

An aerial photograph of a large, colorful geometric plaza. The plaza is composed of various colored rectangular sections in shades of light blue, dark blue, red, and green. A large green square is the central focus, with several people walking on it. Other people are scattered across the surrounding light blue and dark blue sections. The overall design is reminiscent of Piet Mondrian's abstract art style.

7th Asia-Pacific Edition

# MANAGEMENT

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Managing the value chain, information technology and e-business

# CHAPTER 20



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Managing the value chain, information technology and e-business

1

Define operations management, describe its application within manufacturing and service organisations and explain today's partnership approach to supply chain management

2

Summarise considerations in designing facilities layout

3

Discuss new technologies used for manufacturing and service operations, and explain what is meant by lean manufacturing

4

Explain why small inventories are preferred by most organisations and describe just-in-time inventory management

5

Identify ways in which information technology has transformed the manager's job and describe different types of IT systems used in today's organisations and how they support daily operations and decision making

6

Summarise the key components of e-business and explain common e-business strategies



## Which side of your brain do you use?

The following questions ask you to describe your behaviour. For each question, check the answer that best describes you.

- 1 I am usually running late for class or other appointments:  
 a yes  
 b no.
- 2 When taking a test I prefer:  
 a subjective questions (discussion or essay)  
 b objective questions (multiple choice).
- 3 When making decisions, I typically:  
 a go with my gut – what feels right  
 b carefully weigh each option.
- 4 When solving a problem, I would more likely:  
 a take a walk, mull things over, then discuss  
 b write down alternatives, prioritise them, then pick the best.
- 5 I consider time spent daydreaming as:  
 a a viable tool for planning my future  
 b a waste of time.
- 6 To remember directions, I typically:  
 a visualise the information  
 b make notes.
- 7 My work style is mostly:  
 a to juggle several things at once  
 b to concentrate on one task at a time until complete.
- 8 My desk, work area or laundry area are typically:  
 a cluttered  
 b neat and organised.

Source: Hopper, C. (2003). *Practicing Management Skills* (New York: Houghton Mifflin); Wonder, J. and Donovan, P. (March 1984). 'Mind Openers'. *Self*.



# THE ORGANISATION AS A VALUE CHAIN

- **Value chain perspective** views organisation as a system used for transforming inputs into outputs
- Technical core
  - the heart of the organisation's production of its products or service
- Operations management
  - refers to using various tools and techniques to ensure that goods and services are delivered successfully to customers or clients
  - uses specialised techniques for solving manufacturing problems



# THE ORGANISATION AS A VALUE CHAIN

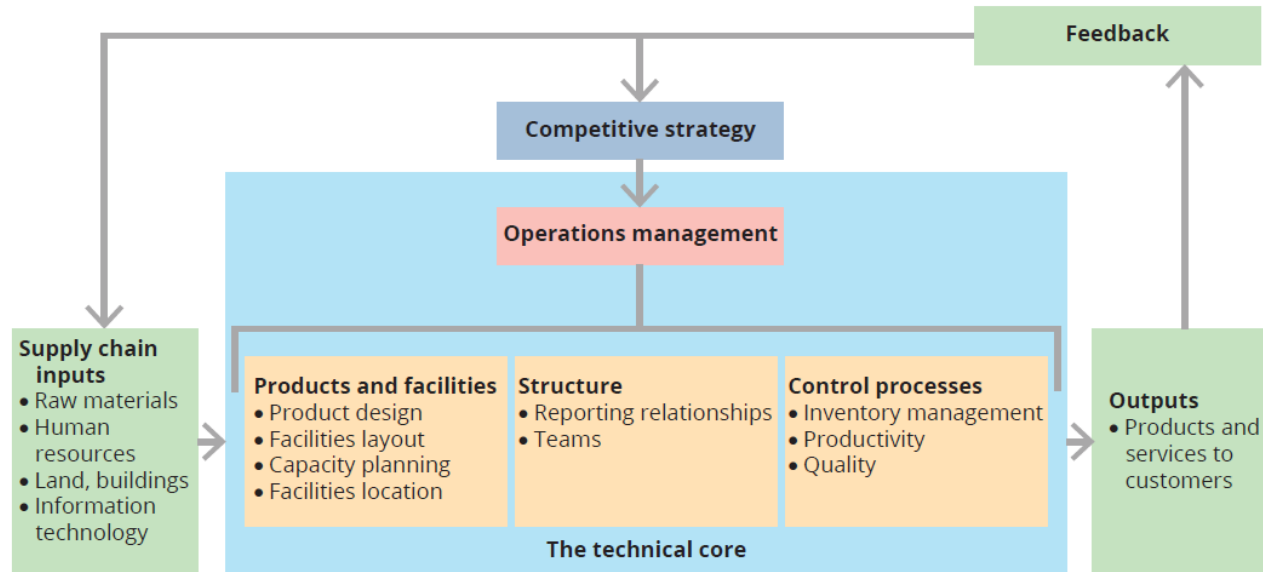




Exhibit 20.1 The organisation as a value chain



# SERVICE AND MANUFACTURING OPERATIONS

- Operations management applies to both service and manufacturing

Manufacturing organisations	Service organisations
	
Produce physical goods	Produce non-physical outputs
Goods inventoried for later consumption	Simultaneous production and consumption
Quality measured directly	Quality perceived and difficult to measure
Standardised output	Customised output
Production process removed from consumer	Consumer participates in production process
Examples: car manufacturers, steel companies, soft drink companies	Examples: airlines, hotels, hospitals

**Exhibit 20.2** Differences between manufacturing and service organisations

Sources: Based on Daft, R. L. (2005). *Organization Theory and Design* (Cincinnati, OH: South-Western), p. 256; and Finch, B. J. and Luebbe, R. L. (1995). *Operations Management* (Fort Worth, TX: Dryden Press), p. 50.



# SUPPLY CHAIN MANAGEMENT

- Managing the sequence of **suppliers** and **purchasers**, covering all stages of processing from obtaining **raw materials** to distributing **finished goods** to final customers
- Effective management maximises customer value
- Most recent advances involve using internet technologies to achieve the **right balance** of:
  - low inventory levels
  - customer responsiveness



# AN INTEGRATED SUPPLY CHAIN

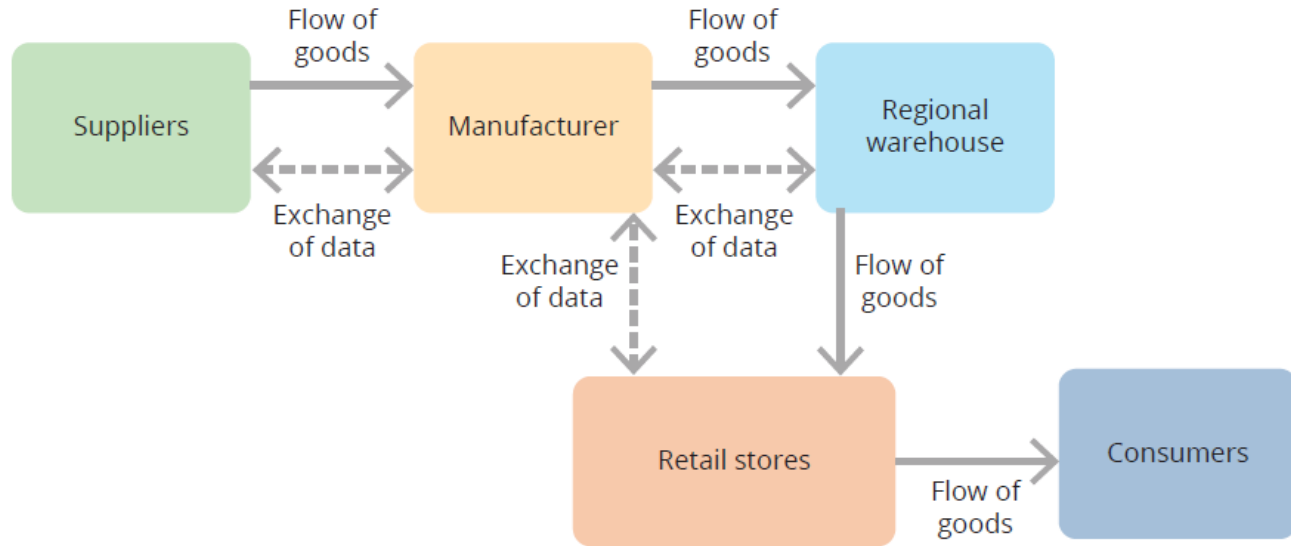
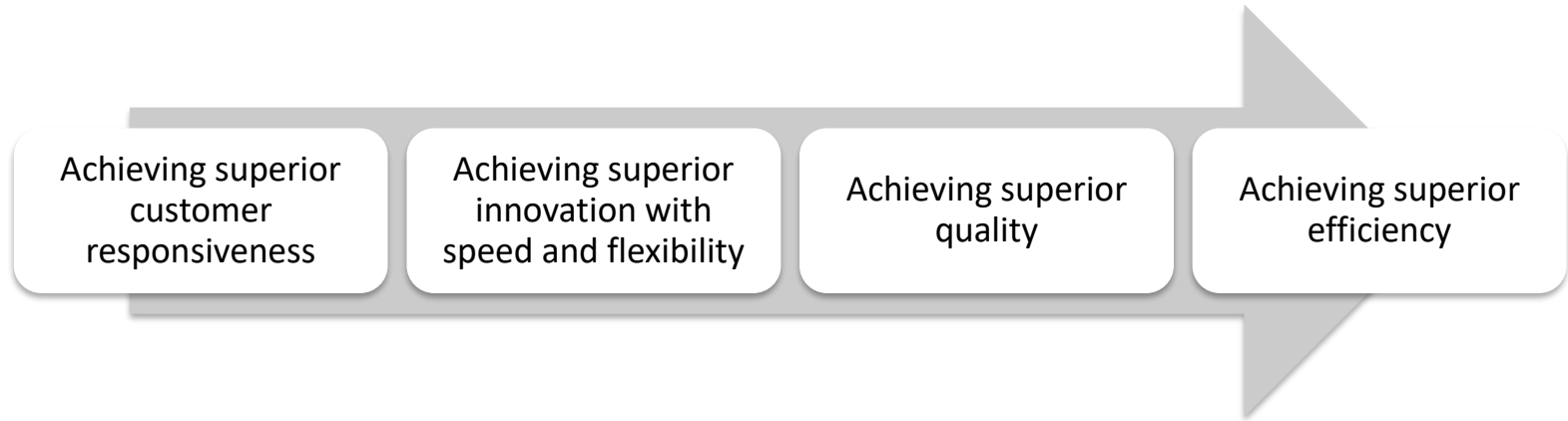


Exhibit 20.3 An integrated supply chain



# OPERATIONS DELIVER OUTCOMES

- Focus on four major outcomes to build a highly effective operations system



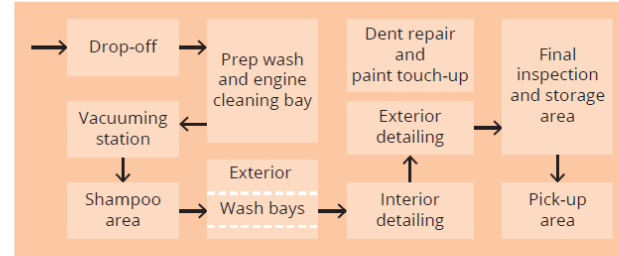
# FACILITIES LAYOUT

- Important to plan the facilities layout for production
- Four common types of layout:
  - process
  - product
  - cellular
  - fixed-position (contd.)

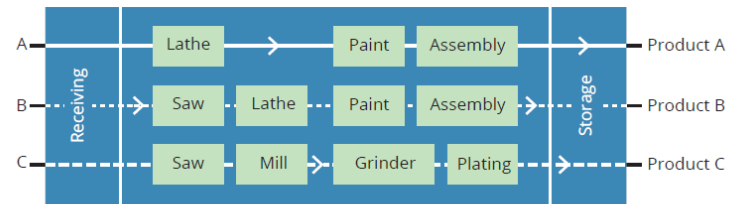


# FACILITIES LAYOUT (CONTD.)

- Process layout
  - a facilities layout in which machines that perform the same function are grouped together in one location
  - potential for economies of scale
  - but the product path can be long
- Product layout
  - machines and tasks are arranged according to the sequence of steps in the production of a single product (contd.)



(a) Process layout

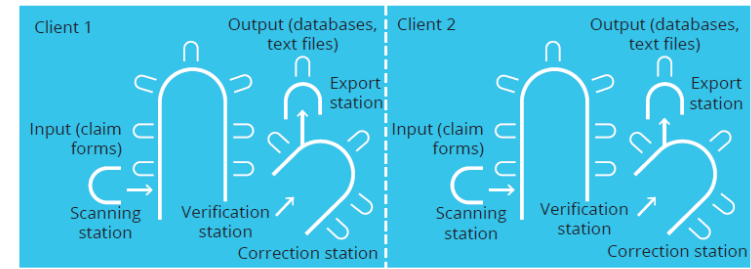


(b) Product layout

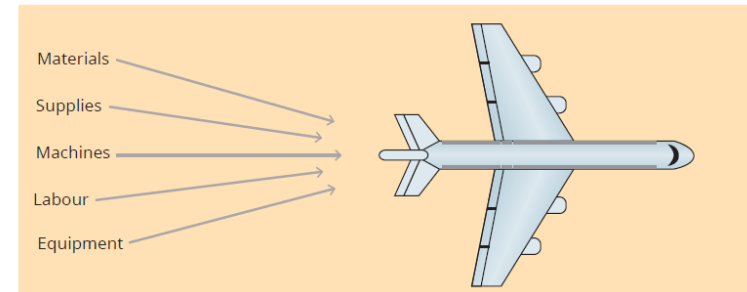


# FACILITIES LAYOUT (CONTD.)

- Cellular layout
  - machines dedicated to sequences of production are grouped into cells in accordance with group-technology principles
  - efficiencies of process as well as product
  - multiskilling, joint problem solving
- Fixed-position layout
  - the product remains in one location and required tasks and equipment are brought to it
  - e.g. aircraft, ships, buildings



(c) Cellular layout



(d) Fixed-position layout

Sources: Based on Black, J. T. (November 1983). 'Cellular Manufacturing Systems Reduce Setup Time, Make Small Lot Production Economical'. *Industrial Engineering*, 36-48; Schonberger, R. J. (November 1983). 'Plant Layout Becomes Product-Oriented with Cellular, Just-in-Time Production Concepts'. *Industrial Engineering*, 66-77; Duplessie, K. (17 June 2009). 'Designing a Detail Shop for Success'. *ModernCarCare.com*, <http://www.moderncarcare.com/articles/2009/06/designing-a-detail-shop-for-success.aspx> (accessed 15 September 2010); and Rely Services, <http://www.relyservices.com/insurance-claims-processing-services.htm> (accessed 15 September 2010).



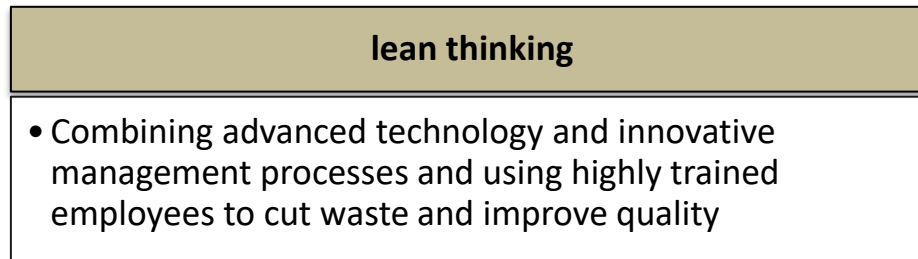
# TECHNOLOGY AUTOMATION

- Finding the right combination of technology and management is important
- Radio-frequency identification (RFID)
  - uses radio system tracking to allow location tracking of items in production systems, transport networks or society
- Advanced manufacturing systems
  - uses advanced technologies, digitally controlled, to allow for adaptation to produce a range of products
  - saves time and expenses connected with making changes



# LEAN THINKING

- Lean thinking improves quality and cuts waste by using:
  - advanced technology
  - innovative management processes
  - highly trained employees
- Based on principles of lean manufacturing pioneered by Toyota



# INVENTORY MANAGEMENT

## Inventory

- The goods that the organisation keeps on hand for use in the production process up to the point of selling the final products to customers

## Finished-goods inventory

- Consists of items that have passed through the complete production process but have yet to be sold

## Work-in-process inventory

- Composed of the materials that are still moving through the stages of the production process

## Raw materials inventory

- Consists of the basic inputs to the organisation's production process



# THE IMPORTANCE OF INVENTORY

- Inventory management is **vital**
- Inventory sitting idle **costs money**
- Keeping inventory to an **absolute minimum** is considered excellent practice

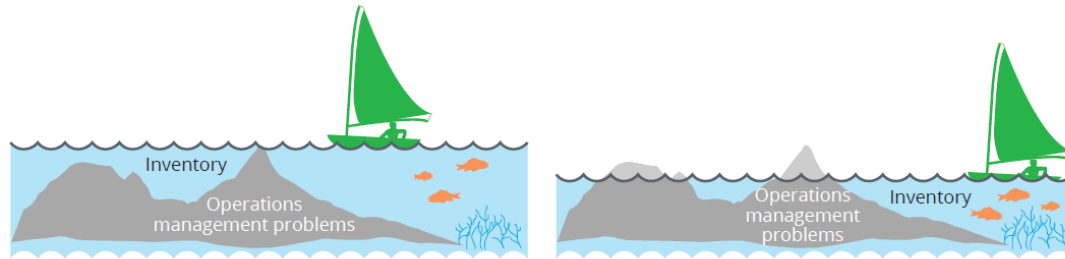


Exhibit 20.5 Large inventories hide operations management problems

Sources: Based on Schonberger, R. J. (1982). *Japanese Manufacturing Techniques: Nine Hidden Lessons in Simplicity* (New York: Free Press).



# JUST-IN-TIME (JIT) INVENTORY

- Is an **inventory control system** that schedules materials to arrive precisely when they are needed on a production line
- Designed to reduce the level of an organisation's inventory
- Advantages:
  - reduced inventory frees capital for other company uses
  - enhances flexibility



# OPERATIONS DELIVER OUTCOMES

- Operations of an organisation is the **heart** and **soul** of the organisation
- Four major outcomes:
  - achieving superior customer responsiveness
  - achieving superior innovation with speed and flexibility
  - achieving superior quality
  - achieving superior efficiency



# INFORMATION TECHNOLOGY HAS TRANSFORMED MANAGEMENT

- Refers to the hardware, software, telecommunications, database management and other technologies used to store, process and distribute information
- Dissolves boundaries
- Encourages collaboration



# KNOWLEDGE MANAGEMENT AND WEB 2.0

- Process of systematically gathering knowledge, making it available through organisation and fostering a culture of learning
- Knowledge involves the use of information by humans to achieve a task or goal
- IT systems facilitate knowledge management by enabling organisations to collect, store and analyse
- Application for knowledge management is the use of **business intelligence software**
- **Expert-locator systems** that identify and catalogue experts in a searchable database



# ENTERPRISE RESOURCE PLANNING (ERP)

- Refers to a networked information system that collects, processes and provides information about an organisation's entire enterprise
- Includes:
  - identification of customer needs
  - receipt of orders
  - distribution of products
  - receipt of payments



# EXAMPLE OF AN ERP NETWORK

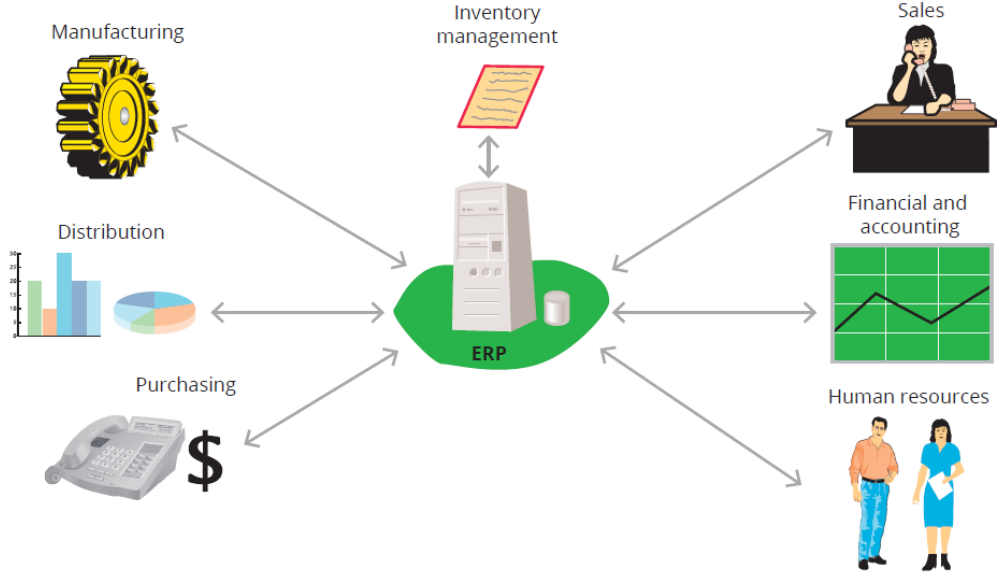


Exhibit 20.6 Example of an ERP network



# THE INTERNET AND E-BUSINESS

- Managers need to incorporate the internet as part of their information technology strategies
- **E-business**
  - any business that takes place by digital processes over a computer network rather than in physical space
- **E-commerce**
  - business exchanges or transactions that occur electronically (contd.)

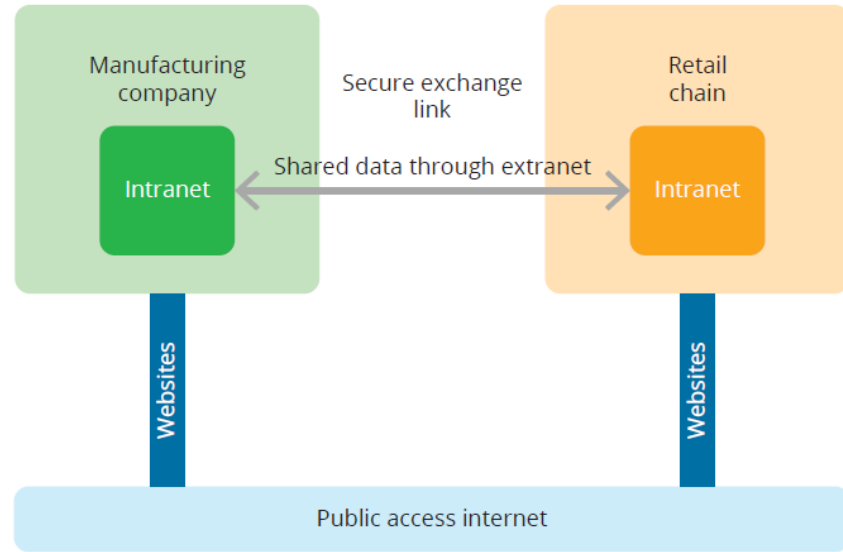


# THE INTERNET AND E-BUSINESS (CONTD.)

- **Intranet**
  - an internal communications system that uses the technology and standards of the internet but is accessible only to people within the organisation
- **Extranet**
  - an external communications system that uses the internet and is shared by two or more organisations



# THE KEY COMPONENTS OF E-BUSINESS FOR TWO TRADITIONAL ORGANISATIONS



**Exhibit 20.7** The key components of e-business for two traditional organisations

Sources: Based on Turcotte, J., Silveri, B. and Jobson, T. (August 1998). 'Are You Ready for the E-Supply Chain?' *APICS – The Performance Advantage*, 56–9.

# E-BUSINESS STRATEGY

## The internet:

- Allows a company to establish **direct links** customers and **expand** into new markets
- Enables the organisation to provide access **around the clock** to **worldwide** market
- E-business offers increased efficiency:
  - improve bottom line and increase productivity
  - cut costs



# STRATEGIES FOR ENGAGING CLICKS WITH BRICKS

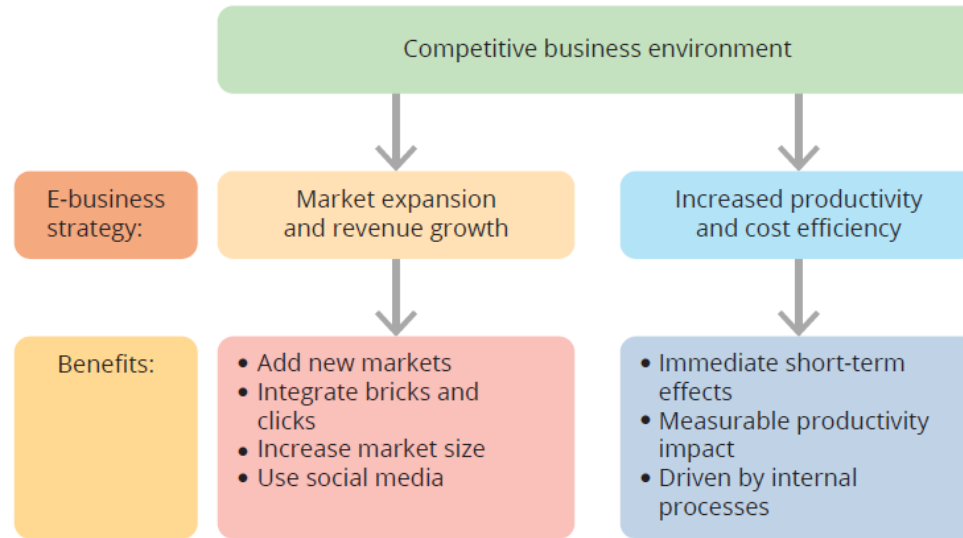


Exhibit 20.8 Strategies for engaging clicks with bricks



# E-BUSINESS STRATEGY: MARKET EXPANSION

- Internet enables a company to expand into new markets
- Enables the organisation to provide access around the clock to a worldwide market



# E-BUSINESS STRATEGY: INCREASING EFFICIENCY

- E-business primarily as a way to improve profit by increasing productivity and cutting costs
- Some companies following Twitter to help predict sales
- Make decisions such as how many products to manufacture and ship
- Whether to increase store inventories or to cut the price of certain items
- Company can access a worldwide market and find the best price, or negotiate better terms for goods and services



# OPERATIONS MANAGEMENT, INFORMATION AND SUSTAINABLE DEVELOPMENT

- Organisations need to have a strong, **connecting** influence between **operations** and **sustainability** outcomes of the organisation
- Can use Global Reporting Initiative (GRI) Index to measure and assess the sustainability actions and outcomes of an organisation
- Involves asking:
  - To what extent are environmentally friendly products being used?
  - Are logistics and transport minimising greenhouse emissions?
  - Is packaging environmentally friendly/recyclable?
  - Is energy efficiency in operations being pursued and achieved?



# CHAPTER 20 – BRIEF SUMMARY

20.1 Operations management refers to using various tools and techniques to ensure that goods and services are delivered successfully to customers or clients.

20.2 Facilities layout, which can be focused around process, product, fixed-position or in cells, provides the process design and structure needed to make the operation effective.

2.3 Advanced technical systems can support the never-ending quest to improve products and the costs, quality and delivery performance of these.

2.4 Inventory is an important contributor to both cost and service levels.

20.5 An organisation's information technology (IT) consists of the hardware, software, telecommunications, database management and other technologies that the company uses to store data and make it available in the form of information for organisational decision making.

20.6 E-business can be defined as any business that takes place by digital processes over a computer network rather than in physical space.

