes in value of available-for-sale securities are reported only in owners' equity and the statement of comprehensive income.

The last category usually found under the heading of owners' equity is retained earnings. This amount represents any earnings (or the difference between total net income and net loss) since the inception of the business that have not been paid out to stockholders as dividends.

Returning to the aforementioned accounting equation, a user of financial statements can better understand that owners' equity is the balancing amount. If assets are considered a company's resources, they must equal the "sources" from which they came. The sources for assets are a company's creditors (as seen in the total of the liabilities) and its owners (as seen in the total for owners' equity). As such, retained earnings does not represent a fund of cash; instead it represents the portion of each asset that is owned by the stockholders. The remaining portion of each asset is owed to creditors in the form of liabilities.

It is important to keep in mind that the balance sheet does not present a company's market value. While some assets are presented at market value, others cannot be disclosed at market value because no such specific market value exists. The changes in the value of the assets that are required to be adjusted to market value for each balance sheet are included in either net income or comprehensive income, depending on the nature of the asset and the purpose for which management chose to acquire it.

Another important consideration about the balance sheet is the manner in which both assets and liabilities are separated into current and noncurrent groups. While not all companies will have all of the classifications discussed above, all will have both current and noncurrent items. This separation allows the user of the balance sheet to compare a company's current liquidity needs and resources to its long-term solvency status.

In conclusion, balance sheets are an important tool to help managers, lenders, and investors analyze a company's financial status and capabilities. They are particularly useful in helping to identify trends in the areas of payables and receivables. However, it is vital to remember that the document only presents a company's financial situation at a given point in time. It does not provide any information about the past decisions that helped the company to arrive at that point, or about the company's future direction or potential for success. For this reason, the balance sheet should be considered along with other required financial statements, as well as historical data, when evaluating a company's performance.

SEE ALSO: Cash Flow Analysis and Statement; Financial Issues for Managers; Financial Ratios; Income Statements

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BALANCED SCORECARD

The balanced scorecard is a performance measurement tool developed in 1992 by Harvard Business School professor Robert S. Kaplan and management consultant David P. Norton. Kaplan and Norton's research led them to believe that traditional financial

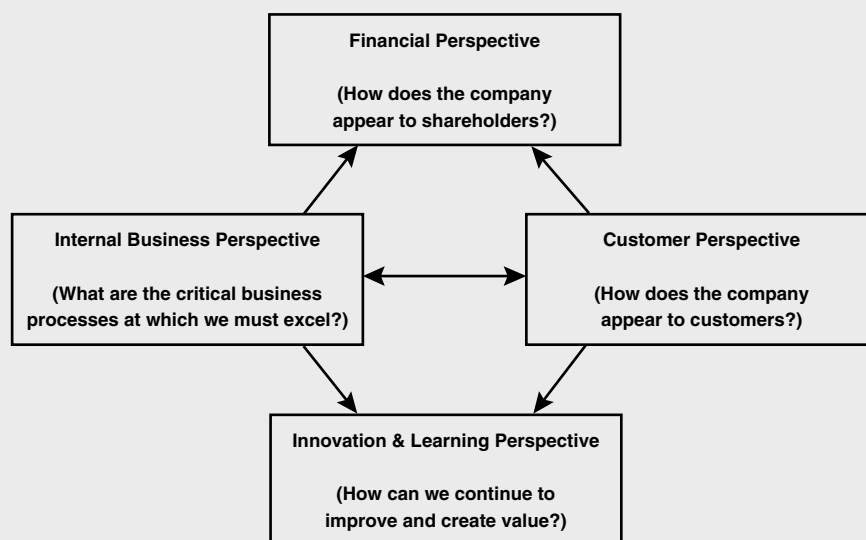
measures, like return on investment, could not provide an accurate picture of a company's performance in the innovative business environment of the 1990s. Rather than forcing managers to choose between "hard" financial measures and "soft" operational measures—such as customer retention, product development cycle times, or employee satisfaction—they developed a method that would allow managers to consider both types of measures in a balanced way. "The balanced scorecard includes financial measures that tell the results of actions already taken," Kaplan and Norton explained in the seminal 1992 *Harvard Business Review* article that launched the balanced scorecard methodology. "And it complements the financial measures with operational measures on customer satisfaction, internal processes, and the organization's innovation and improvement activities—operational measures that are the drivers of future financial performance."

The balanced scorecard provides a framework for managers to use in linking the different types of measurements together. Kaplan and Norton recommend looking at the business from four perspectives: the customer's perspective, an internal business perspective, an innovation and learning perspective, and the financial (or shareholder's) perspective. Using the overall corporate strategy as a guide, managers derive three to five goals related to each perspective, and then develop specific measures to support each goal. Ideally, the scorecard helps managers to clarify their vision for the organization and translate that vision

into measurable actions that employees can understand. It also enables managers to balance the concerns of various stakeholders in order to improve the company's overall performance. "The balanced scorecard is a powerful concept based on a simple principle: managers need a balanced set of performance indicators to run an organization well," Paul McCunn wrote in *Management Accounting*. "The indicators should measure performance against the critical success factors of the business, and the 'balance' is the balancing tension between the traditional financial and nonfinancial operational, leading and lagging, and action-oriented and monitoring measures."

The balanced scorecard concept has enjoyed significant success since its introduction. According to the *Financial Times*, it was adopted by 80 percent of large U.S. companies as of 2004, making it the nation's most popular management tool for increasing performance. In addition, it has increasingly been applied in the public sector since it was promoted by the National Partnership for Reinventing Government. Part of the balanced scorecard's popularity can be attributed to the fact that it is consistent with many common performance improvement initiatives undertaken by companies, such as continuous improvement, cross-functional teamwork, or customer-supplier partnering. It complements these initiatives by helping managers to understand the complex interrelationships among different business areas. By linking the elements of a company's competitive strategy in one report, the balanced scorecard points out situations

Table 1
Balanced Scorecard



where improvement in one area comes at the expense of another. In this way, the scorecard helps managers to make the decisions and tradeoffs necessary for success in today's fast-paced and competitive business environment.

HISTORY OF THE BALANCED SCORECARD APPROACH

In 1990 Robert S. Kaplan, a professor of accounting at the Harvard Business School, and David P. Norton, co-founder of a Massachusetts-based strategy consulting firm called Renaissance Worldwide Inc., conducted a year-long research project involving 12 large companies. The original idea behind the study, as Anita van de Vliet explained in *Management Today*, was that "relying primarily on financial accounting measures was leading to short-term decision-making, over-investment in easily valued assets (through mergers and acquisitions) with readily measurable returns, and under-investment in intangible assets, such as product and process innovation, employee skills, or customer satisfaction, whose short-term returns are more difficult to measure" (1997, pp.78).

Kaplan and Norton looked at the way these companies used performance measurements to control the behavior of managers and employees. They used their findings to devise a new performance measurement system that would provide businesses with a balanced view of financial and operational measures. Kaplan and Norton laid out their balanced scorecard approach to performance measurement in three *Harvard Business Review* articles beginning in 1992. Before long, the balanced scorecard had become one of the hottest topics at management conferences around the world. In fact, the *Harvard Business Review* called it one of the most important and influential management ideas of the past 75 years. In 1996 Kaplan and Norton expanded upon their original concept in a book titled *The Balanced Scorecard: Translating Strategy into Action*. They followed up with two other books that further developed the approach: *The Strategy-Focused Organization: How Balanced Scorecard Companies Thrive in the New Business Environment* (2001) and *Strategy Maps: Converting Intangible Assets into Tangible Outcomes* (2004).

THE FOUR PERSPECTIVES

Kaplan and Norton's basic balanced scorecard asks managers to view their business from four different perspectives: the customer perspective, an internal business perspective, an innovation and learning perspective, and the financial or shareholder perspective. These perspectives are relevant to all types of businesses. However, additional perspectives also may be important in certain types of businesses. For example,

a company in the oil industry might wish to incorporate an environmental regulation perspective. In this way, the balanced scorecard maintains some flexibility for companies with special needs to add other perspectives.

CUSTOMER PERSPECTIVE. According to Kaplan and Norton, viewing a business from the customer perspective involves asking the question: "How do customers see us?" They contend that many companies in a wide range of industries have made customer service a priority. The balanced scorecard allows managers to translate this broad goal into specific measures that reflect the issues that are most important to customers. For example, Kaplan and Norton mention four main areas of customer concern: time, quality, cost, and performance. They recommend that companies establish a goal for each of these areas and then translate each goal into one or more specific measurements. Kaplan and Norton note that some possible measures, like percent of sales from new products, can be determined from inside the company. Other measures, like on-time delivery, will depend on the requirements of each customer. To incorporate such measures into the balanced scorecard, managers will need to obtain outside information through customer evaluations or benchmarking. Collecting data from outside the company is a valuable exercise because it forces managers to view their company from the customers' perspective.

INTERNAL BUSINESS PERSPECTIVE. The internal business perspective is closely related to the customer perspective. "After all, excellent customer performance derives from processes, decisions, and actions occurring throughout an organization," Kaplan and Norton wrote. "Managers need to focus on those critical internal operations that enable them to satisfy customer needs." Viewing a company from the internal business perspective involves asking the question, "What must we excel at?" Kaplan and Norton recommend focusing first on the internal processes that impact customer satisfaction, such as quality, productivity, cycle time, and employee skills. Using these critical processes as a base, managers should develop goals that will help the company to meet its customers' expectations. These goals should then be translated into measures that can be influenced by employee actions. It is important that internal goals and measures are broken down at the local level in order to provide a link between top management goals and individual employee actions. "This linkage ensures that employees at lower levels in the organization have clear targets for actions, decisions, and improvement activities that will contribute to the company's overall mission," the authors explained.

INNOVATION AND LEARNING PERSPECTIVE. In including the innovation and learning perspective in their balanced scorecard, Kaplan and Norton recognized

that modern companies must make continual improvements in order to succeed in an intensely competitive global business environment. “A company’s ability to innovate, improve, and learn ties directly to the company’s value,” they noted. That is, only through the ability to launch new products, create more value for customers, and improve operating efficiencies continually can a company penetrate new markets and increase revenues and margins—in short, grow and thereby increase shareholder value. Accordingly, viewing a business from the innovation and learning perspective involves asking the question, “How can we continue to improve and create value?” Managers should establish goals related to innovation and learning, and then translate the goals into specific measures—such as increasing the percentage of the company’s sales derived from new products.

FINANCIAL PERSPECTIVE. Kaplan and Norton developed the balanced scorecard at a time when financial measures were increasingly coming under attack from management experts. Critics claimed that judging performance by financial measures encouraged companies to focus on short-term results and avoid taking actions that would create value over the long term. They also argued that financial measures looked backward at past actions rather than forward at future possibilities. Some experts told managers to focus solely on operational improvements and allow the financial performance to improve on its own.

Although these arguments convinced Kaplan and Norton to conduct their study of performance measurement, they found that financial controls are an important part of the puzzle. They claimed that managers need to know whether or not their operational improvements are reflected in the bottom line. If not, it may mean that management needs to reevaluate its strategy for the business. “Measures of customer satisfaction, internal business performance, and innovation and improvement are derived from the company’s particular view of the world and its perspective on key success factors. But that view is not necessarily correct,” Kaplan and Norton wrote. “Periodic financial statements remind executives that improved quality, response time, productivity, or new products benefit the company only when they are translated into improved sales and market share, reduced operating expenses, or higher asset turnover.”

Thus, the fourth perspective in the balanced scorecard asks the question: “How do we look to shareholders?” Some of the goals a company might set in this area involve profitability, growth, and shareholder value. The measures attached to these goals might include traditional financial performance measures, such as return on assets or earnings per share. Although these measures can prove misleading when taken alone, when incorporated into a balanced scorecard they can provide managers with valuable infor-

mation about whether the strategy has contributed to bottom-line improvement. According to Kaplan and Norton, a common mistake for managers making large-scale operational improvements is failing to follow up with additional actions. For example, a company might undertake a quality improvement initiative which, when implemented successfully, creates excess capacity or makes certain employees redundant. Financial measurements will point out the need to make further changes.

DEVELOPING A BALANCED SCORECARD

Development of a balanced scorecard begins with the company’s overall strategy or vision. It is important to consult with top management, rather than line managers, to obtain a clear picture of where the company wants to be in 3 to 5 years. The next step is to appoint a “scorecard architect” to establish the framework and methodology for designing the scorecard. With this framework in mind, the organization must define a linked set of strategic objectives that will lead the company toward top management’s vision. These objectives should be true drivers of performance for the business as a whole, rather than a list of separate goals for business units or departments. It may be helpful to begin with the four perspectives included in the balanced scorecard model and then add more if needed, depending on the industry.

At this point, most companies will begin to involve line managers and staff members—and perhaps even customers—in establishing goals or objectives. The involvement might take the form of an executive workshop at which participants review and discuss the goals and appropriate measures. This approach builds consensus around the balanced scorecard and reduces the potential for unrealistic goals to be handed down from the top.

The strategic objectives provide a framework for managers to use in developing specific performance measures. “Most of the measures we use are not new, but they had been held in different silos, different boxes, in the organization,” Rick Anderson, a performance analyst at BP Chemicals, told van de Vliet. “The [balanced scorecard] approach has brought existing measures onto one piece of paper, so everybody can relate to one area.” The goals and measures in an organization’s balanced scorecard can be broken down to provide custom scorecards for all business levels, even down to individual employees. These custom scorecards show how an employee’s work activities link to the business’s overall strategy. For incentive and compensation purposes, it is possible to assign weights to each measure based on its importance to the company and the individual’s ability to affect it.

Once the balanced scorecard is in place, the next step is to collect and analyze the data for performance measurements. This data will enable the organization to see its strong performance areas, as well as areas for potential improvement. It is important to supply the performance data to employees, and to empower employees to find ways to sustain high performance and improve poor performance. Managers also must realize that the balanced scorecard is not set in stone. Experience in using the scorecard may point out areas that should be modified or adapted. In addition, managers may find ways to tie the scorecard into other areas, such as budgets, resource allocation, compensation, succession planning, and employee development.

AVOIDING POTENTIAL PITFALLS

Numerous organizations have implemented some version of the balanced scorecard since its introduction in 1992. However, professor Claude Lewy of the Free University of Amsterdam found that 70 percent of scorecard implementations failed. Many companies are attracted by the power and simplicity of the balanced scorecard concept, but then find implementation to be extremely time-consuming and expensive. Lewy admits that the balanced scorecard can be an effective way of translating an overall strategy to the many parts of an organization. However, he stresses that organizations must have a clear idea of what they want to accomplish, and be willing to commit the necessary resources in order to successfully implement the balanced scorecard. Along with Lex Du Mee of KPMG Management Consulting, Lewy conducted a study of seven European companies and came up with what he called the Ten Commandments of Balanced Scorecard Implementation.

In order to ensure an effective balanced scorecard implementation, Lewy and Du Mee recommended that organizations obtain the commitment of a top-level sponsor, as well as relevant line managers. The balanced scorecard initiative must be the organization's top priority if implementation is to succeed. They also emphasized the importance of putting strategic goals in place before implementing the scorecard. Otherwise, the goals and measures included in the scorecard are likely to drive the wrong behavior. Lewy and Du Mee also suggested that organizations try a pilot program before moving on to full-scale implementation. Testing the balanced scorecard in a few key business areas enables managers to make necessary changes and increase support for the initiative before involving the entire company. It also is important to provide information and training to employees prior to an organization-wide rollout.

Lewy and Du Mee also warn managers against using the balanced scorecard as a way to achieve extra

top-down control. Employees are unlikely to support the goals and measures if the scorecard is used as a "gotcha" by management. Another potential pitfall, according to the researchers, is trying to use a standardized scorecard. Instead, they stress that each organization must devote the time and resources to develop its own customized program. Lewy and Du Mee found that balanced scorecard implementation was more likely to fail when companies underestimated the amount of training and communication required during the introductory phase, or the extra workload and costs involved with periodic reporting later on. Even though the balanced scorecard appears to be a simple idea, implementing it is likely to mean huge changes in an organization.

SOFTWARE AND SUPPORT

Once the balanced scorecard has been implemented successfully, the next significant task involves collecting and analyzing measurement data. Some companies found this process to be time-consuming and expensive, because the data was located on numerous different computer systems throughout the organization. However, by the 2000s a number of technological advances—such as data warehouses, enterprise resource planning systems, decision-support tools, groupware, and Internet technology—made data collection and analysis significantly easier. In fact, several software vendors created balanced scorecard applications for desktop computers. Typical software packages allow users to plug in the performance measures the company has chosen to monitor. The computer then collects the data and supplies performance grades according to formulas the company has determined. With the advent of electronic balanced scorecard applications, the process of performance measurement can be automated throughout a company.

In addition, Kaplan and Norton have used computer technology to provide information and support to organizations that adopt the balanced scorecard. For example, Norton's consulting firm, Renaissance Worldwide Inc., and Gentia Software formed the Balanced Scorecard Technology Council. This virtual users group sponsors a Web site (www.balancedscorecard.com) that provides research, product information, and a forum for ideas. Kaplan and Norton also founded an organization called the Balanced Scorecard Collaborative "to facilitate worldwide awareness, use, enhancement, and integrity of the Balanced Scorecard as a value-added management process." The collaborative also hosts a Web site at www.bsccol.com.

SEE ALSO: Performance Measurement; Strategy Formulation

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BAR CODING AND RADIO FREQUENCY IDENTIFICATION

A barcode is a series of parallel black bars and white spaces, both of varying widths. Bars and spaces together are called elements. Different combinations of the bars and spaces represent different characters, such as numbers or letters. Each combination or sequence of bars and spaces is a code that can be translated into information such as price, product type, place of manufacture, or origin of shipment.

Barcodes are simple to use, accurate, and quick. Almost everyone is familiar with their use in retail establishments. They are also often used in warehouses and manufacturing for selecting items from storage, receiving goods, and shipping.

The FDA requires that a product's national drug code be placed on the container label and outer wrapper on most prescription drugs and about 70 percent of over-the-counter drugs and on blood and blood components intended for transfusion. The U.S. Food and Drug Administration (FDA) estimates that this will prevent nearly 500,000 adverse events and blood transfusion errors and save \$98 billion in reduced healthcare costs over a two year period.

HOW BARCODING WORKS

BARCODE READERS. The barcode itself does not actually contain detailed information. The barcode simply provides a reference number that cues a computer to access information. A barcode reader is required to read a barcode. Barcode readers may be fixed, portable batch, or portable RF. Fixed readers are attached to a host computer and terminal, and transmit one item at a time as the data is scanned. Battery-powered portable batch readers store data into memory for batch transfer into a host computer at a later time. The portable RF reader can transmit data in real-time, on-line.

SCANNERS AND DECODERS. The basic reader consists of a scanner and a decoder. Scanners capture the image of the barcode, and the decoder takes the digitized bar space patterns, decodes them, and transmits the decoded data to the computer.

There are several types of scanners. Laser scanners use a single spot of light to sweep across the barcode in a linear fashion. CCD scanners use an LED array with thousands of light detectors; the entire barcode image is captured and then transmitted. Automatic scanners are in a fixed position and read barcodes as they go by on a conveyor. Handheld scanners, such as wands, are portable and may be carried from place to place, as in a warehouse.

When a scanner is passed over the barcode, the dark bars absorb the scanner's light while the light spaces reflect it. A photocell detector receives the reflected light and converts it into an electrical signal. A low electrical signal is created for the reflected light and a high electrical signal is created for the dark bars. The width of the element determines the duration of the electrical signal. The decoder then decodes the signal into the characters represented by the barcode and passes it to a computer in traditional data format.

TYPES OF BARCODES

There are different types of barcodes. Some barcodes are entirely numeric, whereas others have numeric and alphabetic characters. The type used is dependent upon the implementation, the data that needs to be encoded, and how the barcode is to be printed. There are several barcode standards, called symbologies,

each serving a different purpose. Each standard defines the printed symbol and how the scanner reads and decodes the printed symbol.

The Uniform Product Code (UPC) has been the North American standard for several decades. Others include the Automotive Industry Action Group (AIAG), the European Article Numbering System (EAN), and the Reduced Space Symbology (RSS)—an emerging standard for compressing barcodes so that they can fit into small spaces such as a prescription bottle, and the Global Trade Item Number (GTIN) or “Gee-tin,” which can read and store other types of code.

RFID

Radio frequency identification (RFID) could become the most far-reaching wireless technology since the cell phone. RFID is a method of remotely storing and retrieving data using a small object attached to or incorporated into a product. Its purpose is to enable data to be transmitted via a portable device called a tag, read by a reader, and processed according to the needs of the particular application.

Transmitted data may provide information about product location, or specifics such as color, price, or purchase date. In some systems a return receipt can be generated. RFID tags contain far more detailed information than can be placed on a barcode. Some tags hold enough information to provide routing information for shipping containers, as well as a detailed inventory of what is inside the container.

An RFID system consists of tags, tag readers, tag programming stations, circulation readers, sorting equipment, and tag inventory wands. The tag is the key component. Data can be printed or etched on an electronic substrate and then embedded in a plastic or laminated paper tag.

Tags are classified according to their radio frequency: low-frequency, high-frequency, UHF, and microwave. Low-frequency tags are commonly used in automobile anti-theft systems and animal identification. High-frequency tags are used in library books, pallet tracking, building access, airline baggage tracking, and apparel tracking. Low- and high-frequency tags can be used without a license. UHF tags are used to track pallets, containers, trucks, and trailers. UHF cannot be used globally as there is no one global standard. Microwave tags are used in long-range access, such as General Motors’ OnStar system.

While most RFID tags are write-once/read-only, there are some that offer read/write capability. These tags would allow tag data to be rewritten if need be.

Also, tags may be either passive or active. Passive tags do not have their own power supply. Their power comes from a minute electrical current induced by an

incoming radio-frequency scan. Active tags have their own power source. The lack of a power source makes the passive tag much less expensive to manufacture and much smaller (thinner than a sheet of paper) than an active tag. As a result, the vast majority of RFID tags are passive. However, the response of a passive tag is typically just an ID number. Active tags have longer ranges, the ability to store more information, and are more accurate and reliable.

The tag contains a transponder with a digital memory chip with a unique electronic product code. A stationary or handheld device called an interrogator, consisting of an antenna, transceiver, and decoder, emits a signal creating an electromagnetic zone. When a tag comes within the range of a reader, it detects an activation signal that causes the tag to “wake up” and start sending data. The reader captures the data encoded in the tag’s integrated circuit, decodes it, and sends it over a network to a host computer for processing.

THE ADVANTAGES OF RFID OVER BARCODING

RFID tags can contain far more detailed information than barcodes. Barcodes require a clear line of sight between the scanner and the barcode, a need that is absent from the RFID. It is also only possible to scan just one barcode at a time. Within the field of a reader, hundreds of RFID tags could be read within seconds. RFID codes are long enough that every RFID tag may have a unique code, allowing an individual item to be tracked as it changes location. Barcodes are limited to a single code for all stages of movement of a particular product.

Despite its advantages, it is unlikely that RFID will replace barcoding. The cost of tags is prohibitive in many situations, and there is less need to track individual products from origin to final consumer.

RFID USES

During WWII, RFID devices were used to distinguish British planes from inbound German planes. Modern uses include:

- Toll booths—RFID tags are used for electronic toll collection. Tags are read as vehicles pass causing debits from prepaid accounts.
- Electronic cash-cards imbedded with RFID chips can be used as electronic cash.
- Prisons—The Ohio Dept. of Rehabilitation and Correction requires inmates to wear transmitters. Prison computers are alerted if a prisoner tries to remove his tag.

- Food-Refrigerators will someday be able to track the expiration dates of the food it contains. SAP is working with Australian cattle ranchers to mark their animals with RFID tags and mark the cuts of meat derived from individual cows. This would allow companies to recall meat infected with contaminants such as bovine spongiform encephalopathy and avoid wholesale destruction of cattle.
- Humans-Medical information can be recorded on RFID tags implanted under human skin. This has already been approved by the FDA.
- Electronic keys-The majority of new cars come equipped with keys embedded with RFID tags containing unique identifiers. If a thief uses a key without the tag, the car will be immobilized within minutes. The same concept can be used to secure buildings and facilities.
- Merchandise-RFID tags can be used to track assets, manage inventory, and authorize payments. The Gap retail clothing chain uses shelves with RFID readers that monitor inventory by gathering information through layers of clothing. Wal-Mart, Home Depot, and other giant retailers are investing heavily in RFID technology to improve supply chain efficiency and track products. Wal-Mart has already mandated RFID use from its top 100 suppliers.
- Counterfeiting-The European Union is considering introducing RFID tags onto banknotes to prevent forgery. RFID tagged drugs can be monitored from factory to use, preventing drug counterfeiting. Branded merchandise tagged with unique serial numbers can be authenticated at various stages of its supply chain, thus thwarting potential counterfeiters.

CONTROVERSY OVER RFID USE

The use of RFID has caused some concern for privacy advocates. They feel that it may be a privacy violation for a consumer unaware of the presence an RFID tracking tag, or if they are unable to remove or deactivate it. Other concerns revolve around the ability to fraudulently or surreptitiously read a tag from a distance, and the ability to identify a purchaser through the use of a credit card or a loyalty card.

RFID advocates, however, feel that opposition will lessen as RFID use becomes more widespread and its use across a wide range of industries becomes apparent.

RFID usage is destined to continue and to expand, especially as costs decline and RFID technology is improved.

SEE ALSO: Distribution and Distribution Requirements Planning; Logistics and Transportation; Reverse Supply Chain Logistics; Supply Chain Management; Warehousing and Warehouse Management

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BASES OF POWER

SEE: Leadership Styles and Bases of Power

BENCHMARKING

Benchmarking is the process through which a company measures its products, services, and practices against its toughest competitors, or those companies recognized as leaders in its industry. Benchmarking is one of a manager's best tools for determining whether the company is performing particular functions and activities efficiently, whether its costs are in line with those of competitors, and whether its internal activities and business processes need improvement. The idea behind benchmarking is to measure internal processes against an external standard. It is a way of learning which companies are best at performing certain activities and functions and then imitating—or better still, improving on—their techniques.

Benchmarking focuses on company-to-company comparisons of how well basic functions and processes are performed. Among many possibilities, it may look at how materials are purchased, suppliers are paid, inventories are managed, employees are trained, or payrolls are processed; at how fast the company can get new products to market; at how the quality control function is performed; at how customer orders are filled and shipped; and at how maintenance is performed.

Benchmarking enables managers to determine what the best practice is, to prioritize opportunities for improvement, to enhance performance relative to customer expectations, and to leapfrog the traditional cycle of change. It also helps managers to understand the most accurate and efficient means of performing an activity, to learn how lower costs are actually achieved, and to take action to improve a company's cost competitiveness. As a result, benchmarking has been used in many companies as a tool for obtaining a competitive advantage.

Companies usually undertake benchmarking with a view towards the many improvements that it may offer. These benefits include reducing labor cost, streamlining the work flow through reengineered business processes and common administrative systems, improving data center operations through consolidation and downsizing, cooperative business and information technology planning, implementing new technology, outsourcing some assignments and functions, redesigning the development and support processes, and restructuring and reorganizing the information technology functions.

BENCHMARKING BASICS

The goal of benchmarking is to identify the weaknesses within an organization and improve upon them, with the idea of becoming the "best of the best." The

benchmarking process helps managers to find gaps in performance and turn them into opportunities for improvement. Benchmarking enables companies to identify the most successful strategies used by other companies of comparable size, type, or regional location, and then adopt relevant measures to make their own programs more efficient. Most companies apply benchmarking as part of a broad strategic process. For example, companies use benchmarking in order to find breakthrough ideas for improving processes, to support quality improvement programs, to motivate staffs to improve performance, and to satisfy management's need for competitive assessments.

Benchmarking targets roles, processes, and critical success factors. Roles are what define the job or function that a person fulfills. Processes are what consume a company's resources. Critical success factors are issues that company must address for success over the long-term in order to gain a competitive advantage. Benchmarking focuses on these things in order to point out inefficiencies and potential areas for improvement.

A company that decides to undertake a benchmarking initiative should consider the following questions: When? Why? Who? What? and How?

WHEN. Benchmarking can be used at any time, but is usually performed in response to needs that arise within a company. According to C.J. McNair and Kathleen H.J. Leibfried in their book *Benchmarking: A Tool for Continuous Improvement*, some potential "triggers" for the benchmarking process include:

- quality programs
- cost reduction/budget process
- operations improvement efforts
- management change
- new operations/new ventures
- rethinking existing strategies
- competitive assaults/crises

WHY. This is the most important question in management's decision to begin the benchmarking process. McNair and Leibfried suggest several reasons why companies may embark upon benchmarking:

- to signal management's willingness to pursue a philosophy that embraces change in a proactive rather than reactive manner;
- to establish meaningful goals and performance measures that reflect an external/customer focus, foster "quantum leap" thinking, and focus on high-payoff opportunities;
- to create early awareness of competitive disadvantage; and

- to promote teamwork that is based on competitive need and is driven by concrete data analysis, not intuition or gut feeling.

WHO. Companies may decide to benchmark internally, against competitors, against industry performance, or against the “best of the best.” Internal benchmarking is the analysis of existing practice within various departments or divisions of the organization, looking for best performance as well as identifying baseline activities and drivers. Competitive benchmarking looks at a company’s direct competitors and evaluates how the company is doing in comparison. Knowing the strengths and weaknesses of the competition is not only important in plotting a successful strategy, but it can also help prioritize areas of improvement as specific customer expectations are identified. Industry benchmarking is more trend-based and has a much broader scope. It can help establish performance baselines. The best-in-class form of benchmarking examines multiple industries in search of new, innovative practices. It not only provides a broad scope, but also it provides the best opportunities over that range.

WHAT. Benchmarking can focus on roles, processes, or strategic issues. It can be used to establish the function or mission of an organization. It can also be used to examine existing practices while looking at the organization as a whole to identify practices that support major processes or critical objectives. When focusing on specific processes or activities, the depth of the analysis is a key issue. The analysis can take the form of vertical or horizontal benchmarking. Vertical benchmarking is where the focus is placed on specific departments or functions, while horizontal benchmarking is where the focus is placed on a specific process or activity. Concerning strategic issues, the objective is to identify factors that are of greatest importance to competitive advantage, to define measures of excellence that capture these issues, and to isolate companies that appear to be top performers in these areas.

HOW. Benchmarking uses different sources of information, including published material, trade meetings, and conversations with industry experts, consultants, customers, and marketing representatives. The emergence of Internet technology has facilitated the benchmarking process. The Internet offers access to a number of databases-like Power-MARQ from the nonprofit American Productivity and Quality Center-containing performance indicators for thousands of different companies. The Internet also enables companies to conduct electronic surveys to collect benchmarking data. How a company benchmarks may depend on available resources, deadlines, and the number of alternative sources of information.

TYPES OF BENCHMARKING

There are a number of different types of benchmarking, which are driven by different motivating factors and thus involve different comparisons. Some of the major types of benchmarking are as follows: Metric benchmarking is the use of quantitative measures as reference points for comparisons. Best-practice benchmarking focuses on identifying outstanding techniques. Information technology benchmarking includes data processing, systems analysis, programming, end-user support, and networks. Infrastructure benchmarking includes data centers, networks, data/information, end-user support, and distribution remote centers. Application benchmarking includes system analysis, development and maintenance programming, and functionality. Strategy benchmarking includes skills assessment, information technology strategy, business-technology alignment, and delineation of roles and responsibilities.

There are many motivators that drive the different types of benchmarking. Application benchmarking and infrastructure benchmarking, for example, use such motivators as cost, quality, competition, and goal setting. An advantage of benchmarking is that it facilitates the process of change, clearly laying out the types of solutions external organizations have used and providing a global perspective on how part of the company affects the whole. It further helps focus improvement in the areas where actual gains can be made, which translates into value added to the company as well as its employees.

SUCCESSFUL BENCHMARKING

There are several keys to successful benchmarking. Management commitment is one that companies frequently name. Since management from top to bottom is responsible for the continued operation and evaluation of the company, it is imperative that management be committed as a team to using and implementing benchmarking strategies. A strong network of personal contacts as well as having an open mind to ideas is other keys. In order to implement benchmarking at all stages, there must be a well-trained team of people in order for the process to work accurately and efficiently. Based on the information gathered by a well-trained team, there must also be an effort toward continuous improvement. Other keys include a benchmarking process that has historical success, sufficient time and staff, and complete understanding of the processes to be benchmarked.

In almost any type of program that a company researches or intends to implement, there must be goals and objectives set for that specific program. Benchmarking is no different. Successful companies determine goals and objectives, focus on them, keep

them simple, and follow through on them. As in any program, it is always imperative to gather accurate and consistent information. The data should be understood and able to be defined as well as measured. The data must be able to be interpreted in order to make comparisons with other organizations. Lastly, keys to successful benchmarking include a thorough follow-through process and assistance from consultants with experience in designing and establishing such programs.

THE FUTURE OF BENCHMARKING

Although early work in benchmarking focused on the manufacturing sector, it is now considered a management tool that can be applied to virtually any business. It has become commonplace for companies to use in order to compete in and lead their respective industries. It has helped many reduce costs, increase productivity, improve quality, and strengthen customer service.

In his book *Benchmarking the Information Technology Function*, Charles B. Greene noted that companies are increasingly interested in benchmarking for a number of activities, including:

- cost of supporting business driver (transaction costs, or cost per order)
- systems development activities, including maintenance, backlogs, development productivity and project management
- end-user support
- data centers/communication networks
- skills management
- business strategy alignment
- technology management
- customer/user satisfaction

According to a 2003 Bain and Company survey quoted in *Financial Executive*, benchmarking received the second-highest usage score (84 percent) among more than two dozen management tools used by senior executives around the world. The survey also reported that users tend to be highly satisfied (rated 3.96 on a 5-point scale) with the results benchmarking provides to their companies.

SEE ALSO: Competitive Advantage; Continuous Improvement; World-Class Manufacturer

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BODY LANGUAGE

People in the workplace can convey a great deal of information without even speaking; this is called nonverbal communication. Nonverbal communication can convey just as much as written and verbal communication, and human beings read and react to these nonverbal signals in the workplace. Body language is nonverbal communication that involves body movement and gestures, which communications researchers call *kinesics*. There are hundreds of thousands of possible signs that can be communicated through body movements and gestures. In addition to body movements and gestures, the nonverbal cues given through facial expressions and eye contact, personal space, and touch, influence individual interactions in the workplace. While this body language is fairly well understood in general in each culture, there are major cultural differences in nonverbal communication.

BODY MOVEMENTS AND GESTURE

Gestures, or movements of the head, hands, arms, and legs can be used to convey specific messages that have linguistic translations. For example, a person might use a wave their hand rather than saying "hello", or nod his or her head in agreement, which means "yes" or "okay." These gestures can be very useful in the workplace because they are a quick way to convey thoughts and feelings without needing to speak or write. Additionally, many such gestures are generally widely understood, although they may carry different meanings in other cultures. For instance, although the "ok" sign that is made through touch of the thumb and forefinger with the remaining fingers extended is seen as a positive gesture in the U.S., in some other cultures, this is seen as a vulgar gesture.

In addition to the gestures that people use that have a particular meaning, people also use gestures that do not have specific, generally understood meanings. These gestures, called illustrators, add meaning to a verbal message. For instance, when giving a presentation, a person might use hand gestures to emphasize a point. Many people use gestures while speaking to others to accompany their words, and while these body movements may not have a meaning that can be pinpointed, they serve to embellish a person's words.

A person's body movements that convey feelings and emotions through facial expressions and body positions are called affect displays. These body movements may indicate whether a person is open and receptive, angry, distracted, or a number of other emotions. Many affect displays are commonly interpreted; for instance, individuals who sit in a slumped position and frown are believed to be disinterested or unhappy. Those who sit upright, smile, and have raised eyebrows, are seen as interested and happy. While these affect displays are often appropriately interpreted, they may not be related to the interaction with another person, and thus may be misread. For instance, if a person has a terrible headache, he may squint, look down, and grimace during a conversation, indicating to the speaker that he disagrees with her, even if he is receptive to and in agreement with the speaker.

Researchers also categorize certain nonverbal behaviors called *adaptors*, which are typically unconscious behaviors and are used when a person is tense or anxious. Examples of illustrators are adjusting one's clothes, biting one's nails, or fidgeting and toying with an object. Illustrators indicate to others that a person is upset or nervous, and behavior such as this during a job interview or a meeting with a coworker may be interpreted very negatively. A person who engages in such behavior may be seen as preoccupied, anxious, or even as dishonest. As with affect displays, such body language may not convey true feelings; a person who fidgets and bites her nails may be exhibiting such behaviors for innocuous reasons. Thus, while such behaviors are often interpreted correctly as presenting anxiety, they do not necessarily indicate that a person is in any way dishonest.

When listening to others, individuals often convey messages nonverbally. Therefore, care should be taken to avoid the following:

- Sitting or leaning back is a body movement that may convey disinterest in a speaker's words or disagreement with the speaker. Additionally, resting your chin on your hand may convey boredom. Conversely, leaning forward slightly, raising eyebrows, and making eye contact indicate that you are receptive to the speaker.

- Crossed arms often connote a defensive posture, which can indicate that a person is unhappy with the speaker, feels threatened by the speaker, or does not want to listen to the speaker.
- Adaptors, such as fidgeting or playing with objects, may indicate that you are nervous around the speaker or disinterested in the speaker's message.

FACIAL EXPRESSIONS AND EYE CONTACT

Although facial expressions and eye contact are not kinesics and therefore technically not body language, they are types of nonverbal communication that can have an effect on business relations. Researchers have found that people can identify with great accuracy seven separate human emotions, even after seeing only facial and eye expressions: sadness, happiness, anger, fear, surprise, contempt, and interest. Therefore, without speaking a word, a facial expression can convey a great deal of information to others. Similarly, eye contact or lack of eye contact can also indicate a person's attitudes and emotions.

Research indicates that people use four different facial management techniques to control our facial expressions. First, people intensify their facial expressions, or exaggerate them, in order to show strong emotion. For example, a saleswoman who just made a major sale might intensify her positive expression by smiling more broadly and raising her eyebrows. Second, people may deintensify their facial expressions when they control or subdue them. For instance, an employee who just found out that he got a raise might smile less or look less happy after finding out that his coworker did not get a raise. Third, a person neutralizes their expressions when they avoid showing any facial expression. A person might not show any emotion when being reprimanded in the workplace or when attempting to negotiate with another businessperson. Finally, humans mask their facial expressions. This occurs when a person hides his or her true emotions and conveys different emotions. For example, an employee might express enthusiasm to a manager who gives him an undesirable task in order to curry favor with that manager. Or, a customer service representative might express concern and caring in her facial expression, when in actuality she is annoyed by the customer. Each of these facial management techniques makes it possible for people to interact with one another in socially acceptable ways.

Making and maintaining eye contact can have positive outcomes in the workplace. Eye contact can be used to indicate to a person that you are receptive to what they have to say. Additionally, eye contact may indicate that you want to communicate with a person. Finally, eye contact can be used to express respect for

a person by maintaining longer eye contact. Interestingly, refraining from making eye contact, such as looking down or away, may indicate a level of respect for someone of higher status. A lack of eye contact, or an unwillingness to maintain eye contact may indicate discomfort with a situation, a disinterest in the other person's words, or a dislike of the person. However, the degree to which a person does or does not make eye contact may be dependent on their own level of shyness or extraversion and cannot always be interpreted as a reaction to a particular person or situation.

PERSONAL SPACE

Researchers use the term *proxemic* to describe the way that a person uses space in communication. Each individual has a personal space, which is like an invisible bubble surrounding them. This bubble becomes larger or smaller, depending on the person with whom we interact. We are comfortable standing or sitting closer to someone we like and more comfortable with someone we dislike or don't know well standing or sitting at a distance. However, the amount of personal space that a person desires depends on many characteristics, including gender and age.

The personal space that a person prefers also depends on the situation. When interacting with friends, relatives, or conducting casual business, most people prefer a distance of one and a half to four feet. When conducting formal or impersonal business, most individuals prefer a personal space of 4 to 8 feet. Therefore, a person is likely to be more comfortable standing closely to a trusted coworker than to a new customer.

Although there are broad norms for a comfortable personal space, it is not uncommon for a person to feel that their personal space has been violated when another person sits or stands too closely. When personal space is violated, there are several reactions that people might have. First, they may withdraw by backing up or leaving the room. Second, if anticipating the possibility of a personal space violation, a person may avoid having their space violated. This could mean staying away from meetings, crowds, and parties. Third, people may insulate themselves from intrusion of personal space. A manager who puts her desk in her office in such a way that no one can sit near her is insulating. An employee who takes a seat at the end of a table during a meeting might be doing so to prevent others from sitting near him. Finally, a person may fight to keep his personal space by asking the other person to back up or move away. In a business setting, it may be helpful to recognize the behaviors that others engage in when their personal space is violated. That is, if you notice that others step back from you when speaking, sit at more of a distance, or

if they seem physically uncomfortable, they may have a larger personal space, which should be respected.

TOUCH

In the workplace, people may use touch to communicate nonverbally. The functional-professional touch is businesslike and impersonal. The touch that a physician uses when conducting a physical examination is a functional-professional touch. However, touch is not a part of most professions, and thus, this type of touch is not used often in business settings. The social-polite touch, such as a handshake, is much more common. This type of touch is used to recognize other individuals. It is an expected touch in many business settings. Finally, the friendship-warmth touch shows that you value another as a person. A pat on the back or a hug is a friendship-warmth touch. In most workplaces, the social-polite touch is the only necessary touch, and most managers and employees are encouraged to avoid using touch (particularly the friendship-warmth touch) in the workplace. While many people see a hand on a shoulder or a pat on the back as a useful touch to convey encouragement or concern for another's well-being, sexual harassment fears have made many avoid all types of touch beyond handshakes.

CULTURAL DIFFERENCES

Across the U.S., most body language is consistently understood. However, in other nations and cultures, what is considered to be appropriate body language in one place, may be seen as highly inappropriate in others. As noted above, the American sign for "ok" may be seen as vulgar in other nations. Similarly, other types of gestures and body movements may convey unwanted negative meanings. Therefore, care should be taken before using gestures in other countries or with business partners from other countries. Body movements can also be misinterpreted based on culture. Although most people in the world understand the movement of the head up and down to mean "yes" or "I agree," this is not the case in all countries.

Norms and expectations regarding facial expressions and eye contact also differ across cultures. Because different cultures have different norms for respect, eye contact that is seen as relationship-building and respectful in the U.S. may be seen as challenging and disrespectful in other cultures.

Finally, personal space and touch are used differently in different nations. Americans tend to prefer larger amounts of personal space than do some Latin Americans, Italians, and Middle-Easterners. Germans, Chinese, and Japanese prefer larger amounts of personal space, similar to what Americans prefer. Thus, when conducting business with people from other

cultures, it is important to understand and respect their personal space needs. Americans who do business with those who prefer less personal space may have to fight the urge to step back and therefore avoid insulting a business partner.

SEE ALSO: International Cultural Differences

Marcia J. Simmering

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BRAINSTORMING

Brainstorming was developed by Alex F. Osborn in 1939 to enhance the ability of work groups to solve problems creatively. The participants in his early groups called his process "brainstorming" because it seemed to them that they were using their brains "to storm a creative problem and to do so in commando fashion, with each stormer audaciously attacking the same objective." According to David Whetten and Kim Cameron, there are four cardinal principles that govern effective brainstorming processes:

1. No evaluation of the effectiveness of any given alternative is to be undertaken while the group is generating alternatives. Evaluation of alternatives must come at a later stage in the problem-solving process.
2. The leader of the group must place no parameters upon the group regarding what kinds of alternatives or solutions should be suggested; in fact, the team leader should encourage the group to come up with novel ideas that normally would not receive consideration in the organization.
3. The quantity of ideas should initially take precedence over the quality of ideas; that is, the leader should push the group to produce a large number of ideas irrespective of their quality.
4. Participants should feel free to add to or modify previous ideas proposed by others; it

is often the case that marginal ideas that are added upon or altered in some fashion become transformed into powerful solutions. It should be emphasized that ideas do not belong to the individual who presents them, but to the group.

When generating ideas, it is best to have the members of a group first generate ideas individually and silently rather than shouting out ideas as an entire group. Research indicates that by having people work individually, they generate a greater number of unique ideas than when brainstorming as a group. After individual brainstorming, all ideas can be shared, and further brainstorming as a group can be used.

What topics should be addressed in brainstorming sessions? While theoretically it is possible to brainstorm around any topic, Osborn believed that the problem or topic should be specific rather than general; that is, it should be narrow enough so that the participants can easily comprehend its nature and target their responses to its solution. Also, multiple problems, such as brainstorming about what a new product should be named, how it should be packaged, and how it should be advertised, should not be set before a brainstorming group. The problems should be separated, and brainstormed in separate meetings that are devoted to one of the aforementioned topics.

Osborn believed the ideal size for a brainstorming group was between 5 and 10 people; however, he also contended that with the right kind of leader, large numbers of people of up to 100 could successfully participate in brainstorming sessions. However, research indicates that larger groups generally do not generate more ideas than small groups.

In order to facilitate success, leaders of brainstorming sessions should do the following:

1. Facilitators should teach the principles and objectives of brainstorming to the group before beginning the brainstorming session. Unless all group members understand these rules, the brainstorming effort will fail.
2. Facilitators must enforce the rules during the brainstorming session. Inevitably, people will begin evaluating suggestions during the "generation" phase of brainstorming or violate one of the other principles. When such violations occur, the leader must reteach the principle in question that has been violated, and relaunch the brainstorming process in the group.
3. Facilitators must ensure that the ideas are listed so that they can be referred to later when the group analyzes the ideas that it has generated. Idea records are often kept on flip charts, but an individual can record the information

and the results photocopied and distributed to the participants as well.

4. Facilitators should try to encourage all group members to get involved in the session and contribute ideas. Some group members may be reluctant to share their thoughts, which could lead to one or two participants dominating the session. A good facilitator finds ways to draw out ideas from all group members.
5. Facilitators need to keep the group focused and prevent participants from getting discouraged. Typically, participants offer several ideas at the beginning of a session; often these are the more obvious alternative solutions to the problem at hand. After these initial ideas are offered, the session might get bogged down as the quantity of ideas subsides. Facilitators should assist the group to push past this initial stage and continue working to come up with other alternatives, because it is at this point where truly creative solutions to problems may be offered.
6. Facilitators need to be able to restate and distill poorly articulated ideas in a way that clarifies without altering their meaning.

After a large set of ideas has been generated, they must then be evaluated and culled according to their efficacy. At this point, a large number of options are open to the leader in terms of how the ideas should be evaluated. However, generally it is advisable that the group who generated the ideas be accountable for evaluating them as well. During the analysis stage the leader must facilitate an evaluation of the ideas that the group generated. As the listed ideas are subtracted, merged, and refined in group discussion, it is common for a more comprehensive solution to the problem to be produced than what could have been generated individually or in other group problem-solving processes.

POTENTIAL PROBLEMS

Face-to-face brainstorming sessions may not always generate a large number of creative ideas for a variety of reasons. One problem with face-to-face sessions is called production blocking, which is basically anything that prevents a group member from verbalizing his or her ideas as they occur. Common production blocks are forgetting and distractions. Another problem with face-to-face sessions is evaluation apprehension, which simply means that individuals are afraid to vocalize their ideas. Evaluation apprehension might be caused because individuals are reluctant to share novel, but incompletely developed, ideas. Group members might also be afraid of how others will react if they suggest unpopular or politically sensitive alternatives.

Another potential problem with face-to-face brainstorming is social loafing, which occurs when individuals put forth less effort on a group project than they do working alone.

Electronic brainstorming sessions may reduce some of these problems. In online or network settings, participants can simultaneously contribute ideas, and can usually do so anonymously. Anonymity may make it more likely that individuals will contribute a larger number of creative alternatives. In fact, empirical research suggests that electronic sessions are generally more effective than face-to-face sessions in terms of the number of alternative ideas generated.

Although the anonymity offered by electronic brainstorming sessions may reduce the negative impact of some of the problems associated with face-to-face sessions, other research suggests that social loafing might still be a problem. One study published in the *Journal of Management Information Systems* found that allowing participants in electronic sessions to view and compare their participation rates against those of others in the group (e.g., a tally of how many ideas were suggested by each person) increased individuals' contributions of ideas, as everyone could readily see who was not participating much. In this study, electronic idea forums that allowed social comparison were the most productive, followed by anonymous electronic forums. Face-to-face sessions were the least productive in terms of the quantity of alternative solutions generated.

BRAINSTORMING AS CREATIVE DECISION MAKING

Because of its emphasis on group participation and creativity, brainstorming may also be seen as a tool for creative decision making. Creative decision making is a group decision-making technique in which group members attempt to generate as many alternative solutions as possible for a given problem. It is one of a number of decision-making tools that are used to ensure consideration of a diverse set of alternative solutions. Other common decision-making techniques include the nominal group technique and the Delphi technique.

SEE ALSO: Creativity; Decision Making; Group Dynamics; Problem Solving

Tim Barnett and Mark E. Mendenhall
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BREAK-EVEN POINT

A company's break-even point is the amount of sales or revenues that it must generate in order to equal its expenses. In other words, it is the point at which the company neither makes a profit nor suffers a loss. Calculating the break-even point (through break-even analysis) can provide a simple, yet powerful quantitative tool for managers. In its simplest form, break-even analysis provides insight into whether or not revenue from a product or service has the ability to cover the relevant costs of production of that product or service. Managers can use this information in making a wide range of business decisions, including setting prices, preparing competitive bids, and applying for loans.

BACKGROUND

The break-even point has its origins in the economic concept of the "point of indifference." From an economic perspective, this point indicates the quantity of some good at which the decision maker would be indifferent, i.e., would be satisfied, without reason to celebrate or to opine. At this quantity, the costs and benefits are precisely balanced.

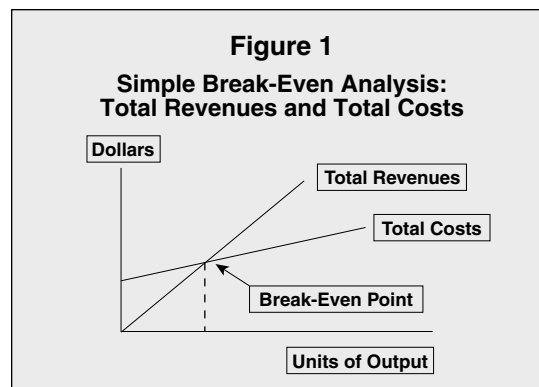
Similarly, the managerial concept of break-even analysis seeks to find the quantity of output that just covers all costs so that no loss is generated. Managers can determine the minimum quantity of sales at which the company would avoid a loss in the production of a given good. If a product cannot cover its own costs, it inherently reduces the profitability of the firm.

MANAGERIAL ANALYSIS

Typically the scenario is developed and graphed in linear terms. Revenue is assumed to be equal for each unit sold, without the complication of quantity

discounts. If no units are sold, there is no total revenue (\$0). However, total costs are considered from two perspectives. Variable costs are those that increase with the quantity produced; for example, more materials will be required as more units are produced. Fixed costs, however, are those that will be incurred by the company even if no units are produced. In a company that produces a single good or service, this would include all costs necessary to provide the production environment, such as administrative costs, depreciation of equipment, and regulatory fees. In a multi-product company, fixed costs are usually allocations of such costs to a particular product, although some fixed costs (such as a specific supervisor's salary) may be totally attributable to the product.

Figure 1 displays the standard break-even analysis framework. Units of output are measured on the horizontal axis, whereas total dollars (both revenues and costs) are the vertical units of measure. Total revenues are nonexistent (\$0) if no units are sold. However, the fixed costs provide a floor for total costs; above this floor, variable costs are tracked on a per-unit basis. Without the inclusion of fixed costs, all products for which marginal revenue exceeds marginal costs would appear to be profitable.



In Figure 1, the break-even point illustrates the quantity at which total revenues and total costs are equal; it is the point of intersection for these two totals. Above this quantity, total revenues will be greater than total costs, generating a profit for the company. Below this quantity, total costs will exceed total revenues, creating a loss.

To find this break-even quantity, the manager uses the standard profit equation, where profit is the difference between total revenues and total costs. Predetermining the profit to be \$0, he/she then solves for the quantity that makes this equation true, as follows:

Let TR = Total revenues
 TC = Total costs
 P = Selling price
 F = Fixed costs
 V = Variable costs

Q = Quantity of output

$$\begin{aligned} TR &= P \times Q \\ TC &= F + V \times Q \\ TR - TC &= \text{profit} \end{aligned}$$

Because there is no profit (\$0) at the break-even point, $TR - TC = 0$, and then $P \times Q - (F + V \times Q) = 0$. Finally, $Q = F / (P - V)$.

This is typically known as the contribution margin model, as it defines the break-even quantity (Q) as the number of times the company must generate the unit contribution margin ($P - V$), or selling price minus variable costs, to cover the fixed costs. It is particularly interesting to note that the higher the fixed costs, the higher the break-even point. Thus, companies with large investments in equipment and/or high administrative-line ratios may require greater sales to break even.

As an example, if fixed costs are \$100, price per unit is \$10, and variable costs per unit are \$6, then the break-even quantity is 25 ($\$100 \div [\$10 - \$6] = \$100 \div \$4$). When 25 units are produced and sold, each of these units will not only have covered its own marginal (variable) costs, but will have also have contributed enough in total to have covered all associated fixed costs. Beyond these 25 units, all fixed costs have been paid, and each unit contributes to profits by the excess of price over variable costs, or the contribution margin. If demand is estimated to be at least 25 units, then the company will not experience a loss. Profits will grow with each unit demanded above this 25-unit break-even level.

While it is useful to know the quantity of sales at which a product will cease to generate losses, it may be even more useful to know the quantity necessary to generate a desired level of profit, say D .

$$\begin{aligned} TR - TC &= D \\ P \times Q - (F + V \times Q) &= D \\ \text{Then } Q &= (F + D) \div (P - V) \end{aligned}$$

This has the effect of regarding the desired profit as an increase in the fixed costs to be covered by sales of the product. As the decision-making process often requires profits for payback period, internal rate of return, or net present value analysis, this form may be more useful than the basic break-even model.

BASIC ASSUMPTIONS

There are several assumptions that affect the applicability of break-even analysis. If these assumptions are violated, the analysis may lead to erroneous conclusions.

It is tempting to the manager to set the contribution margin (and thus the price) by using the sales goal (or certain demand) as the quantity. However, sales goals and market demand are not necessarily equiva-

lent, especially if the customer is price-sensitive. Price-elasticity exists when customers will respond positively to lower prices and negatively to higher prices, and is particularly applicable to nonessential products. A small change in price may affect the sale of skis more than the sale of insulin, an inelastic-demand item due to its inherently essential nature. Therefore, using this method to set a prospective price for a product may be more appropriate for products with inelastic demand. For products with elastic demand, it is wiser to estimate demand based on an established, acceptable market price.

Typically, total revenues and total costs are modeled as linear values, implying that each unit of output incurs the same per-unit revenue and per-unit variable costs. Volume sales or bulk purchasing may incorporate quantity discounts, but the linear model appears to ignore these options.

A primary key to detecting the applicability of linearity is determining the relevant range of output. If the forecast of demand suggests that 100 units will be demanded, but quantity discounts on materials are applicable for purchases over 500 units from a single supplier, then linearity is appropriate in the anticipated range of demand (100 units plus or minus some forecast error). If, instead, quantity discounts begin at 50 units of materials, then the average cost of materials may be used in the model. A more difficult issue is that of volume sales, when such sales are frequently dependent on the ordering patterns of numerous customers. In this case, historical records of the proportionate quantity-discount sales may be useful in determining average revenues.

Linearity may not be appropriate due to quantity sales/purchases, as noted, or to the step-function nature of fixed costs. For example, if demand surpasses the capacity of a one-shift production line, then a second shift may be added. The second-shift supervisor's salary is a fixed-cost addition, but only at a sufficient level of output. Modeling the added complexity of nonlinear or step-function costs requires more sophistication, but may be avoided if the manager is willing to accept average costs to use the simpler linear model.

One obviously important measure in the break-even model is that of fixed costs. In the traditional cost-accounting world, fixed costs may be determined by full costing or by variable costing. Full costing assigns a portion of fixed production overhead charges to each unit of production, treating these as a variable cost. Variable costing, by contrast, treats these fixed production overhead charges as period charges; a portion of these costs may be included in the fixed costs allocated to the product. Thus, full costing reduces the denominator in the break-even model, whereas the

variable costing alternative increases the denominator. While both of these methods increase the break-even point, they may not lend themselves to the same conclusion.

Recognizing the appropriate time horizon may also affect the usefulness of break-even analysis, as prices and costs tend to change over time. For a prospective outlook incorporating generalized inflation, the linear model may perform adequately. Using the earlier example, if all prices and costs double, then the break-even point $Q = 200 \div (20 - 12) = 200 \div 8 = 25$ units, as determined with current costs. However, weakened market demand for the product may occur, even as materials costs are rising. In this case, the price may shift downward to \$18 to bolster price-elastic demand, while materials costs may rise to \$14. In this case, the break-even quantity is 50 ($200 \div [18 - 14]$), rather than 25. Managers should project break-even quantities based on reasonably predictable prices and costs.

It may defy traditional thinking to determine which costs are variable and which are fixed. Typically, variable costs have been defined primarily as “labor and materials.” However, labor may be effectively salaried by contract or by managerial policy that supports a full workweek for employees. In this case, labor should be included in the fixed costs in the model.

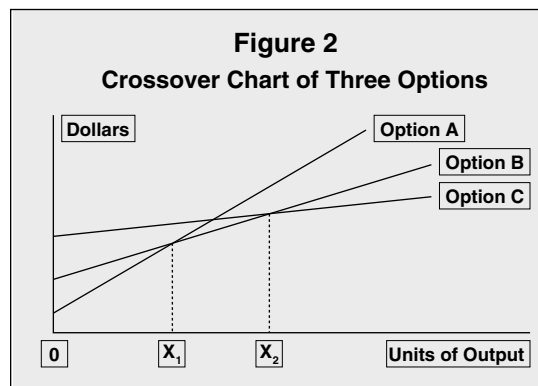
Complicating the analysis further is the concept that all costs are variable in the long run, so that fixed costs and the time horizon are interdependent. Using a make-or-buy analysis, managers may decide to change from in-house production of a product to subcontracting its production; in this case, fixed costs are minimal and almost 100 percent of the costs are variable. Alternatively, they may choose to purchase cutting-edge technology, in which case much of the variable labor cost is eliminated; the bulk of the costs then involve the (fixed) depreciation of the new equipment. Managers should project break-even quantities based on the choice of capital-labor mix to be used in the relevant time horizon.

Traditionally, fixed costs have been allocated to products based on estimates of production for the fiscal year and on direct labor hours required for production. Technological advances have significantly reduced the proportion of direct labor costs and have increased the indirect costs through computerization and the requisite skilled, salaried staff to support company-wide computer systems. Activity-based costing (ABC) is an allocation system in which managers attempt to identify “cost drivers” which accurately reflect the appropriate usage of fixed costs attributable to production of specific products in a multi-product firm. This ABC system tends to allocate, for example, the CEO’s salary to a product based on his/her specific

time and attention required by this product, rather than on its proportion of direct labor hours to total direct labor hours.

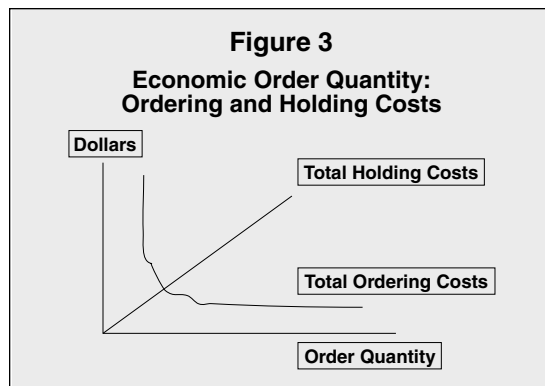
EXTENSIONS OF BREAK-EVEN ANALYSIS

Break-even analysis typically compares revenues to costs. However, other models employ similar analysis.



In the crossover chart, the analyst graphs total-cost lines from two or more options. These choices may include alternative equipment choices or location choices. The only data needed are fixed and variable costs of each option. In Figure 2, the total costs (variable and fixed costs) for three options are graphed. Option A has the low-cost advantage when output ranges between zero and X units, whereas Option B is the least-cost alternative between X and X units of output. Above X units, Option C will cost less than either A or B. This analysis forces the manager to focus on the relevant range of demand for the product, while allowing for sensitivity analysis. If current demand is slightly less than X Option B would appear to be the best choice. However, if medium-term forecasts indicate that demand will continue to grow, Option C might be the least-cost choice for equipment expected to last several years. To determine the quantity at which Option B wrests the advantage from Option A, the manager sets the total cost of A equal to the total cost of B ($F_A + V_A \times Q = F_B + V_B \times Q$) and solves for the sole quantity of output (Q) that will make this equation true. Finding the break-even point between Options B and C follows similar logic.

The Economic Order Quantity (EOQ) model attempts to determine the least-total-cost quantity in the purchase of goods or materials. In this model, the total of ordering and holding costs is minimized at the quantity where the total ordering cost and total holding cost are equal, i.e., the break-even point between these two costs.



As companies merge, layoffs are common. The newly formed company typically enjoys a stock-price surge, anticipating the leaner and meaner operations of the firm. Obviously, investors are aware that the layoffs reduce the duplication of fixed-cost personnel, leading to a smaller break-even point and thus profits that begin at a lower level of output.

APPLICATIONS IN SERVICE INDUSTRIES

While many of the examples used have assumed that the producer was a manufacturer (i.e., labor and materials), break-even analysis may be even more important for service industries. The reason for this lies in the basic difference in goods and services: services cannot be placed in inventory for later sale. What is a variable cost in manufacturing may necessarily be a fixed cost in services. For example, in the restaurant industry, unknown demand requires that cooks and table-service personnel be on duty, even when customers are few. In retail sales, clerical and cash register workers must be scheduled. If a barber shop is open, at least one barber must be present. Emergency rooms require round-the-clock staffing. The absence of sufficient service personnel frustrates the customer, who may balk at this visit to the service firm and may find competitors that fulfill the customer's needs.

The wages for this basic level of personnel must be counted as fixed costs, as they are necessary for the potential production of services, despite the actual demand. However, the wages for on-call workers might be better classified as variable costs, as these wages will vary with units of production. Services, therefore, may be burdened with an extremely large ratio of fixed-to-variable costs.

Service industries, without the luxury of inventory products, have developed a number of ways to provide flexibility in fixed costs. Professionals require appointments, and restaurants take reservations; when the customer flow pattern can be predetermined, excess personnel can be scheduled only when needed, reducing fixed costs. Airlines may shift low-demand flight legs to smaller aircraft, using less fuel and fewer

attendants. Hotel and telecommunication managers advertise lower rates on weekends to smooth demand through slow business periods and avoid times when the high-fixed-cost equipment is underutilized. Retailers and banks track customer flow patterns by day and by hour to enhance their short-term scheduling efficiencies. Whatever method is used, the goal of these service industries is the same as that in manufacturing: reduce fixed costs to lower the break-even point.

Break-even analysis is a simple tool that defines the minimum quantity of sales that will cover both variable and fixed costs. Such analysis gives managers a quantity to compare to the forecast of demand. If the break-even point lies above anticipated demand, implying a loss on the product, the manager can use this information to make a variety of decisions. The product may be discontinued or, by contrast, may receive additional advertising and/or be re-priced to enhance demand. One of the most effective uses of break-even analysis lies in the recognition of the relevant fixed and variable costs. The more flexible the equipment and personnel, the lower the fixed costs, and the lower the break-even point.

It is difficult to overstate the importance of break-even analysis to sound business management and decision making. Ian Benoliel, CEO of management software developer NumberCruncher.com, said on Entrepreneur.com (2002):

The break-even point may seem like Business 101, yet it remains an enigma to many companies. Any company that ignores the break-even point runs the risk of an early death and at the very least will encounter a lot of unnecessary headaches later on.

SEE ALSO: Activity-Based Costing; Cost Accounting; Cost-Volume-Profit Analysis; Financial Issues for Managers

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Revised by Laurie Hillstrom

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BUDGETING

Organizations develop specific plans for saving and spending income and these plans, or budgets, are essential for developing spending and saving priorities. Properly preparing a budget also serves as a reference to check how well money is being managed during a period by allowing managers to see actual revenues and expenses compared to budgeted revenues and expenses. Corrective action can be taken earlier in a period when revenue shortfalls or expense excesses are identified.

The term “budget” can be dated back to medieval England, where it meant “leather purse” or “wallet.” A budget allows businesses to meet specific goals by creating a system of saving and spending money efficiently. Simply defined, a budget is a plan for using corporate funds in a way that best meets the firm’s wants and needs. The plan includes a recorded entry of expected income, expenses, and savings over a defined period of time.

A wide range of budgeting techniques exist, and although the fundamental purposes are similar, the specifics among various organizations are often different. One important aspect of budgeting is how organizations increase cash to finance ongoing operations and new opportunities. Large corporations, for example, may have the option of increasing cash by selling treasury stock (previously authorized shares of ownership that have never been offered for sale on the stock market). The liquidity of equity (stock) markets allows managers to implement these equity decisions fairly quickly to budget for projected needs. In addition, the debt-paying ability of large corporations is rated by several independent organizations. This creates a market for corporate debt, more commonly referred to as bonds. Corporations with favorable debt ratings have the ability to borrow money; that is, issue bonds, at lower interest rates than those with unfavorable debt ratings. Small businesses, in contrast, often do not have publicly traded shares of stock. Although these businesses can sell stock to investors, the process is more uncertain because the market for this type of stock is less liquid. Venture capital is also an option, but the number of small businesses seeking venture capital nearly always exceeds the amount of venture

capital available. Also, debt-rating agencies do not rate the debt-paying ability of many small businesses, limiting the extent to which these businesses can raise cash through bond issues. Without a ready market for debt, small businesses must often turn to the less liquid forms of debt financing such as bank loans, in some cases at higher interest rates than would be available from established credit markets available to larger corporations.

Budgets allow businesses to better utilize the financial resources available to them. To begin with, budgets help businesses operate within their means; that is, over the long term, budgets assist businesses in spending less money than they earn. Next, budgets help businesses achieve their financial goals by planning for the future and organizing money into categories such as income, expenses, and savings. In short, budgets help a business avoid credit problems, better prepare for financial emergencies, and build better money management skills by creating a structured plan.

There are several steps that should be followed to successfully implement a budget. These include setting financial goals, planning budget categories, maintaining financial records, and balancing and adjusting the budget. Setting financial goals is the starting point in the budgeting process. Questions managers should ask include: “What do we want accomplished within one month, one year, or ten years?” “What new products or services do we want to offer in the short- and long-term and how can we finance these?” “Will my operating expenses increase with inflation, and how will we increase revenue to meet these additional expenses?” Clearly, there are dozens of questions managers should ask to cover all the categories of revenue, expense, and debt and equity financing in addition to these, but these questions provide a starting point to spur additional questions. The answers to these questions should help determine how income should be spent and saved, but in general, budgeting questions should revolve around estimates of income and expenses. Categories include fixed expenses such as rent, insurance premiums, and taxes; estimates of variable expenses such as utilities and wages; and estimates that allow for uncertainties.

One way to budget is by comparing estimated financial figures created before a budgeting period with actual experience at the end of the budgeting period. The initial estimates are called pro forma financial statements. The three primary types of financial statements are a balance sheet, income statement, and statement of cash flows. The balance sheet shows assets owned, liabilities owed, and owners’ equity (owners’ financial stake in the businesses). The income statement details profit and loss for a given period. The statement of cash flows helps managers see where cash came from and where it went. By comparing pro forma

financial statements to end-of-period financial statements, managers can judge whether or not their budgets are in line with estimates. Adjustments can then be made for future budgeting periods.

A budget must meet certain characteristics to successfully manage money. The budgeting should be specific enough to provide the needed information. It should be realistic as well as flexible. When unexpected expenses arise, the spending plan should be able to handle these costs. A budget is not a permanent plan and should be realigned when circumstances occur that alter budget categories. The budget should be carefully planned and organized, yet clear enough to be communicated to organizational stakeholders such as lenders and owners.

Companies create budgets for a mixture of reasons. They can serve a variety of functions, and thus many techniques can be implemented to develop them. Budgets can be used as a means of forecasting and planning for the future. Their creation can also be used as a motivational tool. The plan can be used as a means of evaluation and control as well as a resource for information and decision-making. Many different approaches to the budgeting process in addition to preparation or pro forma financial statements and comparison to actual financial statements can be used depending on the desired function of the company. Breakeven analysis, for instance, estimates the amount of sales required to cover a new product's or new service's expenses. Payback periods are similar, but add to breakeven analysis' focus on needed sales by adding the length of time needed to achieve those sales. This tells managers how long it will take to recoup initial expenses. Another type of budgeting is capital budgeting, in which large the estimated revenue from capital projects such as purchase of property, plants, and equipment is projected. Additional techniques include such as parametric, partial, zero-based, and equity budgeting. Each of these may be applied to organizations' financial situations depending on the needs of the individual businesses.

Whatever technique managers use, the important thing is that budgeting is essential. Businesses without budgets can quickly find themselves short of cash not only for new products and services, growth and expansion, and improvements in capital projects, but also in simply meeting short-term needs such as payroll, insurance, and tax expenses. Budgeting is thus a key element in all business planning.

SEE ALSO: Financial Issues for Managers; Zero-Based Budgeting

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Revised by Scott B. Droege

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BUNDLED GOODS AND SERVICES

Bundling is a marketing tactic that involves offering two or more goods or services as a package deal for a discounted price. Examples of bundling are as widespread as McDonald's value meals and automobiles with features such as air conditioning, sunroofs, and geographical systems. The most well-known example is the bundled computer package complete with a monitor, mouse, keyboard, and preloaded software for a single price. Alternatively, one could select and buy each component of the system separately. All components being equal, the differences are that the buyer doesn't have to purchase each item separately, and that the bundled package could cost as much as a third less than the each-sold-separately package. Bundling can be of products from one company, but cross-industry bundling is not uncommon—for example combining airline tickets with credit cards.

Bundling has been researched for over thirty-seven years. While it doesn't always pan out, bundling has been shown to be an effective and profitable marketing strategy under a variety of circumstances, including so-called pure bundling, in which a group of products are only available as a bundle and aren't sold separately, as well as mixed bundling, where the products are sold both as bundles and as individual units. Industries that have implemented bundling of goods and/or services include utilities, telecommunications services, software and computer companies, journal publishers, automobiles, vacation packages, and fast food restaurants, to name a few. Bundling usually saves the consumer from 7 percent to 15 percent over the cost of purchasing the items separately.

APPROACHES TO BUNDLING

Companies may choose to bundle goods for several reasons, including cost efficiency, market opportunities to enhance profits, and competitive strategy. Due to economies of scale, bundling may result in cost savings on the supply side. For instance, in some scenarios

a company may save on packaging and inventory costs by bundling products rather than carrying them separately. There has been a fair amount of published research delving into what kinds of bundling practices are most likely to produce cost savings. Factors a company must consider include whether the bundled products compete with each other and whether the demand for the bundled products is positively or negatively correlated. And even though the tendency is to price bundles lower than the sum of their individual components, in some cases companies successfully pursue strategies in which the bundled price is actually higher. This is called 'premium bundles.'

As a competitive strategy, a marketer of a successful product may bundle a newer or less successful product with its stronger product as a means of edging its way into a new market. Perhaps the most famous example of this is Microsoft Corporation's bundling of various software applications. First they bundled Access and PowerPoint with Word and Excel. Later they bundled their Internet browser with their market-leading operating system. When they did this they increase their market share from 7 percent to 38 percent in one year. (In that example of bundling, which proved highly successful for Microsoft, the legality of the practice was the subject of protracted litigation, however, because it raised concerns about anti-competitive behavior.) In a broader marketing sense, bundling is often intended to entice value- and convenience-seeking customers who would otherwise buy from another supplier or multiple suppliers by offering unique or appealing combinations of goods relative to their competitors.

On the demand side, bundling is used to extract consumer surplus, or an economic value in excess of the purchase price, as suggested by Chuang and Sirbu. In the business-to-business market, for example, a national survey of telecommunications managers showed that 57 percent of businesses will subscribe to bundles of two or more services, while 19 percent of businesses would purchase bundled services if they were priced 10 percent lower.

As with most marketing practices, there is no exact formula for how to create a bundled package that will succeed in the marketplace. However, some observers have noted several qualities that appear common to many successful bundling strategies. According to a 1997 study by Mercer Management Consulting, Lexington, Massachusetts, good bundles have five qualities: (1) the package is worth more than the sum of its parts; (2) the bundle brings order and simplicity to a set of confusing or tedious choices; (3) the bundle solves a problem for the consumer; (4) the bundle is focused and lean in an effort to avoid carrying options the consumer has no use for; and (5) the bundle generates interest or even controversy.

INDUSTRY CASE STUDIES

UTILITIES AND TELECOMMUNICATIONS. In response to much of the deregulation or re-regulation in the utilities industry, companies are looking to bundle their services to provide their products with reduced costs to the consumer while using the power of free markets. According to a telecommunications bundling report published in *Utility Business*, 35 percent of telecom customers are as likely to purchase bundled services (local, long distance, and electric/gas services) from an electric/gas provider as they are from a local telephone service provider. According to another nationwide survey appearing in *Public Utilities Fortnightly*, residential consumers and small business owners are increasingly interested in purchasing bundled goods and services. These customers also want specialized packages that are offered at a discount of at least 5 percent with package increases directly proportional to the size of the discount. Overall, customers assume that bundling goods and services will add value and create economies of scale, according to a study in *Security Distributing & Marketing*.

COMPUTER HARDWARE AND SOFTWARE. In recent years, computer hardware and software companies have offered the bundling of their goods and services. Computer companies such as Gateway, Dell, and Compaq offer Microsoft products pre-installed on their hard drives as a prerequisite to a customer buying the product. These computer companies also offer extra software and peripherals as standard equipment with new desktop, laptop, or server models. Gateway, for example, offers a package including a mouse, mouse pad, wrist support, and maintenance kit for about \$10 in addition to the purchase of a new machine. If these items were purchased separately, the cost could be as much as \$40. In 1999, software publisher Corel Corporation began bundling its WordPerfect Office Suite with a Hong Kong-based group, PC Chips Group, in order to appeal to smaller businesses looking for a computer with a large amount of software.

Computer hardware and software producers bundle their packages for several reasons. First, you cannot have a computer without software and vice-versa, and consumers would rather not incur the added expense of buying these two components separately. Secondly, it is very cost effective for both entities to enter into agreements to let their services co-exist with the consumer. Lastly, the bundling process gives these producers brand recognition in the market. Microsoft became the standard through selling its software products to the industry's largest computer producers such as IBM, Dell, Gateway, and Compaq.

UNBUNDLING TRENDS

Antitrust violations have forced some examples of unbundling. The European Court of First Instance ruled against Microsoft in December of 2004. Microsoft must provide the European market with a version of Windows operating system without their media player. The goal of this decision is to prevent Microsoft from having a monopoly.

There is some evidence that some consumers want unbundling. They want the option to buy exactly what they want, i.e., unbundled products. One example is pay-per-click advertising on Google and Yahoo. Advertisers would rather not pay based on an estimated audience, but are willing to pay for ads that actually are clicked on. Other examples include music (the consumer wants to download and pay for one song) or brokerage (buy one \$5.00 stock) or pay for one periodical article rather than subscribe to the journal. This trend will not make bundling disappear, because for many consumers the package is easier and more convenient. However companies will need to carefully package bundles to meet consumer desires.

SEE ALSO: Service Industry; Service Operations; Service Process Matrix; Strategy Formulation

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Revised by Judith M. Nixon

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BUSINESS CONTINUITY PLANNING

Organizations are faced with a variety of threats and vulnerabilities, and these continue to evolve. Business disruptions can include natural disasters such as floods, fires, hurricanes, and power outages. Since 9/11, the threat of man-made disasters such as terrorist attacks has taken on a sense of urgency as well. The increasing density of our population further exacerbates the threats posed by both natural and man-made disasters. Although business continuity planning and disaster recovery planning are now generally recognized as vital, creating and maintaining a sound plan is quite complex.

Business continuity planning addresses the prospect that a disaster might interrupt an organization's business operations. Whether an organization is for-profit, non-profit, or governmental, the need to mitigate disaster risks has become especially salient. Firms should evaluate their degree of exposure to disaster, both externally (e.g., floods, fires, hurricanes) and internally (e.g., HVAC failure, sabotage).

A business impact analysis helps management to understand the criticality of different business functions, recovery time required, and the need for various resources. The question of which corporate functions receive top priority should be addressed. In selecting a strategy to protect the organization, cost-benefit comparisons are made with regard to the effects of doing without various services and functions (e.g., call centers, production locations, proprietary data) at specific points in time, and developing plans for optimum recovery periods for each service and function.

Thus, a business continuity plan includes the procedures and information about resources to help an organization recover from a disruption in its business operations. In the financial markets, major industry players have responded to the 9/11 terrorist attacks by attempting to deal with future risks, especially risks regarding trading operations. But because most networks rely on the open Internet, viruses or other service attacks remain potential threats.

A central office failure brought about by a fire or power outage can also affect trading operations.

Redundancy (including back-up sites and additional staff and technologies) is recommended, albeit expensive. An additional risk is that an entire network (such as AT&T) might go down. Jay Pultz, research vice-president at disaster and business continuity consultancy firm Gartner, Inc., is concerned that failures will increase because the companies that provide the networks are collapsing their infrastructure to a single backbone, as opposed to separate backbones for the Internet, phone, data, etc.

Business continuity and disaster recovery planning can demand a great deal of resources. For example, Voca (the United Kingdom direct debits clearing house) spends about 35 percent of its IT budget on these plans. But the alternative may be worse. Losses can mount quickly when firms cannot access data.

According to a study by Gartner, Inc., the average cost of computer-network downtime is \$42,000 an hour. Technology-dependent firms such as online brokerages may incur costs of \$1 million or more an hour. To ensure seamless service in case of disaster, Voca runs its business from a back-up site for up to five weeks a year. Off-site backups appear to be a favorite method for protecting data for 58 percent of solution providers, according to recent CRN poll data.

The Confederation of British Industry and security firm Qinetiq report that, even after overhauling business continuity plans, 60 percent of British companies are concerned about their preparation for disaster. Almost 70 percent of respondents to Information Week Research's Outlook 2005 survey ranked business continuity planning or disaster preparedness as a high priority. Still, according to analyst David Hill of Mesabi Group, most companies have neglected some operational needs, such as recovering data after a virus attack. Moreover, many business continuity plans are never even tested, and according to Peter Gerr of the Enterprise Strategy Group, one out of every five recovery efforts fails.

But forward-thinking enterprises are recognizing both external and internal signals for the need to formulate contingency plans. Externally, business continuity plans may be driven by regulation, as in the banking industry. Internal risk exposure, however, is a critical driver as well. A case in point is Madrid-based Banco Santander International, the largest commercial bank in South America and the tenth largest bank in the world. If operations stopped and trades or payments failed, the bank could be liable for compensation.

To maintain protection of business-critical customer data at its private banking center in Miami, Banco Santander chose a solution from VERITAS Software Corp. based on its compatibility with the bank's infrastructure. Data could then be replicated between Miami and New York sites over the IP network.

During the rash of hurricanes that hit Florida in 2004, every time a major warning was issued and facilities evacuated, primary operations were transferred to New York until the threat passed. The system is viewed as an insurance policy for the bank.

Oddly enough, smaller businesses have been found to lead many midsize businesses in implementing true disaster-recovery solutions. Small businesses often rely on value added resellers (VARs) for their solutions, and larger firms use internal IT departments. Midsize firms, however, are too complex to be relocated quickly, yet lack the internal staff to restore business processes rapidly, increasing opportunities for VARs to offer business continuity services to this market.

APPLICATIONS TO SUPPLY CHAIN MANAGEMENT

Outsourcing has become a standard practice among many organizations as a way to add flexibility to the supply chain. Often a particular task can be done more efficiently and/or effectively by an outside vendor. The advantage for the focal firm is that it can focus on its core competence, or at least those functions it does well, and outsource other functions so as to gain efficiency. Thus, rather than integrating all functions within the firm boundaries, the trend toward outsourcing and a variety of cooperative relationships continues. Ironically, the gains in efficiency and flexibility may often be outweighed by risks of being dependent on sole suppliers.

In a *Bank Technology News* article titled "Business Continuity Planning Must Extend to Vendors," John Hoge argues that client-vendor relationships are symbiotic and should lead to greater efficiency and productivity in a variety of industries. In banking, technology vendors are critical for the bank's basic business processes. But if the vendor's systems go down, the bank's systems can go down as well.

The implication is that vendors are increasingly compelled to include business continuity and disaster recovery as key aspects of their activities. Some vendors have adopted business impact analysis to tailor a recovery plan to meet the recovery requirements of specific units. An interesting twist regarding the benefits of "leaner" supply chains is the increased need for contingency plans in case of disruptions.

The "dark side" of supply chain management is discussed in a white paper appearing in a March 2005 issue of *Supply Chain Management Review*. The authors explore the notion of supply continuity planning, which is a comprehensive approach to managing supply risk. They state that by employing their supply continuity planning model, organizations can guard against a major supply disruption that could potentially delay orders and result in loss of customers.

Whereas companies previously relied on inventory buffers (safety stock, lead times, excess capacity) to protect them, today's competitive environment makes these buffers less attractive. A consequence is that today's lean supply chains are increasingly fragile, or more sensitive to shocks and disruptions.

The authors make a strong case for how devastating disruptions can be by citing several events, including a fire at a factory supplying valves to Toyota, resulting in estimated costs of \$195 million; an earthquake in Taiwan, hampering the supply of computer chips and computer demand during the holiday season; a lightning strike at a radio-frequency chip plant in Albuquerque, NM, resulting in a fire, production delays, and the eventual withdrawal of Ericsson from mobile phone manufacturing—because the plant was its sole supplier; and the 9/11 terrorist attacks, resulting in loss of life and loss of information databases.

Based on case studies of four organizations that proactively manage inbound supply risk, the authors present a framework describing detailed efforts focused on four major activities: creating system awareness of supply risk, preventing the occurrence of supply disruptions, remediating supply interruptions, and managing knowledge.

BEING PREPARED

In a 2005 *Canadian Business* article titled "Always Be Prepared," an expert in enterprise risk presents a series of questions that managers should ask about the firm's state of readiness to continue business after a disruption. For example, does the business even have a plan? Is the plan tailor-made or "off the rack?" Are critical functions the basis of the plan? The maintenance of knowledge management, regular testing of the plan, and supplier preparedness are other important issues.

Being prepared for disaster is increasingly essential. The good news for those new to business continuity planning and disaster recovery planning is that information on how to prepare is proliferating. Business continuity and disaster recovery planning software explore the potential impacts of disaster, and underlying risks; constructing a plan; maintenance, testing, and auditing to ensure that the plan remains appropriate to the needs of the organization; and support infrastructure and services.

SEE ALSO: Contingency Approach to Management; Lean Manufacturing and Just-in-Time Production; Strategic Planning Tools; Strategy Formulation; Supply Chain Management

Bruce Walters

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BUSINESS PLAN

A business plan is a written document used to describe a proposed venture or idea. It typically includes the current state of a business, future vision for the business, target market analysis and challenges, sales and marketing strategies, and funding requirements to reach stated goals. Many business plans are designed with the intention of securing funding and investors to support a proposed idea; others are designed to assist with reorganization, takeovers, or to serve as an internal planning document. On its website, the U.S. Small Business Administration (SBA)(<http://www.sba.gov>) describes it this way:

A business plan precisely defines your business, identifies your goals, and serves as your firm's resume. . . It helps you allocate resources properly, handle unforeseen complications, and make good business decisions. Because it provides specific and organized information about your company and how

you will repay borrowed money, a good business plan is a crucial part of any loan application. Additionally, it informs sales personnel, suppliers, and others about your operations and goals.

GETTING STARTED

The article “Write the Right Business Plan,” lists ten things to consider before tackling the document:

1. Decide why you’re writing your plan—what is your motivation?
2. Do your homework—read some books, explore web resources.
3. Compile your information—locate articles, financial statements.
4. Start typing—write down all your ideas, notes and questions in outline form.
5. Write a rough draft—Flesh out the outline with full sentences and paragraphs.
6. Do more research—support your case with data via Small Business Association contacts, annual reports, and competitors in the chosen industry.
7. Think about the numbers—develop pro forma financial statements.
8. Write a final draft—demonstrate attention to detail with accuracy and clarity.
9. Get feedback—have someone else read over your plan and offer advice.
10. Polish your plan to perfection—include a cover page, table of contents, nondisclosure form and an executive summary containing highlights.

Employees with the right skill set and expertise can collaborate to create the business plan. Alternatively, a consultant can be hired to assist with the process. A consultant can bring expertise and professionalism to the appearance and tone of your business plan, provide informed market analysis and research assistance, and supply educated projections for a market that the entrepreneur might be unfamiliar with or have little experience analyzing.

After determining who will be working on the plan, it is useful to decide on the scope of the plan and timeframe for completion of the plan. Once the team or consultant is in place, research and analysis can begin. Internal and external assessments should be conducted and then examined. The interpretations of these assessments will be the framework of the plan and will guide goal setting and strategies for the company. Once goals and strategies are determined, a solid

business plan can be formed toward fulfilling these goals.

From a management perspective, a business plan allows managers to set priorities and allocate resources effectively. It brings order and direction to an organization and provides a vision of the future that employees throughout the company can put energy into and get excited about. This shared vision and focus will benefit the company at every level and ensure that all constituents are working cooperatively and cohesively. Ideally, all employees will utilize the information from the business plan to assist in goal setting, and guide in decision making and performance assessments.

ELEMENTS OF A BUSINESS PLAN

The U.S. Small Business Administration recommends that a business plan describe four main elements of the proposed venture: an overview of the business, a marketing analysis, a financial plan, and a management plan. An executive summary and other supporting documents should also accompany the plan. These elements provide a solid starting point for a general plan, but there is no single formula to a business plan and a multitude of factors will impact the amount of content needed in a good business plan.

The executive summary is a synopsis of the entire business plan. It is critical that this summary be carefully crafted and compelling. This is the first and possibly the only information that a potential investor will read; if it is not informative enough or if it is lacking crucial data, the investor might not read beyond this summary component.

The business overview segment is a profile of the company and its primary industry. Projections, trends, and industry outlooks should be included. In this section the company describes the unique elements that make it a prime candidate for its proposed venture.

A market analysis details how the company will handle its sales and marketing strategies. This analysis includes information on the company’s products or services and intended customers, and how customers will be made aware of the product or service. This section should also include a competitive analysis with a breakdown identifying Strengths, Weaknesses, Opportunities, and Threats (SWOT) to the company and the business proposed. A plan of action should explain how the company will address, exploit, or withstand each of these eventualities.

The financial section discusses the current financial state of the company and what types of financing will be required for the proposed venture. In this area, it is appropriate to discuss the specific dollar amounts required for the business venture, the cost to maintain and sustain the venture, and projections of income,

Element of a Business Plan

1. Cover sheet
2. Statement of purpose
3. Table of contents

I. The Business

- A. Description of business
- B. Marketing
- C. Competition
- D. Operating procedures
- E. Personnel
- F. Business insurance

II. Financial Data

- A. Loan applications
- B. Capital equipment and supply list
- C. Balance sheet
- D. Breakeven analysis
- E. Pro-forma income projections (profit & loss statements)
 - Three-year summary
 - Detail by month, first year
 - Detail by quarters, second and third years
 - Assumptions upon which projections were based
- F. Pro-forma cash flow

III. Supporting Documents

- Tax returns of principals for the last three years Personal financial statement (all banks have these forms)
- For franchised businesses, a copy of franchise contract and all supporting documents provided by the franchisor
- Copy of proposed lease or purchase agreement for building space
- Copy of licenses and other legal documents
- Copy of resumes of all principals
- Copies of letters of intent from suppliers, etc.

balance sheets, and cash flow. Statistics, facts, and research should support any financial projections listed.

The management plan section should discuss the strengths, experience, achievements, and expertise of the person or team undertaking the business venture. Investors want to know that they are offering their support to a person or team qualified and capable of handling the business proposed and the funds loaned.

A complete business plan will provide evidence to the lender that the entrepreneur has performed a thorough investigation of this new business venture, because it details how the business will generate cash flow, pay for operating expenses, and service debt repayment.

The accompanying table offers several elements for inclusion in designing a business plan.

CUSTOMIZING FOR INVESTOR-TYPE

Bankers, venture capital fund managers, and business angels each look at different features of a business plan when assessing it for investment. Bankers tend to focus on the financial aspects of the plan, and

give little emphasis to marketing and management issues. Venture capital fund managers are typically most interested in both the marketing and the financial aspects of the plan. Business angels focus on entrepreneurial elements and “investor fit” considerations. Thus business plan writers should customize their proposals based on the audience they are trying to reach.

Bankers are interested in businesses that will be successful over the long term and entrepreneurs who will remain committed to the project as described in the business plan. When making their lending decisions, they are interested in collateral as security for the loan, and tend to support projects that are less risky. A banker’s main interest is the repayment of the loan.

Venture capital fund managers invest for capital gain, and when a venture is successful, they also benefit. Likewise, if a business fails, venture capital fund managers stand to lose significantly—and at much cost to the outside investors whose funds they are managing. Therefore, venture capital fund managers focus on the uniqueness of the product or service, the status of the market, and the management team’s potential for success. Venture capital fund managers’ main interest is growth potential and potential returns.

Business angels interests align more closely with venture capital fund managers than with bankers. Business angels focus on how their interests match up with the entrepreneur's and how well they are able to work with the entrepreneur over the length of the project. They seek out entrepreneurs who have strong, positive qualities, such as integrity and responsibility, and with whom they feel a connection. Because the investment is personal for the business angel, he or she is interested in financial gains, but also enjoys the opportunity to participate in the venture itself. A business angel's main interest is potential returns, camaraderie with the entrepreneur(s), and personal involvement.

RECENT TRENDS

An article by A. Gome investigates a growing trend among certain entrepreneurs to move away from the old-style business plan that contains an extended, long-term outlook. They are opting instead to use an abbreviated, shorter-term document that better fits their business strategy.

Long-range planning documents don't work as well for some entrepreneurs because of the fast-changing markets they are entering into, which renders the business plan irrelevant within months. And, the short-term nature of some ventures preclude the need for a long-term plan. It is unnecessary to have a five-year plan if the entrepreneur expects to conclude his venture within a shorter time frame.

LIVING DOCUMENTS

Replacing the traditional business plan is what is called a "living document," typically one page in length and with a forward-looking range of one year. Goal-setting may be projected on three- to six-month timeframes, which are more easily monitored and attainable. The living document contains similar elements of a typical business plan-vision, values, objectives, methods toward reaching objectives-but abbreviated to fit on a single page. This document needs constant updating and adjusting, with ample flexibility to respond to customer and market fluctuations. Highly-tailored documents may also need to be prepared for each type of stakeholder, whether bankers, venture capital fund managers, or business angels.

RESOURCES

There are many resources for the entrepreneur looking to write a business plan. Local business organizations, public libraries, colleges and universities may offer useful workshops, seminars, or courses.

Local Small Business Administration (SBA) offices or websites (<<http://www.sba.gov>>) also offer resources. The SBA has sponsored more than 200,000 loans worth more than \$45 billion, making it the largest single financial backer of U.S. businesses in the country. The SBA provides free online courses, e-mail guidance, print materials, and face-to-face consultations to small business owners.

The SBA also administers the Small Business Development Center Program to provide management assistance to current and prospective small business owners. This program provides a broad-based system of assistance for the small business community by linking the resources of federal, state and local governments with the resources of the educational community and the private sector.

There are also several books and software programs that assist with creating a business plan.

Business plans are useful documents for garnering funds for entrepreneurial ventures and evaluating progress in a business start-up. They are also useful for evaluating success in established companies, establishing steps for reorganizations or acquisitions, and for guiding the overall strategy of a company. Customizing the business plan for the intended investor type ensures that the proposal will mesh with the investor's interests and key considerations.

SEE ALSO: Entrepreneurship; Venture Capital

Monica C. Turner

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BUSINESS PROCESS REENGINEERING

Process reengineering is redesigning or reinventing how we perform our daily work, and it is a concept that is applicable to all industries regardless of size, type, and location.

While selected elements of process reengineering are well documented in the late 1800s and early 1900s, process reengineering as a body of knowledge or as an improvement initiative, takes the best of the historical management and improvement principles and combines them with more recent philosophies and principles, which make all people in an organization function as process owners and reinvent processes. It is this combination of the old and the new as well as the emphasis on dramatic, rapid reinvention that makes process reengineering an exciting concept. The differences between continuous process improvement and process reengineering are outlined in Figure 1.

The first question in process reengineering is: "Why are we doing this at all?" Answering this question is the beginning of the immediate, dramatic change and the application of supporting technical and behav-

ioral concepts and tools that are necessary to implement process reengineering. To accomplish this, organizations must foster an environment that encourages quantum leaps in improvement by throwing out existing systems and processes and inventing new ones.

The intent of process reengineering is to make organizations significantly more flexible, responsive, efficient, and effective for their customers, employees and other stakeholders. According to field experts Michael Hammer and James Champy, process reengineering requires the "fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance, such as cost, quality, service, and speed."

If process reengineering is to work, a business's priorities must change in the following ways: (1) from boss to customer focus; (2) from controlled workers to empowered, involved process owners and decision makers; (3) from activity-based work to a results orientation; (4) from scorekeeping to leading and teaching so that people measure their own results; (5) from functional (vertical) to process (horizontal or cross functional) orientation; (6) from serial to concurrent operations; (7) from complex to simple, streamlined processes; (8) from empire building and guarding the status quo to inventing new systems and processes and looking toward the future (i.e., from the caretaker mentality to visionary leadership).

As organizational priorities change, the culture will change as well. As people understand the vision for a better culture with better capabilities and results,

Figure 1

Area of Difference	Continuous Improvement	Reengineering
Reason for change	Desire to improve baselines	Compelling; (Rapid process re-design for survival)
Targets	Small improvement in every process; Cumulative effects	Aggressive (e.g., 10x or more, Six Sigma, etc.)
Approach	Non-structured	Structured and Disciplined
Scope	Evaluation of all steps in all processes	Broad cross functional processes
Focus	Parts of a system	Relations in system
Level of change	Incremental and continuous	Order of magnitude
Organizational structure	Vertical or horizontal	Flattened, horizontal
Involvement of executives	Important up-front; support throughout	Intensive long term involvement
Involvement of all employees	Gradual voluntary involvement	Non-voluntary
Use of teams	Work teams and cross-functional team	Cross functional teams
Role of information	Incidental	Cornerstone

Source: Mildred Golden Pryor and William Donald Pryor, *Process Reengineering*, Center for Excellence, A Partnership between Texas A&M University-Commerce and Raytheon-E-Systems, 1994.

they will be able-individually and as members of teams-to contribute positively to make the organizational vision a reality.

REASONS FOR PROCESS REENGINEERING

There are several reasons for organizations to reengineer their business processes: (1) to re-invent the way they do work to satisfy their customers; (2) to be competitive; (3) to cure systemic process and behavioral problems; (4) to enhance their capability to expand to other industries; (5) to accommodate an era of change; (6) to satisfy their customers, employees, and other stakeholders who want them to be dramatically different and/or to produce different results (7) to survive and be successful in the long term; and (8) to invent the “rules of the game.”

Whatever the reason for reengineering, managers should ask themselves: What do our customers and other stakeholders want/require? How must we change the processes to meet customer and other stakeholder requirements and be more efficient and effective? Once streamlined, should the processes be computerized (i.e., how can information technology be used to improve quality, cycle time, and other critical baselines)? Processes must be streamlined (i.e., re-invented) before they are computerized. Otherwise, the processes may produce results faster, but those results may not be the ones needed.

REQUIREMENTS FOR SUCCESSFUL PROCESS REENGINEERING

Many experts indicate that there are essential elements of process reengineering, including:

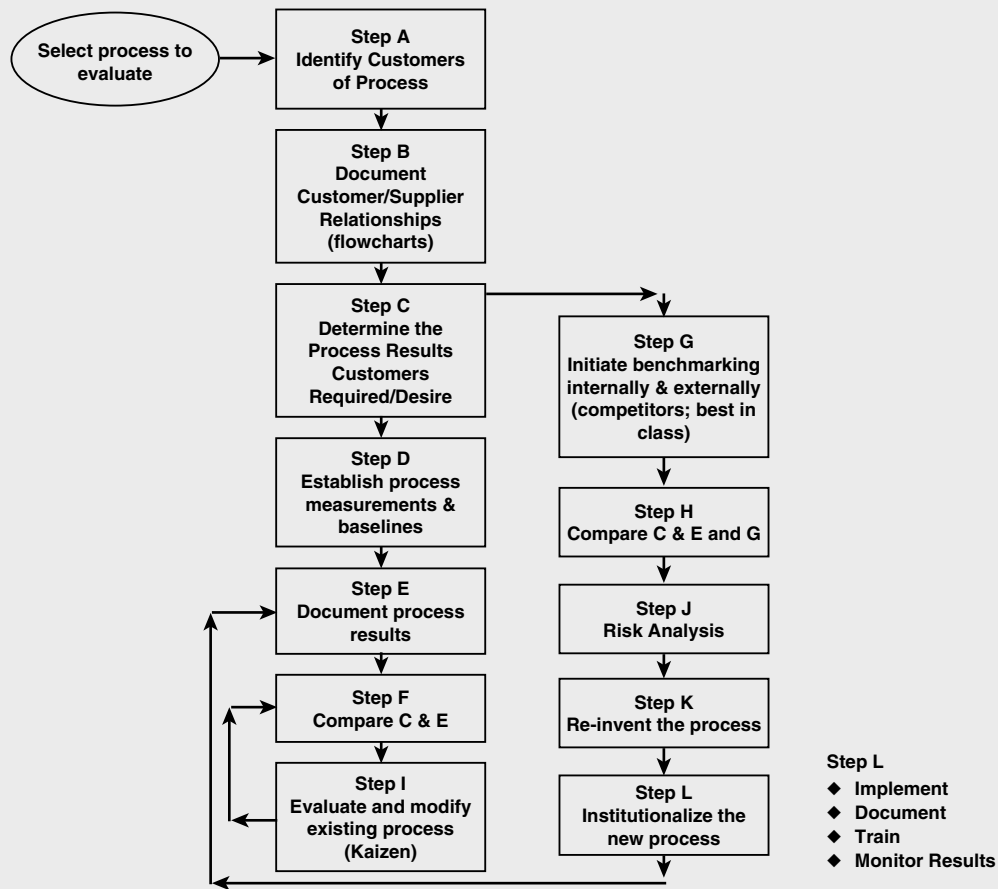
- Initiation from the top by someone with a vision for the whole process and relentless deployment of the vision throughout the organization.
- Leadership that drives rapid, dramatic process redesign.
- A new value system which includes a greater emphasis on satisfying customers and other stakeholders.
- A fundamental re-thinking of the way people perform their daily work, with an emphasis on improving results (quality, cycle time, cost, and other baselines).
- An emphasis on the use of cross-functional work teams which may result in structural redesign as well as process redesign.
- Enhanced information dissemination (including computerization after process redesign) in order to enable process owners to make better decisions.

- Training and involvement of individuals and teams as process owners who have the knowledge and power to re-invent their processes.
- A focus on total redesign of processes with non-voluntary involvement of all internal constituents (management and non-management employees).
- Rewards based on results; and a disciplined approach.

Those same experts state there are many reasons that process reengineering fails, including:

- Not focusing on critical processes first.
- Trying to gradually “fix” a process instead of dramatically re-inventing it.
- Making process reengineering the priority and ignoring everything else (e.g., strategy development and deployment, re-structuring based on new strategies, etc.).
- Neglecting values and culture needed to support process reengineering and allowing existing culture, attitudes, and behavior to hinder reengineering efforts (e.g., short-term thinking, bias against conflict and consensus decision making, etc.).
- “Settling” for small successes instead of requiring dramatic results.
- Stopping the process reengineering effort too early before results can be achieved.
- Placing prior constraints on the definition of the problem and the scope for the reengineering effort.
- Trying to implement reengineering from the bottom up instead of top down.
- Assigning someone who doesn’t understand Reengineering to lead the effort.
- Skimping on reengineering resources.
- Dissipating energy across too many Reengineering projects at once.
- Attempting to reengineer when the CEO is near retirement.
- Failing to distinguish reengineering from, or align it with, other improvement initiatives (e.g., quality improvement, strategic alignment, right-sizing, customer-supplier partnerships, innovation, empowerment, etc.)
- Concentrating primarily on design and neglecting implementation.
- Pulling back when people resist making reengineering changes (not understanding that resistance to change is normal).

Figure 2
Golden-Pryor Improvement Flowchart



Source: Mildred Golden Pryor and William Donald Pryor, *Process Reengineering*, Center for Excellence, A Partnership between Raytheon E-Systems and Texas A&M University-Commerce, Texas, 1994.

Strategic approaches that are process-focused and that are extensions of process reengineering:

- Intensification-improving/re-inventing processes to better serve customers.
- Extension-using strong processes to enter new markets.
- Augmentation-expanding processes to provide additional services to existing customers.
- Conversion-using a process that you perform well and performing that process as a service for other companies.
- Innovation-applying processes that you perform well to create and deliver different goods and services.
- Diversification-creating new processes to deliver new goods or services.

Process reengineering is a valuable concept for organizations that are willing to undergo dramatic change and radical process redesign. It can co-exist with ongoing gradual process improvement efforts because not all processes can be radically redesigned at once.

In process reengineering, as in all improvement initiatives, assessments should be made in terms of cost/benefit analysis, and risk analysis. However, even the assessments should be done with a sense of urgency since process reengineering requires speed as well as radical redesign. Documentation of results will serve as the baseline for future improvements.

The various improvement methodologies (i.e., continuous improvement and process reengineering) should not be used as separate efforts but rather as two approaches within a single improvement initiative. In fact, a single flowchart can be used to make choices regarding both continuous process improvement and process reengineering (see Figure 2). Both gradual

continuous improvement and process reengineering should be an integral part of process management.

SEE ALSO: Continuous Improvement; Product-Process Matrix

Mildred Golden Pryor

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BUSINESS STRUCTURE

When forming a new company, one of the first critical decisions is the formal structure that business will take. Issues such as liability, ownership, operating strategy, and taxation are all impacted by the formal structure of the business. Four different business structures are discussed below: partnership, corporation, Subchapter S, and limited liability corporation (LLC).

PARTNERSHIPS

A partnership is a business association where two or more individuals (or partners) share equally in profits and losses. As is the case with a sole proprietorship, partners have full legal responsibility for the business (including debts against the business). Persons entering into this type of business need a partnership agreement detailing how much each partner owns of the business, how much capital each person will contribute, and the percentage of profits to which they are entitled; how company decisions will be made; if the company is open to new/additional partners, and how they can join; and in what cases and how the company would be dissolved.

In a general partnership, all partners are liable for actions made on the company's behalf, including decisions made and actions taken by other partners. Profits (and loss) are shared by all partners, as are company assets and authority.

A limited partnership is a similar business arrangement with one significant difference. In a limited partnership, one or more partners are not involved in the management of the business and are not personally liable for the partnership's obligations. The extent to which the limited partner is liable is thus "limited" to his or her capital investment in the partnership.

In a limited partnership agreement, several conditions have to be met, the most important of which is that a limited partner or partners have no control or management over the daily operations of the organization. There must be at least two partners and one or more of these general partners manage the business and are liable for firm debts and financial responsibilities. If a limited partner becomes involved in the operation of the partnership, he or she stands to lose protection against liability. In addition, a limited partnership agreement, certificate, or registration has to be filed, usually with the secretary of state, but this varies by state. Such an agreement generally includes the names of general and limited partners, the nature of the business, and the term of the limited partnership or the date of dissolution. Since limited partnerships are often used to raise capital, there is a set term of duration for the agreement. Individual states may also have additional limited partnership requirements.

The most frequent use of the limited partnership agreement has been as an investment, removing the limited partner from financial liability but raising capital through his or her investments or contributions. Limited partnerships are common in real estate investments and, more recently, in entertainment business ventures.

Partnerships are not required to file tax returns for the company, but individual partners do have to claim their share of the company's income or loss on personal tax returns. The Internal Revenue Service (IRS) governs limited partnerships for tax purposes. IRS guidelines restrict limited partnership investments to 80 percent of the total partnership interests (see IRS Revenue Procedure 92-88 for information governing limited partnerships). Limited partnerships are also taxable under state revenue regulations.

CORPORATIONS

The major difference between a partnership and a corporation is that the corporation exists as a unique and separate entity from its owners, or shareholders. A corporation must be chartered by the state in which it is headquartered, and it can be taxed, sued, enter into contractual agreements, and is responsible for its own debts. The shareholders own the corporation, and they elect a board of directors to make major decisions and oversee corporate policy. The corporation files its own tax return and pays taxes on its income from operations. Unlike partnerships, which often dissolve when a partner leaves, a corporation can continue despite turnover in shareholders/ownership. For this reason, a corporate structure is more stable and reliable than a partnership.

There are several major advantages to choosing incorporation over partnership. Sale of stock can help raise large amounts of capital significantly faster and shareholders are only responsible for their personal financial investment in the company. Shareholders have only limited liability for debts and judgments made against the company. And the corporation can deduct the cost of benefits paid to employees from corporate tax returns.

Forming a corporation costs more money than a partnership, including legal and regulatory fees, which vary depending on the state in which the business is incorporated. Corporations are subject to monitoring by federal and state agencies, and some local agencies as well. More paperwork related to taxes and regulatory compliance is required. Taxes are higher for corporations, particularly if it pays dividends, which are taxed twice (once as corporation income, then again as shareholder income).

SUBCHAPTER S

Some small businesses are able to take advantage of the corporate structure and avoid double taxation. These companies must be small, domestic firms with

seventy-five shareholders or less and only one class of stock, and all shareholders must meet eligibility requirements. If a company meets these requirements, they can treat company profits as distributions through shareholders' personal tax returns. This way the income is taxed to shareholders instead of the corporation, and income taxes are only paid once. Subchapter S corporations are also known as small business corporations, S-corps, S corporations, or tax-option corporations.

LIMITED LIABILITY CORPORATION

The limited liability corporation (LLC) structure combines the benefits of ownership with the personal protection a corporation offers against debts and judgments. One or more people can form an LLC, and business owner(s) can either choose to file taxes as a sole proprietorship/partnership or as a corporation. The process of forming an LLC is more extensive than a partnership agreement but still involves less regulatory paperwork than incorporation.

Major advantages offered by the LLC structure are that the business does not have to incorporate (or pay corporate taxes); one person alone can create an LLC; owners can be compensated through company profits; and business losses can be reported against personal income. Still, some may choose to file taxes as a corporate entity, particularly if owners want to keep corporate income within the business to aid its growth. According to the Small Business Administration, an LLC cannot file partnership tax forms if it meets more than two of the following four qualities that would classify it as a corporation: (1) limited liability to the extent of assets; (2) continuity of life; (3) centralization of management; and (4) free transferability of ownership to interests. If more than two of these apply, the LLC must file corporation tax forms.

An LLC that chooses to be taxed as an S corporation can also do the following, which the tradition S corporation cannot, according to David Meier in *Entrepreneur*:

- have more than seventy-five business owners
- include a nonresident alien as an owner
- have either a corporation or a partnership as an owner
- have more than 80 percent ownership in a separate corporate entity
- have disproportionate ownership—ownership percentages that are different from each respective owner's investment in the business
- flow-through business loss deductions in excess of each respective owner's investment in the business

- have owners/members that are active in the management of the business without losing limited personal liability exposure.

SEE ALSO: Entrepreneurship; Organizational Chart

Boyd Childress
Revised by Wendy H. Mason

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