

Chapter 13

IT Strategy & Planning

Information Technology For Management 6th Edition

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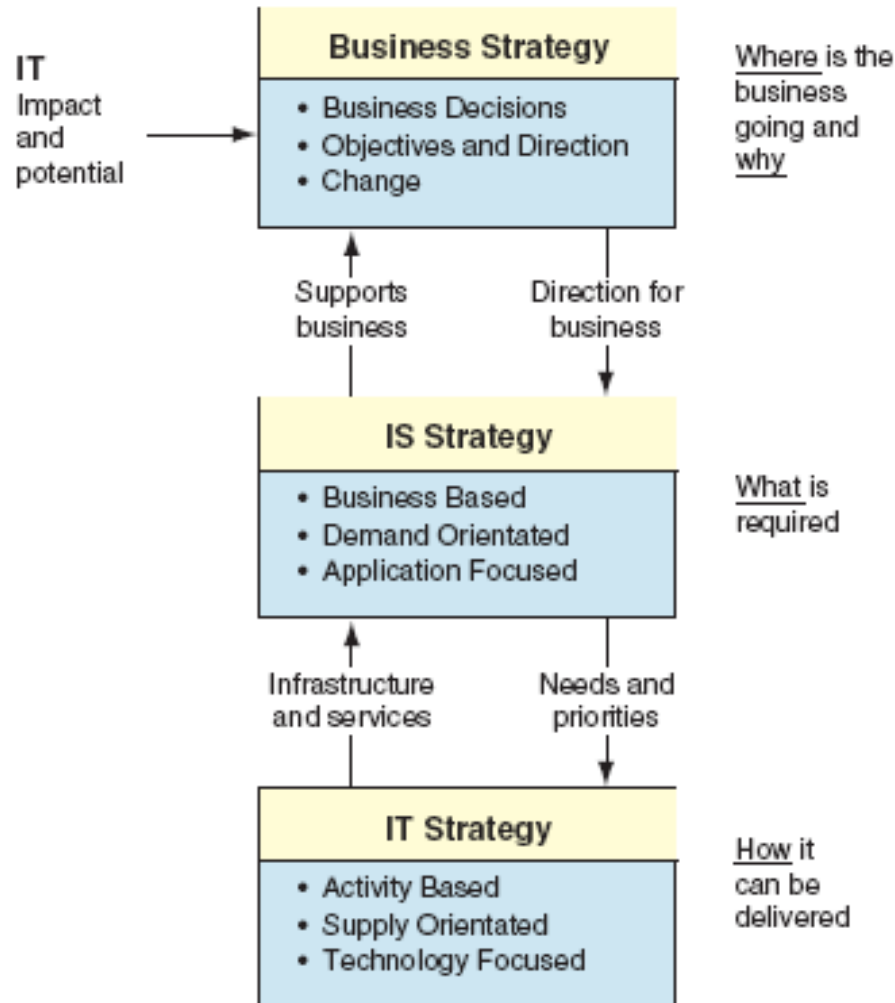
Lecture Slides by L. Beaubien, Providence College

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Learning Objectives

- Explain how IT can contribute to strategic objectives and competitive advantage.
- Assess potential impacts of IT using several frameworks
- Explain the value and challenges of aligning business and IT strategies.
- Describe the importance of IT planning and methodologies to facilitate it.
- Discuss factors to be considered to optimize that allocation of an organization's IT resources.
- Identify and describe how to build strong relationships between information systems department and business units.

Strategic Information System



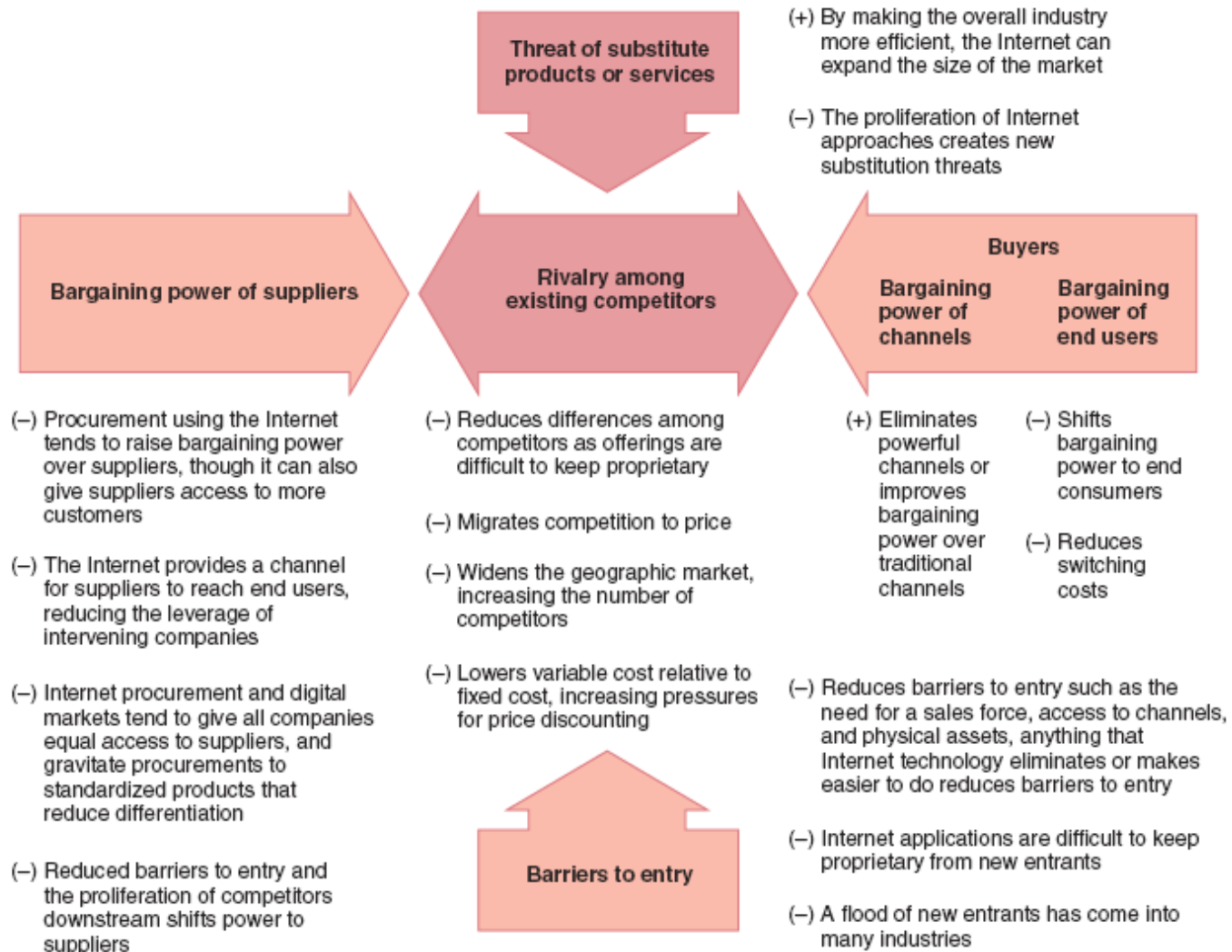
Information Technology – Supports Strategic Management

- **Innovative applications:** Create innovative applications that provide direct strategic advantage to organizations.
- **Competitive weapons:** Information systems themselves are recognized as a competitive weapon
- **Changes in processes:** IT supports changes in business processes that translate to strategic advantage
- **Links with business partners:** IT links a company with its business partners effectively and efficiently.

Information Technology – Supports Strategic Management (Continued)

- **Cost reductions:** IT enables companies to reduce costs.
- **Relationships with suppliers and customers:** IT can be used to lock in suppliers and customers or to build in switching costs.
- **New products:** A firm can leverage its investment in IT to create new products that are in demand in the marketplace.
- **Competitive intelligence:** IT provides competitive (business) intelligence by collecting and analyzing information about products, markets, competitors, and environmental changes .

Porter's Competitive Forces Model



We Develop a Competitor Analysis

First Competitive Force

What Drives them?

What are they Doing and What Can they do?

What are their strengths & weaknesses?

Is Competition Intense?

We Analyze the Entry Barriers

Second Competitive Force

If nothing slows entry of competitors, competition will become intense.

Incumbent Reaction?

What Actions are required to build market share?

Production Process?

We Analyze the Substitute Products

Third Competitive Force

Products or services from another industry enter the market.

Customers becoming acclimated to using substitutes.

Is the substitute market growing?

We Analyze the Supply Chain

Fourth & Fifth Competitive Forces

The Suppliers

The Buyers

Who controls the transaction?

Each element adds value – question: who captures it?

Generic Strategies

Developing a Sustained Competitive Advantage

Analyzing the forces that influence a company's competitive position will assist management in crafting a **strategy** aimed at establishing a sustained competitive advantage. To establish such a position, a company needs to develop a strategy of performing activities differently than a competitor.

- **Cost leadership strategy:** Produce products and/or services at the lowest cost in the industry.
- **Differentiation strategy:** Offer different products, services, or product features.
- **Niche strategy:** Select a narrow-scope segment (niche market) and be the best in quality, speed, or cost in that market.

Generic Strategies

Developing a Sustained Competitive Advantage (Continued)

- **Growth strategy:** Increase market share, acquire more customers, or sell more products.
- **Alliance strategy:** Work with business partners in partnerships, alliances, joint ventures, or virtual companies.
- **Innovation strategy:** Introduce new products and services, put new features in existing products and services, or develop new ways to produce them.
- **Operational effectiveness strategy:** Improve the manner in which internal business processes are executed so that a firm performs similar activities better than rivals.

Generic Strategies

Developing a Sustained Competitive Advantage (Continued)

- **Customer-orientation strategy:** Concentrate on making customers happy
- **Time strategy:** Treat time as a resource, then manage it and use it to the firm's advantage.
- **Entry-barriers strategy:** Create barriers to entry.
- **Lock in customers or suppliers strategy:** Encourage customers or suppliers to stay with you rather than going to competitors.
- **Increase switching costs strategy:** Discourage customers or suppliers from going to competitors for economic reasons.

The Value Chain



According to the **value chain model** (Porter, 1985), the activities conducted in any organization can be divided into two parts: primary activities and support activities.

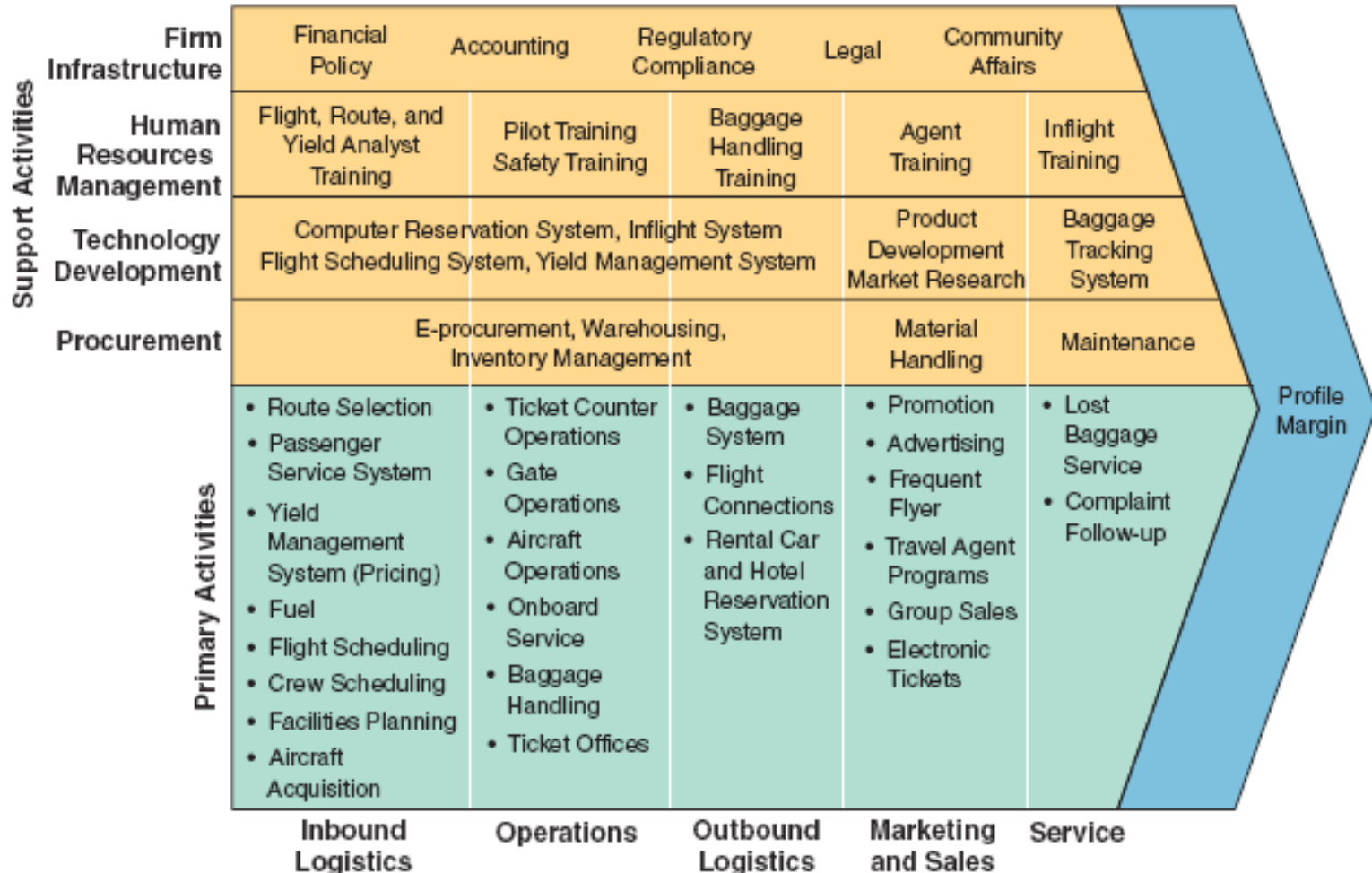
- **Primary activities** are those activities in which materials are purchased, processed into products, and delivered to customers. Each adds value to the product or service hence the value chain.
 - Inbound logistics (inputs)
 - Operations (manufacturing and testing)
 - Outbound logistics (storage and distribution)
 - Marketing and sales
 - Service

The Value Chain (Continued)

- Unlike the primary activities, which directly add value to the product or service, the **support activities** are operations that support the creation of value (primary activities)
 - The firm's infrastructure (accounting, finance, management)
 - Human resources management
 - Technology development (R&D)
 - Procurement

The initial purpose of the value chain model was to analyze the internal operations of a corporation in order to increase its efficiency, effectiveness, and competitiveness. We can extend that company analysis by systematically evaluating a company's key processes and core competencies to eliminate any activities that do not add value to the product.

The Value Chain (Continued)



The Value System

A firm's value chain is part of a larger stream of activities, which Porter calls a value system. A *value system* includes the suppliers that provide the inputs necessary to the firm and their value chains. This also is the basis for the *supply chain management* concept. Many of these alliances and business partnerships are based on Internet connectivity are called *interorganizational information systems* (IOSs)

- These Internet-based EDI systems offer strategic benefits
 - Faster business cycle (*PO to Receiving*)
 - Automation of business procedures (*Automated Replenishment*)
 - Reduced operational costs
 - Greater advantage in a fierce competitive environment

Sustaining a Strategic Information System (SIS)

Strategic information systems are designed to establish a profitable and sustainable position against the competitive forces in an industry. Due to advances in systems development it has become increasingly difficult to sustain an advantage for an extended period. Experience also indicates that information systems, by themselves, can rarely provide a sustainable competitive advantage. Therefore, the major problem that companies now face is how to sustain their competitive advantage.

- These Internet-based EDI systems offer strategic benefits.
 - One popular approach is to use *inward systems* that are not visible to competitors. These proprietary systems allow the company to perform the activities on their value chain differently than their competitors.

Strategic Resources And Capabilities

TABLE 13.3 Key Resource Attributes that Create Competitive Advantage

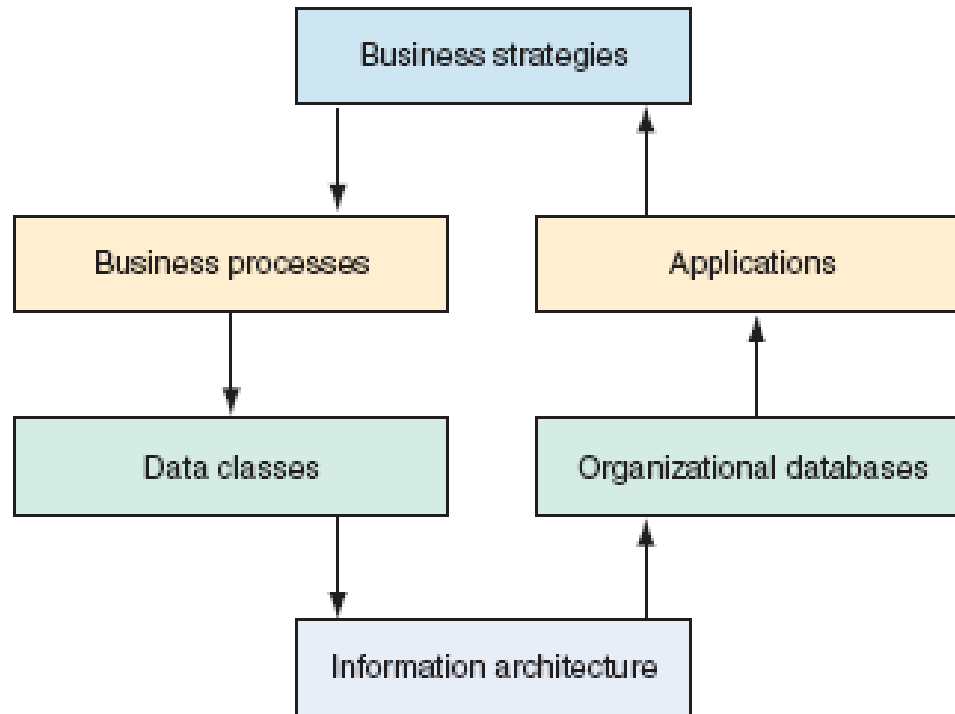
Resource Attributes	Description
Value	The degree to which a resource can help a firm improve efficiency or effectiveness.
Rarity	The degree to which a resource is nonheterogeneously distributed across firms in an industry.
Appropriability	The degree to which a firm can make use of a resource without incurring an expense that exceeds the value of the resource.
Imitability	The degree to which a resource can be readily emulated.
Mobility	The degree to which a resource is easy to transport.
Substitutability	The degree to which another resource can be used in lieu of the original resource to achieve value.

Strategic Resources And Capabilities (Continued)

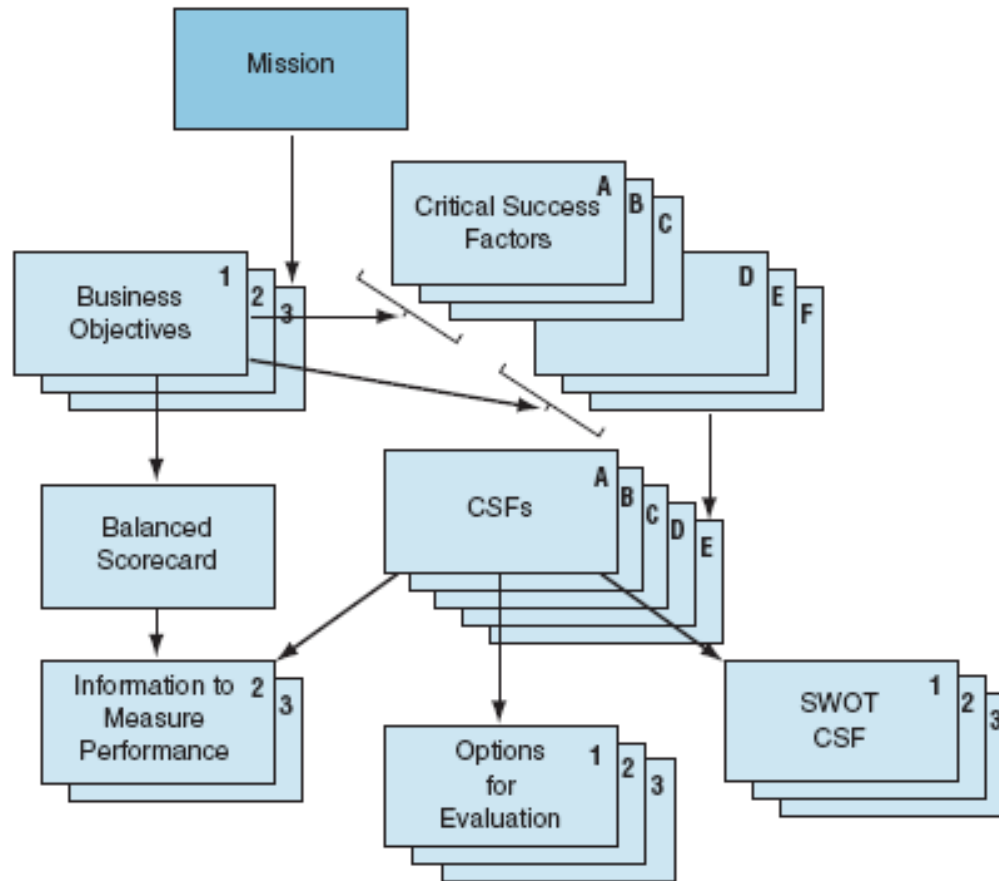
TABLE 13.4 IS Resources and Capabilities

IS Resource/Capability	Description	Relationship to Resource Attributes
Technology resources	Includes infrastructure, proprietary technology, hardware, and software.	Not necessarily rare or valuable, but difficult to appropriate and imitate. Low mobility but a fair degree of substitutability.
IT skills	Includes technical knowledge, development knowledge, and operational skills.	Highly mobile, but less imitable or substitutable. Not necessarily rare but highly valuable.
Managerial IT resources	Includes vendor and outsourcer relationship skills, market responsiveness, IS-business partnerships, IS planning and management skills.	Somewhat more rare than the technology and IT skill resources. Also of higher value. High mobility given the short tenure of CIOs. Nonsubstitutable.

IT Planning – Critical



IT Planning — A Critical Issue for Organizations (Continued)



Strategic Information Technology Planning - Stage 1

The first stage of the IT planning model identifies the *applications portfolio* through which an organization will conduct its business. This stage can also be expanded to include the process of searching for *strategic information systems (S/S)* that enable a firm to develop a competitive advantage. This involves assessing the current business environment and the future objectives and strategies.

- **IT Alignment with Organizational Plans:** The primary task of IT planning is to identify information systems applications that fit the objectives and priorities established by the organization.
- Analyze the **external environment** (*industry, supply chain, competition*) and the **internal environment** (*competencies, value chain, organizational structure*) then relate them to technology (*alignment*).
- **Alignment** is a complex management activity whose complexity increases in accordance with the complexity of organization.

Strategic Information Technology Planning – Methodologies

Several methodologies exist to facilitate IT planning.

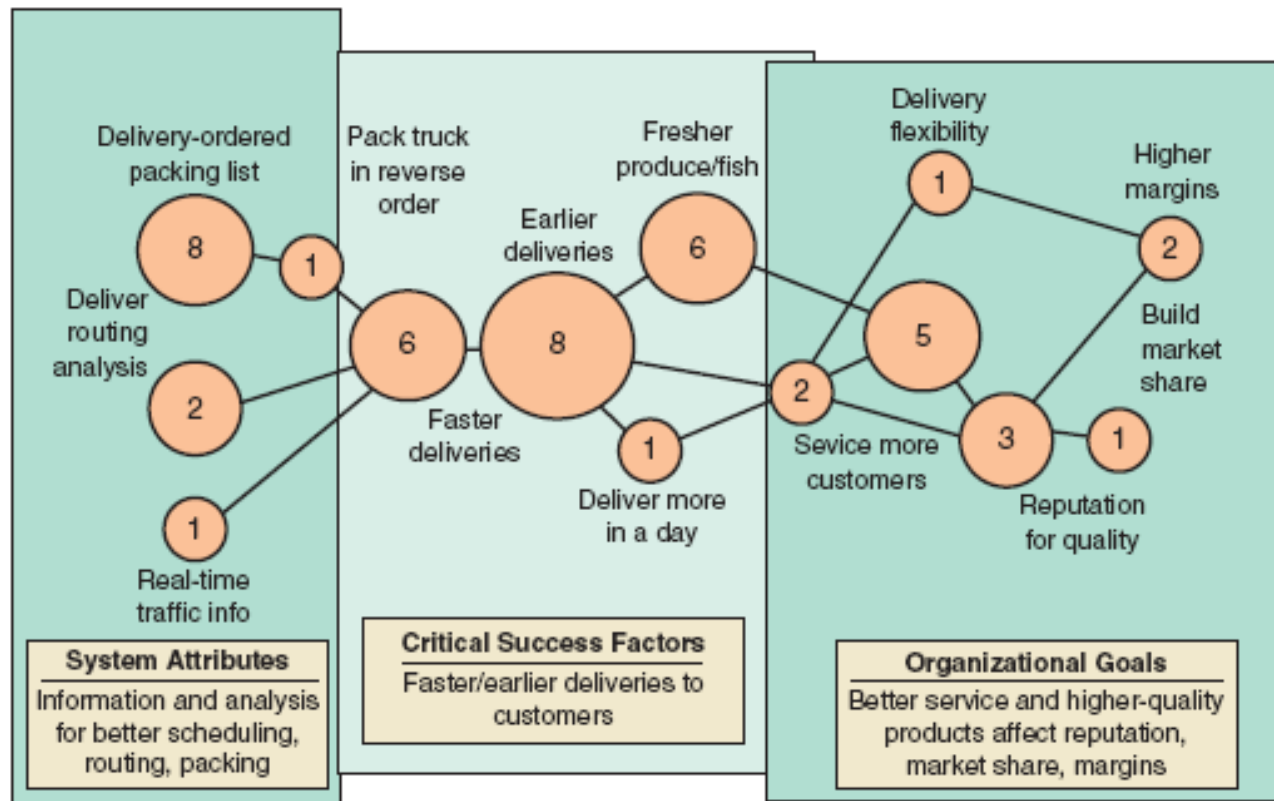
- **The business systems planning (BSP) model**, developed by IBM, deals with two main building blocks which become the basis of an information architecture.
 - **Business processes**
 - **Data classes**
- **Stages Of IT Growth Model**, indicates that organizations go through six stages of IT growth
 - **Initiation**. When computers are initially introduced.
 - **Expansion** (Contagion). Centralized growth takes place as users demand more applications.
 - **Control**. In response to management concern about cost versus benefits, systems projects are expected to show a return.
 - **Integration**. Expenditures on integrating (via telecommunications and databases) existing systems
 - **Data administration**. Information requirements rather than processing drive the applications portfolio.
 - **Maturity**. The planning and development of IT are closely coordinated with business development

Strategic Information Technology Planning – Methodologies (Continued)

- **Critical success factors (CSFs)** are those few things that must go right in order to ensure the organization's survival and success. Critical success factors vary by industry categories—manufacturing, service, or government—and by specific industries within these categories. Sample questions asked in the CSF approach are:
 - What objectives are central to your organization?
 - What are the critical factors that are essential to meeting these objectives?
 - What decisions or actions are key to these critical factors?
 - What variables underlie these decisions, and how are they measured?
 - What information systems can supply these measures?
- **Scenario planning** is a methodology in which planners first create several scenarios, then a team compile possible future events that may influence the outcome of each scenario.

Strategic Information Technology Planning – Methodologies (Continued)

Critical success factors (CSFs)



Global Competition

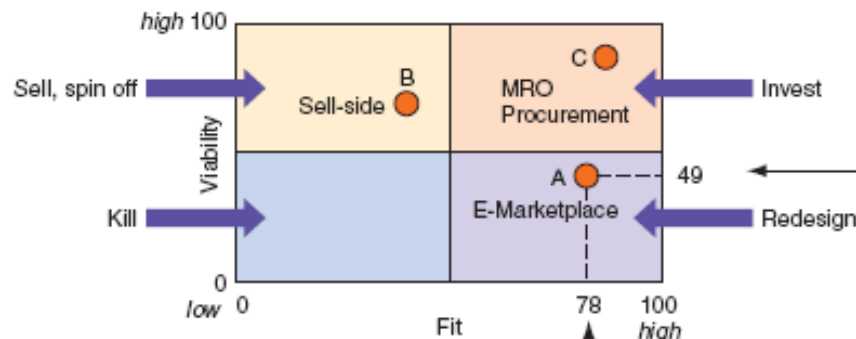
Many companies are operating in a *global environment*. Doing business in this environment is becoming more challenging as the political environment improves and as telecommunications and the Internet open the door to a large number of buyers, sellers, and competitors worldwide. This increased competition is forcing companies to look for better ways to compete globally.

- Global dimensions along which management can globalize
 - **Product**
 - **Markets & Placement**
 - **Promotion**
 - **Where value is added to the product**
 - **Competitive strategy**
 - **Use of non-home-country personnel - labor**
 - ***Multidomestic Strategy***: Zero standardization along the global dimensions. ***Global Strategy***: Complete standardization along the seven global dimensions.

IT Planning — Web-based Systems

EC Application	Market-Value Potential	Time to Positive Cash Flow	Personnel Requirement	Funding Requirement	Average
E-Marketplace (A)	85	70	20	20	49
Sell-side (B)	70	70	60	50	63
MRO Procurement (C)	80	60	80	90	80

Viability Metric (on 1–100 scale)



EC Application	Alignment with Core Capabilities	Alignment with Other Company's Initiatives	Fit with Organizational Structure	Fit with Company's Culture and Values	Ease of Technical Implementation	Average, Overall Fit
e-Marketplace	90	60	90	70	80	78
Sell-side	10	30	30	40	60	35
MRO Procurement	90	60	90	80	80	84

Fit Metric (on 1–100 scale)

Managerial Issues



- Sustaining competitive advantage.
- Importance.
- Organizing for planning.
- Fitting the IT architecture to the organization.
- IT architecture planning.
- IT policy.
- Ethical and legal issues.
- IT strategy.

Chapter 13

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Chapter 14

Information Technology Economics

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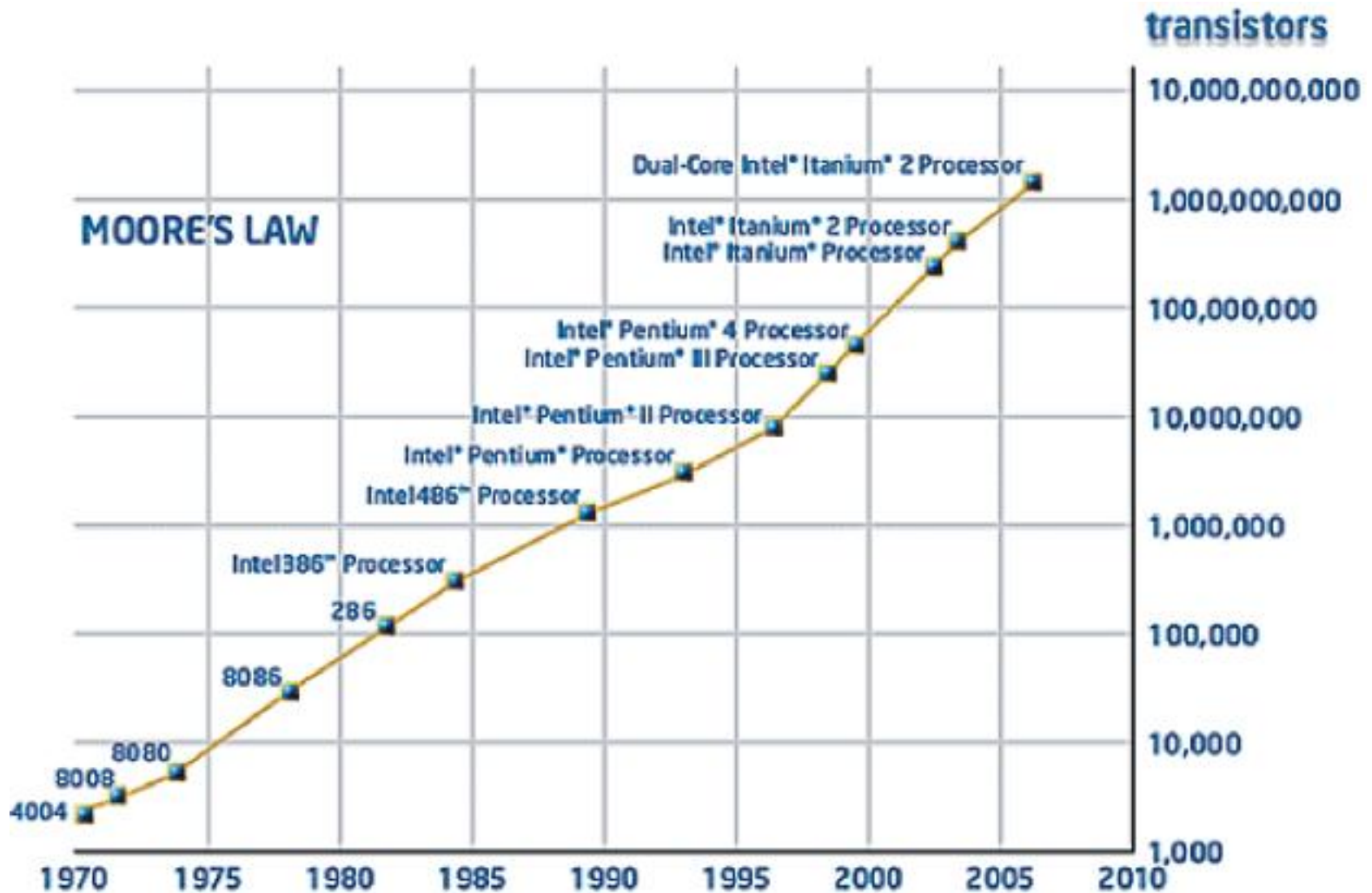
Learning Objectives

- Identify the major aspects of the economics of information technology.
- Explain and evaluate the productivity paradox.
- Describe approaches for evaluating IT investment and explain why is it difficult to do it.
- Explain the nature of intangible benefits and the approaches to deal with it.
- List and briefly describe the traditional and modern methods of justifying IT investment.

Learning Objectives (Continued)

- Identify the advantages and disadvantages of approaches to charging end users for IT services (chargeback).
- Identify the advantages and disadvantages of outsourcing.
- Describe the economic impact of EC.
- Describe economic issues related to Web-based technologies including e-commerce.
- Describe causes of systems development failures, the theory of increasing returns, and market transformation through new technologies.

Moore's Law



Value of Information - Evaluating

One measurement of the benefit of an investment is the value of the information provided. The **value of information** is the difference between the **net benefits** (benefits adjusted for costs) of decisions made using information and the net benefits of decisions made without information.

$$\text{Value of information} = \text{Net benefits with information} - \text{Net benefits without information}$$

Cost-Benefits Analyses - Evaluating

TABLE 14.2 IT Investment Opportunities Matrix				
Type of Investment	Example	Comments	Upside Benefits	Probability of Return
Infrastructure	Wide area network	Support current business—may allow for future investments	Little itself, but allows new programs	.2 to 1.0 (.5)
Required—(compliance), managerial control	OSHA, SOX reporting system, budgets	Usually a cost of doing business	SOX compliance may generate benefits	0 to .5 (.2)
No other way to do the job	Computerized reservations system, air traffic control	Enable new task or process, provide better customer service, new products	Could gain more than forecast	.5 to 1.0 (.75)
Direct return from IT	Merrill Lynch, Chrysler	Structure, cost-benefit, and NPV appropriate	A little if you can build on the investment	.7 to 1.0 (.9)
Indirect returns	CRS in travel agencies	Potential for considerable return, but indirect benefits hard to estimate	Could be substantial future benefits	0 to 1.0 (.5)
Competitive necessity	Bank ATMs, much EDI, electronic commerce	Need the system to compete in the business; what is the cost of not investing in technology?	Very little if you are following the industry	0 to 1.0 (.2)
Strategic application	Baxter, Merrill Lynch CMA	High risk—high potential; may be able to estimate return only after implementation	A high potential	0 to 1.0 (.5)
Transformational IT	Virtual organizations, Oticon	Must be combined with changes in management philosophy; good for fast-response organization—risky to change structure, but high potential rewards	A high potential	0 to 1.0 (.5)

“Costing” IT Investments - Evaluating

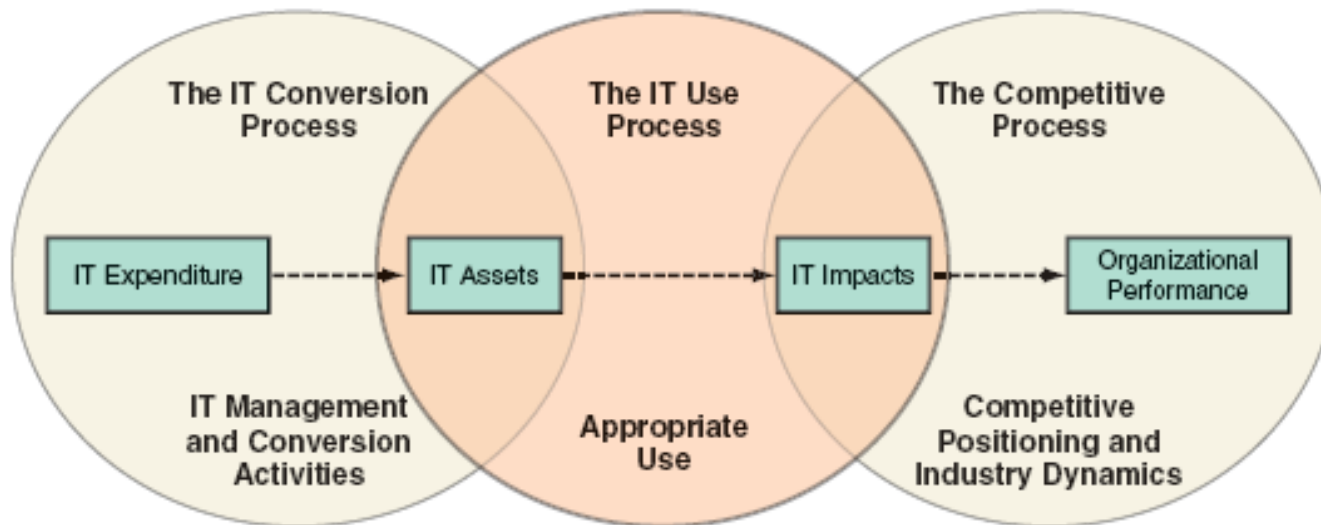
- Placing a dollar value on the cost of IT investments is not a simple task. One of the major issues is to allocate fixed costs among different IT projects. Fixed costs are those costs that remain the same in total regardless of change in the activity level.
- Another area of concern is the Life Cycle Cost; costs for keeping it running, dealing with bugs, and for improving and changing the system. Such costs can accumulate over many years, and sometimes they are not even anticipated when the investment is made.
- There are multiple kinds of values (tangible and intangible)
 - improved efficiency
 - improved customer relations
 - the return of a capital investment measured in dollars or percentage
 - *many more ...*
- Probability of obtaining a return depends on probability of implementation success

Intangible Benefits

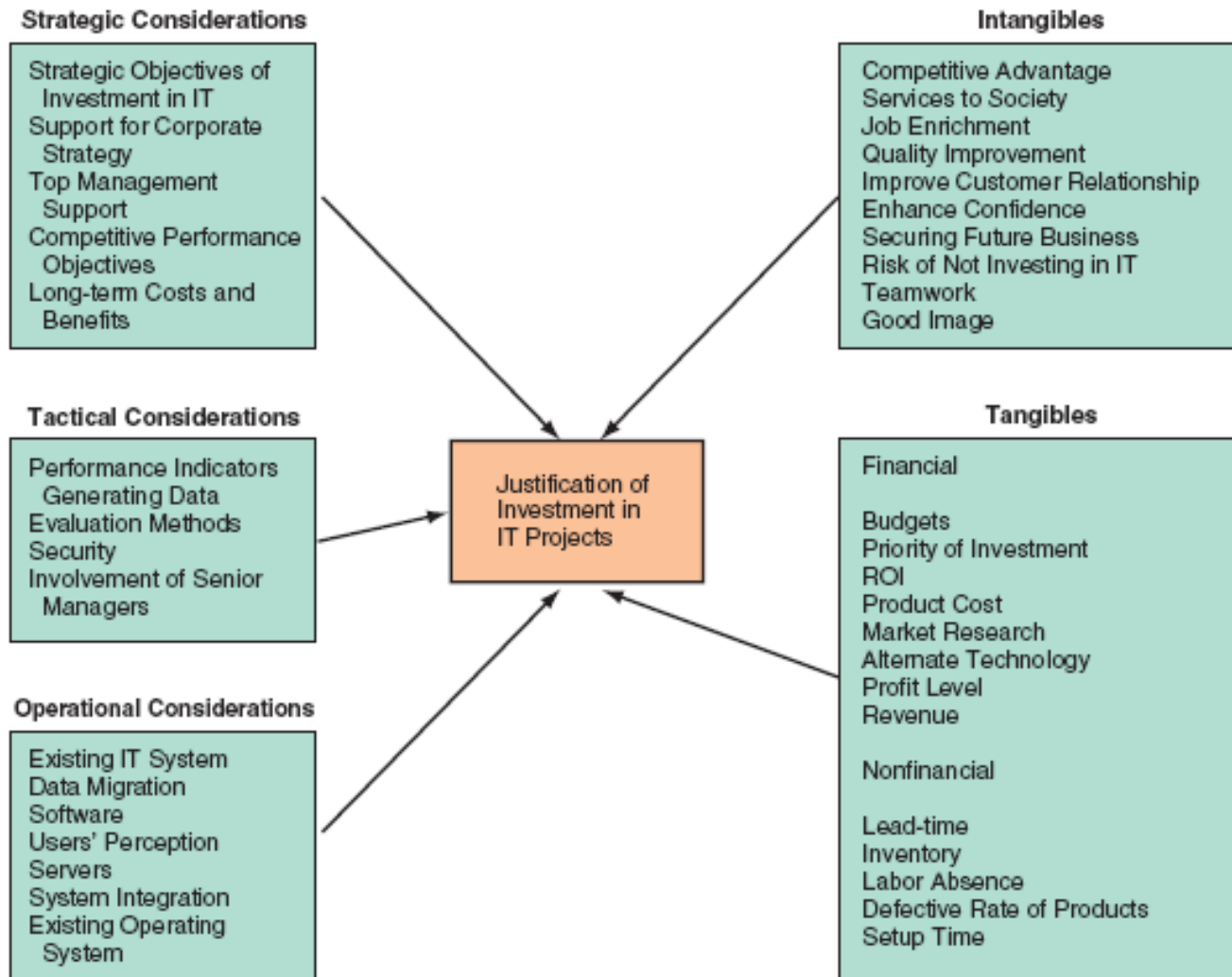
Sawhney's Method of Handling

- **Think broadly and softly.**
 - Supplement hard financial metrics with soft ones
- **Pay your freight first.**
 - Think carefully about short-term benefits that can “pay the freight” for the initial investment in the project.
- **Follow the unanticipated.**
 - Keep an open mind about where the payoff from IT and e-business projects may come from

Specific Evaluation Methods



Specific Evaluation Methods (Continued)



“Costing” IT – Economic Strategies

TABLE 14.3 Methods for Evaluating IT Investments

- **Value analysis.** With the value analysis method, the organization evaluates intangible benefits using a low-cost, trial EC system before deciding whether to commit to a larger investment in a complete system.
- **Information economics.** Using the idea of critical success factors, this method focuses on key organizational objectives and potential impacts of the proposed EC project on those objectives.
- **Scoring methodology.** This method assigns weights and scores to various aspects of the evaluated project and then calculates a total score. Information economics methods are used to determine the aspects to include in the scoring.
- **Benchmarks.** This method is appropriate for evaluating EC infrastructure. Using industry standards, for example, the organization can determine what the industry is spending on e-CRM. Then the organization can decide how much it should spend. Benchmarks may be industry metrics or best practices recommended by professional associations or consultants.
- **Management by maxim.** An organization may use this method to determine how much it should invest in large EC (and IT) infrastructures. It is basically a combination of brainstorming and consensus-reaching methodologies.
- **Real-options valuation.** This is a fairly complex assessment method, and used only infrequently. It can be fairly accurate in certain situations. The idea behind this method is to look at future opportunities that may result from the EC investment and then place monetary values on them.
- **Balanced scorecard.** This method evaluates the health or performance of the organization by looking at a broad set of factors, not just financial ones. It is becoming a popular tool for assessing EC projects (see Chapter 11).
- **Performance dashboard.** This is a variant of the balanced scorecard that is widely used in e-business situations. A dashboard is a single view that provides the status of multiple metrics (see Chapter 11).
- **Activity-based costing.** This managerial accounting concept was adapted for assessing EC investments in recent years and has been proven to be fairly successful.

Unfortunately, none of these methods is perfect or universal. Therefore, one needs to look at the advantages and disadvantages of each, which vary according to the specific situation.

Outsourcing

TABLE 14.4 Potential Outsourcing Benefits

Financial

- Avoidance of heavy capital investment, thereby releasing funds for other uses.
- Improved cash flow and cost accountability.
- Improved cost benefits from economies of scale and from sharing computer housing, hardware, software, and personnel.
- Less need for expensive office space.
- Reduce and control operating costs.

Technical

- Access to new information technologies.
- Greater freedom to choose software due to a wider range of hardware.
- Ability to achieve technological improvements more easily.
- Greater access to technical skills not available internally.
- Faster application development and placement of IT applications into service.

Management

- Concentration on developing and running core business activity. Improved company focus.
- Delegation of IT development (design, production, and acquisition) and operational responsibility to suppliers.
- Elimination of need to recruit and retain competent IT staff.
- Reduced risk of bad software.

Human Resources

- Opportunity to draw on specialist skills, available from a pool of expertise, when needed.
- Enriched career development and opportunities for remaining staff.

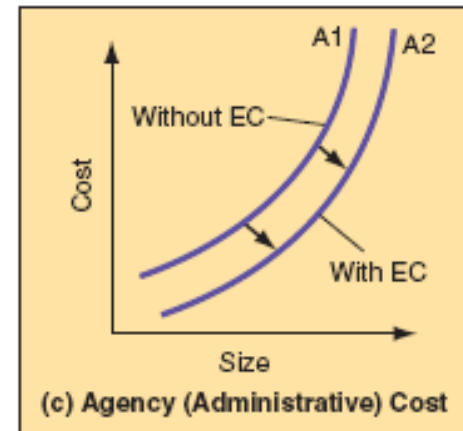
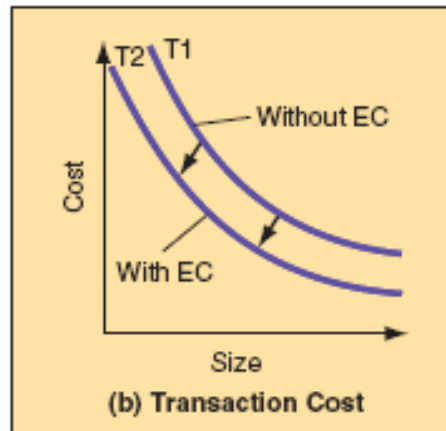
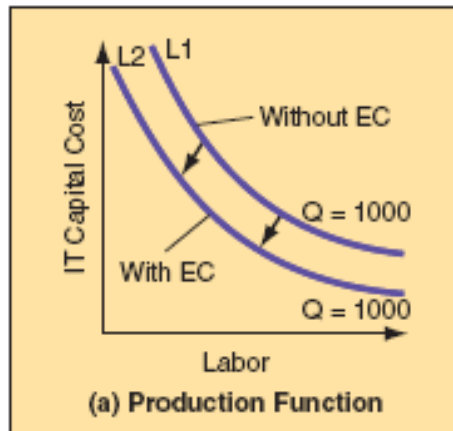
Quality

- Clearly defined *service levels* (see Chapter 13).
- Improved performance accountability.
- Improved quality accreditation.

Flexibility

- Quick response to business demands (agility).
- Ability to handle IT peaks and valleys more effectively (flexibility).

Economic Potential of IT



Web-based Systems – Economic Strategies

Web-based systems can considerably increase productivity and profitability. However, the justification of EC applications can be difficult. Usually one needs to prepare a business case that develops the baseline of desired results, against which actual performance can and should be measured. The business case should also cover both the financial and non-financial performance metrics against which to measure the e-business implementation and success.

Most decisions to invest in Web-based systems are based on the assumption that the investments are needed for strategic reasons and that the expected returns cannot be measured in monetary values.

Failures



Information technology is difficult to manage and can be costly when things do not go as planned. A high proportion of IS development projects either fail completely or fail to meet some of the original targets for features, development time, or cost. Many of these are related to economic issues, such as an incorrect cost-benefit analysis.

The economics of software production suggest that, for relatively standardized systems, purchasing or leasing can result in both cost savings and increased functionality. Purchasing or leasing can also be the safest strategy for very large and complex systems.

Managerial Issues



- Constant growth and change.
- Shift from tangible to intangible benefits.
- Not a sure thing.
- Chargeback.
- Risk.
- Outsourcing.
- Increasing returns.

Chapter 14

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