

# I

## IPO

SEE: Initial Public Offering

## IMPORTING

SEE: Exporting and Importing

## INCOME STATEMENTS

The income statement is one of the three major financial statements that all publicly held firms are required to prepare annually. It provides a record of a company's revenues and expenses for a given period of time, and thus serves as the basic measuring stick of profitability. In fact, the income statement is often referred to as the profit-and-loss statement, with the bottom line literally revealing which result a company achieved. Along with the balance sheet and cash flow statement, the income statement provides important financial information to business managers, investors, lenders, and analysts.

"The income statement is simply a scorecard that summarizes the revenues and expenses of an organization for a specific period of time," Jayson Orr wrote in *CMA Management*. "It reveals critical information

about the operations and profitability of a business unit. It also reveals little secrets that may not be so obvious. In short, the income statement tells how successfully a business unit is fulfilling its prime directive—to generate profit."

Preparing an income statement is one of the basic responsibilities of the accounting function. Accounting is the process of recording and disclosing the financial information for a company so that operating results can be known and comparisons between different years and different companies can be made. Accounting has been described as the language of business. Because managers of all organizations use accounting information, perhaps on a daily basis, it is critical that they understand the language. One of the obstacles to the best use of accounting information is that its terminology is confusing, especially when some of the terms used in accounting have alternate meanings in other business settings.

One of the purposes of this essay is to provide logical definitions for key business terms from an accounting perspective; thus avoiding misunderstandings from applying an inappropriate definition. A second purpose is to describe the contents of the typical income statement prepared for a profit-seeking corporation.

### ACCRUAL ACCOUNTING VS. CASH BASIS ACCOUNTING

An area of confusion for many people is the concept known as accrual accounting. When individuals and small companies spend money, the expenditure is generally considered to be an *expense*. This is what accountants refer as the *cash basis* of accounting. But larger companies, particularly publicly held

corporations, are required to use the *accrual basis* of accounting. From the accrual accounting perspective, the purpose of the expenditure determines whether or not the expenditure is an expense at the time of payment. For example, if a business expends cash for office supplies, no expense occurs until the office supplies are used in business operations. The spending of cash is not the critical event. Thus, when a business buys postage stamps, it has purchased an *asset*, that is, an item that has a future potential to benefit the company. If the stamps are used to mail an invoice to a customer or supplier, then the *expense* occurs because the stamp (asset) has no further benefit for the company.

The same logic would apply to other expenditures wherein a company acquires an asset that offers future benefits on a long-term basis, such as a delivery truck. Identifying when the benefit occurs, and therefore when the expense occurs, is a more difficult task in this instance, and the point will be discussed later as the concept of *depreciation*. One unique aspect of an expense is that expenses are incurred in order to produce revenues.

The concept of revenues also proves confusing to some people. Revenues can be defined as the amount charged to customers for the services and products that are provided to them. When employees receive paychecks, they consider that they have earned their pay at that time. The paycheck represents the completion of labor for the previous work period. For a company that uses accrual accounting, however, the receipt of payment is not the critical event for determining when revenues have been earned. From an accrual accounting perspective, a company generally earns revenues at the time when a product or service is provided to the customer. Thus, whether a customer pays for the purchase of a product or service with cash (or check) or charges the purchase on a credit card, the company earns revenue when the product or service is provided. This concept is complicated because revenue is earned, and yet no cash might be paid to the company at the time that accounting says that revenue is earned. Using the paycheck example, employees actually earn their pay on a daily basis as they perform services for their company, but they do not receive payment until payday.

To merge the two concepts of revenues and expenses together, consider a rule accountants refer to as the *matching principle*. This rule can be summarized as follows: revenues are recorded in the time period when earned and expenses are matched (offset) against the revenues in the same time period that they cause revenues to be earned. More formal definitions can be summarized as follows: revenues can be defined as the total amount earned from providing goods and services to customers. Revenues are equal to (measured by) the amount of cash or legal claim to receive cash or other items of value to be received at a

later date in payment from the customer. The receipt of payment might occur immediately or it might occur, say, 30 days after the invoice's date. In either case, the revenues are earned when the service or product is provided, not necessarily when the cash is received.

Expenses can be viewed as representing the use of the benefits that an employee or asset provides; the payment for the asset or services might or might not occur at the same time that the benefits are used. The important thing to remember is that expenses are incurred, and therefore matched with revenues, in the period in which the company earns the revenues.

## THE INCOME STATEMENT

The income statement is considered by many to be a company's most important financial statement. It discloses the dollar amount of the profitability for a company during a specific period of time. Since published annual financial statements usually cover a 12-month period, which will be the assumption here.

The heading of the income statement should contain three crucial elements of information: the name of the company involved, the title of the statement identifying it as an income statement, and the specific 12-month period during which the income was earned. The basic format of the income statement is represented by the following equation: revenues minus expenses equal net income.

**REVENUES.** The income statement discloses total revenue and total expenses for the period in question. The amount of the revenues in excess of the expenses is the net income, or profit, earned by the company for the year covered by the statement. Notice that revenues are considered as a total or gross concept, whereas profit is considered a net concept, as in net income. Revenues represent the total amount that products and services are worth; expenses represent the amount that products or services cost the company; and the excess of the revenues over the expenses is the profit.

Consider a simple example: say that a company sells automobiles for profit. The company buys a car for a cost of \$20,000 and sells it for \$30,000 in revenue. Ignoring expenses other than the cost of the car, the profit can be determined by taking the \$30,000 in revenue minus the \$20,000 in expenses (the cost of the car), giving a figure of \$10,000. If the total of all such sales for a year are shown and all related expenses incurred in that same year to produce the sales are deducted, the result is an income statement.

There are two basic formats of the income statement. The one summarized above is known as the *single-step income statement*, used by many service companies. All revenues are disclosed at the top of the statement, followed by all expenses of the company

for the same time period. Some companies prefer to disclose their income tax expense after having deducted all other expenses from the revenues, since it doesn't relate directly to operations of the company, as do the other expenses. Net income is the bottom line, just as the expression says. However, for a company that is a corporation, an amount that is roughly the net income earned per share of corporate voting stock is disclosed last. This figure is entitled *earnings per share*, and when tracked over time it is used widely as an indicator of corporate performance from period to period.

The other format for the income statement is known as the *multiple-step income statement*. Its form is somewhat more complex; its purpose is to disclose in more detail certain relationships that many users of financial statements consider important. An abbreviated version of the multiple-step income statement is shown in Table 1.

**Table 1**

<b>Sales Revenues</b>	<b>\$1,000,000</b>
<b>Less Cost of Goods Sold</b>	<b><u>-600,000</u></b>
<b>Gross Profit on Sales</b>	<b>400,000</b>
<b>Less Operating Expenses</b>	<b><u>-250,000</u></b>
<b>Income Before Income Taxes</b>	<b>150,000</b>
<b>Less Income Tax Expense</b>	<b><u>-50,000</u></b>
<b>Net Income</b>	<b><u>\$100,000</u></b>
 <b>Earnings Per Share</b>	 <b>\$1.00</b>

The following paragraphs examine each line in this hypothetical income statement. To begin with, revenues would follow the general description presented earlier; in other words, they would be recorded on an accrual basis as customers take delivery of products. Thus, in this sample the *sales revenue* refers to the revenue earned from providing products to the customer. Note, however, that a bank would not have sales revenue but, instead, would have interest revenue, while a car rental company would have rental revenue. The nature of the revenue would determine the adjective used to describe the source of the revenue. There are other points in time that revenue may be recorded as being earned, but point of sale is the dominant usage.

**COST OF GOODS SOLD.** *Cost of goods sold* (often abbreviated COGS) is the expense representing the cost that a company expends to manufacture a product, if it is a manufacturing firm, or to acquire a product for resale, if a wholesaler or retailer. This represents only the direct cost of providing the product to the customer; other costs of operating the business, such as management and sales staff salaries, are deducted as expenses in other locations of the income

statement. Of course, a company that provides a service instead of a product would not have a COGS expense to be deducted on its income statement.

**GROSS PROFIT ON SALES.** *Gross profit on sales* (or simply gross profit or gross margin) represents the total profit on the sales, if only the cost of the product itself is considered. This amount is used in calculating numerous financial ratios, such as the gross margin percent; thus it is provided for the financial statement user's benefit to analyze operating performance and make comparisons with other firms in the same line of business.

**OPERATING EXPENSES.** *Operating expenses* are deducted next. Sometimes this category is divided into two major components: selling (marketing) expenses and general and administrative (G&A) expenses (or both together, SG&A). Selling expenses include any expense incurred in an attempt to sell the products. Expenses such as advertising, salaries of sales personnel, and sales commissions would be included. G&A expenses include all other expenses; these relate to the general administration activities needed to run the business for the current year covered by the income statement. Examples of G&A expenses include rent expense, insurance expense, and other expenses related to the general administration of the company.

A few special expenses in this category require added discussion. Based on the accrual accounting definition of expenses presented above, expenses are deducted when incurred to earn revenue, and this may not correspond with the point in time that cash is spent to pay for the expense. For example, one of the operating expenses might be *warranty expense*. A product might be sold with a two-year warranty to cover labor and parts needed for repairs. In the year that the product is sold and the revenue from the sale is recorded, the future two years of warranty expense must also be recorded. This might seem illogical except for two important reasons. First, accrual accounting requires that expenses be matched with related revenues when the revenues are earned. Second, the warranty expense was incurred to create the sale in the first place. The sale might not have occurred without the warranty made available to the customer. This means that the accountant, with management's approval, must estimate and currently deduct what the future sacrifice will be during the subsequent two-year period, long before any cash expenditures are made.

Another example of an estimated expense is an *uncollectible accounts expense* or *bad debt expense*. Any company that offers credit terms to its customers will experience a few instances when customers are unable to pay the balance of an account when it comes due. Since accrual accounting requires the disclosure of revenue when it is earned, even when on a credit basis, the company must deduct at the time the revenue

is recorded an estimate of the total of the accounts that may prove to be uncollectible in the future.

The next example of an expense that must be estimated, but one that is common to many income statements, is *depreciation expense*. If a company owns a long-lived asset, such as a building, delivery truck, machine, or computer equipment, the company should not (and often cannot for tax purposes) deduct the total cost of the item in the year it is acquired and placed into service. Since the asset has potential benefit to the company in future years, the asset's cost must be allocated over the years of its estimated life as the company receives its benefits. When a long-lived asset is first acquired for use, therefore, management must make some good-faith estimates concerning the asset. The accountant can then calculate, by one of a number of mathematical formulas, the amount of the asset's cost that will be recorded as an expense each year of the asset's life. If, after a few years, it becomes clear that the original estimate was incorrect, an updated estimate is then used to calculate the new depreciation for the asset's remaining life. The total of all depreciation expensed over an asset's life should be equal to its cost less any amount for which it can be sold at the end of its useful life.

The final estimated expense that will be covered here is a *pension expense*. The nature of the pension expense is somewhat similar to the warranty expense. Pension expenses are also deducted before they are paid in cash. The main distinction is that a pension expense is much more difficult to estimate. Nonetheless, management must make a good-faith effort to determine the expense to be deducted each year. What makes the amount so difficult to estimate is that the actual payment to the employee might not occur for decades into the future. Meanwhile, management, with the assistance of actuaries, must make assumptions as to how long the employee will work for the company, how much the employee will earn in future years, how long the employee will live after retirement, and other such seemingly insurmountable hurdles. It will sound repetitive, but accrual accounting requires that expenses be deducted in the year that they are incurred to earn revenue. Since the employee is working currently to help the company earn revenues, the cost of all post-employment benefits must be deducted while the employee is currently employed. This is true for medical and dental benefits, just as it is for pension benefits.

**INCOME BEFORE INCOME TAXES.** *Income before income taxes* is the result of subtracting operating expenses from gross profit on sales. This amount is shown separately so that the profit from regular operations—before the impact of income taxes—can be seen easily.

**INCOME TAX EXPENSE.** The final expense normally shown as a deduction on the income statement is the

*income tax expense*. The amount of the expense is the result of accrual accounting rules, which differ from rules required for filing tax returns. In other words, the income tax expense is matched to the revenues that give rise to that expense, regardless of the amount computed on the tax return or paid to the IRS.

**NET INCOME.** This is the “bottom line” amount that shows the excess of the revenue over all the expenses. It does not reflect the amount of cash left over at year-end. Because revenues are recorded when they are earned (and not necessarily when they are collected), and expenses are deducted from revenues when the expenses are incurred (and not necessarily when they are paid), net income is not correlated directly to cash left over at year-end. In the long run, however, all revenues should be collected in the form of cash and all expenses should be paid in the form of cash. In the short run, accrual accounting provides a more meaningful measurement of the profitability of the company than do mere cash receipts and expenditures.

**EARNINGS PER SHARE.** The final presentation on the income statement for a publicly held corporation is the amount of earnings per share of stock outstanding. In effect, this is the entire income statement condensed to show the amount of net income that each share of common voting stock earned for the income statement time period. If a stockholder owns 100 shares, the stockholder's investment earned 100 times this amount. This amount should not be confused with *dividends per share*. Dividends per share represents the amount of cash that the board of directors, as representatives of all stockholders, chooses to pay to the stockholders as a return on their investment in the company for the current period. Again, earnings and cash received do not mean the same thing.

## OTHER SPECIAL ISSUES

A few other issues deserve some explanation. In the lower portion of many income statements (following operating expenses), there may be a different caption from income before income taxes. The caption income from operations is substituted when a company has experienced gains and losses. Gains and losses usually occur whenever a company sells an asset (other than inventory for which it is in business to sell) for more or less than the value of the asset in its records. The accounting concept here is to separate the disclosure of normal sales activities from the unusual disposal of other assets. (See also the discussion of *extraordinary items* below.)

There may also be up to three unique items that follow income tax expense at the end of the income statement. These items are *discontinued operations*, *extraordinary items*, and *cumulative effect of accounting changes*.

A company would include discontinued operations if it had disposed of a significant segment of its operations. This event would be of such a magnitude (usually defined in percentage terms) that the information on the income statement would be misleading if it were not separately disclosed from what the reader could consider to be regular recurring operations of the company.

Extraordinary items are major gains or losses that are defined to be both highly unusual in nature and infrequent in occurrence, such as expenses stemming from a natural disaster or the restructuring of long-term debt. These extremely rare gains and losses are disclosed apart from regular operations, including normal gains and losses as discussed above, so that the user of the income statement can better judge the results of normal recurring operations.

The last item disclosed as part of the income statement before the earnings per share data can be the cumulative effect of accounting changes. This caption is used only when the management of a company has decided that changing from one *generally accepted accounting principle* (as defined by independent standards organizations for the accounting profession) to a different generally accepted accounting principle will better disclose the results of operations for the users of the statements. This change is based on management's judgment, and the accounting firm that audits the company's financial statements reviews this change. Generally, any previous years' accounting data will be restated to use the new accounting rule so that comparisons of current and previous data will be made on the same basis.

## COMPREHENSIVE INCOME

A relatively new concept that may be included at the end of the income statement is *comprehensive income*. Comprehensive income results from changes in certain assets and liabilities on the balance sheet (a financial statement of corporate assets and liabilities). These unique gains and losses are not included in calculating net income, but they may be added after net income is shown. They are excluded from net income itself because they would distort the basic purpose of the income statement: to disclose the results of operations. These particular gains and losses result, instead, from two main sources not related to operations. First, comprehensive income results from market value changes of certain investment securities that are reported in the financial statements at their current trading values. Second, these gains and losses also result from foreign exchange rate changes used to report the values of assets and liabilities in foreign subsidiaries. These items may also be shown on other financial statements rather than as an addition to the income statement.

## PROBLEMS WITH THE INCOME STATEMENT

Studying a company's income statement can help managers, investors, creditors, and analysts to form an understanding of the business's performance and profitability. Yet the income statement has come under criticism in recent years because the two main figures—income and expenses—are often obscured by accounting adjustments and subjective estimates. In the wake of accounting scandals at several major corporations, many analysts began pushing for expanded reporting standards that would limit companies' ability to overstate revenue or understate expenses. In any case, rather than relying on the income statement alone, users should examine all three major financial statements to gain further information about a company's results.

SEE ALSO: Balance Sheets; Cash Flow Analysis and Statement; Financial Issues for Managers

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## INDUSTRIAL RELATIONS

Most definitions of industrial relations acknowledge that industrial relations involves the complex interplay among management, workers and their representatives, and the government. Each of these three players has different needs and goals that determine how they interact with the other two parties. In general, management's goals center upon labor costs, productivity, and profitability. In contrast, workers and their representatives (i.e., unions) are concerned with securing high wages and benefits, safe working conditions, fulfilling work, and a voice in the workplace. Finally, as the representative of the members of the

society in which employers and unions reside, the government's objectives include balancing the rights of both labor and management. Perhaps even more important, the government has the obligation to protect the rights of the members of society by maintaining relative harmony between workers and employers. In the U.S. private sector, industrial relations are governed by the National Labor Relations Act (1935, as amended).

There is a three-tier structure of industrial relations in the United States. Local unions deal with the daily interaction with employers at the workplace level. Typically, these local unions are affiliated with a national union such as the Service Employees International Union, which, as of 2005, is the largest national union in the United States. Labor federations, like the AFL-CIO, serve as umbrella organizations for national unions and provide overall direction for the labor movement, as well as services like training and government lobbying. However, the lack of advancement of organized labor in recent years has caused some national unions to leave the AFL-CIO and attempt to form a competing labor federation.

Industrial relations have changed substantially in the United States since 1980; there has been a change in the shared ideology among the three players. Prior to 1980, all three players acknowledged the legitimacy of the other players' roles. Employers kept their relationship with unions at arms length, neither embracing unions nor aggressively seeking to destroy them. This produced some level of stability within the industrial relations system. However, since 1980 employers have moved away from the "arms length" relationship with unions and have either pursued greater collaboration with labor or sought to aggressively suppress unionization, even to the point of intentionally violating U.S. labor law.

The percentage of workers represented by unions (i.e., union density) in the United States has decreased from a high of 35 percent in 1945 to 12.5 percent by 2005. Interestingly, union density is substantially greater in the public sector than in the private sector. In the public sector, approximately 36 percent of government workers are represented by unions, with the highest density being in local government (41 percent). This level of unionization in the public sector may decline in the future, however, given the trend toward privatizing government services. In the private sector, only 8 percent of workers are represented by unions, with the transportation industry and utilities maintaining the highest level of union density (25 percent). Union density in the private sector is approximately half of what it was in 1983. Union membership rates vary considerably by state. New York, Hawaii, Michigan, and Alaska have the highest membership rates—with 25 percent, 24 percent, 22 percent, and

20 percent, respectively—while North Carolina and South Carolina have the lowest rates (approximately 3 percent). As of 2005, full-time wage and salary workers who are represented by a union make more than those workers not represented by a union (\$781 versus \$612).

There are many reasons for the decline in union density other than the change in management attitudes toward unions. Employment has moved from manufacturing jobs and other jobs that have traditionally been represented by unions (e.g., railroads and mining) to more service and high technology jobs. There are more white collar and part-time jobs now than ever before, which has also contributed to the decline in union density because it is harder for unions to organize people in these jobs. Furthermore, employers have learned that using positive human resource management practices—like installing formal grievance systems, comprehensive benefit plans, and worker involvement programs—suppresses union organizing activity. Finally, in the past several decades the government has increasingly provided for the protection of workers' rights by passing a variety of legislative actions, including the Civil Rights Act (1964), the Occupational Safety and Health Act (1970), the Americans with Disabilities Act (1990), and the Family and Medical Leave Act (1993).

The number of strikes by unions has declined in the last two decades due to the fact that employees have a greater understanding of the impact of globalization on competition. Also, more employees are shareholders now than ever before. Some of these same factors appear to be reducing union density levels in other developed nations, although Canada is an exception; it has twice the union density of the United States.

In 1993 the Dunlop Commission was established by the Clinton Administration to propose ways to reform the labor policies set forth in the National Labor Relations Act. In general, the Commission concluded that labor law needed to be altered to make it easier for workers to seek union representation and to remove the constraints upon worker involvement. However, these recommendations have not been adopted, even though both labor and management acknowledge the need to change the antiquated labor laws that prevent closer, more trusting relations and hamper the flexibility needed by businesses to compete in the global economy. Consequently, there is a continuing need for labor law that reflects the changes that have occurred since the National Labor Relations Act was passed in 1935.

SEE ALSO: Employment Law and Compliance; Human Resource Management

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## INDUSTRY LIFE CYCLE

SEE: Product Life Cycle and Industry Life Cycle

## INITIAL PUBLIC OFFERING

An initial public offering (IPO) is the process through which a privately owned business sells shares of stock to the public for the first time. Also known as *going public*, an IPO provides a growing business with access to public capital markets and increases its credibility and exposure. It has long been considered a right of passage that marks an important phase in a business's development. At the same time, however, staging an IPO is both time consuming and expensive. It requires companies to navigate a complex Securities and Exchange Commission (SEC) registration process and disclose a great deal of confidential information to potential investors. Furthermore, the success of an IPO is not guaranteed, and depends in part upon industry, economic, and market conditions that are beyond a company's direct control. Overall, the decision to go public is a complicated one that requires careful management consideration and planning.

There is no doubt that becoming a public entity offers a number of advantages to a business. In addition to gaining immediate access to capital to fund expansion, it also makes it easier for the firm to obtain capital in the future. The IPO process provides a company with a great deal of publicity, which may help increase its credibility with suppliers and lenders, attract new customers, and create new business opportunities. Going public also offers an opportunity for the company's founders and venture capitalists to cash

out on their early investments, and provides a public valuation of the company to facilitate future mergers and acquisitions.

Some of the major disadvantages associated with going public include the high cost of staging an IPO (which may claim 15 to 20 percent of the proceeds from the stock sale), the demands on the time of managers (the process may take between six months and two years to complete), and the dilution of ownership and associated loss of management flexibility and control. In addition, the process of going public requires a private company to disclose confidential information about its strategy, capital structure, customers, products, competitors, profit margins, and employee compensation. Finally, becoming accountable to shareholders sometimes leads to an increased emphasis on short-term financial performance.

The first step in the IPO process involves applying to the SEC for permission to sell stock and preparing an initial registration statement according to SEC regulations. This statement includes a prospectus of detailed information about the company, financial statements, and a candid management analysis of the risks and benefits of investing in the company. The next step involves selecting an underwriter—usually an investment bank—to act as an intermediary between the company and the capital markets. The underwriter helps determine the valuation of the company and the suggested share price. It also helps assemble an underwriting team, which includes attorneys, accountants, and financial printers.

While the SEC completes its review of the registration statement—a period of time known as the *cooling off* or *quiet period*—the company undergoes an audit by independent accountants, files forms with the states where the stock will be sold, and begins marketing the investment to potential investors through *road shows* featuring top executives. Once the SEC review is complete, the company finalizes the registration statement, files a final amendment with the SEC, and agrees to an asking price for the shares of stock. Then the sale of stock finally takes place, overseen by the underwriter. Afterward, the underwriter meets with all involved parties to distribute funds from the sale, settle expenses, arrange for the transfer of stock, and file final reports with the SEC.

The pace of IPOs peaked in 1999, fueled by investor interest in Internet-related businesses. It declined markedly in 2000, as a drop in the value of technology stocks led to an overall drop in the stock market. Over the next few years, investors largely adopted a more cautious, back-to-basics approach toward IPOs. They increasingly demanded that companies demonstrate a proven business model, solid management team, large customer base, and strong revenue potential if they hoped to stage a successful

IPO. Another factor limiting the number of IPOs was the Sarbanes-Oxley Act (SOA) of 2002. Passed in the wake of several high-profile corporate accounting scandals, the act required the boards of public companies to include independent directors with financial experience. It also required public companies to form auditing committees chaired by an outside director. The SOA and similar regulations have made it more expensive for companies not only to go public, but also to be public, in the twenty-first century.

SEE ALSO: Cash Flow Analysis and Statement; Due Diligence; Entrepreneurship; Financial Issues for Managers; Strategy Implementation

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## INNOVATION

Innovation is the act of developing a new process or product and introducing it to the market. It is essentially an entrepreneurial act, whether it takes place in a start-up firm, a large organization, a not-for-profit, or a public-sector agency. Innovation means change: sometimes radical change, such as the development of the computer, and sometimes incremental change, such as the modification of existing computer software. In either case, managers must develop processes to encourage and guide the changes taking place.

Sources of, and opportunities for, innovation in organizations are described below. Finally, the management principles underlying an innovative organization are identified.

### SOURCES OF INNOVATION

Innovation generally stems from the purposeful search for opportunities. Management guru Peter Drucker identified that opportunities for innovation exist both within and outside a company or industry. Opportunities internal to a company include unexpected

events, incongruities in processes or between expectations and results, process needs, and changes in the marketplace or industry structure. Opportunities external to a company include demographic changes, changes in perception, and new knowledge.

**UNEXPECTED EVENTS.** Unexpected events can be failures as well as successes. For example, the failure of the technically superior Sony's Betamax VCR standard (and the success of the industry standard VHS format) led the firm to pay more attention to developing products in line with industry standards. Similarly, the development of the very successful Sony Walkman was the result of the CEO spending time in New York and noticing young people carrying portable radios on their shoulders. Progressive Insurance saw its business quadruple in size when it started sending claims adjusters in mobile offices to accident scenes.

**INCONGRUITIES.** Incongruities result from a difference between perception and reality. Federal Express was able to capitalize on consumer dissatisfaction with the U.S. Postal Service and demonstrate that individuals and companies were willing to pay a premium for overnight delivery of packages and documents.

Likewise, Southwest Airlines provided a dramatically different approach to airline service. Its low-fare, no-frills, first come-first seated approach has garnered devoted customers. Southwest Airlines has remained profitable for 31 straight years, even during the economic downturn following the terrorist attacks of 2001, when many airlines struggled to remain in business.

**PROCESS NEEDS.** Process need innovations are those which are created to support some other process or product. The development of the ATM (automatic teller machine) and now web-based and Internet banking options allow individuals to do their banking when the bank is closed and without relying on tellers being available. This has freed tellers from performing many routine functions such as cashing checks and has improved both efficiency and profit margins for banks.

**MARKET AND INDUSTRY STRUCTURE CHANGES.** Industry structures change in response to growth and changes in the marketplace. One of the most dramatic changes can be seen in the health care industry. The rise of HMOs (health maintenance organizations) and the decline of the traditional fee-for-service plans have impacted the health-care industry as a whole. The development of the personal computer also had a far-reaching impact on the computer industry as a whole. Until the personal computer, manufacturers of large mainframe computers, terminals, and software developed for specific uses within a firm dominated the computer industry. With the adoption of the personal computer and advent of the laptop computer, the

composition of computer sales and marketing changed dramatically.

**DEMOGRAPHIC CHANGES.** Demographic changes are shifts in the makeup of the population. Increases in the Hispanic and Asian populations in the United States create opportunities for new products and services, such as cable television stations targeting these audiences. Innovations in prepared meals and takeout food are meeting the needs of busy two-income families and single-parent families.

**CHANGES IN PERCEPTION.** Americans have become more health conscious and we have seen the rise in popularity of stores such as GNC which cater to the demand for vitamins and other supplements. Similarly, stores such as Whole Foods provide organic produce, meats, dairy, and fish free from additives to satisfy a growing market demand for chemical-free products.

**NEW KNOWLEDGE.** New knowledge or technology is one of the strongest forces for innovation. Many companies, of all sizes and levels of sophistication, now have a web presence on the Internet with the capability of connecting their products with customers nearby or on the other side of the globe. No longer are consumers limited to the daytime hours for their activities; online stock trading, shopping, and banking are examples of services that are accessible at any time of day or night via the Internet. Other opportunities are being explored in the fields of genomics and nanotechnology. These technologies and systems will develop even further as consumers continue to demand new and innovative products and immediate access to information, goods and services.

## MANAGING INNOVATION

Innovation must be seen as a process occurring within an organization, not a single event. This process can be managed. In general, the process follows five stages: (1) idea generation, (2) initial screening, (3) review, (4) seeking sponsorship, and (5) sponsorship and commercialization. At each of these stages the organization's culture must be designed to support the innovation process.

**IDEA GENERATION.** Idea generation requires a supportive organizational culture. Ideas, and the people who develop them, are fragile, and if the organization does not support them they will not develop. A supportive culture requires that the organization allow for experimentation and failure. In other words, not every idea will be commercially viable, but mistakes are to be learned from and learning should be celebrated. W.L. Gore is a company that celebrates learning and innovation. Each plant is kept small and everyone in the company is allowed to experiment with the products. In addition to the familiar GoreTex polymer coating, the

company also manufactures products for the medical industry, NASA, and industrial use. The company operates internationally and holds hundreds of patents.

**INITIAL SCREENING.** The screening process can be made easier by assigning a facilitator from outside the organization who can help guide the initial idea through the organization's systems, as well as act as an advocate for the idea. At this stage the idea is evaluated and possibly revised before being sent on to a group to review for further development.

**REVIEW.** At this stage, the idea should be sufficiently developed to present to a group within the organization who will make a decision about funding further development. 3M has a long-standing process such as this. The Post-It notepads are probably the best-known illustration of the effectiveness of the process. Although no uses for the adhesive were initially found, the researcher was allowed to continue to spend time developing the product. The review process did not initially continue direct funding, but by allowing the researcher time, the company indirectly funded the development of a very successful product.

**SEEKING SPONSORSHIP.** In most organizations, an idea needs a sponsor to continue to move forward. The sponsor must be convinced of the value of the idea to the organization. Effective champions frequently are managers who know how to navigate the corporate structure for support and resources. In addition, they are effective at putting together a cross-functional team to help develop all aspects of the new idea. Both 3M and W.L. Gore have instituted systems that facilitate this process.

**SPONSORSHIP AND COMMERCIALIZATION.** At this stage the champion or sponsor takes the project forward through the final phases of corporate approval to commercialization. Many organizations, including Dow Corning, PepsiCo, 3M, and Black & Decker, spend a great deal of time interacting with customers at this stage. Customer input can help with final design issues, with searching out new uses for a product, and with simplifying processes. According to N. Radjou as quoted in *Industrial Management*, "Customers seek innovations that enhance their life cycle experience with a product—not the product-centric improvements in functionality and reliability that R & D engineers focus on." Utilizing consumer input can help companies focus their creativity on the products and improvements that will most satisfy consumer needs and wants.

**INNOVATION IS WORK.** Peter Drucker said, "Innovation is work." Successful organizations have internalized innovation as a strategic goal. As we move further into the information age, innovation, and the ability to manage it, becomes a crucial element of a successful corporate strategy. The speed at which information

and ideas move throughout the global marketplace has forced organizations to internalize innovation as part of their processes and to develop cultures that encourage experimentation and new ideas.

SEE ALSO: Futuring; New Product Development

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#### INSTANT MESSAGING

Instant messaging (IM) is a general term encompassing a variety of software applications that enable users to have real-time text conversations, play turn-based games, and share pictures, music, and data files over the Internet. IM software allows users to maintain a list of contacts—sometimes referred to as a buddy list—with whom they can exchange messages

whenever both parties are online. These messages appear in a small window on the computer screen that both the sender and the recipient can see. The most popular IM utilities—such as America Online Instant Messenger (AIM), Microsoft MSN Messenger, and Yahoo! Messenger—also offer a number of other features, including chat rooms for groups to exchange messages and the capability to use voice communication and view streaming content over the Internet.

While each different IM utility is proprietary, they all work on a client-server model. Client software resides on the user's computer and connects with a central server. Users open an IM session by logging into their account on the server. The server makes a record of the Internet address of the user's computer, then calls up the user's buddy list and checks to see who else is online. Once this information is provided to all connected clients, the buddies can exchange messages directly in real time.

IM has exploded in popularity since ICQ, the first free, public instant-messaging utility, was introduced in 1996. Many fans of IM took the technology to work with them, downloading IM client software onto corporate computer networks and using it as a tool to facilitate business communications. IM offers both advantages and disadvantages in the workplace. Proponents claim that it boosts employee productivity by allowing them to get immediate answers from coworkers and suppliers. Sales personnel and help desk technicians, in particular, find that it enables them to serve customers more effectively. Businesses can also use IM to conduct virtual meetings and facilitate collaboration on group projects. "Backers say IM, once dismissed as a plaything for the under-twenty set, dramatically speeds up the flow of information in and out of a company," Esther Shein wrote in *CFO*.

Most public IM utilities were created for personal use, however, which can create problems in a business setting. Most importantly, IT managers emphasize that public IM is not a secure form of communication. "When a user carries on a discussion with the person in the cube right next to him, if it's not a corporate IM utility, the message doesn't go from one computer right next door to the other one," network security consultant Dan Wooley explained in *InstantMessagingPlanet.com*. "It goes out of the corporate network and across different networks and then back to the other person's desk." As a result, anyone with access to the networks in between can intercept message traffic, potentially exposing confidential business information. IT managers also point out that the major public IM clients do not provide monitoring, virus protection, encryption, or other features usually associated with corporate IT applications. Finally, some business managers question whether IM conversations truly increase productivity or instead create a source of distraction for employees.

Despite such potential problems, however, many businesses are reluctant to block IM for fear of alienating employees who rely upon it. Instead, businesses have increasingly sought to manage its use through enterprise instant messaging (EIM) solutions. One approach involves implementing a software application called an IM gateway, which can intercept, log, and approve communication that takes place through the corporate network using public IM systems. Other companies choose to develop their own in-house IM systems, which can be designed to include such features as user authentication, network security, virus protection, message encryption, and message archiving. Logging and archiving of messages is particularly important in light of Securities and Exchange Commission rules that require companies to retain electronic correspondence that divulges key corporate information.

With proper management, IM technology seems likely to play an important role in future business communications. "Instant messaging is just one of a whole Swiss Army knife set of tools that will be used to conduct business," Nate Root of Forrester Research stated in *CFO*.

SEE ALSO: Communication; Handheld Computers

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## INTELLECTUAL PROPERTY RIGHTS

Intellectual property is a term used to cover goods and services protected under the laws governing patents, trademarks, copyrights, and trade secrets. Although the legal rights concerning different kinds of

intellectual property are similar in a general sense, they differ specifically in what they protect and in how the particular rights are established. Patents protect an inventor's right to exclude others from making, manufacturing, using, or selling an inventor's invention. Trademarks protect words, phrases, symbols, and designs. Copyrights protect original artistic, musical, and literary works, including software. Intellectual property rights can also encompass state trade secrets laws, which protect a company's proprietary and confidential information, such as methods of manufacturing, customer lists, supplier information, and the materials used during the manufacturing process.

## PATENT RIGHTS

A patent is a grant of a property right by the United States government, through the Patent and Trademark Office (PTO), to the inventor of an invention. The term of this property right is 17 years from the date the patent is granted, as long as the holder of the patent pays maintenance fees. A patent is not a grant of the right to make, manufacture, use, or sell the invention, but rather the right to exclude others from making, manufacturing, using, or selling the invention.

The power to grant rights in patents arises from Article I, section 8 of the U.S. Constitution. The first patent law was passed in 1790, and the current law governing patents took effect in 1953. Since the first statute, over 5 million patents have been granted. The current statute set forth the subject matters for which patents may be granted and the conditions under which a patent will be issued. It also established the Patent and Trademark Office.

Under the law, anyone who "invents or discovers any new and useful process, machine, manufacture or composition of matter, or any new and useful improvements thereof, may obtain a patent." Courts have interpreted this language to include nearly anything that could be fabricated. One cannot, however, patent methods of doing business or printed matter, such as books. An invention must meet the test of being "new" under the standards in the law before a patent will be granted. The subject matter of an invention must be sufficiently different from what has been described before in a printed publication of some sort anywhere in the world, or on sale in the United States before the date of the application for the patent. In addition, the invention must not be obvious to a person who has ordinary skill in the relevant technical or scientific area at the time the inventor applies for the patent. Finally, an invention must be determined "useful" before a obtaining a patent, although this requirement is interpreted very broadly.

Only the inventor may apply for a patent, unless he has died or has been declared insane. An inventor

applies for a patent by sending to the Commissioner of Patents and Trademarks a written specification, which is a description of the invention and of the process in which the invention is made and used. The specification must contain one or more claims about the subject matter that the applicant believes pertains to the invention, and include necessary drawings. The specification must be accompanied by a sworn oath or declaration by the inventor that he or she is the original and first inventor of the subject matter of the application, and the necessary filing fees.

## TRADEMARK RIGHTS

A trademark is a word, name, phrase, symbol, or design, or a combination of these elements, which identifies and distinguishes the source of goods or services. The term *trademark* also encompasses service marks, which identify and distinguish the source of a service rather than a product. Trademark rights are used to prevent others from making, promoting, or selling goods or services which have a name, symbol, or design that is confusingly similar to that of an established trademark. It does not, however, prevent others from making or selling the same goods or services, as long as it is under a different, non-confusing mark.

There are two distinct types of rights in a trademark or service mark: the right to use the mark and the right to register the mark. These rights arise from either using the mark in actual commerce, or filing an application for registration of the mark with the PTO.

The Trademark Act of 1946, 15 U.S.C. Section 1051 et seq.; the Trademark Rules, 37 C.F.R. Part 2; and the Trademark Manual of Examining Procedure (2nd ed. 1993) control the registration of marks. The first party who either uses a mark in the course of commerce or business or files an application for registration with the PTO usually has the right to register that mark. A party can use a mark, or establish rights in it, without filing an application for registration. The registration, however, creates a presumption that the party who has registered the mark is the owner of the mark for the goods and services set forth in the registration application, and therefore has the right to use the mark anywhere in the country. This presumption can become important when two parties unintentionally begin using similar marks and become involved in a lawsuit over who has the right solely to use the mark. This is not determined by the PTO, but by a federal court, which has the power to issue an injunction to stop a party from using a mark, and to award damages for a party's improper use of another's mark.

Similarly, the owner of a mark may use the trademark (™) or service mark (SM) designation with the mark to make it clear that the owner is claiming rights in the product or service so designated. The trademark or service mark designation may be used without the

owner having registered the mark with the Patent and Trademark Office. If it is registered, however, the owner may use the registration symbol (®) with the mark.

Rights in a trademark, unlike rights in a copyright or a patent, can last for an indefinite period if the owner of the mark continuously uses the mark for its products or services. Federal registrations last for ten years, but between the fifth and sixth year after the date of the initial registration, the person who registered the mark must file an affidavit with information about the mark and ownership. If the registrant does not file this affidavit, the registration is cancelled. After the initial registration period, the mark can be renewed for successive ten-year terms. Registration of a mark with the PTO provides protection from others using the mark in the United States and its territories, but does not extend to its use in other countries.

## COPYRIGHTS

A copyright gives an owner of "original works of authorship" the exclusive right to reproduce the work; prepare derivative works based on the copyrighted work; and distribute, perform, or display the work. The first Copyright Act was passed in 1790, and it has been revised many times, most recently in 1976. This act sets forth eight categories of works that can be copyrighted. These are

1. literary works
2. musical works, including lyrics
3. dramatic works, including music
4. pantomimes and choreographic works
5. pictorial, graphic, and sculptural works
6. motion pictures and other audiovisual works
7. sound recordings
8. architectural works

These categories are interpreted broadly, so that, for example, software is considered copyrightable as a literary work. However, the act does not protect an "idea, procedure, process, system, method of operation, concept, principal or discovery regardless of the form in which it is described, explained, illustrated or embodied in such work."

The term of a copyright is for the period of the life of the owner, plus 50 years. An entity or person can become the owner of a copyright in two ways, either by creating the work personally, or through owning a work for hire. Works for hire cover situations where an employee creates a work at the request of an employer (and the employer thereby owns the copyright), or where someone commissions the creation of a work, and the party commissioning the work

and the creator have agreed in writing that the commissioning party shall be the owner and that the work shall be a work for hire.

In 1988, the United States became a signatory to the Berne Convention, by enacting the Berne Convention Implementation Act. The Berne Convention provides copyright protection for a copyright owner simultaneously in most countries in the world. To become a signatory country, the United States had to amend the Copyright Act to create a copyright in a work automatically upon completion of the creation. Now, as soon as a composer finishes a work or an author writes the last words of an article, there exists a copyright. However, if an owner wishes to sue for copyright infringement, the owner must register the copyright with the United States Copyright Office by completing an application, and sending it with two copies of the “best edition” of the work and the filing fee.

## INTELLECTUAL PROPERTY IN THE INTERNET AGE

Efforts to protect intellectual property became vastly more complicated with the growth of Internet technology in the late 1990s and early 2000s. The global computer network gave people greater access to all kinds of creative works, and in many cases enabled them to copy such works without regard to legal protection. “Virtually all creative content can be digitized, even if it was not initially created on a computer, and the Internet has become the primary distribution channel for every kind of digital material,” Jonathan Cohen explained in his article “Copyright and Intellectual Property in the Age of the Internet.”

Since the Internet has an international reach, the digital age has also brought to light discrepancies in intellectual property laws between nations. Several attempts have been made to bring the protection granted by developed and developing nations in line. In 2002, for example, the World Intellectual Property Organization Copyright Treaty (WCT) was ratified by the United States, Japan, and the European Union. The WCT updated the Berne Convention to apply to the Internet age, setting international standards for the protection of literary and artistic works in digital form.

Simultaneously, major content providers have taken steps to protect their own intellectual property from unauthorized reproduction through digital rights management (DRM) technology. DRM systems involve anti-piracy measures that are built into software, video, and music files sold over the Internet to ensure that the owners of intellectual property are compensated for its use. DRM has proved cumbersome to consumers, however, because different content providers have established their own, usually

incompatible, DRM systems—making it difficult for users to access content packaged and distributed with one DRM technology using a device that supports a different technology.

Some legal experts have also expressed concern that content providers will use DRM technology to erode the rights previously granted to the public under the “fair use” doctrine of copyright law. Whether a specific use of copyrighted material is determined to be fair depends on four factors: the purpose and character of the use; the nature of the work; the portion of the work used; and the effect of the use on the market for the work. Fair use protects such activities as videotaping a television program for later viewing, posting a newspaper cartoon on an office bulletin board, and quoting from a book in a report. In view of the rapidly evolving nature of intellectual property protection in the Internet age, business managers should seek legal advice in order to protect their own creative works as well as to avoid infringing on the rights of others.

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Revised by Laurie Hillstrom

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## INTERNAL AUDITING

The Institute of Internal Auditors (2005) defines internal auditing as “. . .an independent, objective assurance and consulting activity designed to add value and improve an organization’s operations. It helps an organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control and governance processes.”

One way to distinguish between internal auditors and their more familiar counterparts, external auditors, is the intended audience of their reports. External auditors are hired by a company to audit that firm's financial statements and issue an opinion on the reliability of those financial statements. While external auditors are in a contractual relationship to the firm whose financial statements are being audited, external auditors owe their primary fiduciary responsibility to groups outside of the firm, such as investors and creditors. The external auditor's report or opinion is provided to groups outside of the firm that hired him to audit by including it in that firm's annual report. In contrast, internal auditors are employed by the organization that they are auditing. Similar to external auditors, the internal auditor might provide a written opinion based on his evaluation. However, in contrast to external auditors, the audience for that opinion will always be corporate management instead of investors and creditors.

Typically, the role of internal auditors is broader than that of external auditors. While a company's external auditors will focus on evaluating the firm's financial statements, internal auditors can provide financial, compliance, and operational auditing.

## FINANCIAL AUDITS

The significance of the contribution of internal auditors to financial audits was dramatically increased with the passage of the Sarbanes-Oxley Act of 2002. That act made wide-spread changes in the responsibility of the parties involved in the financial reporting process.

One change that has enhanced the role of the internal auditor is the requirement in Section 302 of Sarbanes-Oxley that a firm's certifying officers (typically the chief executive officer and chief financial officer) must state that they are responsible for establishing and maintaining internal controls over financial reporting. As part of this certification, they must also indicate that the internal controls were designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements in accordance with generally accepted accounting principles in the United States. These Section 302 certifications are required to be included with the firm's annual financial statements. Most firms will rely extensively on the work of their internal auditors to provide the justification for the Section 302 certifications.

Section 404 of the Sarbanes-Oxley act also increased the responsibilities of internal auditors. This section requires that management include, in the firm's annual financial statements, a report on internal controls. The report must indicate that management is responsible for establishing and maintaining internal

controls over financial reporting, and management's conclusions regarding the effectiveness of those internal controls. In most companies, the internal auditors will provide the documentation and testing of internal controls that will be necessary for management to make that report.

## COMPLIANCE OR OPERATIONAL AUDITS

A compliance audit assures that the company's activities comply with relevant laws and regulations. An operational audit explores the effectiveness and efficiency of the firm's activities, seeking to reduce the risks faced by the specific firm. In performing an operational audit, performance standards may include a variety of criteria other than monetary measures, such as the percentage of late deliveries or idle labor time. It is the responsibility of the internal auditor to determine appropriate measures on the basis of experience and insight into the integrated functions of the company's activities. Typically, performance is measured against prior periods, industry standards, other operational units, or budgeted activity.

Internal auditing provides a broad-based, independent, value-adding function that is essential for the effective management of a firm. The value of internal audit has been greatly enhanced by the passage of the Sarbanes-Oxley Act of 2002.

SEE ALSO: Financial Issues for Managers

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## INTERNATIONAL BUSINESS

Today, business is acknowledged to be international and there is a general expectation that this will continue for the foreseeable future. International business may be defined simply as business transactions that take place across national borders. This broad definition includes the very small firm that exports (or imports) a small quantity to only one country, as well as the very large global firm with integrated operations and strategic alliances around the world. Within this broad array, distinctions are often made among different types of international firms, and these distinctions are helpful in understanding a firm's strategy, organization, and functional decisions (for example, its financial, administrative, marketing, human resource, or operations decisions). One distinction that can be helpful is the distinction between multi-domestic operations, with independent subsidiaries which act essentially as domestic firms, and global operations, with integrated subsidiaries which are closely related and interconnected. These may be thought of as the two ends of a continuum, with many possibilities in between. Firms are unlikely to be at one end of the continuum, though, as they often combine aspects of multi-domestic operations with aspects of global operations.

International business grew over the last half of the twentieth century partly because of liberalization of both trade and investment, and partly because doing business internationally had become easier. In terms of liberalization, the General Agreement on Tariffs and Trade (GATT) negotiation rounds resulted in trade liberalization, and this was continued with the formation of the World Trade Organization (WTO) in 1995. At the same time, worldwide capital movements were liberalized by most governments, particularly with the advent of electronic funds transfers. In addition, the introduction of a new European monetary unit, the euro, into circulation in January 2002 has impacted international business economically. The euro is the currency of the European Union, membership in March 2005 of

25 countries, and the euro replaced each country's previous currency. As of early 2005, the United States dollar continues to struggle against the euro and the impacts are being felt across industries worldwide.

In terms of ease of doing business internationally, two major forces are important:

1. technological developments which make global communication and transportation relatively quick and convenient; and
2. the disappearance of a substantial part of the communist world, opening many of the world's economies to private business.

## DOMESTIC VS. INTERNATIONAL BUSINESS

Domestic and international enterprises, in both the public and private sectors, share the business objectives of functioning successfully to continue operations. Private enterprises seek to function profitably as well. Why, then, is international business different from domestic? The answer lies in the differences across borders. Nation-states generally have unique government systems, laws and regulations, currencies, taxes and duties, and so on, as well as different cultures and practices. An individual traveling from his home country to a foreign country needs to have the proper documents, to carry foreign currency, to be able to communicate in the foreign country, to be dressed appropriately, and so on. Doing business in a foreign country involves similar issues and is thus more complex than doing business at home. The following sections will explore some of these issues. Specifically, comparative advantage is introduced, the international business environment is explored, and forms of international entry are outlined.

## THEORIES OF INTERNATIONAL TRADE AND INVESTMENT

In order to understand international business, it is necessary to have a broad conceptual understanding of why trade and investment across national borders take place. Trade and investment can be examined in terms of the comparative advantage of nations.

Comparative advantage suggests that each nation is relatively good at producing certain products or services. This comparative advantage is based on the nation's abundant factors of production—land, labor, and capital—and a country will export those products/services that use its abundant factors of production intensively. Simply, consider only two factors of production, labor and capital, and two countries, X and Y. If country X has a relative abundance of labor and country Y a relative abundance of capital, country X should export products/services that use labor intensively,

country Y should export products/services that use capital intensively.

This is a very simplistic explanation, of course. There are many more factors of production, of varying qualities, and there are many additional influences on trade such as government regulations. Nevertheless, it is a starting point for understanding what nations are likely to export or import. The concept of comparative advantage can also help explain investment flows. Generally, capital is the most mobile of the factors of production and can move relatively easily from one country to another. Other factors of production, such as land and labor, either do not move or are less mobile. The result is that where capital is available in one country it may be used to invest in other countries to take advantage of their abundant land or labor. Firms may develop expertise and firm specific advantages based initially on abundant resources at home, but as resource needs change, the stage of the product life cycle matures, and home markets become saturated, these firms find it advantageous to invest internationally.

## THE INTERNATIONAL BUSINESS ENVIRONMENT

International business is different from domestic business because the environment changes when a firm crosses international borders. Typically, a firm understands its domestic environment quite well, but is less familiar with the environment in other countries and must invest more time and resources into understanding the new environment. The following considers some of the important aspects of the environment that change internationally.

The economic environment can be very different from one nation to another. Countries are often divided into three main categories: the more developed or industrialized, the less developed or third world, and the newly industrializing or emerging economies. Within each category there are major variations, but overall the more developed countries are the rich countries, the less developed the poor ones, and the newly industrializing (those moving from poorer to richer). These distinctions are usually made on the basis of gross domestic product per capita (GDP/capita). Better education, infrastructure, technology, health care, and so on are also often associated with higher levels of economic development.

In addition to level of economic development, countries can be classified as free-market, centrally planned, or mixed. Free-market economies are those where government intervenes minimally in business activities, and market forces of supply and demand are allowed to determine production and prices. Centrally planned economies are those where the government

determines production and prices based on forecasts of demand and desired levels of supply. Mixed economies are those where some activities are left to market forces and some, for national and individual welfare reasons, are government controlled. In the late twentieth century there has been a substantial move to free-market economies, but the People's Republic of China, the world's most populous country, along with a few others, remained largely centrally planned economies, and most countries maintain some government control of business activities.

Clearly the level of economic activity combined with education, infrastructure, and so on, as well as the degree of government control of the economy, affect virtually all facets of doing business, and a firm needs to understand this environment if it is to operate successfully internationally.

The political environment refers to the type of government, the government relationship with business, and the political risk in a country. Doing business internationally thus implies dealing with different types of governments, relationships, and levels of risk.

There are many different types of political systems, for example, multi-party democracies, one-party states, constitutional monarchies, dictatorships (military and nonmilitary). Also, governments change in different ways, for example, by regular elections, occasional elections, death, coups, war. Government-business relationships also differ from country to country. Business may be viewed positively as the engine of growth, it may be viewed negatively as the exploiter of the workers, or somewhere in between as providing both benefits and drawbacks. Specific government-business relationships can also vary from positive to negative depending on the type of business operations involved and the relationship between the people of the host country and the people of the home country. To be effective in a foreign location an international firm relies on the goodwill of the foreign government and needs to have a good understanding of all of these aspects of the political environment.

A particular concern of international firms is the degree of political risk in a foreign location. Political risk refers to the likelihood of government activity that has unwanted consequences for the firm. These consequences can be dramatic as in forced divestment, where a government requires the firm give up its assets, or more moderate, as in unwelcome regulations or interference in operations. In any case the risk occurs because of uncertainty about the likelihood of government activity occurring. Generally, risk is associated with instability and a country is thus seen as more risky if the government is likely to change unexpectedly, if there is social unrest, if there are riots, revolutions, war, terrorism, and so on. Firms naturally prefer

countries that are stable and that present little political risk, but the returns need to be weighed against the risks, and firms often do business in countries where the risk is relatively high. In these situations, firms seek to manage the perceived risk through insurance, ownership and management choices, supply and market control, financing arrangements, and so on. In addition, the degree of political risk is not solely a function of the country, but depends on the company and its activities as well—a risky country for one company may be relatively safe for another.

The cultural environment is one of the critical components of the international business environment and one of the most difficult to understand. This is because the cultural environment is essentially unseen; it has been described as a shared, commonly held body of general beliefs and values that determine what is right for one group, according to Kluckhohn and Strodtbeck. National culture is described as the body of general beliefs and values that are shared by a nation. Beliefs and values are generally seen as formed by factors such as history, language, religion, geographic location, government, and education; thus firms begin a cultural analysis by seeking to understand these factors.

Firms want to understand what beliefs and values they may find in countries where they do business, and a number of models of cultural values have been proposed by scholars. The most well-known is that developed by Hofstede in 1980. This model proposes four dimensions of cultural values including individualism, uncertainty avoidance, power distance and masculinity. Individualism is the degree to which a nation values and encourages individual action and decision making. Uncertainty avoidance is the degree to which a nation is willing to accept and deal with uncertainty. Power distance is the degree to which a nation accepts and sanctions differences in power. And masculinity is the degree to which a nation accepts traditional male values or traditional female values. This model of cultural values has been used extensively because it provides data for a wide array of countries. Many academics and managers found this model helpful in exploring management approaches that would be appropriate in different cultures. For example, in a nation that is high on individualism one expects individual goals, individual tasks, and individual reward systems to be effective, whereas the reverse would be the case in a nation that is low on individualism. While this model is popular, there have been many attempts to develop more complex and inclusive models of culture.

The competitive environment can also change from country to country. This is partly because of the economic, political, and cultural environments; these environmental factors help determine the type and degree of competition that exists in a given country.

Competition can come from a variety of sources. It can be public or private sector, come from large or small organizations, be domestic or global, and stem from traditional or new competitors. For the domestic firm the most likely sources of competition may be well understood. The same is not the case when one moves to compete in a new environment. For example, in the 1990s in the United States most business was privately owned and competition was among private sector companies, while in the People's Republic of China (PRC) businesses were owned by the state. Thus, a U.S. company in the PRC could find itself competing with organizations owned by state entities such as the PRC army. This could change the nature of competition dramatically.

The nature of competition can also change from place to place as the following illustrate: competition may be encouraged and accepted or discouraged in favor of cooperation; relations between buyers and sellers may be friendly or hostile; barriers to entry and exit may be low or high; regulations may permit or prohibit certain activities. To be effective internationally, firms need to understand these competitive issues and assess their impact.

An important aspect of the competitive environment is the level, and acceptance, of technological innovation in different countries. The last decades of the twentieth century saw major advances in technology, and this is continuing in the twenty-first century. Technology often is seen as giving firms a competitive advantage; hence, firms compete for access to the newest in technology, and international firms transfer technology to be globally competitive. It is easier than ever for even small businesses to have a global presence thanks to the internet, which greatly expands their exposure, their market, and their potential customer base. For economic, political, and cultural reasons, some countries are more accepting of technological innovations, others less accepting.

## INTERNATIONAL ENTRY CHOICES

International firms may choose to do business in a variety of ways. Some of the most common include exports, licenses, contracts and turnkey operations, franchises, joint ventures, wholly owned subsidiaries, and strategic alliances.

Exporting is often the first international choice for firms, and many firms rely substantially on exports throughout their history. Exports are seen as relatively simple because the firm is relying on domestic production, can use a variety of intermediaries to assist in the process, and expects its foreign customers to deal with the marketing and sales issues. Many firms begin by exporting reactively; then become proactive when they realize the potential benefits of addressing a market that is much larger than the domestic one.

Effective exporting requires attention to detail if the process is to be successful; for example, the exporter needs to decide if and when to use different intermediaries, select an appropriate transportation method, preparing export documentation, prepare the product, arrange acceptable payment terms, and so on. Most importantly, the exporter usually leaves marketing and sales to the foreign customers, and these may not receive the same attention as if the firm itself undertook these activities. Larger exporters often undertake their own marketing and establish sales subsidiaries in important foreign markets.

Licenses are granted from a licensor to a licensee for the rights to some intangible property (e.g. patents, processes, copyrights, trademarks) for agreed on compensation (a royalty payment). Many companies feel that production in a foreign country is desirable but they do not want to undertake this production themselves. In this situation the firm can grant a license to a foreign firm to undertake the production. The licensing agreement gives access to foreign markets through foreign production without the necessity of investing in the foreign location. This is particularly attractive for a company that does not have the financial or managerial capacity to invest and undertake foreign production. The major disadvantage to a licensing agreement is the dependence on the foreign producer for quality, efficiency, and promotion of the product—if the licensee is not effective this reflects on the licensor. In addition, the licensor risks losing some of its technology and creating a potential competitor. This means the licensor should choose a licensee carefully to be sure the licensee will perform at an acceptable level and is trustworthy. The agreement is important to both parties and should ensure that both parties benefit equitably.

Contracts are used frequently by firms that provide specialized services, such as management, technical knowledge, engineering, information technology, education, and so on, in a foreign location for a specified time period and fee. Contracts are attractive for firms that have talents not being fully utilized at home and in demand in foreign locations. They are relatively short-term, allowing for flexibility, and the fee is usually fixed so that revenues are known in advance. The major drawback is their short-term nature, which means that the contracting firm needs to develop new business constantly and negotiate new contracts. This negotiation is time consuming, costly, and requires skill at cross-cultural negotiations. Revenues are likely to be uneven and the firm must be able to weather periods when no new contracts materialize.

Turnkey contracts are a specific kind of contract where a firm constructs a facility, starts operations, trains local personnel, then transfers the facility (turns over the keys) to the foreign owner. These contracts

are usually for very large infrastructure projects, such as dams, railways, and airports, and involve substantial financing; thus they are often financed by international financial institutions such as the World Bank. Companies that specialize in these projects can be very profitable, but they require specialized expertise. Further, the investment in obtaining these projects is very high, so only a relatively small number of large firms are involved in these projects, and often they involve a syndicate or collaboration of firms.

Similar to licensing agreements, franchises involve the sale of the right to operate a complete business operation. Well-known examples include independently owned fast-food restaurants like McDonald's and Pizza Hut. A successful franchise requires control over something that others are willing to pay for, such as a name, set of products, or a way of doing things, and the availability of willing and able franchisees. Finding franchisees and maintaining control over franchisable assets in foreign countries can be difficult; to be successful at international franchising firms need to ensure they can accomplish both of these.

Joint ventures involve shared ownership in a subsidiary company. A joint venture allows a firm to take an investment position in a foreign location without taking on the complete responsibility for the foreign investment. Joint ventures can take many forms. For example, there can be two partners or more, partners can share equally or have varying stakes, partners can come from the private sector or the public, partners can be silent or active, partners can be local or international. The decisions on what to share, how much to share, with whom to share, and how long to share are all important to the success of a joint venture. Joint ventures have been likened to marriages, with the suggestion that the choice of partner is critically important. Many joint ventures fail because partners have not agreed on their objectives and find it difficult to work out conflicts. Joint ventures provide an effective international entry when partners are complementary, but firms need to be thorough in their preparation for a joint venture.

Wholly-owned subsidiaries involve the establishment of businesses in foreign locations which are owned entirely by the investing firm. This entry choice puts the investor parent in full control of operations but also requires the ability to provide the needed capital and management, and to take on all of the risk. Where control is important and the firm is capable of the investment, it is often the preferred choice. Other firms feel the need for local input from local partners, or specialized input from international partners, and opt for joint ventures or strategic alliances, even where they are financially capable of 100 percent ownership.

Strategic alliances are arrangements among companies to cooperate for strategic purposes. Licenses

and joint ventures are forms of strategic alliances, but are often differentiated from them. Strategic alliances can involve no joint ownership or specific license agreement, but rather two companies working together to develop a synergy. Joint advertising programs are a form of strategic alliance, as are joint research and development programs. Strategic alliances seem to make some firms vulnerable to loss of competitive advantage, especially where small firms ally with larger firms. In spite of this, many smaller firms find strategic alliances allow them to enter the international arena when they could not do so alone.

International business grew substantially in the second half of the twentieth century, and this growth is likely to continue. The international environment is complex and it is very important for firms to understand this environment and make effective choices in this complex environment. The previous discussion introduced the concept of comparative advantage, explored some of the important aspects of the international business environment, and outlined the major international entry choices available to firms. The topic of international business is itself complex, and this short discussion serves only to introduce a few ideas on international business issues.

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Revised by Monica C. Turner

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## INTERNATIONAL CULTURAL DIFFERENCES

Culture in a global economy is a critical factor in international business. While many business transactions make economic sense, the ability to successfully fulfill profitable relationships often depends on being able to reconcile international differences arising from separate cultures. Understanding cultural differences is an initial step, but managers also need to engage in learning processes to develop international cultural competence. Cross-cultural training enables managers to acquire both knowledge and skills to fulfill the role of cultural agents. Advancing cultural intelligence and international cultural competence is critical to the future success of managers and leaders working in a global context.

Culture, as defined in Kroeber and Kluckhohn's classic, *Culture: A Critical Review of Concepts and Definitions*, is the "patterned ways of thinking, feeling, and reacting, acquired and transmitted mainly by symbols, constituting the distinctive achievements of human groups, including their embodiments in artifacts; the essential core of culture consists of traditional (i.e., historically derived and selected) ideas and especially their attached values" (1952). In international management research, Hofstede defined culture as "...the collective programming of the mind which distinguishes the members of one group or category of people from those of another" (1991). Many other definitions of culture are available. Common elements in the definitions are the shared and dynamic nature revolving around norms, values, and beliefs that are expressed in different behaviors, artifacts, and interactions.

Within the context of international business, culture involves multiple levels that span from broad to narrow and different dimensions. On a broad level, supranational culture differences span multiple countries and include regional, ethnic, religious, and linguistic dimensions. On a national level, governments create sovereign boundaries to distinguish different nations with political and legal regulatory systems. In the business literature, most research on culture uses the nation-state as a proxy for culture. Other levels of

analysis for culture include subcultures, as well as professional and organizational groups. In addition to various levels, culture also involves different dimensions.

Four major classifications schemes provide frameworks for identifying international differences in culture. First, anthropologist Edward T. Hall (b. 1914) classified cultural differences along five different dimensions: time, space, things, friendships, and agreements. Second, Kluckhohn and Strodtbeck developed a cultural orientations framework that identified six issues, with variations in each one: relation to nature, relationships among people, mode of human activity, belief about basic human nature, orientation to time, and use of space. Third, Hofstede's framework is one of the most prominent one in international management. He identified four major dimensions of cultural values—individualism-collectivism, power distance, uncertainty avoidance, and masculinity-femininity—along with a fifth dimension subsequently identified as Confucian Dynamism, or long-term orientation. Finally, Trompenaars and Hampden-Turner extended Hofstede's classification with seven dimensions that include universalism versus particularism, collectivism versus individualism, affective versus neutral relationships, specificity versus diffuseness, achievement versus ascription, orientation toward time, and internal versus external control. The four different classifications provide different and overlapping approaches to organize the many complex dimensions that make up culture. A major premise underlying the need for organizing different cultural dimensions is a means to avoid costly mistakes in conducting international business.

The different classifications provide a map to make sense of the complex nature of culture. Important caveats to keep in mind are that each classification is not exhaustive and each one originates from a particular cultural perspective. Managers have to engage in learning processes with cross-cultural training to develop both cultural intelligence and international cultural competence. Cross-cultural training for international assignments encompasses a broad range of methods that may include area briefings, readings, lecture/discussions, language lessons, films, self-assessment exercises, role plays, field trips, sensitivity training, and cross-cultural simulations. Cross-cultural training also needs to be coordinated in multiple phases to maximize the learning effectiveness for individual managers and organizational performance. The three phases are predeparture orientation, in-country socialization, and country exit debriefing. The exit debriefing is important for organizational learning, and a knowledge management system can support the capture of the cultural lessons that are learned.

Kim and Ofori-Dankwa described four major delivery methods for cross-cultural training: the intellectual model, the area simulation model, the self-awareness

model, and the cultural awareness model. The intellectual model involves the traditional classroom approach of general readings and lecture. The area simulation model incorporates culture-specific activities (e.g., working in Japan or Mexico) with games and exercises. The self-awareness training method focuses on having participants identify their strengths and weaknesses in dealing with different cultures, especially taken-for-granted assumptions about intercultural situations. The cultural awareness model focuses on the theoretical foundation for behavioral differences across cultures. The key to effective cross-cultural training is the integration of multiple methods that allow a participant to move from simple to complex levels of learning with increasing levels of training rigor.

The purpose of using multiple methods in cross-cultural training is to advance the learning process through the learning stages to develop cultural intelligence and international cultural competence. Cultural intelligence integrates the three interrelated elements of knowledge, mindfulness, and behavioral skills. International cultural competence goes a step further with a more complex skill set that integrates cognitive, affective, and behavioral learning to effectively engage in successful cross-cultural relationships. International cultural competence is very similar to intercultural communication competence, which integrates three components: culture-specific understanding of the other, culture-general understanding, and positive regard of the other. Increasing one's ability to work effectively across cultures also provides positive support to address a range of adjustment issues for expatriates who often face culture shock in the acculturation process. Overall, the most important key of cultural intelligence and intercultural competence is the integration of multiple spheres of cross-cultural learning to effectively engage in international business situations. Effectiveness in reconciling cross-cultural differences often leads to creativity, innovation, and synergy for productive workplace performances.

Although cross-cultural training supports global managers' ability to be effective, the learning process often moves through different stages of development. The different development stages of cultural intelligence are: (1) reactivity to external stimuli, (2) recognition of other cultural norms and motivation to learn more about them, (3) accommodation of other cultural norms and rules, (4) assimilation of diverse cultural norms into alternative behaviors, and (5) proactiveness in cultural behavior based on recognition of change cues that others do not perceive.

Global managers with high levels of cultural intelligence and competence play important strategic roles as cultural agents (c-agents), helping their organizations to span international boundaries. C-agents require both the ability to navigate different cultures

and the legitimacy from different cultural perspectives, including organizational and within the local community. Organizations have increasing needs for global managers to fill the role of c-agents because demands of globalization increasingly depend on successful relationships with strategic alliance partners, international vendors, and global customers.

Within the global arena, national borders often form the defining entity for a culture. However, analysis of cultural differences needs to account for a range of diversity within a national culture. On a continuum of cultural diversity that ranges from homogenous to heterogeneous, Japan, Norway, and Poland are relatively more homogeneous when compared to India, Papua New Guinea, Australia, Britain, and Canada. The more heterogeneous societies encompass more distinctions between subcultures within the national borders. However, it is important to account for the fact that “almost no country is entirely homogeneous. The world’s nearly 200 countries contain some 5000 ethnic groups. Two-thirds have at least one substantial minority—an ethnic or religious group that makes up at least 10 percent of the population.”

In many ways, how a society addresses issues of multiculturalism creates an orientation that enables its citizens to live and work together in a global community. Cultural norms shaped by national government policies will need to avoid and dismantle policies for separation (keeping different cultural identities but not integrated) or assimilation (forced rejection of traditional cultural identity to integrate into dominant identity) in order to adopt new approaches of multiculturalism. Important principles for multicultural policies center on promoting tolerance and cultural understanding to respect diversity, recognize multiple identities, and build common bonds of membership to the local community.

In the future globalization will continue to increase the flow and interactions of people across cultures, which surfaces even more international differences. Understanding the different dimensions of culture provides an initial knowledge base to develop cultural intelligence and competence for effective international business relationships. However, global managers require cross-cultural training to advance their learning and growth in cultural intelligence and competence as they take on international assignments. More importantly, organizations will have an increasing need for global managers to become c-agents to develop effective international relationships. In addition, government leaders have opportunities to shape their national culture and support international competitiveness with new multiculturalism policies that promote both the inclusion of multiple cultural identities and the development of local communities in an era of globalization.

SEE ALSO: International Business; International Management; Organizational Culture

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#### INTERNATIONAL MANAGEMENT

During the 1990s and early 2000s, many companies took advantage of a world market that was increasingly open to international expansion and trade. Obstacles to free trade were eased through the

General Agreement on Tariffs and Trade (GATT), the North American Free Trade Agreement (NAFTA), and the Association of South East Asian Nations (ASEAN).

Economies opened, and due to technological developments in communication, transportation, and finance, there were fewer difficulties with the practical issues of conducting business across national borders. Communications technology showed exponential growth, including innovations that facilitated doing business anywhere at anytime, such as remote access and net conferencing.

As shown in Table 1, the number of Internet users in the world grew from 30 million to over 562 million over six years, and by 2002 almost 10 percent of the world population used the Internet.

**Table 1**  
**Internet Users 1996-2002**

Year	Internet Users (millions)	Internet Users a Percentage of World Population
Jan 1996	30	.73
Jan 1997	57	1.41
Jan 1998	102	2.49
Jan 1999	153.5	3.75
Jan 2000	254.29	4.27
Jan 2001	455.55	7.5
Jan 2002	562.47	9.43

Accompanying all of these changes was an increase in need for international management for people who understand business and cultural issues well enough to manage and grow an international business effectively. Among those issues are:

- Business Structure
- Competition
- Political and economic environments
- Finance and business issues such as contracts, taxation, intellectual property, and risk
- Employment and leadership
- Cultural norms and values
- Technology

## BUSINESS STRUCTURE

An international manager has the task of reopening business in a radically different environment. He or she must determine the overall structure of the business and its workflow. In a functional-based business (i.e., the new location needs to be able to perform standardized tasks that comply with overall corporate

practices), skilled labor and ability to perform these tasks is key.

Technological infrastructure could be a crucial factor. For an area-based business, location is key, and detailed knowledge of the country and its culture is critical. Products may have to be adapted to the host market.

A global-based structure may have a varied set of product lines, each of which can be made and marketed across locations. These approaches can be mixed, but choosing the structure of the business should support the firm's primary goals.

Many businesses start by first establishing the new office or facility as an "export division" that falls under the umbrella of Operations or Marketing—which may eventually become an "International Division." How this new entity best fits within the parent organization's overall structure depends on the purpose for the new location and how much the parent company plans to grow the business.

Other options include opening a wholly-owned subsidiary or an overseas joint venture, contracting from an international company (IC) to manufacture products to specification, or purchasing supplies and/or materials from an IC manufacturer.

Other considerations include the additional costs of globalization, such as international freight, insurance, packing (up to 12 percent of manufacturing prices), sales terms, import duties, broker's fees, inventory costs, and international travel.

## COMPETITION

Competition in the global marketplace continues to grow, particularly between the United States, the European Union, and Asian nations. For this reason, companies need to evaluate the competitive landscape of the host country. First, it is helpful to understand that the nature of competition varies by region and industry. Some nations support an atmosphere of pure competition; for example, there may be any number of sellers, each with relatively small market share, with competition based solely on price. Others may be more monopolistic. Understanding the type of environment in which a firm will participate in its host country ensures the use of appropriate business practices.

More specific threats to companies comes from existing competitors, new competitors who may also enter the market, and the bargaining power of suppliers and buyers in the host country or region. Also, some countries' business environments make entering the marketplace harder than others. For example, foreign businesses find it hard to compete with industry in Japan, where groups of firms are connected financially

and rarely do business outside of that group (called “keiretsu”).

When investigating the competitive climate, it is also helpful to understand the power wielded by many of the world’s transnational corporations (TNCs). Many of the world’s top TNCs earn more in revenues each year than most nations, as shown in Table 2. While this does not mean other companies cannot compete with the products and services offered by these companies, it helps to know that these TNCs are involved in establishing direction, lobbying industry, and other activities that have direct impact on the laws and regulations that affect entire industries and how smaller companies can conduct international business.

**Table 2**  
**Top Revenue Earners from the**  
**Global Fortune 500 (in billions of US\$)**  
**Nations/States vs.**  
**Transnational Corporations**

**2003 Total Revenues**

1. United States (Total of 189 companies), \$5,841
2. Japan (82), \$2,181
3. Germany (34), \$1,363
4. France (37), \$1,246
5. Britain (35), \$1,079
6. Netherlands (12), \$388
7. Switzerland (12), \$382
8. China (15), \$358
9. Italy (8), \$300
10. South Korea (11), \$266
11. Wal-Mart Stores (U.S.), \$263
12. Britain/Netherlands (2), \$250
13. BP (Britain), \$232.5
14. Exxon Mobil (U.S.), \$222.8
15. Royal Dutch/Shell Group (Britain/Netherlands), \$201.7
16. General Motors (U.S.), \$195.3
17. Canada (13), \$185
18. Ford Motor Co.(U.S.), \$164.5
19. Spain (7), \$162
20. Daimler Chrysler (Germany), \$156.6
21. Toyota Motor (Japan), \$153.1
22. General Electric (U.S.), \$134.1

Source: Compiled by Wendy H. Mason, Data from *Fortune's Global 500*, June 2004

Finally, understanding of international anti-trust laws and when they are enforced is critical to assessing the risks to an international business. The United States is the toughest nation in regard to anti-trust, even trying to enforce laws outside the country. The European Union is lax on enforcing anti-trust laws, but does use them as a means to levy fines on cartels. In Japan, enforcement of anti-trust legislation, which was enacted only under great pressure from outside

the country, is weak at best, and usually nonexistent. Learning how “fair competition” is viewed in foreign business environments better prepares a manager to protect his or her own business.

## ENVIRONMENTAL FACTORS

Both the economic and political environments of countries and regions have great impact on the managing of international operations. A few of the economic factors that impact international business are:

- Host nation’s economy: free-market vs. centrally planned, or mixed.
- Gross Domestic Product (GDP), Gross National Product (GNP), and per capita income—all are gauges to consumer buying power.
- Spending patterns of host population.
- Variation in degree of development or industrialization.
- Infrastructure and technology available to business.
- Differences in available education and health care.

Some economies are less hospitable to job creation than others. For example, in Western Europe high minimum wages, healthy unemployment benefits, and employment protection laws are significant barriers to companies hoping to produce job growth in this part of the world. This and other issues also have an impact on finding employees to help staff and manage international operations.

The political environment plays a large role in determining how international companies will be able to manage business operations. Examples of political forces affecting international corporations include:

- Governments, political parties, and ideological beliefs (communism, capitalism, socialism, liberal, conservative, etc.).
- Nature of government-business relationships.
- Laws and attitude toward business.
- Tariffs and quotas.
- Currency controls (limits on the amount of money entering or leaving a country).

All businesses must abide by the laws, regulations, and bureaucracy in the host nation, including the United States and other capitalist countries. Examples of the obstacles an international corporation may encounter include complying with government restrictions on regulated professions and industries such as law, medicine, banking, insurance, transportation, and utilities. State and local governments may

also require specific licenses for business and restrict foreign use of buildings. For all of these, proper compliance takes knowledge, time to learn, and expense.

While all of the above factors have significant impact on multi-national corporations, perhaps the most important factor for an international manager is awareness of the degree of risk associated with various political forces in the host region. In addition to weighing the stability of the established government in the region in which it conducts business, governments can seize property owned by foreigners within its borders. This is known as expropriation in cases where the government follows up with quick, adequate compensation for former owners of the property. However, some governments may confiscate property, meaning former owners do not receive proper compensation.

## CONTRACTS

When parties representing different nations enter into a contract, dispute resolution becomes especially complicated. The United Nations (UN) Convention on Contracts for the International Sale of Goods (CISG) established legal rules for international sales contracts, including rights and obligations for both buyer and seller. Unless the parties to the contract expressly exclude the CISG, it applies to all contracts signed by companies from the countries that ratified the Convention. In the European Union (EU), the Rome Convention (1991) also applies to contracts formed between EU residents. Outside of these two agreements, companies must rely on private solutions and arbitration (which is used with increasing frequency).

## INTELLECTUAL PROPERTY

Intellectual property is well protected in the United States, with patents, trademarks, and copyrights. But when companies engage in business with other countries, they take risks. For example, product counterfeiting, common in Asia, costs industries more than \$200 billion worldwide, according to the U.S. Department of Commerce.

Other risks to business included trade secrets and industrial espionage. Most often, competitive information is obtained from inside the company, from published business materials, customers, competitor employees, and sometimes through direct observation.

Each nation has its own laws to protect intellectual property, but which products those laws protect differs as well. The UN's World Intellectual Property Organization (WIPO) was created to administer international property treaties, as was TRIPS, a World Trade Organization (WTO) agency.

The United States adopted its Foreign Corruption Practices Act (FCPA), which unfortunately acts as a barrier to United States companies. The FCPA was not adopted in Europe, or elsewhere, and compliance with the FCPA means American exporters lose business. Most importantly, international managers need to be aware piracy and counterfeiting, particularly in certain markets, and take steps to protect proprietary corporate information.

## LIABILITY

Product liability is a much bigger issue in the United States than in other countries. For example, the United States is the only country that conducts jury trials or pays punitive damages in cases of product liability. There was a principle of strict liability adopted in Europe, but company defense is strong and some countries cap damages.

The United States places many burdens upon its own companies, which impacts how well American companies can conduct business internationally and what it costs them to do so. Like the FCPA, boycott legislation often applies only to the United States. These become significant obstacles to international competition when other countries do not follow suit.

## FINANCE

Financial management of international corporations is particularly challenging, as countries change in value in terms of each other based on currency exchange rates. Companies must comply with financial laws and regulations in the host country. International managers need to:

- Understand how fluctuations in currency value change international business transactions.
- Learn about financial tools such as derivatives, hedges, payment timing, exposure netting, price adjustments, balance sheet neutralizing, and swaps, and how they affect business performance.
- Meet, network, and cooperate with counterparts in other organizations to protect and/or benefit the organization.
- Learn when and how to pay exporters in forms other than money; buyers frequently prefer payment rendered in the form of goods or services (countertrade).
- Differentiate between two types of currency: hard, convertible currency is accepted around the world at uniform rates; soft, nonconvertible currency is rarely of value outside the host country.

- Use international finance centers as a resource—these accumulate expertise and information to conduct financial transaction for international company units most profitably and at the lowest cost.

## EMPLOYMENT AND LABOR FORCES

Investigation of the available labor force should be performed before a company chooses to expand its business to a given region. Managers should determine whether there are enough people of the right skill level for a company to run the business effectively, and whether or not they will want to work for a foreign employer.

When staffing international operations, managers must be able to fill positions from a pool of labor with the right education and skill to maintain and grow the business. Hiring options include choosing from the parent company, choosing people from the host country, or hiring from a local subsidiary. Refugees are often pulled into operations. However, they may lack the skills, health, or education to work. Guest workers may also provide labor, and are particularly helpful in times of rapid growth—when native workers are not willing or able to fill all positions and they do not feel displaced. However, even in times of growth, bringing in large numbers of guest workers (foreigners) often causes friction with citizens of the host country.

Proper planning also helps a company to recognize other forces that cannot be controlled (but must be managed) and plan accordingly. Managers of international operations need to understand the effects of price and wage controls, labor laws, and currency exchange in the host country. In Europe, the government plays a very active role in legislating wages and working conditions, particularly in Germany and France. In Japan, unions align more with specific companies than with industry, so union members have a stake in how well the company does and how much money it makes. They often work with company management.

Understanding cultural issues is critical to international management in general, but culture plays a particularly important role in building a labor force outside the United States. Though U.S. businesses have come to see women as part of the employment pool, women are less accepted as part of the workforce in many other countries.

Another consideration is race, which is still a source of conflict and discrimination in many areas, as is social status. Religious, tribal, racial, and other cultural factors have an impact, not just on employment, but on how an international company will be viewed by the host culture (and how many people will buy products made by the company). However, if managers

are well informed and handle cultural issues properly, people from different cultures, speaking different languages, and possessing various abilities and levels of experience can strengthen the overall management of an international company.

Many corporations have particular difficulty finding qualified executives to effectively manage international companies. Successful leaders of international companies need to understand motivation, leadership, communication, conflict, and other behavioral issues that arise in cross-national and cross-cultural context. The ability to address these issues depends on an understanding of the host culture's values. Other skills cited as keys to successful international management include:

- Technical competence.
- Ability to speak, or willingness to learn, the host language.
- Tolerance for ambiguity and ability to manage uncertainty.
- Nonjudgmental attitude.
- Ability to emotionally connect with people from diverse cultures and backgrounds, and to understand differing viewpoints.
- Personal integrity.
- Strong commitment to personal and company standards.
- Inquisitive mindset/continuous learning.

Managers of international operations need to be adaptable and have a high tolerance for change and ambiguity. They are most successful when given autonomy and discretion in the workplace. Overall business savvy on the part of executives helps to ensure an international company will run well.

Thorough understanding of both the company and industry is important, along with an ability to leverage that understanding when planning, organizing, and implementing ideas. On a more practical level, international managers need to be able to manage accounting and auditing, business plans, policies and procedures, information systems, and corporate culture—all of which vary based on the infrastructure and culture of the host country.

## CULTURAL ISSUES

Defined as the body of beliefs, norms, and values shared by a group of people, culture presents the biggest challenge to businesses working internationally. It is a key factor in how all other areas of business work together. As stated by Geert Hofstede, "Culture is more often a source of conflict than of synergy. Cultural differences are a nuisance at best and often

**Table 3**  
**Hofstede's 5 Cultural Dimensions**

Value Dimension	Value Description	High Score	Low Score
Power Distance Index (PDI)	The degree of equality, or inequality, between people in the country's society	Indicates that inequalities of power and wealth have been allowed to grow within the society. These societies are more likely to follow a caste system that does not allow significant upward mobility of its citizens.	Indicates the society de-emphasizes the differences between citizen's power and wealth. In these societies equality and opportunity for everyone is stressed.
Individualism (IDV)	Degree to which a society reinforces individual or collective achievement and interpersonal relationships.	Indicates that individuality and individual rights are paramount within the society. Individuals may tend to form a larger number of looser relationships.	Typifies societies of a more collectivist nature with close ties between individuals. Reinforce extended families and collectives where everyone takes responsibility for fellow members of their group.
Masculinity (MAS)	Degree to which a society reinforces, or does not reinforce, the traditional masculine work role model of male achievement, control, and power	Indicates the country experiences a high degree of gender differentiation. Males dominate a significant portion of the society and power structure, with females being controlled by male domination.	Indicates the country has a low level of differentiation and discrimination between genders. Females are treated equally to males in all aspects of the society.
Uncertainty Avoidance Index (UAI)	Level of tolerance for uncertainty and ambiguity within the society - i.e. unstructured situations.	Indicates the country has a low tolerance for uncertainty and ambiguity. Creates a rule-oriented society that institutes laws, rules, regulations, and controls in order to reduce the amount of uncertainty.	Indicates the country has less concern about ambiguity and uncertainty and has more tolerance for a variety of opinions. Reflected in a society that is less rule-oriented, more readily accepts change, and takes more and greater
Long-Term Orientation (LTO)	Degree to which a society embraces, or does not embrace, long-term devotion to traditional, forward thinking values.	Indicates the country prescribes to the values of long-term commitments and respect for tradition. This is thought to support a strong work ethic where long-term rewards are expected as a result of today's hard work. However, business may take longer to develop in this society, particularly for an "outsider".	Indicates the country does not reinforce the concept of long-term, traditional orientation. In this culture, change can occur more rapidly as long-term traditions and commitments do not become impediments to change.

Source: Adapted from Geert Hofstede Cultural Dimensions website, <http://www.geert-hofstede.com/>

a disaster." A summary of Hofstede's major factors impacting international business relationships that also influence the practice of international management are shown in Table 3.

Managers of international operations should be aware of the importance of context in various countries. Context indicates the level in which communication occurs outside of verbal discussion. High-context communication depends heavily on gestures, body

language, and other nonverbal cues. Much of what is communicated is implicit, or unspoken, and assumed to be understood through other cues. Low-context communication is explicit and precise, relying little on nonverbal embellishment for meaning. Many of these, and other cultural practices, is learned through socialization.

Culture influences management practices as well, including negotiation tactics, decision making, and

rewards and recognition programs. For example, when conducting business, members of some cultures sit right down to business after shaking hands. In other countries, it is considered rude to mention business at all until after both parties have spent a significant amount of time establishing a relationship. Other management soft skills, such as motivation, making decisions, and rewarding employees, depend on cultural factors as well.

## TECHNOLOGY

Technology is an important factor that can vary significantly, depending on the purpose of foreign investment and how important it is for technology to be standardized across business divisions. While some business leaders may choose to expand internationally to take advantage of cheaper labor or manufacturing costs, particularly in developing nations, they may also need to plan for “intermediate and appropriate technology.”

The production processes used may vary from advanced to primitive, depending on the economic, cultural, and political variables of the host nation. Some governments urge investors to consider intermediate technology rather than the highly-automated equipment and processes of industrialized countries, in part because less advanced countries lack the infrastructure to support such technology. Companies may respond by searching for an appropriate technology that matches a country’s resources, or it may choose to invest elsewhere.

Technology has also contributed significantly to the spread of globalization and international expansion. Advances in technology enable international businesses to conduct international financial transactions, purchase products, analyze data rapidly, make capital improvements, and streamline communications, transportation, and distribution channels.

The summaries above are brief introductions to broad issues to which entire semesters are devoted in business programs. International management requires a broad knowledge base in many areas, as well as an ability to adapt to working conditions in which the only constants are change and a devotion to continuous learning.

Most critical to international management is the desire and ability to work well with people of various cultures, interests, degrees of education, and intelligence—from employees to colleagues to government officials, with home country and host country, and across national and industrial borders.

SEE ALSO: International Cultural Differences; International Management

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## INTERNATIONAL MANAGEMENT SOCIETIES AND ASSOCIATIONS

One of the most noteworthy developments in business in the second half of the twentieth century was the rise of the professional business manager. Whereas previously individuals with a wide range of training, usually including experience in a given business, rose to management positions within corporations, in the present managers are often graduates of general business administration and related programs. Accompanying the rise of business management as a profession has been the development of management societies and associations.

International organizations exist to represent business managers engaged in a multitude of economic enterprises. These organizations serve many purposes, including the coordination of members’ activities, facilitating exchange of information and the spread of new findings of interest to business managers, disseminating business information to members and other interested parties, monitoring trends in specific industries and areas of business management, and gathering and compiling statistics. Thus, business management associations and societies generally seek to encourage the professional advancement of their members, the economic advancement of specific industries or areas of business, and the development of more effective business management practices. In many cases their activities are closely linked to those of management institutes. The following list of some of the leading international management organizations shows both their diversity of scope and the similarity of their activities.

## LEADING INTERNATIONAL MANAGEMENT ASSOCIATIONS

**ASSOCIATION OF MANAGEMENT/INTERNATIONAL ASSOCIATION OF MANAGEMENT (AOM/IAOM).** The Association of Management (AoM) and the International Association of Management (IAoM) were founded in 1975 as professional organizations representing business academicians and business management practitioners. The organization was first known as the Association of Human Resources Management and Organizational Behavior (HRMOB), and the name was changed to AoM/IAoM in 1993. According to their mission, both organizations seek to bridge the gap between theory and practice in management, education, technology, and leadership across multiple disciplines. A primary goal is the continuing professional development of individual business managers. In this regard they are closely related to national business management associations worldwide. Both organizations also sponsor regularly scheduled meetings and issue publications to facilitate exchange of information among their members and between members and the wider business community and the public.

**AMERICAN MANAGEMENT ASSOCIATION (AMA).** In 1923, the National Personnel Association changed its name to the American Management Association. The AMA's mission is to be "a global, not-for-profit, membership-based association that provides a full range of management development and educational services to individuals, companies, and government agencies worldwide". The organization serves as a forum for information and ideas on management practices and business trends, disseminated worldwide through multiple distribution channels.

**ALL INDIA MANAGEMENT ASSOCIATION (AIMA).** The All India Management Association (AIMA) claims to be the one Indian body helping to equip Indian managers to make the most of opportunities arising from transition. Begun in 1957 with support from the Indian government and industry, AIMA now has over 30,000 Professional Individual Members and over 3,000 Corporate/Institutional Members. Activities include management education and development, publications, and testing services. AIMA is represented on a number of committees involved with policy making in the Indian government, and is associated with the Asian Association of Management Organizations and the World Management Council, among other groups.

**EUROPEAN FEDERATION OF MANAGEMENT CONSULTING ASSOCIATIONS (FEACO).** Founded in 1960, FEACO comprises national associations representing management consultants. In addition to formulating standards of ethics and practice for the field, FEACO conducts industry surveys and compiles statistics on the performance of management consultancy companies in Europe.

**INTERNATIONAL PROJECT MANAGEMENT ASSOCIATION (IPMA).** Initiated in 1965 as an informal discussion group involving managers of international projects, the IPMA held its first official congress in 1967. In 1999 the association comprised 26 national organizations representing more than 12,000 project managers, and is the prime international promoter of project management. The IPMA confers professional certification upon qualified individuals, serves as a forum for information exchange within the project management field, conducts research and disseminates information on project management, and sponsors continuing professional education programs for project managers.

**CENTRAL AND EAST EUROPEAN MANAGEMENT DEVELOPMENT ASSOCIATION (CEEMAN).** CEEMAN's function is somewhat different from those of other management societies, given the relatively short time that the profession of business manager has existed in countries formerly under communist rule. As such, the organization is primarily concerned with advancing business and management education in Eastern Europe, and providing for information exchange among members.

**ASSOCIATION OF INTERNATIONAL MANAGEMENT SALES EXECUTIVES (AIMSE).** This group represents management sales personnel, pension fund managers, and marketers at money market management firms worldwide. AIMSE seeks to advance the management sales profession, and encourages the professional development of its members by conducting educational programs, gathering and disseminating management sales information, and facilitating exchange of information among members at its annual meeting.

**AUSTRALIAN INSTITUTE OF MANAGEMENT (AIM).** This is Australia's largest professional body for managers and is well known for providing management training and consulting. AIM maintains a network of bookshop and library facilities dedicated to applied management information. AIM membership is around 25,000 personal members and 6,000 key corporate members.

**EUROPEAN ASSOCIATION OF PERSONNEL MANAGEMENT (EAPM).** Founded in 1962, the EAPM represents a specific constituency within business management, namely, personnel managers. The association functions as the European representative of national personnel management organizations, and formulates standards of conduct and practice for personnel managers.

**EUROPEAN WOMEN'S MANAGEMENT DEVELOPMENT NETWORK (EWMD).** Founded in 1984, the EWMD represents women in business management in thirty countries regardless of their specific field of endeavor. The network works for the professional advancement of its members, serves as a forum for the exchange of

information regarding women in management, and seeks to ensure gender equity in the business management professions.

**INSTITUTE OF MANAGEMENT SPECIALISTS (IMS).** Founded in 1971, the IMS comprises business managers and commercial business and technical professionals in thirty-nine countries. The institute formulates standards of practice for management specialists, and conducts examinations and bestows professional certification upon qualified individuals.

**LATIN AMERICAN AND CARIBBEAN COUNCIL FOR SELF-MANAGEMENT (LACCSM).** Founded in 1977, LACCSM comprises national management organizations, research centers, and businesses practicing self-management. The council serves as a forum for the exchange of information among its members, and gathers and disseminates self-management information to all interested parties.

**MANAGEMENT PROFESSIONALS ASSOCIATION (MPA).** Founded in 1981, the association comprises 26,000 individuals in 161 countries. The MPA seeks to represent the professional interests of business managers in all fields. In an effort to improve business management practice, the MPA develops model profiles describing successful personality traits shared by effective managers, and conducts research and educational programs in the field of business management. The MPA also makes available consulting services to corporations experiencing management problems.

**WORLD MANAGEMENT COUNCIL (WMC).** Rapid advances in the field of business management, and the perception of increased international trade, led U.S. president Herbert Hoover to convene the first International Management Congress in Prague, Czechoslovakia, in 1924. Attendees found the proceedings so informative that it was decided to form an international management organization to carry on some of the research, information exchange, and management practice initiatives developed during the Congress. The WMC was subsequently founded in 1926, and serves as an umbrella organization for associations representing business managers of every type worldwide. Its mission is to facilitate the exchange of business management information and the development and dissemination of new management practices and techniques among its membership. The WMC also operates national management associations in many countries, and has several regional affiliates, including the European Council of Management, Asian Association of Management Organizations, North American Management Council and the Pan American Council, which function as autonomous international business associations in their own right.

In addition to its functions as a research organization and a forum for the exchange of management

information, the WMC maintains close relationships with international trade and development agencies, including the United Nations Economic and Social Council, the United Nations Industrial Development Organization, the United Nations Institute for Training and Research, and the International Labour Organization. Working both directly with these international bodies and through its regional affiliates, the WMC plays an active role in the development and implementation of national and international projects designed to improve management policies and practice.

The WMC brings its members together each year at its annual congress. The WMC congress features presentations of research and opinion and panel discussions on a variety of management topics selected by international industrial, government, and academic leaders.

**PERFORMANCE MANAGEMENT ASSOCIATION (PMA).** Founded in 1985, the PMA represents project managers in all fields of business activity. The association works to improve understanding of the techniques and value of performance measurement among business managers, and conducts educational programs for managers interested in learning more about this topic.

## UNIVERSITY MANAGEMENT INSTITUTES

A somewhat related category of organizations concerns university management institutes. These organizations are similar to management societies and associations, but they generally pursue somewhat different goals. University management institutes are closely related to business management societies and organizations. Management institutes exist worldwide, and although they are primarily engaged in educational activities, they also occasionally work with management associations and industrial groups to gather data on specific industries or areas of economic activity. The Manufacturing 2000 Project (M2000) undertaken by the International Institute for Management Development provides an example of this sort of cooperation between academia, industry, and business management associations.

M2000, a ten-year project begun in 1990, brought together an operating team comprising researchers, professors, business managers, and corporate board members representing sixteen large manufacturing firms. Each firm participating in the project submitted their plans for managing change and developing best practices for consideration and revision by the entire M2000 operating team. Corporate, managerial, and academic participants in M2000 found that the project facilitated information exchange and had a positive influence on all concerned. Keeping in touch with the realities of everyday business management helped

academicians develop more useful research projects, while remaining familiar with academic developments proved useful for managers wishing to make changes in corporate procedure or structure. Thus, although it is essentially an academic program, the International Institute of Management Development fulfills a function similar to that of leading business management associations.

Similarly the Decision Analysis Society (DAS), operated by the Fuqua School of Business at Duke University, is an organization comprising business academicians and researchers, managers, and other corporate representatives. DAS seeks to promote and develop the use of logical methods for the improvement of the decision-making process in both public and private enterprises. The society develops model procedures, risk analysis and assessment techniques, and expert systems for decision support.

Another example of a university management institute, the Federation for Enterprise Knowledge Development (FEND), is a collaborative effort involving representatives of leading corporations and business academics. FEND serves as a think tank, analyzing business management tools and methods and researching new management strategies. The federation also develops business management software applications, conducts educational programs for business managers, and provides assistance to businesses wishing to improve their management practices.

Other international university management institutes include the European Foundation for Management Development, through which academicians, corporations, managers, and educational institutions in forty-five countries work to address current issues in management development; the Institute for Administrative Management, an organization of professional managers and business management students united to identify and disseminate new trends and techniques in administrative management; and the Strategic Planning Society, through which educational institutions, government officials, business executives, and corporations of all sizes work to improve public policies regulating the practice of business management.

In a somewhat separate category is the International Academy of Management (IAM), an organization comprising fellows elected for their contributions to the field of management. The IAM is in large measure an educational organization whose main goal is to identify and objectively evaluate new hypotheses in the study and practice of business management.

#### THE ROLE OF MANAGEMENT ASSOCIATIONS AND SOCIETIES

As the above examples suggest, management associations, as distinct from university management institutes, exist primarily to advance their members'

interests, or to advance a particular class or type of business manager. They can be active in the formulation of professional standards of ethics and practice, the development of national and international public policies pertaining to business and trade, business and management education, and the gathering and dissemination of information on the entire spectrum of business and management topics. They may also serve as certification bodies and sources of ethical and practice standards within a particular business management field. International management associations and societies all share one common function: facilitating the exchange of information among professionals from different countries. As such, they play a vital role in stimulating global trade, and promoting the advancement of business management as a profession.

SEE ALSO: Domestic Management Societies and Associations

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#### INTERNATIONAL MONETARY FUND

The International Monetary Fund, widely known as the IMF, is an international cooperative institution headquartered in Washington, D.C., whose main mission is to promote and assist in international monetary stability. With its initial organization coming at the end of World War II, for many years the main goal of the IMF was to oversee a system of stable, fixed

exchange rates among the currencies of member nations. Since 1971, the exchange rates of the world's currencies have been allowed to float, with supply and demand market forces determining their value. As of 2004 the IMF consisted of 184 member countries, which pay an initial quota subscription to become members. The organization works to achieve and enhance a stable world economy through the promotion of open financial disclosure among member nations, the provision of loans during periods of economic crises, and technical assistance provided through educational and promotional means.

The IMF has come under criticism from some sources for its role in high-profile assistance offered to the Mexican, South Korean, and Russian economies, among others. The member nations, however, continue to support the organization in its efforts to sustain international economic stability and promote international trade.

## HISTORY

The events that ultimately led to the creation of the IMF had their origins in the conclusion of World War I. The economic terms of surrender were negotiated at the 1919 peace conference in Paris. As part of the peace treaty, known as the Treaty of Versailles, England and France demanded large amounts of war reparation payments from Austria and Germany to help rebuild their war-torn economies. However, the Austrian and German economies were depleted, too. This forced them to rely on foreign imports for goods and services unable to be produced locally. When a country imports more than it exports, it runs a balance of payments deficit. Together with other factors, the result may be a devaluation of the currency, since foreign sellers often demand to be repaid in their own currencies. The addition of war reparations on top of a large balance of payments deficit exacerbated the economic crisis, resulting in hyperinflation and political instability in Germany.

The great British economist John Maynard Keynes had participated in the peace conference following World War I and foresaw the scenario described above. Indeed, his book *The Economic Consequences of the Peace* predicted a second world war as an inevitable consequence of the severe penalties and lack of political and economic cooperation following the conclusion of World War I.

## THE CREATION OF THE IMF

Keynes was determined to avoid repeating the mistakes made in the Treaty of Versailles. As World War II came to a close in 1944, an international conference was held at the resort community of Bretton Woods, New Hampshire. Forty-four nations were

represented at the conference, with the chief negotiators being Keynes from Great Britain and Harry Dexter White from the United States. The result of their deliberations was the creation of the International Monetary Fund. The original goals of the fund were to aid members needing foreign exchange to conduct international trade and to promote a system of fixed exchange rates.

The original plan called for the U.S. dollar to be pegged to gold at a rate of \$35 per ounce. Other currencies were set at fixed exchange rates to the dollar, and thus indirectly tied to gold. Countries participating agreed to set a "par" value for their currency based on this fixed exchange rate, allowing for a 1 percent fluctuation band. Should a country experience problems maintaining its par value, the IMF stood ready to lend foreign exchange to aid the cause. Member nations made an initial deposit into the fund known as a quota subscription. These deposits formed a pool from which the IMF could extend loans to members. As a special provision, if a member nation experienced chronic problems maintaining its par value, it would be allowed a one-time devaluation of its currency of up to 10 percent.

## SPECIAL DRAWING RIGHTS

In 1969 the IMF created a new hybrid asset to serve as a reserve currency. The new financial asset was named a special drawing right, or SDR. The value of an SDR is a function of the current value of five different currencies from which it is comprised. They include the U.S. dollar, the Japanese yen, the United Kingdom pound sterling, and the respective euro values of Germany and France. The respective weights of the currencies, which constitute SDRs value, are revised every five years.

Member nations may use SDRs in a variety of ways. These include exchanging SDRs for other monetary assets or for maintaining operations, and exchanging SDRs directly with other members in exchange for foreign currencies to address a balance of payments problem. Since part of the mission of the IMF is to promote and enhance international trade, the board of governors has the option to decide on periodic special allocations of SDRs to augment members' existing reserve accounts.

## THE IMF AND THE WORLD BANK

In addition to the IMF, the Bretton Woods Agreement resulted in the formation of the World Bank. Formally known as the International Bank for Reconstruction and Development, the World Bank's primary goal is to promote economic growth among the world's developing nations. It does so by effectively serving an investment-banking role, issuing

bonds and notes to raise new investment capital, which in turn lends to poor nations to finance specific projects. Typical projects include those associated with enhanced transportation routes, electric power development, and increased agricultural production.

As they share the ancestry of the Bretton Woods conference plus related economic roles, confusion between the IMF and the World Bank is common among the general public. They remain, however, two distinct organizations with their own individual goals and agendas aimed at promoting economic health and development among the world's nations.

### THE END OF BRETTON WOODS

The system of fixed exchange rates created by the Bretton Woods Agreement and overseen by the IMF lasted from 1946 until 1971. For much of that period, the system worked very well. The U.S. dollar was pegged to gold and most other currencies were pegged to the dollar. During much of this period the United States ran a trade surplus, exporting more goods and services than it imported. Thus, the amount of U.S. dollars held domestically on net increased, causing little strain on the international monetary system.

This scenario changed during the 1960s. As the United States expanded its level of imports and increased industrial output during the Vietnam War, the amount of dollars held overseas expanded greatly. These dollars were deposited in foreign banks, allowing the banks to extend U.S. dollar denominated loans. The supply of U.S. dollars outstanding expanded significantly. At the same time, as more dollars were presented for redemption, the U.S. gold supply was being depleted. By the end of the decade, there were more dollars outstanding than there was gold to back them. In August 1971 the Nixon administration acknowledged the situation by closing the gold window, refusing to allow foreign central banks to exchange U.S. dollars for gold.

The Smithsonian Agreement of that year began the process of ending the Bretton Woods system of fixed foreign exchange rates. The initial agreement called for expanded fluctuation of exchange rates from 1 percent to 2.25 percent; subsequent economic activity made these bands unfeasible. Governments then decided to let their respective currencies float relative to each other, and the world moved to a floating exchange rate system.

### THE ROLE OF THE IMF EVOLVES

In 1978, the IMF formally amended its constitution to alter its role in the world economy. It now plays a number of roles in its overall mission of promoting international stability and growth. These roles fall

generally under three areas: surveillance, technical assistance, and financial assistance.

In its surveillance function, the IMF serves as a watchdog over member nations' economic policies. Each nation consults with IMF staffers on a regular basis regarding current and potential policy changes that may affect both the domestic economy and that of other nations. In this role, the IMF attempts to promote coordination and transparency in international economic policy, with the belief that open communication and mutual consideration of new policy initiatives will result on net in more robust international stability and trade.

Technical assistance to member nations takes up a large amount of daily operations at the fund. With a staff of approximately 2,700 experts from 140 countries, including many economists and statisticians, the IMF provides expertise and consultation on matters involving the implementation of both fiscal and monetary policy, trade laws and tariff measures, and programs aimed at strengthening and stabilizing local currency values. The technical staff produces numerous articles and publications designed to inform and educate policymakers on international economic affairs. Included are statistical compilations on trade, capital flows, employment, and other economic data. The technical area extends to educational training sessions, which are provided both at the IMF and jointly with other economic institutes throughout the world.

Perhaps the one area that has brought the IMF the most attention and raised its image among the general public has been its role of providing financial assistance to nations experiencing economic crises. This involves providing credits or arranging loans for nations experiencing such problems as severe balance of payments deficits or a sudden devaluation of their currency.

The 1990s saw the IMF make global headlines with several widely publicized financial assistance programs. The first occurred in 1995 with the crisis in Mexico. Faced with a severe devaluation of its currency due to a rapid loss of confidence in its policies, the Mexican government turned to the IMF for what was then a record \$17.8 billion financial assistance package. While attempting to move towards a market-oriented economy, Russia required financial assistance several times during the 1990s. Included were large loans in both 1996 and 1998. And, in 1997, an extended crisis throughout much of east Asia resulted in the IMF arranging financial assistance for South Korea, Indonesia, and Thailand.

These financial assistance programs, which have grown successively larger in amount, have met with severe criticism from some sources. The IMF has been labeled a "bailout" source for poorly run economies,

serving as a safety net for policymakers unable or unwilling to make difficult decisions which market discipline demanded. In addition, critics claim that IMF policies encourage poor nations to carry huge amounts of international debt, forcing them to use a large proportion of their annual revenues to make interest payments. The IMF has responded to its critics by actively working with both the public and private sectors to promote better information flow and legislation designed to prevent additional financial crises from taking place. The organization continues to develop systems and procedures designed to limit such crises from spreading to other countries and enveloping entire geographical regions.

The modern International Monetary Fund remains a major player on the global economic stage. The fund continues to grow and expand in its new roles within a world of floating exchange rates and rapid capital flows. The modern IMF wears a number of hats, including overseer and communicator of national policies and legislation, consultant and educator on numerous fiscal and monetary issues, and intermediary and lender for nations whose currencies come under pressure.

Critics continue to denounce the IMF for forcing nations in need to adopt its policy recommendations as a condition of assistance. In addition, the fund raises concerns among those who claim it acts as a safety net to alleviate poor or ineffective domestic monetary and trade policies. The IMF is also frequently charged with favoring bankers and elite classes, obstructing debt reduction for the world's poorest countries, and ignoring human rights violations. "Street protesters have it exactly right, for example, when they argue that the economic policies imposed on developing nations by the International Monetary Fund and World Bank have hammered the poor," Eric Pooley wrote in *Time*. "Using loans and the threat of default as levers, the IMF has pushed more than 90 countries to accept its brand of free-market shock therapy: lowering trade barriers, raising interest rates, devaluing currencies, privatizing state-owned industries, eliminating subsidies and cutting health, education, and welfare spending." While such programs attract foreign investment and stimulate the economy, they also tend to increase the cost of living and hurt small, local businesses.

Such criticisms are not likely to dissipate soon. Nevertheless, the 184 member nations continue to support the IMF in the belief that open communication and coordinated policies will lead to greater stability and promote a climate which fosters growth in international trade and development.

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### INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

The International Organization for Standardization (ISO) is a non-governmental organization based in Geneva, Switzerland, that works to develop technical standards for products and services sold around the world. The steady rise in international trade that began in the mid-19th century and has persisted until the present day provided impetus for the global standardization of goods and services. Companies with overseas operations must know that products or services they contract for outside their home country will conform to their needs, and the only way to ensure this is for both parties in the transaction to meet a single set of standards. Thus, as economic interdependence increased among nations on all continents, the need for an authoritative international standards body became increasingly apparent. To address this need, the International Organization for Standardization (ISO) was founded in 1947.

The ISO comprises national standards bodies representing 148 countries and serves a variety of functions. It facilitates communication and cooperation among its members, eases the distribution of scientific and technical information on standards and standardization, operates over 2,850 technical groups devoted to standards and other commercial and industrial research, and maintains online databases covering international standards and other organizational activities. The ISO also seeks to ensure that standards are not used as a nontariff barrier to international trade by formulating international standards applicable to the full scope of commercial activity in any locale worldwide.

Although the majority of standards promulgated by the ISO are the result of the internal activities of its technical committees and working groups, ISO standards are not necessarily handed down to companies from the central organization. Companies often send their own internal standards to the ISO for consideration as international standards. Similarly, national standards organizations work with the ISO

to make accepted national standards internationally applicable.

Adherence to standards formulated by ISO is completely voluntary, but companies that do conform to them have a distinct advantage over those that do not, particularly when trading overseas. ISO standards cover the entire spectrum of scientific, industrial, and commercial activities, including computer operating systems, manufacturing processes, product quality, safety, management technique, and environmental protection. In addition to its specific quality standards, the ISO has issued two sets of general standards, ISO 9000 and ISO 14000, to govern manufacturing and organizational processes and environmental protection, respectively.

### THE ISO 9000 QUALITY STANDARDS SERIES

Released in 1987 and updated in 2000, the ISO 9000:2000 standards series governs general international quality assurance for products and services. It is divided into five specific areas. ISO 9000 is an overview, which includes guidelines for the selection, and use of quality management and quality assurance standards, provides definitions of quality concepts, and serves as a guide for the selection of ISO quality models applicable to specific industries. ISO 9001 provides a model for quality assurance in design and development, production, installation, and services. ISO 9002 provides a model for quality assurance in production and installation. ISO 9003 provides a model for quality assurance in final inspection and testing of products. Finally, ISO 9004 sets forth guidelines for developing and implementing internal corporate quality management programs and quality systems.

Each facet of the ISO 9000 standards series is general and can be applied to any industrial activity. In fact, the series' lack of specificity has led critics to note that two companies complying with ISO 9000 could conceivably produce goods that were radically different in terms of quality. The U.S. Department of Defense holds this view, stating that the ISO 9000 standards "are not adequate for use without significant supplementation." Despite these limitations, many corporations worldwide choose to adhere to the ISO 9000 standards. Under the General Agreement on Tariffs and Trade (GATT) companies may demand that their suppliers or other trading partners achieve ISO 9000 certification, and this demand will not be considered an illegal restraint of trade under GATT. Regardless of corporate opinions regarding ISO 9000, many countries are mandating that the foreign companies with which they trade achieve certification. For example, overseas producers of computer switches and pacemakers must be certified under ISO 9000 to

trade with the European Union, as must computer software producers wishing to sell their goods in Japan.

Companies wishing to attain ISO 9000 certification must first register with the ISO. Prior to registration, a third-party registrar must be found to audit and evaluate the company's operations and recommend changes that must be made to ensure conformation. Prior to this audit, companies must prepare a quality assurance program; define, document, and implement new procedures; and compile a corporate quality manual and preassess the manual with the selected auditor. Many adherents to the ISO 9000 standards have found that several components are necessary to ensure certification. First, companies must carefully evaluate their trading relationships to determine whether adherence to the ISO 9000 standards will result in increased profitability. If this is judged to be the case, management must be completely committed to achieving certification and a competent registrar must be secured. Staff must be carefully educated regarding the changes in processes and products required for conformation, and a core cadre of employees must be trained to constantly audit procedures following certification and conduct the periodic audits required to ensure that standards are being maintained.

In its early years, the ISO 9000 series of standards was not adopted as readily as had been anticipated, but by the early 1990s the standards were beginning to receive more widespread use. The U.S. Commerce Department finally endorsed global acceptance of ISO 9000 in 1994, and the formation of the International Accreditation Forum during the same year also provided an impetus to ISO 9000 certification. By 2005 more than half a million organizations in over 60 countries had either implemented or were in the process of implementing the quality management framework outlined in ISO 9000. QS-90000, a separate series of standards for the many automotive industry suppliers and has been updated and recently replaced by ISO/TS 16949:2002.

Although the ISO 9000 series eventually caught on and began to fulfill its role in regulating international industrial, commercial, and management activity, even its staunchest adherents found that the series did not account for environmental protection. This oversight allowed too much latitude for differences in process between companies in different countries, particularly those in the chemical industries. The Global Environmental Initiative held in Rio de Janeiro, Brazil, in 1992 further established the need for an internationally recognized set of standards governing industrial and commercial environmental protection policies and processes. In response to this need, ISO began work on a new series of standards designed to govern environmental protection.

## THE ISO 14000 SERIES OF STANDARDS

Released in 1996, the ISO 14000 series of standards is designed to supplement the ISO 9000 series, and adherence to ISO 14000 assures customers that a company has sound environmental protection policies and processes. ISO 14000 is divided into ten separate areas of standardization:

1. ISO 14001 provides a model framework for the establishment of an environmental management system.
2. ISO 14004 offers a checklist for companies wishing to implement ISO 14001, and is not mandatory for ISO 14000 certification.
3. ISO 14010 is also voluntary and establishes guidelines for corporate environmental auditing procedures, including definition of quality audit evidence.
4. ISO 14011 provides guidance for the voluntary formation of corporate environmental auditing procedures, including a general outline of an effective environmental audit.
5. ISO 14012 delineates qualification criteria for environmental auditors.
6. ISO 14020 establishes standards for scientific evidence presented in corporate environmental management audits
7. ISO 14021 allows companies to self-declare environmental claims under certain circumstances.
8. ISO 14024 provides guidelines for verifying corporate environmental management claims and delineates the criteria which must be met for companies to use ISO-recognized labels advertising their compliance with ISO 14000 environmental standards.
9. ISO 14031 establishes standards for corporate review of existing environmental management systems.
10. ISO 14040 provides guidelines and criteria for long-range environmental assessments, which are required to determine whether or not certain commercial activities can be considered environmentally sustainable.

Although the ISO 9000 standards are currently viewed favorably in the corporate world, ISO 14000 has proven more controversial. ISO 14000 does not stipulate standards of corporate environmental performance, but rather governs only the means a company must employ to make its production activities environmentally sustainable. National standards for compliance with ISO 14000 also differ widely, as the third-party audits required to attain certification are conducted differently in different countries, and with

differing criteria for compliance. Finally, while the GATT agreements allow companies to stop doing business with trading partners that fail to achieve ISO 9000 certification, refusing to do business with a company that failed to achieve ISO 14000 certification could be considered an illegal restraint of trade under the GATT provisions. Companies based in the United States have been particularly unwilling to secure ISO 14000 certification, given the amount of time, money, and effort they already expend in meeting the standards of environmental performance and practice set by the federal Environmental Protection Agency (EPA). In fact, U.S. and Canadian steelmakers went on record in 1996 against ISO 14000 compliance, stating that complying with ISO 9000 should become the sole recognized method for international standardization and that adding a new series of standards would create "standards gridlock."

Although widespread corporate compliance with ISO 14000 did not occur in the series' initial years, increased awareness of environmental concerns among both government agencies and the public worldwide will provide an impetus for ISO 14000 certification in the future. For instance, the rigorous Eco-Management and Audit Scheme (EMAS) promulgated by the European Union in 1992 has proven difficult for many companies to implement, yet compliance with EMAS may become essential for firms wishing to trade in Europe. Compliance with ISO 14000 standards will automatically make a company also eligible for EMAS certification. Similarly, compliance with ISO 14000 will provide a powerful marketing tool for companies wishing to sell products to environmentally conscious consumers. Compliance with ISO 14000 also provides legal evidence of due diligence, which would mitigate in favor of any ISO 14000-certified company which was sued for creating environmental damage or hazards. Finally, ISO 14000 certification removes barriers to international trade in the same manner as does ISO 9000 compliance.

## THE FUTURE

Since its founding in 1947, the ISO has published more than 13,700 international standards, covering everything from dimensions of freight containers to symbols that provide danger warnings. ISO has addressed the standardization of protocols to allow different types of computers to communicate with one another, as well as the standardization of interfaces and connections to ensure the interoperability of various technologies. Although the majority of ISO standards are specific to individual products, materials, or processes, the ISO 9000 and 14000 series provide generic management system standards that can be applied to any product or service, by any type of organization.

ISO standards are not without their critics in the business world. Critics claim that the standards can be costly and time-consuming to implement, for example. But proponents point out that ISO certification enables businesses to increase knowledge of their capabilities, improve their processes and performance, ensure consumer and stockholder confidence, and gain a source of competitive advantage. As a result, the ISO seems likely to play an increasingly important role in international trade in the future. The general lowering of tariff barriers worldwide in recent years has led to a contradictory rise in the use of standards to exclude products of certain countries or regions, a practice which global adoption of ISO standards would eradicate. Furthermore, in the case of the ISO 14000 series, increased public environmental consciousness will provide a powerful incentive for corporate compliance and in the long run will also result in the passage of public policies mandating environmental sustainability such as the EMAS.

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#### THE INTERNET

The Internet is the world's largest computer network. It is a global information infrastructure comprised of millions of computers organized into hundreds of thousands of smaller, local networks. The term "information superhighway" is sometimes used to describe the function that the Internet provides: an

international, high-speed telecommunications network that offers open access to the general public.

The Internet provides a variety of services, including electronic mail (e-mail), the World Wide Web (WWW), Intranets, File Transfer Protocol (FTP), Telnet (for remote login to host computers), and various file-location services.

#### E-MAIL

Electronic mail, or e-mail, is the most widely used function used on the Internet today. Millions of messages are passed via Internet lines every day throughout the world. Compared to postal service, overnight delivery companies, and telephone conversations, e-mail via the Internet is extremely cost-effective and fast. E-mail facilities include sending and receiving messages, the ability to broadcast messages to several recipients at once, storing and organizing messages, forwarding messages to other interested parties, maintaining address books of e-mail partners, and even transmitting files (called "attachments") along with messages.

Internet e-mail messages are sent to an e-mail address. The structure of an e-mail address is as follows: PersonalID@DomainName

The personal identifier could be a person's name or some other way to uniquely identify an individual. The domain is an indicator of the location of that individual, and appears to the right of the "at" (@) sign. A domain name is the unique name of a collection of computers that are connected to the Internet, usually owned by or operated on the behalf of a single organization (company, school, or agency) that owns the domain name. The domain name consists of two or more sections, each separated by a period.

From right-to-left, the portions of the domain name are more general to more specific in terms of location. In the United States, the rightmost portion of a domain is typically one of the following:

- com—indicating a commercial enterprise
- edu—indicating an educational institution
- gov—indicating a governmental body
- mil—indicating a military installation
- net—indicating a network resource
- org—indicating a nonprofit organization

In November of 2000 seven new domain names were created and made available: biz, .info, .name, .pro, .aero, .coop, and .museum.

In non-U.S. countries, the rightmost portion of a domain name is an indicator of the geographic origin of the domain. For example, Canadian e-mail addresses end with the abbreviation "ca."

**SPAM.** Commercial abuse of e-mail continues to be problematic as companies attempt to e-mail millions of online users in bulk. This technique is called “spam,” so named after a skit by the comedy troupe Monty Python that involved the continuous repetition of the word. Online users are deluged with a massive amount of unwanted e-mail selling a wide array of products and services. Spam has become a network-wide problem as it impacts information transfer time and overall network load. Several organizations and governments are attempting to solve the spam problem through legislation or regulation.

**VIRUSES.** Computer viruses spread by e-mail have also grown as the Internet has grown. The widespread use of e-mail and the growing numbers of new, uninformed computer users has made it very easy to spread malicious viruses across the network. Security issues for both personal computers and for network servers will continue to be a crucial aspect of the ongoing development of the Internet and World Wide Web.

## WORLD WIDE WEB

The World Wide Web (WWW) is a system and a set of standards for providing a graphic user interface (GUI) to Internet communications. The WWW is the single most important factor in the popularity of the Internet, because it makes the technology easy to use and gives attractive and entertaining presentation to users.

Graphics, text, audio, animation, and video can be combined on Web pages to create dynamic and highly interactive access to information. In addition, Web pages can be connected to each other via hyperlinks. These hyperlinks are visible to the user as highlighted text, underlined text, or images that the user can click to access another Web page.

**BROWSERS.** Web pages are available to users via Web browsers, such as Mozilla/Firefox, Netscape Navigator, or Microsoft’s Internet Explorer. Browsers are programs that run on the user’s computer and provide the interface that displays the graphics, text, and hyperlinks to the user. Browsers recognize and interpret the programming language called Hypertext Markup Language (HTML). HTML includes the ability to format and display text; size and position graphics images for display; invoke and present animation or video clips; and run small programs, called applets, for more complex interactive operations. Browsers also implement the hyperlinks and allow users to connect to any Web page they want.

**SEARCH ENGINES.** Sometimes a user knows what information she needs, but does not know the precise Web page that she wants to view. A subject-oriented search can be accomplished with the aid of search

engines, which are tools that can locate Web pages based on a search criterion established by the user. Commonly used search engines include Google, Yahoo, Teoma, and Alta Vista.

**BLOGS.** The ease with which users can publish their own information using the World Wide Web has created an opportunity for everyone to be a publisher. An outcome from this is that every topic, hobby, niche, and fetish now has a thriving community of like-minded people. The ease of publishing information on the Web became easier with the advent of Web logs or “blogs,” online diaries that opened the floodgates to an even greater level of individual participation in information sharing and community.

## UNIFORM RESOURCE LOCATORS (URL)

A Uniform Resource Locator (URL) is a networked extension of the standard filename concept. It allows the user to point to a file in a directory on any machine on the Internet. In addition to files, URLs can point to queries, documents stored deep within databases, and many other entities. Primarily, however, URLs are used to identify and locate Web pages.

A URL is composed of three parts:

**PROTOCOL.** This is the first part of the address. In a Web address, the letters “http” stand for Hypertext Transfer Protocol, signifying how this request should be dealt with. The protocol information is followed by a colon. URL protocols usually take one of the following types:

- http—for accessing a Web page
- ftp—for transferring a file via FTP
- file—for locating a file on the client’s own machine
- gopher—for locating a Gopher server
- mail—for submitting e-mail across the Internet
- news—for locating a Usenet newsgroup

**RESOURCE NAME.** This is the name of the server/machine at which the query should be directed. For an “http” request, the colon is followed by two forward slashes, and this indicates that the request should be sent to a machine.

**PATH AND FILE NAME.** The rest of a URL specifies the particular computer name, any directory tree information, and a file name, with the latter two pieces of information being optional for Web pages. The computer name is the domain name or a variation on it (on the Web, the domain is most commonly preceded by a machine prefix “www” to identify the computer that is functioning as the organization’s Web server, as opposed to its e-mail server, etc.).

If a particular file isn't located at the top level of the directory structure (as organized and defined by whoever sets up the Web site), there may be one or more strings of text separated by slashes, representing the directory hierarchy.

Finally, the last string of text to the right of the rightmost slash is the individual file name; on the Web, this often ends with the extension "htm" or "html" to signify it's an HTML document. When no directory path or file name is specified (e.g., the URL <http://www.domain.com>), the browser is typically pointed automatically to an unnamed (at least from the user's perspective) default or index page, which often constitutes an organization's home or start page.

Thus, a full URL with a directory path and file name may look something like this:

<http://www.mycompany.com/files/myfile.html>

Lastly, a Web URL might also contain, somewhere to the right of the domain name, a long string of characters that does not correspond to a traditional directory path or file name, but rather is a set of commands or instructions to a server program or database application. The syntax of these URLs depends on the underlying software program being used. Sometimes these can function as reusable URLs (e.g., they can be bookmarked and retrieved repeatedly), but other times they must be generated by the site's server at the time of use, and thus can't be retrieved directly from a bookmark or by typing them in manually.

## INTERNET SERVICE PROVIDERS

To gain access to the Internet a user typically subscribes to an Internet Service Provider (ISP). ISPs are companies that have permanent connection to the Internet. Subscribers to ISPs can connect to the ISP's server computer, and through that connection can gain access to the Internet. Some well-known commercial ISPs include America Online, MSN, and Earthlink, although there are hundreds of such services.

An alternative access to the Internet is provided via academic institutions (i.e. colleges or universities) and government agencies. Most students and faculty in colleges have accounts on the school's computer system, through which they can gain access to the Internet.

## TRANSMISSION CONTROL PROTOCOL/ INTERNET PROTOCOL (IP)

The Internet is a network of computers, or more accurately, a vast network of networks. These networks are connected to each other via a high-speed backbone, a communication link that joins the major Internet host computers. These hosts are primarily

mainframe computers at academic institutions. The communication along the Internet follows the Transmission Control Protocol (TCP)/Internet Protocol (IP) communications standard.

TCP is called a connection-based protocol, which enables two hosts to establish a direct connection and exchange streams of data. TCP guarantees delivery of data and also guarantees that packets of data will be delivered in the same order in which they were sent. In this regard, TCP acts like a telephone conversation.

IP is a connectionless protocol, acting something like the postal system. It allows you to address a data packet and drop it in the system, but there's no direct link between you and the recipient.

Each node (or computer) on the Internet is assigned a unique IP address. IP addresses are 32-bit numbers, normally written as 4 octets (in decimal), e.g., 128.8.4.5. These identify the particular network and host. IP addresses are numeric values. However, most users prefer symbolic names to identify the hosts they want to access. Thus, the Internet provides the Domain Name Service (DNS), which allows users to use symbolic names to locate Internet hosts.

## INTRANETS

Internet technology has become extremely beneficial for businesses and other organizations as a cost-effective means of implementing their corporate-wide telecommunications needs. However, the public nature of the Internet poses a challenge to any company wishing to take advantage of its potential. The TCP/IP protocol does not provide adequate security for commercial institutions. It is relatively easy to eavesdrop on transmissions, and there is no inherent authentication mechanism. Thus, many companies adopt intranets, private networks based on Internet technology.

Intranets use the company's existing network infrastructure, together with the TCP/IP protocol, Web browsers, Web server technologies, and HTML-formatted Web pages. The key distinction between an intranet and the Internet is the use of a firewall, which is a security system with specialized software and/or hardware that can prevent unauthorized users from gaining access to the company's intranet server.

Intranets have many advantages over other corporate-wide network implementations. They are comparatively inexpensive to implement and easily allow different types of computers to communicate with each other, which overcomes a major obstacle to corporate-wide information sharing.

Most companies have a wide variety of computer platforms, including PCs, mainframes, and minicomputers, spread throughout the organization. Web technology and TCP/IP communications standards enable

these diverse platforms to maintain a consistent user interface, thus reducing the amount of time it takes users to become proficient on the network.

Intranets are used for many business purposes, ranging from distribution of corporate documents to facilitating group collaboration via groupware and teleconferencing, to full-blown transaction-processing applications.

## FILE TRANSFER PROTOCOL

The File Transfer Protocol (FTP) is a method of moving files between two Internet sites. Files can contain software, text, graphics, or other file formats.

Early Internet users developed FTP so researchers could copy files from one place to another across the Internet. Until 1995 and the popularization of the World Wide Web, FTP accounted for more traffic on the Internet than any other service. Nowadays, the bulk of traffic is done via the Web. However, even when downloading files via an Internet browser, FTP is the protocol involved. In this case, the URL begins with the protocol “ftp://” instead of “http://”.

Although using FTP to transfer files from one system to another usually requires a user ID on both systems, many host systems provide anonymous FTP services. Anonymous FTP lets anyone in the world have access to a certain area of disk space on the host system and allows some files to be publicly available. Some systems have dedicated entire disks or even entire computers to maintaining extensive archives of source code and information. These sites are called anonymous FTP servers.

Once a user logs onto an FTP server, he or she can transfer data to or from that server using common FTP commands. The basic syntax for FTP commands is based on the UNIX operating system; however, many software products are available that provide graphic interfaces to FTP and thus simplify the file transfer process.

## ARCHIE, GOPHER, AND VERONICA

As FTP sites proliferated over the Internet, it became necessary to create directories and indexes to allow Internet users to quickly locate desired information. Three commonly used tools exist for this purpose. An Archie is a database server that provides keyword search to locate relevant FTP files. Gophers, originally developed at the University of Minnesota, are menu-oriented directories to FTP files and sites. The menus are arranged in hierarchical structure based on topics, and are hyperlinked to FTP sites and even to other Gopher sites. Finally, a Veronica (Very Easy Rodent-Oriented Netwide Index) is a keyword-search

tool that searches Gopher sites for relevant subject material.

Although these three tools are useful, their use has declined with the advent of the World Wide Web. One can think of the Archies, Gophers, and Veronicas of the world as being precursors to the modern search engines of the Web. In fact, Gophers are themselves accessible from the Web, and have their own URL protocol.

## TELNET

Telnet is the Internet standard protocol for remote terminal connection, allowing a user at one site to interact with a remote timesharing system at another site as if the user's terminal were connected directly to the remote computer. A Telnet program is the terminal emulation software you use to log in to an Internet host; the host has similar Telnet software. Thus, via Telnet, your computer becomes a terminal connected to the host computer, and your interaction with that computer is the same as it would be if you were sitting at a terminal wired directly to that computer.

Telnet is a text-based connection protocol, providing only character-based communications capabilities with the host. Thus, Telnet has been greatly overshadowed by the Web, as there is limited content available by Telnet and it requires knowledge of various system commands. However, there are still many Telnet sites available. Most Internet browsers allow access to Telnet sites by specifying the Telnet protocol as the first part of a URL.

## PEER-TO-PEER (P2P)

The peer-to-peer (P2P) protocol began to gain in popularity in the late 1990s and early 2000s. This protocol allows for the sharing of individual computer hard drives and storage devices. P2P spreads the network usage and downloading across all of the linked computers distributing the load more evenly. It also allows for a lack of accountability in serving and acquiring data. It has been extremely popular for downloading music, videos, and books.

The first and most well-known instance of P2P was Napster in 1999, a file sharing application for exchanging music files between users without regard to copyright restrictions or royalties. A significant amount of litigation took place between Napster and the Recording Industry Association of America to stop promoting copyright infringements. Napster eventually acquiesced to the legal actions; however P2P downloading continues to be a corporate issue.

## USENET NEWSGROUPS

Usenet is an Internet news/discussion group forum that allows ongoing conversations on a given topic to occur over an extended period of time (weeks, months, and even years). These newsgroups are organized in a bulletin board framework, so that any Internet user can read or post messages to any topic area. Although Usenet newsgroups existed long before the WWW, they are still in wide use and accessible from the Web via their own URL protocol.

## HISTORY OF THE INTERNET

The idea for the Internet began in the early 1960s as a military network developed by the U.S. Department of Defense's Advanced Research Project Agency (ARPA). At first, it was a small network called ARPANET, which promoted the sharing of super-computers amongst military researchers in the United States. A few years later, ARPA began to sponsor research into a cooperative network of academic time-sharing computers. By 1969, the first ARPANET hosts were constructed at Stanford Research Institute, University of California Los Angeles (UCLA), University of California Santa Barbara, and the University of Utah.

In the early 1970s, use of ARPANET expanded dramatically. Although it was originally designed to allow scientists to share data and access remote computers, e-mail quickly became ARPANET's most popular application, as researchers across the country used it for collaborating on research projects and discussing topics of interests.

In 1972, the InterNetworking Working Group (INWG) was established as the first standards-setting organization to govern the growing network. Under the leadership of Vinton Cerf, known as the "father of the Internet," INWG began to address the need for establishing agreed-upon protocols and enforce standardization in ARPANET functionality. Two early protocols, Telnet and FTP, are still in use today.

By 1973, ARPANET crossed national boundaries, establishing connections to University College in London, England, and the Royal Radar Establishment in Norway. In 1974, a commercial version of ARPANET, called Telenet, was developed by Bolt, Beranek, and Newman, Inc. (BBN), one of the original ARPA contractors that had helped get ARPANET running. It began a move away from the military/research roots of the original ARPANET.

In 1979, faculty members and graduate students at Duke University and the University of North Carolina created the first Usenet newsgroups, enabling users from all over the world join discussion groups on a myriad of subjects including politics, religion, computing, and even less-than-savory topics. Usenet influenced a continuing wave of growth.

Between 1981 and 1988, ARPANET grew from around 200 hosts to more than 60,000. Many factors influenced this explosive growth. First was the boom in the personal computer industry. With more people using inexpensive desktop machines, and with the advent of powerful, network-ready servers, many companies began to join this vast computer network for the first time, using it to communicate with each other and with their customers.

A second factor in growth was the National Science Foundation's NSFNET, built in 1986 for the purpose of connecting university computer science departments. NSFNET combined with ARPANET to form a huge backbone of network hosts. This backbone became what we now think of as the Internet (although the term "Internet" was used as early as 1982).

The third factor in growth was the concept of internetworking, which began to appear in popular culture in the 1980s. William Gibson's 1984 novel *Neuromancer* coined the ubiquitous term "cyberspace" to describe the new virtual communities, cultures, and geographies that the Internet provides.

The explosive growth of the Internet came with major problems, particularly related to privacy and security in the digital world. Computer crime and malicious destruction became a paramount concern. One dramatic incident occurred in 1988 when a program called the "Morris worm" temporarily disabled approximately 10 percent of all Internet hosts across the country. The Computer Emergency Response Team (CERT) was formed in 1988 to address such security concerns.

In 1990, as the number of hosts approached 300,000, the ARPANET was decommissioned, leaving only the Internet with NSFNET as its sole backbone. The 1990s saw the commercialization of the Internet, made possible when the NSF lifted its restriction on commercial use and cleared the way for the age of electronic commerce.

Electronic commerce was further enhanced by new applications being introduced to the Internet. For example, programmers at the University of Minnesota developed the first point-and-click method of navigating the Internet files in 1991. This program, which was freely distributed on the Internet, was called Gopher, and gave rise to similar applications such as Archie and Veronica.

An even more influential development, also started in the early 1990s, was Tim Berners-Lee's work on the World Wide Web, in which hypertext-formatted pages of words, pictures, and sounds promised to become an advertiser's dream come true. At the same time, Marc Andreessen and colleagues at the National Center for Supercomputing Applications (NCSA), located on the campus of University of Illinois at Urbana-Champaign,

were developing a graphical browser for the World Wide Web called Mosaic (released in 1993), which would eventually evolve into Netscape.

By 1995, the Internet had become so commercialized that most access to the Internet was handled through Internet service providers (ISPs), such as America Online and Netcom. At that time, NSF relinquished control of the Internet, which was now dominated by WWW traffic.

Partly motivated by the increased commercial interest in the Internet, Sun Microsystems released an Internet programming language called Java, which promised to radically alter the way applications and information can be retrieved, displayed, and used over the Internet.

By 1996, the Internet's twenty-fifth anniversary, there were 40 million Internet users, and Internet-based electronic commerce had reached major proportions, with more than \$1 billion in Internet shopping mall transactions.

## DIRECTION OF THE INTERNET

The Internet is now truly global, with 150 countries connected. In less than 30 years, the Internet migrated from an American military information management tool to an information superhighway serving the entire world.

The Internet revolutionized late twentieth and early twenty-first century society as dramatically as the railroads and the Industrial Revolution of the nineteenth century. Telecommuting, e-commerce, blogs, and virtual communities have broken geographic boundaries and brought people closer together.

At the same time, the internet has introduced significant social challenges. There is a danger of creating a second-class citizenship among those without access. Privacy and security are a continuing concern. The workplace is drastically altering society as the information age makes industrial-era skills obsolete. The twenty-first century will be strongly influenced by the dispersion of information technology, and the Internet promises to be the conduit of this technology.

SEE ALSO: Computer Networks; Computer Security; Electronic Commerce; Electronic Data Interchange and Electronic Funds Transfer; Electronic Data Interchange and Electronic Funds Transfer

Michel Mitri

Revised by Hal P. Kirkwood, Jr.

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## INTRAPRENEURSHIP

Intrapreneurship describes the process of developing new products, services, and lines of business within an existing company. It is perhaps best understood as a form of internal entrepreneurship that takes place with the encouragement and support of management. An employee who takes responsibility for developing an innovative idea into a marketable product is known as an intrapreneur. Management consultants Gifford and Elizabeth Pinchot coined the term in 1976 and helped popularize the concept of intra-corporate entrepreneurship in their pioneering book *Intrapreneuring: Why You Don't Have to Leave the Corporation to Become an Entrepreneur* (1985).

The Pinchots and other experts recognized that entrepreneurial ventures often lost their innovative edge as they grew into established companies. In order to help organizations remain creative and competitive as they grew, the consultants came up with guidelines and models to foster this entrepreneurial spirit among employees. "There are many advantages in working with intrapreneurs in any organization. Given the business environment in this day, any organization needs people who can bring in new ideas and see them through," Emily Hwengere wrote in the *Financial Gazette*. "Without intrapreneurs who can identify and exploit new opportunities, organizations will naturally die." One of the most commonly cited intrapreneurship success stories is 3M Corporation, which has a policy that allows employees to spend 15 percent of their working hours developing their own business or product ideas. This policy led to the creation of Post-It-Notes and other successful products by 3M employees.

Experts recommend that business organizations create a culture that provides employees with both freedom and encouragement to develop new ideas. They emphasize that support for intrapreneurship must start with top executives and work its way down in the form of policies, programs, and reward systems. "The real challenge for any company trying to unleash new businesses is that people have to believe that this is not an unnatural act," Gary Hamel explained in *Inc.* "This is what's going to have to happen in companies-bringing ideas, capital, and talent together from all

across the corporate entities. Companies have to learn how to leverage the competencies and the assets that they already have within.” Some companies foster intrapreneurship by encouraging employees to form competing teams that function like small businesses or internal vendors. Other companies create formal innovation programs to ensure that every new idea receives a fair hearing. In some companies, upper management behaves like a venture capital firm, evaluating and providing financial support for promising new ideas.

Employees who succeed as intrapreneurs tend to possess many of the same talents and traits as traditional entrepreneurs as well as a commitment to the organization and its goals. Working within an existing company—rather than launching an independent start-up business—offers a number of advantages to such individuals. Access to the company’s resources increases their chances of success, for example, while maintaining a salaried position provides them with added security in case of failure. Intrapreneurs also gain experience that they can apply to future entrepreneurial ventures, as well as a stimulating work environment. In this way, supporting intrapreneurship can help companies retain valuable employees. “One of the most wonderful things organizations have going for them is that people already have an intrinsic desire to go beyond—to learn, to grow, and to aspire to possibilities within themselves,” according to Jacqueline Byrd and Paul Lockwood Brown, authors of *The Innovation Equation*.

Numerous books, articles, Web sites, and workshops exist to provide advice for companies and employees hoping to take advantage of the opportunities presented by intrapreneurship. In general, such sources recommend that intrapreneurs be willing to take risks, find an internal champion from senior management, negotiate measures of success for their project, ensure that the project is given adequate time to succeed, and select fellow employees who can contribute needed skills. Some of the major factors that inhibit intrapreneurship include resistance to change in organizations, a corporate bureaucracy that slows down project approval, a refusal to allocate resources to new ideas, a lack of training and support for employees, low rewards for success coupled with high costs of failure, and performance evaluation based solely on job descriptions. “When you set up a new unit, be careful that you steer a line between two paths,” Hamel explained. “Totally isolating it, which is fine if it isn’t at all related to what you’re doing, and giving it a bear hug, where you hold on to it so tight that it can never escape the gravitational pull of old beliefs.”

SEE ALSO: Creativity; Entrepreneurship

Laurie Hillstrom

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## INVENTORY MANAGEMENT

Inventory management, or inventory control, is an attempt to balance inventory needs and requirements with the need to minimize costs resulting from obtaining and holding inventory. There are several schools of thought that view inventory and its function differently. These will be addressed later, but first we present a foundation to facilitate the reader’s understanding of inventory and its function.

### WHAT IS INVENTORY?

Inventory is a quantity or store of goods that is held for some purpose or use (the term may also be used as a verb, meaning to take inventory or to count all goods held in inventory). Inventory may be kept “in-house,” meaning on the premises or nearby for immediate use; or it may be held in a distant warehouse or distribution center for future use. With the exception of firms utilizing just-in-time methods, more often than not, the term “inventory” implies a stored quantity of goods that exceeds what is needed for the firm to function at the current time (e.g., within the next few hours).

### WHY KEEP INVENTORY?

Why would a firm hold more inventory than is currently necessary to ensure the firm’s operation? The following is a list of reasons for maintaining what would appear to be “excess” inventory.

Table 1

	January	February	March	April	May	June
Demand	50	50	0	100	200	200
Produce	100	100	100	100	100	100
Month-end inventory	50	100	200	200	100	0

**MEET DEMAND.** In order for a retailer to stay in business, it must have the products that the customer wants on hand when the customer wants them. If not, the retailer will have to back-order the product. If the customer can get the good from some other source, he or she may choose to do so rather than electing to allow the original retailer to meet demand later (through back-order). Hence, in many instances, if a good is not in inventory, a sale is lost forever.

**KEEP OPERATIONS RUNNING.** A manufacturer must have certain purchased items (raw materials, components, or subassemblies) in order to manufacture its product. Running out of only one item can prevent a manufacturer from completing the production of its finished goods.

Inventory between successive dependent operations also serves to decouple the dependency of the operations. A machine or workcenter is often dependent upon the previous operation to provide it with parts to work on. If work ceases at a workcenter, then all subsequent centers will shut down for lack of work. If a supply of work-in-process inventory is kept between each workcenter, then each machine can maintain its operations for a limited time, hopefully until operations resume the original center.

**LEAD TIME.** Lead time is the time that elapses between the placing of an order (either a purchase order or a production order issued to the shop or the factory floor) and actually receiving the goods ordered.

If a supplier (an external firm or an internal department or plant) cannot supply the required goods on demand, then the client firm must keep an inventory of the needed goods. The longer the lead time, the larger the quantity of goods the firm must carry in inventory.

A just-in-time (JIT) manufacturing firm, such as Nissan in Smyrna, Tennessee, can maintain extremely low levels of inventory. Nissan takes delivery on truck seats as many as 18 times per day. However, steel mills may have a lead time of up to three months. That means that a firm that uses steel produced at the mill must place orders at least three months in advance of their need. In order to keep their operations running in the meantime, an on-hand inventory of three months' steel requirements would be necessary.

**HEDGE.** Inventory can also be used as a hedge against price increases and inflation. Salesmen routinely call

purchasing agents shortly before a price increase goes into effect. This gives the buyer a chance to purchase material, in excess of current need, at a price that is lower than it would be if the buyer waited until after the price increase occurs.

**QUANTITY DISCOUNT.** Often firms are given a price discount when purchasing large quantities of a good. This also frequently results in inventory in excess of what is currently needed to meet demand. However, if the discount is sufficient to offset the extra holding cost incurred as a result of the excess inventory, the decision to buy the large quantity is justified.

**SMOOTHING REQUIREMENTS.** Sometimes inventory is used to smooth demand requirements in a market where demand is somewhat erratic. Consider the demand forecast and production schedule outlined in Table 1.

Notice how the use of inventory has allowed the firm to maintain a steady rate of output (thus avoiding the cost of hiring and training new personnel), while building up inventory in anticipation of an increase in demand. In fact, this is often called anticipation inventory. In essence, the use of inventory has allowed the firm to move demand requirements to earlier periods, thus smoothing the demand.

## CONTROLLING INVENTORY

Firms that carry hundreds or even thousands of different part numbers can be faced with the impossible task of monitoring the inventory levels of each part number. In order to facilitate this, many firm's use an ABC approach. ABC analysis is based on Pareto Analysis, also known as the "80/20" rule. The 80/20 comes from Pareto's finding that 20 percent of the populace possessed 80 percent of the wealth. From an inventory perspective it can restated thusly: approximately 20 percent of all inventory items represent 80 percent of inventory costs. Therefore, a firm can control 80 percent of its inventory costs by monitoring and controlling 20 percent of its inventory. But, it has to be the correct 20 percent.

The top 20 percent of the firm's most costly items are termed "A" items (this should approximately represent 80 percent of total inventory costs). Items that are extremely inexpensive or have low demand are termed "C" items, with "B" items falling

in between A and C items. The percentages may vary with each firm, but B items usually represent about 30 percent of the total inventory items and 15 percent of the costs. C items generally constitute 50 percent of all inventory items but only around 5 percent of the costs.

By classifying each inventory item as an A, B or C the firm can determine the resources (time, effort and money) to dedicate to each item. Usually this means that the firm monitors A items very closely but can check on B and C items on a periodic basis (for example, monthly for B items and quarterly for C items).

Another control method related to the ABC concept is cycle counting. Cycle counting is used instead of the traditional “once-a-year” inventory count where firms shut down for a short period of time and physically count all inventory assets in an attempt to reconcile any possible discrepancies in their inventory records. When cycle counting is used the firm is continually taking a physical count but not of total inventory.

A firm may physically count a certain section of the plant or warehouse, moving on to other sections upon completion, until the entire facility is counted. Then the process starts all over again.

The firm may also choose to count all the A items, then the B items, and finally the C items. Certainly, the counting frequency will vary with the classification of each item. In other words, A item may be counted monthly, B items quarterly, and C items yearly. In addition the required accuracy of inventory records may vary according to classification, with A items requiring the most accurate record keeping.

## BALANCING INVENTORY AND COSTS

As stated earlier, inventory management is an attempt to maintain an adequate supply of goods while minimizing inventory costs. We saw a variety of reasons companies hold inventory and these reasons dictate what is deemed to be an adequate supply of inventory. Now, how do we balance this supply with its costs? First let’s look at what kind of costs we are talking about.

There are three types of costs that together constitute total inventory costs: holding costs, set-up costs, and purchasing costs.

**HOLDING COSTS.** Holding costs, also called carrying costs, are the costs that result from maintaining the inventory. Inventory in excess of current demand frequently means that its holder must provide a place for its storage when not in use. This could range from a small storage area near the production line to a huge warehouse or distribution center. A storage facility requires personnel to move the inventory when needed

and to keep track of what is stored and where it is stored. If the inventory is heavy or bulky, forklifts may be necessary to move it around.

Storage facilities also require heating, cooling, lighting, and water. The firm must pay taxes on the inventory, and opportunity costs occur from the lost use of the funds that were spent on the inventory. Also, obsolescence, pilferage (theft), and shrinkage are problems. All of these things add cost to holding or carrying inventory.

If the firm can determine the cost of holding one unit of inventory for one year ( $H$ ) it can determine its annual holding cost by multiplying the cost of holding one unit by the average inventory held for a one-year period. Average inventory can be computed by dividing the amount of goods that are ordered every time an order is placed ( $Q$ ) by two. Thus, average inventory is expressed as  $Q/2$ . Annual holding cost, then, can be expressed as  $H(Q/2)$ .

**SET-UP COSTS.** Set-up costs are the costs incurred from getting a machine ready to produce the desired good. In a manufacturing setting this would require the use of a skilled technician (a cost) who disassembles the tooling that is currently in use on the machine. The disassembled tooling is then taken to a tool room or tool shop for maintenance or possible repair (another cost). The technician then takes the currently needed tooling from the tool room (where it has been maintained; another cost) and brings it to the machine in question.

There the technician has to assemble the tooling on the machine in the manner required for the good to be produced (this is known as a “set-up”). Then the technician has to calibrate the machine and probably will run a number of parts, that will have to be scrapped (a cost), in order to get the machine correctly calibrated and running. All the while the machine has been idle and not producing any parts (opportunity cost). As one can see, there is considerable cost involved in set-up.

If the firm purchases the part or raw material, then an order cost, rather than a set-up cost, is incurred. Ordering costs include the purchasing agent’s salary and travel/entertainment budget, administrative and secretarial support, office space, copiers and office supplies, forms and documents, long-distance telephone bills, and computer systems and support. Also, some firms include the cost of shipping the purchased goods in the order cost.

If the firm can determine the cost of one set-up ( $S$ ) or one order, it can determine its annual setup/order cost by multiplying the cost of one set-up by the number of set-ups made or orders placed annually. Suppose a firm has an annual demand ( $D$ ) of 1,000 units. If the firm orders 100 units ( $Q$ ) every time it

places and order, the firm will obviously place 10 orders per year ( $D/Q$ ). Hence, annual set-up/order cost can be expressed as  $S(D/Q)$ .

**PURCHASING COST.** Purchasing cost is simply the cost of the purchased item itself. If the firm purchases a part that goes into its finished product, the firm can determine its annual purchasing cost by multiplying the cost of one purchased unit ( $P$ ) by the number of finished products demanded in a year ( $D$ ). Hence, purchasing cost is expressed as  $PD$ .

Now total inventory cost can be expressed as:

$$\begin{aligned} \text{Total} &= \text{Holding cost} + \text{Set-up/Order cost} + \text{Purchasing cost} \\ \text{or} \\ \text{Total} &= H(Q/2) + S(D/Q) + PD \end{aligned}$$

If holding costs and set-up costs were plotted as lines on a graph, the point at which they intersect (that is, the point at which they are equal) would indicate the lowest total inventory cost. Therefore, if we want to minimize total inventory cost, every time we place an order, we should order the quantity ( $Q$ ) that corresponds to the point where the two values are equal. If we set the two costs equal and solve for  $Q$  we get:

$$\begin{aligned} H(Q/2) &= S(D/Q) \\ Q &= 2DS/H \end{aligned}$$

The quantity  $Q$  is known as the economic order quantity (EOQ). In order to minimize total inventory cost, the firm will order  $Q$  every time it places an order. For example, a firm with an annual demand of 12,000 units (at a purchase price of \$25 each), annual holding cost of \$10 per unit and an order cost of \$150 per order (with orders placed once a month) could save \$800 annually by utilizing the EOQ. First, we determine the total costs without using the EOQ method:

$$Q = \$10(1000/2) + \$150(12,000/1000) + \$25(12,000) = \$306,800$$

Then we calculate EOQ:

$$\text{EOQ} = 2(12,000)(\$150)/\$10 = 600$$

And we calculate total costs at the EOQ of 600:

$$Q = \$10(600/2) + \$150(12,000/600) + \$25(12,000) = \$306,000$$

Finally, we subtract the total cost of  $Q$  from  $Q$  to determine the savings:

$$\$306,800 - \$306,000 = \$800$$

Notice that if you remove purchasing cost from the equation, the savings is still \$800. We might assume this means that purchasing cost is not relevant to our order decision and can be eliminated from the equation. It must be noted that this is true only as long as no quantity discount exists. If a quantity discount is available, the firm must determine whether the savings of the quantity discount are sufficient to offset the loss of the savings resulting from the use of the EOQ.

There are a number of assumptions that must be made with the use of the EOQ. These include:

- Only one product is involved.
- Deterministic demand (demand is known with certainty).
- Constant demand (demand is stable throughout the year).
- No quantity discounts.
- Constant costs (no price increases or inflation).

While these assumptions would seem to make EOQ irrelevant for use in a realistic situation, it is relevant for items that have independent demand. This means that the demand for the item is not derived from the demand for something else (usually a parent item for which the unit in question is a component). For example, the demand for steering wheels would be derived from the demand for automobiles (dependent demand) but the demand for purses is not derived from anything else; purses have independent demand.

## OTHER LOT-SIZING TECHNIQUES

There are a number of other lot-sizing techniques available in addition to EOQ. These include the fixed-order quantity, fixed-order-interval model, the single-period model, and part-period balancing.

**FIXED-ORDER-QUANTITY MODEL.** EOQ is an example of the fixed-order-quantity model since the same quantity is ordered every time an order is placed. A firm might also use a fixed-order quantity when it is captive to packaging situations. If you were to walk into an office supply store and ask to buy 22 paper clips, chances are you would walk out with 100 paper clips. You were captive to the packaging requirements of paper clips, i.e., they come 100 to a box and you cannot purchase a partial box. It works the same way for other purchasing situations. A supplier may package their goods in certain quantities so that their customers must buy that quantity or a multiple of that quantity.

**FIXED-ORDER-INTERVAL MODEL.** The fixed-order-interval model is used when orders have to be placed at fixed time intervals such as weekly, biweekly, or monthly. The lot size is dependent upon how much inventory is needed from the time of order until the next order must be placed (order cycle). This system requires periodic checks of inventory levels and is used by many retail firms such as drug stores and small grocery stores.

**SINGLE-PERIOD MODEL.** The single-period model is used in ordering perishables, such as food and flowers, and items with a limited life, such as newspapers.

Unsold or unused goods are not typically carried over from one period to another and there may even be some disposal costs involved. This model tries to balance the cost of lost customer goodwill and opportunity cost that is incurred from not having enough inventory, with the cost of having excess inventory left at the end of a period.

**PART-PERIOD BALANCING.** Part-period balancing attempts to select the number of periods covered by the inventory order that will make total carrying costs as close as possible to the set-up/order cost.

When a proper lot size has been determined, utilizing one of the above techniques, the reorder point, or point at which an order should be placed, can be determined by the rate of demand and the lead time. If safety stock is necessary it would be added to the reorder point quantity.

Reorder point =  
Expected demand during lead time + Safety stock

Thus, an inventory item with a demand of 100 per month, a two-month lead time and a desired safety stock of two weeks would have reorder point of 250. In other words, an order would be placed whenever the inventory level for that good reached 250 units.

Reorder point =  
 $100/\text{month} \times 2 \text{ months} + 2 \text{ weeks' safety stock} = 250$

## OTHER SCHOOLS OF THOUGHT IN INVENTORY MANAGEMENT

There are a number of techniques and philosophies that view inventory management from different perspectives.

**MRP AND MRP II.** MRP and MRP II are computer-based resource management systems designed for items that have dependent demand. MRP and MRP II look at order quantities period by period and, as such, allow discrete ordering (ordering only what is currently needed). In this way inventory levels can be kept at a very low level; a necessity for a complex item with dependent demand.

**JUST-IN-TIME (JIT).** Just-in-time (JIT) is a philosophy that advocates the lowest possible levels of inventory. JIT espouses that firms need only keep inventory in the right quantity at the right time with the right quality. The ideal lot size for JIT is one, even though one hears the term “zero inventory” used.

**THEORY OF CONSTRAINTS (TOC).** Theory of constraints (TOC) is a philosophy which emphasizes that all management actions should center around the firm's constraints. While it agrees with JIT that inventory should be at the lowest level possible in most instances, it advocates that there be some buffer inventory around

any capacity constraint (e.g., the slowest machine) and before finished goods.

## THE FUTURE OF INVENTORY MANAGEMENT

The advent, through altruism or legislation, of environmental management has added a new dimension to inventory management—reverse supply chain logistics. Environmental management has expanded the number of inventory types that firms have to coordinate. In addition to raw materials, work-in-process, finished goods, and MRO goods, firms now have to deal with post-consumer items such as scrap, returned goods, reusable or recyclable containers, and any number of items that require repair, reuse, recycling, or secondary use in another product. Retailers have the same type problems dealing with inventory that has been returned due to defective material or manufacture, poor fit, finish, or color, or outright “I changed my mind” responses from customers.

Finally, supply chain management has had a considerable impact on inventory management. Instead of managing one's inventory to maximize profit and minimize cost for the individual firm, today's firm has to make inventory decisions that benefit the entire supply chain.

SEE ALSO: Aggregate Planning; Inventory Types; Lean Manufacturing and Just-in-Time Production; Manufacturing Resources Planning; Reverse Supply Chain Logistics; Supply Chain Management

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## INVENTORY TYPES

Inventory is defined as a stock or store of goods. These goods are maintained on hand at or near a business's location so that the firm may meet demand and fulfill its reason for existence. If the firm is a retail establishment, a customer may look elsewhere to have his or her needs satisfied if the firm does not

have the required item in stock when the customer arrives. If the firm is a manufacturer, it must maintain some inventory of raw materials and work-in-process in order to keep the factory running. In addition, it must maintain some supply of finished goods in order to meet demand.

Sometimes, a firm may keep larger inventory than is necessary to meet demand and keep the factory running under current conditions of demand. If the firm exists in a volatile environment where demand is dynamic (i.e., rises and falls quickly), an on-hand inventory could be maintained as a buffer against unexpected changes in demand. This buffer inventory also can serve to protect the firm if a supplier fails to deliver at the required time, or if the supplier's quality is found to be substandard upon inspection, either of which would otherwise leave the firm without the necessary raw materials. Other reasons for maintaining an unnecessarily large inventory include buying to take advantage of quantity discounts (i.e., the firm saves by buying in bulk), or ordering more in advance of an impending price increase.

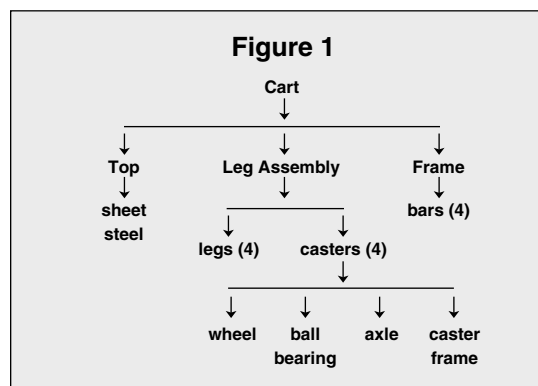
Generally, inventory types can be grouped into four classifications: raw material, work-in-process, finished goods, and MRO goods.

## RAW MATERIALS

Raw materials are inventory items that are used in the manufacturer's conversion process to produce components, subassemblies, or finished products. These inventory items may be commodities or extracted materials that the firm or its subsidiary has produced or extracted. They also may be objects or elements that the firm has purchased from outside the organization. Even if the item is partially assembled or is considered a finished good to the supplier, the purchaser may classify it as a raw material if his or her firm had no input into its production. Typically, raw materials are commodities such as ore, grain, minerals, petroleum, chemicals, paper, wood, paint, steel, and food items. However, items such as nuts and bolts, ball bearings, key stock, casters, seats, wheels, and even engines may be regarded as raw materials if they are purchased from outside the firm.

The bill-of-materials file in a material requirements planning system (MRP) or a manufacturing resource planning (MRP II) system utilizes a tool known as a product structure tree to clarify the relationship among its inventory items and provide a basis for filling out, or "exploding," the master production schedule. Consider an example of a rolling cart. This cart consists of a top that is pressed from a sheet of steel, a frame formed from four steel bars, and a leg assembly consisting of four legs, rolled from sheet steel, each with a caster attached. An example

of this cart's product structure tree is presented in Figure 1.



Generally, raw materials are used in the manufacture of components. These components are then incorporated into the final product or become part of a subassembly. Subassemblies are then used to manufacture or assemble the final product. A part that goes into making another part is known as a component, while the part it goes into is known as its parent. Any item that does not have a component is regarded as a raw material or purchased item. From the product structure tree it is apparent that the rolling cart's raw materials are steel, bars, wheels, ball bearings, axles, and caster frames.

## WORK-IN-PROCESS

Work-in-process (WIP) is made up of all the materials, parts (components), assemblies, and subassemblies that are being processed or are waiting to be processed within the system. This generally includes all material—from raw material that has been released for initial processing up to material that has been completely processed and is awaiting final inspection and acceptance before inclusion in finished goods.

Any item that has a parent but is not a raw material is considered to be work-in-process. A glance at the rolling cart product structure tree example reveals that work-in-process in this situation consists of tops, leg assemblies, frames, legs, and casters. Actually, the leg assembly and casters are labeled as subassemblies because the leg assembly consists of legs and casters and the casters are assembled from wheels, ball bearings, axles, and caster frames.

## FINISHED GOODS

A finished good is a completed part that is ready for a customer order. Therefore, finished goods inventory is the stock of completed products. These goods have been inspected and have passed final inspection requirements so that they can be transferred out of

work-in-process and into finished goods inventory. From this point, finished goods can be sold directly to their final user, sold to retailers, sold to wholesalers, sent to distribution centers, or held in anticipation of a customer order.

Any item that does not have a parent can be classified as a finished good. By looking at the rolling cart product structure tree example one can determine that the finished good in this case is a cart.

Inventories can be further classified according to the purpose they serve. These types include transit inventory, buffer inventory, anticipation inventory, decoupling inventory, cycle inventory, and MRO goods inventory. Some of these also are known by other names, such as speculative inventory, safety inventory, and seasonal inventory. We already have briefly discussed some of the implications of a few of these inventory types, but will now discuss each in more detail.

### TRANSIT INVENTORY

Transit inventories result from the need to transport items or material from one location to another, and from the fact that there is some transportation time involved in getting from one location to another. Sometimes this is referred to as pipeline inventory. Merchandise shipped by truck or rail can sometimes take days or even weeks to go from a regional warehouse to a retail facility. Some large firms, such as automobile manufacturers, employ freight consolidators to pool their transit inventories coming from various locations into one shipping source in order to take advantage of economies of scale. Of course, this can greatly increase the transit time for these inventories, hence an increase in the size of the inventory in transit.

### BUFFER INVENTORY

As previously stated, inventory is sometimes used to protect against the uncertainties of supply and demand, as well as unpredictable events such as poor delivery reliability or poor quality of a supplier's products. These inventory cushions are often referred to as safety stock. Safety stock or buffer inventory is any amount held on hand that is over and above that currently needed to meet demand. Generally, the higher the level of buffer inventory, the better the firm's customer service. This occurs because the firm suffers fewer "stock-outs" (when a customer's order cannot be immediately filled from existing inventory) and has less need to backorder the item, make the customer wait until the next order cycle, or even worse, cause the customer to leave empty-handed to find another supplier. Obviously, the better the customer service the greater the likelihood of customer satisfaction.

### ANTICIPATION INVENTORY

Oftentimes, firms will purchase and hold inventory that is in excess of their current need in anticipation of a possible future event. Such events may include a price increase, a seasonal increase in demand, or even an impending labor strike. This tactic is commonly used by retailers, who routinely build up inventory months before the demand for their products will be unusually high (i.e., at Halloween, Christmas, or the back-to-school season). For manufacturers, anticipation inventory allows them to build up inventory when demand is low (also keeping workers busy during slack times) so that when demand picks up the increased inventory will be slowly depleted and the firm does not have to react by increasing production time (along with the subsequent increase in hiring, training, and other associated labor costs). Therefore, the firm has avoided both excessive overtime due to increased demand and hiring costs due to increased demand. It also has avoided layoff costs associated with production cut-backs, or worse, the idling or shutting down of facilities. This process is sometimes called "smoothing" because it smooths the peaks and valleys in demand, allowing the firm to maintain a constant level of output and a stable workforce.

### DECOUPLING INVENTORY

Very rarely, if ever, will one see a production facility where every machine in the process produces at exactly the same rate. In fact, one machine may process parts several times faster than the machines in front of or behind it. Yet, if one walks through the plant it may seem that all machines are running smoothly at the same time. It also could be possible that while passing through the plant, one notices several machines are under repair or are undergoing some form of preventive maintenance. Even so, this does not seem to interrupt the flow of work-in-process through the system. The reason for this is the existence of an inventory of parts between machines, a decoupling inventory that serves as a shock absorber, cushioning the system against production irregularities. As such it "decouples" or disengages the plant's dependence upon the sequential requirements of the system (i.e., one machine feeds parts to the next machine).

The more inventory a firm carries as a decoupling inventory between the various stages in its manufacturing system (or even distribution system), the less coordination is needed to keep the system running smoothly. Naturally, logic would dictate that an infinite amount of decoupling inventory would not keep the system running in peak form. A balance can be reached that will allow the plant to run relatively smoothly without maintaining an absurd level of inventory. The cost of efficiency must be weighed against the cost of carrying excess inventory so that there is an

optimum balance between inventory level and coordination within the system.

## CYCLE INVENTORY

Those who are familiar with the concept of economic order quantity (EOQ) know that the EOQ is an attempt to balance inventory holding or carrying costs with the costs incurred from ordering or setting up machinery. When large quantities are ordered or produced, inventory holding costs are increased, but ordering/setup costs decrease. Conversely, when lot sizes decrease, inventory holding/carrying costs decrease, but the cost of ordering/setup increases since more orders/setups are required to meet demand. When the two costs are equal (holding/carrying costs and ordering/setup costs) the total cost (the sum of the two costs) is minimized. Cycle inventories, sometimes called lot-size inventories, result from this process. Usually, excess material is ordered and, consequently, held in inventory in an effort to reach this minimization point. Hence, cycle inventory results from ordering in batches or lot sizes rather than ordering material strictly as needed.

## MRO GOODS INVENTORY

Maintenance, repair, and operating supplies, or MRO goods, are items that are used to support and maintain the production process and its infrastructure. These goods are usually consumed as a result of the production process but are not directly a part of the finished product. Examples of MRO goods include oils, lubricants, coolants, janitorial supplies, uniforms, gloves, packing material, tools, nuts, bolts, screws, shim stock, and key stock. Even office supplies such as staples, pens and pencils, copier paper, and toner are considered part of MRO goods inventory.

## THEORETICAL INVENTORY

In their book *Managing Business Process Flows: Principles of Operations Management*, Anupindi, Chopra, Deshmukh, Van Mieghem, and Zemel discuss a final type of inventory known as theoretical inventory. They describe theoretical inventory as the average inventory for a given throughput assuming that no

WIP item had to wait in a buffer. This would obviously be an ideal situation where inflow, processing, and outflow rates were all equal at any point in time. Unless one has a single process system, there always will be some inventory within the system. Theoretical inventory is a measure of this inventory (i.e., it represents the minimum inventory needed for goods to flow through the system without waiting). The authors formally define it as the minimum amount of inventory necessary to maintain a process throughput of  $R$ , expressed as:

$$\begin{aligned}\text{Theoretical Inventory} &= \text{Throughput} \times \text{Theoretical Flow Time} \\ I_{th} &= R \times T_{th}\end{aligned}$$

In this equation, theoretical flow time equals the sum of all activity times (not wait time) required to process one unit. Therefore, WIP will equal theoretical inventory whenever actual process flow time equals theoretical flow time.

Inventory exists in various categories as a result of its position in the production process (raw material, work-in-process, and finished goods) and according to the function it serves within the system (transit inventory, buffer inventory, anticipation inventory, decoupling inventory, cycle inventory, and MRO goods inventory). As such, the purpose of each seems to be that of maintaining a high level of customer service or part of an attempt to minimize overall costs.

SEE ALSO: Inventory Management; Theory of Constraints

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## FURTHER READING:

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# J

## JAPANESE MANAGEMENT

The Japanese have had phenomenal impact on world markets. Many industries, such as electronics, cameras, watches, motorcycles, machine tools, automotive products, shipbuilding, and even some aspects of aerospace are either dominated by Japanese firms or are heavily impacted by them.

Many people mistakenly attribute this phenomenon strictly to cultural differences. The vision of dedicated Japanese workers giving their life to the company for substandard wages surely accounts for the difference, they reason. Of course, this view doesn't always square with reality. First, Japanese factories have some of the highest wage structures seen outside the United States. Second, this "Japanese miracle" is also happening outside Japan. Most Japanese automobile manufacturers have successful plants located within the United States; all of them manufacturing quality automobiles utilizing American workers. When Matsushita bought a U.S. television plant in Chicago, they managed to maintain the 1,000 hourly employees while trimming the indirect labor by half. Utilizing the same workers employed by the U.S. firm, Matsushita doubled daily production while improving quality 40-fold. Outside warranty costs fell from \$16 million per year to \$2 million per year while selling twice as many sets.

Word of these success stories soon aroused considerable interest from U.S. firms. Interest in Japanese management was first generated in the U.S. with the appearance of a book by William Ouchi entitled "Theory Z", and later a book by Richard J. Schonberger entitled "Japanese Manufacturing Techniques: Nine Hidden Lessons in Simplicity", and the broadcast of

an NBC television white paper entitled "If Japan Can, Why Can't We?"

William Ouchi's book "Theory Z" detailed much of the success being realized by the Japanese manufacturing firms. The Japanese style of management (as opposed to McGregor's Theory X and Theory Y) mystified many U.S. businessmen with its talk of cultural differences and notions such as lifetime employment.

In his book "Japanese Manufacturing Techniques: Nine Hidden Lessons in Simplicity", Richard Schonberger presented nine "lessons" the world could learn from the Japanese. These lessons included:

1. Management technology is a highly transportable technology.
2. Just-in-time production exposes problems otherwise hidden by excess inventories and staff.
3. Quality begins with production, and requires a company-wide "habit of improvement."
4. Culture is no obstacle; techniques can change behavior.
5. Simplify, and goods will flow like water.
6. Flexibility opens doors.
7. Travel light and make numerous trips, like the water beetle.
8. More self-improvement, fewer programs, less specialist intervention.
9. Simplicity is the natural state.

For many American business executives this was their first encounter with the concepts (and even just the terms) of just-in-time, kanban, Total Quality Management, and quality circles.

The NBC documentary “If Japan Can Why Can’t We?” introduced Americans to the progress made in Japanese manufacturing and served as a “wake-up call” for American businesses that manufacturing had entered a new generation. For many viewers, this was their first introduction to W. Edwards Deming, statistical process control (SPC), and quality circles.

By the early 1980s it was evident that Japan was well on its way to the position as a worldwide dominant force in manufacturing that it enjoys today. Japan’s rise to economic dominance sent ripples throughout the industrialized world. Since the early 1960s Japan has systematically increased its share of world trade in industrial and consumer goods, although persistent economic problems during the 1990s have arrested its rapid growth.

A number of reasons have been tendered to explain the success of the Japanese. When Japanese automobile manufacturers’ market position began to strengthen in the 1970s it was easy to suppose that the 1973 Arab oil embargo and subsequent escalation in gas prices was the antecedent. Customers were sent searching for small fuel-efficient vehicles. Since the Japanese were already entrenched in the small car market, they had a considerable natural competitive advantage. However, it was expected that this advantage would wane as the Big Three automakers had time to react by incorporating small cars into their product line and as oil prices began to decrease.

However, as the Big Three were able to produce smaller cars and gas prices fell, the Japanese market share of the automobile industry continued to increase. Nor did this reasoning account for the simultaneous surge in Japanese market share in areas such as steel, consumer electronics, copiers and heavy equipment. After all, if the oil embargo was responsible for the increase in Japanese market share why didn’t other traditional small car manufacturers such as Renault and Volkswagen have comparable success? Manufacturers began to realize that the Japanese success story was more than simply a matter of timing.

## HISTORY

When Japanese industry was in its infancy stage, the Japanese market was too small to absorb the increasing domestic production. Japan needed a global market in order to further develop. By creating an export market, Japan was able to structurally transform its economy, thereby granting it access to the technology it needed to develop.

The Japanese goal became one of full employment through industrialization. This called for dominating the market in very select product areas. They carefully chose areas in which they had the confidence to dominate and concentrated on them rather than diluting their efforts over many areas.

A number of tactics were utilized to support this strategy. First of all, the Japanese imported their technology, thus avoiding the risks involved with major R&D expenditures. Instead, they negotiated license agreements to make workable new products. Then the best engineering talent was directed to the plant floor rather than to the product design department, thereby concentrating their ingenuity on high productivity and low cost rather than innovative design. Finally, they strove continuously to improve quality and reliability to the highest possible levels and then beyond; to levels competitors could not or would not supply. Implementation of these tactics was guided by a solid respect for people and the belief that waste must be eliminated (these two areas are discussed in depth below).

The Japanese example of success shows that neither massive research and development investment nor abundant natural resources is necessary for sustainable industrial development. For years Japan was well known as an imitator not an innovator as they copied, borrowed, and licensed technology from other countries. By building competence in adapting existing product designs and speeding up the processes the Japanese were able to manufacture superior quality at competitive prices, giving them a distinct advantage in world markets.

Japan showed the world that efficient production and quality control methods could overcome transportation cost disadvantages and tariff costs. They proved that cultural differences could be overcome and that the critical cultural points necessary for successful production could be transferred across national boundaries.

Japan’s success as an economic superpower strongly implied that the West might lose its world dominance as the leader in technology. Emboldened by the success of the Japanese, other Pacific Rim countries began to follow their example, thus accelerating the diffusion of innovative technology throughout the industrial world. Actually, new centers of industrial superiority were created as a result.

Japan’s success is also an indicator of the importance of quality as a strategic variable. When it looked like Japan could only hope to carve out a niche as a producer of outdated Western goods for the Asian market, Japanese leadership came to the conclusion that it could play a leading role in global industry by changing its quality image; a change made by producing quality goods for a sustained period of time. The Japanese learned from the price they paid for their reputation for inferior-quality products. They learned that quality reputations are built by producing quality products with a painstaking attention to detail and craftsmanship. They were also willing to make the necessary investment in human resources and technology needed to improve their quality image.

Synonymous with the improvement in quality was a profound improvement in Japan's position in global markets. From a weak position in the television market in the 1960s, Japan became the world's largest producer and exporter of household television sets in the world. They are sure to dominate the market for the coming revolution in high-resolution television. They totally dominate the VCR market and are challenging companies such as Intel in the market for large-scale integrated circuits.

In the early 1960s North American, British, and German motorcycle manufacturers lead the market. Today, Harley-Davidson is the only serious competitor for Japanese made motorcycles. In fact, Harley-Davidson teetered on the brink of nonexistence until wholeheartedly adopting Japanese manufacturing techniques, most notably just-in-time and Total Quality Management. Another example, Xerox, suffered embarrassing market share losses to Japanese manufacturers Canon, Sharp, and Minolta.

The emphasis placed on quality by Japanese manufacturers has been continuous since the inspiration derived from the first visit of Dr. W. Edwards Deming. Today, Japan is certainly seen as the worldwide symbol of quality. While Western firms measure quality in parts per thousand (the acceptable quality level or AQL), the leading Japanese manufacturers are achieving defects that are barely measurable, perhaps 3.4 defective parts per million. The Japanese turnaround in quality can clearly be attributed to such variables as worker training, employee involvement, and firm wide delegation of authority and responsibility for quality. A change in attitude and vision on the part of Japanese top management brought quality to the forefront as a strategic mission, one that allowed them to liberate the creative talent and resources necessary for long-term improvement and the eventual mastery of the quality concept.

## RESPECT FOR PEOPLE

There are a number of facets to the Japanese respect for and treatment of workers. One of the most prominent is lifetime employment, which gained notoriety from William Ouchi's book "Theory Z". When many Japanese workers are hired for permanent positions in major industrial firms, they can generally consider it a job for life. However, this kind of benefit applies only to permanent workers, about one-third of the Japanese workforce. It is felt that if workers can stay with one firm for life, they more easily identify with the firm's goals and objectives.

Unlike the case for American labor unions, workers who are members of Japanese labor unions identify more with the company than the type of work they are doing. Also, Japanese unions tend to share the management's view. The better the company performs,

the more the worker benefits. As a result, Japanese management believes in giving the workers more opportunity to expand their job boundaries rather than waiting until the worker proves himself. The Japanese also spend more on education and training, for all levels, than any other industrial nation. Also, because the Japanese believe that robots free people for more important tasks, they have invested heavily in robotics and automated equipment, making theirs perhaps the most automated manufacturing sector in the world.

Another area in which Japanese management has successfully tapped into worker potential is in the use of small group improvement activities (SGIA). One example is quality circles, a small group of volunteer employees who meet once a week, on a scheduled basis, to discuss their functions and the problems they are encountering. They then propose solutions and make a sincere attempt to implement real change.

Finally, the Japanese believe in what they call "bottom round" management. This concept, sometimes called consensus management or committee management, is an innate part of Japanese culture. It involves a slow decision-making process that attempts to reach a true consensus rather than a compromise. While the decision-making process is slow the implementation process is quite fast.

## ELIMINATION OF WASTE

When the Japanese say elimination of waste they mean anything other than the absolutely essential minimum amount of workers, equipment, and materials necessary to meet demand. This means no safety stock, no inventory stored for use in smoothing production requirements, and so forth. If it can't be used right now it is considered waste.

A number of concepts are central to this idea of waste elimination. Instead of building a large manufacturing plant that does everything, the Japanese tend to build small plants that are highly specialized and form them into focused factory networks. It is difficult to manage a large facility; the bigger it is the more bureaucratic it tends to be. Bureaucracy is not conducive to the Japanese style of management. Also, a specialized plant can be more economically constructed and operated.

Along with the idea of smaller plants, the Japanese make considerable use of group technology. Japanese engineers examine each operation required to make a part and attempt to group dissimilar machines into clusters designed to be work centers for a given part or family of parts, thus eliminating or at least greatly shortening the time necessary for set-up and changeover.

Just-in-time (JIT) production is an important part of waste elimination. In fact, JIT has often been defined as the elimination of waste. JIT is the production of precisely the necessary unit in the correct quantity at the correct time in order to maintain perfect performance to schedule. Over producing is considered just as bad as under producing since unnecessary inventory would be wasteful.

In order for JIT to work effectively, production must flow smoothly. Any changes can cause disturbances in the flow, which can be amplified throughout the supply chain, causing disruptions and delays. In order to ensure a more uniform flow, the Japanese adopt a uniform plant load. This means that they simply plan to build the same mix of products each day. If you run some of everything you need each day, it only takes one day before you have more (as opposed to large lot sizes which tie up capacity for lengthy periods, causing delays in shipping).

Uniform plant loading requires that everything be produced in small lot sizes, implying that the number of set-ups required will increase. The principle of economic order quantity (EOQ) states that as lot sizes increase set-up costs decrease but as lot sizes decrease set-up costs increase. Therefore, this emphasis on small lots requires that set-up times be minimized. Instead of taking established set-up times as a given, the Japanese have managed to reduce set-up times tremendously, often to the point of single digits (i.e., less than ten minutes).

The Japanese also use a self-regulating system for production control known as *kanban*. It uses dedicated containers and recycles traveling requisitions/cards (often known as *kanbans* themselves) to regulate the system. It is also referred to as a “pull” system since the authority to produce or supply comes from downstream operations.

Finally, the Japanese utilize a number of quality control techniques to ensure maximized quality and minimized waste. Among these are *jidoka*, *bakayoke*, and *poka-yoke*.

*Jidoka* is a quality concept that means “stop everything” whenever an error occurs. It is controlling quality at the source. Instead of using inspectors to find problems someone else created, the Japanese worker is his own inspector, responsible for his/her own quality. When an error or defect is discovered, the worker has the authority and the responsibility to halt the production process. Usually, this is controlled by some mechanism such as push buttons. When the line stops, lights flash, bell ring, and flags wave as all attention is directed at the problem.

The Japanese also believe that, whenever possible, inspection should be performed by a machine, for the sake of speed and accuracy. A technique known as *bakayoke* is used for this purpose. *Bakayokes* are

devices that are attached to machines to automatically check for abnormalities in the process, such as malfunction or tool wear, as well as measuring dimensions and warning when tolerances are close to being exceeded. For manual assembly, the Japanese utilize *poka-yoke* or mistake proofing.

Today, all these Japanese techniques have been repackaged and are now known as “Lean” management techniques. Even though JIT, *kanban*, and other tools have not changed in their application, the new “lean” label has removed some of the Japanese stigma and has made the tools more palatable. With the introduction of the lean label has also come a broader application of these principles to where they are now being used in the service sector and in the front office, with the same high degree of success.

## JAPANESE KEIRETSU

A *keiretsu* is an organizational structure unique to Japanese major corporations. While not all major Japanese businesses are *keiretsu*, most of Japan’s major corporate entities are. Moreover, the influence of the *keiretsu* on the Japanese business world is important even to non-*keiretsu* organizations. There are two types of *keiretsu*: the classical *keiretsu* and the vertically integrated *keiretsu*.

The so-called Big Six Japanese business groups are all examples of classical *keiretsu*. These are the Fuyo/Fuji Group, Sumitomo, Sanwa, Mitsui, Mitsubishi, and Daiichi-Kangyo Ginko. Classical *keiretsu* are bank-centered with no specific central industry.

While not considered classic *keiretsu*, many major single-industry companies in Japan are increasingly becoming viewed as vertical *keiretsu*. These include Hitachi, Toyota, Nissan, Toshiba, and Matsushita. These *keiretsu* are more pyramid-shaped, with a single industry or company at the pinnacle of the pyramid and the member companies collected beneath.

## KEIRETSU DEFINED

Japan’s *keiretsu* are not single entities. Each *keiretsu* is formed of an interdependent collection of individual firms woven into a common enterprise. In this, the *keiretsu* are similar to the Korean *chaebol*, but there the similarities stop.

The *keiretsu* form a type of family of member companies, each connected to the others through cross-shareholdership. In other words, each company within the *keiretsu* holds significant shares of stock in each of the other *keiretsu* members. The companies remain independent of each other, and are not subsidiaries of

holding companies, as holding companies were outlawed after World War II.

Additionally, the size of the keiretsu corporate families can be deceptive. Most keiretsu have well over 100 members, while many far exceed that amount. Hitachi alone has over 680 member firms and subsidiaries. While shareholder control is coordinated, technically the stock of each member firm in the keiretsu can be traded independently.

## CLASSICAL KEIRETSU

In the classical keiretsu, member firms share in the compositions of their boards of directors or council of presidents. While legally independent of each other, the boards of directors for each member firm are largely made up of the same members.

Although a coordinating role may be given to the head of the central bank around which the keiretsu is formed, there is no central president in a classical keiretsu. For example, its Twenty Presidents Council governs Sumitomo. This is the council made up of the presidents of many companies that bear the name Sumitomo, such as the Sumitomo Bank, Sumitomo Chemical, Sumitomo Metal Industries, Sumitomo Metal Mining, and so forth. Yet not all members of the Twenty Presidents Council run companies with the name Sumitomo in it. Thus, both the Japanese giants NEC and Nippon Sheet Glass are central members of the Sumitomo keiretsu, despite the name difference. In addition to the twenty member firms whose heads comprise Sumitomo's Twenty Presidents Council, the Sumitomo keiretsu has reach through its affiliated companies. These are often giant industrial concerns who have strong relationships to the Sumitomo keiretsu's central members or which have close ties to Sumitomo Bank. Among Sumitomo's affiliate companies are some of the most important companies in Japan, including Mazda Motors, Daishowa Paper, Asahi Breweries, Sanyo Electric, and Daikin Industries, among others. The relationships can be even more confusing when one takes into account that some companies bear the name Sumitomo that are not members of the central twenty Sumitomo keiretsu members. Instead, these companies are affiliated companies only despite names such as Sumitomo Precision Products, Sumitomo Rubber Industries, or Sumitomo Seika products.

Nor is Sumitomo exceptional among classical keiretsu. Indeed, it is considered the most closely unified of the Big Six classical keiretsu. A popular saying in corporate Japan is "Sumitomo for unity," indicating that the ties and connections of Sumitomo's member companies are the most closely knit (which also makes them the most transparent).

At the other extreme, Daiichi-Kangyo Ginko, itself formed only in 1978 through the merger of two

major bank-centered keiretsu, is highly complicated and is still in a state of settling its affairs out. Nevertheless, Daiichi-Kangyo is clearly run by its own Council of Forty-Seven Presidents centered around Daiichi-Kangyo Bank.

In any case, it is the coordination of shareholder-ships and directorships that allows the members of the classical keiretsu to act in concert financially, since members use the keiretsu's select bank and insurance companies. The banks, in turn, give favored treatment to keiretsu members, enabling comparatively easy access to financing of keiretsu projects.

Classical keiretsu often have no single industry on which they focus their output. Yet is their goal to create what is called a "one-set" principle. In the "one-set" principle, keiretsu members attempt to create a situation in which they would never have to rely on non-keiretsu firms to produce an end-product.

## VERTICALLY INTEGRATED KEIRETSU

More common than the classical keiretsu is the vertically integrated corporate giant that focuses on a single industry. Technically these giant companies may not be viewed as keiretsu, since they have no central bank and do tend to have a specific company with a single leader as their chairperson. Yet these corporate giants are increasingly beginning to resemble keiretsu in most other respects. As a result, it is unclear as to what is and is not an actual keiretsu.

Giant Japanese companies such as Toyota have begun to control enough subsidiary companies to attain a "one-set" principle. These large companies have become a sort of vertically-organized keiretsu that have grown out of a central manufacturing company. Thus companies like Toyota can be viewed as a single-industry keiretsu.

For example, beneath the central Toyota Motor Corporation are 12 direct group companies each tied only to a specialized function in the production of Toyota automobiles. These include Toyota Central R&D Laboratories, Kanto Auto Works (car assembly), Toyota Auto Body, Toyoda Machine Works, Toyoda Automatic Loom Works (which despite its name produces car engines), Aichi Steel Works, Toyoda Gosei (resin and rubber products), Toyoda Boshoku (air filters), Toyota Tsusho Corporation (the keiretsu's wholesaler), Towa Real Estate, Aisin Seiki (auto parts), and the giant Nippondenso (electronics).

Many of these twelve direct group companies, in turn, control several of their own subsidiaries. Thus, Nippondenso controls Nippon Wiperblade, Asmo, Tsuda Industries, and Anjo Denki, and so on. Similarly, Aisin Seiki controls Aichi Giken, Aisin Takaoka, and Aisin-AW.

In this way, Toyota's orientation is vertical and spreads downward in a pyramid of related companies. Like the classical keiretsu, Toyota also has many closely affiliated companies it does not control directly. Thus several companies are part of the greater Toyota Group without formally being part of its actual structure. These are controlled not by bank loans, as in the classical keiretsu, but by supplier dependence. Among the many major Japanese firms affiliated in this way as part of a greater Toyota keiretsu are Kyoho Machine Works, Chuo Spring, Trinity Industrial, Tokai Rika, Aisan Industries, and many others.

Nor is Toyota in any way atypical for vertically structured single-industry keiretsu. Similar relationships exist for Nippon Steel, Nissan, Hitachi, and Toshiba, and dozens of other large Japanese concerns.

#### RELATIVE INDEPENDENCE OF MEMBER FIRMS

Most keiretsu member firms act with considerably greater independence than subsidiary firms of large U.S., Canadian, or European companies. The Japanese firm that is a keiretsu member is highly specialized, and thus less able to stand as self-sufficient than its non-Japanese counterparts. Yet while this dependence in effect coordinates their actions with the keiretsu as a whole, the leaders of the keiretsu member firms make agreements and arrangements far separate from their central bank or parent company.

Indeed, several vertically organized keiretsu members, far from acting in the subservient role of the Western corporation's subsidiary, have grown to be the dominant members of their keiretsu. Toyota Motor Corporation, for instance, grew from a dependent member of the Toyoda Automatic Loom keiretsu in 1937 to become the dominant member of today's Toyota keiretsu, under whose umbrella its former parent company now stands.

Because so many keiretsu members act independently, there is considerable overlap of commitments within industries. This is compounded by the fact that most keiretsu have strong commitments to reaching beyond the borders of Japan to integrate more fully into the global economy. Perhaps this is nowhere better illustrated than in the automotive industry. For example, IBC Vehicles is a joint venture between Isuzu Motors and the U.S. automaker General Motors. Subaru-Isuzu Automotive is a joint venture between Fuji Heavy Industries and Isuzu Motors. Fuji Heavy Industry, to point out just one cross-affiliation, is a major components supplier to the Italian company Fiat. Fiat is a supplier to Mazda while Mazda is tied closely to the U.S. automaker Ford. This brings one around full circle since Ford and General Motors are

major competitors. The web of relationships can go on for dozens of other ties as well.

#### ORIGINS OF THE KEIRETSU

Whatever the direction of the classical and vertically integrated keiretsu, it is in the past that the keiretsu as an organizational structure has its source. The keiretsu have a long history in Japanese society. The keiretsu evolved directly from Japan's pre-World War II industrial groups called *zaibatsu*. These *zaibatsu* were family-dominated, and resembled the chaebol structures that dominate South Korean industry today. Most of the leading *zaibatsu* families came to power during Japan's rapid industrialization following the Meiji Restoration in 1868; however, the companies' corporate organization and even some of the key families had their roots in Japan's feudal period. By 1945, four *zaibatsu* (Mitsui, Mitsubishi, Sumitomo, and Yasuda) controlled fully one-fourth of all Japanese business.

After World War II, U.S. occupation forces dismantled the four main *zaibatsu* as well as six smaller ones, blaming them for Japan's militarism. The *zaibatsu* members, in turn, simply came together again to form new entities centered on common business needs and relationships. The keiretsu that took their place were essentially identically to the pre-war *zaibatsu* with one main difference: the keiretsu centered on a bank and common financial resources in place of the earlier kinship ties of key individuals. Ironically, when reformed as keiretsu, the former *zaibatsu* members were given an excuse to drop the less profitable member firms, thus making the punitive measures imposed by the American occupation forces a sort of blessing in disguise. Three of the four leading pre-war *zaibatsu* reformed under the same name. The last of the four great pre-war *zaibatsu*, Yasuda, joined with many firms from the smaller dismantled *zaibatsu* (such as the Asano and Nezu *zaibatsu*) to form the Fuyo Group centered around Fuji Bank.

#### NEGATIVES OF JAPANESE MANAGEMENT

Despite their success, some do not see Japanese management techniques as the panacea others credit them as being. Even though research has shown that management techniques developed in Japan can be successfully applied in other countries with remarkable results, critics claim that their success comes not from catering to intrinsic values but to an array of stifling constraints unlikely to be tolerated in the West. Rather than a carefully nurtured atmosphere of trust and common enterprise, they see a restrictive system of internal controls. Much of this criticism has come from labor unions. It has been noted that workers in JIT systems have more stress than their counterparts

in more traditional systems. Stress is seen to originate not only from additional authority and responsibility, but also from the fast-paced system where there is little slack and a continual push to improve. Apparently, some see the authority and responsibility delegated to the worker as a way for management to further burden the worker without a comparable increase in take-home pay. Constant improvement through use of *kaizen*, just-in-time, and Total Quality Management is felt to be within the purview of management not the worker.

There is really no mystery to the success attributed to Japanese management. The Japanese were convinced that a shift, caused by natural competitive forces, was taking place worldwide. They then rode this change, which was international in scope, to financial success by becoming the premier producer of products known for quality. They were prepared to sacrifice short-term financial results in order to invest for the long-term in superior quality; a variable consumers would soon demand.

Consumers are still showing their confidence in Japanese goods by purchasing what they see as commensurate quality at a fair price. Japanese produced television sets, for example, have an average life span that is twice that of similar sets produced in North America. Any country that can manage to achieve this kind of quality and parlay it into a strategic weapon should continue to have a competitive position within the markets in which it competes.

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## JOB ANALYSIS

A job analysis is a step-by-step specification of an employment position's requirements, functions, and procedures. Just as a seed cannot blossom into a flower unless the ground is properly prepared, many human resource management (HRM) practices cannot blossom into competitive advantage unless grounded on an adequate job analysis.

Successful HRM practices can lead to outcomes that create competitive advantage. Job analyses, properly performed, enhance the success of these HRM practices by laying the foundation. Job analysis information can be applied to a variety of HRM practices. We now take a brief look at some of them.

### ESTABLISHING FAIR AND EFFECTIVE HIRING PRACTICES

An employer's recruitment and selection practices seek to identify and hire the most suitable applicants. Job analysis information helps employers achieve this aim by identifying selection criteria, such as the knowledge, skills, and abilities (KSAs) needed to perform a job successfully. A firm's managers and human resource (HR) professionals can then use this information to choose or develop the appropriate selection devices (e.g., interview questions, tests). This approach to selection is legally required.

An employer facing discrimination charges must demonstrate to the courts that its selection criteria are job-related. To support this type of claim-relatedness, a firm must demonstrate that the challenged selection practice was developed on the basis of job analysis information. As one judge noted during a discrimination hearing, without a job analysis on which to base selection practices, an employer "is aiming in the dark and can only hope to achieve job-relatedness by blind luck."

In the 1990s, the need for firms to base selection criteria on job analysis information became even more

important due to the passage of the Americans with Disabilities Act. This law states that employment decisions concerning disabled candidates must be based on their ability to perform the essential functions of the job. For instance, if report reading were an essential job function, then applicants whose disabilities prevented them from reading could be lawfully denied employment (assuming there was no way to accommodate them). If, however, report reading were not an essential function, the inability to read could not lawfully serve as a basis for denial. The determination of which job functions are essential is made during a job analysis.

#### DEVELOPING TRAINING AND APPRAISAL PROGRAMS

Firms can also use job analysis information to assess training needs and to develop and evaluate training programs. Job analyses can identify tasks a worker must perform. Then, through the performance appraisal process, supervisors can identify which tasks are being performed properly or improperly. The supervisor can next determine whether improperly performed work can be corrected through training.

HR professionals also use job analysis information to develop relevant training programs. The job analysis specifies how each job is performed, step by step, allowing HR professionals to develop training materials to teach trainees how to perform each task. To evaluate the effectiveness of a training program, the organization must first specify training objectives or the level of performance expected of trainees when they finish the program. The success of a training program is judged on the basis of the extent to which those performance levels have been reached. Expected performance levels are often specified during a job analysis.

Information obtained from a job analysis can be used to develop performance appraisal forms. An example of a job analysis-based form would be one that lists the job's tasks or behaviors and specifies the expected performance level for each. The role of job analysis is crucial here. Without job analysis information, organizations typically use a single, generalized form in which all workers are appraised on the basis of a common set of characteristics or traits that are presumed to be needed for all jobs (e.g., cooperation, dependability, leadership).

Job analysis-based appraisal forms are superior to the generalized forms because they do a better job of communicating performance expectations and because they provide a better basis for giving feedback and for making HRM decisions.

Most companies base pay rates, in part, on the relative worth or importance of each job to the organ-

ization. Job worth is typically determined by evaluating or rating jobs based on important factors such as skill level, effort, responsibility, and working conditions. The information provided by a job analysis serves as the basis for job worth evaluations.

Job analysis also plays an important role in the development of productivity improvement programs. Various pay-for-performance programs provide rewards to employees who perform their jobs at or above some desired level. Job analysis is used to identify that level of performance.

#### REMEDIAL USES

Managers must sometimes discipline employees for their failure to properly carry out their job responsibilities. For instance, workers may be disciplined for refusing to perform tasks that they believe are not part of their jobs. If the responsibilities and limits of authority of a job are delineated in a job analysis, this information may be used to help resolve such problems.

Job analysis information can also be useful from a safety and health point of view. While conducting a job analysis, an employer may uncover potential dangers or hazards of a job. The job analysis may also identify unsafe practices, such as tasks that are performed in a way that could cause injury.

#### DETERMINING THE TYPE OF INFORMATION TO BE COLLECTED

A wealth of information may be gathered during a job analysis. Job analysis information may be divided into three categories: job content, job context, and worker requirements. Job content refers to workers' job activities or what workers actually do on the job. Job context refers to the conditions under which the work is performed and the demands such jobs impose on the worker. Worker requirements refer to the worker qualifications needed to perform the job successfully. The specific information falling within each category is described next.

**CONTENT.** When gathering information about tasks, the job analyst seeks to determine what the worker does, the purpose of the action, and the tools, equipment, or machinery used in the process. The analyst may also gather additional information about tasks, such as their relative importance, the expected performance levels, and the type of training needed by a new worker to perform tasks satisfactorily. Job content can be described in a number of ways, depending on how specific one wants (or needs) to be. The different types of job content information are described in Exhibit 1.

## Exhibit 1

### The Different Types of Job Content Information

#### Broad Level

##### Function or Duty

- **Definition:** The major areas of the job-holder's responsibility.
- **Example:** A professor's functions are teaching, research, and service to the university/community.

#### Intermediate Level

##### Task

- **Definition:** What a worker does when carrying out a function of the job; it is an activity that results in a specific product or service.
- **Example:** The function of teaching requires a professor to perform several tasks like lecturing, giving/grading exams, and meeting with students.

##### Work Behavior

- **Definition:** An important activity that is not task specific; such behavior is engaged in when performing a variety of tasks.
- **Example:** "Communicating"—a professor engages in this behavior when performing several tasks, such as lecturing and meeting with students.

#### Specific Level

##### Subtasks

- **Definition:** The steps carried out in the completion of a task.
- **Example:** The task of providing lectures consists of several subtasks, such as reading the text and other relevant materials, deciding on what information to convey, and determining how this information can be communicated in a clear and interesting manner.

##### Critical Incidents

- **Definition:** Specific activities that distinguish effective from ineffective job performance.
- **Example:** "The professor uses several examples when explaining difficult concepts."

- **Ability**—the capability needed to perform a non-motor task, such as communication abilities, mathematical abilities, and reasoning or problem-solving abilities.
- **Personal characteristics**—an individual's traits (e.g., tact, assertiveness, concern for others, objectivity, work ethic) or their willingness/ability to adapt to the circumstances in the environment (e.g., ability to withstand boredom, willingness to work overtime, willingness to treat others cordially).
- **Credentials**—proof or documentation that an individual possesses certain competencies, such as diplomas, certifications, and licenses.

The sheer amount of information that can be uncovered during a job analysis may be overwhelming, but it is usually unnecessary to gather all possible data. The purpose or intended use of the job analysis dictates the particular information to be gathered. Therefore, the analyst must decide how the job analysis will be used before deciding what information to seek.

For instance, if a job analysis were to be used to develop a technical training program for new employees, the analyst should focus on information about subtasks (a step-by-step description of how the job is carried out) and the specific knowledge, skills, and abilities (KSAs) one would need to do well on that job. If the purpose were to develop a written employment test to assess applicants' knowledge of the job, the analyst should target information about the specific tasks of the job and the knowledge required to perform each task (i.e., the facts, theories, principles, etc., one must know to be able to perform tasks satisfactorily).

## DETERMINING HOW TO COLLECT THE INFORMATION

HR professionals often gather job analysis information. However, because these individuals lack sufficient expertise in the jobs being analyzed, they must enlist the actual job incumbents and their supervisors to gather and interpret the pertinent information. Job analysis information may be gathered by interviewing these individuals, observing them at work, and/or having them complete job analysis questionnaires. The appropriateness of each approach depends, in part, on the type of information sought.

**INTERVIEWS.** Job analysis interviews are structured conversations between the job analyst and one or more subject-matter experts. Interviews are typically held with both job incumbents and their supervisors. Interviews with incumbents tend to focus on job content and job context information. That is, incumbents

**CONTEXT.** Job context refers to the conditions under which work is performed and the demands such work imposes on employees. Specific types of job context information typically identified during a job analysis include reporting relationships, supervision received, judgment, authority, personal contacts, working conditions, and the physical and mental demands on the worker.

**REQUIREMENTS.** Worker requirements refer to the knowledge, skill, ability, personal characteristics, and credentials needed for effective job performance. These terms are defined as:

- **Knowledge**—the body of information one needs to perform the job.
- **Skill**—the capability to perform a learned motor task, such as forklift operating skills and word-processing skills.

are asked to describe what they do, how they do it, and the conditions under which they perform their jobs.

The typical role of the supervisor is to review and verify the accuracy of the incumbents' responses, and to provide further information concerning task importance, expected performance levels, training needs of new workers, and worker requirements.

As the most frequently used job analysis method, interviews provide a potential wealth of information. However, one-on-one interviews can be quite time-consuming. An interview usually takes between one and eight hours, depending on the amount and depth of information sought. Thus, interviewing can take a great deal of time, especially when the analyst must interview several people. When time constraints pose a problem, the best alternative is to conduct a group interview, where several subject-matter experts are interviewed simultaneously.

**OBSERVATIONS.** Sometimes a job analyst will supplement interviews with job analysis observations. As the name suggests, observation means watching the incumbent perform the job. Observation is most useful when jobs are complex and difficult to accurately describe. When analyzing such jobs, the analyst observes or videotapes the job and then interviews the worker for clarification or explanation. The observation allows the analyst to gain a better understanding of how the work is done and the KSAs needed to perform it.

While observation is usually used as a supplement to the interview, HR professionals sometimes base job analysis solely on observation. Whether or not observation yields sufficient data for the analysis depends on the type of information being collected.

For instance, it is an excellent method for identifying subtasks performed in routine/repetitive types of jobs, such as assembly-line work. When using this approach, however, analysts should be alert to the possibility that some workers may behave atypically when observed. For instance, they may increase their speed to impress the observer, or slow down in an effort to demonstrate how difficult their jobs are.

**QUESTIONNAIRES.** Job analysis questionnaires ask subject-matter experts—workers and/or supervisors—to record job information in writing. Job analysis questionnaires contain either open-ended or closed-ended questions. Open-ended questions ask respondents to provide their own answers to the questions. Closed-ended questions ask respondents to select an answer from a list provided on the questionnaire. Closed-ended questions are more commonly used because they provide greater uniformity of responses and are more easily scored.

A job analysis questionnaire containing only closed-ended questions is called a job analysis inven-

tory. An inventory containing a list of task statements is called a task inventory; one containing a list of worker ability requirements is called an ability inventory. Job analysis inventories ask respondents to rate each item in terms of its importance to the job. Task inventories also request information regarding the frequency or time spent performing each task.

Companies use job analysis inventories when information is needed from several people (e.g., when many people hold the same job title). Compared to interviews, information can be collected much more quickly using this approach. Companies also use inventories as a means of grouping jobs. Grouping refers to categorizing jobs based on the similarity of tasks performed or skills needed; a group would consist of jobs in which all workers performed similar tasks or needed similar skills.

Once groups are established, the organization can determine selection criteria, training needs, and evaluation criteria applicable to all jobs within a group. Job analysis inventories are also used to determine workers' training needs. Workers are presented with a list of tasks or abilities and are asked to indicate those for which they need training. A five-point rating scale, ranging from "great need" to "no need," is typically used.

## DETERMINING HOW JOB ANALYSIS INFORMATION WILL BE RECORDED

Once HR professionals have collected job analysis information, it must be recorded in some systematic way to produce a job description (i.e., a summary of job analysis findings). The format of job descriptions may be general purpose or special purpose.

**GENERAL PURPOSE JOB DESCRIPTION.** A general purpose job description is one that contains a variety of information that can be used for several purposes, such as communicating job responsibilities to employees and specifying minimum job requirements. For instance, a manager would pull out a job description to review essential functions and worker requirements prior to developing interview questions for a job applicant.

The particular information contained in the job description varies depending on company preference and the intended use of the instrument. A typical general purpose job description contains the following sections: job identification, job summary, essential functions, and worker requirements.

General purpose job descriptions used by most companies provide only a brief summary of job analysis information, and thus lack sufficient detail for some HRM applications. For instance, many fail to indicate subtasks, performance standards, and job context. Subtask information may serve as a basis for

developing training programs; performance standards may serve as a basis for developing certain types of performance appraisal forms; and job context information may serve as a basis for making job evaluation ratings that are needed to establish pay rates.

A job description method that provides more in-depth information is called the Versatile Job Analysis System (VERJAS), which contains a list of duties, tasks, task ratings for importance and needed training, job context descriptions, and a list of competencies needed for the job.

**SPECIAL PURPOSE JOB DESCRIPTIONS.** Several special purpose job descriptions have been developed by a variety of HRM experts during the past 30 years. A key difference between general and special purpose job descriptions lies in the amount of detail they include. Special purpose formats cover fewer topics, but the topics covered are analyzed in more depth. Some of the more commonly used special purpose approaches are described next.

Functional job analysis (FJA) focuses primarily on recording job content information. Each task is analyzed separately on a worksheet that contains a task statement (specifying what the worker does, how it is done, and the results or final product of the worker's actions), the performance standards and training needs associated with the task, and seven rating scales. Three of the scales are known as worker function scales, indicating the level of worker involvement with data, people, and things. The other four scales indicate the level of ability needed in the areas of reasoning, mathematics, language, and following instructions.

Another special purpose method of job analysis is called the critical incident technique (CIT). It originated in the military during World War II and was used to identify critical factors in human performance in a variety of military situations. Critical factors are those that have been demonstrated to make the difference between success and failure in performing a job.

The critical incident technique requires the job analyst to collect critical incidents from people familiar with the job. The incidents are usually collected in the form of stories or anecdotes that depict successful and unsuccessful job behaviors. The stories are then condensed to a single statement that captures the essence of the story. The CIT has several useful HRM applications. For instance, it is a good tool for identifying selection criteria and training needs and for developing performance appraisal forms.

Job analysis is a key component of the HRM process. While the performance of comprehensive job analyses can be time consuming, ultimately employers will benefit from the many uses that a thorough job analysis can provide. From hiring and training to

salary justification to remedial uses, job analysis will make the HR manager's job easier, protect an organization from claims of discrimination, and can give the overall organization a competitive advantage.

SEE ALSO: Employee Recruitment Planning; Employee Screening and Selection; Employment Law and Compliance; Occupational Information Network

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## JOINT VENTURES AND STRATEGIC ALLIANCES

As economies become more globalized, more and more firms are participating in foreign markets. The most popular participation strategies include exporting, licensing, strategic alliances, joint ventures, and direct foreign investment. Each of these involves different levels of risk, capital, and returns.

The use of strategic alliances and joint ventures is rapidly becoming popular with a growing number of multinational firms. According to Cullen, an international strategic alliance is an "agreement between two or more firms from different countries to cooperate in any value-chain activity from R&D to sales". Hitt offered this definition, "joint venture is when an independent firm is created by at least two other firms".

Strategic alliances gained increased popularity in the 1990s. Harbison and Pekar reported that from 1987 to 1992 more than 20,000 new alliances were formed in the U.S., up from 5100 between 1980 and 1987. By 1999, U.S. corporations were involved in

over 2,000 alliances with companies in Europe alone, according to Cullen. These cooperative strategies offer many potential advantages to the participant, but they are also pitted with special problems.

### ADVANTAGES

Firms may have many motivations to form strategic alliances, and most of these reasons are based on the logic that each partner can bring complementary strengths to the table, resulting in a competitive advantage for the participants collectively. Partners in a strategic alliance can benefit from many aspects of a cooperative relationship: access to unfamiliar or untapped markets, risk sharing, economies of scale, shared technology, and decreased costs.

A partner's knowledge of the local market can be invaluable to a firm if it wants to get its services and products into a new market. This advantage is most easily achieved when the local firm is in a related industry with related products. The local partner knows the buying habits and preferences of the local buyers and suppliers, and he should also have knowledge of the existing channels of distribution. These relationships with others in the value chain may be otherwise unobtainable to an outside firm.

Consider a company that is contemplating entering foreign markets. Local governments often require, as a condition of entry, that entering companies allow some local ownership. This stipulation is found more often in developing countries than in more developed nations because the developing countries are trying to avoid being exploited for their resources. Through a joint venture the outside company can meet this requirement; in fact, the government of a developing country is often the partner in a joint venture.

Joint ventures and strategic alliances force companies to share revenues and profits, but they also share the risk of loss and failure. Thus, the popularity of the cooperative strategies increases as projected risk increases, because joint ventures allow firms to take on projects that are otherwise too risky or too costly.

Economies of scale can be achieved when two or more firms pool their resources together, maximizing efficiency based on the project's needs. Cooperative strategies also allow small companies to join together to compete against an industry giant. Companies of different sizes may also benefit from joining together. The large company offers its capital and resources in exchange for the efficiencies or innovations found at the smaller company. An article by Shafer describes how Abakadoodle—a company that offers creative art classes for children in schools, day care centers, and community programs—established a strategic alliance with Binney and Smith, known for its Crayola brand art products. Abakadoodle founder Mary

Rogers was seeking products of high quality that would be safe for children and that would be available nationally, so all locations could use the same materials in their classes. Since she was already using Crayola products in her classes, she states, "We realized that once we started franchising, the number of Crayola products used in Abakadoodle classes would grow enormously." After months of negotiation, agreement was reached between the two companies. Crayola products will be featured exclusively in Abakadoodle classes, Abakadoodle will be allowed to use the Crayola trademark for advertising purposes and will be eligible for discounts on Crayola products. Both companies are benefiting from their shared vision for encouraging children's artistic creativity.

In cases where firms do not have the same strengths, creating alliances can allow them to share technology. This, in turn, can help firms produce more efficiently or at a higher quality. Firms must learn to recognize which other companies can offer complementary skills or technology.

When companies from developed countries cooperate with companies in less developed countries, they usually realize huge cost savings by seeking cheaper labor and untapped reserves of material. The company from the less developed country benefits from advanced technology and increased access to capital. Both companies benefit from the cooperative alliance. Many U.S. firms have been attacked for taking their manufacturing plants "south of the border" to Mexico and thereby harming American workers. The firms are criticized because they join with governments in developing nations so that they can obtain cheaper labor in less developed countries, thus lowering their production costs. Many argue that it harms American workers, but opponents often overlook the advantages that the developing country receives. Often, the large American company provides jobs to areas with alarmingly high unemployment rates and offers them infrastructure and support that they never had before.

### SELECTING AN ALLIANCE PARTNER

In order to realize such benefits, many considerations must go into choosing a partner for a joint venture or a strategic alliance. Choosing a strategic alliance or joint venture partner is very important and can prove to be very difficult. Inherent in partner selection is the understanding of potential partners' goals. For one thing, a potential partner must have complementary strategic objectives. A venture will not succeed if the objectives are in conflict, but the objectives do not need to be identical. For example, a Korean radio manufacturer has advanced technology and this technology is attractive to the largest radio manufacturer in Germany. The German firm controls 80 percent of the German market. These firms have complemen-

tary objectives. The Korean firm will provide the German firm with the advanced technology, and the German firm will provide the Korean firm access into a new market. It is important that each partner understand and accept the other's objectives.

Potential partners should also possess complementary skills. Each partner must contribute more than capital to the project, bringing other competencies into the venture. One firm may bring technical skills and another may bring knowledge of the market. There are many skills that a firm can bring into the relationship: managerial expertise, production facilities, or access to limited resources. Skills are most easily meshed when partners have similar, but not identical, products. If both produce an identical product it may be difficult for them to work together. Even if skills are complementary competition may drive them apart and cause the venture to fail.

While the partners must offer complementary objectives and skills, both partners must believe that they can trust each other and that mutual commitment is a reality. As Cullen explained, "A common theme among managers from both failed and successful strategic alliances is the importance of building mutual trust and commitment among partners. No matter how mutually beneficial and logical the venture may seem . . . without trust and commitment the alliance will fail entirely, or it will fail to reach its strategic potential". There are a variety of ways that a company can attain and sustain commitment and trust in cooperative ventures. Goal and intent revelation is a crucial step toward building trust.

## MANAGEMENT STRUCTURE

The management structures that control cooperative efforts are varied, and they are usually unique to each relationship. Cullen identified five typical management structures used by companies for their joint ventures and strategic alliances: dominant parent, shared management structure, split-control management structure, independent management structure, and rotating management.

The dominant parent is generally the majority owner of a joint venture. In cases where there is no majority owner, the dominant parent may be the company that contributes the most valuable resources. When there is a dominant parent, this company makes more operational and strategic decisions. In many instances, a joint venture is treated as a subsidiary of the dominant parent. Often when large multinational firms have cooperative alliances with firms in small countries, the multinational firm comes in as the dominant parent.

The shared management structure and the split-control management structure are very similar. In these structures, both parent companies share deci-

sion-making responsibilities. In the shared structure, there are an equal number of managers in controlling positions from each company (board of directors, top management, and functional management). In split-control structures, there are not equal numbers of managers from each company at the functional level. In areas of expertise, one company may hold most or all of these positions. This can be because of differences in expertise or because one firm may insist on this type of arrangement if they do not want to share their knowledge or technology.

Independent management structures are found when the management of a joint venture, acts independently of either parent firm. Because a joint venture is a separate, legal entity, this is possible, but it is highly unlikely with new joint ventures. It is more common to see the independent management structure as a joint venture matures and begins to act as an independent firm. If the independent management structure is found in a young joint venture, it is often because the parents agreed to recruit externally for management positions.

In a rotating management structure, key positions of the hierarchy rotate between firms. Each firm assigns a person for their term. This structure is popular when an alliance partner is from a less developed country. With this type of management, local management can be trained so that technology and expertise are transferred to the community, according to Cullen.

## DOMESTIC JOINT VENTURES AND ALLIANCES

Not all joint ventures and strategic alliances cross international boundaries. Companies in the same country can achieve many of the same benefits found in an international cooperative agreement. For instance, Zuber reported that in 1999, CKE Restaurants, the parent of Carl's Jr. and Hardee's fast-food restaurants, entered into a joint venture with Houston-based Equilon Enterprises and Motiva Enterprises, owners of Shell and Texaco gas station franchises. Under the plan, full-size CKE restaurants would be built next to the gas stations, as opposed to having smaller, more limited outlets operating from within the gas stations' convenience stores. This would enable CKE to get into new markets, and they will do so paired with two established gasoline brands. The gas stations hoped to benefit from increased traffic because they now would offer a single place to fill a gas tank and fill a customer's stomach.

Just as the companies that come together are quite varied, so are their reasons for doing so. There is, however, one best reason for bringing two firms together: synergy. Synergy is the realization that the whole may be greater than the sum of the parts, according to Hitt.

Often, when two firms are combined, they find that their new venture is greater than the sum of what each could have done independently. Many of the reasons presented create synergy, but one must analyze the venture to make sure that it creates something greater than the two companies could have been on their own. When there is synergy, new products are created for the market quicker or better than they would have been if the companies had kept their resources to themselves. If there is synergy, everyone benefits.

SEE ALSO: Competitive Advantage; Diversification Strategy; International Business; Strategy Formulation

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#### JUST-IN-TIME PRODUCTION

SEE: Lean Manufacturing and Just-in-Time Production