

Part 1: MIS and You

Chapter 3

Productivity, Innovation and Strategy

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Running Case

- Josie and his grandparents are delighted with the results of introduction of wireless Internet
- He is still thinking of Café Italiano gaining more competitive advantage by introducing Facebook and Twitter pages
- He is also investigating some group-buying discount services and strategies
- He realizes that implementing two strategies above require overall strategy
- He needs to align his strategies with his grandparent's overall strategy

Study Questions

1. Why should I care about Productivity and Innovation?
2. What is Business Technology Management (BTM) and how is it related to productivity and Innovation?
3. How do information systems improve productivity?
4. How are organizational strategy and industry structure related?
5. What is the relationship between innovation and IT?
6. How do information systems provide competitive advantage?
7. Can competitive advantage through information systems be sustained?

Why Should I care about Productivity and Innovation?

- Productivity, or, labour productivity, is the ratio of the Canadian gross domestic product (GDP) over the total paid hours worked by Canadians
- It measures the value that Canadian workers generate per hour
- The Conference Board of Canada has suggested that labour productivity is the primary indicator of our per capita income
- The increasing labour productivity is the best measure of Canada's future growth

Productivity Paradox

- In 1989, economist Stephen Roach found no evidence of an increase in worker productivity associated with the massive increase in investment in information technology
- This result led the Nobel Prize winning economist, Robert Solow, to make the now famous quote "*We see computers everywhere except in the productivity statistics*"
- The **Productivity Paradox** remains with us today

How can IT create business value

- **Productivity** – IT allows a company to make either more output from the same inputs, and/or to make better output and/or to make the output faster than before the technology
- **Structure of competition** – IT can alter the way corporations compete
- **Benefits to the End customer** – IT helps make processes more efficient and changes the nature of the competition. Consumer may see cheaper and better goods and services

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What is Business Technology Management (BTM), and How Is It Related to Productivity and Innovation?

- The ICT industry sector is an important industry for productivity and innovation
- Because it includes technologies that can enhance individual and organizational productivity
- Canadian policymakers are looking to the ICT industry as a primary driver of innovation and hence increased productivity in Canadian industries
- BTM is a new program designed by CCICT

Business Technology Management (BTM)

- BTM programs include a variety of course topics, such as business and technical training, financial accounting, system analysis and design, project management, IT infrastructure, marketing, international business management, writing and business communication, organizational behaviour, and teamwork skills
- BTM programs are designed for students who are inspired to use technology to change the way the world does business

How do Information Systems Improve Productivity?

- **Increasing efficiency** means that business processes can be accomplished either more quickly or with fewer resources and facilities (or both).
 - “doing things right”
- **Increased effectiveness** means that the company considers offering either new or improved goods or services that the customer values
 - “doing the right things”

A Sample of Business Processes

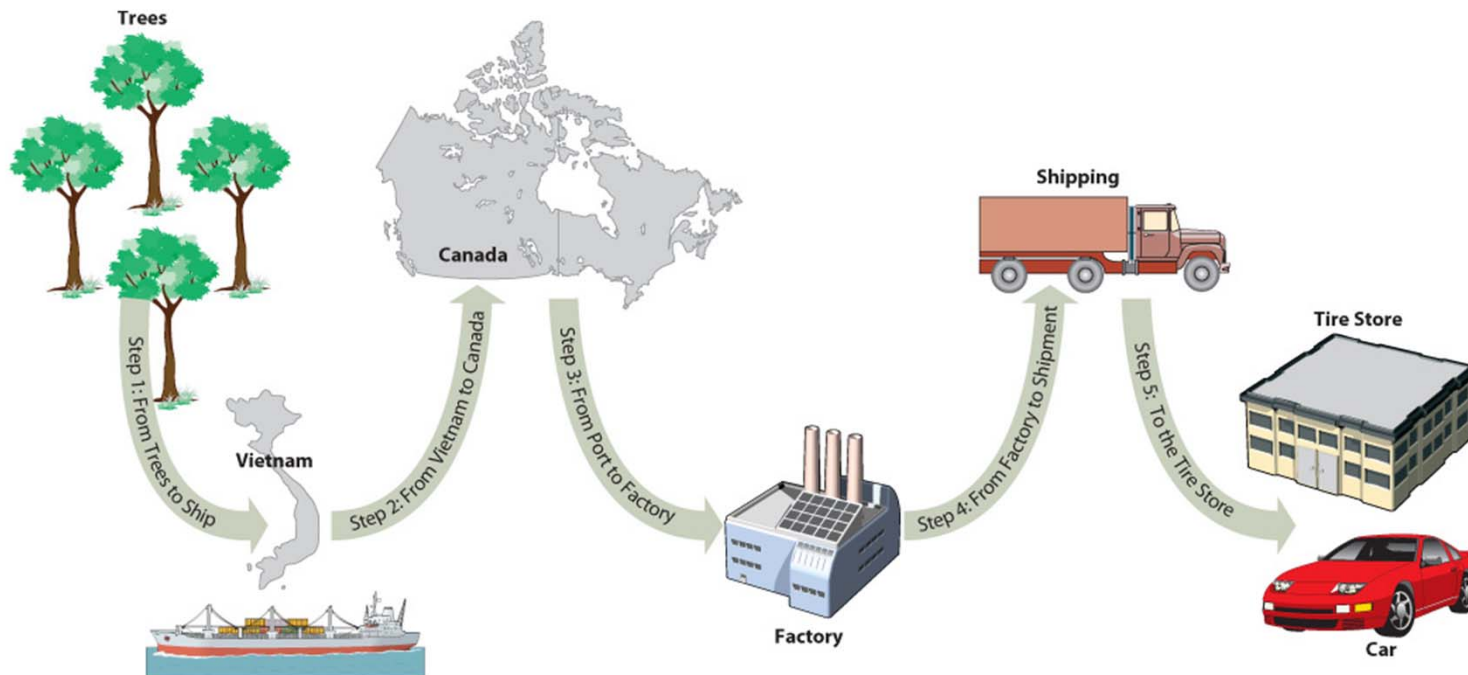


Figure 3-1

Business Process

Business Processes and Value Chains

- A **value chain** is a network of value-creating activities
 - Primary activities
 - Support activities
- Made up of at least one and often many business processes

Porter's Value Chain Model

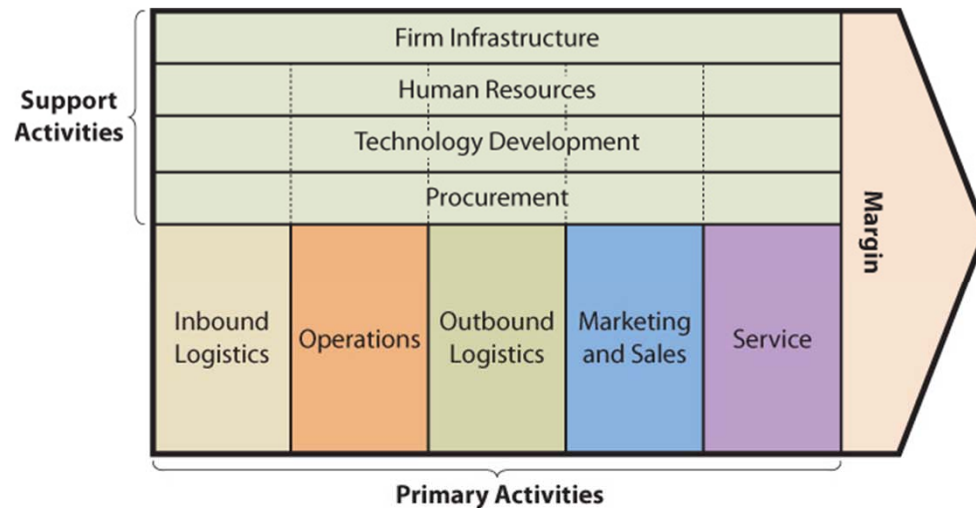


Figure 3-2

Porter's Value Chain Model

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Primary Activities

- Primary activities are activities in which value is added directly to the product
- Primary activities include the following (five):
 1. Inbound logistics
 2. Operations
 3. Outbound logistics
 4. Marketing and sales
 5. Service
- Stages accumulate costs and add value to product
 - Net result is total margin of chain

Support Activities

- Support activities support the primary activities
- Support activities include the following (Four)
 1. Firm infrastructure
 2. Human resources
 3. Technological development
 4. Procurement
- Contribute indirectly to production, sale, and service
- Add value and costs
 - Produce margin that is difficult to calculate

Understanding the Value Chain

- Help to understand how information systems increase productivity
- Enable the development of more efficient or more effective supporting activities
- Increase the margin enjoyed by company
- Information systems increase productivity by offering new and improved services, primary activities

MIS in Use

Winterborne Bicycles: Building the Biking Experience

- Winterborne Custom Bicycles was founded in 2001 by Jason Filer
- Filer and Alan Medcalf, business partners, consider Winterborne more of a vocation than a business
- They help customers make the best possible choices for their cycling wants and needs
- The company's website provides customers with information about products, and promotes events such as weekend maintenance clinics, the advanced maintenance course, group rides and clubs, trail-maintenance days, and educational seminars

MIS in Use Questions

1. Identify the value chain involved in obtaining a new bicycle from Winterborne Custom Bicycles. Can you identify the primary activities that create value for the customer when purchasing a new bike?
2. What information systems do you think could be used to support these primary activities?
3. Check out the company's website (www.winterbornebikes.com). Does the site fill the role of a primary activity or is it more appropriately considered a support activity? Justify your answer.

How are organizational strategy and industry structure related?

- Organizational Strategy reflects organization's goals and objectives
- Developed from organizational structure
- Creates the value chain for organization
- Establishes the structure, features, and functions of information systems
- A company's strategy is influenced by the competitive structure of the industry the company is in

Five forces determine industry structure

- Porter's five competitive forces:
 - Bargaining power of customers
 - Threat of substitution
 - Bargaining power of suppliers
 - Threat of new entrants
 - Rivalry among existing firms

Porter's Five Forces



Figure 3-5

Winterborne Bicycle Institute

Source: Courtesy of Winterborne Bicycle Institute.

A Competitive Strategy

- Organization's response to structure of its industry
- Porter identified four competitive strategies:
 - Cost leadership across industry
 - Cost leadership focused on particular industry segment
 - Differentiation across industry
 - Differentiation focused on particular industry segment
- Porter says goals, objectives, culture, and activities must be consistent with strategy

Porter's Four Competitive Strategies

Figure 3-6

Porter's Four Competitive Strategies

		Cost	Differentiation
Industry-wide	Focus	Lowest cost across the industry	Better product/service across the industry
		Lowest cost within an industry segment	Better product/service within an industry segment

What is the relationship between innovation and information technology?

- Changes to industry structure often occur through innovation
- Bower and Christensen suggested two general types of technology innovations:
 - **Sustaining technologies** are changes in technology that maintain the rate of improvement in customer value
 - **Disruptive technologies** introduce a very new package of attributes to the accepted mainstream products

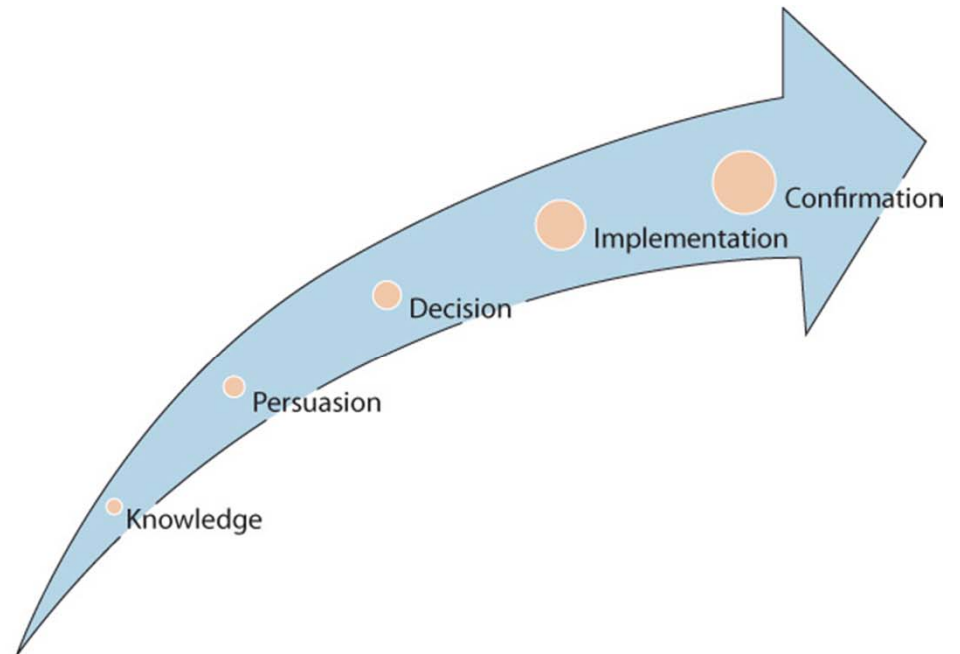
Diffusion of Innovation

- This theory was defined by Everett Rogers
- The process by which an innovation is communicated through certain channels over time among the members of a social system
- Stages of diffusion of an innovation are:
 - Knowledge
 - Persuasion
 - Decision
 - Implementation
 - Confirmation

Diffusion of Innovation, continued

Figure 3-7

Roger's Theory of Diffusion
of Innovation



How do Information Systems Provide Competitive Advantage?

- Organizations respond to the five competitive forces in numerous ways
- For our purposes, we can distill those ways into the list of principles
- You can also apply these principles to a personal competitive advantage
- Some of these competitive techniques are created via products and services, and some are created via the development of business processes

Principles of Competitive Advantage

Product Implementations

1. Create a new product or service
2. Enhance products or services
3. Differentiate products or services

System Implementations

4. Lock in customers and buyers
5. Lock in suppliers
6. Raise barriers to market entry
7. Establish alliances
8. Reduce costs

Figure 3-8

Principles of Competitive Advantage

Competitive Advantage via Products

- Organizations gain a competitive advantage by:
 - Creating new products or services
 - Enhancing existing products or services
 - Differentiating their products and services from those of their competitors
- Information systems can achieve these objectives

Competitive Advantage via Business Processes

- Organizations can gain a competitive advantage by implementing business systems
 - Locking in customers
 - High switching costs
 - Locking in suppliers
 - Making it easy to connect to and work with organization

Competitive Advantage via Business Processes, continued

- Create entry barriers
 - Making it expensive for new competition to enter market
- Establish alliances
 - Establish standards
 - Promote product awareness
- Reducing costs
 - Increased profitability

Can Competitive Advantage through Information Systems Be Sustained?

- Competitors often react to innovations by replicating the technology
- The more ubiquitous—existing everywhere—information technology becomes, the less competitive advantage information technology provides
- While this may be true about technology, it isn't true about information systems which also include organizational procedures and people along with hardware and software
- In business, people make the difference!

Sustained Competitive Advantage

- Companies must find a distinctive way to compete
- Companies must successfully integrate many technology systems with people and procedures in the organization
- While competitors might be able to purchase the technology, it takes time for people to gain the necessary experience and skill
- Matching the entire set of information systems is a high barrier for companies with less experience and success in integrating people and technology

What do YOU think?

The Digital Divide

- Someone who knows how to search the Internet can learn more readily than someone who does not
- And every year, the person with greater knowledge pulls farther and farther ahead
- The increasing reliance on the web for information and commerce has created a digital divide between those who have Internet access and those who do not
- This divide continues to deepen as those who are connected pull farther ahead of those who are not