

Unit 5, Part 1: Manufacturing: An Introduction

- S.C.O: Demonstrate an understanding of what manufacturing entails, including the following delineations:
- 5.1.1 Identify natural and human inputs in a manufacturing operation.
- 5.1.2 Analyze the processes in a manufacturing operation.
- 5.1.3 Describe the three processes that may be used to change a raw material into a useable form.

Manufacturing

- **Manufacturing** is the application of tools and a processing medium to the transformation of raw materials into finished goods for sale.
- Manufacturing is a **wealth producing sector** of an economy, whereas a tertiary service sector tends to be **wealth consuming**.

Manufacturing

- Major manufacturers in North America include General Motors, Ford Motor Company, Chrysler, Boeing, and Pfizer.
- Examples in Europe include France's Airbus and Michelin Tire.

Review: Three Sectors of the Economy

- 1. Primary economic activity** involves the collection of raw materials from the earth. Farming, fishing, mining, forestry are the classic parts of the primary economy.



Review: Three Sectors of the Economy

2. Secondary economic activity involves processing or manufacturing raw materials into products for people to buy.

It is often referred to as the **manufacturing or processing** sector.



Review: Three Sectors of the Economy

3. **Tertiary economic activity** does not involve raw materials rather it involves providing service to people.

Hence it is often referred to as the **service industry**.



Systems Model: The Language of Manufacturing

- **Inputs**
- **Manufacturing processes**
- **Outputs**

Inputs

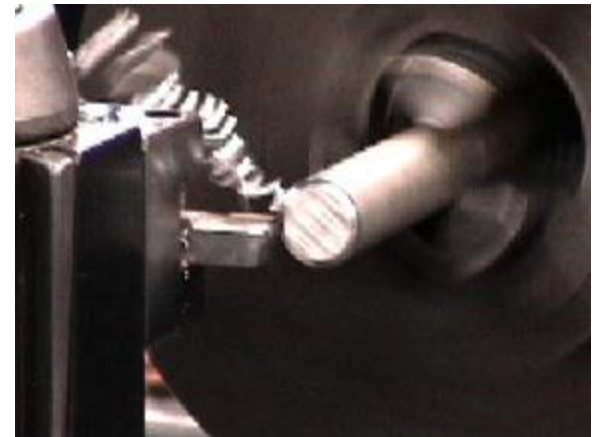
- In manufacturing, these are **materials & factors** that go into making a product.
- **Examples:** raw material, power, buildings, land, labor, decisions, capital, machinery.

Manufacturing processes

Are those processes that **change a raw material to a usable form.**

Three types of processes:

1. *Conditioning*
2. *Analytical*
3. *Synthetic*



Manufacturing processes

1. *Conditioning Processes:* minimal change to a resource.

Examples: logs into lumber; fish into fillets



Manufacturing processes

2. Analytical Processes: resource converted to a number of different products.

Examples: cow into leather, milk & cheese

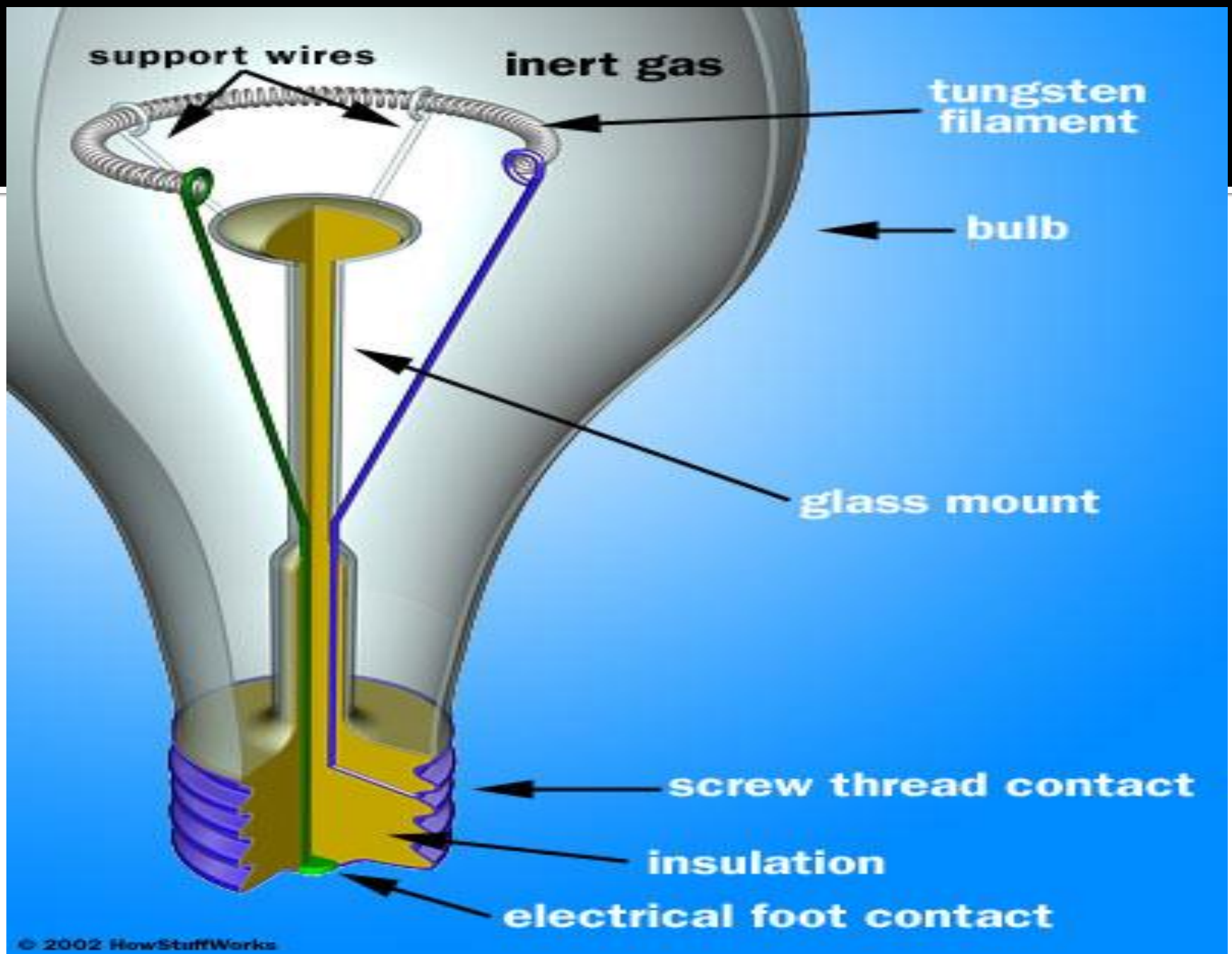


Manufacturing processes

3. *Synthetic Processes*: several resources are combined to make one resource.

Examples: light bulb has glass, tungsten, Nitrogen & aluminum





Outputs

- For example, the output from the fish plant is fish sticks or frozen fish fillets.
 - Read the introduction to Chapter 13 "Patterns in Manufacturing" on page 216
 - Read "The Manufacturing Process" on pages 216-217.

Part 2: Types of Manufacturing

The student will be expected to differentiate among types of manufacturing activity, including the following delineations:

- 5.2.1 Define the terms labour-intensive and capital-intensive.
- 5.2.2 Analyze a manufacturing operation to determine if it is labour-intensive or capital-intensive.
- 5.2.3 Define the terms light industry and heavy industry.
- 5.2.4 Analyze a manufacturing operation to determine if it is an example of light industry or heavy-industry.

Defining Types of Industry

- 1. Labor Intensive vs. Capital Intensive**
- 2. Heavy vs. Light Industry**

Labour Intensive vs. Capital Intensive

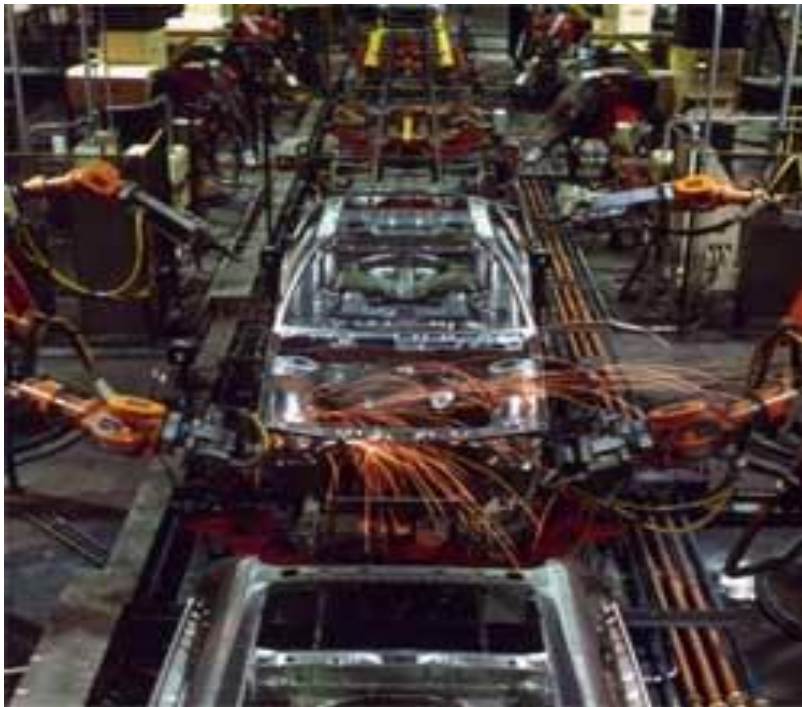
- **Labor intensive:** requires a lot of hands-on labour to produce the product.
- **Example:** Jewelry making.



North Korean women work at the assembly line of the factory

Labour Intensive vs. Capital Intensive

- **Capital Intensive:** Requires a lot of expensive equipment to make the product.
- **Example:** Automotive industry



Heavy vs. Light Industry

- **Heavy industry:** produces big expensive products for other industry.
Examples: Ship yard, tractor production



Heavy vs. Light Industry

- **Light industry:** produces products for consumers.
- Example: Soft drink industry



Practice Classifying

- Analyze the manufacturing processes in figure 13.2 on page 218 of your text. Determine if each manufacturing process is “labor intensive” or “capital intensive” and if it is “heavy industry” or “light industry”. Shown next slide

Complete the “Wrigley Gum” case study.

Do the following chart

- Manufacturing Process labor vs. capital heavy vs. light
- fabricating water turbines
- assembling televisions
- making shirts
- building ships

Location of Industries

5.3: The student will be expected to determine the factors that influence the location of an industry, including the following delineations:

- 5.3.1 Examine the influence that site conditions and situation may have on the location of an industry. (a)

Factors Affecting Industry Location

- 1. Site/Physical Cost Factors**
- 2. Human-based Cost Factors**
- 3. Government Influence**

Site/Physical Cost Factors

Three major factors of site (physical location)

1. Proximity to raw material.
2. Land
3. Energy



Site/Physical Cost Factors

1. Proximity to raw material:

The heavier & bulkier the raw material the closer the industry will be located to reduce transportation costs.

- **resource oriented industry**

- Communities frequently spring up around resource industries. Labrador City, Churchill Falls, Grand Falls-Windsor and Bonavista are good examples. Can you think of other examples?

Site/Physical Cost Factors

2. **Land:** price of land, level, good drainages, dense, well-settled soil.
3. **Energy:** Before power could be easily transported by high voltage lines, locating close to an energy source was important.

Voisey's Bay, Labrador
INCO Nickel Mine



Location of Industries

- 5.3.2 Compare the terms resource-oriented industry and market-oriented industry. (k)
- 5.3.3 Analyze the influence of weight-gain and weight-loss production on the location of an industry. (a)
- 5.3.4 Describe the advantages of the agglomerating tendency. (k)
- 5.3.5 Identify the characteristics of a labour force that make it attractive to industry. (k)
- 5.3.6 Explain how government subsidies on transportation influence the location of a given industry. (k)
- 5.3.7 Draw conclusions about patterns in the distribution of highly industrialized areas on the earth's surface. (a)

Human-based Cost Factors

- **Market Oriented Industry**
- **Market vs. Resource Oriented Industries**
- **Agglomerating Tendency**
- **Industrial Parks**
- **Labor force characteristics that attract business**

Market Oriented Industry

- Industries that are **located close to the market** because the **product is expensive to transport**.
- The resources needed for inputs are not bulky or expensive to transport.
 - The soft drink industry is a good example.
 - Water, carbon dioxide, flavoured syrup

Market vs. Resource Oriented Industries: Weight Gain vs. Weight Loss

- If the product weight is greater (**weight gain**) than the **input resources** it is located near market.
- If product weight is less (**weight loss**) than the **input resources** it is located near resource.

- Read "The Location of Manufacturing Industries: Where & Why" on page 223 of your text book.
- Read "Physical cost factors" on page 224 of your text book.
- Read "Human-based cost factors" on pages 224-226 of your text book.
- **Assigned Activities**
- Complete questions #14-17 from pages 226-227 of your text book.

Agglomerating Tendency

- The tendency for manufacturing factories producing related products to locate close to each other for mutual benefit.
- **Example:** Car factory & tire factory. How does each benefit by being located close to each other?

Industrial Parks

- **Industrial parks** provide many advantages for a business.
 - Existing infrastructure of roads
 - On ramps and off ramps to highways
 - Large lots, sewer, ample electricity, and close location to related industries
 - All of these make industrial parks attractive for manufacturing businesses.
 - **Example:** Donovan's Industrial Park is located just off the TCH in St. John's.

Labor force characteristics that attract business

- 1. Wages expected:** lower wages in some developing countries like Mexico, and the Philippines attract manufacturers
 - How many North American companies have manufacturing facilities in Asian countries?
- 2. Training:** highly skilled labourers can attract businesses that require welders, mechanics, carpenters, etc.

Labor force characteristics that attract business cont'd...

- 3. Benefits** (EI, Pensions etc): lower costs of employment insurance, pensions , etc. can attract business just as easily as low wages.
- 4. Availability:** a high unemployment rate might attract business, especially if large numbers of workers are required.



Government Influence

- **Transportation subsidies** affect the location of industry.
- A **subsidy** is funding from a government to help businesses pay for some expenses, usually related to infrastructure.
- Subsidies allow businesses to locate farther from the resource.
- Subsidies allow governments to encourage industry in rural areas.
Examples:
 - Building roads in Labrador
 - Helping with the cost of coastal transportation in Labrador
 - Helping with the cost of crossing the Gulf to/from Nova Scotia.

Government Influence

- **Tax breaks affect the location of Industry.**
- Provinces like Newfoundland have attempted to attract business by offering tax breaks. The company obtains a financial break while the province gets the advantage of putting people to work.



Industry Location: The Global Picture

- Look at figure 13.6 on page 223 of your text book.
- The highly industrialized areas on the earth's surface are concentrated in 4 definite regions:
 - North America
 - Western Europe
 - Japan
 - Australia
- Do you see any other patterns?

Industry Location Case Study

- Read the case study "Human and physical factors in Japan's Car Industry" on pages 227-228 and complete questions #18 & 19 on page 228 of your text book.



Environmental Threats

1. Industrial Waste

- Industry has waste output as well as product output.
- Industrial wastes are obviously mostly related to areas of heavy industry.
- However, when we look at the maps on p. 238 and realize prevailing winds play a role we can see that pollution does not recognize political or economic boundaries.

Three types of Industrial waste

1. Greenhouse gasses

Examples: Carbon dioxide & methane.

- Causes global warming & associated problems.

2. Acid Rain

Examples: Sulphur & nitrogen.

- Decreases soil fertility, kills fish, corrodes buildings

3. CFC's (chlorofluorocarbons)

Examples: Refrigerants & sprays.

- Breaks down ozone which filters harmful cancer causing UV rays.

The Role of GOVERNMENT and INTEREST GROUPS

- Remember: “It is the extreme views that define the middle”.
- Interest groups often play the extremist. They raise valid points of concern and argue them vehemently.
- Government has the role of balancing environmental concerns & encouraging economic development.

Averting an environmental threat posed by an industry.

- The prevailing winds map p. 64 you can see that prevailing winds are transporting acid rain from industrialized areas and depositing it in locations down wind from the industrialized area.
- It is important to note that industrialized areas as well as those areas down wind from industrialized areas are affected.

Averting an environmental threat posed by an industry Cont.

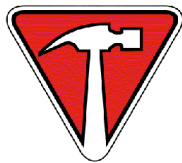
- A need for cooperation and consultation between different nations
- The Kyoto, Japan summit (1997) and the summit held in Rio de Janeiro in 1992 attempted to get countries to reduce their carbon dioxide emissions.

Solutions to solving the acid rain problem include:

1. **Government regulation** to reduce sulphur & nitrogen emission
2. Development of **sulphur-filtering equipment**
3. **Tax breaks for companies** if they reduce pollution output
4. Meetings and consultation between business, environmentalists and government to decide on a plan of action.

Moral Issues & Industry

- Examples include:
 - Child labour
 - Safety of workers
 - A company's responsibility to be environmentally



**SAFE
WORK**

S SPOT THE HAZARD
A ASSESS THE RISK
F FIND A SAFER WAY
E EVERYDAY



Moral Issues & Industry

- Business drives the economy and provides us with our high standard of living here in the western world.
- The question we have to keep asking ourselves is:
 - “Are industries acting within the moral parameters of our society?”.

Moral Issues & Industry

- In Canada and most well developed nations there are strict regulations about safety, waste emissions, age of workers, and corporate responsibility.
- In some developing nations the regulations might not be in place or they might be relaxed in the hope of stimulating business instead of inhibiting it.



- “Manufacturing & The Environment” pages 237-239.
- **Assigned Activities**
 - Complete questions 31 & 32 p. 238
 - Consider question # 33 from page 239 of your text book.

Types of Tertiary Economic Activity

Tertiary = Service industry, such as:

- Ex. Doctor, lawyer, waitress, tourism industry, mechanic, teacher



Public vs. Private Tertiary activity

- **Private service industry** is run by private business and requires that a profit be made from the service.
- **Examples:** Mechanics, Lawyers, Tourism.



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Public vs. Private Tertiary activity

- **Public service industry** is operated by some level of government



Public Health
Agency of Canada

Agence de la santé
publique du Canada



Types of tertiary activity

- **Distributive activities:** involves the transportation and sale of all products from manufacturer to consumer.
 - **Examples:** truck driver, warehouse manager, sales person
- **Financial Activities:** involves banks, insurance companies, financial advising companies, and trust companies.
- **Personal Services:** involves a wide range of services from legal services, to food services, to entertainment and counselling services.

Public service

- Tax payers money pay for things such as education, health care, mail, water, sewer, roads. Hence the term “ public servant”.
- Why does the government provide some tertiary services?

Location of Tertiary Economic Activity

1. Proximity & price
2. Service Availability vs. Population Size.

Proximity & price

- 1. *Location*:** services must be located close to a large enough market to produce DEMAND.
- 2. *Viability*:** services are only viable as businesses if the demand is high enough & the price is reasonable.
 - "The Location of Tertiary Activities" on page 244 of your text book.
 - Complete Question #9-10 on page 244.

Service Availability vs. Population Size

- 1.** Larger populations support a wider range of services.
- 2.** Consider: Health services, education, recreation facilities, shopping facilities, hotels, restaurants and you will see that the range of services available is directly related to community size

Case Study: Tourism

- "International Tourism in the Tertiary Sector"
p. 245-246
- **Assigned Activities**
- Complete questions # 11-14 on page 246 of your text book.
- Case Study "Costa Del Sol" p. 247-248
complete questions #15-18

QUATERNARY Activity

- refers to activities which involve the collection, recoding, arranging, storage, retrieval, exchange, and dissemination (sharing) of information.
- **Examples:** research and development, Computers, Cell Phones, E-mail, and the WWW.



Location of Quaternary Activity

- Populations of people concentrated in an area makes the information sector viable
- At one time cable TV, telephones, and radio were popular in areas where there was a population large enough to support them.

Location of Quaternary Activity

- Infrastructure is required for the communication of information. The infrastructure has been closely linked to populated areas.
- However, the development of infrastructure technology is changing so much and decreasing in price to the point it may change the patterns of infrastructure.
 - **Example:** Fibre-optic Internet connections were once only found in urban areas.

Location of Quaternary Activity

- Lesser developed nations currently do not have much access. However, lesser developed nations are not tied to the old and outdated infrastructure.
- This might be the time for lesser developed nations to build infrastructure and increase their share of the information technology market

QUATERNARY Activity

- Read "The Quaternary Sector and The Information Age" p. 249
- Complete questions #19-21



Factors Affecting Mass Communications Patterns

- In the telesphere of global communications there are islands and continents of activity and there are deserts or areas where there is no activity because there is no connectivity.
- The areas of connectivity are closely associated with development.



Mass Communication Affects Workplace Location

- As more and more people work in the information sector we may see a trend towards reducing urbanization.
- People would not be tied to an office building if they could work at home.
- Maybe they could work at home on the country farm and submit work electronically.



Mass Communication Affects Workplace Location

- Businesses need not be located physically near other businesses as we saw with the agglomerating tendency of the manufacturing sector.
- Infrastructure is improving to the point it overcomes distances, so information technology will be a new source of employment and economic activity in rural depressed regions.

Mass Communications Patterns

- Read "Information Technology and Economic Development" and complete question # 22 p.251



Tertiary Sector Trends

- Economists recognize that the tertiary industry has expanded significantly in the last 100 years.
- Figure 14.3 on page 243 of your text shows that in Canada the tertiary sector of the economy has grown from **36% of GNP - 73% of GNP** over the last 100 years.

Tertiary Sector Trends

- In the early 1900s, as the secondary sector of the economy grew there were more people working in urban areas as manufacturers.
- The concentration of people meant there was more need for services. Service industries grew in turn.
- The people working in the tertiary industry need services too so the growth of the service industry continues.

Two Tertiary Growth Sectors

1. *International tourism*



2. *Information technology.*



International tourism

- *In the last quarter of the 20th century International tourism increased 12.5%*
 - *8 reasons for this :*
 1. More leisure time since WWII
 2. More retired people because of aging population
 3. Younger retirement age. It did average 65, now it is closer to 55.
 4. The average holiday time has increased from 2 weeks to 4 weeks

5. Wages have increased giving people more disposable income
6. Travel time and travel costs have decreased
7. Travel agencies are offering all inclusive packages which attract people
8. Appealing advertising campaigns by travel agencies.

1. *Climate-oriented Sites:*

A) Warm climates, sunbathing and swimming attract some tourists from colder regions.



B) Abundant snow and good skiing conditions attract those avid skiers and snowmobilers



2. *Landscape-oriented Sites:*

Some tourists are attracted by site seeing opportunities.



3. *Culture-oriented Sites*

Some tourists are attracted by historic sites like Athens and Jerusalem.



Standard Of Living Indicators

- **Economic Indicators**
 - There are a variety of economic indicators which can provide a measure of the degree of development in a country.
 - We will look at two indicators:
 - Employment Structure
 - GNP per capita.

Employment Structure

- Countries that have become "developed" have been able to move their economy beyond the primary sector to the secondary sector which in turn grows the tertiary sector.
 - Primary sector 5%
 - Secondary sector 25%
 - Tertiary sector 70%

Employment Structure

- Lesser developed countries have most of their work force employed in the primary economic sector.
 - Primary sector 60%
 - Secondary sector 15%
 - Tertiary sector 25%

GNP per Capita

- GNP per capita is a measure based on the Gross National Product (GNP) of a country.
 - GNP refers to the total value of the production of goods and services in a nation measured over a year.
 - The GNP per capita takes that dollar value and divides it by the population of the country.

- For example if the GNP for Country X was \$5,000,000 and there were 1,000 people in the country then the GNP per capita would be $\$5,000,000 / 1,000 \text{ people} = \$5,000$ per person or a GNP per capita of \$5,000.
 - Country X would have a much higher GNP per Capita.

Standard of Living Defining Development

- The level of **development** in a country refers to two type of development:
 1. economic development
 2. social development.

- **Economic development** refers to how well the economy is doing and how much money people have at their disposal.
- **Social development** refers to more human indicators of well being such as life expectancy, infant mortality rate, literacy rate, availability of communications.

- Some countries have a very high standard of living with long life expectancy, equal rights, high average wages, strong economies, great health care and high literacy rates
- While other countries have a short life expectancy, fierce discrimination against woman, very low wages, faltering economies, little health care and very low literacy rates.
- [YouTube - Development Indicators](#)

- The United Nations recognizes the disparity and has set forth eight "millennium goals" to reduce the disparity among nations.
 - Eradicate extreme poverty and hunger
 - Achieve universal primary education
 - Promote gender equality and empower women
 - Reduce child mortality
 - Improve maternal health
 - Combat HIV/AIDS, malaria and other diseases
 - Ensure environmental sustainability
 - Develop a global partnership for development