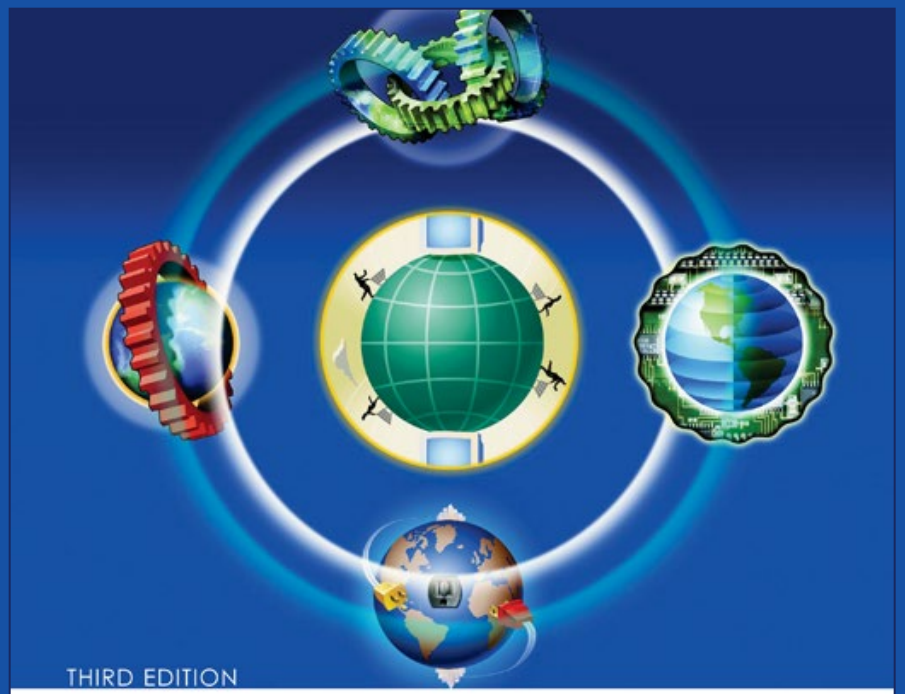

Chapter 9

Procurement and Outsourcing Strategies

9.1 Introduction

- Outsourcing components have increased progressively over the years
- Some industries have been outsourcing for an extended time
  - Fashion Industry (Nike) (all manufacturing outsourced)
  - Electronics Industry
    - Cisco (major suppliers across the world)
    - Apple (over 70% of components outsourced)

Not Just Manufacturing but Product Design, Too…

- Taiwanese companies now design and manufacture most laptop sold around the world
- Brands such as Hewlett-Packard and PalmOne collaborate with Asian suppliers on the design of their PDAs.

Questions/Issues with Outsourcing

- Why do many technology companies outsource manufacturing, and even innovation, to Asian manufacturers?
- What are the risks involved?
- Should outsourcing strategies depend on product characteristics, such as product clockspeed, and if so how?

Discussion Points

- **Buy/make** decision process
  - Advantages and the risks with outsourcing
  - Framework for optimizing buy/make decisions.
- Effective procurement strategies
  - Framework for identifying the appropriate procurement strategy
  - Linkage of procurement strategy to outsourcing strategy.
- The procurement process
  - Independent (public), private, and consortium-based e-marketplaces.
  - New developments mean higher opportunities and greater challenges faced by many buyers

9.2 Outsourcing Benefits and Risks
Benefits

- **Economies of scale**
  - Aggregation of multiple orders reduces costs, both in purchasing and in manufacturing
- **Risk pooling**
  - Demand uncertainty transferred to the suppliers
  - Suppliers reduce uncertainty through the risk-pooling effect
- **Reduce capital investment**
  - Capital investment transferred to suppliers.
  - Suppliers' higher investment shared between customers.

Outsourcing Benefits

- **Focus on core competency**
  - Buyer can focus on its core strength
  - Allows buyer to differentiate from its competitors
- **Increased flexibility**
  - The ability to better react to changes in customer demand
  - The ability to use the supplier's technical knowledge to accelerate product development cycle time
  - The ability to gain access to new technologies and innovation.
  - Critical in certain industries:
    - High tech where technologies change very frequently
    - Fashion where products have a short life cycle

Outsourcing Risks
Loss of Competitive Knowledge

- Outsourcing critical components to suppliers may open up opportunities for competitors
- Outsourcing implies that companies lose their ability to introduce new designs based on their own agenda rather than the supplier's agenda
- Outsourcing the manufacturing of various components to different suppliers may prevent the development of new insights, innovations, and solutions that typically require cross-functional teamwork

Outsourcing Risks
Conflicting Objectives

- Demand Issues
  - In a good economy
    - Demand is high
    - Conflict can be addressed by buyers who are willing to make long-term commitments to purchase minimum quantities specified by a contract
  - In a slow economy
    - Significant decline in demand
    - Long-term commitments entail huge financial risks for the buyers
- Product design issues
  - Buyers insist on flexibility
    - would like to solve design problems as fast as possible
  - Suppliers focus on cost reduction
    - implies slow responsiveness to design changes.

Examples of Outsourcing Problems
IBM

- PC market entry in 1981
- Outsourced many components to get to market quickly
- 40% market share by 1985 beating Apple as the top PC manufacturer
- Other competitors like Compaq used the same suppliers
- IBM tried to regain market by introducing the PS/2 line with the OS/2 system
  - Suppliers and competitors did not follow
  - IBM market share shrunk to 8% in 1995
    - Behind Compaq's 10% leading share
    - Led to eventual sale of PC business to Lenovo

Examples of Outsourcing Problems **Cisco**

- 2000 problem:
  - Forced to announce a $2.2 billion write-down for obsolete inventory
  - 8,500 employees were laid off.
- Significant reduction in demand for telecommunication infrastructure
- Problem in its virtual global manufacturing network
  - Long supply lead time for key components
  - Would have impacted delivery to customers
  - Cisco carried component inventory which were ordered long in advance of the downturn.
  - Competition on limited supplier capacities
    - Long-term contracts with its suppliers

9.3 Framework for Make/Buy Decisions

- How can the firm decide on which component to manufacture and which to outsource?
- Focus on core competencies
  - How can the firm identify what is in the core?
  - What is outside the core?

Two Main Reasons for Outsourcing

- **Dependency on capacity**
  - Firm has the knowledge and the skills required to produce the component
  - For various reasons decides to outsource
- **Dependency on knowledge**
  - Firm does not have the people, skills, and knowledge required to produce the component
  - Outsources in order to have access to these capabilities.

Outsourcing Decisions at Toyota

- About 30% of components in-sourced
- Engines:
  - Company has knowledge and capacity
  - 100% of engines are produced internally
- Transmissions
  - Company has the knowledge
  - Designs all the components
  - Depends on its suppliers' capacities
  - 70 % of the components outsourced
- Vehicle electronic systems
  - Designed and produced by Toyota's suppliers.
  - Company has dependency on both capacity and knowledge

Outsourcing Decisions at Toyota

- Toyota seems to vary its outsourcing practice depending on the strategic role of the components and subsystems
  - The more strategically important the component, the smaller the dependency on knowledge or capacity.

Product Architectures

- Modular product
  - Made by combining different components
  - Components are independent of each other
  - Components are interchangeable
  - Standard interfaces are used
  - Customer preference determines the product configuration.
- Integral product
  - Made up from components whose functionalities are tightly related. =
  - Not made from off-the-shelf components.
  - Designed as a system by taking a top-down design approach.
  - Evaluated on system performance, not on component performance
  - Components perform multiple functions.

A Framework for Make/Buy Decisions

Product	Dependency on knowledge and capacity	Independent for knowledge, dependent for capacity	Independent for knowledge and capacity
Modular	Outsourcing is risky	Outsourcing is an opportunity	Opportunity to reduce cost through outsourcing
Integral	Outsourcing is very risky	Outsourcing is an option	Keep production internal

Hierarchical Model to Decide Whether to Outsource or Not

- **Customer Importance**
  - How important is the component to the customer?
  - What is the impact of the component on customer experience?
  - Does the component affect customer choice?
- **Component Clockspeed**
  - How fast does the component's technology change relative to other components in the system?
- **Competitive Position**
  - Does the firm have a competitive advantage producing this component?
- **Capable Suppliers**
  - How many capable suppliers exist?
- **Architecture**
  - How modular or integral is this element to the overall architecture of the system?

Examples of Decisions

Criteria	**Example 1**	**Example 2**	**Example 3**	**Example 4**
Customer Importance	Important	Not important	Important	Important
Clockspeed	High	Slow	High	Slow
Competitive Position	Competitive Advantage	No advantage	No advantage	No advantage
Capable Suppliers	X	X	Key variable to decide strategy	
Architecture	X	X		Key variable to decide strategy
DECISION	Inhouse	Outsource	Inhouse, Acquire supplier, Partnership	Outsource with modular; Inhouse or joint development with integral.

9.4 Procurement Strategies

- Impact of procurement on business performance
- 2005 profit margins for Pfizer (24%), Dell (5%), Boeing (2.8%).
- Reducing procurement cost by exactly 1% of revenue would have translated directly into bottom line, i.e., net profit.
- To achieve the same impact on net profit through higher sales
  - Pfizer would need to increase its revenue by 4.17 (0.01/0.24) %
  - Dell by 20% and Boeing by 35.7%
- The smaller the profit margins, the more important it is to focus on reducing procurement costs.

Appropriate Strategy

- Depends on:
  - type of products the firm is purchasing
  - level of risk
  - uncertainty involved
- Issues:
  - How can the firm develop an effective purchasing strategy?
  - What are the capabilities needed for a successful procurement function?
  - What are the drivers of effective procurement strategies?
  - How can the firm ensure continuous supply of material without increasing its risks?

Kraljic's Supply Matrix

- Firm's supply strategy should depend on two dimensions
  - profit impact
    - Volume purchased/ percentage of total purchased cost/ impact on product quality or business growth
  - supply risk
    - Availability/number of suppliers/competitive demand/ make-or-buy opportunities/ storage risks/ substitution opportunities

Kraljic's Supply Matrix

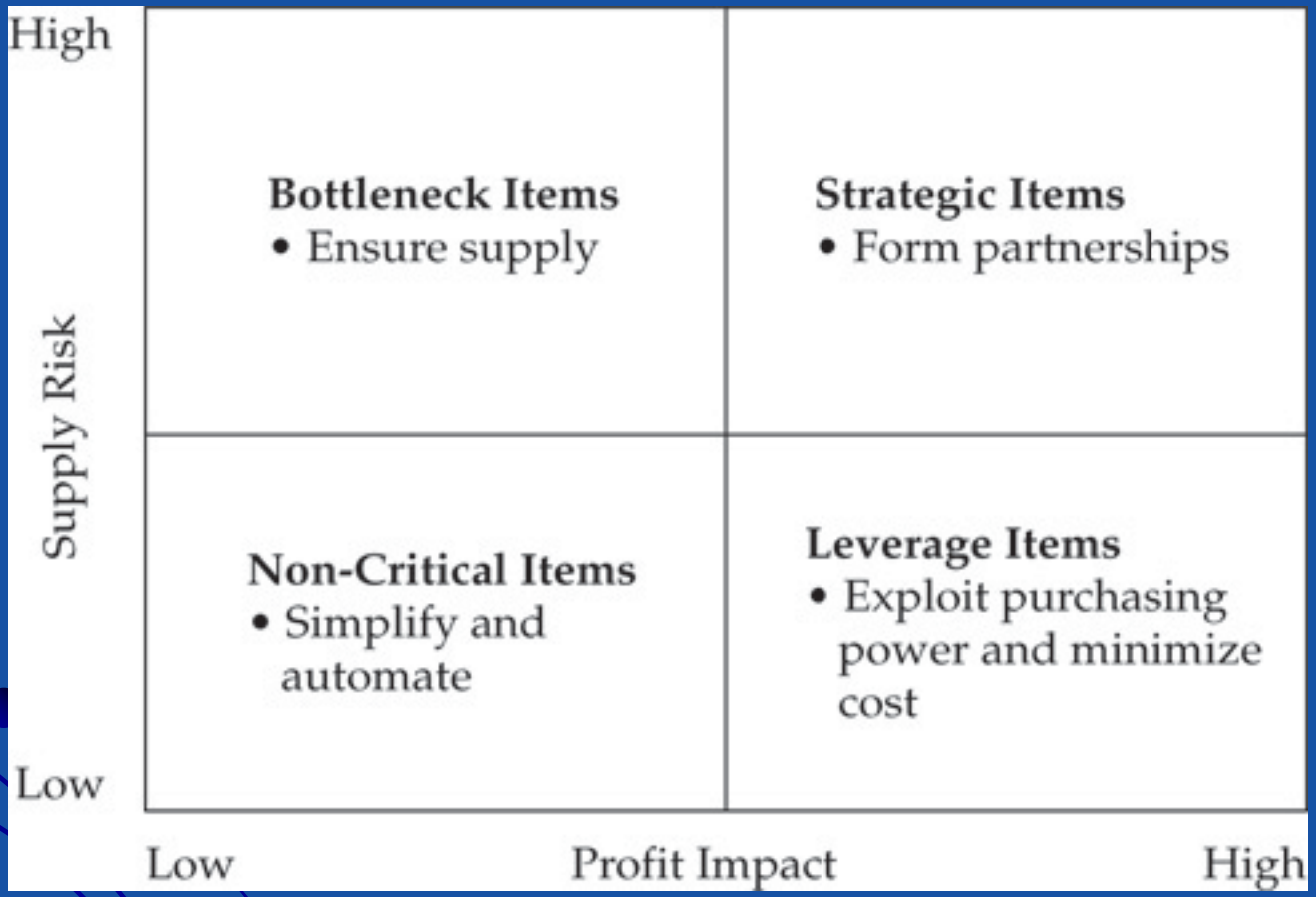

FIGURE 9-4: **Kraljic's supply matrix**

Kraljic's Supply Matrix

- Top right quadrant:
  - Strategic items where supply risk and impact on profit are high
  - Highest impact on customer experience
  - Price is a large portion of the system cost
  - Typically have a single supplier
  - **Focus on long-term partnerships with suppliers**
- Bottom right quadrant
  - Items with high impact on profit
  - Low supply risk (***leverage items)***
  - Many suppliers
  - Small percentage of cost savings will have a large impact on bottom line
  - **Focus on cost reduction by competition between suppliers**

Kraljic's Supply Matrix

- Top left quadrant:
  - High supply risk but low profit impact items.
  - ***Bottleneck components***
  - Do not contribute a large portion of the product cost
  - Suppliers have power position
  - Ensure continuous supply, even possibly at a premium cost
  - **Focus on long-term contracts or by carrying stock (or both)**
- Bottom left quadrant:
  - Non-critical items
  - Simplify and automate the procurement process as much as possible
  - Use a decentralized procurement policy with no formal requisition and approval process

Supplier Footprint

- Supply Strategies have changed over the years
  - American automotive manufacturers
    - 1980s: Suppliers either in the US or in Germany.
    - 1990s: Suppliers in Mexico, Spain, and Portugal.
    - 2000s: Suppliers in China
  - High-tech industry
    - 1980s: Sourcing in the US
    - 1990s: Singapore and Malaysia
    - 2000s: Taiwan and mainland China
- Challenge:
  - Framework that helps organizations determine the appropriate supplier footprint.
  - Strategy should depend on the type of product or component purchased

Fisher's Functional vs. Innovative Products

	Functional Products	**Innovative Products**
Product clockspeed	Slow	Fast
Demand Characteristics	Predictable	Unpredictable
Profit Margin	Low	High
Product Variety	Low	High
Average forecast error at the time production is committed	Low	High
Average stockout rate	Low	High

Supply Chain Strategy

- Functional Products
  - Diapers, soup, milk, tiers
  - Appropriate supply chain strategy for functional products is push
  - Focus: efficiency, cost reduction, and supply chain planning.
- Innovative products
  - Fashion items, cosmetics, or high tech products
  - Appropriate supply chain strategy is pull
  - Focus: high profit margins, fast clockspeed, and unpredictable demand, responsiveness, maximizing service level, order fulfillment

Procurement Strategy for the Two Types

- Functional Products
  - Focus should be on *minimizing total landed cost*
    - unit cost
    - transportation cost
    - inventory holding cost
    - handling cost
    - duties and taxation
    - cost of financing
  - Sourcing from low-cost countries, e.g., mainland China and Taiwan is appropriate
- Innovative Products
  - Focus should be on *reducing lead times and on supply flexibility.*
  - Sourcing close to the market area
  - Short lead time may be achieved using air shipments

Sourcing Strategy for Components

- Fisher's framework focuses on finished goods and demand side
- Kraljic's framework focuses on supply side
- Combine Fisher's and Kraljic's frameworks to derive sourcing strategy

Integrated Framework

- **Component forecast accuracy**
- **Component supply risk**
- **Component financial impact**
- **Component clockspeed**

Component Forecast Accuracy

- Not necessarily the same forecast accuracy as for finished goods
  - Risk pooling concept implies higher accuracy for components
- Sourcing strategy may be minimizing total landed costs, lead time reduction, or increasing flexibility.
- Cost-based sourcing strategy
  - High component forecast accuracy/Low supply risk/High financial impact/Slow is appropriate.
- Lead time reduction strategy
  - Low component forecast accuracy/High financial risk/Fast clockspeed
- Flexibility and lead time strategy
  - Low component forecast accuracy/High financial risk/Fast clockspeed/High supply risk

HP's Portfolio Strategy

- Exponential growth in demand for Flash memory resulted in high demand uncertainty
- Uncertain price and supply
- Significant financial and supply risk.
- Commitment to purchase large amount of inventory
  - huge financial risk through obsolescence cost.
- Not have enough supply to meet demand
  - both supply risk and financial risk
    - purchasing from the spot market during shortage periods yield to premium payments
- HP's solution: the portfolio strategy
  - Combined fixed commitment, option contracts, and spot purchasing

Qualitative Approach to Sourcing Strategy

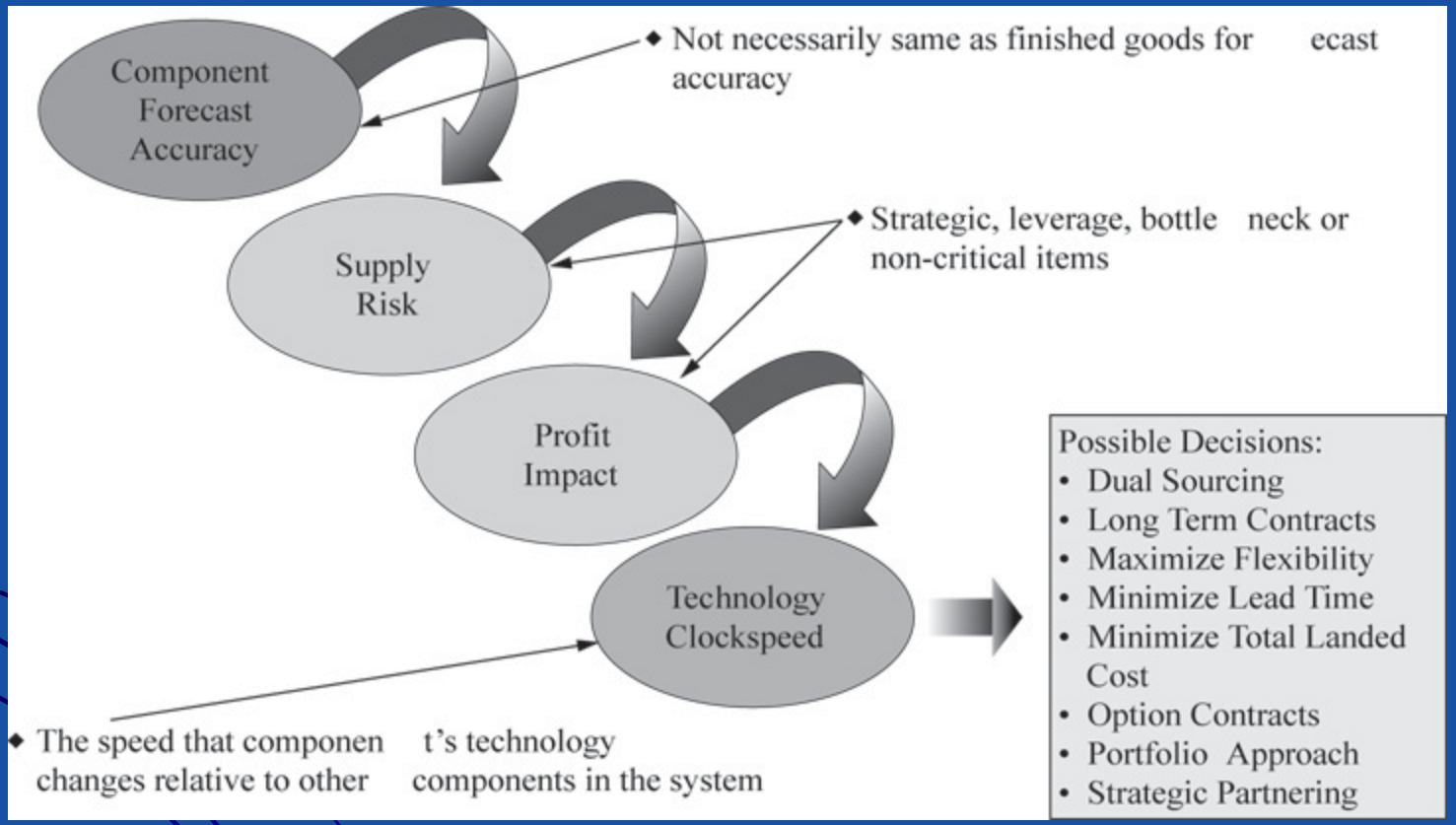

FIGURE 9-5: **A qualitative approach for evaluating component sourcing strategy**

9.5 E-Procurement

- Mid to late 90s: B2B automation was considered a trend that would have a profound impact on supply chain performance.
- 1998-2000:
  - Multiple e-markets established in various industries
  - Promised:
    - increased market reach for both buyers and suppliers
    - reduced procurement costs
    - paperless transactions
- Processing cost per order proposed to be reduced to $5/order from as high as $150/order

Business Environment in the 1990s

- Many manufacturers desperately looking to outsource their procurement functions.
- Procurement process highly complex, significant expertise required and expensive
- B2B transactions an enormous portion of the economy (much larger
- B2B marketplace highly fragmented
  - a large number of suppliers
  - competing in the same marketplace
  - offering similar products.
- Opportunities and challenges
  - Lowered procurement costs (Suppliers)
  - Significant expertise in procurement process absent (Buyers)

Opportunities for the Marketplaces

- Initial offerings of independent e-marketplaces
  - Either a vertical-industry focus or a horizontal-business-process or a functional focus.
  - Companies offered:
    - expertise in the procurement process
    - ability to force competition between a large number of suppliers.

Value Proposition to Buyers

- Serving as an intermediary between buyers and suppliers.
- Identifying saving opportunities.
- Increasing the number of suppliers involved in the bidding event.
- Identifying, qualifying, and supporting suppliers.
- Conducting the bidding event.

The Result

- Reduction in procurement costs from 15-40%
- Buyers focused on the spot market or on leverage component
- Long term relationships with suppliers not important
- Value proposition to suppliers not clear

Benefits of e-markets to Suppliers

- Relatively small suppliers could expand their market horizon
- Allows suppliers to access spot markets. Advantageous in:
  - Fragmented markets
  - Reducing marketing and sales costs
  - Increasing ability to compete on price.
- Allows suppliers to better utilize their available capacities and inventories.

Issues of the Benefits

- Do the benefits compensate for a reduction in revenue?
  - Average 15%, sometimes as high as 40%.
- Many suppliers may not feel comfortable competing on price alone.
- Suppliers, especially those with brand-name recognition, may resist selling their services through e-markets.

What about the e-markets Themselves?

- Revenue generation through transaction costs
  - Typically 1-5% of price paid by buyer
- Transaction fees pose serious challenges to the market maker:
  - Sellers resist paying a fee to the company whose main objective is to reduce the purchase price.
  - Revenue model needs to be flexible enough so that transaction fees are charged to the party that is more motivated to secure the engagement.
  - Buyers also resist paying a fee in addition to the purchase price.
- Low barriers to entry created a fragmented industry

Fragmented e-markets in the Chemical Industry

- About 30 e-markets
  - CheMatch, e-Chemicals, ChemB2B.com, ChemCross, OneChem, ChemicalDesk, ChemRound, Chemdex…
  - Low margins and inability to build scale resulted in a major shake-up of this industry

Challenges Lead to Evolution of the e-markets

- Changes in the way clients are charged
  - **Licensing fee**
    - software vendor licenses its software so that the company can automate the access to the marketplace
  - **Subscription fee**
    - marketplace charges a membership fee
    - Fee depends on the size of the company, the number of employees who use the system, and the number of purchase orders

Challenges Lead to Evolution of the e-markets

- Modification of value proposition
  - Initial proposition was market reach
  - Changed through creation of four types of markets.

Value-Added Independent Public e-Markets

- Expanded value proposition by offering additional services:
  - inventory management
  - supply chain planning
  - financial services
- Examples:
  - Instill.com focuses on the food service industry
    - Provides an infrastructure that links together operators
    - Additional services like forecasting, collaboration, and replenishment tools.
  - Pefa.com services the European fresh fish market
    - Offers buyers access to a large number of independent fresh fish auctions.
    - Provide visibility on price from many European ports
    - Provide information on product quality

Private e-markets

- Many companies have established their own private e-markets
- Key activities:
  - to run reverse auctions
  - on-line supplier negotiation.
- Examples:
  - Subway restaurant franchise
    - 16,000 members in over 70 countries
    - Allows the different restaurants to purchase from over 100 suppliers.
  - Motorola
    - Implemented supplier negotiation software
    - Allows firm to conduct bids, negotiate and select an effective procurement strategy.

Consortia-Based e-markets

- Similar to public e-markets
- Established by a number of companies within the same industry.
- Examples:
  - Covisint in the automotive industry
  - Exostar in the aerospace industry
  - Trade-Ranger in the oil industry
  - Converge and E2Open in the electronic industry.
- Provides suppliers with a standard system that supports all the consortia's buyers
- Some of the consortia have exited the auction business
  - Focus on technology that enables business collaboration between trading partners (Examples: Covisint and E2Open)

Content-Based e-markets

- Two types of markets
  - Maintenance, repair, operations (MRO) goods
  - Industry-specific products.
- Focus on content
  - Achieved by integrating catalogs from many industrial suppliers.
  - Unify suppliers' catalogs
  - Provide effective tools for searching and comparing suppliers' products.
- Example:
  - Aspect Development (now part of i2) offers electronics parts catalogs that integrate with CAD systems.

SUMMARY

- Outsourcing has both benefits and risks
- Buy/make decisions should depend on:
  - Whether a particular component is modular or integral
  - Whether or not a firm has the expertise and capacity to manufacture a particular component or product.
  - Variety of criteria including customer importance, technology clockspeed, competitive position, number of suppliers, and product architecture.
- Procurement strategies vary from component to component
  - Four categories of components, strategic, leverage, bottleneck and non-critical items
- Four categories important in selecting suppliers: component forecast accuracy, clockspeed, supply risk, and financial impact.