

5.1 Introduction to operations management

Topic 5: Operations management

Unit content

Content	Assessment objective
<u>The role of operations management</u>	AO2
<u>The role of operations management and the business management concepts</u>	

The role of operations management

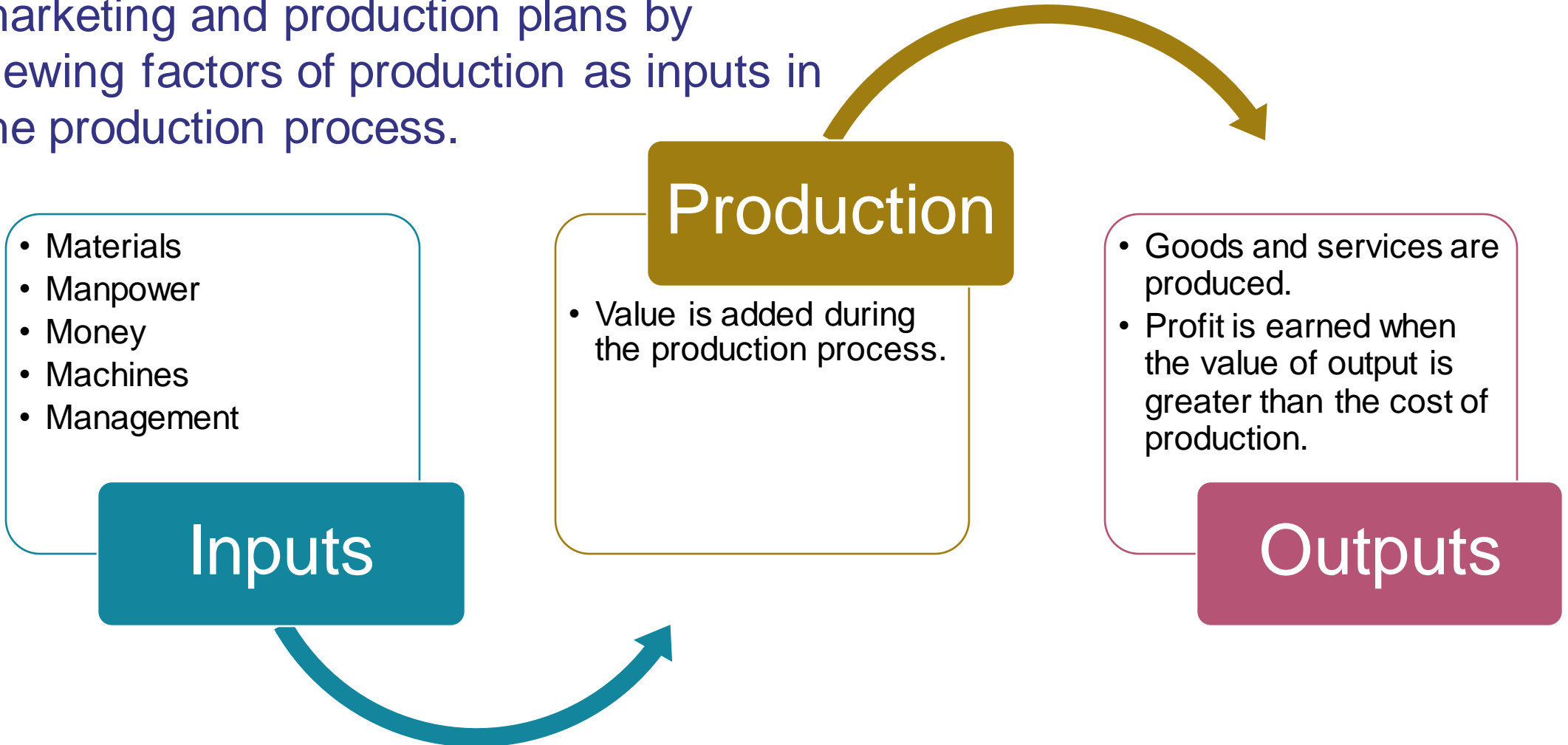
Operations management

- This is the provision of goods and services in the right quantities and at the right quality in a cost-effective and timely manner.
- The role of production is to turn factors of production (inputs) into outputs by adding value.



The Five Ms

- The Five Ms are a useful tool in devising marketing and production plans by viewing factors of production as inputs in the production process.



Marketing implications

- Production methods affect the quality and individuality of the product.
- Exclusive products can be marketed at high prices due to uniqueness and quality.
- By contrast, mass produced products are more standardized.



HRM implications

- Size of workforce from changes in production methods.
- Training and development needs must be considered for different methods of production.
- Recruitment and selection can be relatively easy for unskilled work yet attractive remuneration packages may be needed to recruit specialist workers.
- Contingency plans for operational crises need to be developed.



Finance implications

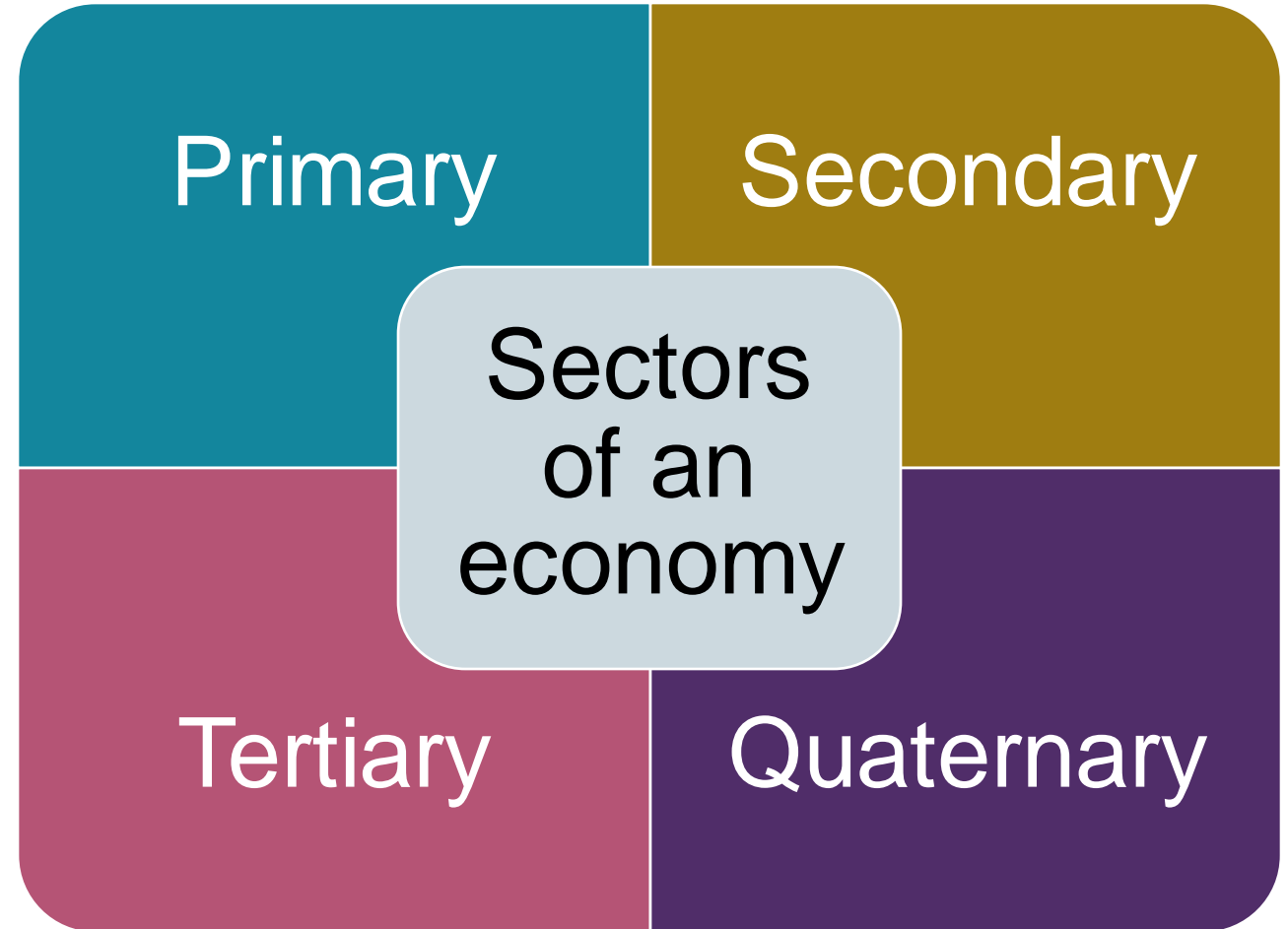
- Capital intensity and lean production require heavy investment in machinery and equipment.
- Investment appraisal is required to assess investment options as fixed investment costs can be very high.
- Contingency funds need to be set aside for unforeseen emergencies, e.g. machine breakdowns.
- In labour intensive production, a greater proportion of a firm's costs go towards remunerating workers with financial benefits.



Sectors of the economy and operations management

- Operations management is concerned with all four sectors of the economy.
- Essentially, the role of production is to turn factors of production into the output of goods and services cost-effectively.

BUSINESS MANAGEMENT



Primary sector

Businesses in this sector are involved in the extraction, harvesting and conversion of natural resources.



Secondary sector

Businesses in this sector are involved in the manufacturing or construction of products.



Tertiary sector

Businesses in this sector specialize in providing services to the general population.



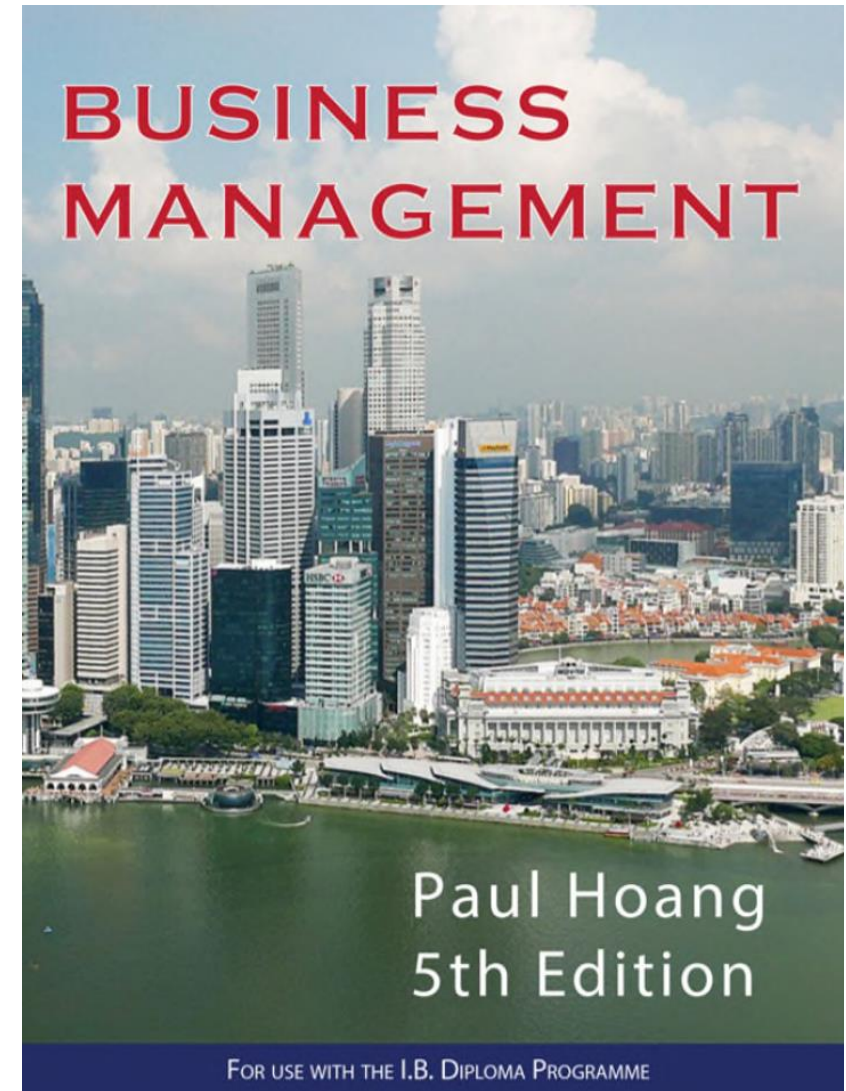
Quaternary sector

Businesses in this sector are involved in intellectual, knowledge-based activities that generate and share information.



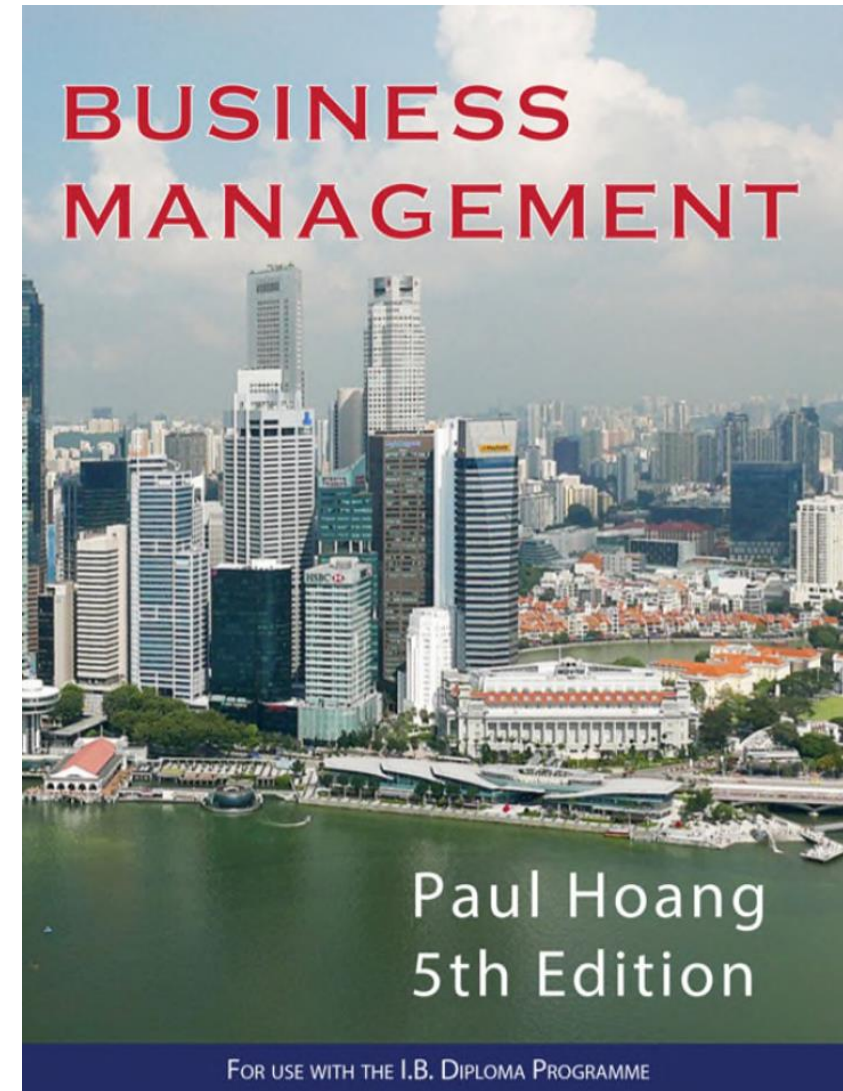
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- Answer all parts



Approaches to learning

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- Activity 35.1 *Research and thinking skills*
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Theory of knowledge

If there is no universally agreed definition of 'human rights', can this ever be achieved globally for social sustainability?



An example is this video by *DuPont*, a chemicals firm, on their ethical position on diversity and inclusion in the workplace.



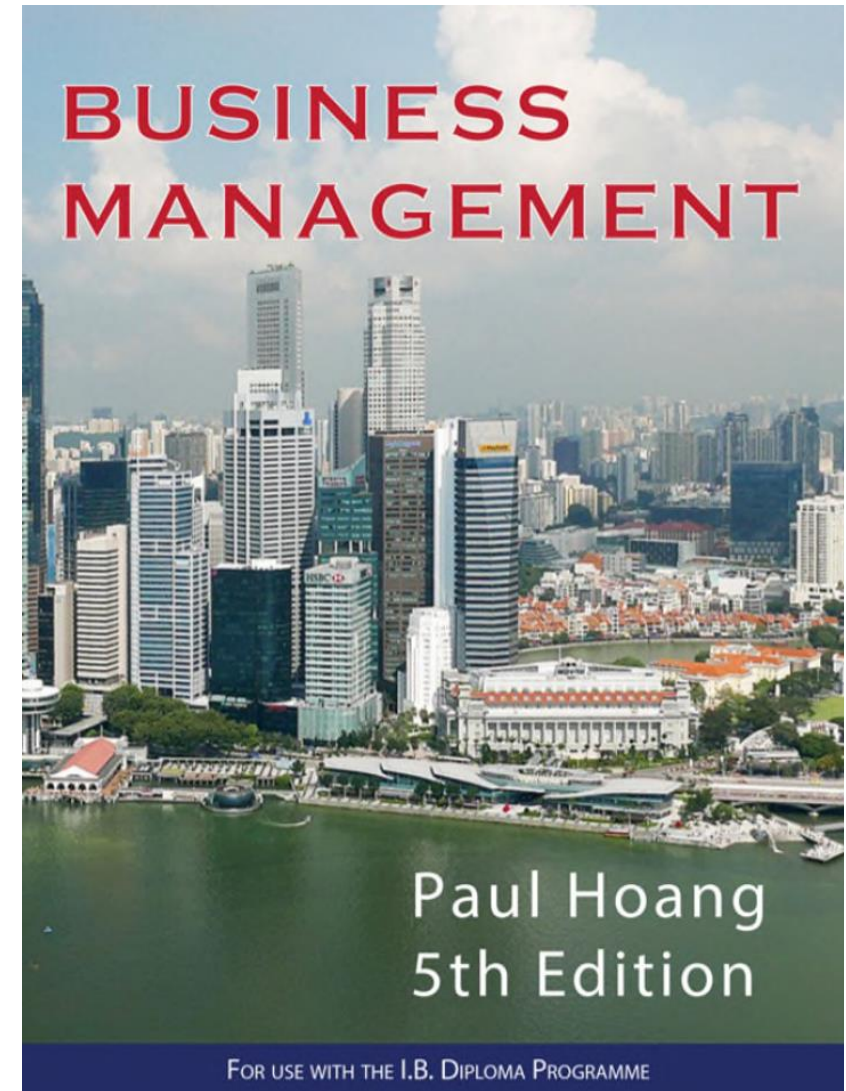
Concepts in BM: ethics



- Diversity and inclusion are increasingly at the forefront of business approaches to CSR.
- Diversity and inclusion policies are designed to ensure that everyone, regardless of who they are or what they do, feel equally valued by the firm.
- Many firms have publicly declared their position on diversity and inclusion. These can be found on their company websites.

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5.2 Operations methods

Topic 5: Operations management

Unit content

Content	Assessment objective
<p>The following operations methods:</p> <ul style="list-style-type: none">• <u>Job production</u>• <u>Batch production</u>• <u>Mass/flow production</u>• <u>Mass customization</u>	AO3
<p>Business Management Toolkit:</p> <ul style="list-style-type: none">• <u>Force field analysis (HL only)</u>	
<u>Operations methods and the business management concepts</u>	

Bakery vs. factory bread in Germany

- This video compares two approaches to baking bread.

1. What are the pros and cons of bakery produced bread?
2. What are the pros and cons of factory produced bread?



Methods of production

- Job production
- Batch production
- Mass/flow production
- Mass customization

Job production

- This involves creating an individual product from start to finish, tailor made to meet specific needs of a customer.
- Typically, these products are one-off items (small to large scale):
 - Buildings
 - Wedding dresses
 - Movies
 - Haircuts
 - Musical instruments



Job production of parade floats



Advantages and disadvantages of job production



Advantages

- Quality of production.
- Highly motivated workers.
- Uniqueness of the product acts as a unique selling point (USP).
- Flexibility in the design and specifications of the product are possible.

Advantages and disadvantages of job production



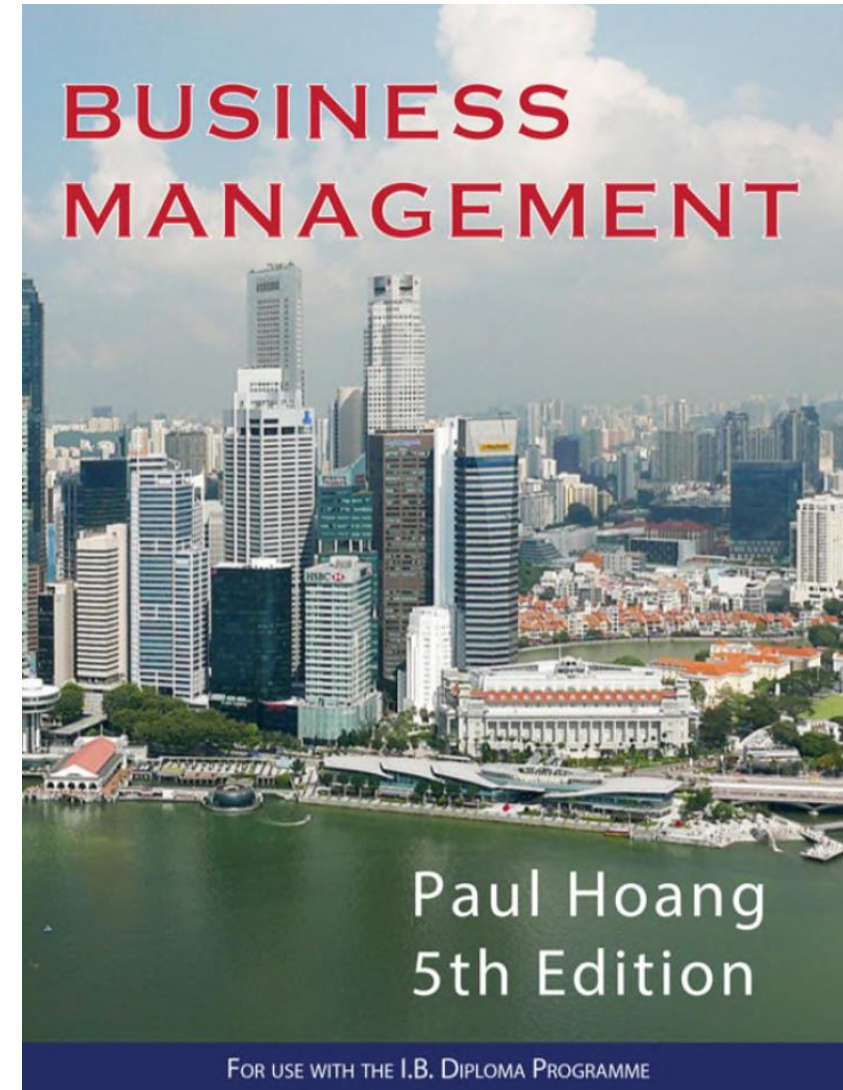
Disadvantages

- Labour intensive and therefore expensive
- Time consuming due to the varying and specific design requirements.
- Long working capital cycle between producing and selling product.
- Few economies of scale can be enjoyed since each product is unique (i.e. produced on a small scale).

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- Answer all parts

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Batch production

- This involves producing a limited number of identical products.
- Work on each batch is fully completed before production switches to a new batch.



Batch production

Examples include:

- Bakeries baking bread or pastries or cakes.
- Footwear manufacturers making shoes in different sizes.
- Electrical appliances made with 110 volts for the US and Japanese markets and 220 volts for other markets.



Batch production of soaps by *Lush*



Advantages and disadvantages of batch production



Advantages

- Economies of scale from machinery producing larger quantities.
- Specialization leads to increased productivity.
- Higher sales from a wider product portfolio, which gives customers greater choice.
- Products can still be tailored at relatively low cost, e.g. customized birthday cakes.

Advantages and disadvantages of batch production



Disadvantages

- Inflexibility from difficulty in changing one batch to another once production has begun.
- Storage costs are high since there is a lot of work in progress.
- Jobs are repetitive and may lead to boredom.
- High production costs from using equipment and machinery.

Mass production

- This is the manufacturing of large amounts of a standardized product.
- It often involves the assembly of individual components.
- It is capital intensive with many tasks relying on automation.

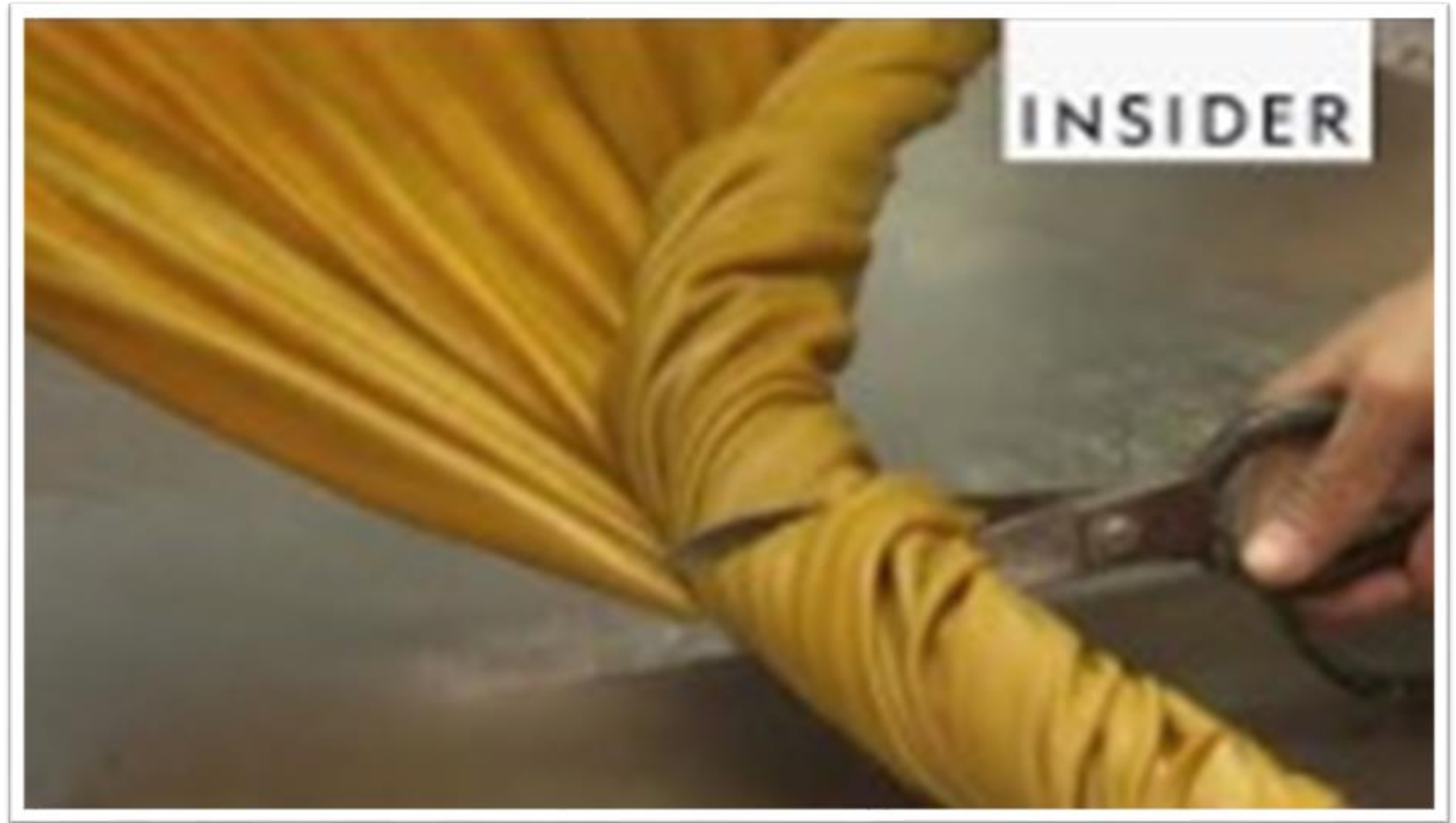


Mass production

- Examples of mass produced items include:
 - Ball bearings
 - Mobile phones
 - LEGO toys
 - Paper clips
 - Pins
 - Toothpicks



Mass production of rubber bands



Flow production

- This focuses on a continuous production process of manufacturing products that are standardized in large quantities.
- Flow production relies entirely on automated systems with very few workers required.



Flow production

- Mass production is highly automated but will have more workers than flow production.
- Flow production lines are often kept running 24 hours a day, 7 days a week to maximise output and to eliminate waste.



Flow production of *Jaffa* *Cakes*



Advantages and disadvantages of mass/flow production



Advantages

- Large scale output.
- Economies of scale through capital intensive methods.
- Standardized quality.
- Worker specialization leading to low defect rates.
- Low labour costs due to use of unskilled workers.

Advantages and disadvantages of mass/flow production



Disadvantages

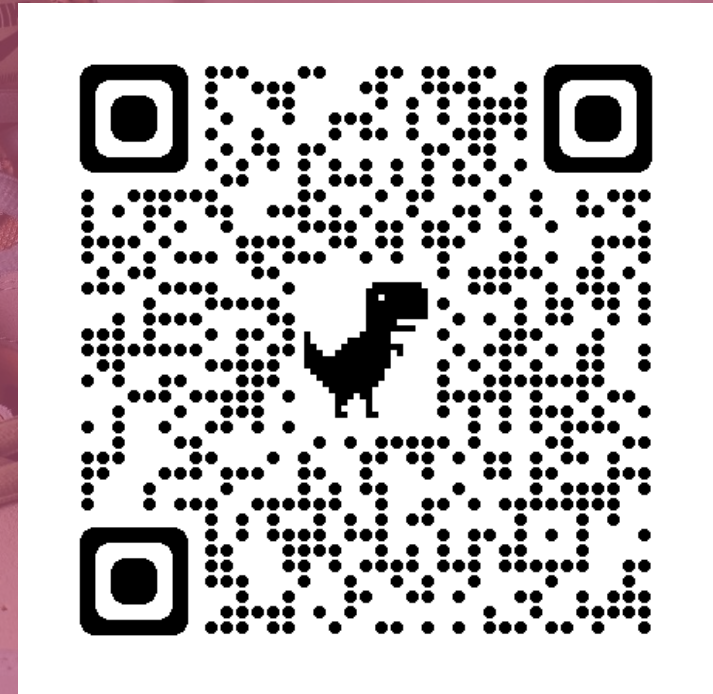
- Low levels of motivation due to boring repetitive work.
- Breakdowns will cause major delays.
- Little flexibility for change once production begins.
- Capital intensive and therefore very high set up, running and replacement costs.
- Large storage system is required for the large amounts of stock.

Mass customization

- This occurs for businesses that produce large quantities of goods via batch or mass/flow production, but products can be tailored to a customer's exact preferences.

Scan to view *Nike's* customizable shoes *Nike By You*

1. Customize a shoe of your choice.
2. Identify the number of components in your customized shoe.
3. Are these components manufactured by batch or mass/flow production?
4. What is the method of production for customized shoes?



Selecting an appropriate operations method

- Production methods can either be labour or capital-intensive.
- Choosing labour or capital-intensive methods of production depends on:
 - Relative cost of labour and capital.
 - Size of the market.
 - Corporate objectives.



Labour-intensive production

- Labour-intensive production uses a greater proportion of labour than any other factor input.
- A key benefit is the ability to offer personalized services.
- It is essential in some industries, e.g. health care and education.

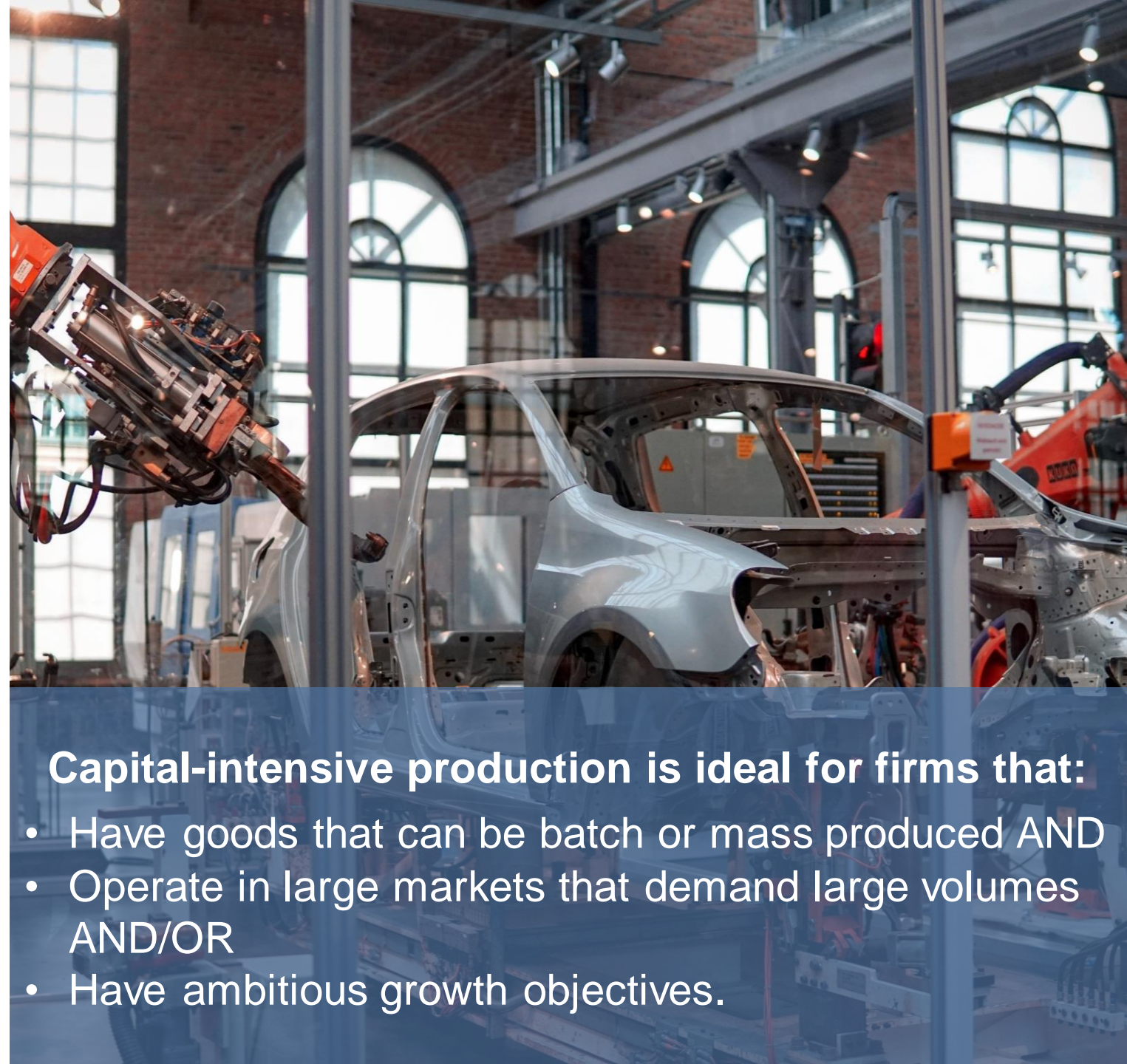


Labour-intensive production is highly suited for firms that:

- Make products that are highly customized, e.g. tailormade suits.
- Are in the tertiary sector.
- Operate farming in economically developing countries.

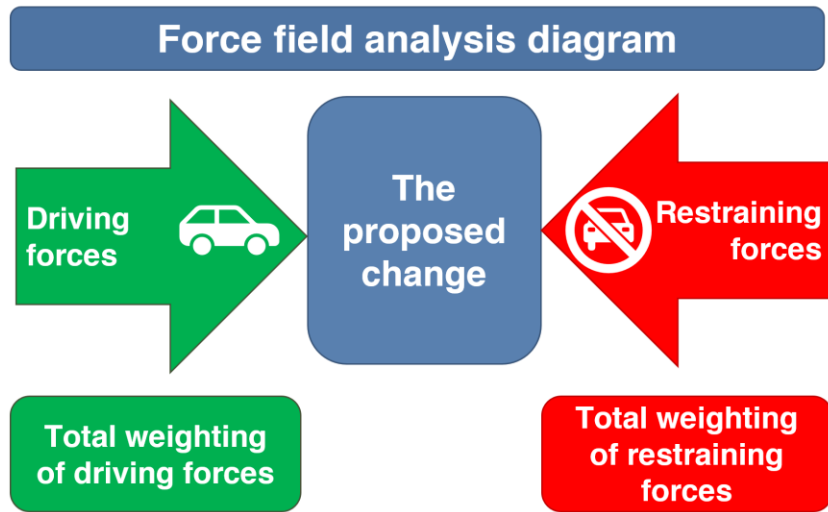
Capital-intensive production

- Capital-intensive industries have a relatively high proportion of capital costs compared with labour costs.
- High levels of output are possible.
- However, products tend to be highly homogeneous, so there is no unique selling point (USP) from customization.



Capital-intensive production is ideal for firms that:

- Have goods that can be batch or mass produced AND
- Operate in large markets that demand large volumes AND/OR
- Have ambitious growth objectives.



BMT: Force field analysis and selecting an appropriate method of operation (HL only)

Watch the video *How New Balance (NB) Sneakers Are Made*.

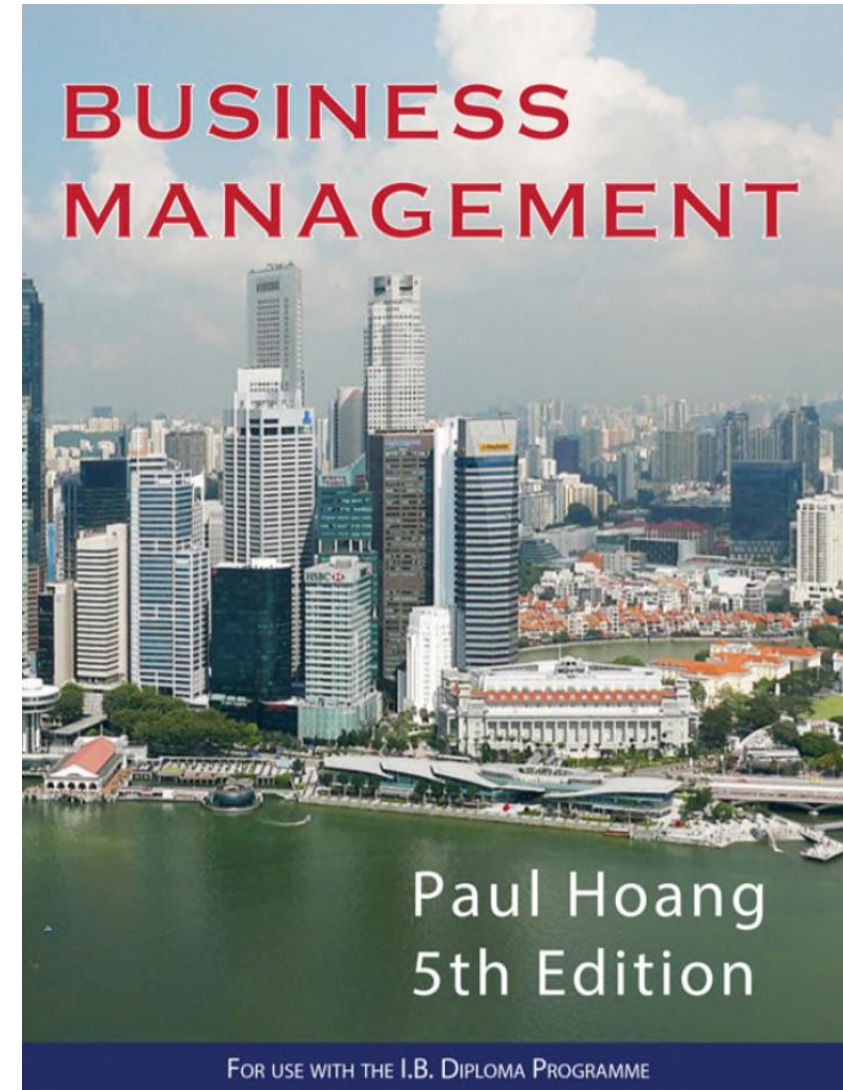


1. Identify the method of operations used by *NB*.
2. Explain **two** advantages of using this method of operations at *NB*.
3. Prepare a force field analysis for *NB* to offer mass customization for its sneakers and apparel.

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- Question 36.3 *Categorizing operations methods*
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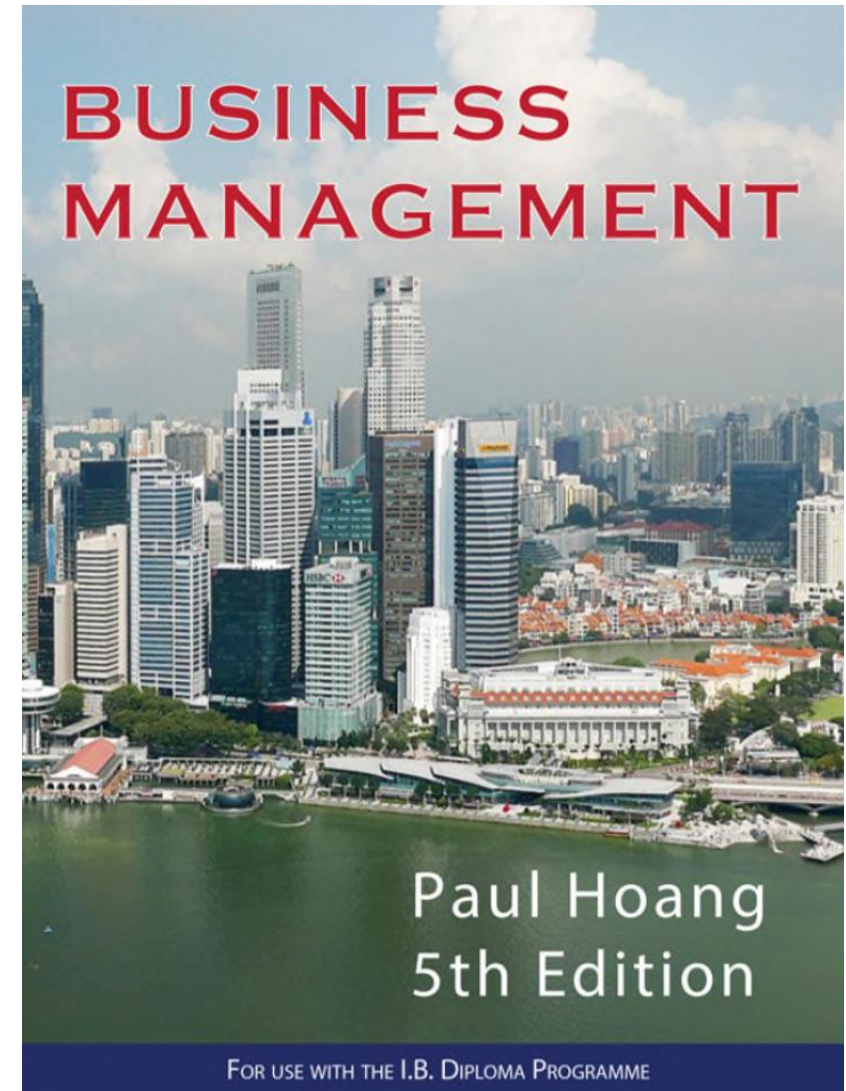
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Can it ever be ethically correct for an innovative business to make people redundant in the process of adopting a capital-intensive business strategy?



- *Slow Food* is an organization that promotes local food and traditional cooking.
- The concepts of ethics and sustainability can be seen in the objectives of this movement.



Concepts in BM: **ethics** and **sustainability**

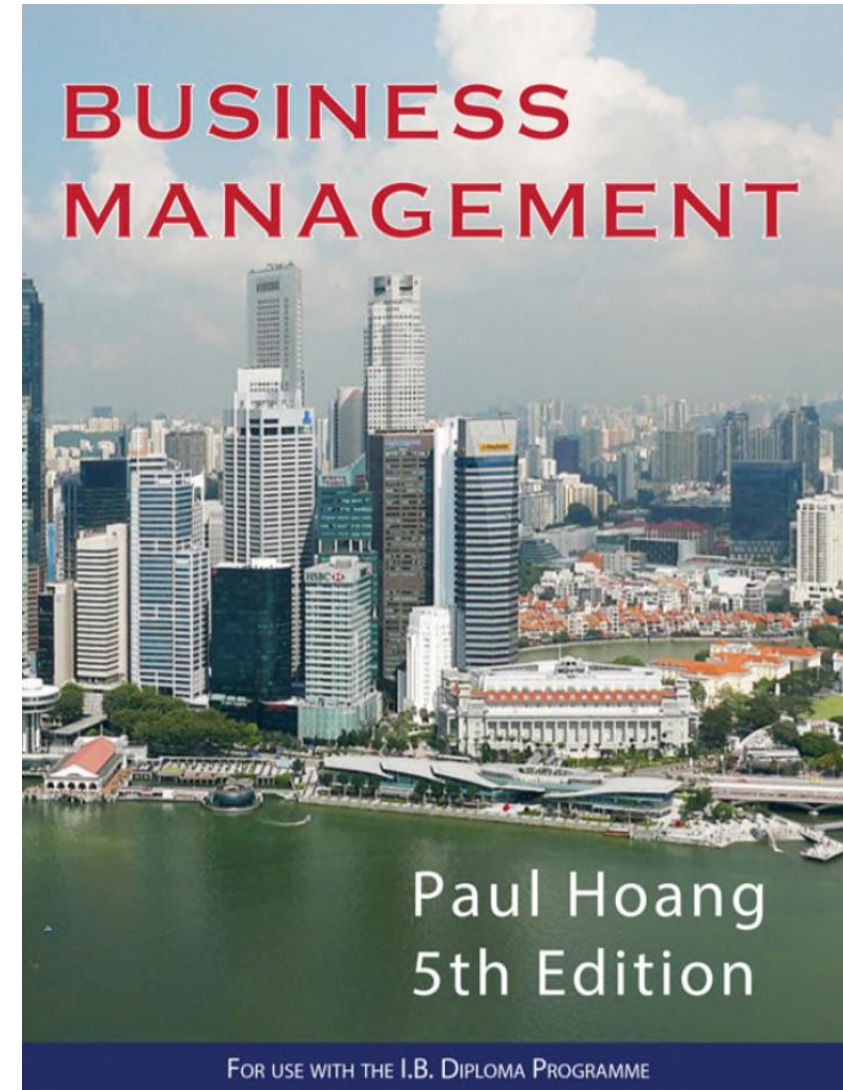


- Since the Industrial Revolution, firms wishing to grow scale up their output by investing in capital-intensive methods of production.
- However, there is increasing societal backlash against mass consumerism and production.

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5.3 Lean production and quality management (HL only)

Topic 5: Operations management

Unit content

Content	Assessment objective
<u>The following features of lean production:</u> <ul style="list-style-type: none">• Less waste• Greater efficiency	AO1
<u>The following methods of lean production:</u> <ul style="list-style-type: none">• Continuous improvement (kaizen)• Just-in-time	AO2
<u>Features of cradle to cradle design and manufacturing</u>	AO2
<u>Features of quality control and quality assurance</u>	AO2

Unit content (continued)

Content	Assessment objective
<u>The following methods of managing quality:</u> <ul style="list-style-type: none">• Quality circle• Benchmarking• Total quality management (TQM)	AO2
The impact of <u>lean production</u> and <u>TQM</u> on an organization	AO3
<u>The importance of national and international quality standards</u>	AO2

Unit content (continued)

Content	Assessment objective
Business Management Toolkit: <ul style="list-style-type: none">• <u>Circular business models</u>	
<u>Lean production and quality management and the business management concepts</u>	

The following features of lean production:

- Less waste
- Greater efficiency

Lean production

- Lean production is the process of streamlining operations and processes to reduce all forms of waste (or 'muda') and to achieve greater efficiency.
- Lead production should lead to improved quality and reduced costs.



無駄

'Muda' is the
Japanese term
for waste'

Getting ready for school

1. Think about all the things you do from the moment you wake up to the moment you arrive at school.
2. List each step of your morning routine and the estimated time for you to complete each step.
3. Swap your list with that of a friend and analyse it.
4. Which steps could be improved to become more efficient, to have less 'muda'?

An example has been provided for you.

Example of muda		
Time	Habit	How to improve efficiency (i.e. reduce muda)
6:00am	Wake-up and snooze in bed	
6:15am	Shower and brush teeth	
6:30am	Look for clean clothes to wear and get dressed	<i>Lay clothes out the night before.</i>
6:35am	Pack school bag	
6:45am	Eat breakfast	
7:00am	Take taxi to school	
7:45am	Stop at a convenience store to buy a sandwich, yogurt, chocolate and a drink for snack and lunch time	
8:00am	Arrive at school.	

Examples of muda

- An easy way to remember examples of wastage is to use the acronym OTHER[©]:

Think back to your morning routine. What are some of your mudas?

Muda	Meaning
Over-processing	When the business adds more features or functions to a product than is necessary to meet the needs of customers.
Time	Delays in the production, delivery and inefficient movement around the production facility.
Human effort	Sub-standard and defective output may need to be re-worked.
Energy	Leaving lights, air-conditioning and other utilities on when not needed.
Resources and materials	From underproduction or overproduction.

Principles of lean production



Waste minimization

- This requires the removal of any operation or process that does not add value to the product.



'Right first time' approach

- Businesses aim for zero defects by identifying and resolving problems at the source.



Flexibility

- Resources must be adaptable to changing needs of the business.



Continuous improvement

- The firm must continually strive to improve quality and efficiency.



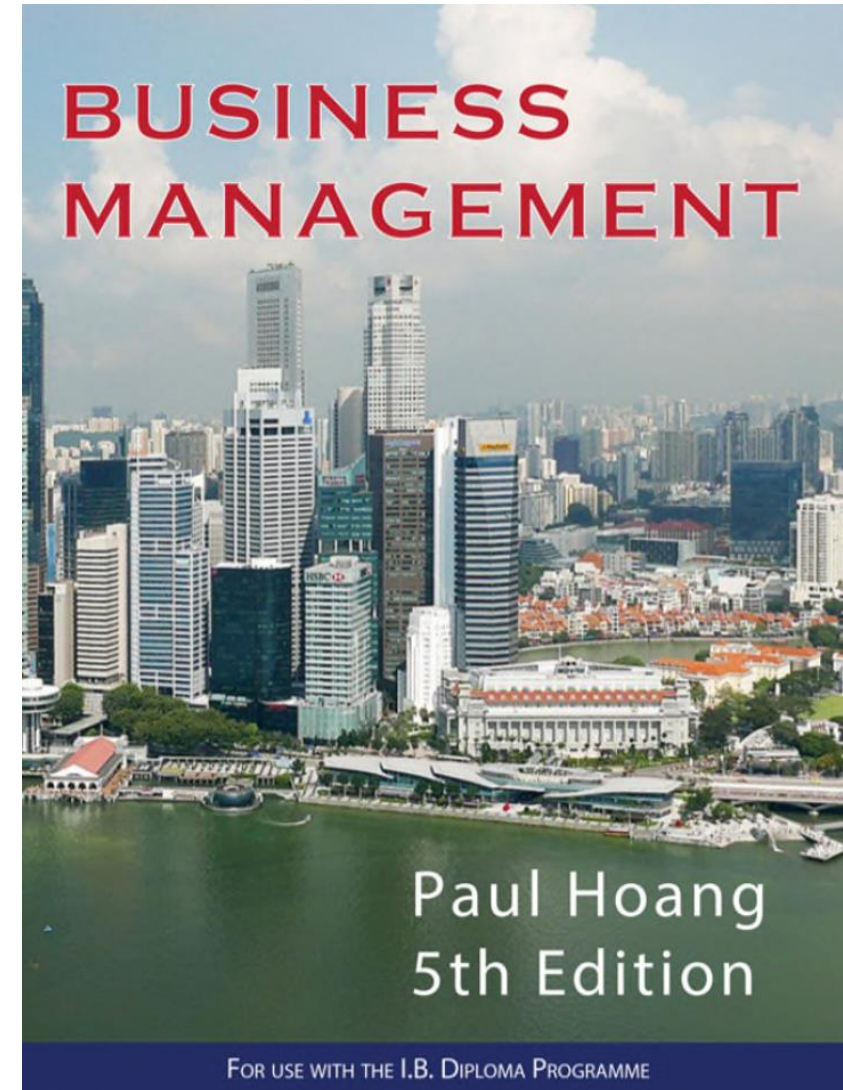
Supply chain management

- Businesses must develop and maintain good professional working relationships in the supply chain.

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- Answer all parts

BUSINESS MANAGEMENT

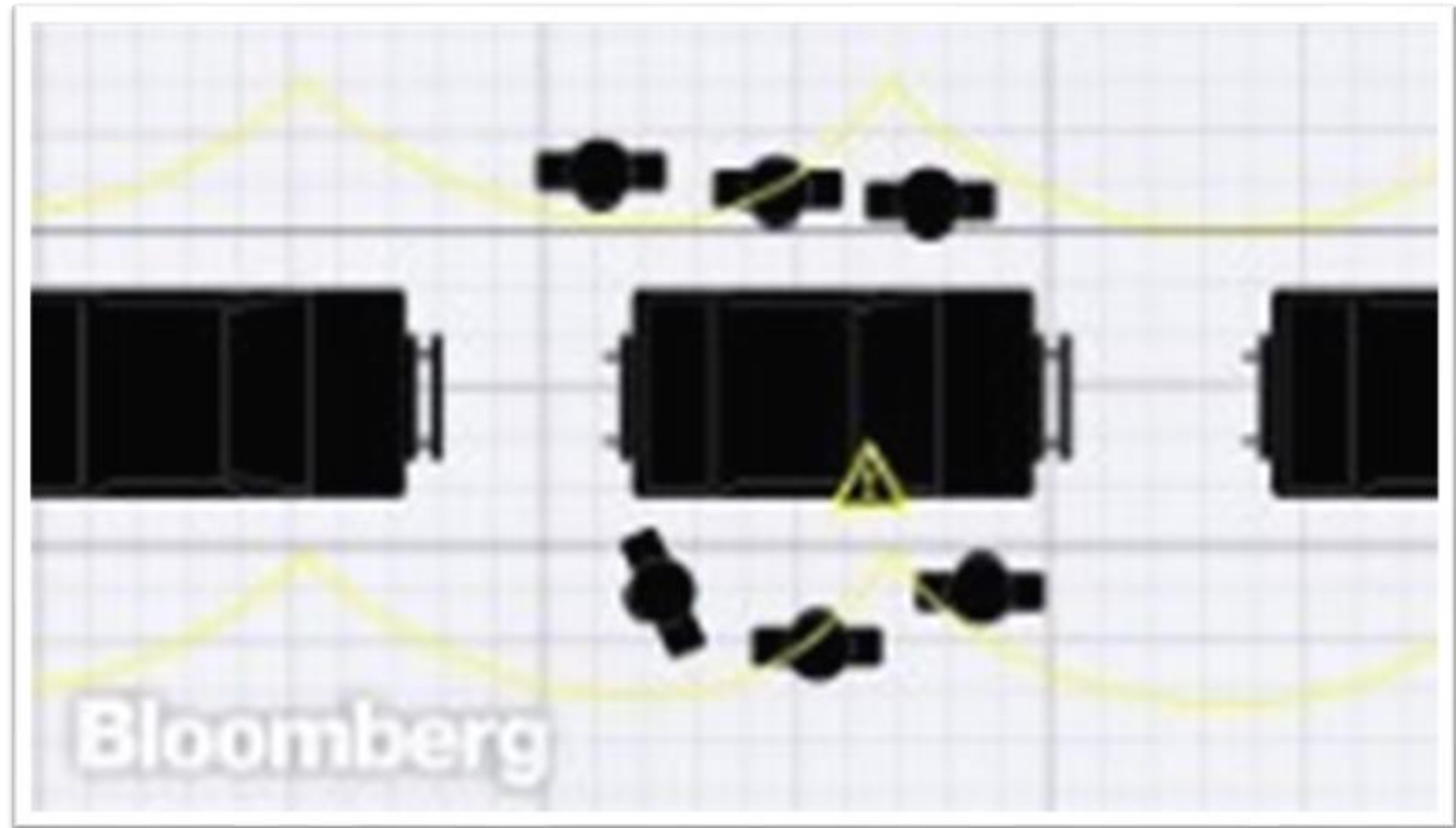


The following methods of lean production:

- Continuous improvement (kaizen)
- Just-in-time (JIT)

Lean production at Toyota

1. What is a JIT system?
2. What is kaizen?
3. What competitive advantage did Toyota have from its methods of lean production?
4. Which firms adopted Toyota's lean production methods?
5. In which industries do these firms belong? (You may need to search for this information after the video).



How *Toyota* changed the way we make things

Continuous improvement (kaizen)

- Kaizen is a Japanese philosophy of making small and continuous improvements to increase efficiency and productivity.
- Small groups of employees are formed with the purpose of identifying changes and improvements to the firm's products, processes and procedures.
- The focus is on incremental improvements in quality.

改善

'Kaizen' is a Japanese philosophy of continuous improvement.



Impact of kaizen on an organization

- Change is easier to manage in small, continuous improvements.
- People tend to be resistant to big changes.
- The focus on quality often brings about costs savings.
- Motivating to employees as anyone in the firm can contribute, irrespective of rank.

“Success is the product of daily habits – not once-in-a-lifetime transformations”

James Clear
Author of ‘Atomic Habits’



Just-in-time (JIT) stock control

- JIT is a Japanese stock management method based upon having stocks delivered as and when they are needed.
- Only the absolute minimum levels of stock are held, and finished goods are dispatched as soon as they have been produced.



Just-in-time stock management, explained using sandwich making

The advantages and disadvantages of JIT will be explored in Unit 5.6
Production planning (HL only)

Features of cradle to cradle design and manufacturing

Sustainable design and manufacturing

- Cradle to cradle (C2C) is a sustainable model of production based on natural processes, thus benefiting the environment.
- By contrast, cradle to grave (C2G) refers to single use products. It is the most common form of manufacturing.



Cradle to cradle design and manufacturing explained

Happy or unhappy meal?

Think about the last fast food meal you enjoyed.

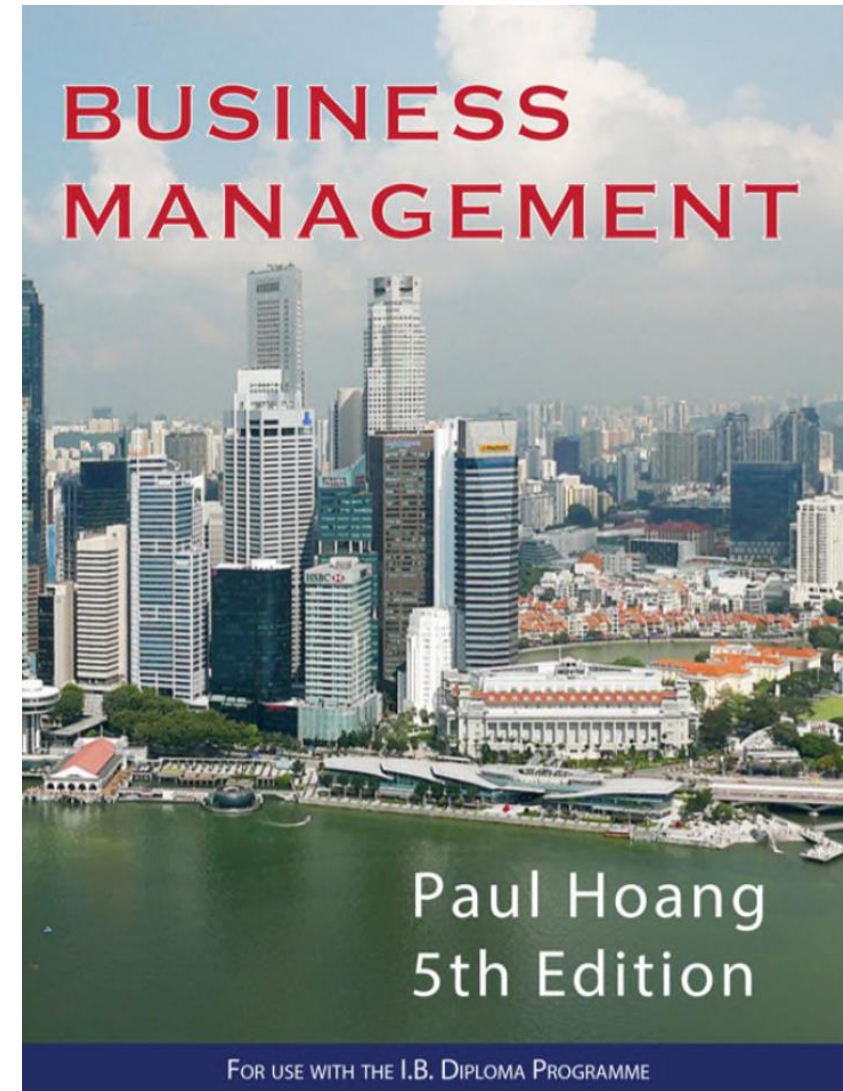
1. List all the components of the meal (e.g. food, packaging, serving-ware etc.).
2. Identify which components of the meal were designed and made to be:
 - a. Cradle to grave.
 - b. Cradle to cradle.
3. Swap your list with a partner. For each CTG item, suggest a more sustainable alternative.



Approaches to learning

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Features of quality control and quality assurance

Quality

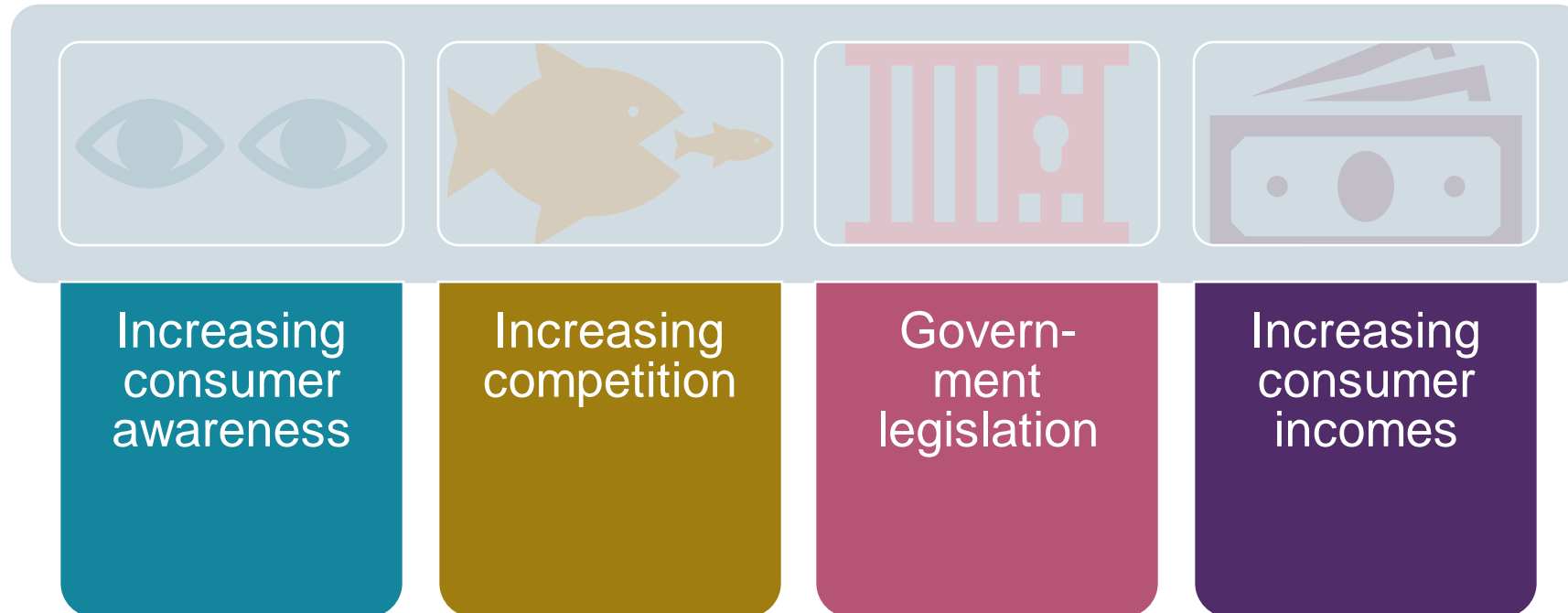
- Quality means that a product fulfils its purpose and meets the expectations of the consumer.
- Customers perceive quality based on various factors including:
 - Physical appearance and design
 - Image and reputation of the firm
 - Reliability
 - Durability
 - Fit for purpose
 - Safety features
 - Customer service
 - After-sales service



Scan to learn more about products with lifetime guarantees of quality. They tend to feature all of the factors that customers perceive as quality.

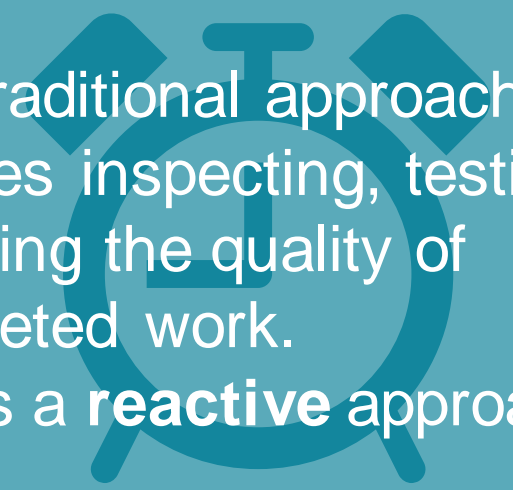
Quality management

- This is the function concerned with controlling business activities to ensure that products are fit for their purpose.
- There are four driving forces that have led to quality being of paramount priority for many businesses.



Approaches to quality management

Quality control

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- A large, faint, teal-colored icon of a clock or alarm clock is visible in the background of the Quality control section.
- This traditional approach involves inspecting, testing and sampling the quality of completed work.
 - This is a **reactive** approach.

Quality assurance

- 
- A large, faint, gold-colored icon of a bar chart with an upward-pointing arrow is visible in the background of the Quality assurance section.
- This is a process of assuring customers that everything is done 'right first time'.
 - This is a **proactive** approach.

Advantages of quality control (QC)



Advantages

- Prevents faults reaching the customer, thus safeguarding reputation.
- Cheaper to have trained QC inspectors than to train every employee to be responsible for QC.
- Widespread issues and problems across the organization can be identified by QC inspectors.

Disadvantages of quality control (QC)



Disadvantages

- It is expensive to fix mistakes.
- The root cause of the problem is not dealt with.
- There is a lack of accountability for substandard work by individuals.

Advantages of quality assurance (QA)



Advantages

- Improves staff morale as QA programs involve employee participation and ownership for their work.
- New ideas for improving quality can be generated from all employees.
- Breaks down a 'them and us' culture.
- Less wastage from reworking faulty products as they are checked at every stage of output.

Disadvantages of quality assurance (QA)



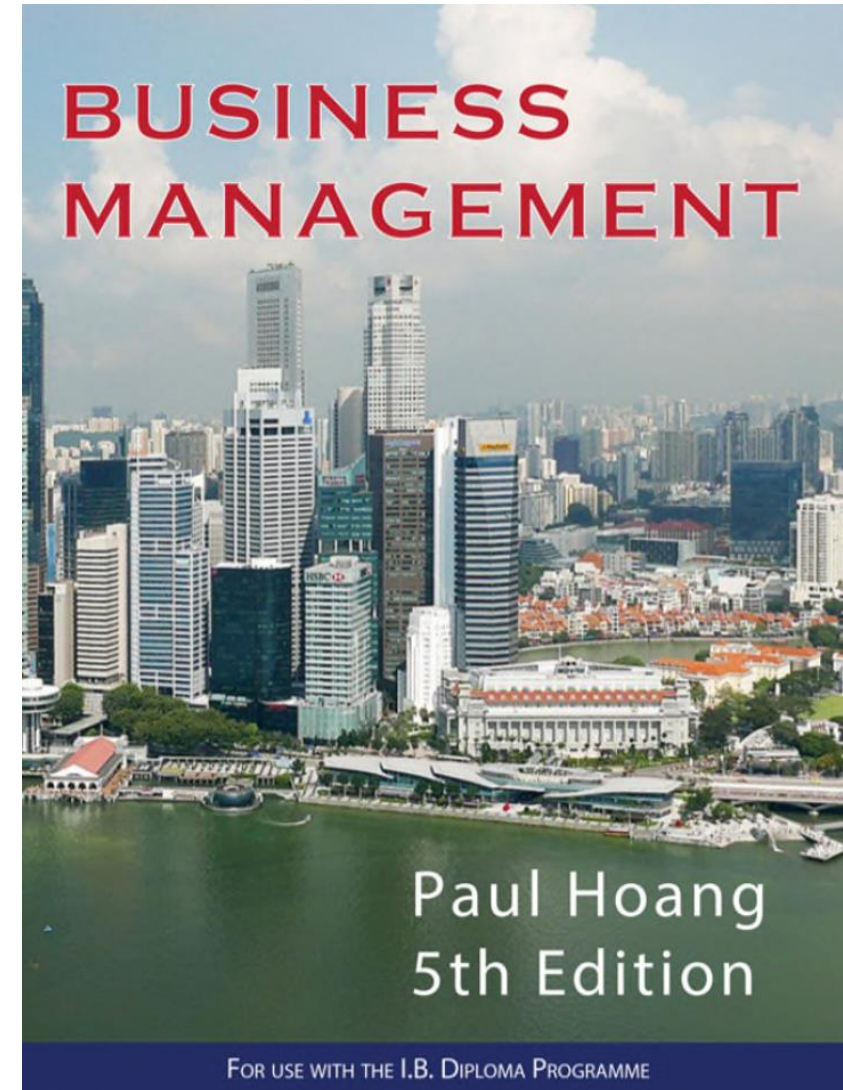
Disadvantages

- The time, energy and training needed to nurture a total quality culture within an organization.
- The costs of implementing the above changes to establish a quality culture.

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- Question 37.2 *Nissan's product recalls*
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- Answer all parts

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The following methods of managing quality:

- Quality circle
- Benchmarking
- Total quality management (TQM)

Quality circle

- These are small groups of people who meet regularly.
- They examine issues relating to the quality of output and make recommendations for improvement.
- Quality circles are like kaizen groups. However, the key difference is members of quality circles also execute and manage solutions to quality issues.



Benefits

Improved efficiency, production, profitability and motivation.

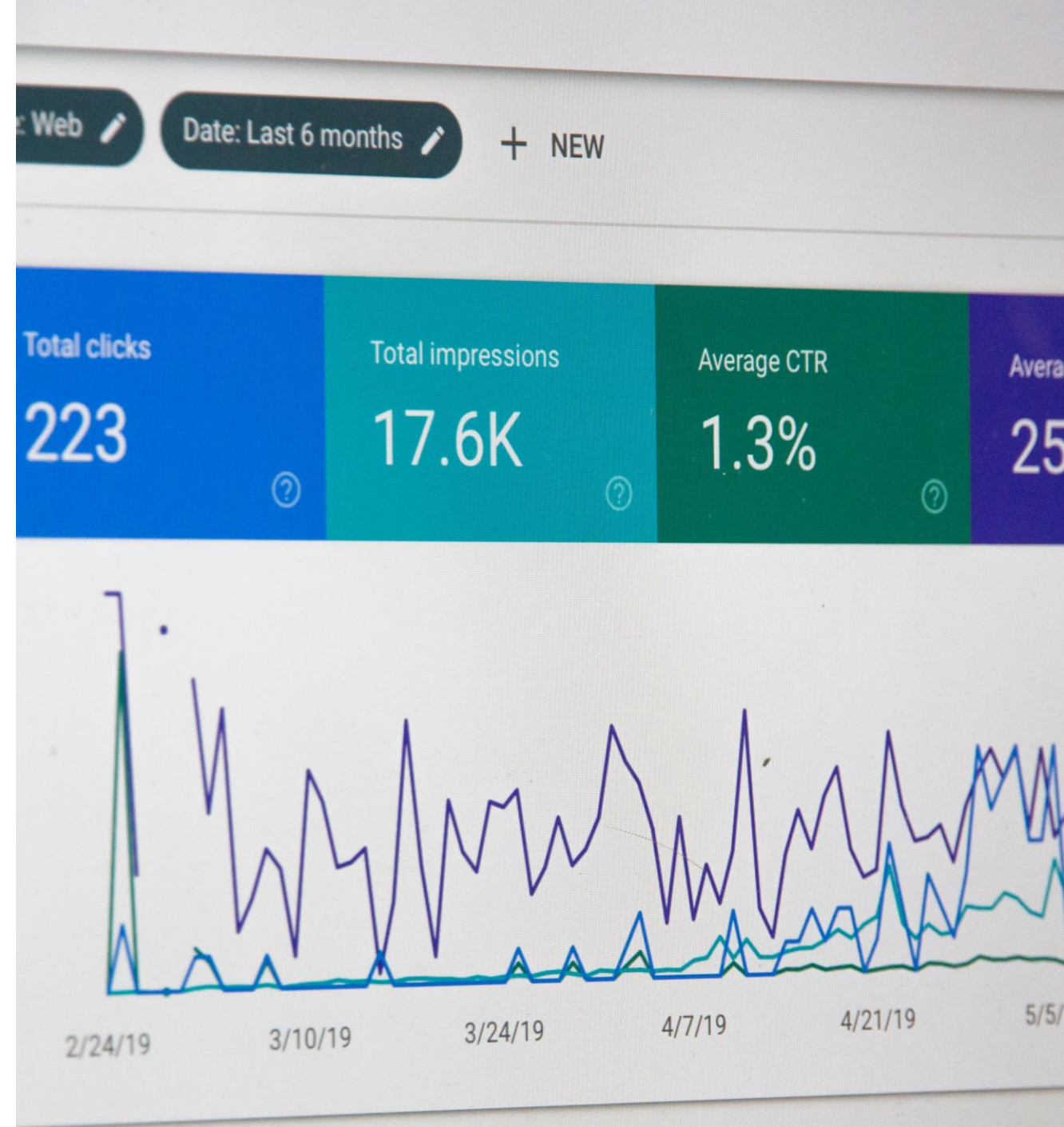


Drawbacks

Not all employees enjoy this form of empowerment and would rather be told what to do.

Benchmarking

- Benchmarking is the comparison of products, operations, processes and financial data of a firm with others in the same industry, especially the market leaders.
- There are two methods of benchmarking:
 - Historical benchmarking
 - Comparing the same performance data over time.
 - Inter-firm benchmarking
 - Comparing the same performance data of different businesses.



Benefits and limitations of benchmarking



Benefits

- Reduces performance gaps with rivals.
- A simple way to determine quality rather than using guesswork.
- Quality is assessed from the perception of customers, thus helping a firm meet its needs and wants.
- Competitive advantage from improved quality and lower production costs.

Benefits and limitations of benchmarking



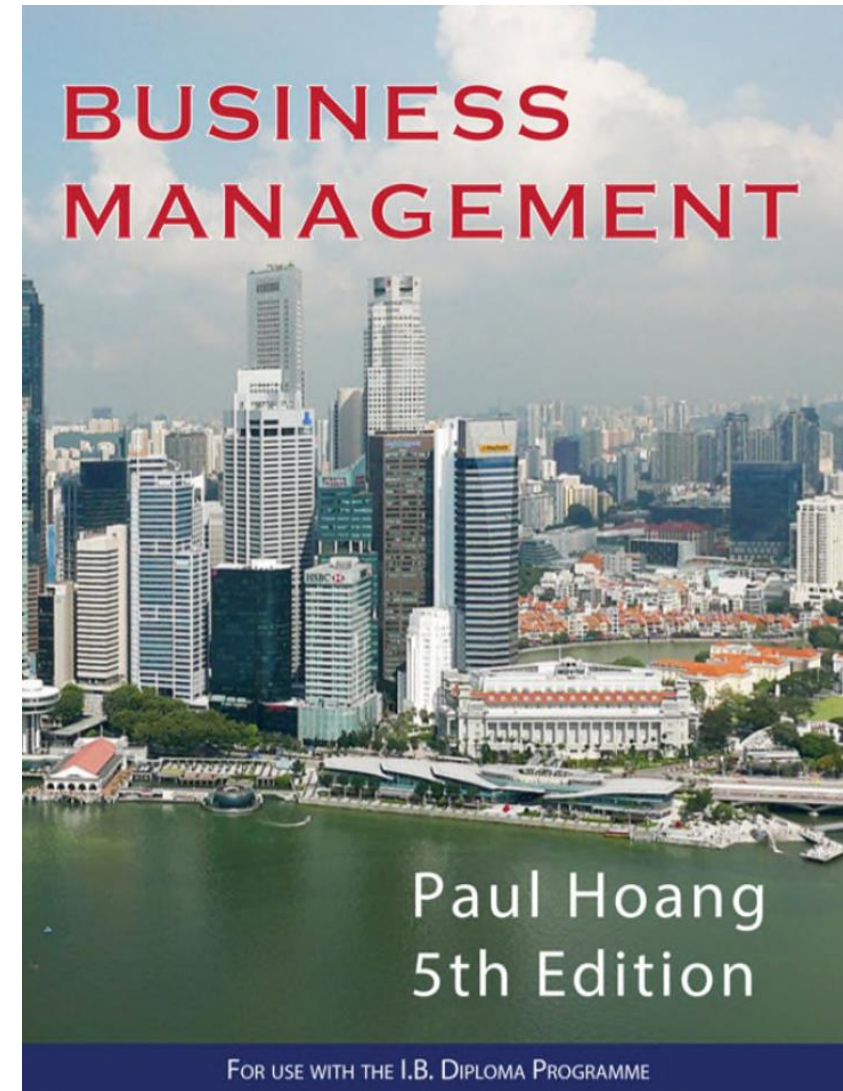
Limitations

- Collecting relevant and up-to-date benchmarks can be time-consuming and expensive.
- Replicating the ideas and best practice of other firms does not create USPs.
- Cost of implementation (finance and time) can be very high.
- Restrains creative and innovative thinking when relying on the ideas of others.

Approaches to learning

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Total quality management (TQM)

- TQM is a process that requires the dedication of everyone in the organization to commit to achieving quality standards.
- Quality is seen from the perspective of the consumer rather than the producer.
- Creating a total quality culture means it is embedded throughout the whole organization.



Impact of total quality management on an organization



Benefits

- Improved motivation from empowered employees.
- Reduces or eliminates wastage, therefore lowering production costs.
- Improved corporate image when reputation is associated with TQM.
- Competitive advantage due to customer focused production process.
- TQM improves the chances of a firm's survival.

Impact of total quality management on an organization



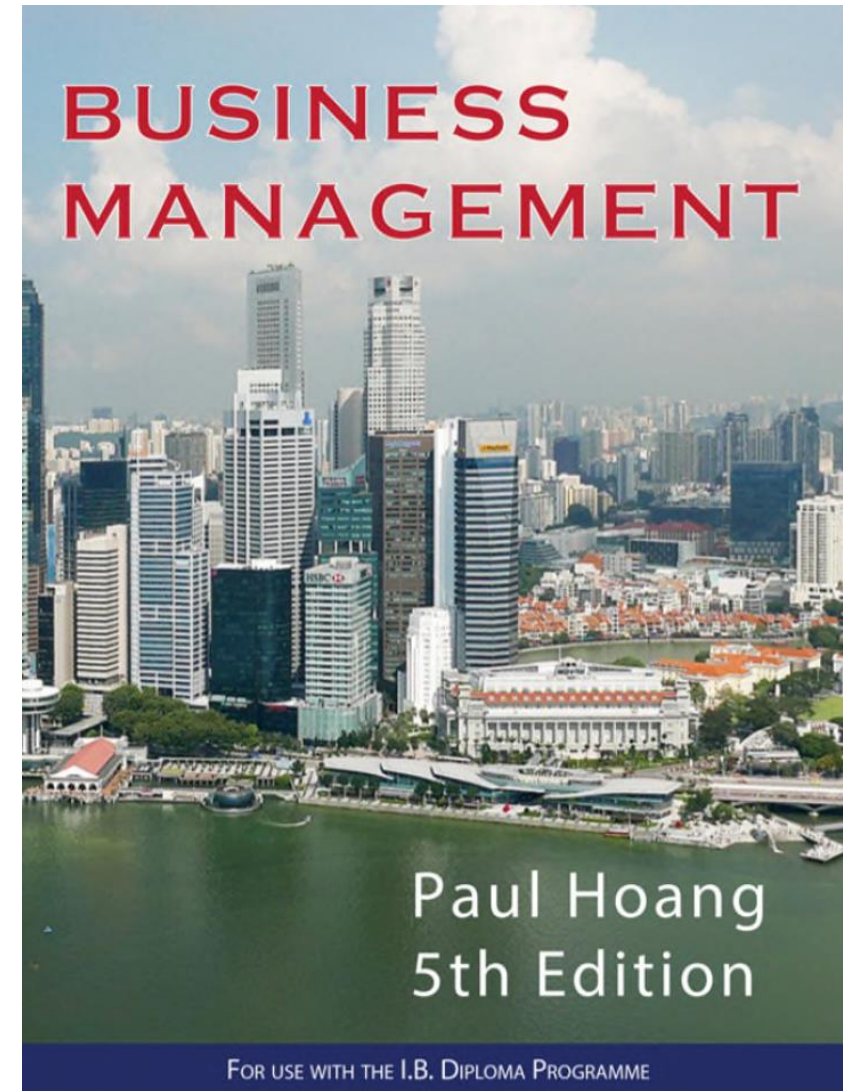
Limitations

- Costs of implementation and maintaining TQM can be high.
- Bureaucracy can hamper TQM processes.
- Staff training and development is necessary, which can be expensive.
- TQM only works if there is full commitment by all employees.
- Time lag between implementation and results can sometimes take several years.

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- Question 37.4 *Mercedes-Benz*
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- Answer all parts

BUSINESS MANAGEMENT



The impact of national and international quality standards

Quality standards

- National and international quality awards are used to show that certain quality standards have been met.
- Businesses that meet or exceed these standards can include the quality symbols or logos on their products and in their promotional material.



The *International Organization for Standardization* (ISO) is an NGO with the purpose of promoting international quality standards for a wide variety of goods and services.

Benefits of quality standard accreditation

- Promote quality awareness within the organization.
- Improve performance.
- Recognize quality achievements.
- Motivate the workforce.
- Attract high calibre employees.
- Gain a competitive advantage.

Examples of national and international quality standards

The CE Mark

This is the European Union's award for products that meet mandatory health and safety standards.

The ASQ Award

The American Society for Quality (ASQ) is an organization dedicated to the promotion and advancement of quality in the USA.

The BSI Kitemark

The British Standards institutions (BSI) is responsible for setting quality standards in the UK.

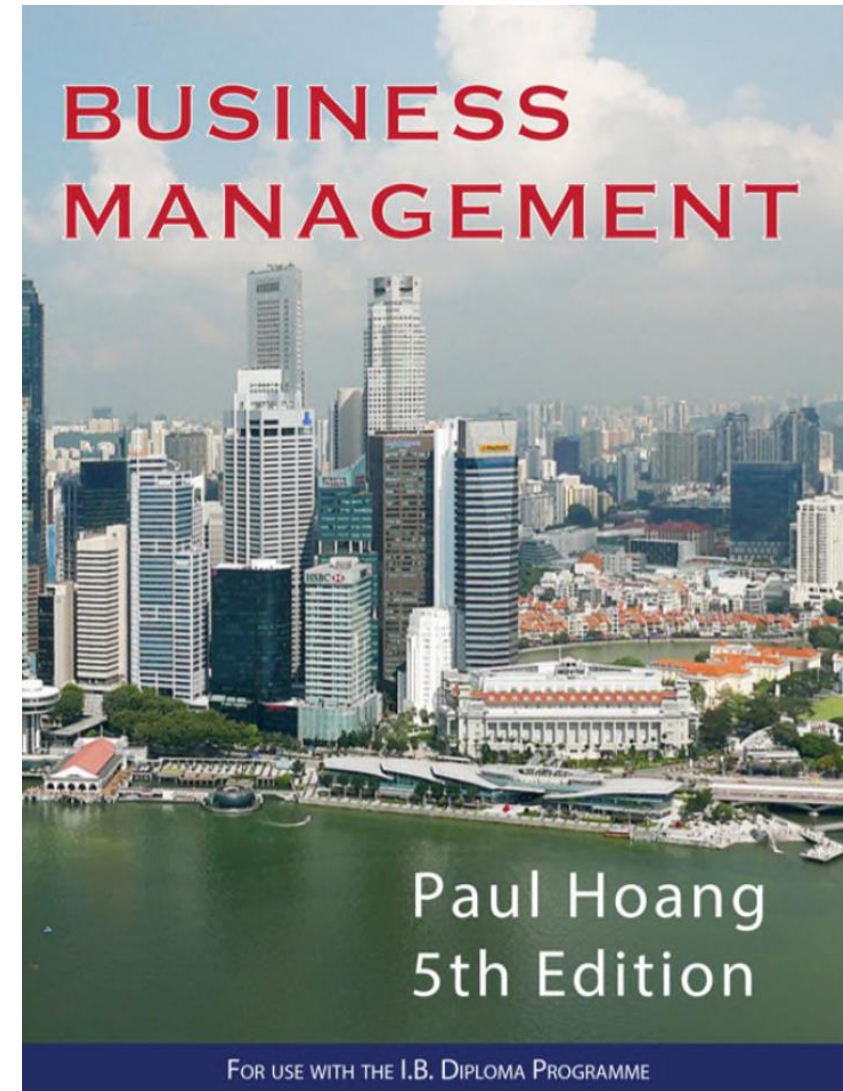
NSF

This is an international organization that certifies products and services meet high standards of public health.

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- Question 37.5 *The BSI Kitemark*
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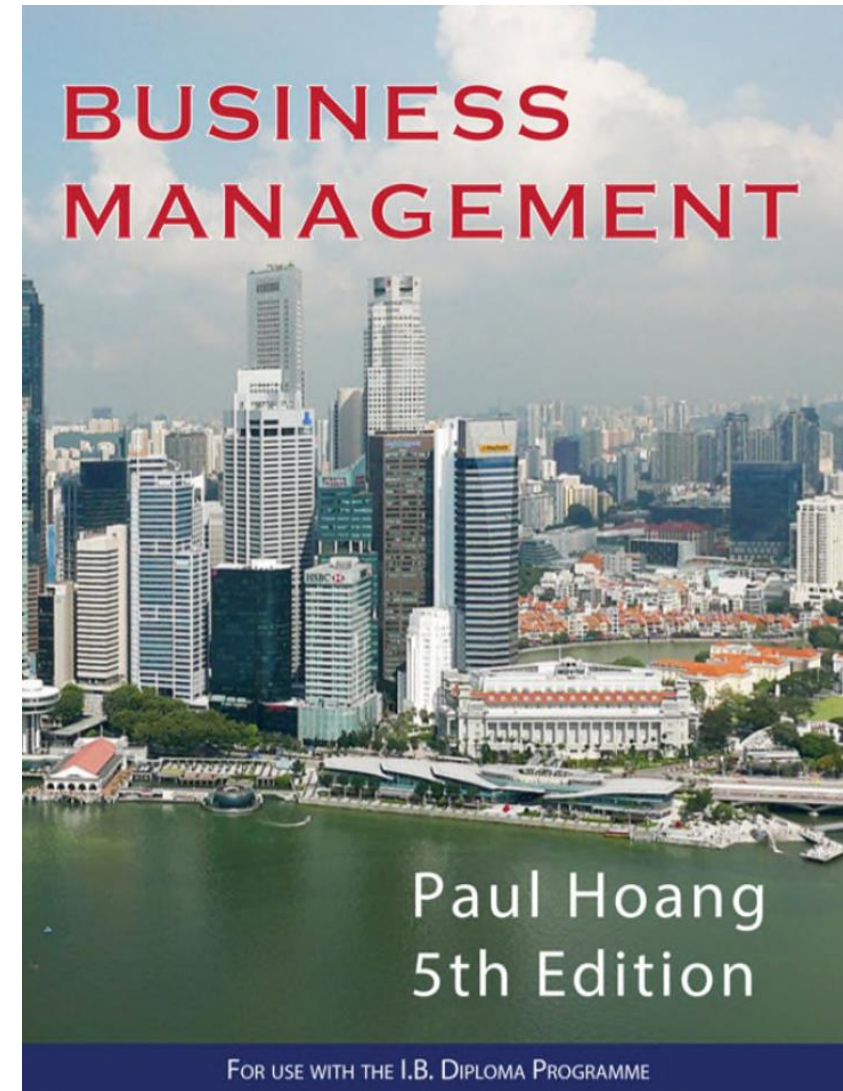
BUSINESS MANAGEMENT



Approaches to learning

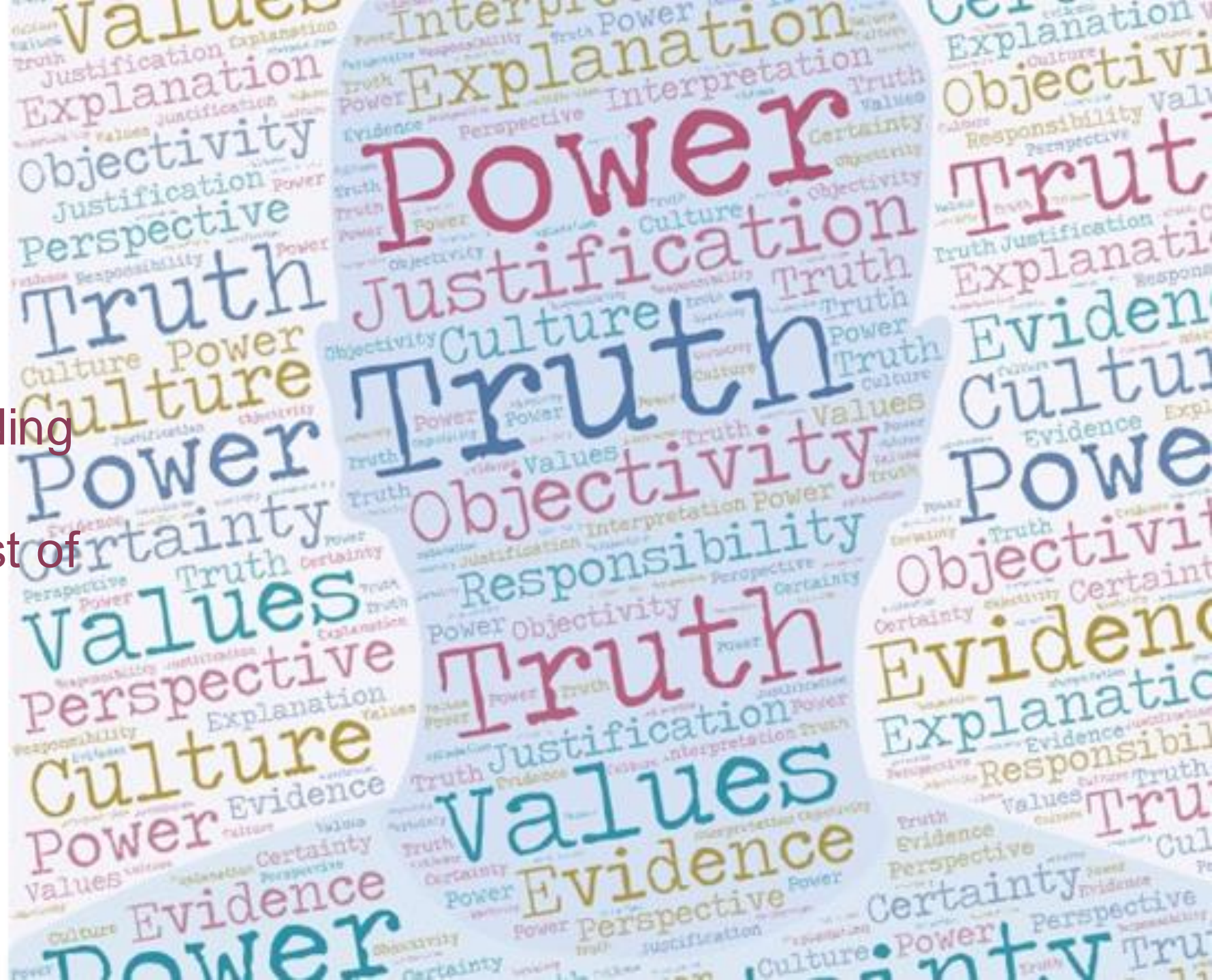
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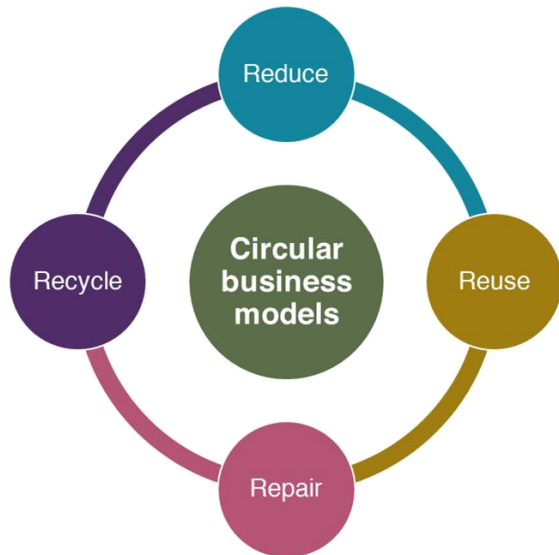
Theory of knowledge

Does our understanding and knowledge of 'quality' stand the test of time?



In 2022, *H&M* achieved *Cradle to Cradle Certified® Gold Level* for their newborn collection of baby clothes.

- Discuss how cradle to cradle design and manufacturing are essential to H&M's circular business models.



BUSINESS MANAGEMENT

BMT: Circular business models and *H&M*



Scan to
read more
about
H&M's
Cradle to
Cradle
Certified®
Gold Level
certification

Concepts in BM: sustainability

- Although lean production and quality are often associated with manufacturing, the principles of lean production can be applied to services too.

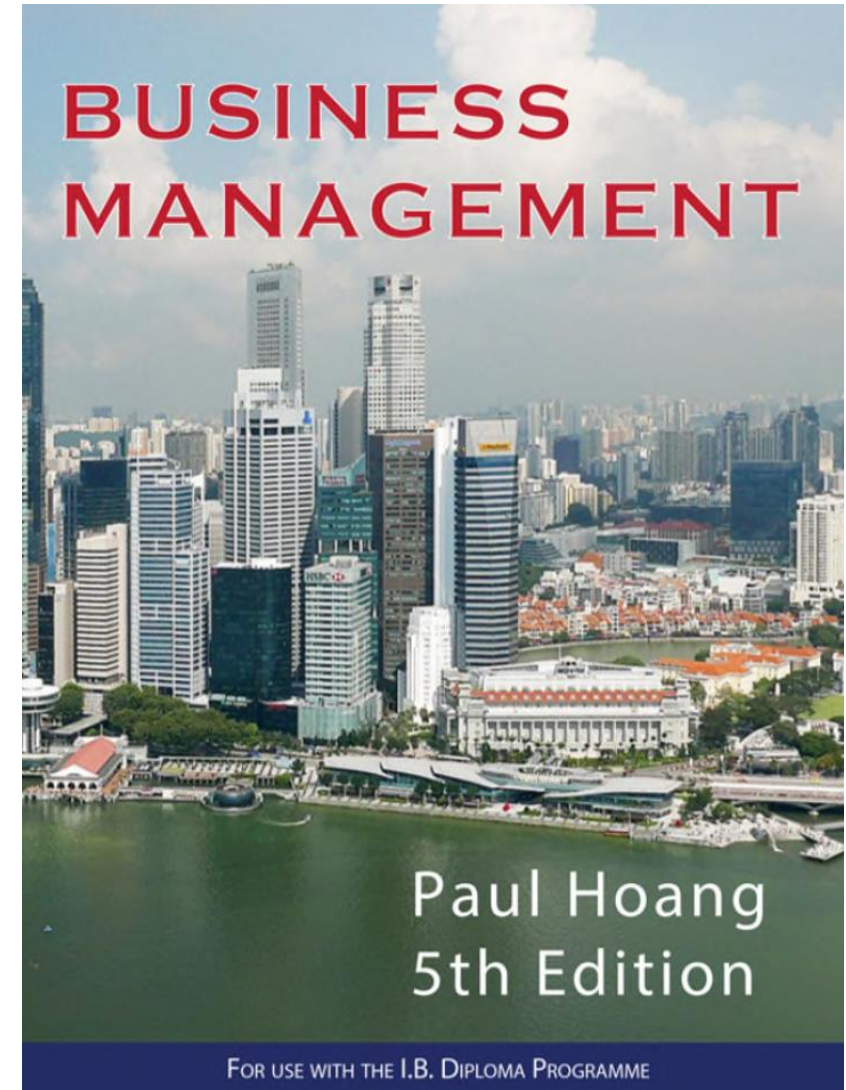


- Many Japanese hotels have implemented a lean approach to the process and physical evidence aspects of a hotel experience.
- This approach to service delivery helps to improve the quality of a hotel experience while enjoying cost savings and sustainability gains from the reduction of wastage.

Over to you

- Hoang textbook
- *Review Questions*
 - Page 503 to 504

BUSINESS MANAGEMENT



5.4 Location

Topic 5: Operations management

Unit content

Content	Assessment objective
<u>The reasons for a specific location of production</u>	AO2
<u>The following ways of reorganizing production, both nationally and internationally:</u> <ul style="list-style-type: none">• Outsourcing/subcontracting• Offshoring• Insourcing• Reshoring	AO3
Business Management Toolkit: <ul style="list-style-type: none">• <u>STEEPLE analysis</u>	
<u>Location and the business management concepts</u>	

The reasons for a specific location of production

- Quantitative factors
- Qualitative factors

Location of a business

- Location refers to the geographical position of a business.
- The location decision depends on many factors that can be generally grouped under quantitative and qualitative factors.



Quantitative factors affecting location decisions

- Availability, suitability and cost of land
- Availability, suitability and cost of labour
- Proximity to the market (customers)
- Proximity and access to raw materials
- Government incentives and limitations
- Feasibility of e-commerce

Availability, suitability and cost of land

- The quantity, quality and cost of land are important factors when choosing a location.
- City centres tend to be expensive as demand for land is greater than supply.
- Inexpensive land may seem attractive but if the location does not suit the firm's purpose, it will be an unprofitable decision.
- Businesses must determine if locating in a busier area will be a profitable decision.



Availability, suitability and cost of labour

- The availability and quality of labour affect the level of wages paid to workers,
- The supply and quality of labour varies even within a country.
- Firms requiring highly skilled engineers might relocate to countries like Germany whereas firms who need to mass produce goods might choose to locate in highly populated countries with lower labour costs such as Indonesia.



Proximity to the market (customers)

- The location chosen by a firm depends on the products it sells.
- Retail and service industries will locate near markets as their customers demand convenience.
- Bulk-increasing industries are better off being located closer to the market due to high transportation costs of getting the product to customers.



Proximity and access to raw materials

- The location chosen by a firm may depend on the raw materials needed.
- Retail and service industries will locate near their markets as customers demand convenience.
- Bulk-reducing industries locate near the source of raw materials that are heavier and more costly to transport than the final product.



British Sugar's factory is strategically located near its sugar beet farms as it operates in a bulk-reducing industry.

Government incentives and limitations



BUSINESS MANAGEMENT

- Governments often try to attract businesses to locate in or relocate to a certain area by offering financial incentives.
- Such incentives are more likely to be approved if businesses locate in enterprise zones.
- At times, government decisions cause firms to relocate, e.g. an increase in corporation tax rates.

Wales offers financial incentives to firms that move to specific enterprise zones.
What are the financial and non-financial incentives offered by the Welsh government in the video?

Feasibility of e-commerce

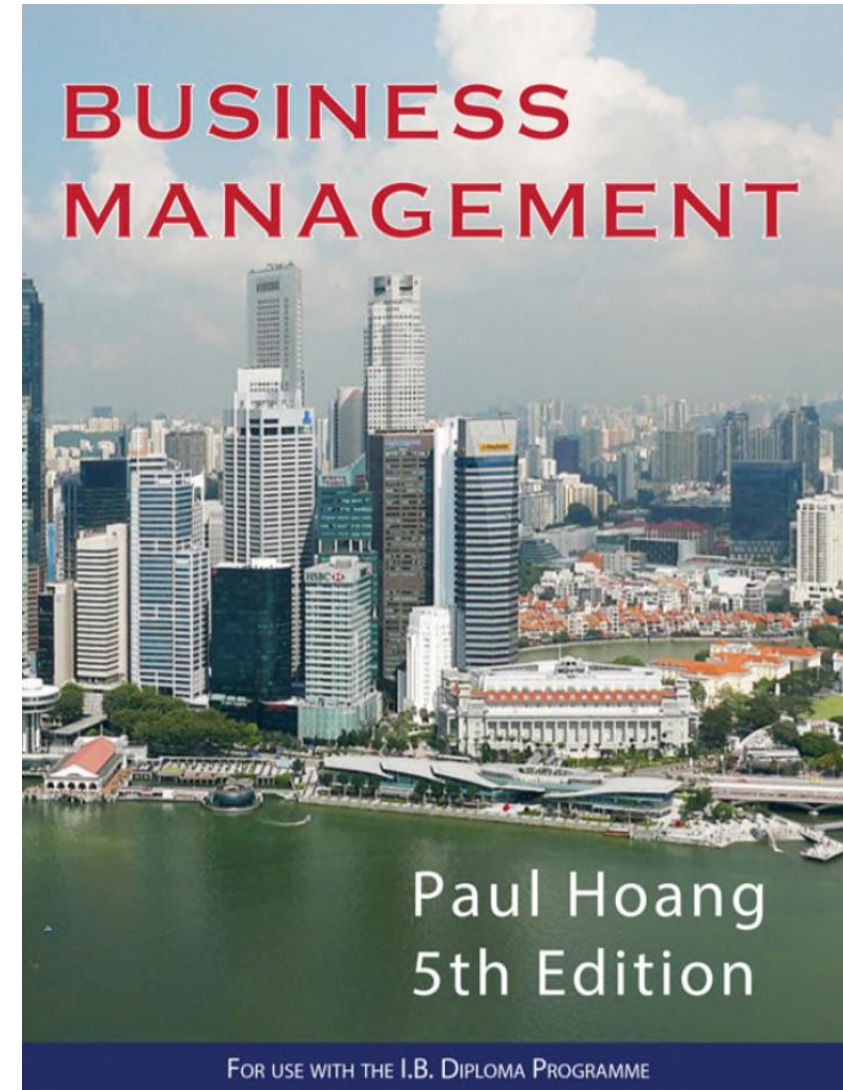
- Despite the virtual location benefits of e-commerce, some businesses are not suited to e-tailing.
- Examples include:
 - Airplane manufacturers.
 - Sales are made in-person.
 - Convenience stores.
- These are in busy areas so their customers can purchase items immediately.



Over to you

- Hoang textbook
- Question 38.1
Location, Location, Location!
 - Page 507
- Question 38.2 *Doing business in Singapore*
 - Page 509
- Answer all parts

BUSINESS MANAGEMENT



Qualitative factors affecting location decisions

- Management preferences
- Local knowledge
- Infrastructure
- Political stability
- Government restrictions and regulations
- Ethical issues
- Comparison shopping (clustering)

Local knowledge

- Some businesses will choose to locate in areas familiar to them as it is less risky.
- Their market insights and experience make it easier to conduct business activity.



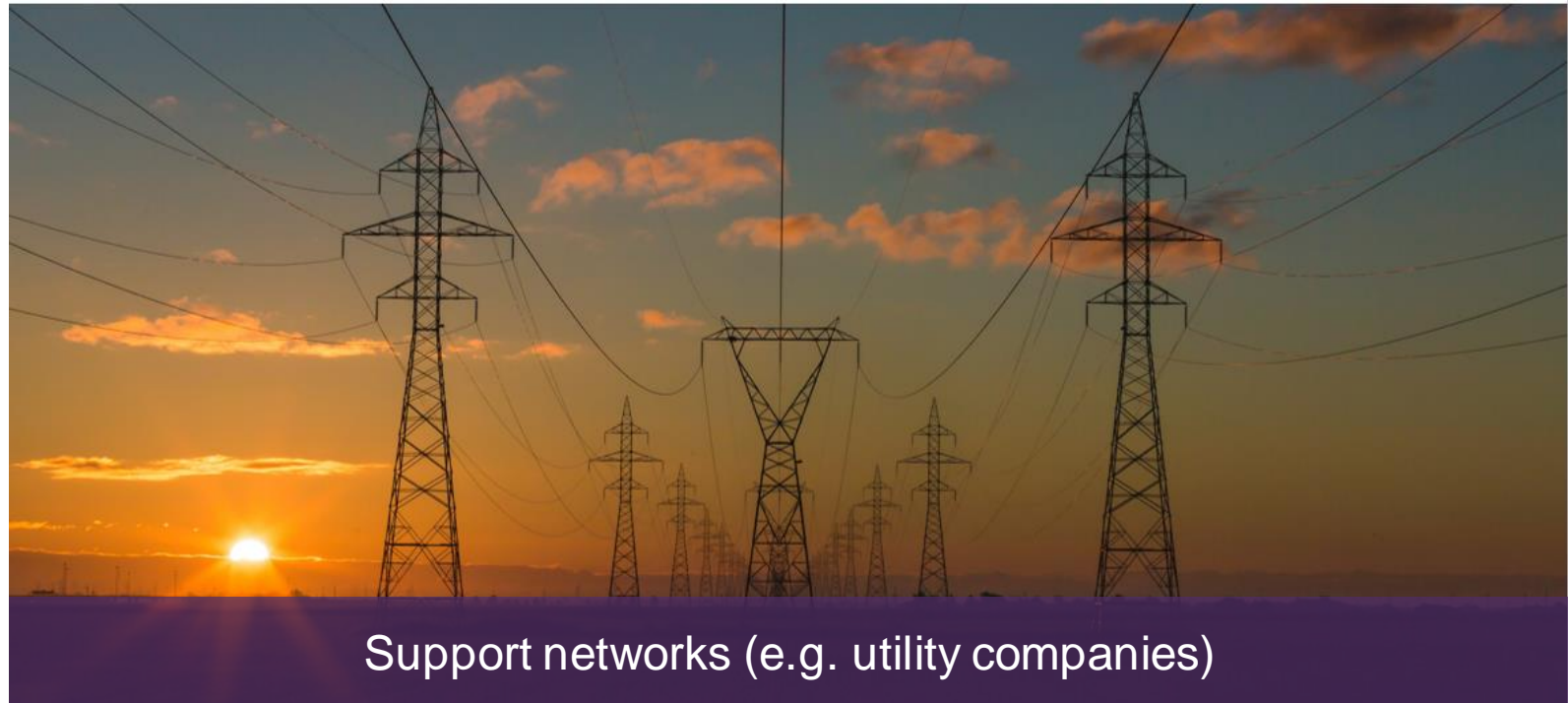
Management preferences

- Management may have preferences for location decisions for various reasons such as:
 - Instinct
 - Managers feel the location will serve workers and the local community better
 - Personal reasons



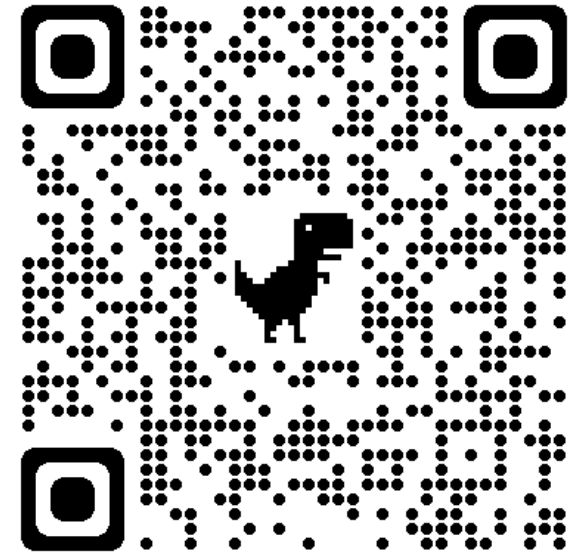
Infrastructure

- Infrastructure is the term used to describe the essential structures and facilities needed to operate in a country (and firms).
- This is perhaps the most common qualitative factor affecting location decisions, including its impact on employees commuting to work.



Political stability

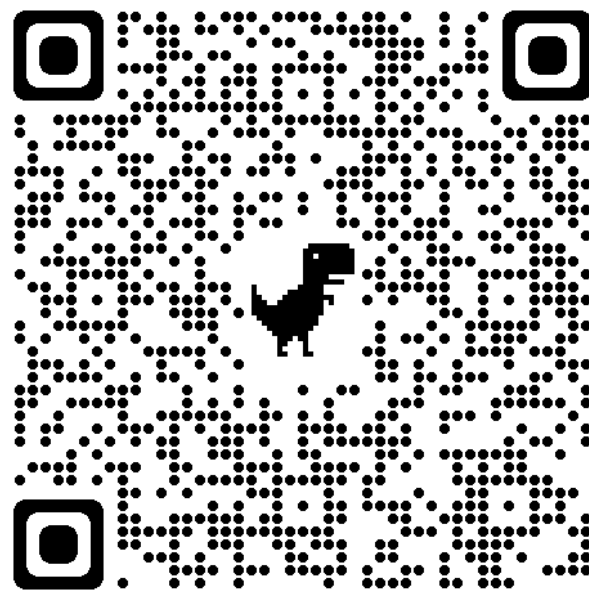
- Political instability will be disruptive to any business, even if all other location factors suggest otherwise.
- Indicators of political stability includes:
 - Political harmony
 - No corruption
 - A good system of law and order
 - A stable exchange rate system
 - Low rates of taxation



Scan to view *Worldwide Governance Indicators* by the *World Bank*. It is a report focusing on various dimensions of governance for over 200 countries.

Government restrictions and regulations

- Businesses need to consider government policies and regulations that constrain business activity as administrative and bureaucratic processes vary between countries.



Scan to view the *Worldwide Bureaucracy Indicators* by the World Bank to learn more about how government bureaucracy differs across nations and their impact on business activity.

Ethical issues

- Decisions regarding the international location or relocation of a business often include ethical issues.
- Examples include:
 - Noise polluting firms move to remote areas to avoid complaints from residents.
 - Firms choosing to remain in location to prevent massive job losses that could damage its reputation.



Comparison shopping (clustering)

- Clustering means that firms locate near other businesses that cater for complementary (related) or similar markets.
- Examples include:
 - Savile Row, London is renowned for custom-made suits.
 - Garment District, New York City, has many fabric and other sewing related stores.

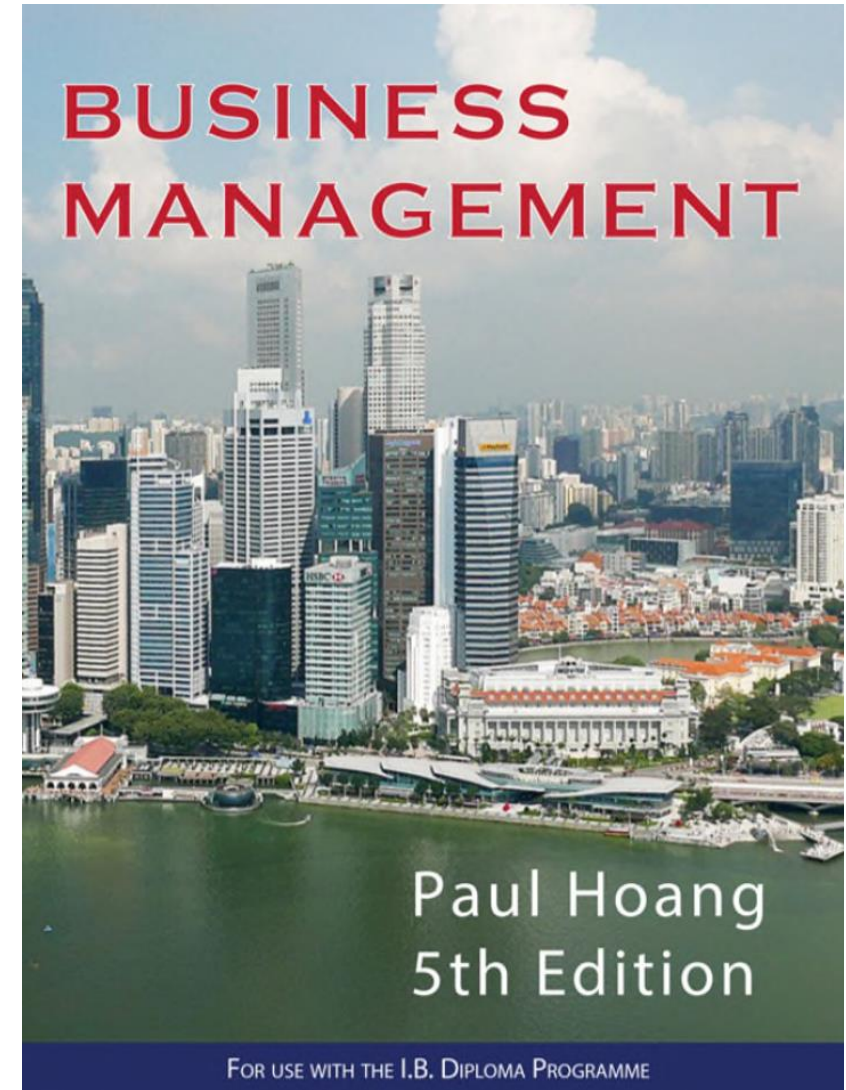


Akihabara is an area of Tokyo, Japan that is clustered with thousands of shops specializing in anime, manga and electronics.

Over to you

- Hoang textbook
- Question 38.3 *Doing business in India*
 - Page 512
- Question 38.4 *Fifth Avenue, New York*
 - Page 513
- Answer all parts

BUSINESS MANAGEMENT



The following ways of reorganizing production, both nationally and internationally:

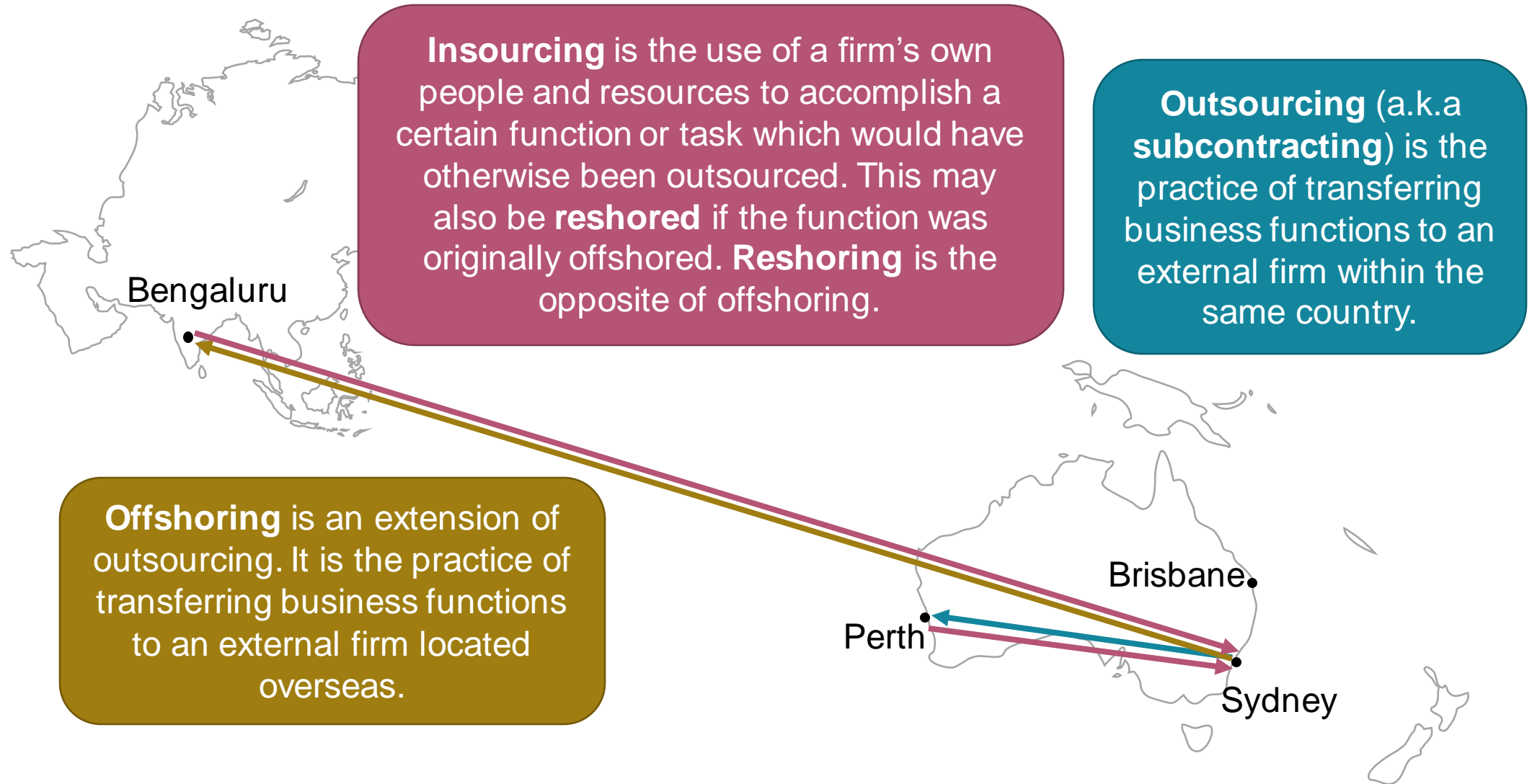
- Outsourcing/subcontracting
- Offshoring
- Insourcing
- Reshoring

Reorganizing production

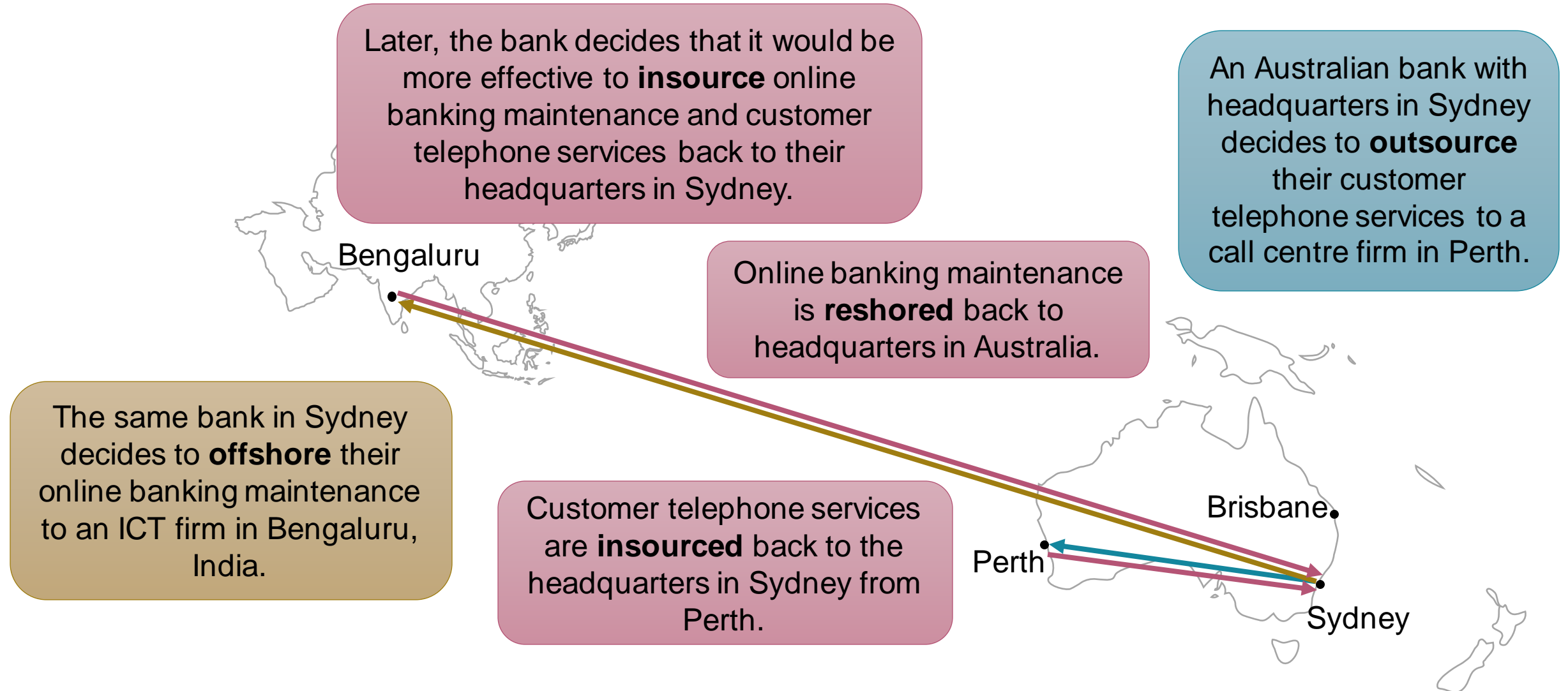
- Reorganizing production often takes place by firms to take advantage of the best that locations nationally and internationally have to offer.
- The four main ways of reorganizing production are:
 1. Outsourcing
 2. Offshoring
 3. Insourcing
 4. Reshoring



Outsourcing, offshoring, insourcing, or reshoring?



Outsourcing, offshoring, insourcing, or reshoring example



Advantages and disadvantages of outsourcing/offshoring



Advantages

- Improved quality output.
- Reduced production costs.
- Reduced labour costs.
- Allows businesses to concentrate on its core activities.
- Improved workforce flexibility.

Advantages and disadvantages of outsourcing/offshoring

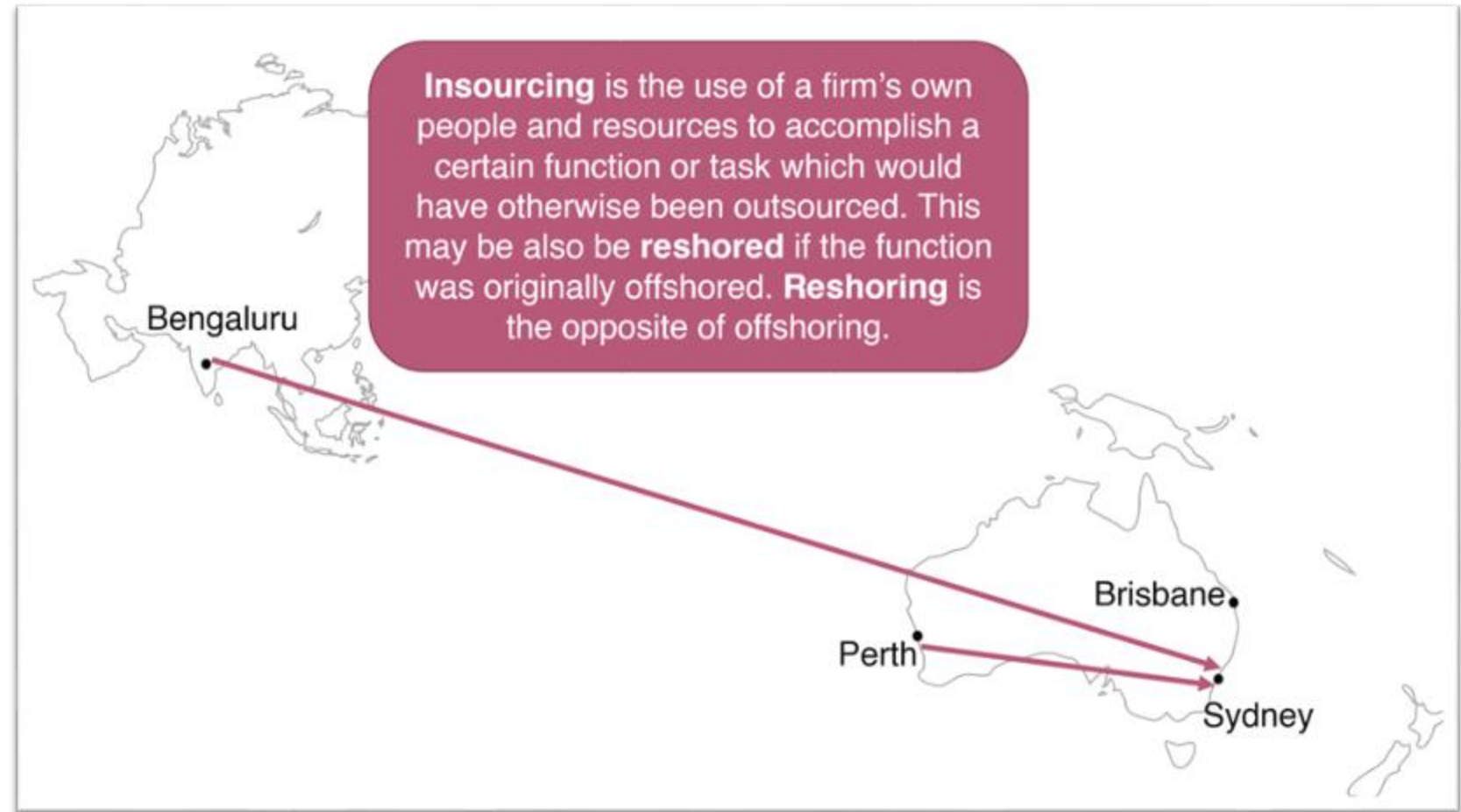


Disadvantages

- Sub-standard quality output may occur without close supervision.
- Quality management can be difficult.
- Time spent supervising quality of sub-contractors will increase.
- Redundancies may occur, negatively impacting staff motivation.
- Historically negative associations with unethical practices (e.g. using child labour and dangerous working practices).

Reasons for insourcing

- The quality of the outsourced function/task has been sub-standard so the firm is hoping that having the work done in-house would improve the quality of the work.
- There are no longer cost-saving benefits from using a subcontractor.



Reasons for reshoring

- Reshoring may allow for closer supervision of quality of output and business practices.
- Domestic governments supporting reshoring initiatives to bring back jobs to their economies.
- Rising transportation costs and supply chain disruptions making it more logical to reshore.



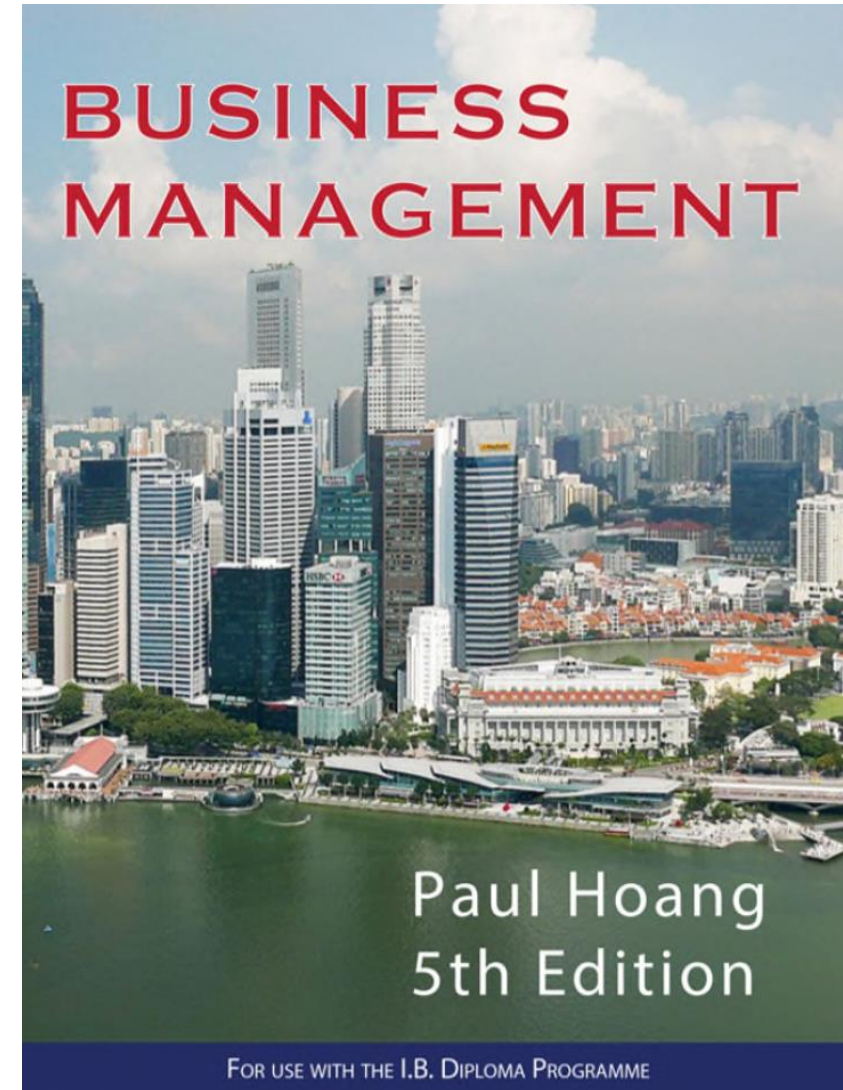
This report from the *Wall Street Journal* explains how supply chain bottlenecks from COVID19 have caused firms to consider reshoring (and its related variations in regionalization and near-shoring).

N.B. Regionalization and near-shoring are not on the Business Management syllabus.

Over to you

- Hoang textbook
- Question 38.5 *Jeffrey Penn School*
- Question 38.6 *Volkswagen*
 - Page 516
- Question 38.7 *Offshoring in India*
 - Page 517
- Answer all parts

BUSINESS MANAGEMENT



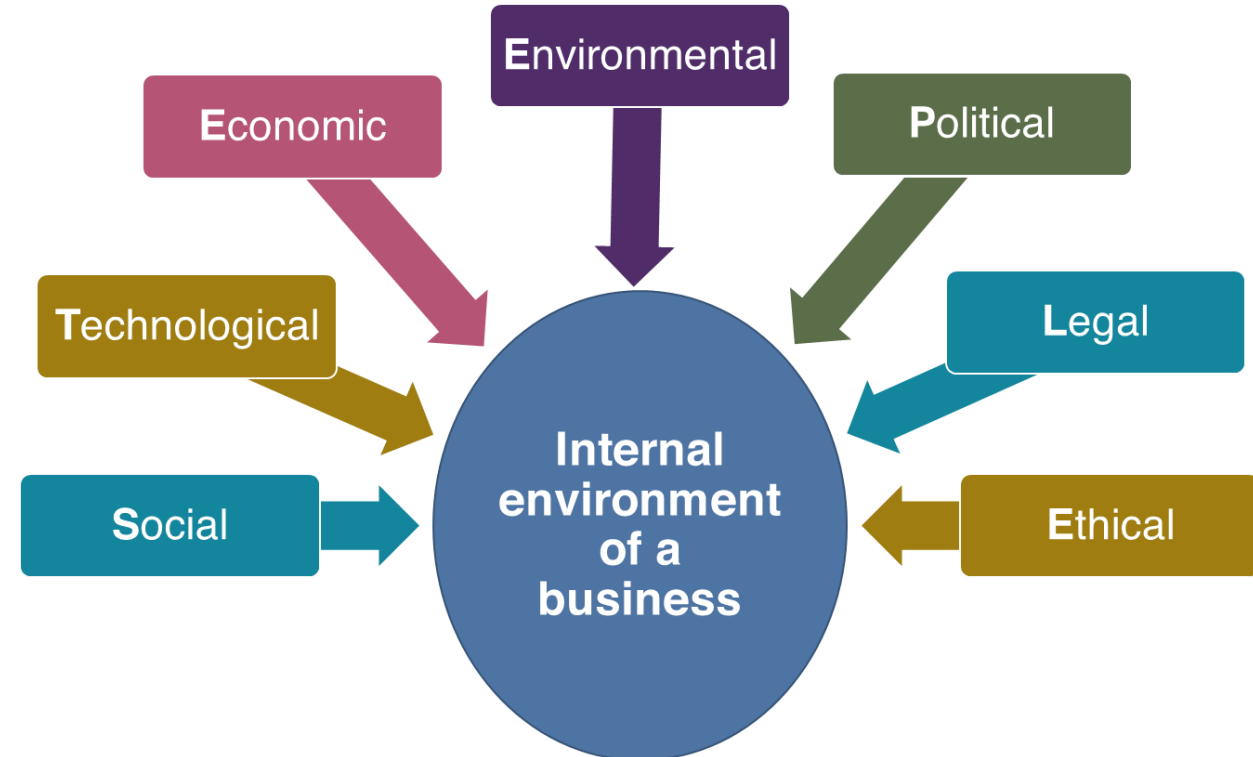
To what extent do you think that a country's ability to develop depends on its willingness and ability to embrace globalization?



BUSINESS MANAGEMENT

BMT: Factors affecting location decisions and STEEPLE analysis

With reference to STEEPLE analysis, discuss how the external environment can influence location decisions.





Concepts	Questions to guide decision making
Change	What are the reasons for relocation?
Creativity	Will the firm be able to access a labour market that will continue to help the firm evolve with creative approaches?
Ethics	What is the CSR owed to local communities in the existing and proposed new locations?
Sustainability	Will relocation enable the firm to meet its obligations to the triple bottom line (i.e. people, planet and profits)?

T

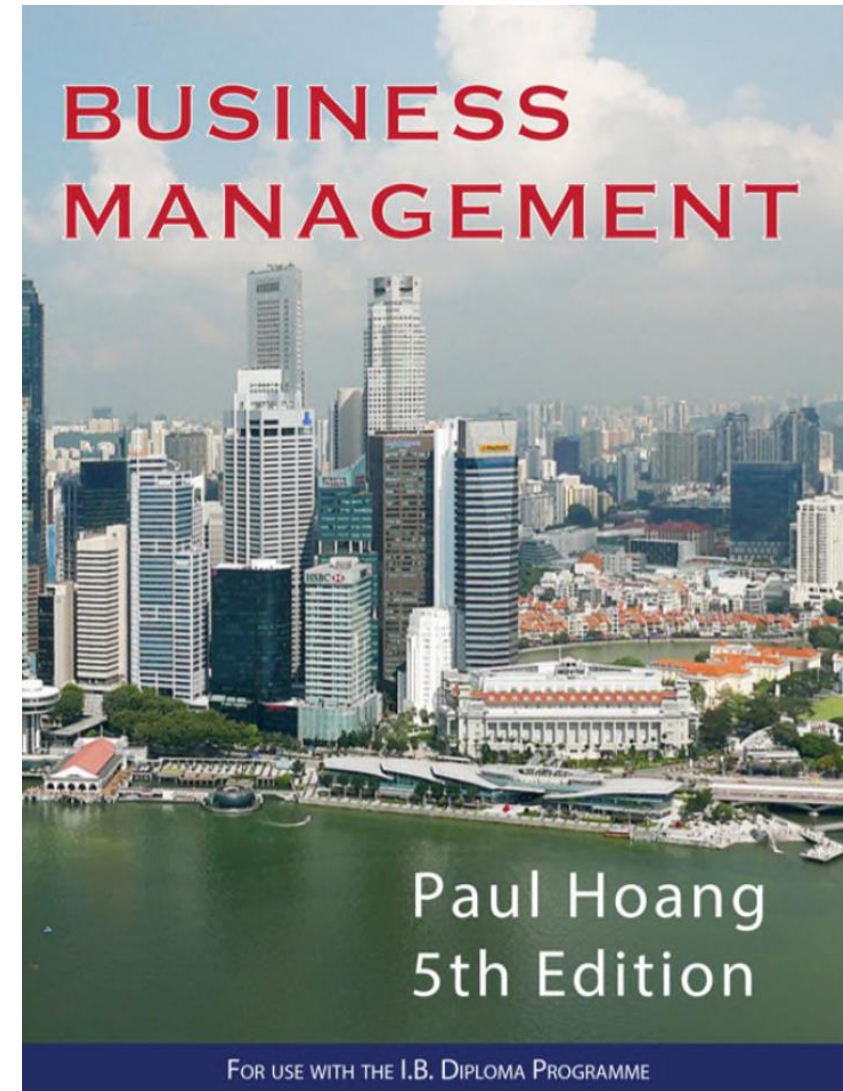
Concepts in BM: change, creativity, ethics and sustainability

- Managers evaluating potential locations can use the concepts as a simple decision-making framework.

Over to you

- Hoang textbook
- *Review Questions*
 - Page 521

BUSINESS MANAGEMENT



5.5 Break-even analysis

Topic 5: Operations management

Unit content

Content	Assessment objective
<u>Contribution per unit versus total contribution</u>	AO2
<u>A break-even chart and the following aspects of break-even analysis:</u> <ul style="list-style-type: none">• Break-even quantity/point• Profit or loss• Margin of safety• Target profit quantity• Target profit• Target price	AO2, AO4

Unit content (continued)

Content	Assessment objective
<u>The effects of changes in price or cost on the break-even quantity, profit and margin of safety, using graphical and quantitative methods</u>	AO2, AO4
<u>Limitations of break-even as a decision making tool</u>	AO3
Business Management Toolkit: <ul style="list-style-type: none">• <u>Contribution (HL only)</u>	
<u>Break-even analysis and the business management concepts</u>	

Why perform break-even analysis?

- Bea would like to sell her handmade candles at her local farmers' market. She knows she will incur the following costs:
 - Stall rental: \$100
 - Cost of production per candle: \$0.50
- Bea would like to know if it is a worthwhile business venture to pursue.



What quantitative information does Bea need to know in order to determine whether this is a good business idea?

Useful formulae for break-even analysis

Name of formula	Formula
Unit contribution	Price – Variable Cost
Contribution to fixed costs (i.e. the break-even quantity)	$\frac{\text{Fixed Cost}}{\text{Unit contribution}}$
Total revenue (TR)	Price × Quantity
Total cost (TC)	$\text{FC} + (\text{VC} \times \text{Quantity})$
Break-even point (BEP)	$\text{TR} = \text{TC}$
Profit or loss	$\text{TR} - \text{TC}$
Margin of safety	Level of demand – Break-even quantity
Target profit quantity	$\frac{(\text{FC} + \text{Target profit})}{(\text{Price} - \text{VC})}$

Contribution per unit versus total contribution

What is contribution?

- Contribution refers to the sum of money that remains after all direct and variable costs have been taken away from sales revenue
 - i.e. how many units of output have to be sold in order to pay for fixed costs?



Contribution can be used as a decision making tool in make or buy analysis, contribution costing and absorption costing. This is explored further in the BMT for Higher Level students only.

Unit contribution versus total contribution

Unit contribution

- This is the proportion of the selling price for each unit of output that will go towards (i.e. contributes to) paying off total fixed costs.
- The formula for unit contribution is:

$$\text{Unit contribution} = \text{Selling price per unit} - \text{VC per unit}$$

Total contribution

- This refers to the quantity of output needed to go towards (i.e. contribute to) paying off total fixed costs.
- The formula for total contribution is:

$$\text{Total contribution} = \text{FC} \div \text{Unit contribution}$$

Worked example of contribution

- Financial information for Bea's Candles:
 - Fixed cost (stall rental): \$100
 - Variable cost per candle: \$0.50
 - Selling price: \$1.50

Unit contribution

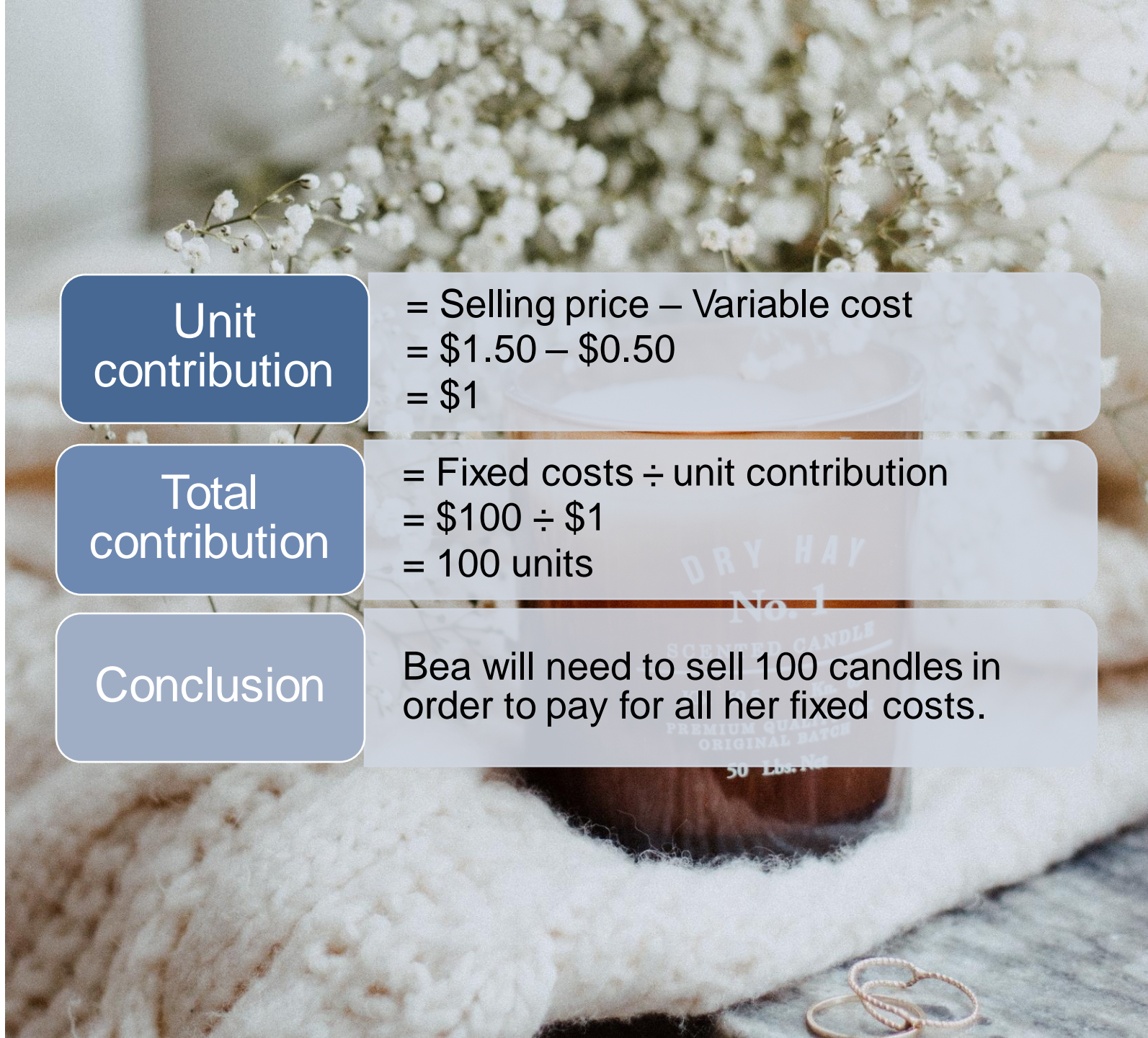
$$\begin{aligned} &= \text{Selling price} - \text{Variable cost} \\ &= \$1.50 - \$0.50 \\ &= \$1 \end{aligned}$$

Total contribution

$$\begin{aligned} &= \text{Fixed costs} \div \text{unit contribution} \\ &= \$100 \div \$1 \\ &= 100 \text{ units} \end{aligned}$$

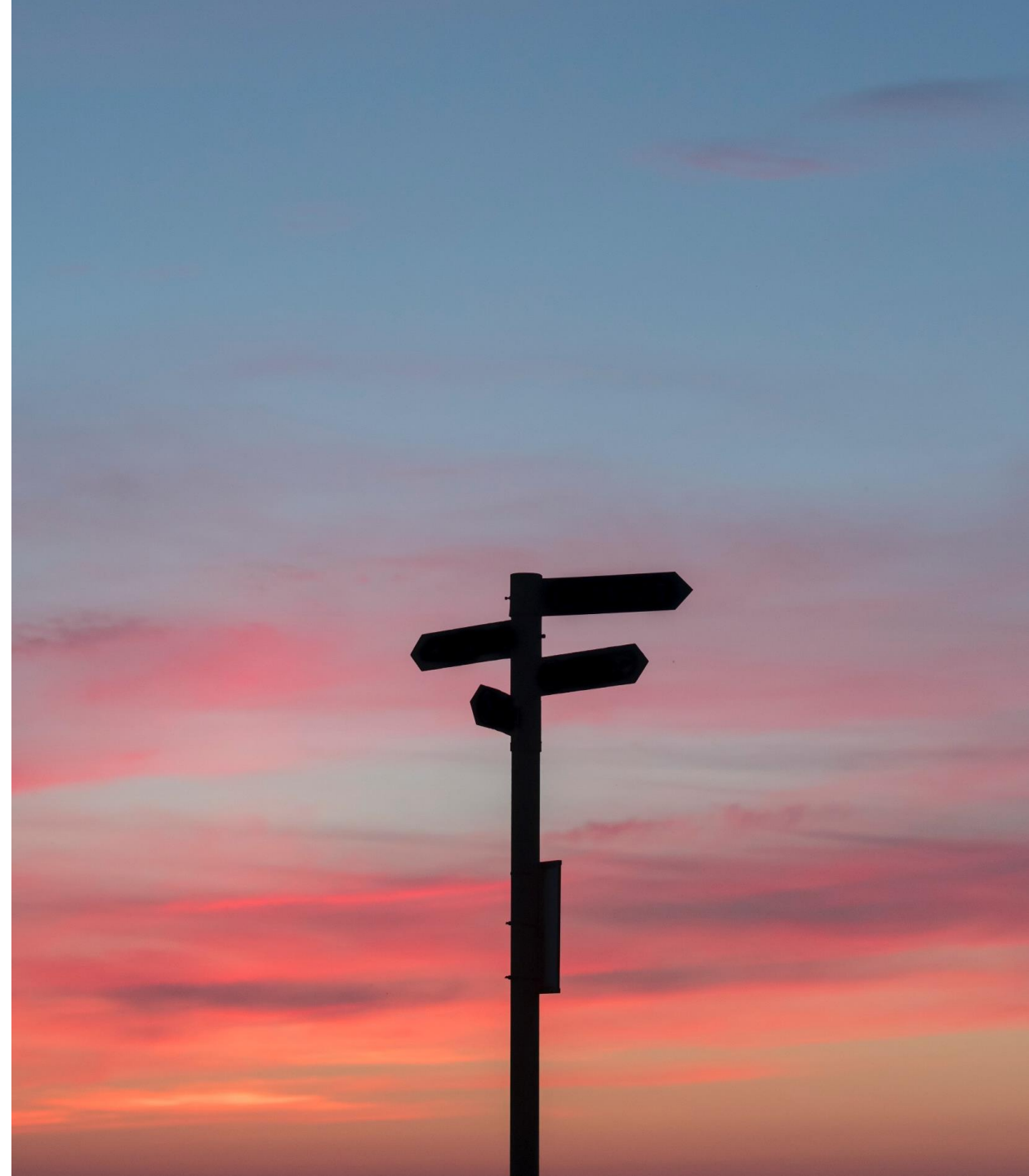
Conclusion

Bea will need to sell 100 candles in order to pay for all her fixed costs.



Purpose of contribution analysis

- Calculating contribution helps a firm to:
 - Determine pricing strategies
 - Prioritise products in their portfolio
 - Allocate overheads to cost and profit centres
 - Decide on whether to make or buy in products
 - Make special order decisions
 - Perform break-even analysis



A break-even chart and the following aspects of break-even analysis:

- Break-even quantity/point
- Profit or loss
- Margin of safety
- Target profit output
- Target profit
- Target price

Break-even analysis

- Break-even exists when a firm makes neither a profit nor a loss.
- Break-even analysis helps to determine the level of sales that must be generated for the firm to earn a profit.
- It helps to inform managers about:
 - whether a product is financially worthwhile to produce.
 - how much profit can be earned if the business idea goes to plan.

The three methods of determining the break-even point:



Unit contribution method



TR = TC method



Drawing a break-even chart

Unit contribution method

- Financial information for Bea's Candles:
 - Fixed cost (stall rental): \$100
 - Variable cost per candle: \$0.50
 - Selling price: \$1.50

As shown earlier, the unit contribution method indicates that Bea's break-even point is 100 candles.

Unit
contribution

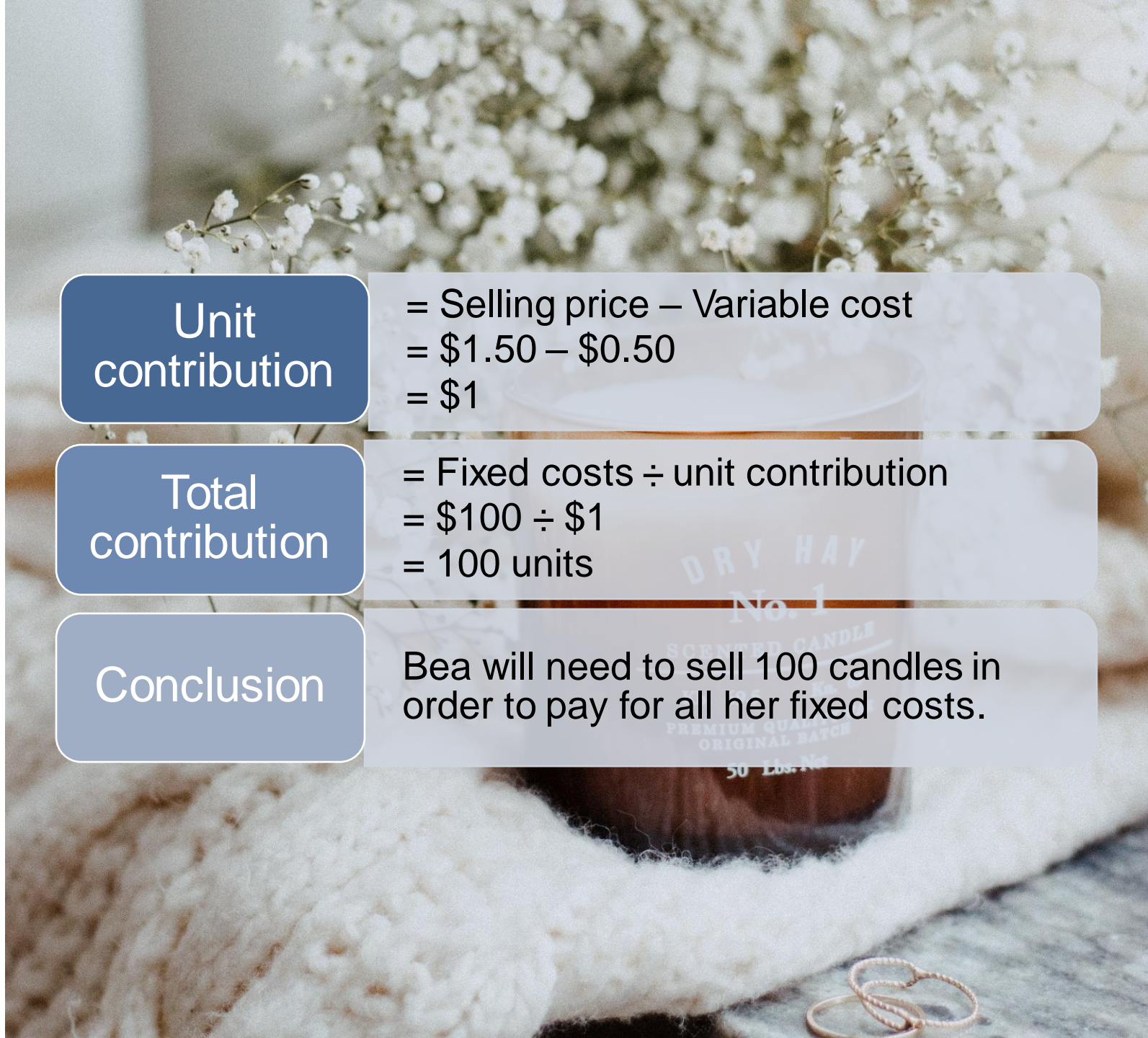
= Selling price – Variable cost
= \$1.50 – \$0.50
= \$1

Total
contribution

= Fixed costs ÷ unit contribution
= \$100 ÷ \$1
= 100 units

Conclusion

Bea will need to sell 100 candles in order to pay for all her fixed costs.



Total revenue = Total cost method

- Financial information for Bea's Candles:
 - Fixed cost (stall rental): \$100
 - Variable cost per candle: \$0.50
 - Selling price: \$1.50

Total revenue

$$= \text{Price} \times \text{Quantity}$$
$$= \$1.50 \times Q$$

Total cost

$$= \text{Fixed costs} + (\text{Variable costs} \times \text{Quantity})$$
$$= \$100 + (\$0.50 \times Q)$$

TR = TC

$$1.5Q = 100 + 0.5Q$$
$$1.5Q - 0.5Q = 100$$
$$Q = 100$$

Conclusion

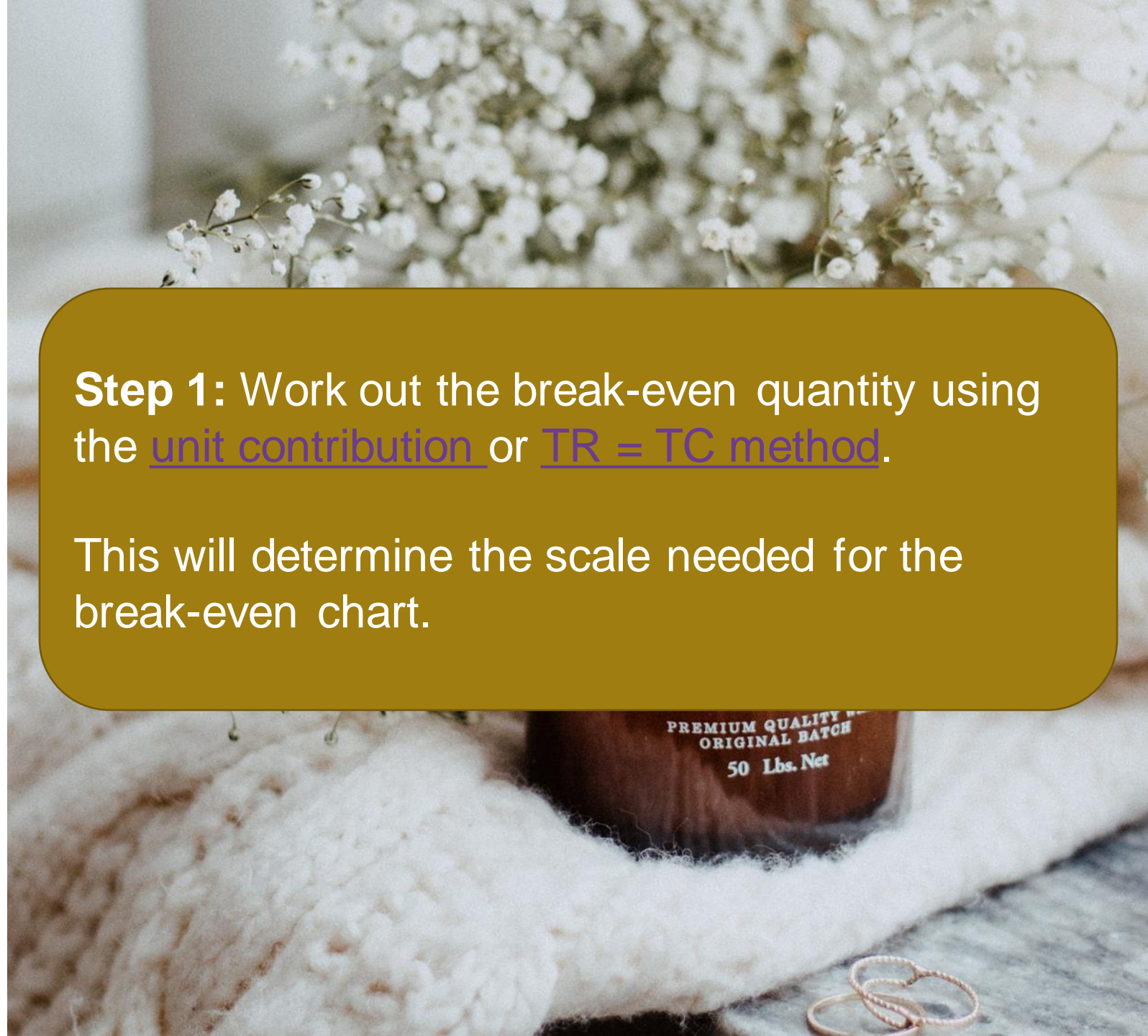
Bea's break-even point is 100 candles.

Break-even chart method

- Financial information for Bea's Candles:
 - Fixed cost (stall rental): \$100
 - Variable cost per candle: \$0.50
 - Selling price: \$1.50
 - Anticipated demand: 250 candles

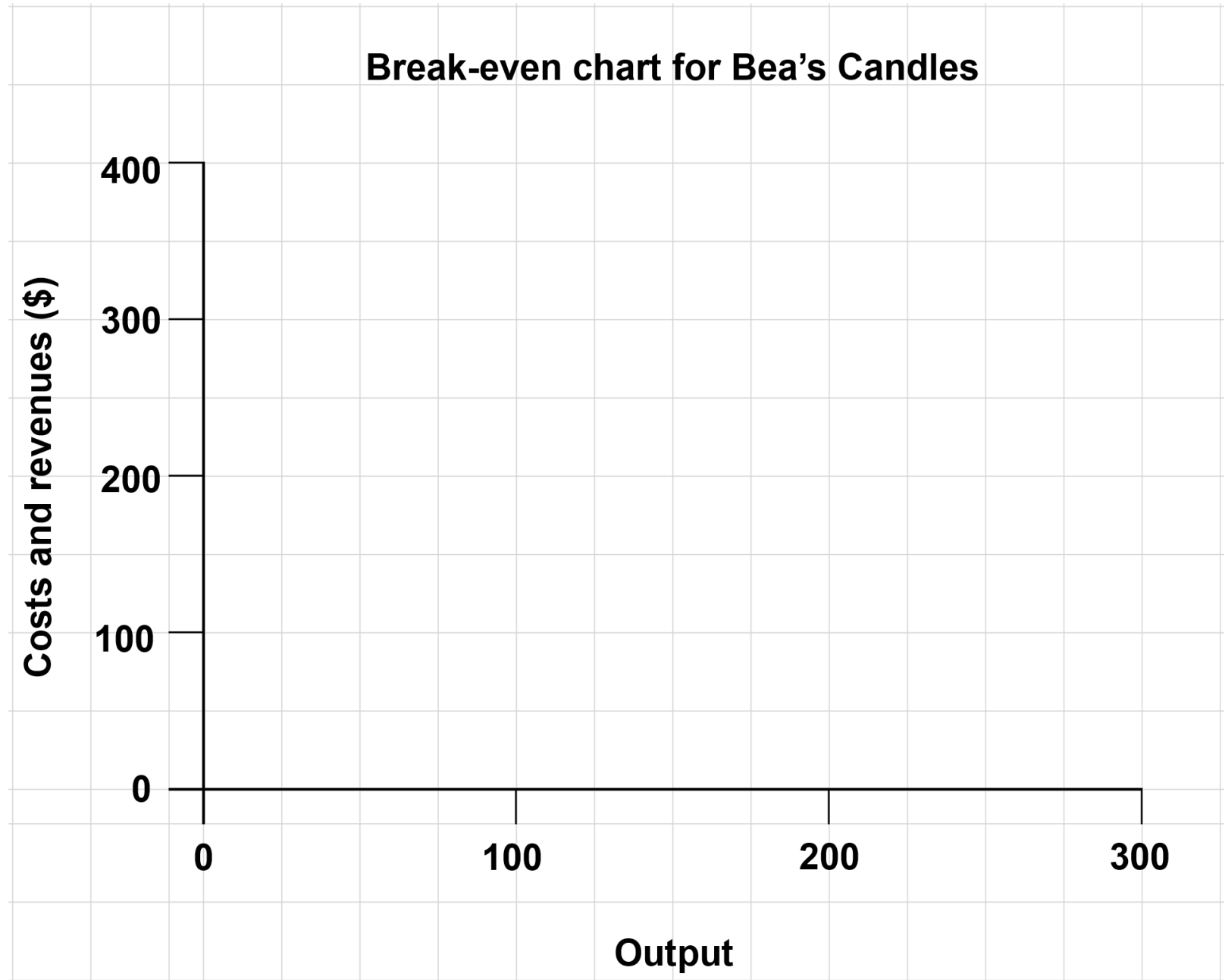
Step 1: Work out the break-even quantity using the unit contribution or TR = TC method.

This will determine the scale needed for the break-even chart.



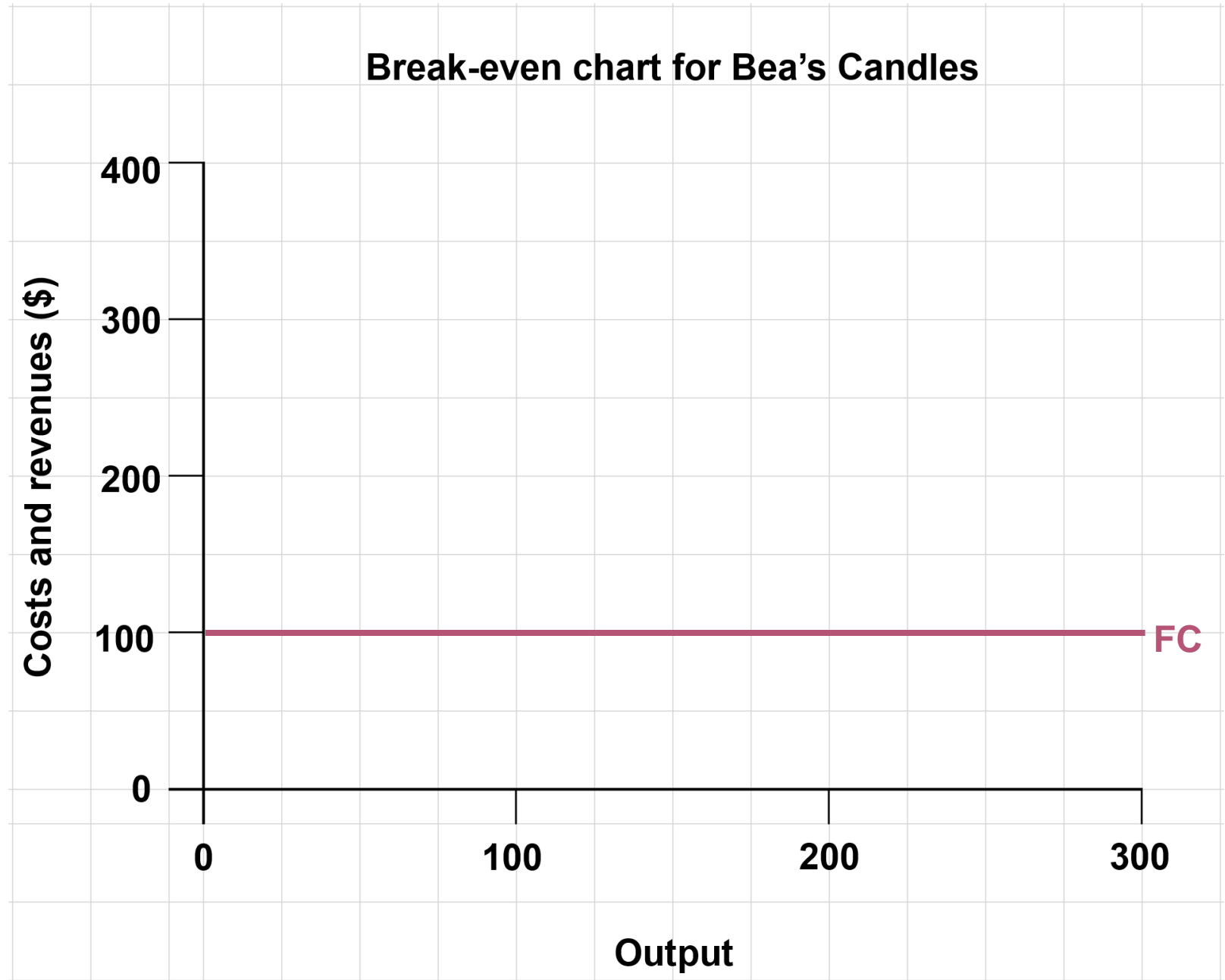
Break-even chart method

Step 2: Plot and label the axes of the break-even chart.



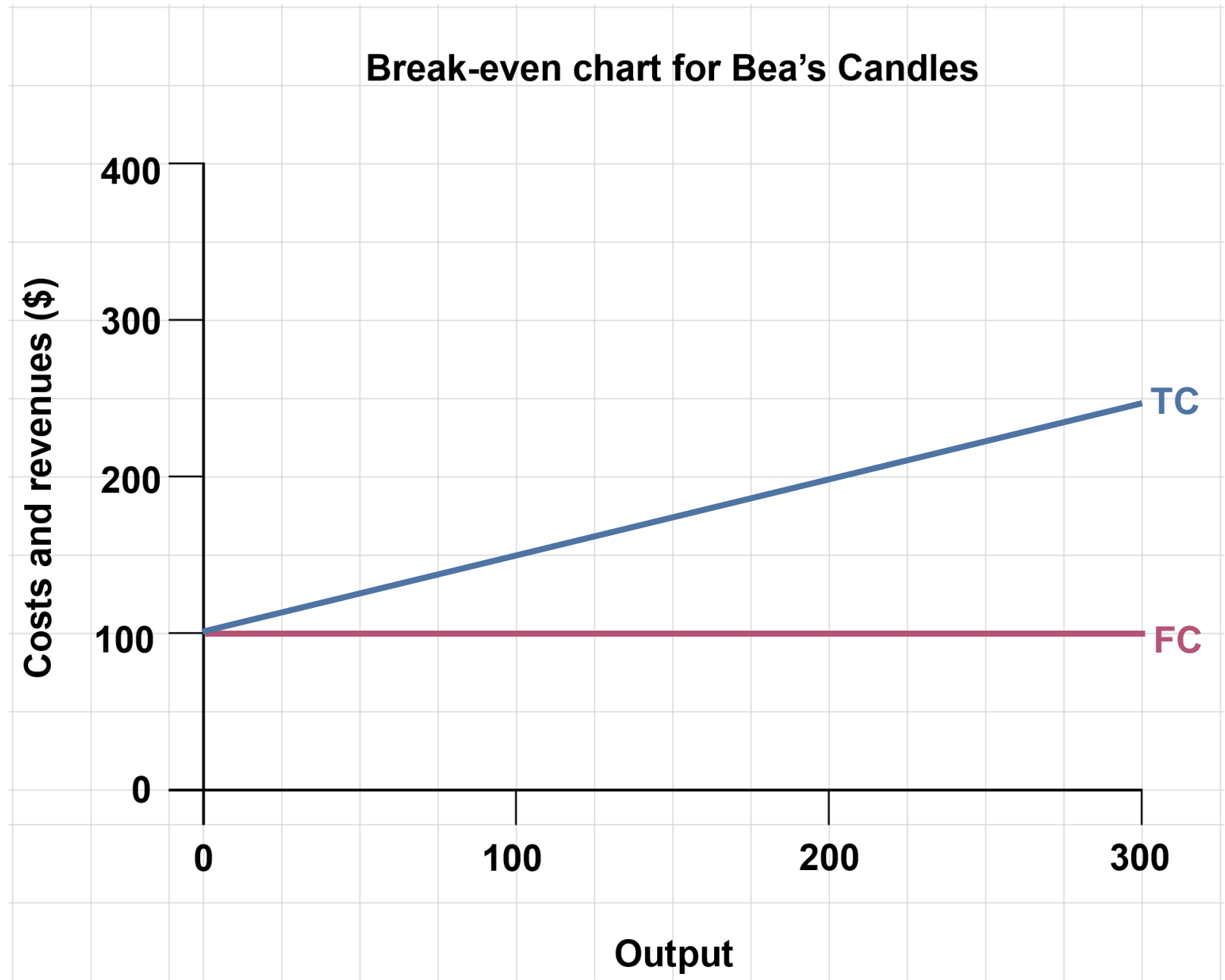
Break-even chart method

Step 3: Plot the
fixed costs line
and label it *FC*.



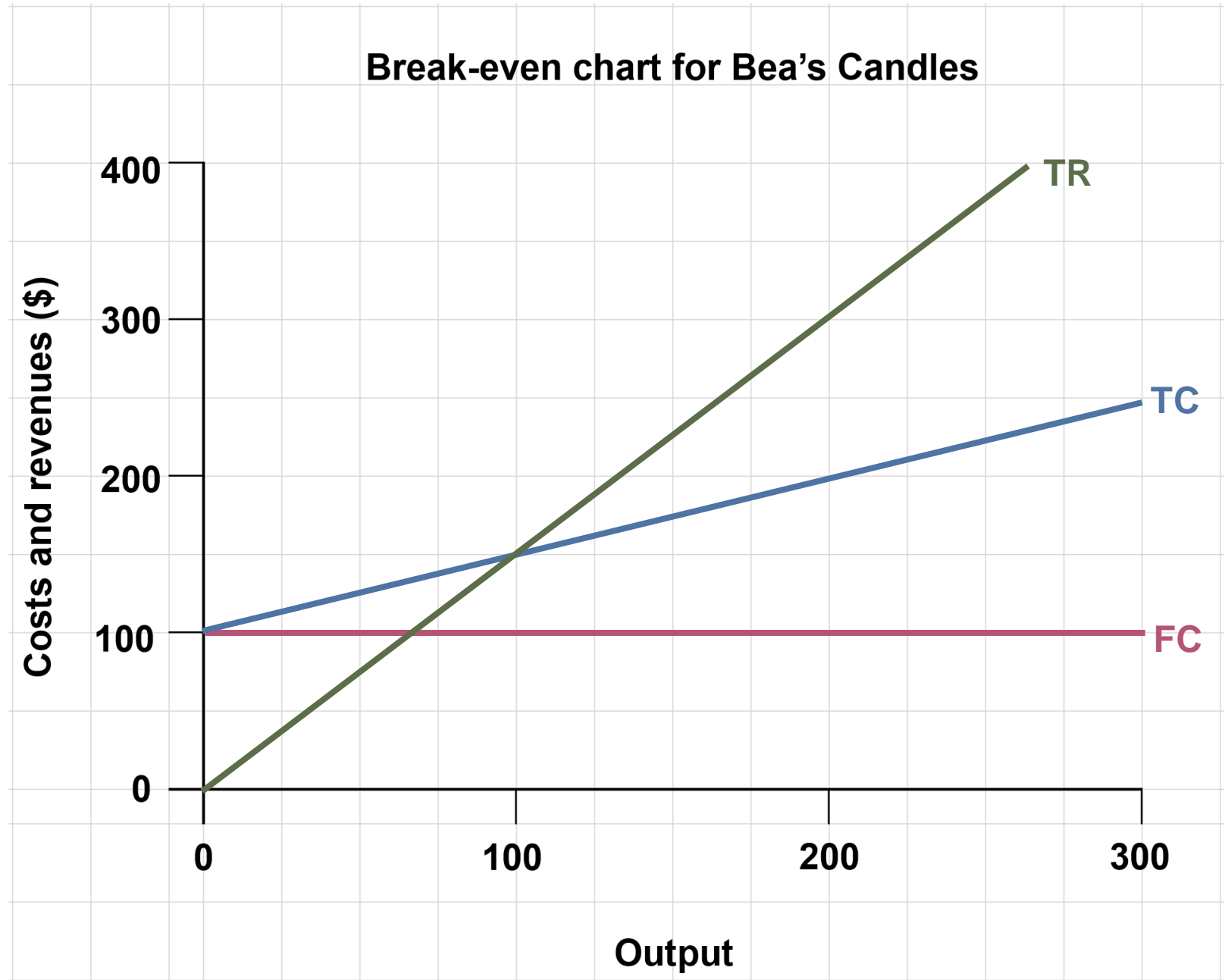
Break-even chart method

Step 4: Plot the
total costs line
and label it *TC*.



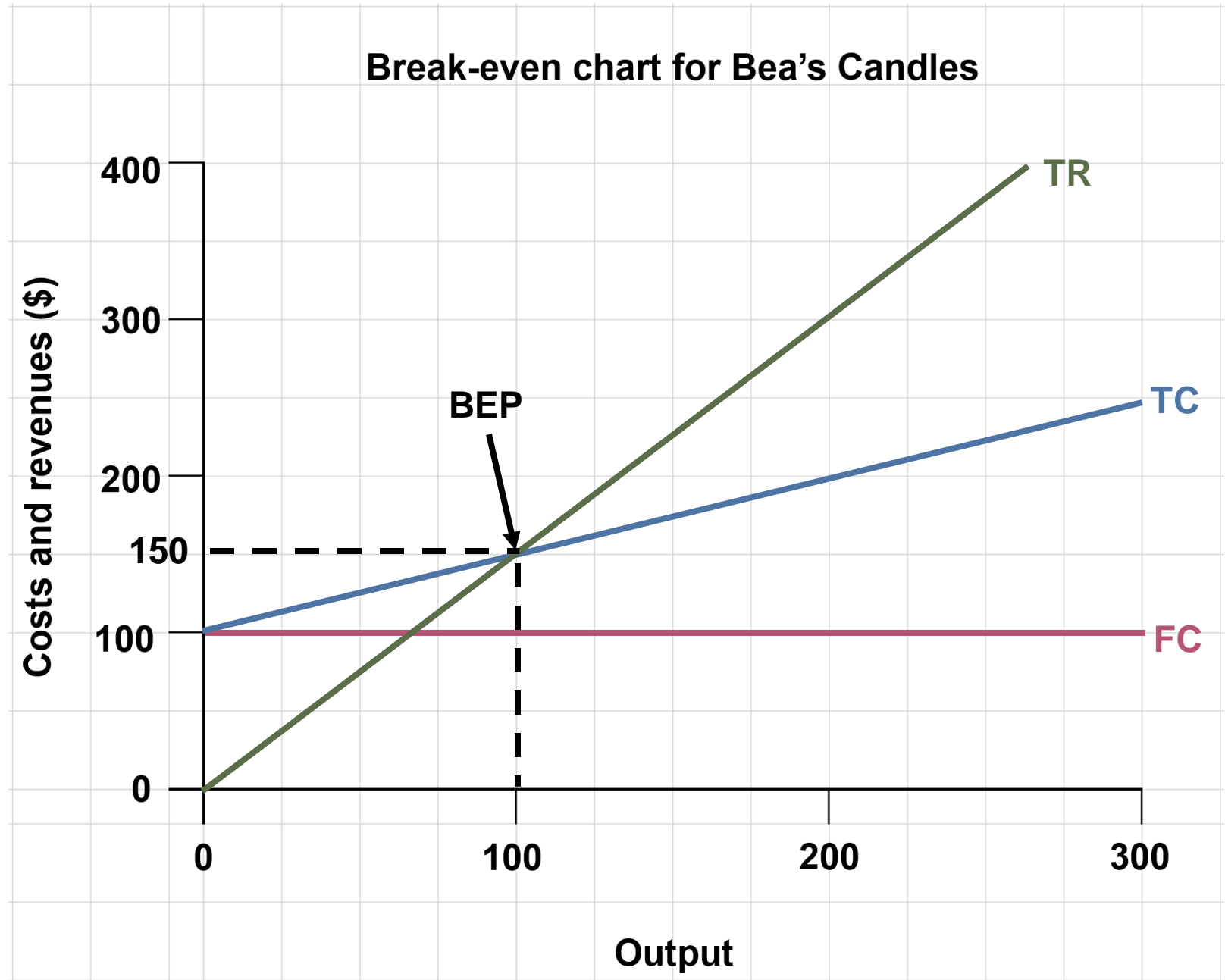
Break-even chart method

Step 5: Plot
the total
revenue line
and label it *TR*.



Break-even chart method

Step 6: Identify
the break-even
point.

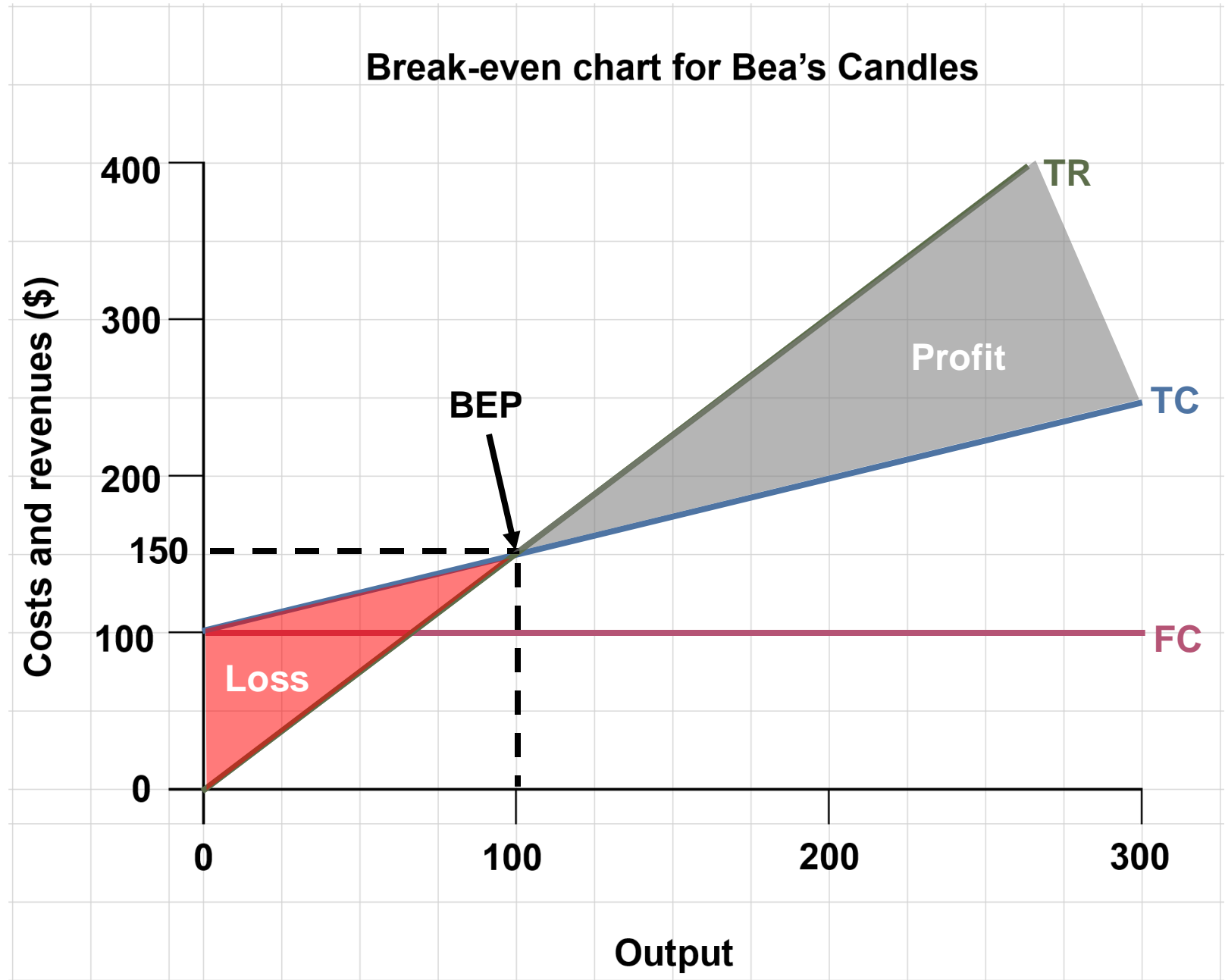


Break-even chart method

- The break-even chart also shows the profit and loss of a firm.

Any sales beyond the BEP generates a profit.

Any sales below the BEP means the firm makes a loss.



Margin of safety

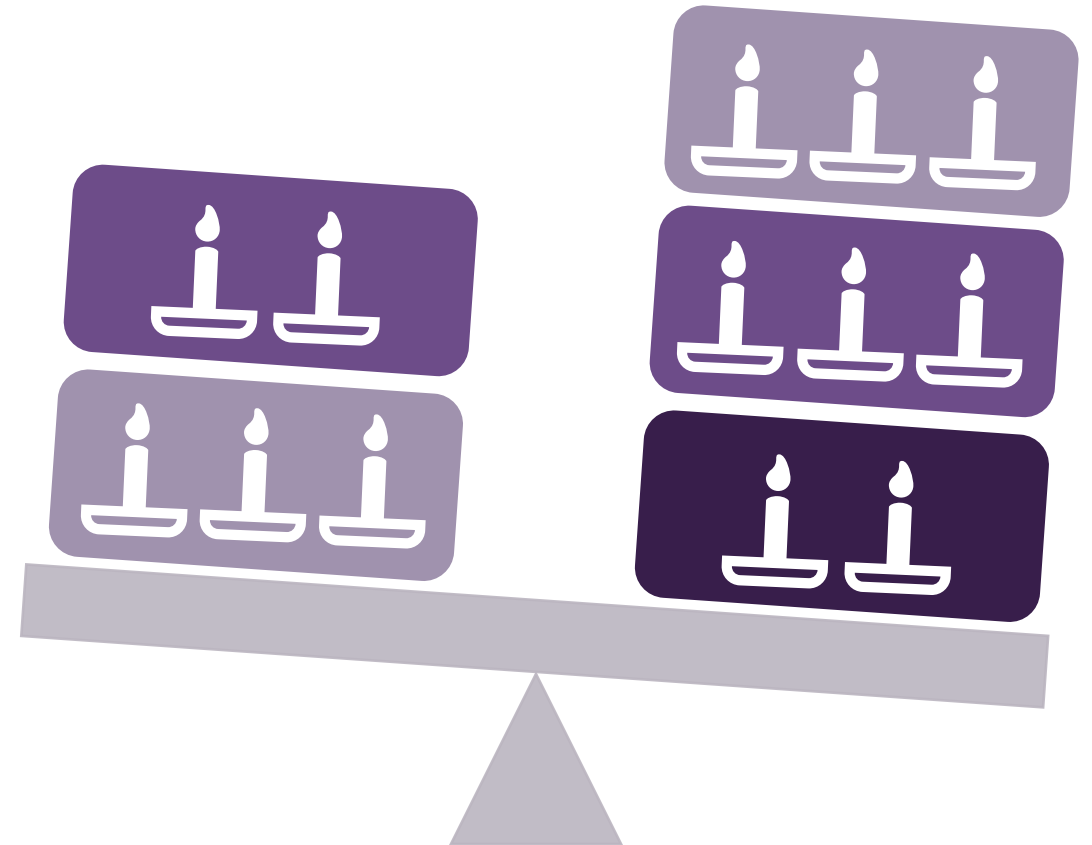
- This measures the amount by which demand for a product exceeds the break-even quantity.
- A positive margin of safety means that firms will be 'safe' in terms of being able to afford sales to fall before it starts making a loss.
- The greater the positive difference, the 'safer' the firm will be.

Margin of safety =
Level of demand – Break-even quantity

BUSINESS MANAGEMENT

Break-even
quantity

Level of
demand



Worked example of margin of safety

- Financial information for Bea's Candles.
 - Anticipated demand: 250 candles
 - Break-even quantity: 100 candles

Margin of safety

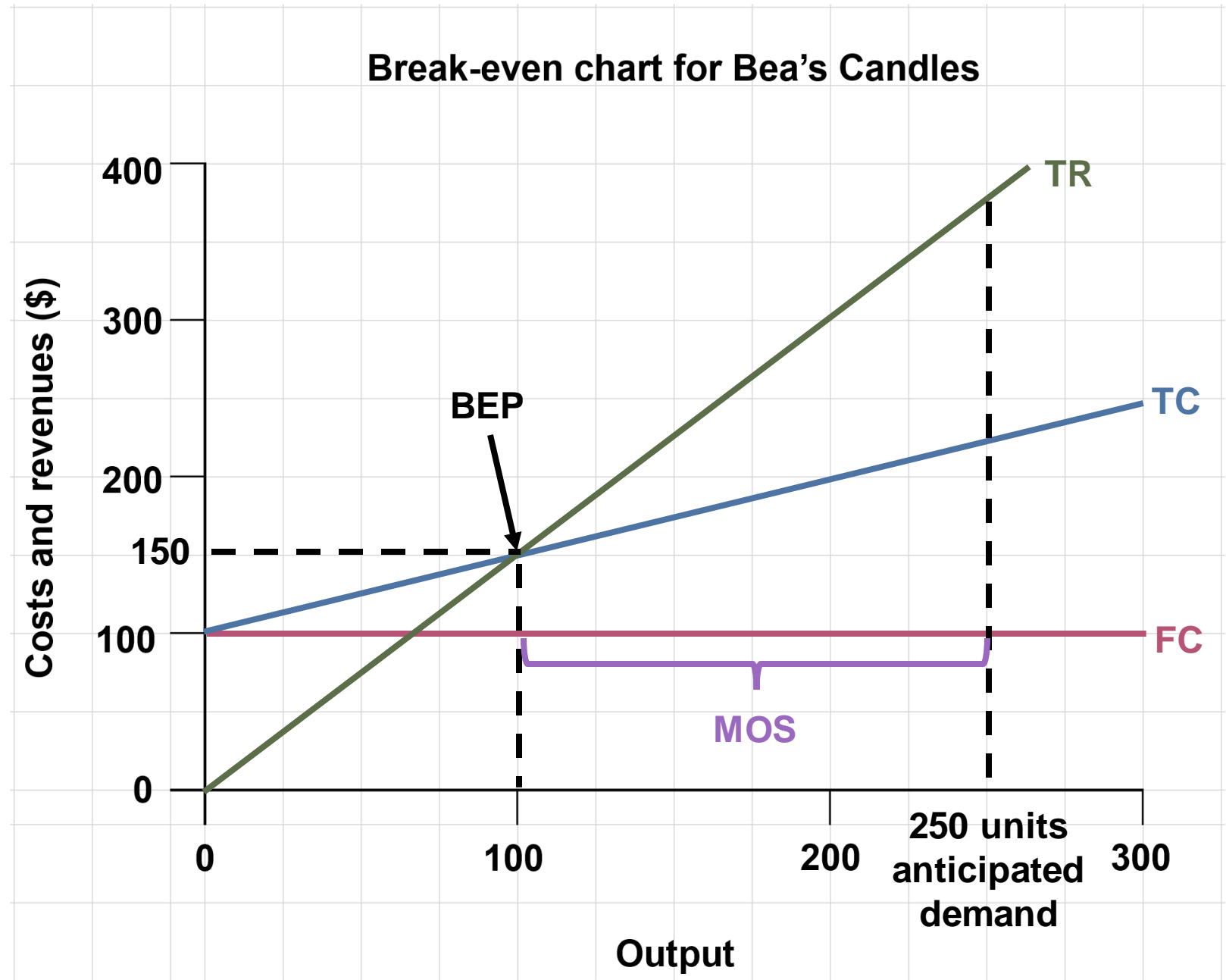
= Level of demand – break-even quantity
= 250 – 100
= 150 candles

Conclusion

- The demand for Bea's candles exceeds the break-even quantity by 150 units.
- Her sales can afford to fall by 150 candles before she goes below the break-even point and starts making a loss.

Worked example of margin of safety

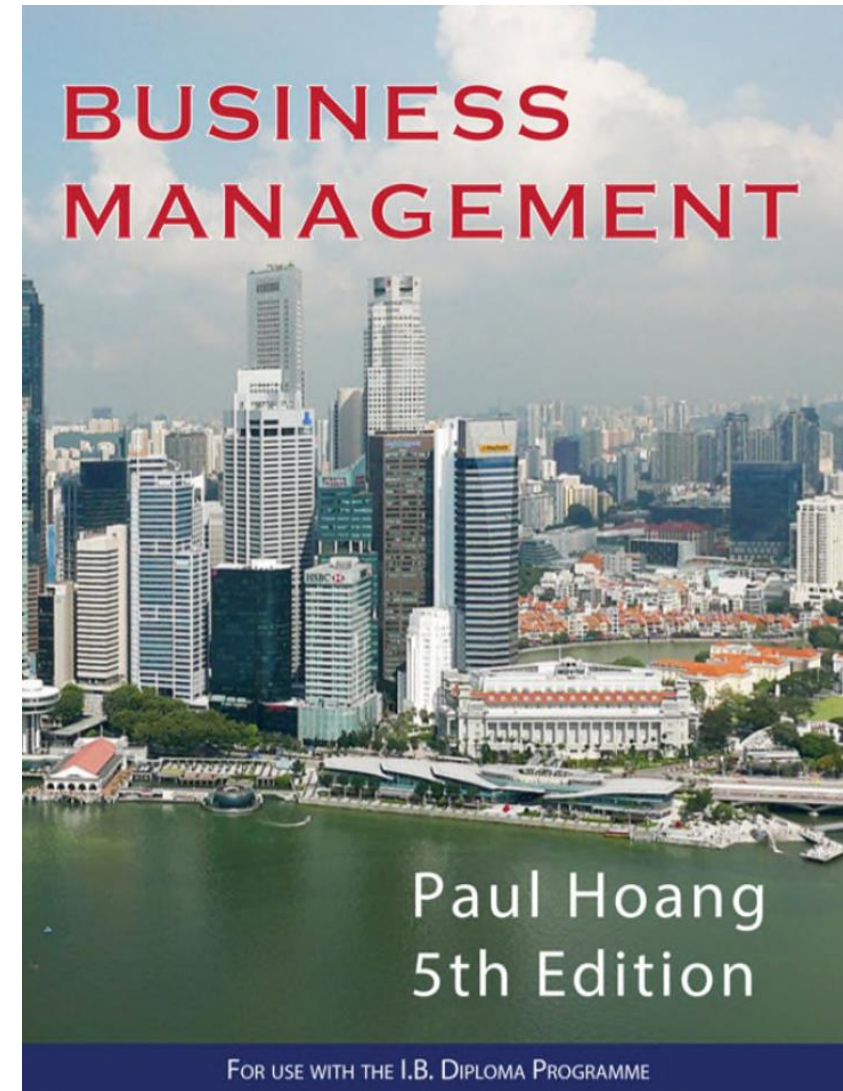
Step 7: Indicate the margin of safety.



Over to you

- Hoang textbook
- Question 39.1 *Jade Villa Ltd.*
 - Page 524
- Question 39.2 *Graham Go-Karts!*
 - Page 526
- Question 39.3 *Calculating the margin of safety*
 - Page 527
- Question 39.4 *TMR Day-Care Centre*
 - Page 529
- Answer all parts

BUSINESS MANAGEMENT



Forecasting target profits, quantities and price

- Just knowing the break-even point is not sufficient to decide on whether to sell a product.
- Businesses also need to know three key pieces of financial information:
 - How much profit they might make.
 - How many units of output they need to produce.
 - How much to charge for the selling price.
- These three key pieces of financial information can be calculated using this formula:

$$\text{Target profit quantity} = \frac{(\text{Fixed cost} + \text{Target profit})}{(\text{Price} - \text{Variable cost})}$$

Calculating target profit quantity

- If Bea would like to make \$350 profit, how many candles will she need to sell in order to reach that target?
- Financial information for Bea's Candles:
 - Fixed cost (stall rental): \$100
 - Variable cost per candle: \$0.50
 - Selling price: \$1.50



$$\begin{aligned}\text{Target profit quantity} &= (\text{FC} + \text{Target profit}) \div (\text{Price} - \text{VC}) \\ X &= (100 + 350) \div (1.50 - 0.5) \\ X &= 450 \div 1.50\end{aligned}$$

Target profit quantity = 450 candles

Calculating target profit

- If Bea ends up selling 300 candles, what is her profit?
- Financial information for Bea's Candles:
 - Fixed cost (stall rental): \$100
 - Variable cost per candle: \$0.50
 - Selling price: \$1.50



$$\text{Target profit quantity} = (\text{FC} + \text{Target profit}) \div (\text{Price} - \text{VC})$$

$$300 = (100 + X) \div (1.50 - 0.5)$$

$$300 = (100 + X) \div 1$$

$$300 = 100 + X$$

$$300 - 100 = X$$

$$\text{Target profit} = \$200$$

Calculating target price

- If Bea would like to make \$400 profit, but she only has 250 candles to sell, at what price should Bea sell her candles?
- Financial information for Bea's Candles:
 - Fixed cost (stall rental): \$100
 - Variable cost per candle: \$0.50



$$\text{Target profit quantity} = (\text{FC} + \text{Target profit}) \div (\text{Price} - \text{VC})$$

$$250 = (100 + 400) \div (X - 0.5)$$

$$250 = 500 \div (X - 0.5)$$

$$250 \times (X - 0.5) = 500$$

$$X - 0.5 = 500 \div 250$$

$$X - 0.5 = 2$$

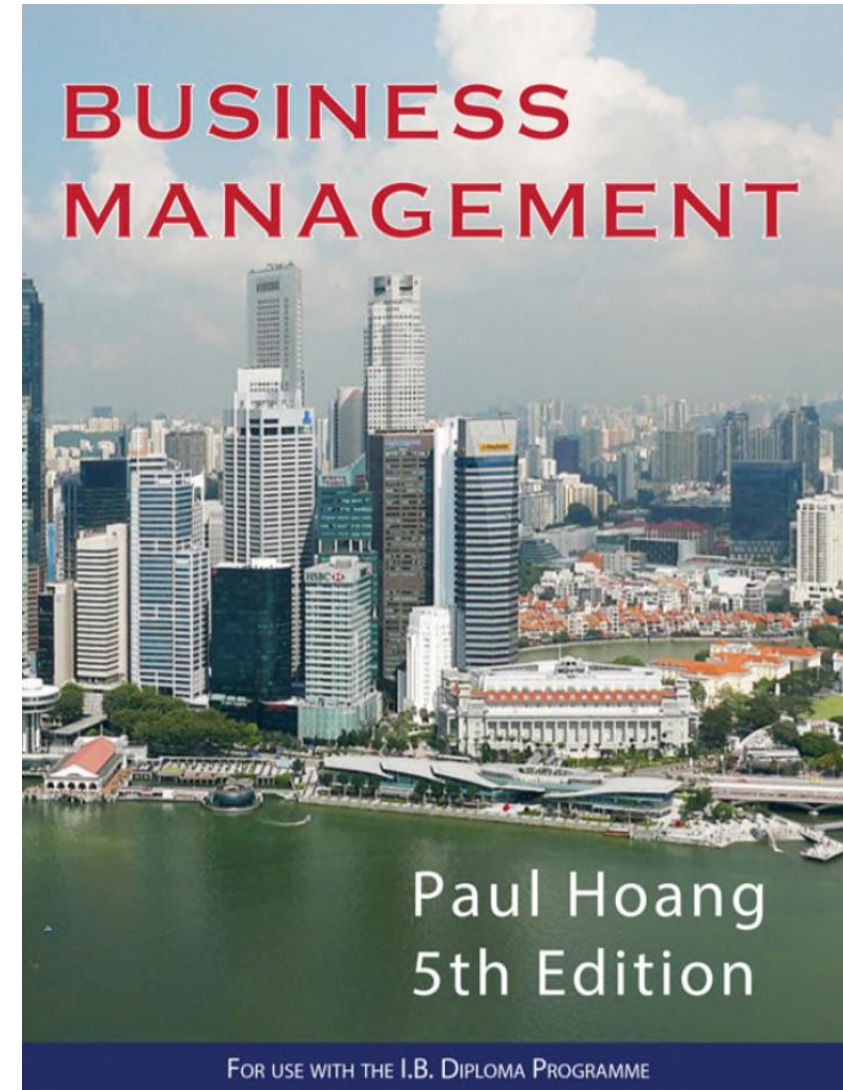
$$X = 2 + 0.50$$

$$\text{Target price} = \$2.50$$

Over to you

- Hoang textbook
- Question 39.5 *Creighton Tours*
 - Page 530
- Question 39.6 *Mendoza Taxi Services*
 - Page 531
- Answer all parts

BUSINESS MANAGEMENT



The effects of changes in price or cost on the break-even quantity, profit and margin of safety, using graphical and quantitative methods

Causes of changes in break-even



Difference between short and long-term profits.



Changes in demand due to external factors (e.g. changes in income, trends, seasons etc.).



Level of risk (the riskier the project, the higher the break-even quantity).



Innovation and the introduction of new technologies.



Luck!

Changes in break-even at *Brandon's Candles*

- *Brandon's Candles (BC)* is a candle business founded in 2014. The firm was started by 13 year old Brandon Bechtel and became a \$500,000 business by 2019.



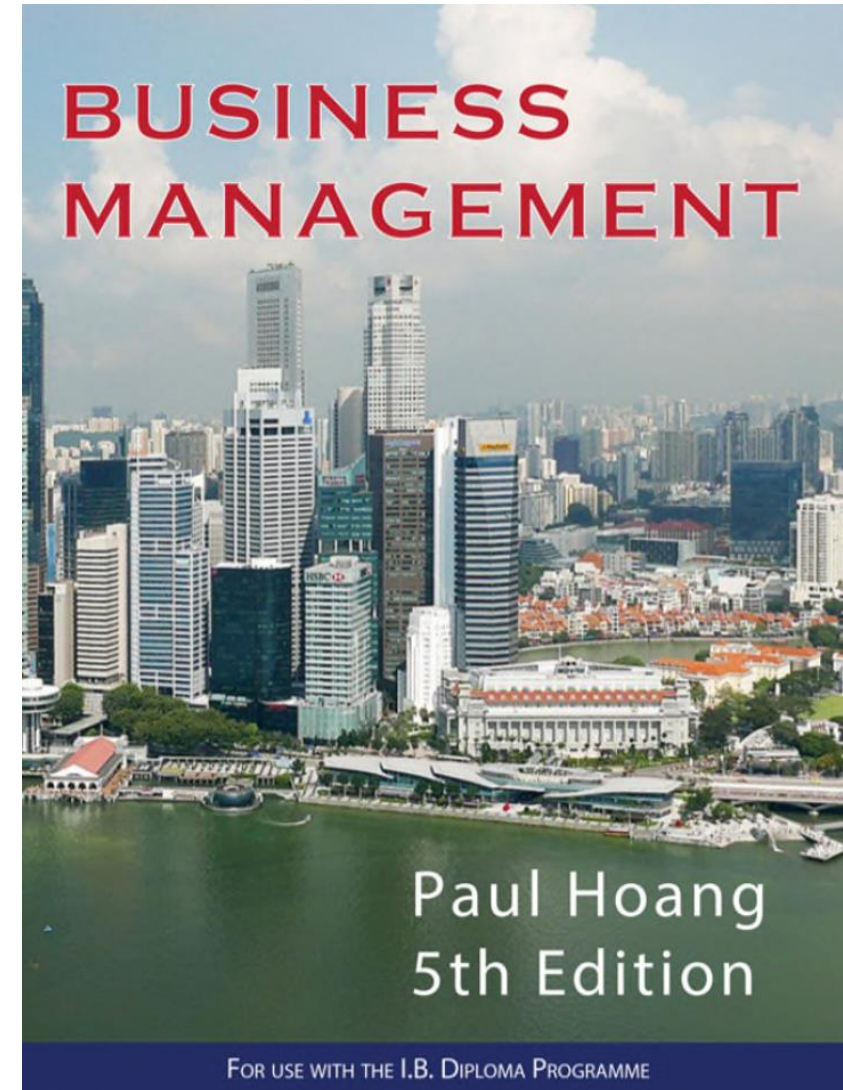
Watch the video and answer the following questions:

1. What would have caused *BC's* break-even point to increase? Why?
2. What would have caused *BC's* break-even point to decrease? Why?
3. What would *BC's* margin of safety have been like in its early years of operation?
4. What would *BC's* margin of safety have been like in its later years of operation?

Over to you

- Hoang textbook
- Question 39.7 *RT's Hotdogs*
 - Page 532
- Question 39.8 *Ana Hermosa Art Studios*
 - Page 533
- Answer all parts

BUSINESS MANAGEMENT



Limitations of break-even as a decision making tool



Limitations of break-even

- Assumptions:
 - all cost functions are linear.
 - sales revenue function is linear.
 - all output will be sold.
- Not useful to a dynamic business environment due to its static nature.
- Garbage in garbage out (GIGO) data entry.
- Ignores other quantitative and qualitative factors.
- In practical terms, it is only suitable for single-product firms.

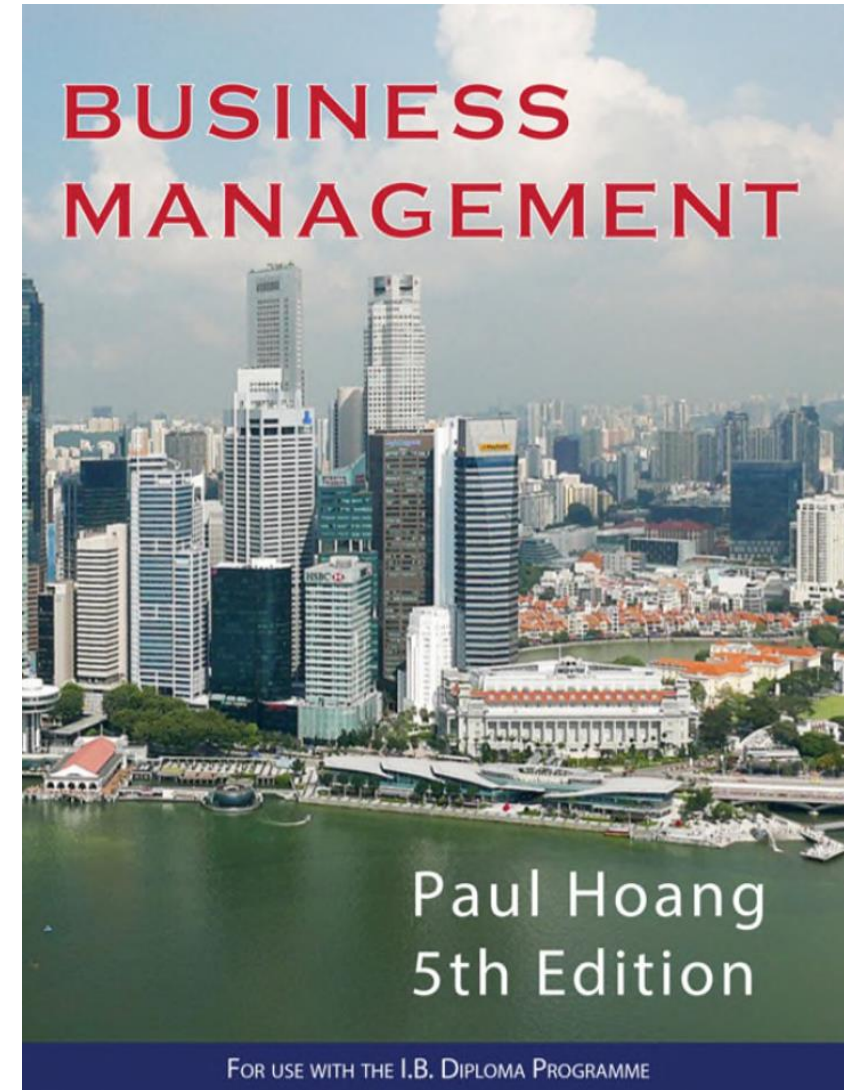


Break-even analysis is not so useful for businesses that sell multiple goods.

Over to you

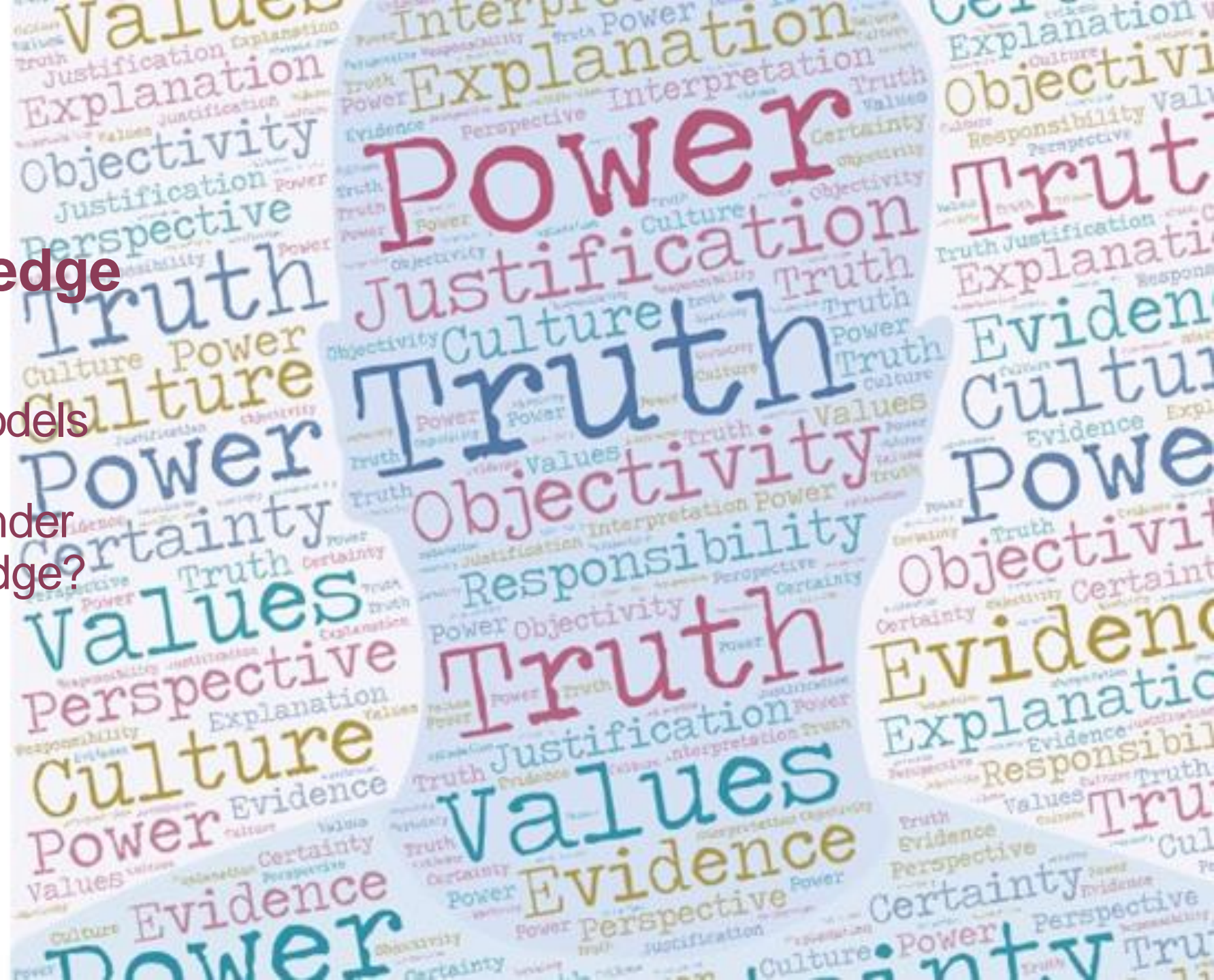
- Hoang textbook
- Question 39.9 *Airbus A380*
 - Page 534
- Answer all parts

BUSINESS MANAGEMENT



Theory of knowledge

How do theoretical models such as break-even analysis support or hinder our search for knowledge?





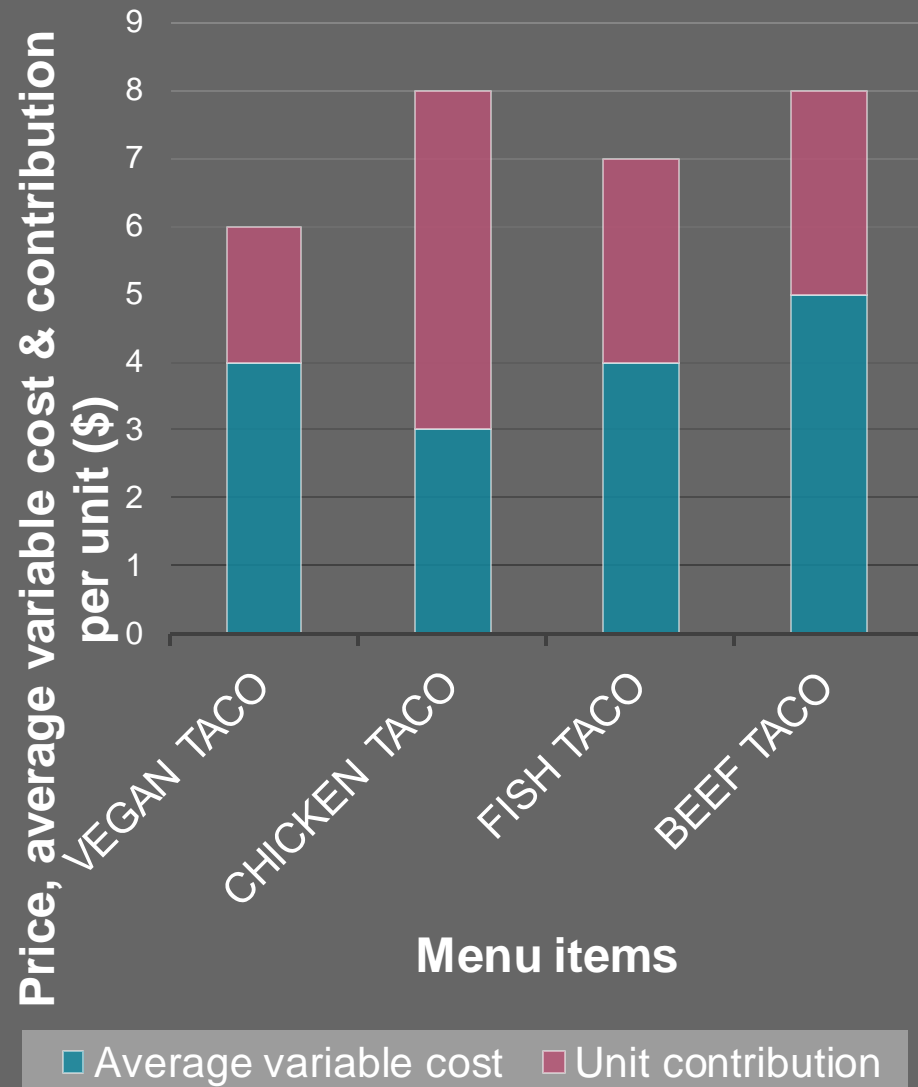
Concepts in BM: sustainability

Merits of BEA as a planning and decision making tool

Product portfolio management	Helps to assess the expected BEQ prior to the launch of a new product.
Risk assessment	Calculating the margin of safety helps gauge the level of risk involved in a project.
Make-or-buy decisions	Enables a firm to consider the merits of cost-to-make versus cost-to-buy decisions.
Special order decisions	Helps a firm decide if a one-off/atypical order is worth accepting.

- The concept of contribution is crucial to understanding break-even analysis.
- Any product that makes a positive contribution will help towards paying some of the firm's fixed costs, thus supporting the sustainability of its future.

Contribution analysis of a taco truck



BUSINESS MANAGEMENT

BMT: Contribution and break-even analysis of your IA business (HL)

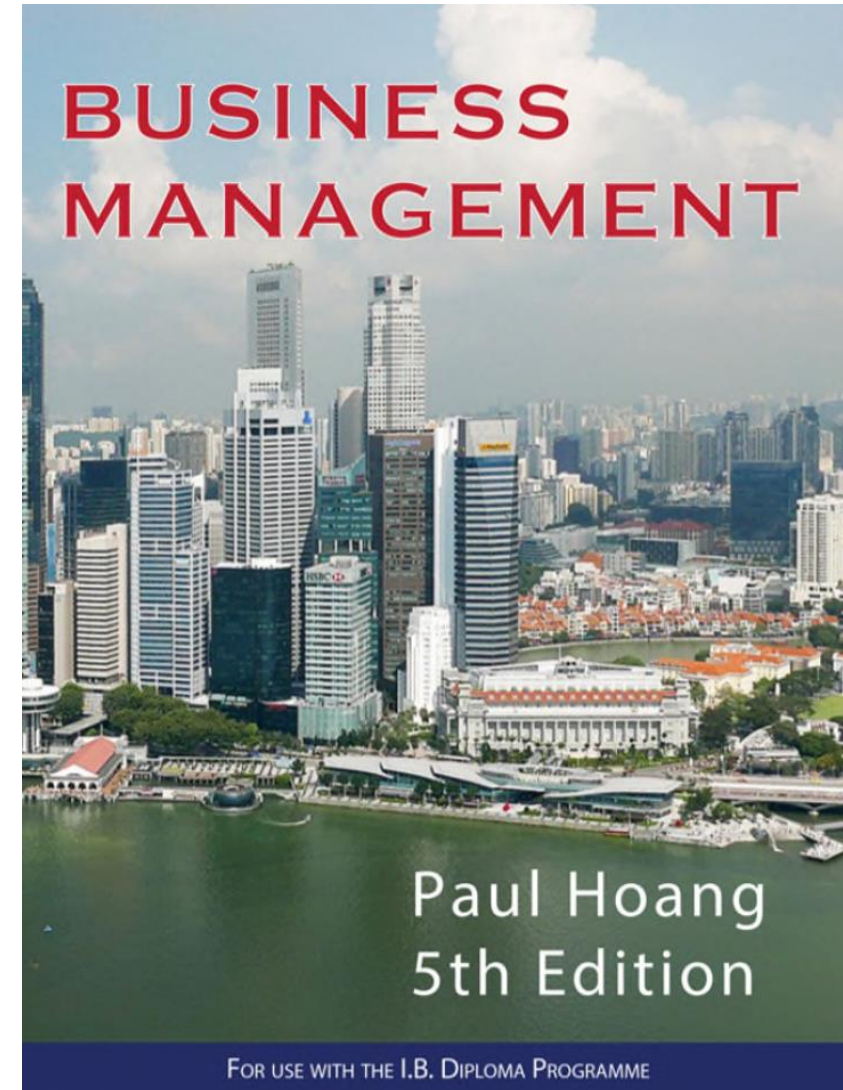
With reference to the organization you have selected for your Business Management internal assessment, explain how contribution analysis can aid the firm to make decisions for:

1. Make or buy analysis.
2. Contribution costing.
3. Absorption costing.

Over to you

- Hoang textbook
- *Review Questions*
 - Page 536

BUSINESS MANAGEMENT



5.6 Production planning (HL only)

Topic 5: Operations management

Unit content

Content	Assessment objective
<u>The local and global supply chain process</u>	AO2
<u>The difference between JIT and just-in-case (JIC)</u>	AO3
<u>Stock control charts based on the following:</u> <ul style="list-style-type: none">• Lead time• Buffer stock• Re-order level• Re-order quantity	AO2, AO4
<u>Capacity utilization rate</u>	AO2, AO4
<u>Defect rate</u>	AO2, AO4

Unit content (continued)

Content	Assessment objective
<u>Labour productivity, capital productivity, productivity rate, operating leverage</u>	AO2, AO4
<u>Cost to buy (CTB) and cost to make (CTM)</u>	AO3, AO4
Business Management Toolkit: <ul style="list-style-type: none">• <u>Critical path analysis</u>	
<u>Production planning and the business management concepts</u>	

The local and global supply chain process

Amazon's supply chains

What is the fastest shipping time offered by *Amazon*?

2 hours
for eligible
Amazon Prime
Now locations



Amazon's supply chains

- One of Amazon's key competitive advantages is its enormous portfolio of products that can be shipped to customers quickly, some even as soon as 2 hours after an order has been placed.
- This is due to its supply chain management as seen in this behind-the-scenes video of its order fulfillment centre.



Supply chain management (SCM)

- The supply chain process (a.k.a. logistics) refers to the sequence of activities from a production of a good or service to it being delivered to the end customer.
- SCM is the art of managing and controlling these logistics which must be efficient and cost effective for a business to be profitable.

BUSINESS MANAGEMENT

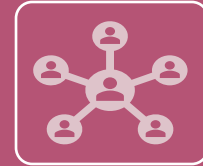
Key functions of SCM



Stock control



Quality control



Supplier networks



Transportation



Transportation solutions by UPS

Listen carefully to the lyrics of the song in this advertisement for UPS.

- What are the benefits of outsourcing transportation to specialist firms in logistics?



Benefits and drawbacks of SCM



Benefits

- Prevents mistakes that occur in long supply chains.
- Manages stock effectively so ensure cash is not tied up in too much stock or insufficient stock causes delays in fulfilling orders.
- SCM is an effective tool for lean production.

Benefits and drawbacks of SCM



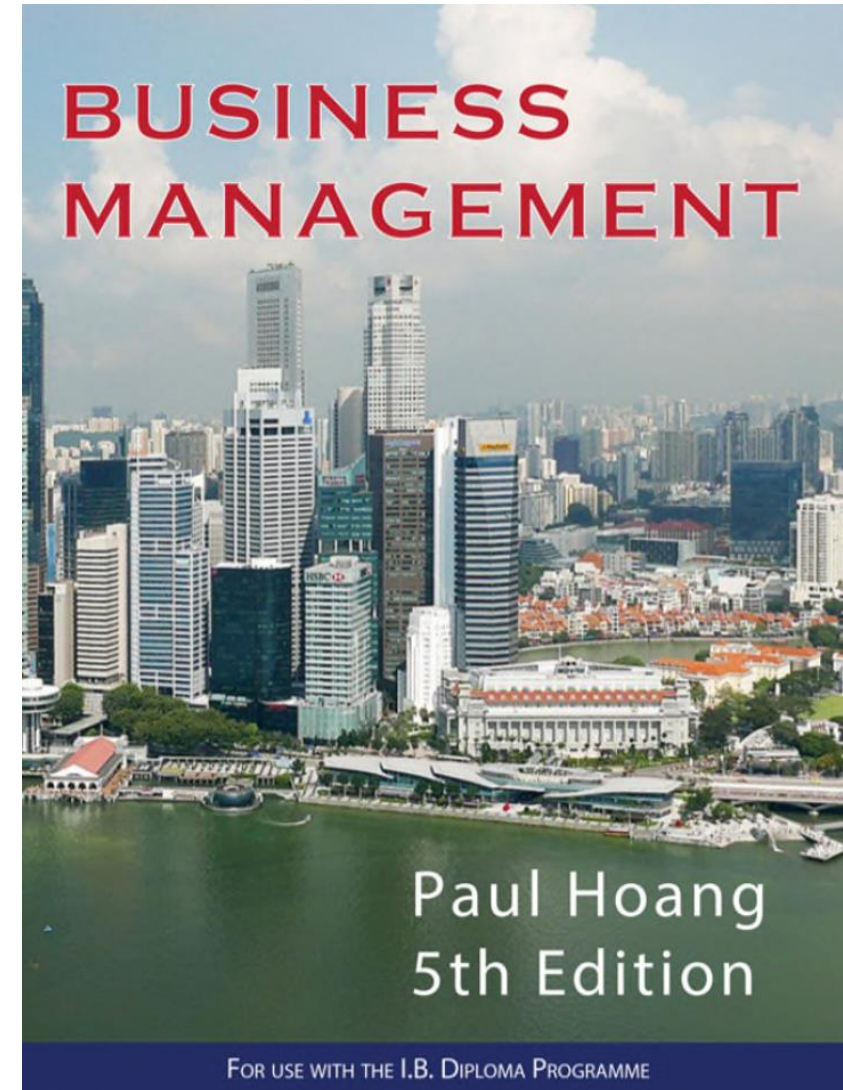
Drawbacks

- Time differences, and language/cultural differences with global supply chain partners can delay the logistics of getting goods to customers.
- Greater interdependence means a single problem in the supply chain can cause major disruptions.

Over to you

- Hoang textbook
- Question 40.1 *Carrefour*
 - Page 541
- Answer all parts

BUSINESS MANAGEMENT



The difference between just-in-time (JIT) vs. just-in-case (JIC)

Just-in-time (JIT) stock control

- JIT is a Japanese stock management method based upon having stocks delivered as and when they are needed.
- Only the absolute minimum levels of stock are held
- Finished goods are dispatched as soon as they have been produced.
- It is a prerequisite to lean production and is widely used by car manufacturers.



Just-in-case (JIC) stock control

- This traditional stock control method recognizes the need to maintain large amounts of stock in case there are supply or demand fluctuations.
- A reserve stock (known as buffer stock) of raw materials, semi-finished goods and finished goods kept just in case there is unexpected demand.



JIC systems ensure there is always sufficient stock available to meet customer demands.

Just-in-time vs. just-in-case

- Toyota was the first company in the world to develop a JIT approach to stock control.



Volkswagen discovered the consequences of denial of fraudulent behaviour when it was caught cheating emissions tests in 2015.

Just-in-time vs. Just-in-case

Toyota was the first company in the world to develop a JIT approach to stock control.

1. What are the pros and cons of JIT stock control?
2. What are the pros and cons of JIC stock control?



Advantages and disadvantages of JIT



Advantages

- Reduces costs of holding stock.
- Working capital can be better used elsewhere.
- Improves cash flow.
- Can reduce the break-even point.
- Firms can be more flexible in times of changing demand.
- Improves motivation of staff by promoting team work.
- Reduces waste.
- Strengthens the firm's relationship with its suppliers.

Advantages and disadvantages of JIT

Disadvantages

- Huge reliance on external suppliers.
- Little room for mistakes.
- Can be inflexible in times of increased demand.
- Few opportunities to exploit economies of scale.
- Stocks must be of good quality.
- Relies on sophisticated computer technology.
- The philosophy must be embedded in the culture.

Advantages and disadvantages of JIC



Advantages

- Business can meet sudden changes in demand.
- Increased flexibility.
- Can speed up production if necessary.
- Economies of scale.
- No need to wait for delivery of stocks.

Advantages and disadvantages of JIC



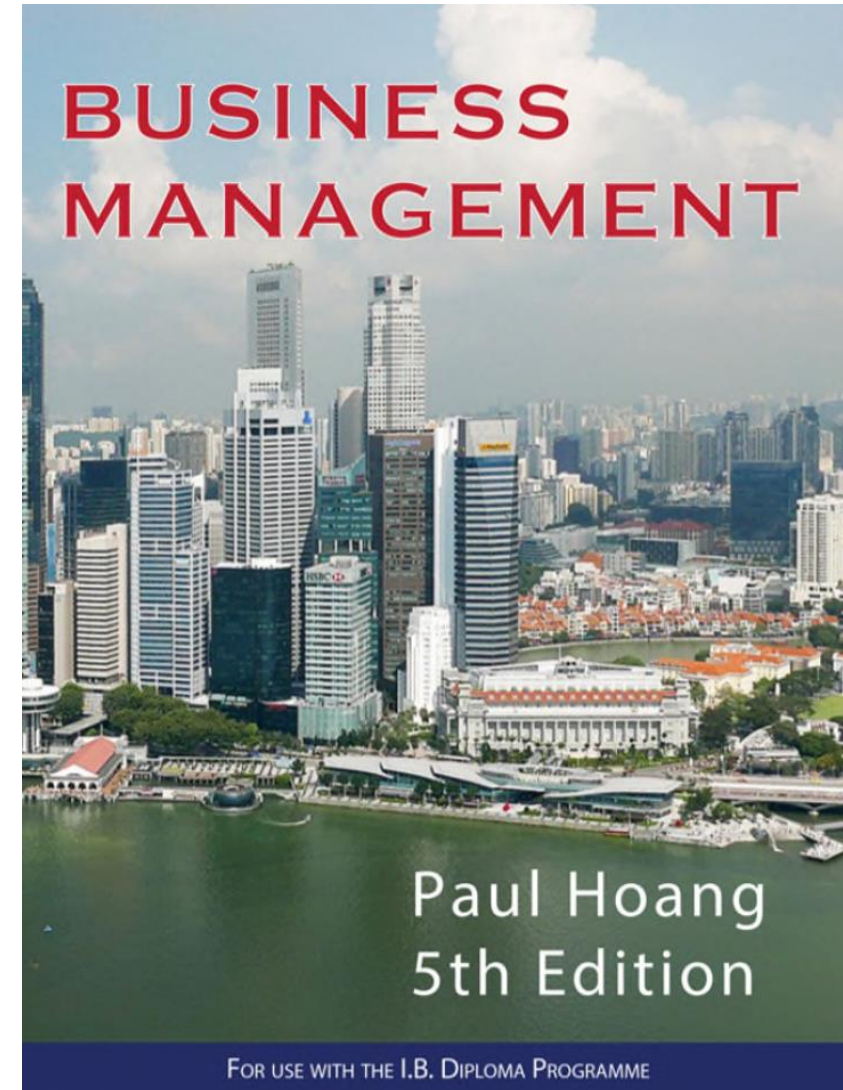
Disadvantages

- Higher costs of storage.
- Some stocks are perishable, so buffer stocks are wasteful.
- Stock can be subject to damage or theft.
- Purchasing large volumes of stocks can be detrimental to cash flow.

Over to you

- Hoang textbook
- Question 40.2 *IB Café*
 - Page 543
- Answer all parts

BUSINESS MANAGEMENT



Stock control charts based on the following:

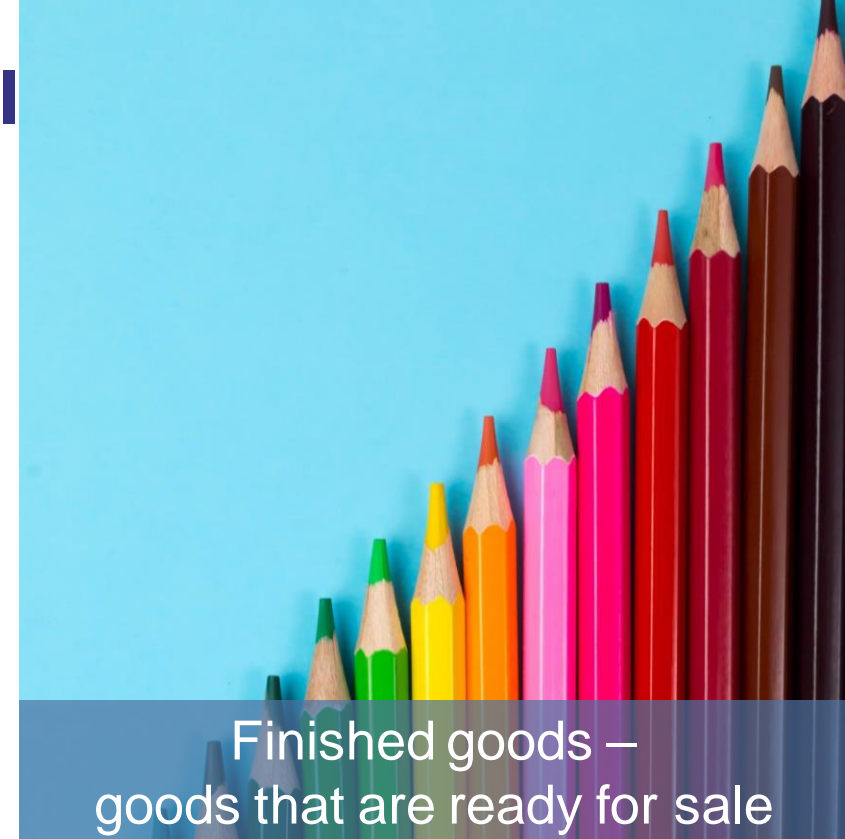
- Lead time
- Buffer stock
- Re-order level
- Re-order quantity



Raw materials



Work-in-progress –
semi-finished goods



Finished goods –
goods that are ready for sale

Stocks (inventories)

- Stocks are the materials, components and products used in the production process.
- There are three categories of stocks as outlined above.

Managing stock

- Managing stock is an important task for all businesses so that stockpiling or stock-outs do not occur.



Stockpiling:
holding excess
stock



Stock-outs:
holding
insufficient
stock

Drawbacks of stockpiling



Costs of stockpiling

- Storage costs.
- Fire, theft or damage.
- Perishables may deteriorate.
- Stock is illiquid.
- Stock may become obsolete if demand changes.
- Changing fashions and tastes.

Drawbacks stock-outs

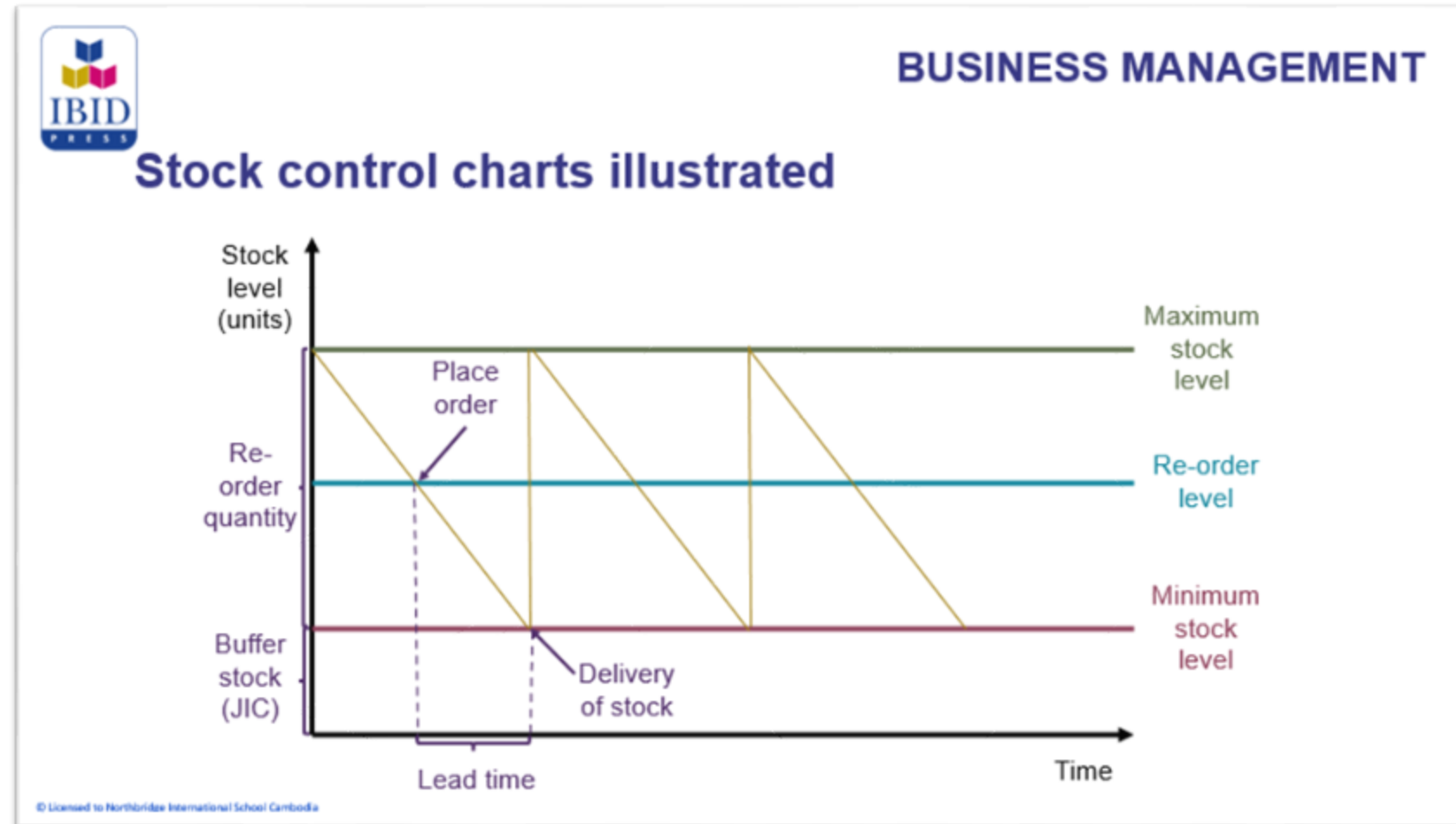


Costs of stock-outs

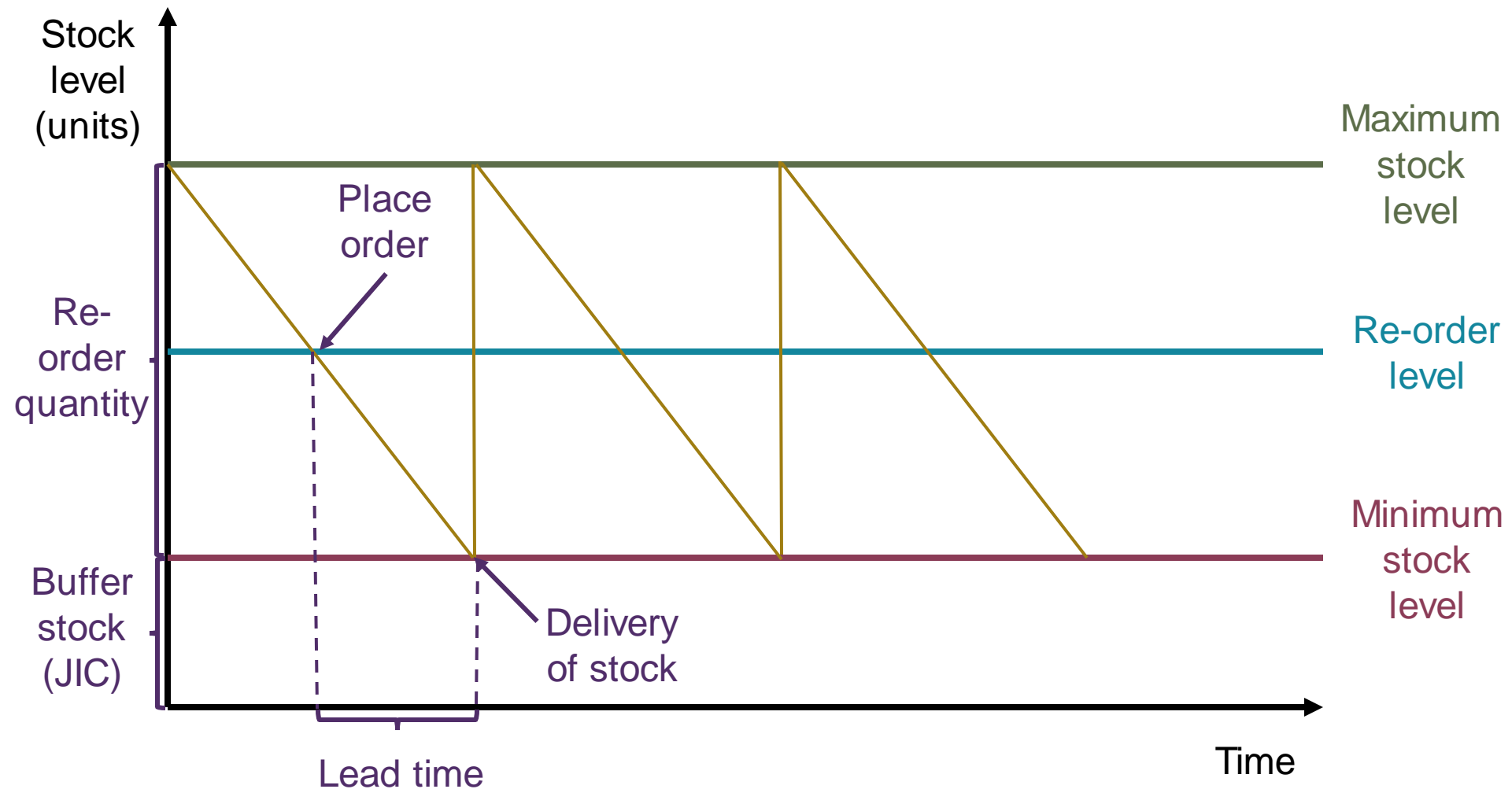
- Lost sales and potentially customers lost to rivals.
- Halted production leading to inefficiencies.
- Damaged corporate image.
- Higher costs due to fixed costs still needing to be paid.

Stock control charts

- Stock control charts are used to graphically illustrate a simplistic system of stock control.
- Key concepts illustrated by stock control charts are:
 - Maximum stock level
 - Re-order level
 - Buffer stock
 - Re-order quantity
 - Lead time



Stock control charts illustrated



Optimum levels of stock

- Businesses must decide between:
 - Ordering in bulk to get purchasing economies of scale (but pay high storage costs) and/or
 - Order smaller quantities, but more frequently.



The best level of stock for a business will vary from industry to industry e.g. the optimal stock level for a furniture store will be quite different from a florist.



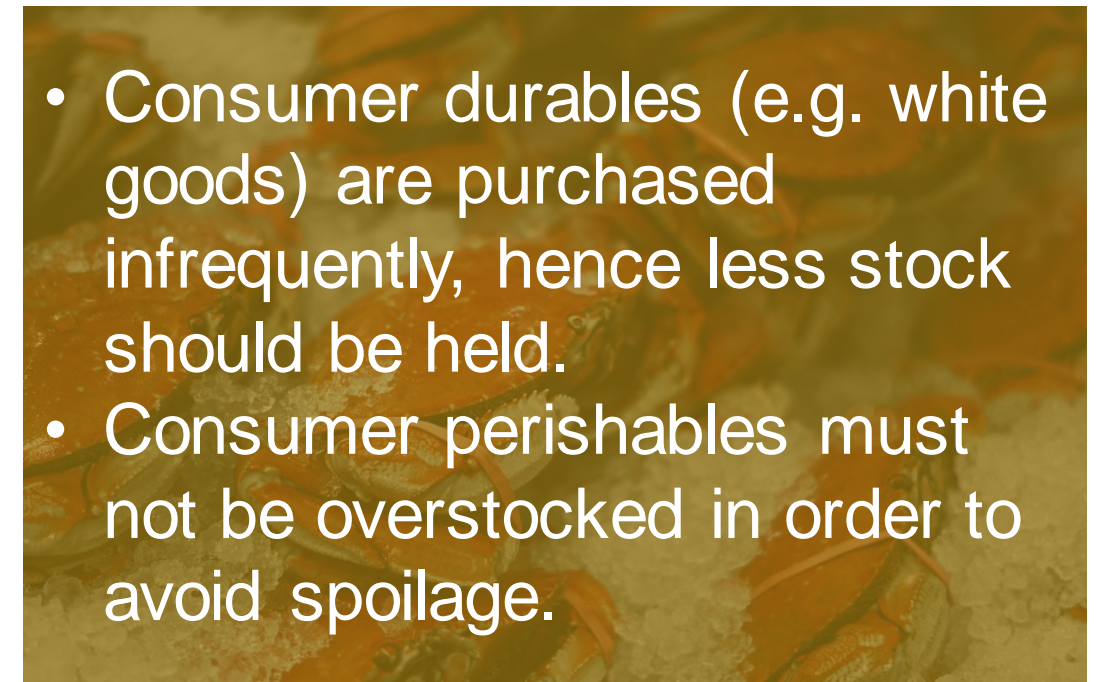
Factors influencing the amount of stock held – types of product

Fast moving consumer goods (FMCGs)



- FMCGs need to have more available stock due to high stock turnover.

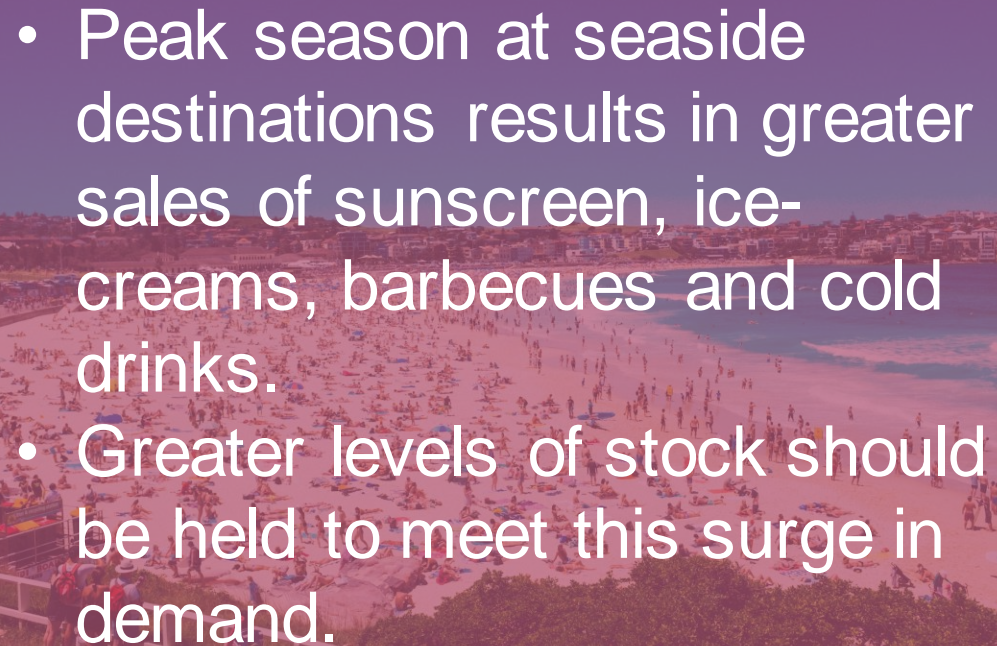
Consumer durables or perishables



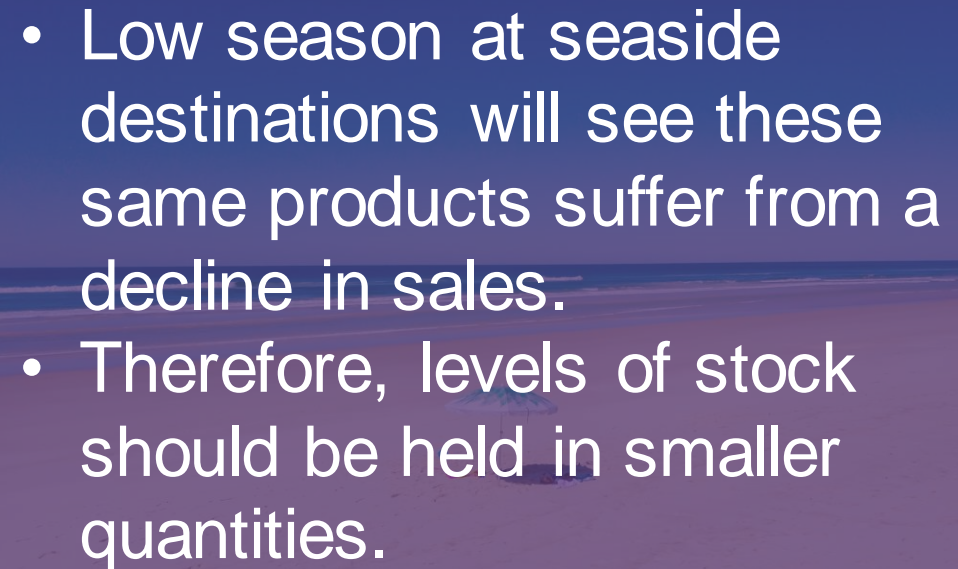
- Consumer durables (e.g. white goods) are purchased infrequently, hence less stock should be held.
- Consumer perishables must not be overstocked in order to avoid spoilage.

Factors influencing the amount of stock held – forecast level of demand

Peak season demand

- 
- A photograph of a crowded beach with many people, umbrellas, and towels, illustrating peak season demand.
- Peak season at seaside destinations results in greater sales of sunscreen, ice-creams, barbecues and cold drinks.
 - Greater levels of stock should be held to meet this surge in demand.

Low season demand

- 
- A photograph of a beach with very few people, illustrating low season demand.
- Low season at seaside destinations will see these same products suffer from a decline in sales.
 - Therefore, levels of stock should be held in smaller quantities.

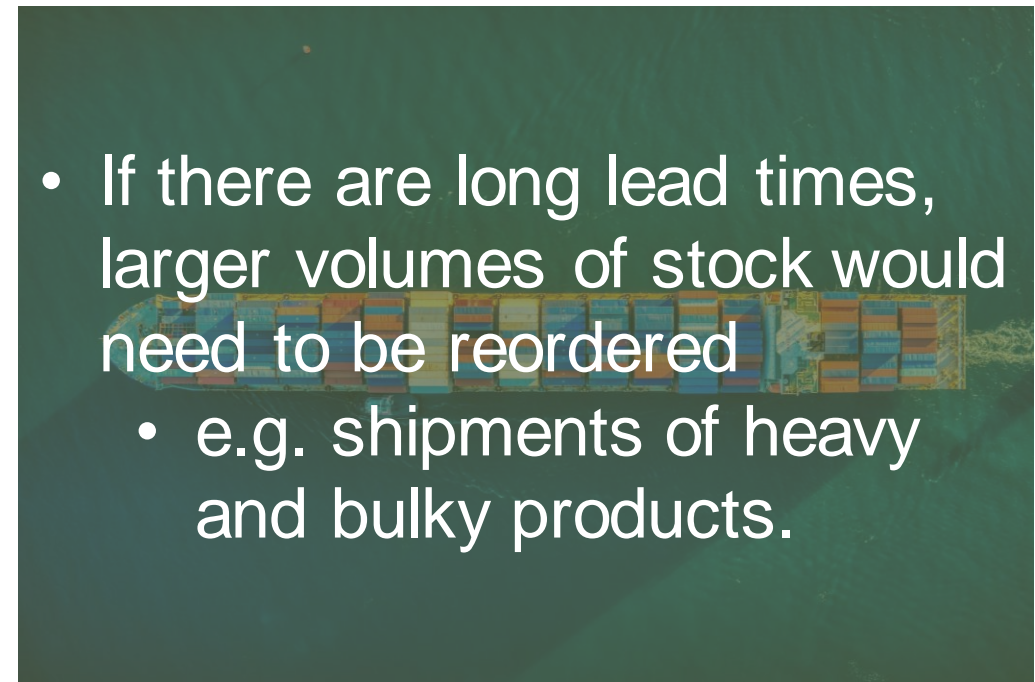
Factors influencing the amount of stock held – lead times

Short lead times



- Suppliers that can guarantee short lead times allow a business to have minimal buffer stocks.

Long lead times



- If there are long lead times, larger volumes of stock would need to be reordered
 - e.g. shipments of heavy and bulky products.

Factors influencing the amount of stock held – cost of holding stock

High opportunity cost of stockpiling

- Firms such as fine jewelers and luxury sports car manufacturers will find it too expensive to hold excess stock.
- This is due to limited demand and the risk of theft or damage.

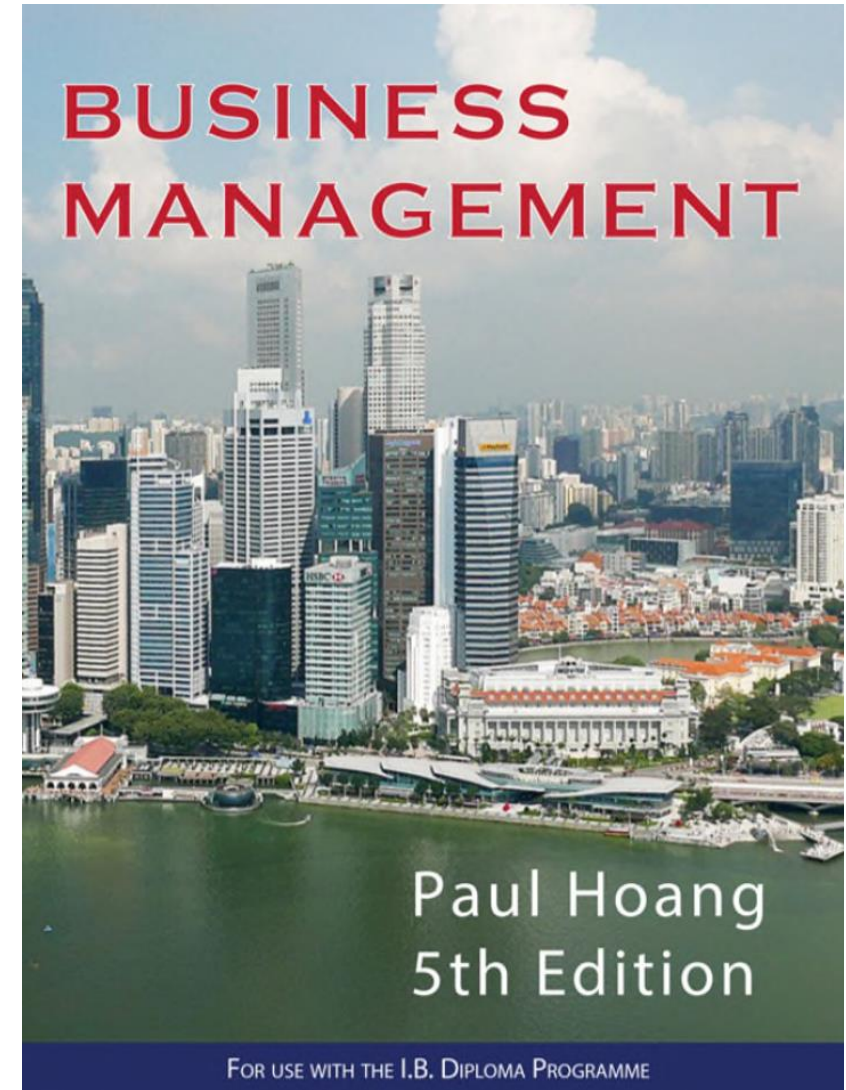
Low opportunity cost of stockpiling

- Low cost FMCGs are sold with such high levels of stock turnover that there is a low opportunity cost of holding such large volumes of stock.

Over to you

- Hoang textbook
- Question 40.4 *Diallo Bakery*
 - Page 548
- Answer all parts

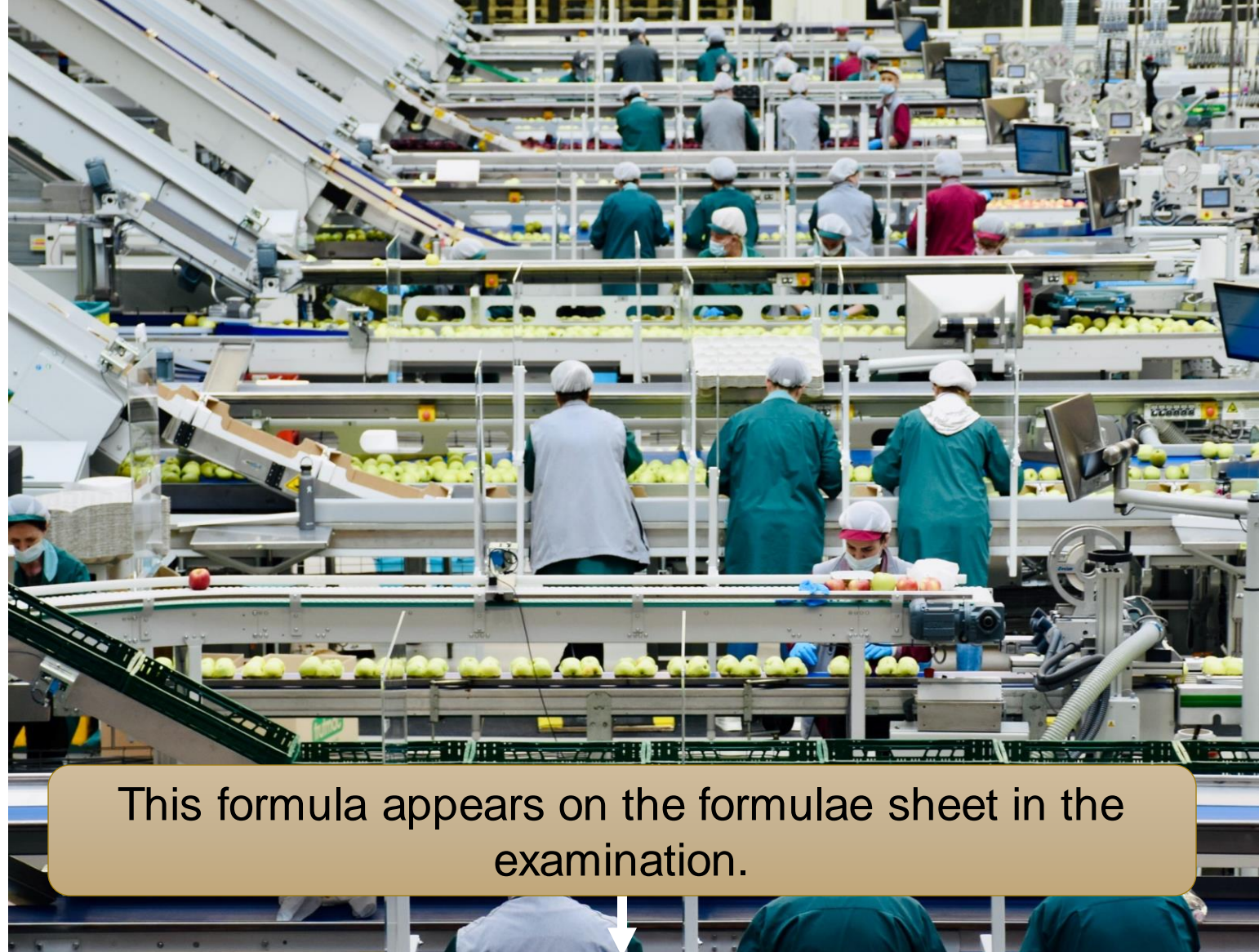
BUSINESS MANAGEMENT



Capacity utilization rate

The productive efficiency of a firm

- Capacity utilization measures a firm's output level as a percentage of its potential output.
- It is a measure of a firm's efficiency as it reveals the extent to which there are idle resources in the organization.
- High-capacity utilization is financially important as it spreads out fixed and indirect costs of production over a large level of output.



This formula appears on the formulae sheet in the examination.

$$\text{Capacity utilization rate} = \frac{\text{Actual output}}{\text{Productive capacity}} \times 100$$

The importance of high capacity utilization

- High capacity utilization is generally more important to firms that have the following features:

Feature	Reason
High fixed costs	High capacity utilization reduces the average fixed costs as fixed costs will be distributed across a higher number of units produced.
Low profit margins	Products with low profit margins contribute little (per unit) to the profits of a business so need to be sold in large quantities to be profitable.
High levels of break-even	High capacity utilization will reach break-even faster, thus earning profit earlier.
Low marginal costs	If the extra cost of providing a particular product to an additional customer is close to zero, then high capacity utilization is important for profitability.

High capacity utilization on the Tokyo subway

- Tokyo subways have professional pushers to cram commuters onto the trains during rush hour (i.e. high capacity utilization).



What are the drawbacks of high-capacity utilization on the Tokyo subway?

Drawbacks of high capacity utilization

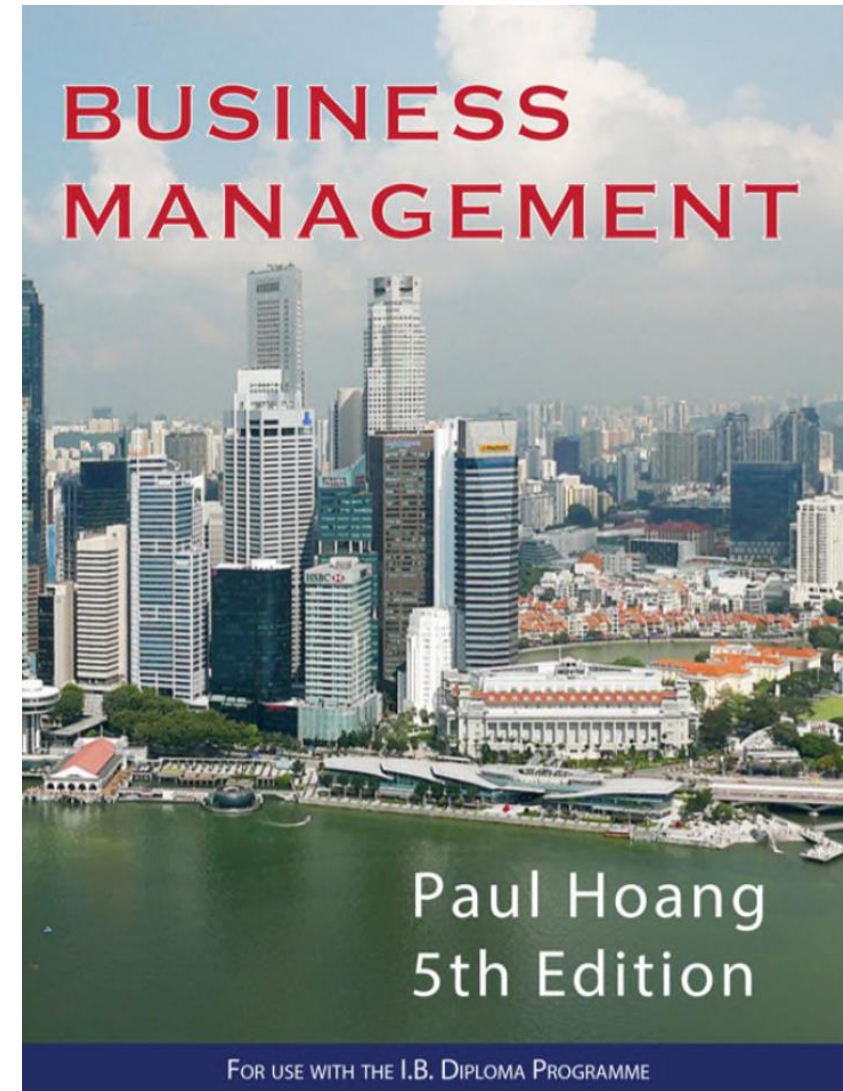
- Minimal time for maintenance repairs.
- Stress on workforce which can result in problems with quality.
- Negative impact on service including long waiting times or health and safety dangers, e.g. overcrowding.
- Not a substitute for growth as growth is limited by the maximum capacity.



Over to you

- Hoang textbook
- Question 40.5 *The Emirates Stadium, London*
 - Page 551
- Question 40.6 *Virginie Srienzen Inc.*
 - Page 551
- Question 40.7 *AMC Theatres*
 - Page 552
- Answer all parts

BUSINESS MANAGEMENT



Defect rate

Defect rate

- Defects occur when the quality of a particular product is unacceptable (i.e. substandard output).
- Defects represent waste and inefficiency.
- The defect rate measures the proportion of output per time period, that is substandard.
- Defect rates can be used to evaluate production processes and as a measure of quality assurance.

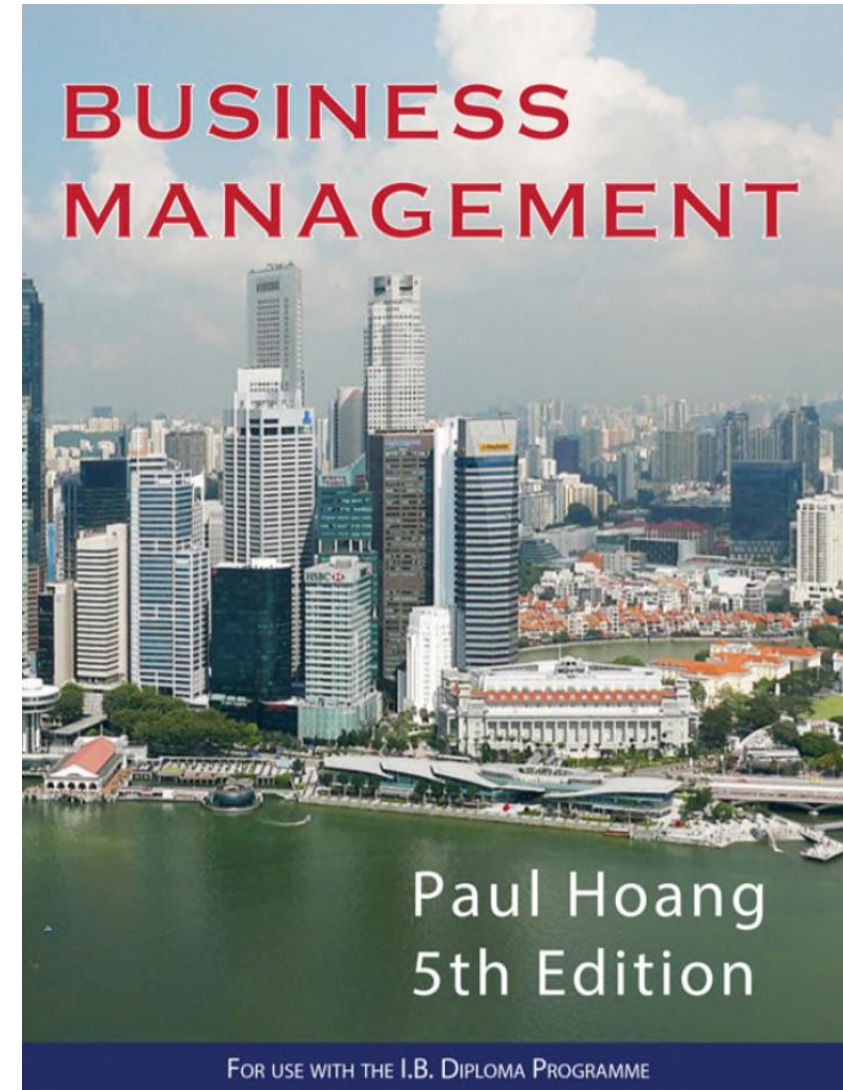


$$\text{Defect rate} = \frac{\text{Defective output}}{\text{Total output}} \times 100$$

Over to you

- Hoang textbook
- Question 40.8 *Durex*
 - Page 553
- Answer all parts

BUSINESS MANAGEMENT

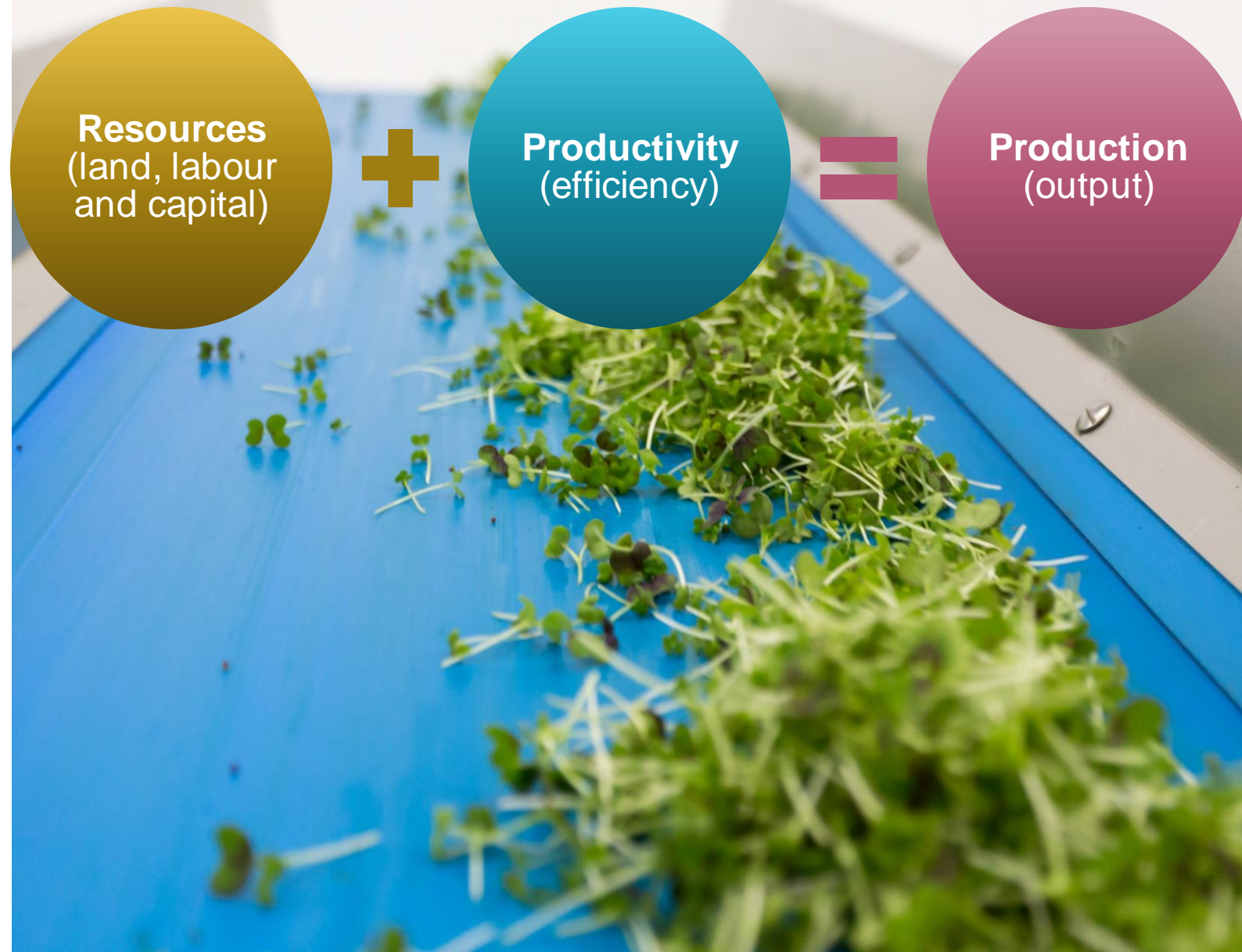


**Labour productivity, capital productivity,
productivity rate and operating leverage**

Productivity

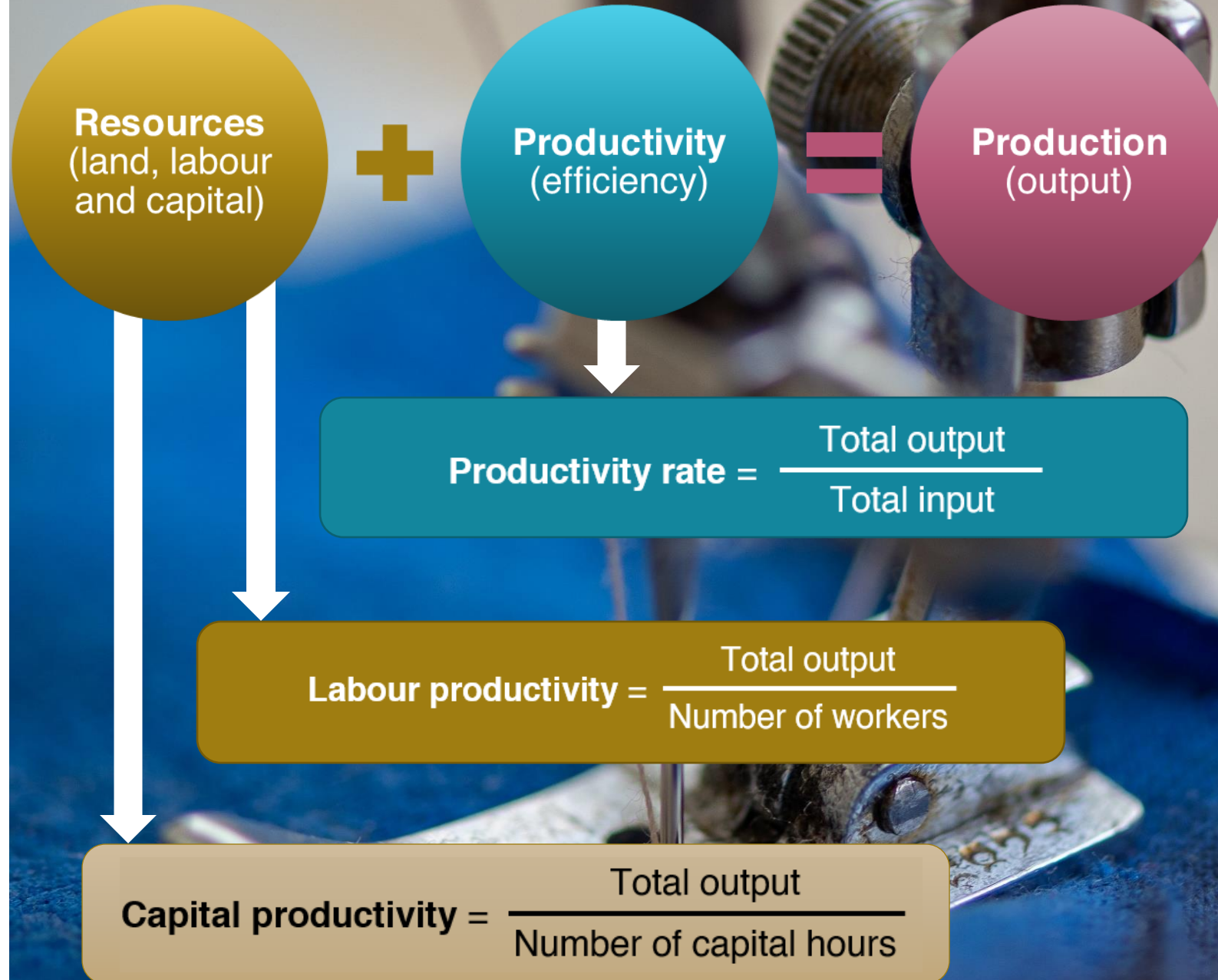
- Productivity refers to how well resources (inputs) are used in the production process to generate outputs.
- Productivity can be measured using various formulae. They include:
 - Labour productivity
 - Capital productivity
 - Productivity rate

The relationship between input, productivity and output



Productivity formulae

- Capital productivity measures how well a firm uses its physical resources (e.g. machinery).
- Labour productivity measures the efficiency of the workforce.
- The productivity rate measures the degree of efficiency in the use of resources in the production process.



Benefits of higher productivity rates

- The benefits of higher productivity rates can be remembered easily by the '4Es':

			
Economies of scale	Earnings (higher profits and wages)	Efficiency (improved competitiveness)	Evolution (growth)

Operating leverage

- Operating leverage measures a firm's fixed costs as a percentage of variable costs.
- A firm with relatively high fixed costs has high operating leverage, and vice versa.
- Firms with high operating leverage are vulnerable to a drop in sales volume as they must achieve sufficient sales volume to pay for its substantial fixed costs.



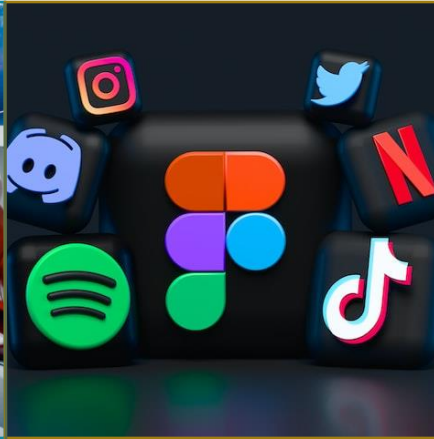
$$\text{Operating leverage} = \frac{(\text{Price} - \text{VC per unit}) \times \text{Quantity}}{[(\text{Price} - \text{VC per unit}) \times \text{Quantity}] - \text{FC}} \times 100$$

Determinants of productivity rates - TRIES



Technology

Investment in technologies helps workers be more productive



Rivalry

Competition incentivises productivity in firms



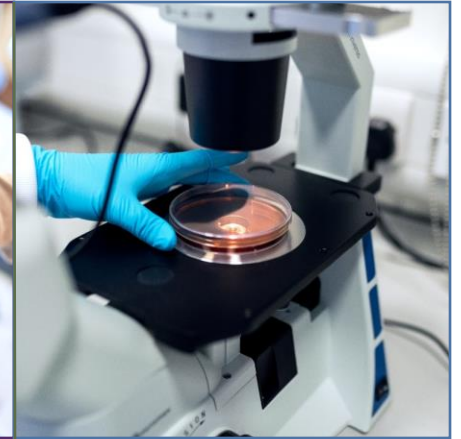
Innovation

Commercialization of new ideas and products changes the way people work (e.g. remote working using laptops and smartphones)



Entrepreneurship

Effective leadership and personal motivation of entrepreneurs can drive productivity



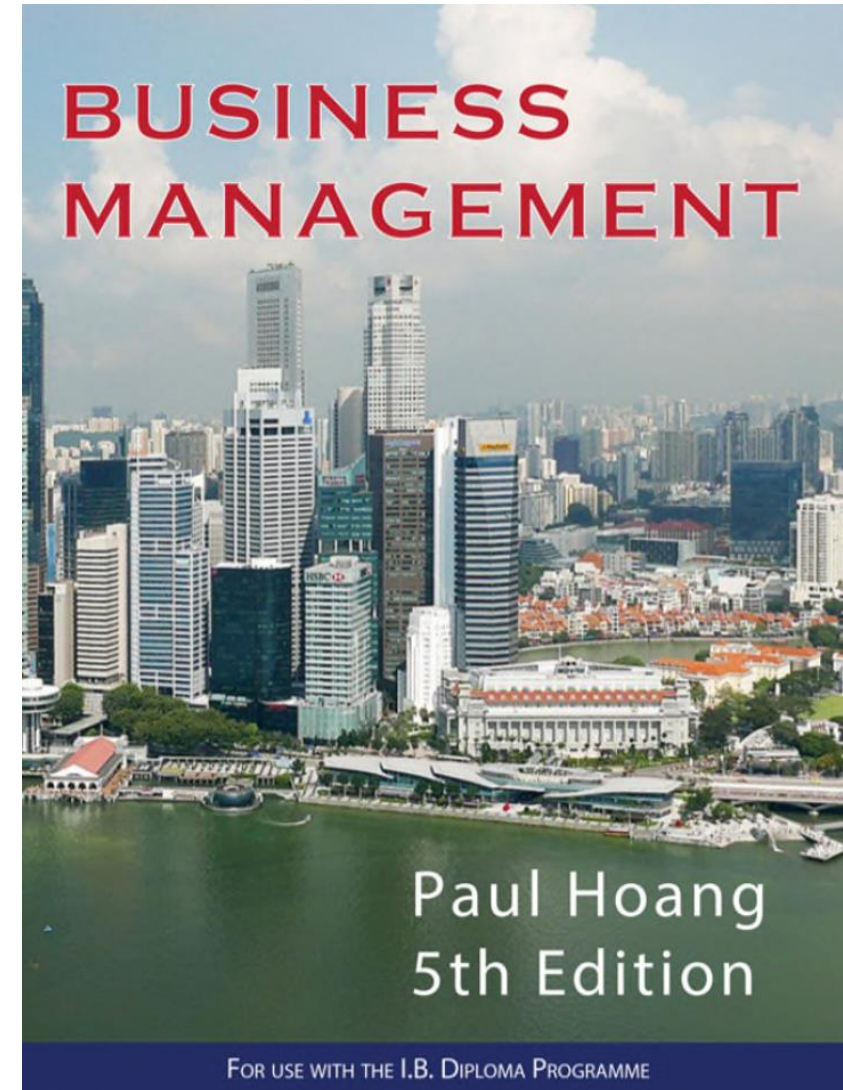
Skills and experience

Education, training and development can increase human capital for increased productivity

Over to you

- Question 40.9 *Measuring productivity*
 - Page 555
- Question 40.10 *Social media and productivity*
 - Page 556
- Question 40.11 *Bath & Body Works Inc.*
 - Page 557
- Question 40.12 *Nicola D'ambrosio Manufacturing Corp*
 - Page 558

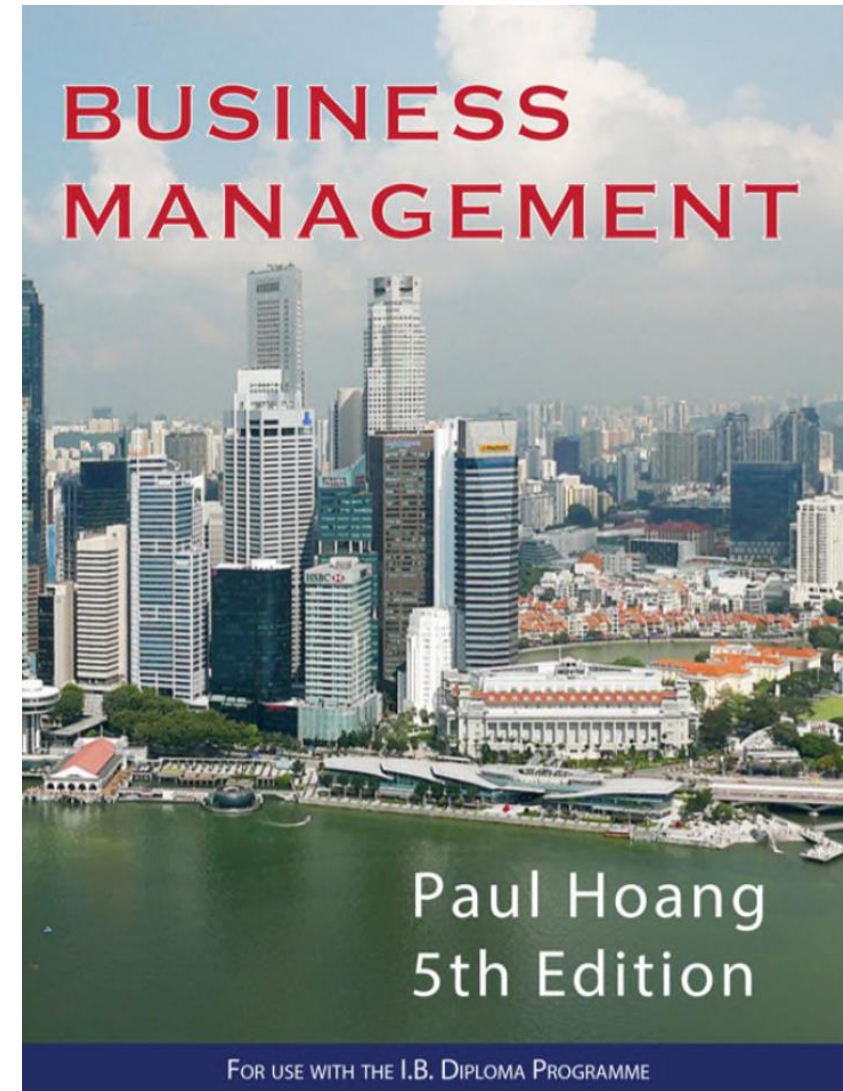
BUSINESS MANAGEMENT



Approaches to learning

- Hoang textbook
- Activity 40.1
Communications and Thinking skills
 - Page 556

BUSINESS MANAGEMENT



Cost to buy (CTB) and cost to make (CTM)

Volkswagen (VW) – car or sausage producer?

True or false?

Volkswagen's factory produces more sausages than it makes cars worldwide.

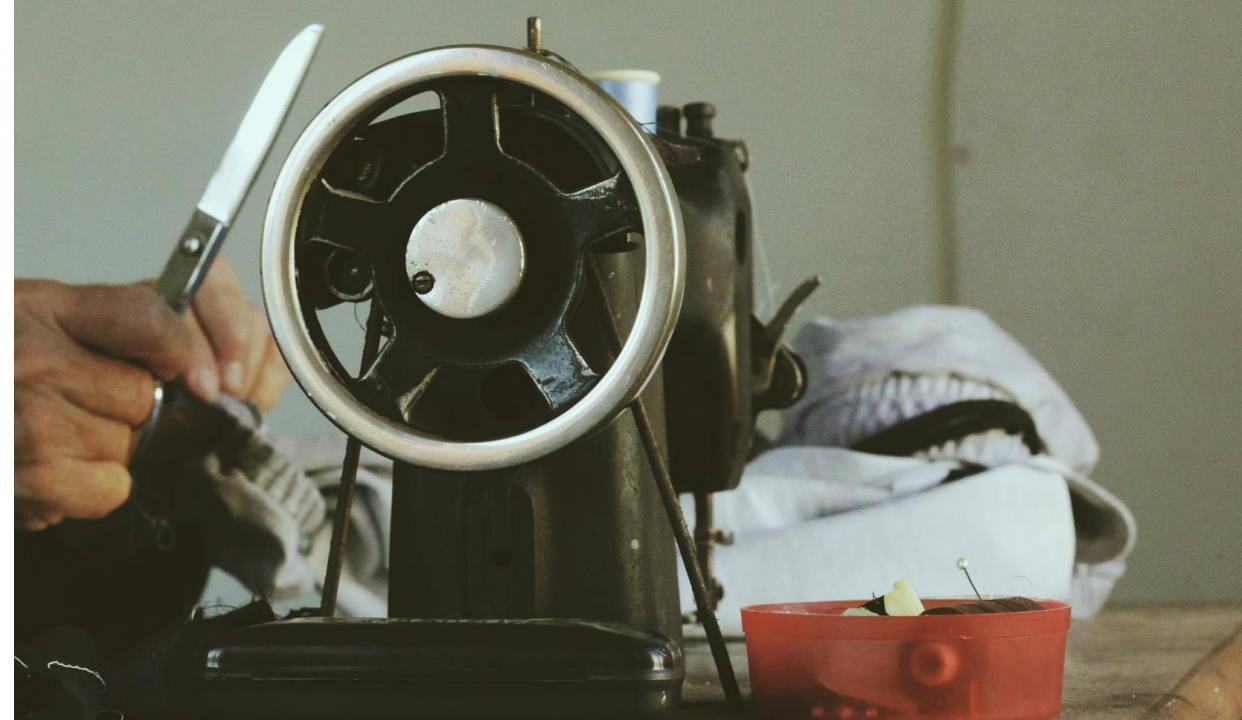
Watch this video of the VW factory and answer the below questions:

1. Does VW produce more sausages than cars?
2. Why does *Volkswagen* produce sausages?



CTB vs. CTM

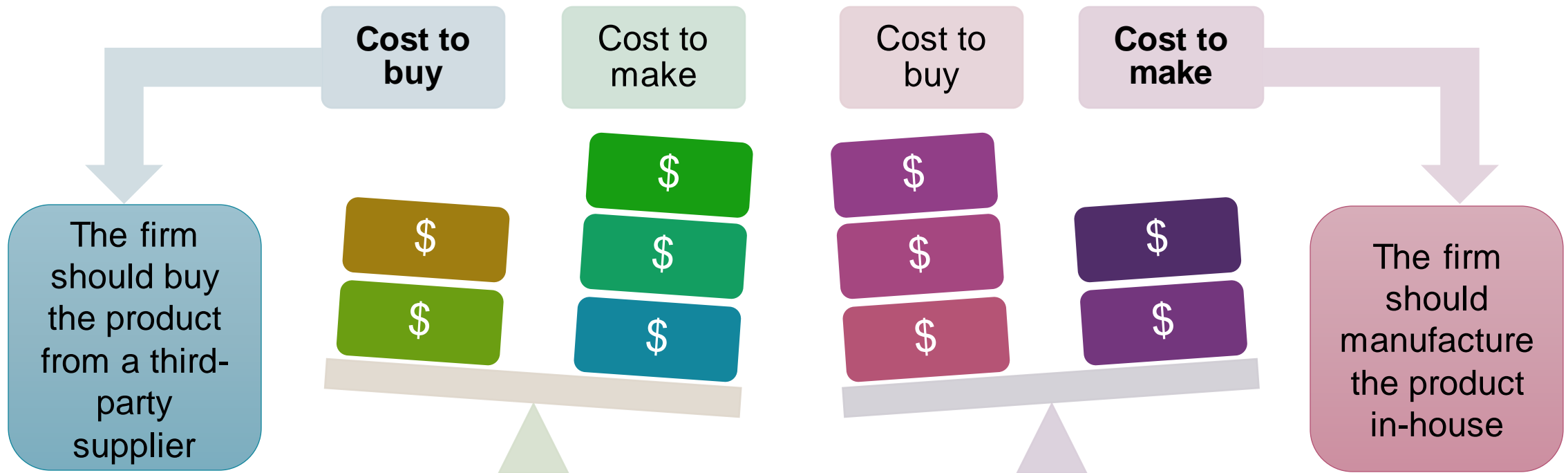
- A business faces a make-or-buy decision when it has a choice between manufacturing a product or purchasing it from an external supplier.
- To decide whether to make or to buy, a firm uses quantitative and qualitative factors in its decision making.



Quantitative factors in make or buy decisions

Cost to buy = Price × Quantity
versus

Cost to make = Fixed costs + (Variable costs × Quantity)



Qualitative factors in make or buy decisions



Time frame of
production



Spare capacity



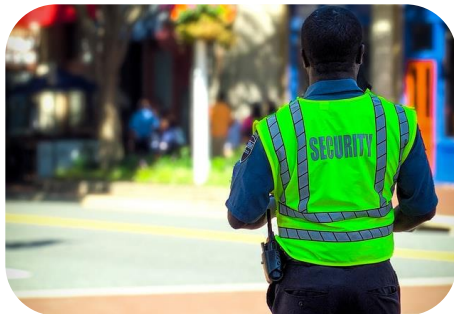
Reliability of
suppliers



In-house
expertise



Size of capital
expenditure



Core & non-core
competencies



Strategic
importance



Significance of
the product to
the firm

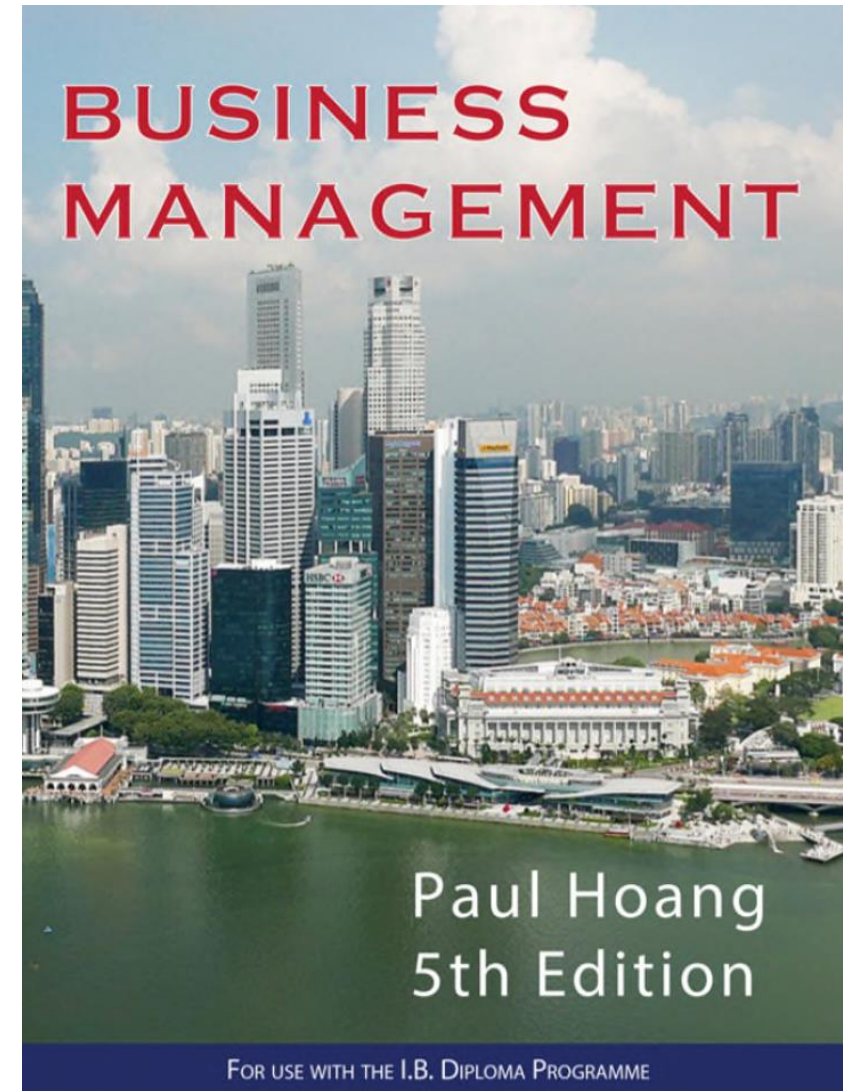


External
influences

Over to you

- Hoang textbook
- Question 40.13 *To make or to buy? That is the question*
 - Page 559
- Answer all parts

BUSINESS MANAGEMENT



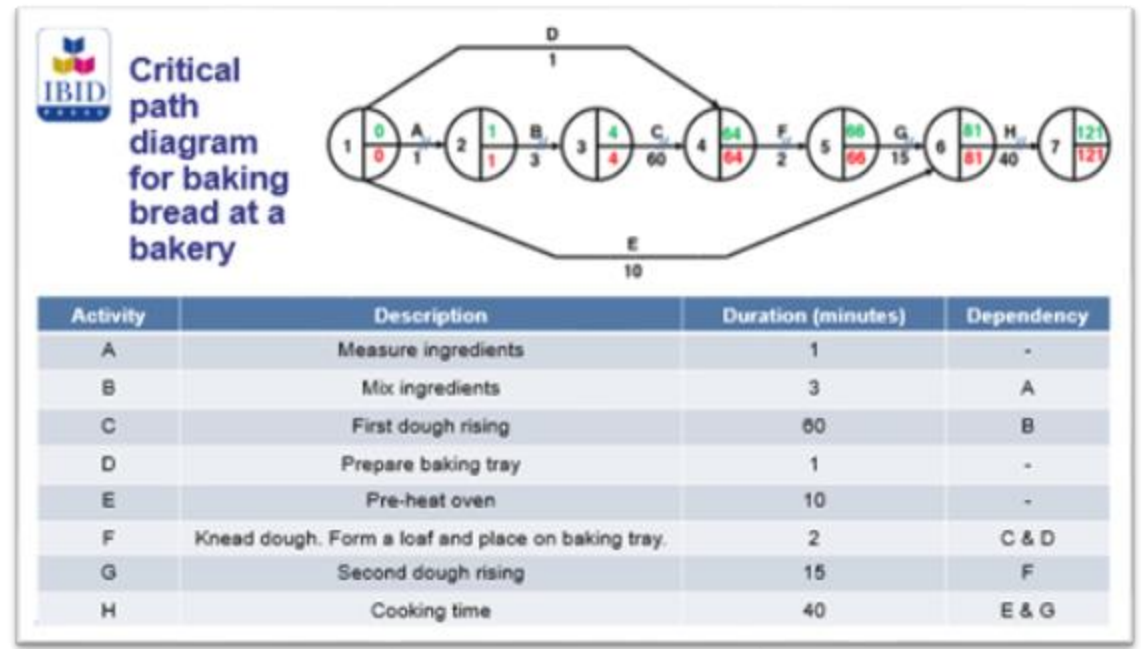
How can knowledge of change in the external business environment create both opportunities and threats for production planning?



1. Explain the impact of a low labour productivity rate on the critical path.
2. During which activities would it be advisable for the baker to perform stock (inventory) management? Explain your answer.
3. With reference to the critical path diagram, explain the impact of high capacity utilization on the bakery business if they operate from 3:00am to 7:00pm each day.
4. Given the impact of high capacity utilization on the bakery, what is the likelihood the bakery will outsource some of their bread-making to an external supplier (i.e., choose CTB instead of CTM)? Explain your answer.

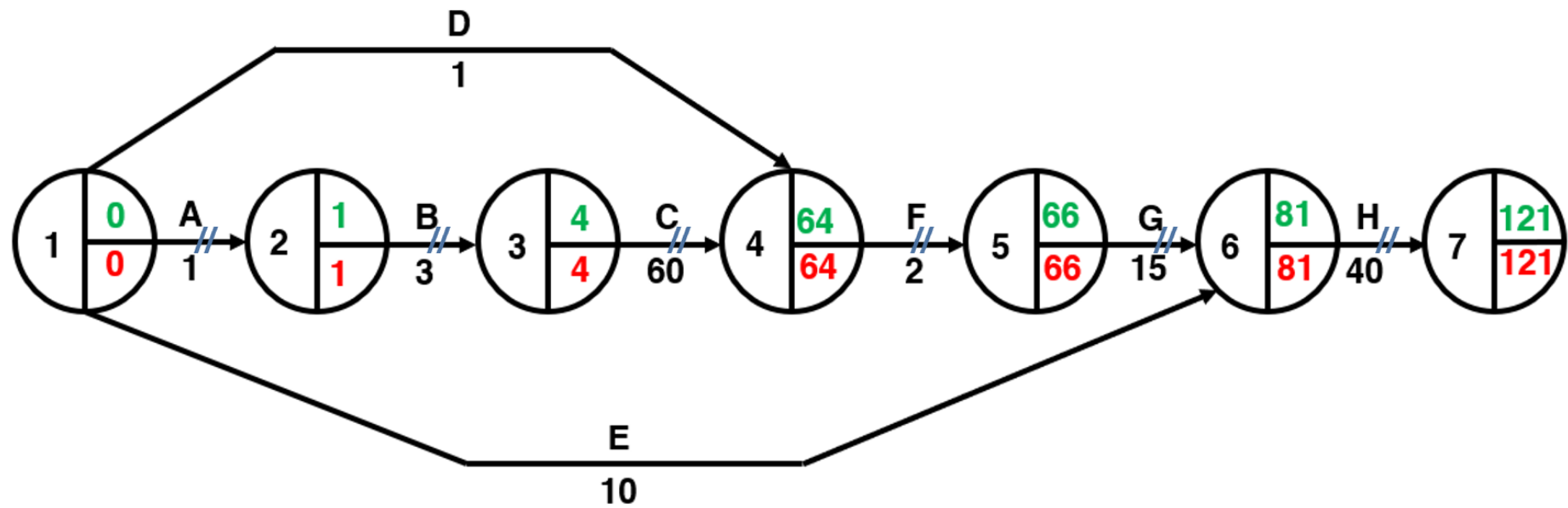
BMT: Critical path analysis and production planning

View the critical path activities and diagram for a bakery and answer the questions from this slide.





Critical path diagram for baking bread at a bakery



Activity	Description	Duration (minutes)	Dependency
A	Measure ingredients	1	-
B	Mix ingredients	3	A
C	First dough rising	60	B
D	Prepare baking tray	1	-
E	Pre-heat oven	10	-
F	Knead dough. Form a loaf and place on baking tray.	2	C & D
G	Second dough rising	15	F
H	Cooking time	40	E & G



Concepts in BM: change, creativity and sustainability



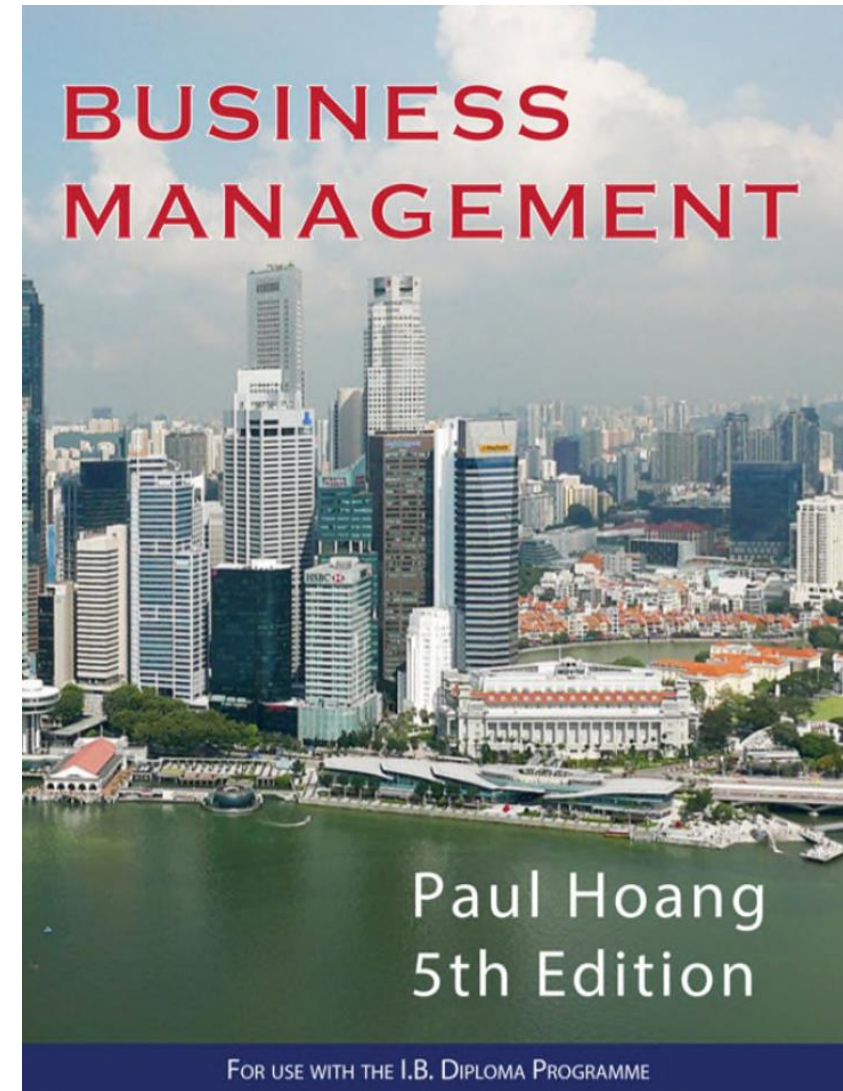
NT

- Global supply chains have been impacted severely since being the COVID-19 pandemic.
- Many retailers have struggled to keep their shelves fully stocked. However, *Amazon* is staying one step ahead of the global supply chain crisis by using creative solutions to ensure their adaptability to change and sustainability of their business.

Over to you

- Hoang textbook
- *Review Questions*
 - Page 561

BUSINESS MANAGEMENT



5.7 Crisis management and contingency planning (HL only)

Topic 5: Operations management

Unit content

Content	Assessment objective
<u>The difference between crisis management and contingency planning</u>	AO2
<u>The factors that affect effective crisis management</u> <ul style="list-style-type: none">• Transparency• Communication• Speed• Control	AO2
<u>The impact of contingency planning for a given organization or situation in terms of:</u> <ul style="list-style-type: none">• Cost• Time• Risks• Safety	AO3

Unit content (continued)

Content	Assessment objective
Business Management Toolkit: <ul style="list-style-type: none"><u>Force field analysis</u>	
<u>Crisis management and contingency planning and the business management concepts</u>	

Crisis at *United Airlines*

- On 9th April 2017, *United Airlines* (UA) overbooked Flight 3411. Having had no luck in getting passengers to volunteer to take a later flight, UA's ground staff selected four passengers to be told to leave the aircraft.
- One of the passengers refused to leave. Security staff were brought in to forcibly remove him. They became increasingly violent in their efforts to deplane the passenger. Eventually, the passenger was dragged down the aisle of the aircraft, causing him to seemingly be unconscious and causing facial injuries.
- The incident caused a huge public outcry.

If you were a senior manager of *UA*, what strategies would you use to respond to the public backlash against the airline?

The difference between crisis management and contingency planning

What is a crisis?

- A crisis is a situation of instability which results in major problems for a business.
- Characteristics of a crisis are:
 - Unexpected and often unpredictable.
 - Threaten the organization.
 - Need quick decisions to be made.
 - Have a need change.



Crisis management

- This refers to the response of an organization to a crisis situation.
- Crisis management is required to minimize the impact on the business.
 - Typical responses will require:
 - Radical measures.
 - Centralized decision making.
 - Autocratic style of leadership.



Contingency planning

- This is about anticipating probable threats to the organization.
- Contingency planning involves developing a plan before an unwanted or unlikely event occurs by using 'what if' questions to identify all probable threats.
- Contingency planning is suitable for:
 - Predictable and quantifiable situations.
 - Situations for which there is advanced notice.
 - Unexpected and often unwanted events.



The difference between crisis management and contingency planning

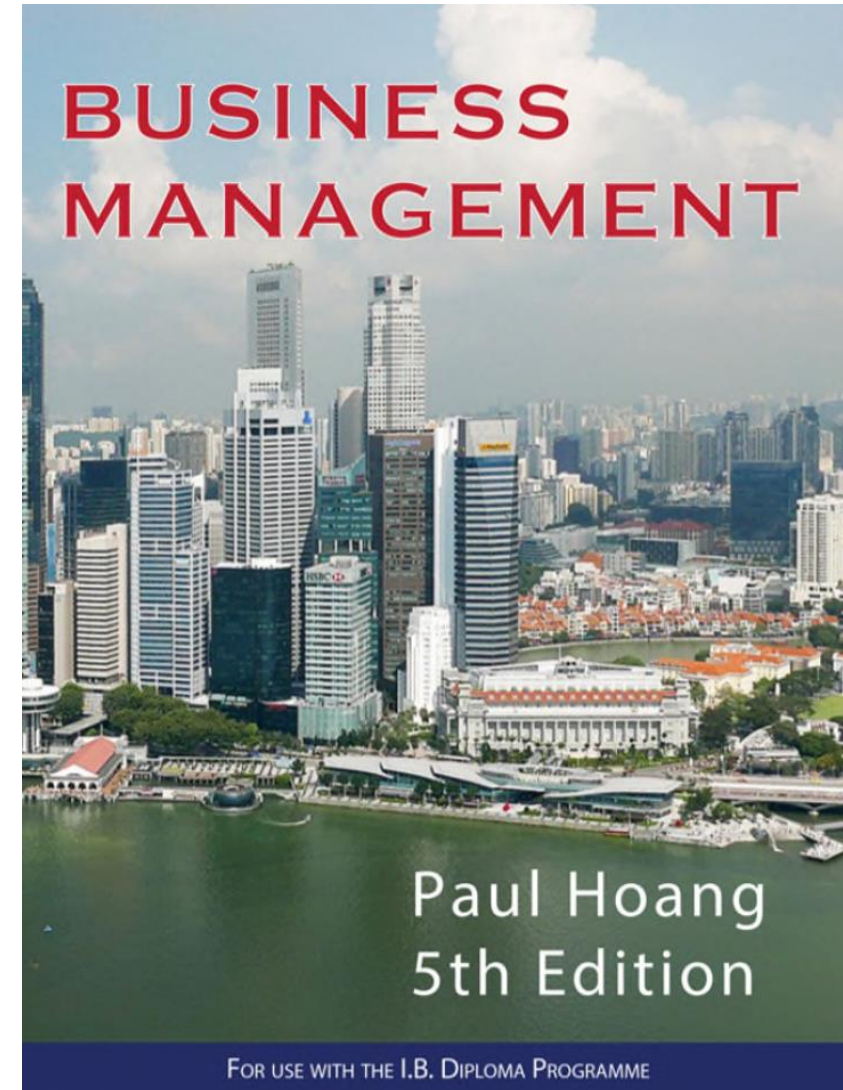
**Crisis
management is
reactive**

**Contingency
planning is
proactive**

Over to you

- Hoang textbook
- Question 41.1 *Meat products recalled in the USA*
 - Page 565
- Question 41.2 *Bausch & Lomb*
 - Page 567
- Answer all parts

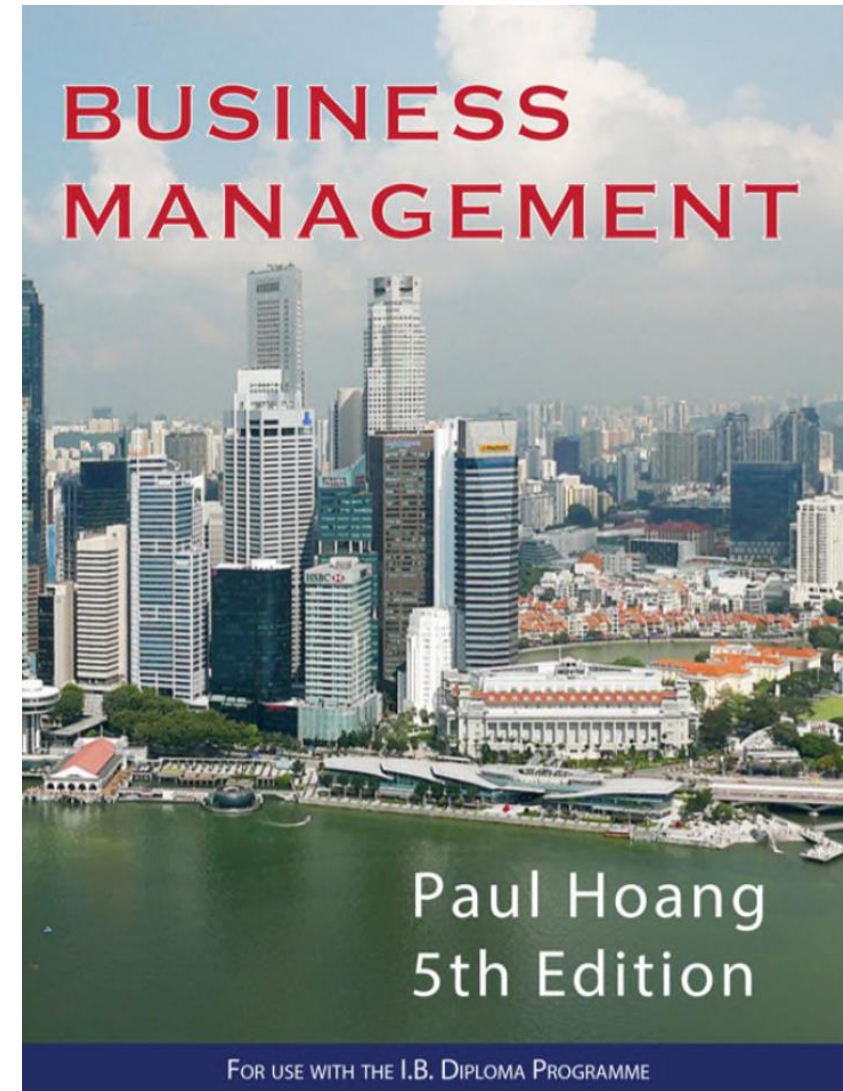
BUSINESS MANAGEMENT



Approaches to learning

- Hoang textbook
- Activity 41.1 *Research skills*
 - Page 567

BUSINESS MANAGEMENT



The factors that affect effective crisis management

- Transparency
- Communication
- Speed
- Control

Effective crisis management

- Effective crisis management depends on four main factors:
 - Transparency
 - Communication
 - Speed
 - Control
- Firms who do this well can be quite successful at overcoming the negative impact of a crisis.



Transparency

- Most experts believe that it is best to be transparent (open and honest) during a time of crisis.
- Denial and dishonest responses can result in significant damage to a firm.



Volkswagen discovered the consequences of denial of fraudulent behaviour when it was caught cheating emissions tests in 2015.

Communication

- Effective communication with all key stakeholders is critical in a crisis situation.
 - e.g. contacting emergency services and insurers.
- A crisis communication plan should be deployed.



- Crisis communications plans should include the following:
- Understanding how the news media works.
 - Issuing a press release to control the situation.
 - Working with the media to get the media to portray them favourably (where possible).

Speed

- In a crisis situation, the speed of response is critical to the effectiveness of crisis management.
- This is where a contingency plan is very helpful in reducing the impact of a crisis thanks to a speedy response.



Control

- A major crisis truly tests the performance of the leadership team within an organization.
- Leaders need to be able to control the crisis situation.
- This requires:
 - An ability to work under extreme pressure.
 - Communication with all key stakeholders.
 - Quick and effective decision making.
 - Instant access to cash funds to control the situation.



Crisis mismanagement by United Airlines

Two days after the incident at United Airlines, UA's market value fell by \$1 million as a result of damage to UA's reputation.

- Which of the crisis management factors could *UA* have handled better? Explain your reasons



Top PR nightmares: What went wrong



The impact of contingency planning for a given organization or situation in terms of:

- Cost
- Time
- Risks
- Safety

Impact of contingency planning



Benefits

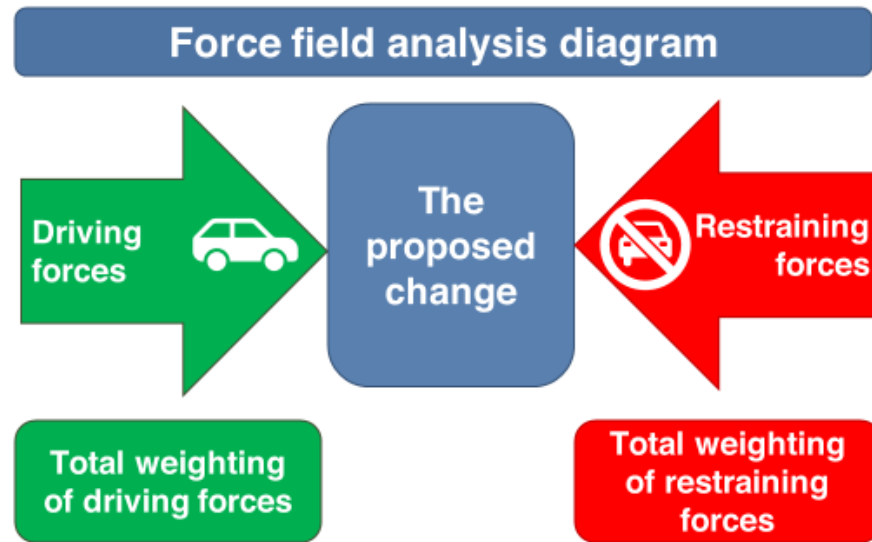
- Cost
 - Can minimize financial damage and damage to the reputation of a business.
- Time
 - Planning takes time but will save valuable time in a crisis.
- Risk
 - Reduces the impact of a crisis.
- Safety
 - Reassures staff, therefore reassuring the safety needs of employees.

Impact of contingency planning



Drawbacks

- Cost and time
 - The opportunity cost in terms of time and finance could have been better used as crises may never happen.
- Risk
 - Plans may be inappropriate.
- Safety
 - Contingency plans depend on the accuracy of risk assessments which need to be reviewed on a regular basis.



Scan to view
the *World
Health
Organization's*
(*WHO*) guide to
contingency
planning



BUSINESS MANAGEMENT

BMT: Force field analysis and contingency planning (HL only)

Given the information about contingency planning by the *WHO*, prepare a force field analysis on whether a firm should have a contingency plan in anticipation of another global pandemic.

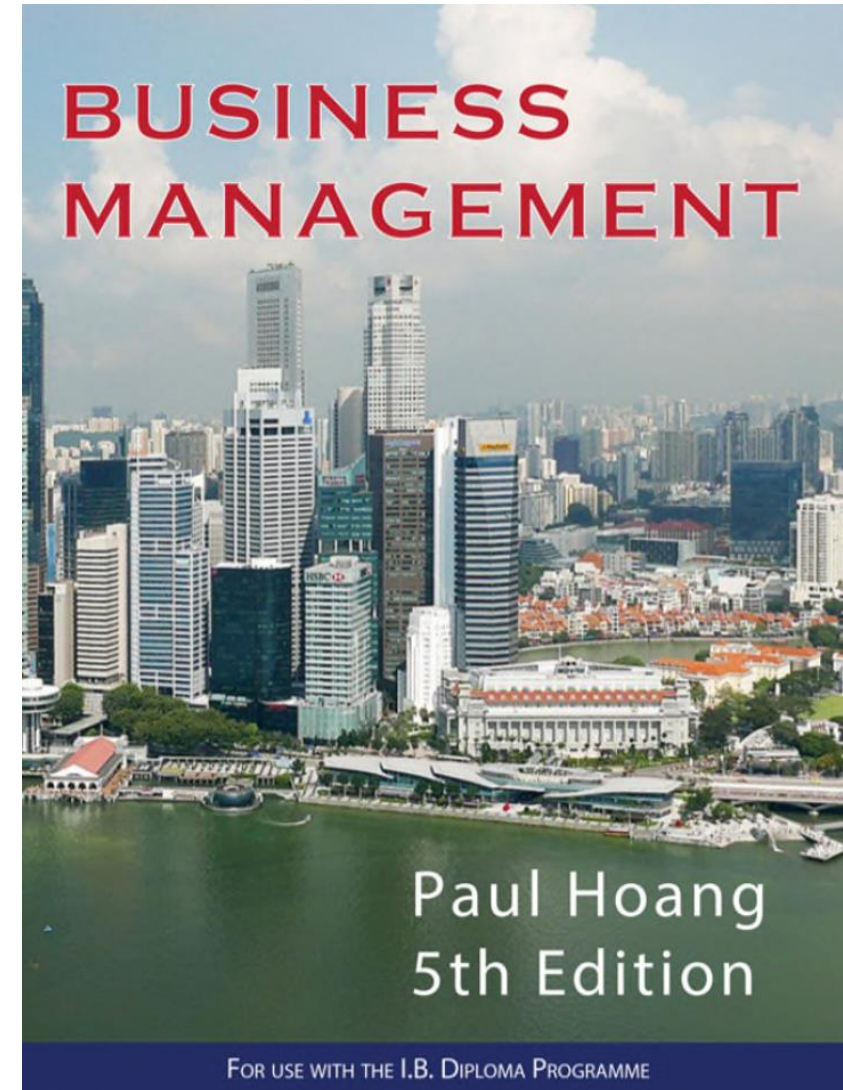
Base the force field analysis on a firm of your choice for one of the following sized enterprises:

- Small - (e.g. sole trader)
- Medium - (e.g. a partnership or privately held company with about 50 partners/shareholders)
- Large - (e.g. a publicly held company)

Over to you

- Hoang textbook
- Question 41.3 *The COVID-19 pandemic*
 - Page 571
- Question 41.4 *Toyota*
 - Page 572
- Answer all parts

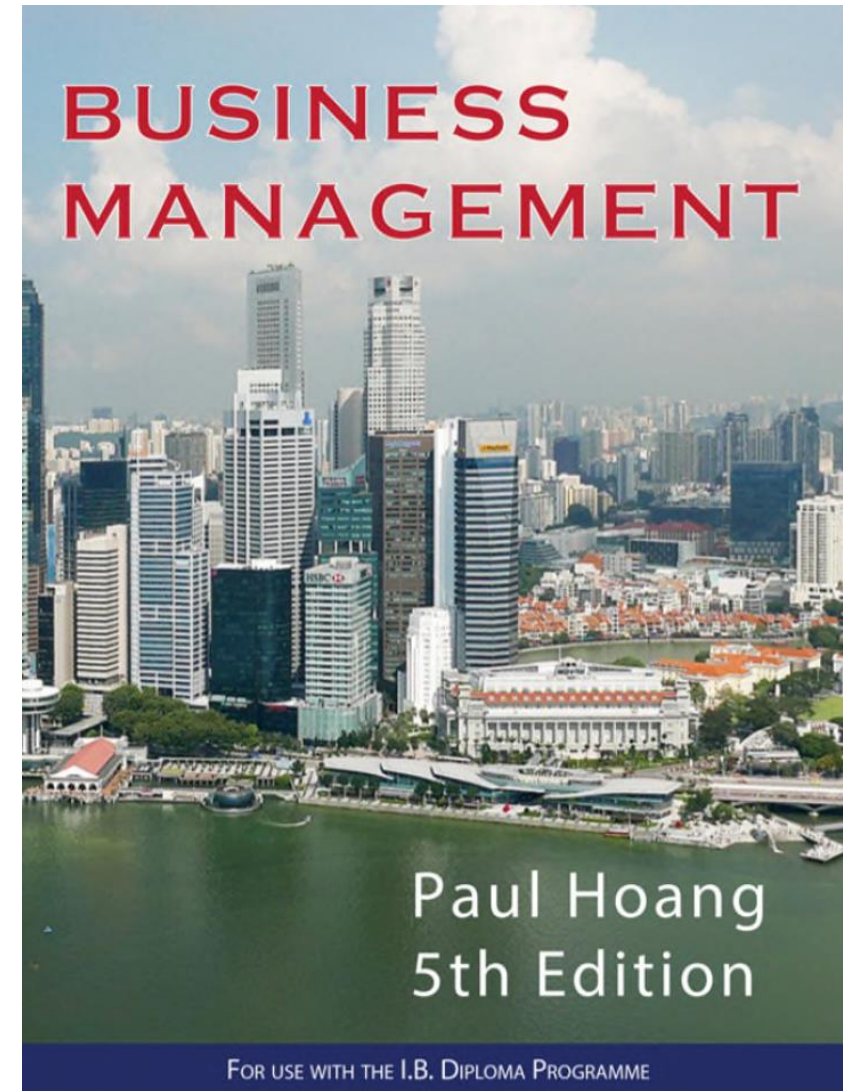
BUSINESS MANAGEMENT



Approaches to learning

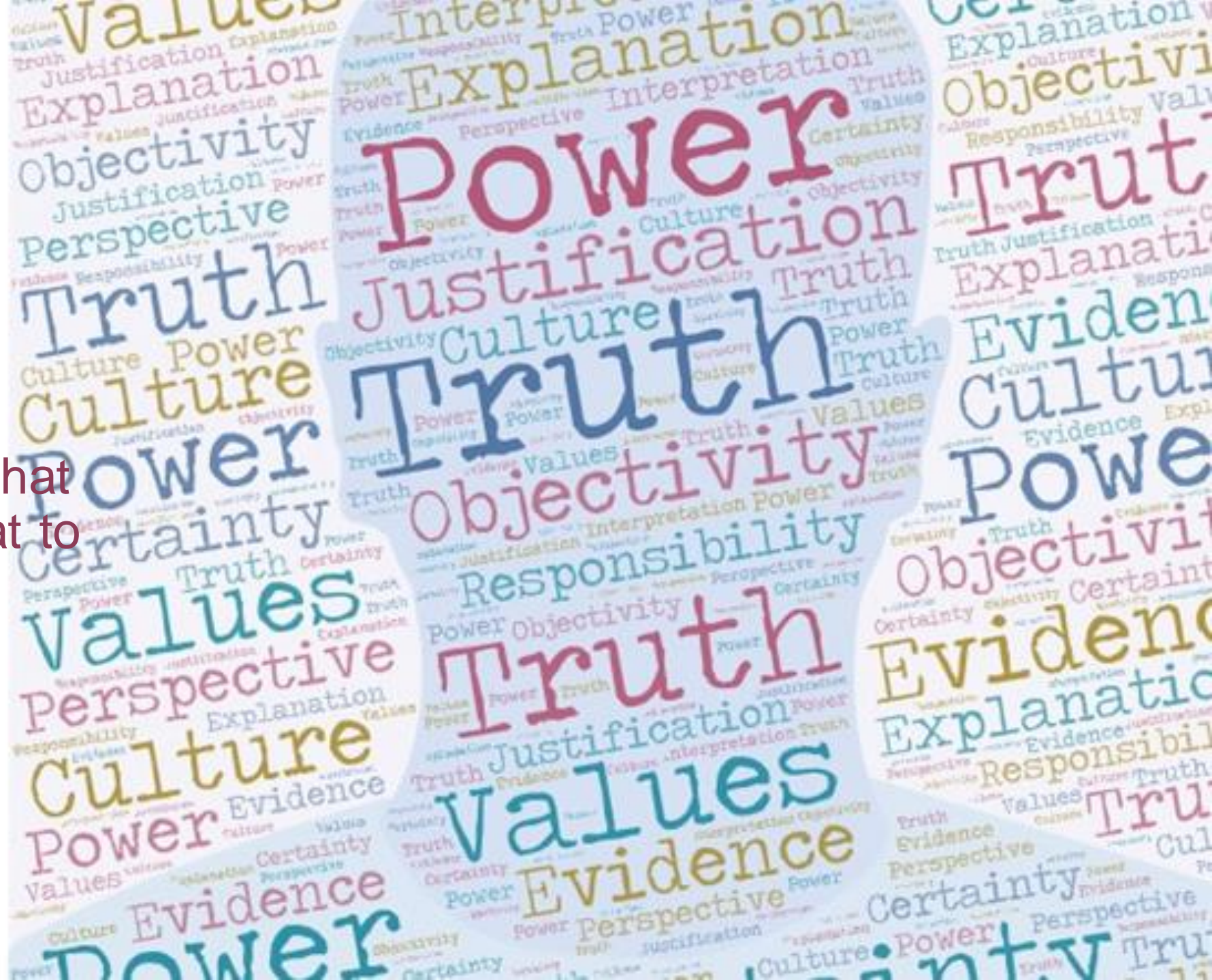
- Hoang textbook
- Activity 41.2 *Social and Research skills*
 - Page 572

BUSINESS MANAGEMENT



Theory of knowledge

Can anything good come out of a crisis that poses a severe threat to the survival of a business?





Concepts in BM: change

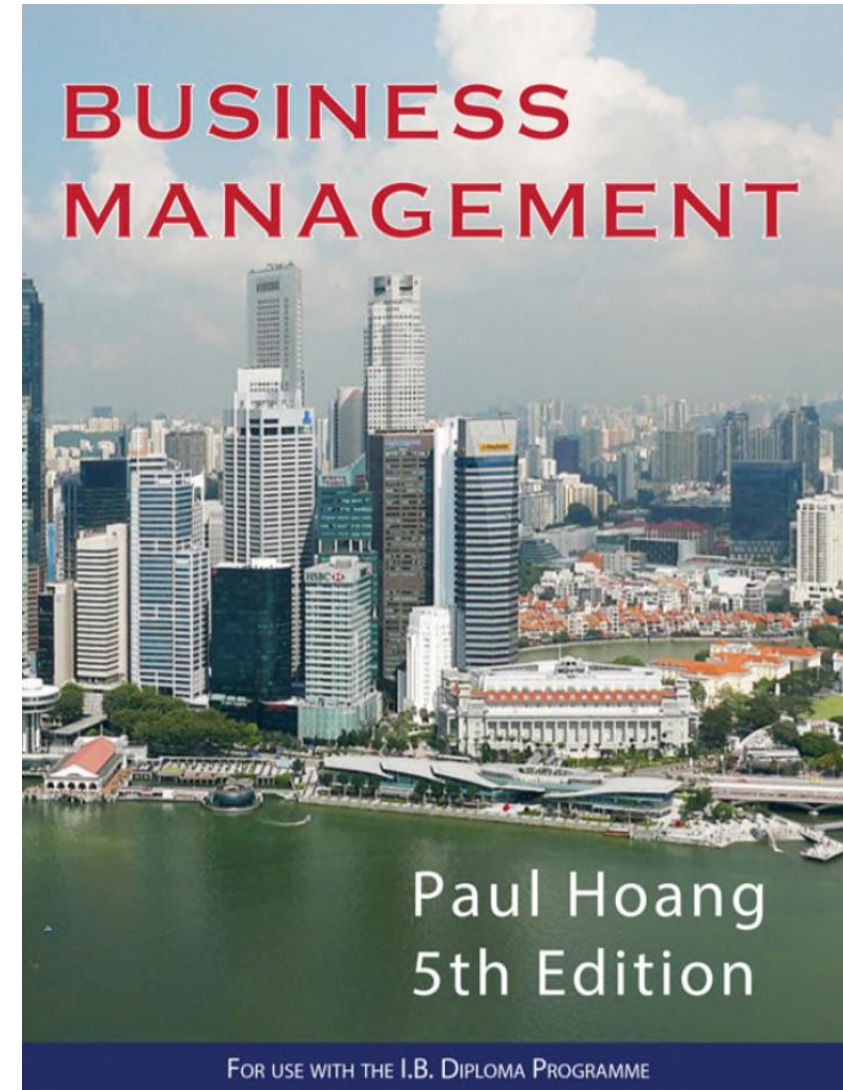
Year	Social media platform	Media format
2003	Myspace	Personal profiles, messaging, blog entries, music preferences
2005	Reddit	News-sharing
2006	Facebook	Status updates, photo and video sharing.
2006	Twitter	Microblogging
2010	Instagram	Photo sharing
2010	Pinterest	Digital pin board
2011	Snapchat	Video sharing and digital effects such as filters.
2016	TikTok	Short-form video sharing

- In the space of less than 15 years, social media formats have changed so significantly printed press releases no longer have the desired effect in managing a crisis.
- Press releases have to be adapted using various media strategies.

Over to you

- Hoang textbook
- *Review Questions*
 - Page 574

BUSINESS MANAGEMENT



5.8 Research and development (HL)

Topic 5: Operations management

Unit content

Content	Assessment objective
<u>The importance of research and development for a business</u>	AO3
<u>The importance of developing goods and services that address customers' unmet needs (of which customers may or may not be aware)</u>	AO2
<u>Intellectual property protection; copyrights, patents and trademarks</u>	AO2
<u>Innovation: incremental and disruptive</u>	AO2
Business Management Toolkit: • <u>Porter's generic strategies</u>	
<u>Research and development and the business management concepts</u>	

The importance of research and development for a business

Research and development (R&D)

- Research refers to investigating the unknown such as new products or processes.
- Development involves using research findings to create products that might be commercialized.



The purpose of R&D

- The purpose of research and development (R&D) is to provide continual advancement and launch new products to satisfy customer needs in a profitable way.
- R&D can be vital to an organization's long-term success.



Benefits of R&D

- R&D is often beneficial for businesses that operate in sunrise industries.
 - Sunrise industries are those that have enormous growth potential, e.g. high-tech industries.
- R&D offers first-mover advantages such as:
 - Charging premium pricing.
 - Development of a favorable corporate image.
 - Establishing strong market share.



Hydrogen energy is a sunrise industry that develops clean energy alternatives to oil, coal and gas.

Drawbacks of R&D

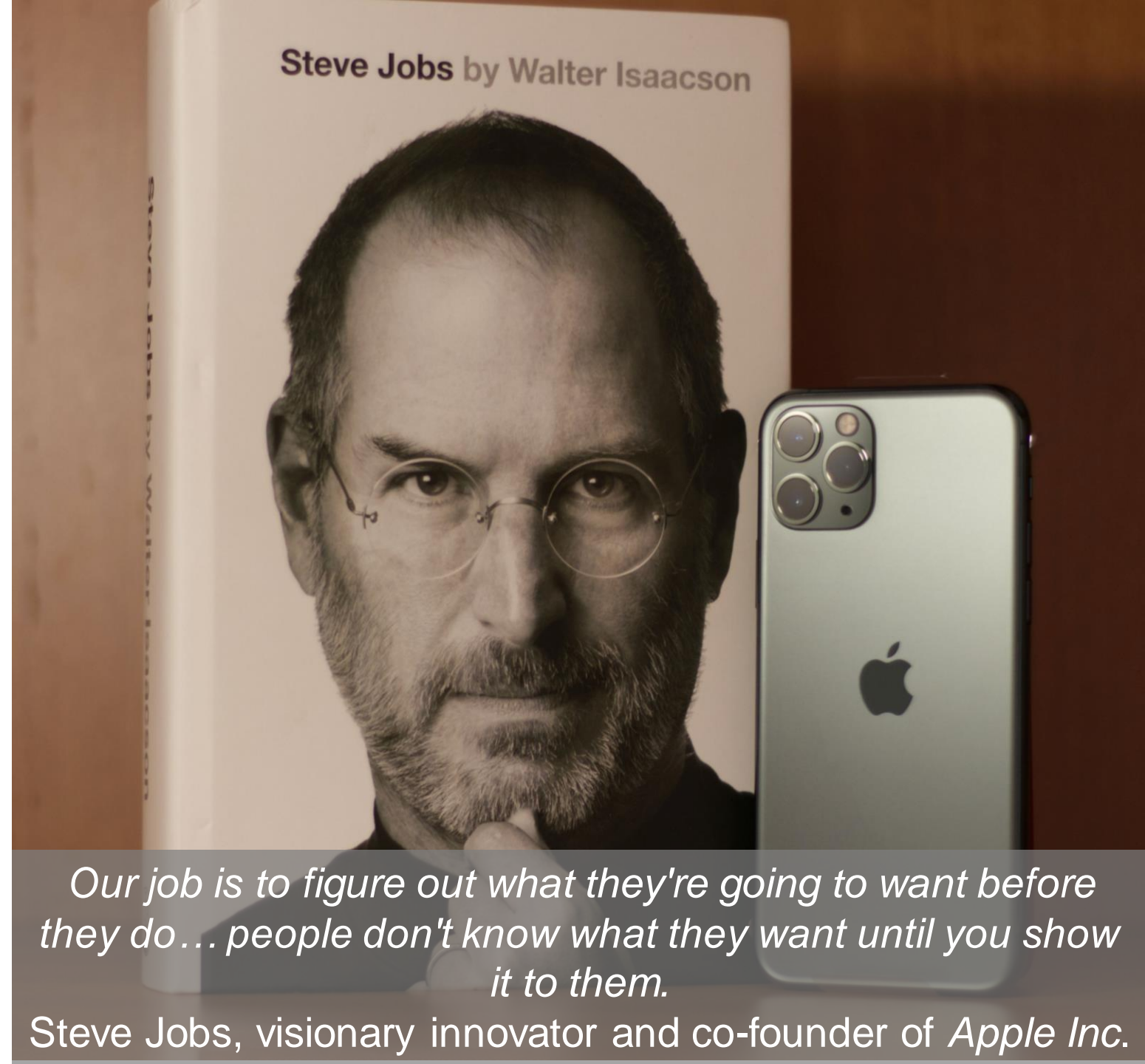
- R&D expenditure in sunset industries is unlikely to be profitable.
- Sunset industries are those with negative or deteriorating growth potential.
- Studies show only one in ten products that are developed and tested reaches commercialization.



The importance of developing goods and services that address customers' unmet needs (of which they may or may not be aware)

R&D and the unmet needs of customers

- R&D is a vital aspect in the process of commercially pioneering new ideas and creations to meet the unmet needs of customers..
- The needs may be:
 - Known to customers, i.e. firms are market oriented.
 - Unknown to customers, i.e. firms are product oriented.



Examples of innovations



Exploitation of creative ideas

e.g. Sir James Dyson's invention of bladeless fans



Introduction of new products

e.g. plastic bank notes introduced to the world by Australia



Entering new markets

e.g. luxury perfumes allow less affluent consumers opportunities to own a fashion branded good



Discovery of new production processes

e.g. omni-directional conveyer belts

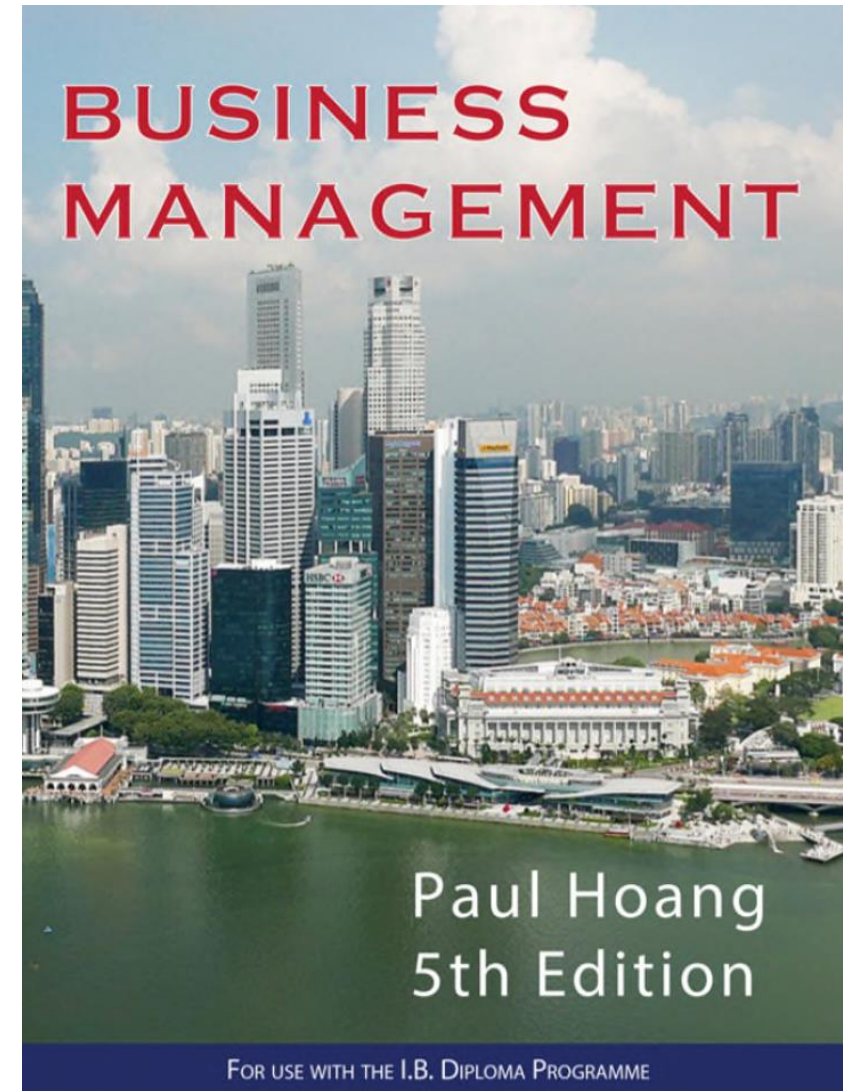
Omni-directional conveyer belts



Over to you

- Hoang textbook
- Question 42.1 *Nintendo Company*
 - Page 589
- Answer all parts

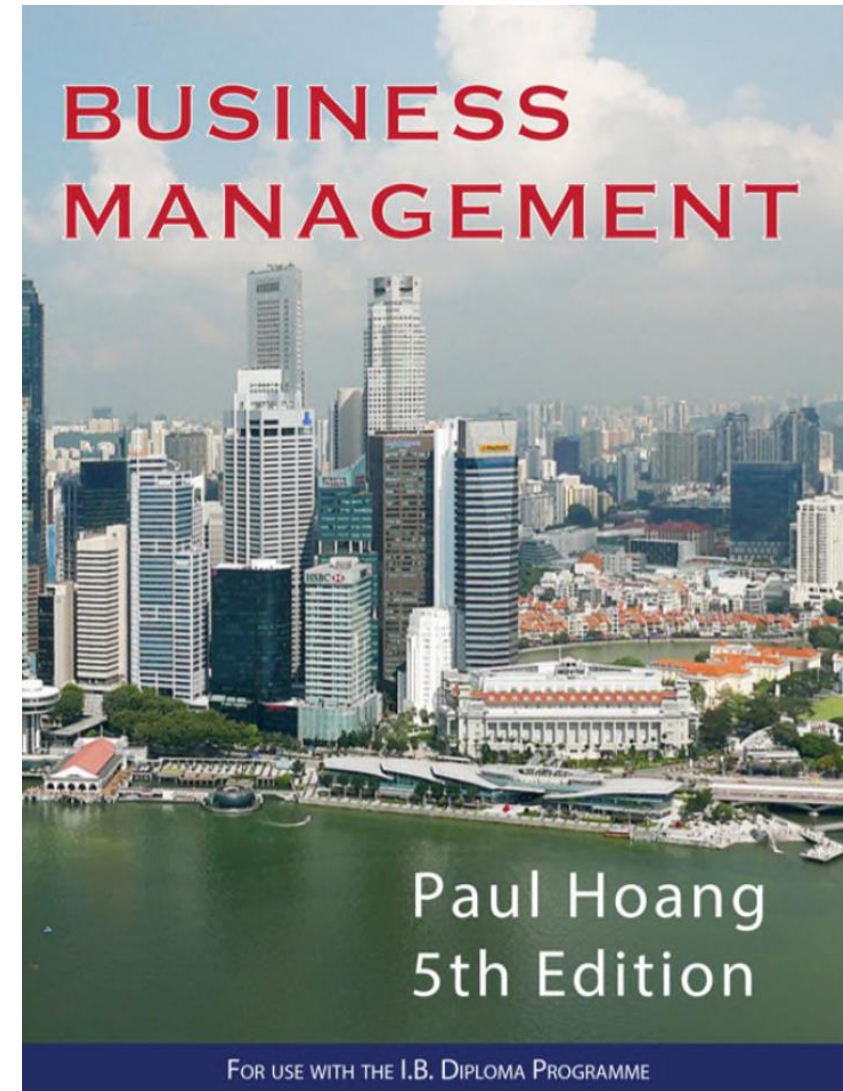
BUSINESS MANAGEMENT



Approaches to learning

- Hoang textbook
- Activity 42.1 *Research and Thinking skills*
 - Page 579

BUSINESS MANAGEMENT



Intellectual property protection; copyrights, patents, trademarks

Intellectual property protection



- Intellectual property rights (IPRs) are the legal and exclusive ownership claims to certain creations, inventions or pieces of work.
- Also referred to as intellectual property protection.
- IPRs act to prevent others from replicating the ideas of the inventors or creators.
- IPRs act as:
 - an incentive for businesses to innovate.
 - a benefit to owners from having a first-mover advantage.

Intellectual property protection

The main types of IPR are:

Patents

- Legal protection for product designs created by the inventor.

Copyrights

- Legal protection for IP (e.g. songs, novels, theatre, and works of art).

Registered trademarks

- Legal protection for brands and logos used by a business.

Apple's IPR

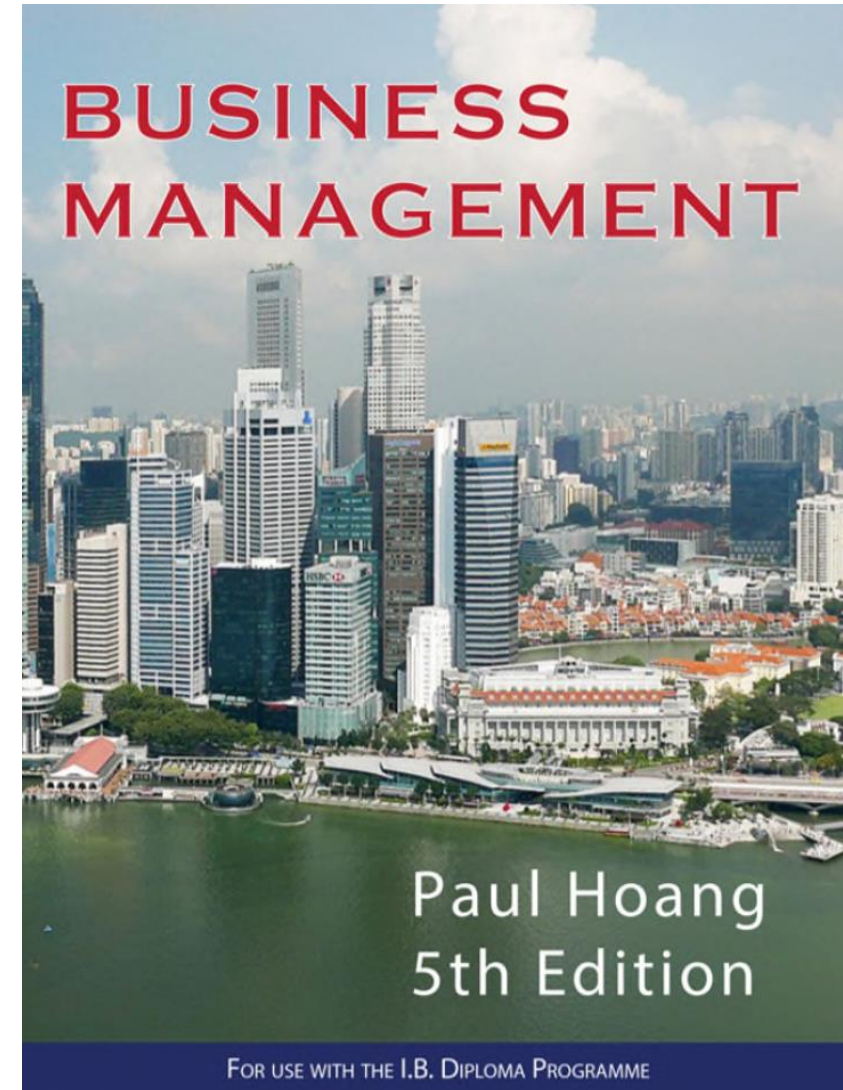
- Identify one example for each type of IPR at *Apple*:
 - Patents
 - Copyrights
 - Registered trademarks



Over to you

- Hoang textbook
- Question 42.2 *BMW and Rolls Royce*
 - Page 580
- Answer all parts

BUSINESS MANAGEMENT



Innovation: incremental and disruptive

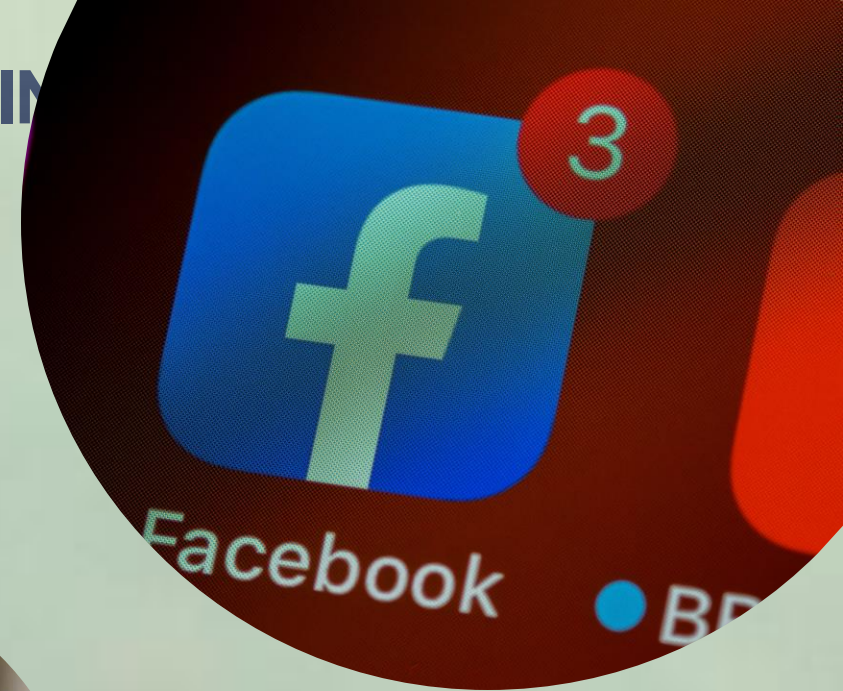
Innovation

- Innovation is the process of commercially pioneering new ideas and creations in the production process.
- It stems from successful R&D in order to meet the needs of customers in a profitable way.
- Innovation can be categorized as incremental or disruptive.

To learn more about the inventors of these pictured famous inventions, read page 581 from the Hoang textbook.



BUSIN



Incremental innovation

- This refers to minor improvements to products or work processes.
- Most innovations are incremental in nature as they are:
 - More affordable.
 - Less risky.
 - Less disruptive to organizations.



Gillette, the world's largest producer of shaving supplies, regularly upgrades its razors, adding new features such as extra blades and pivoting functions.

Radical innovation

- This refers to major and disruptive innovations that tend to involve high risks.
- Radical innovations are a major source of:
 - Competitive advantage.
 - Long-term survival.

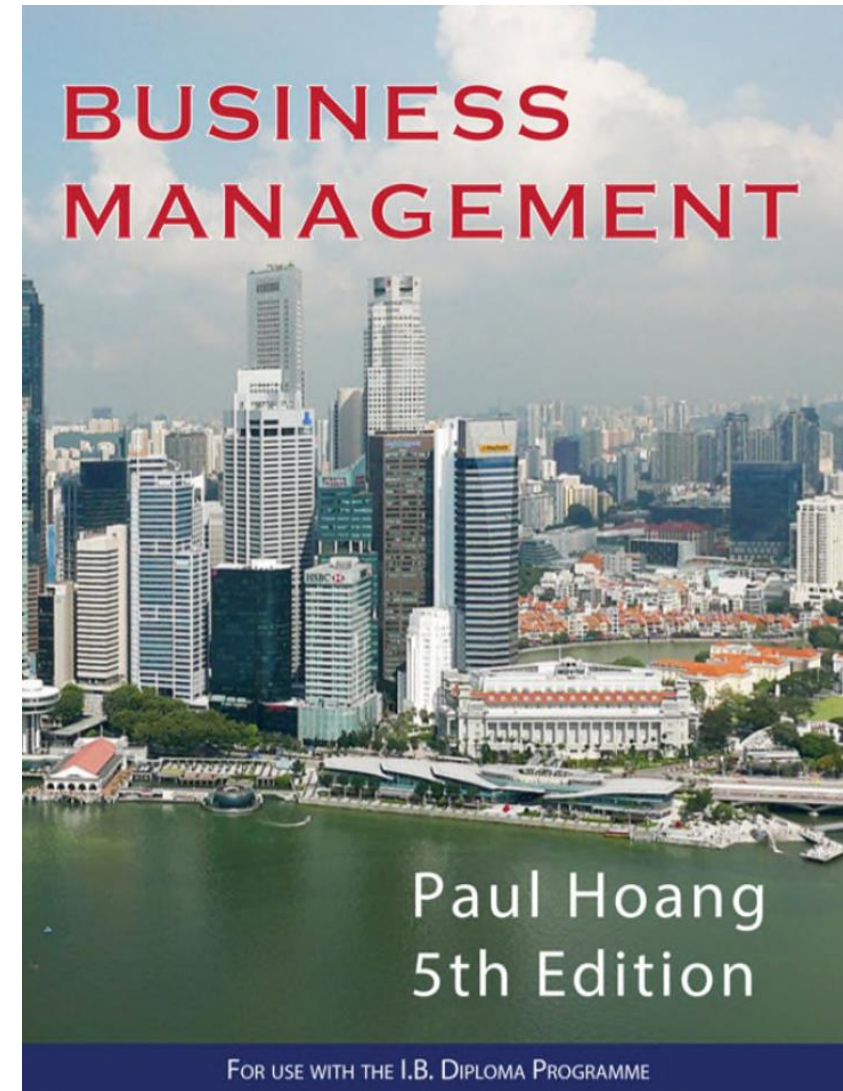


VHS videos were replaced by DVD technology. Eventually, these were replaced by online streaming services, leading to the downfall of *Blockbuster*.

Over to you

- Hoang textbook
- Question 42.3 *Johnson & Johnson*
- Question 42.4 *Hotmail*
 - Page 582
- Answer all parts

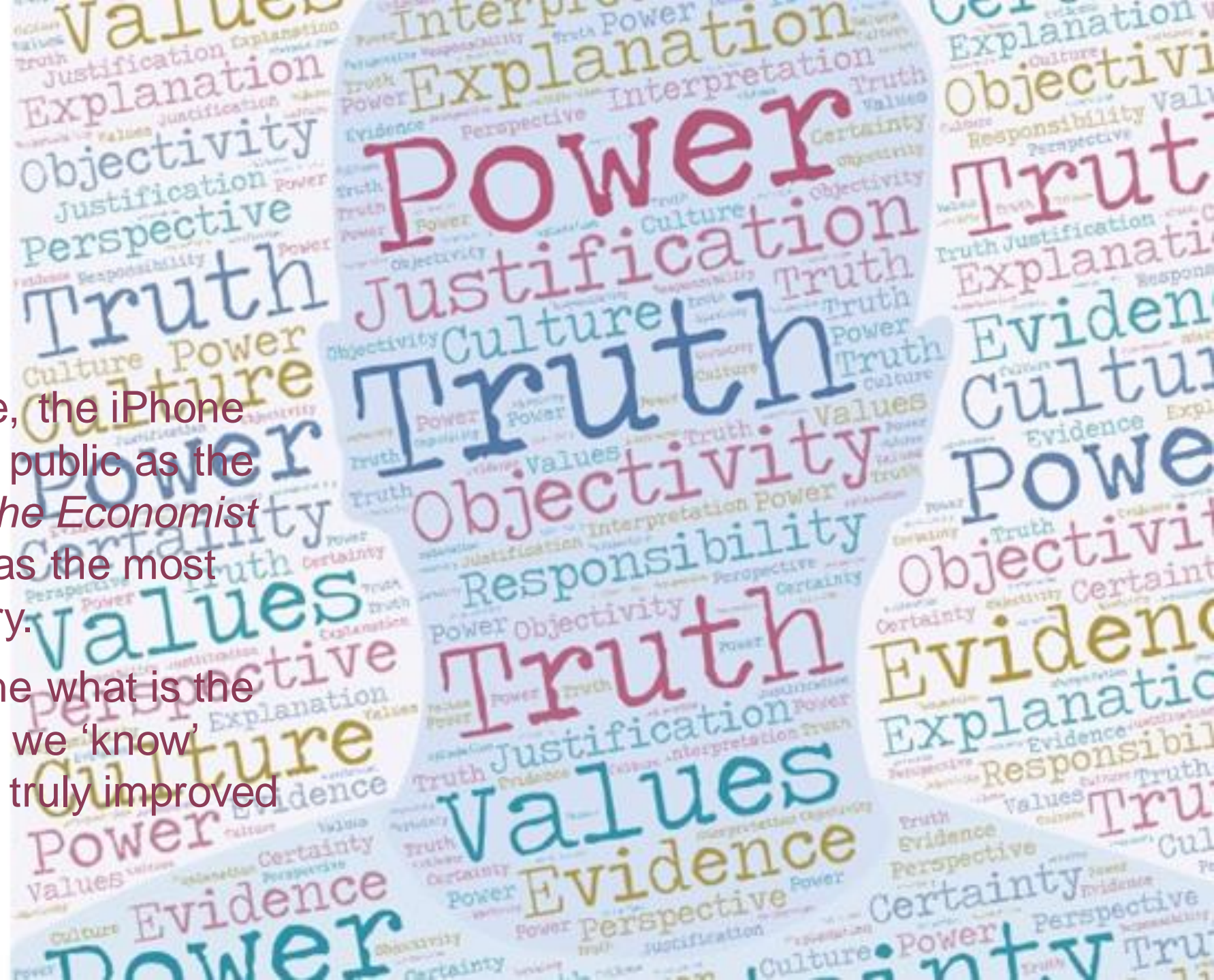
BUSINESS MANAGEMENT



Theory of Knowledge

At the turn of the decade, the iPhone was voted by the British public as the World's Best Product. *The Economist* voted the modern toilet as the most useful invention in history.

How do people determine what is the 'best' product? How can we 'know' whether technology has truly improved our quality of life?



BMT: Porter's generic strategies and the protection of IPR

		Competitive advantage	
		<i>Cost</i>	<i>Uniqueness</i>
Scope	Mass	Cost leadership	Differentiation
	Narrow	Focus (Cost focus)	Focus (Differentiation focus)

With reference to a firm of your choice, discuss whether the protection of intellectual property rights (IPR) is important for a successful differentiation strategy.

E-commerce giants such as *Amazon* have installed robotic equipment into their 'smart' warehouses.



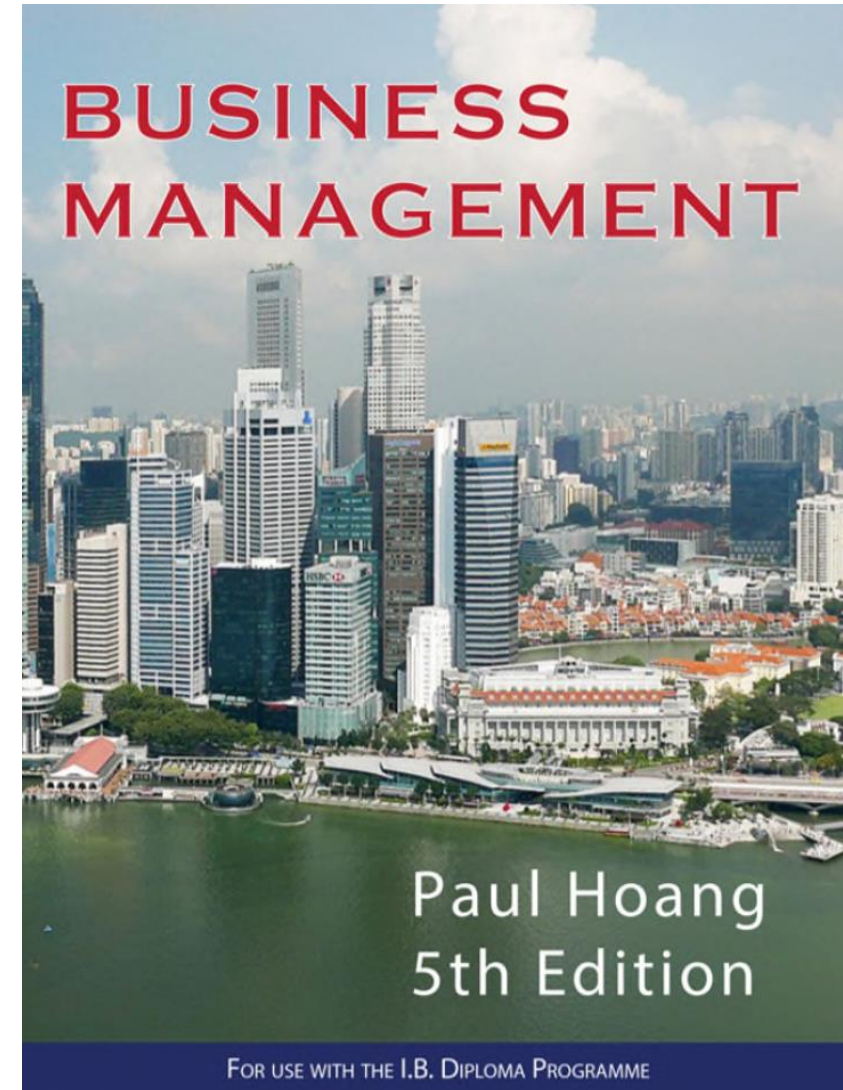
Concepts in BM: change, ethics and sustainability

- R&D can often have ethical implications despite the benefits of innovation.
- Automation can be hugely beneficial to the sustainability of a firm. However, it can be argued that despite job elimination, human operators will always be a necessary component in production.

Over to you

- Hoang textbook
- *Review Questions*
 - Page 52

BUSINESS MANAGEMENT



5.9 Management information systems

Topic 5: Operations management

Unit content

Content	Assessment objective
<u>Data analytics</u>	AO1
<u>Database</u>	AO1
<u>Cybersecurity and cybercrime</u>	AO1
<u>Critical infrastructures, including artificial neural networks, data centres and cloud computing</u>	AO2
<u>Virtual reality</u>	AO2
<u>The internet of things</u>	AO2
<u>Artificial intelligence</u>	AO2
<u>Big data</u>	AO2
<u>Customer loyalty programmes</u>	AO3

Unit content

Content	Assessment objective
<u>The use of data to manage and monitor employees; Digital Taylorism</u>	AO3
<u>The use of data mining to inform decision-making</u>	AO3
<u>Management information systems - the benefits, risks and ethical implications of advanced computer technologies and technological innovation on business decision-making and stakeholders</u>	AO3
Business Management Toolkit: <ul style="list-style-type: none">• <u>Descriptive statistics</u>	
<u>Management information systems and the business management concepts</u>	

Data analytics

Data analytics

- Data analytics is the process of transforming raw data into usable information for businesses.
- It can help determine trends from a mass of data, making information more user friendly to improve the overall efficiency of a business.



Descriptive data analytics

- Describes and answers questions about what occurred over a period of time.



Diagnostic data analytics

- Focuses on and answers questions about why something has happened.



Predictive data analytics

- Projects possible outcomes in order to answer questions on what is likely to happen in the foreseeable future.



Prescriptive data analytics

- Recommends an appropriate course of action by answering questions about what should be done.



Database

Database

A database is a computerized system that makes it easy to store, search and select data and information.



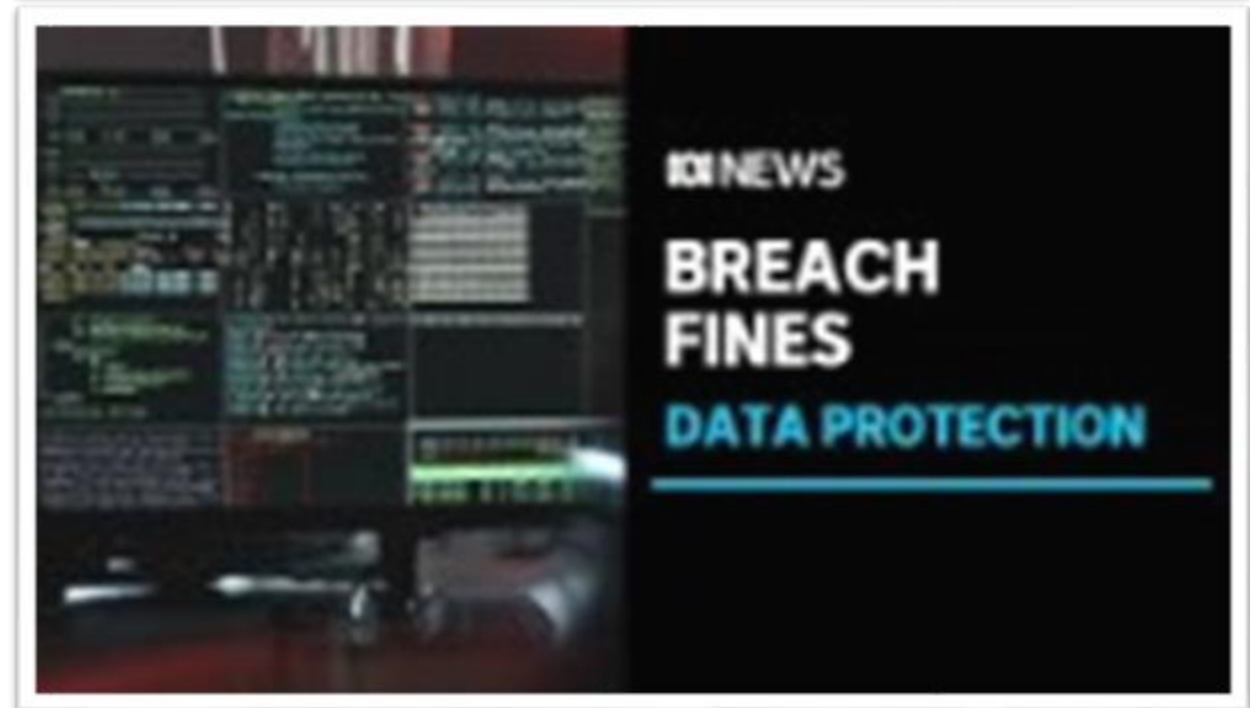
Cybersecurity and cybercrime

The cost of cybercrime for *Optus*

In 2022 *Optus*, an Australian telecommunications firm, suffered from a cyberattack that led to the theft of personal data of about 10 million customers (about 40% of the population of Australia).

- Watch the videos about the fallout from this cyberattack.
- Total up the estimated, worst-case scenario, financial damage that *Optus* may face as a result of the data breach.

Optus reported a profit of AUD\$ 2.07 billion for the 2021-2022 financial year. How significant is the potential financial damage from this cyberattack?



Cybersecurity and cybercrime

Cybersecurity

- This refers to the protection of computer systems and networks from:
 - Unwarranted information disclosure.
 - Theft or damage to computer hardware, software or data.

Cybercrime

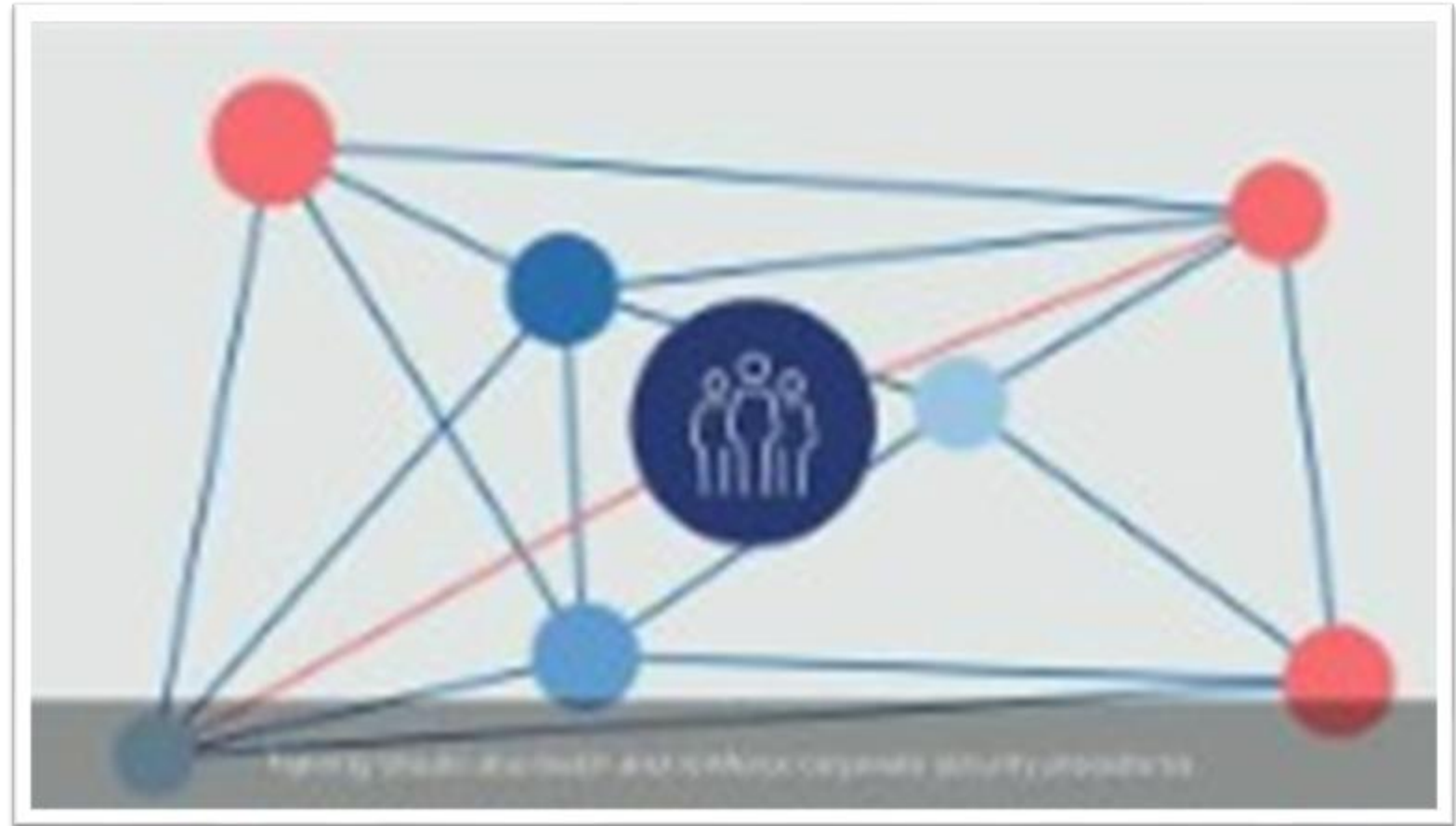
- This refers to any illegal activity carried out using computers or the internet by deliberately and maliciously targeting computers, computer networks or networked devices.

Examples of cybercrime



Fighting cybercrime with cybersecurity

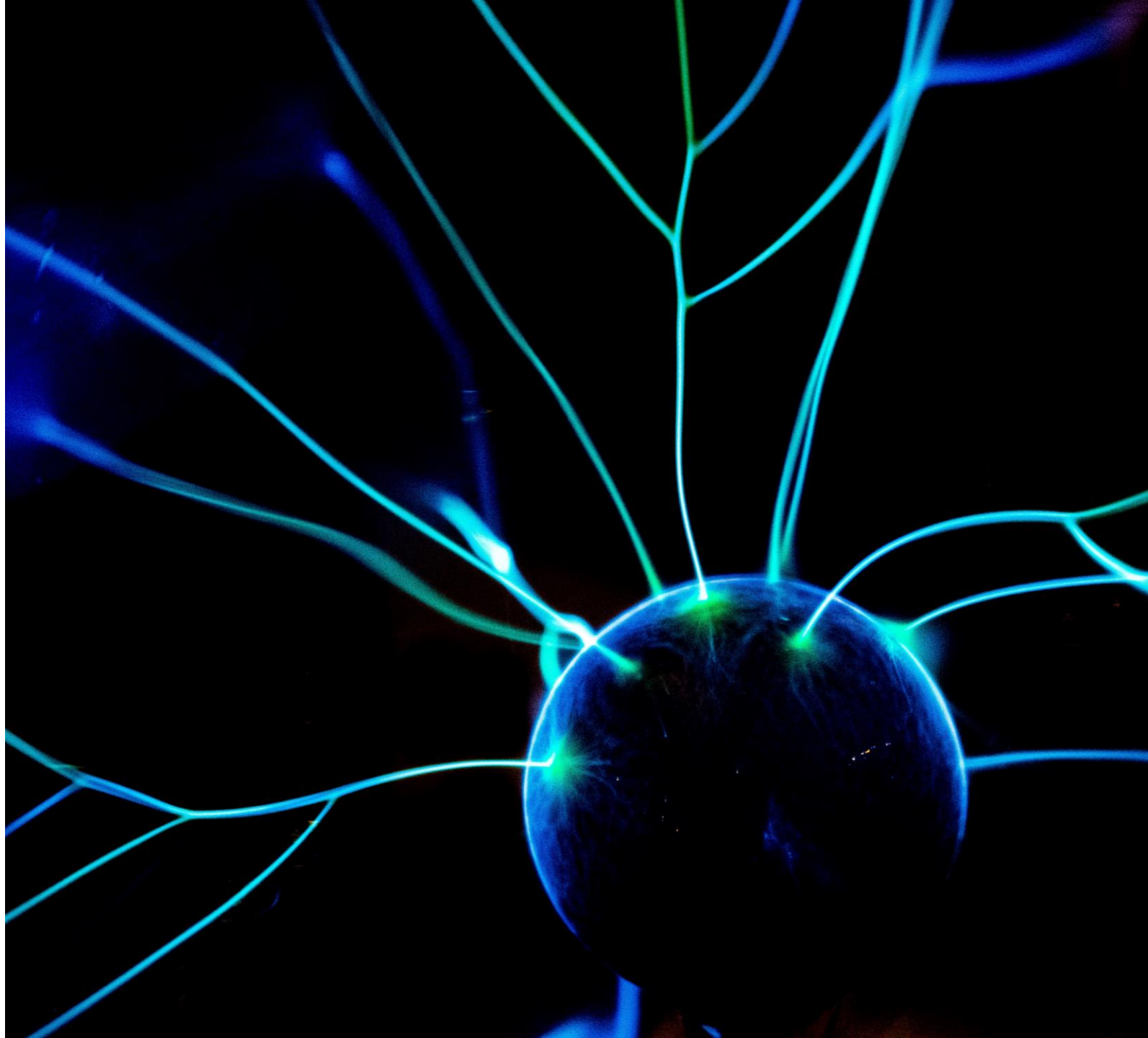
- Methods of fighting cybercrime include:
 - Keeping computer software, network structures and operating systems updated.
 - Using anti-virus software to prevent or limit the volume of cyber attacked.
 - Training staff about the importance of cybersecurity.



Critical infrastructures, including artificial neural networks, data centres and cloud computing

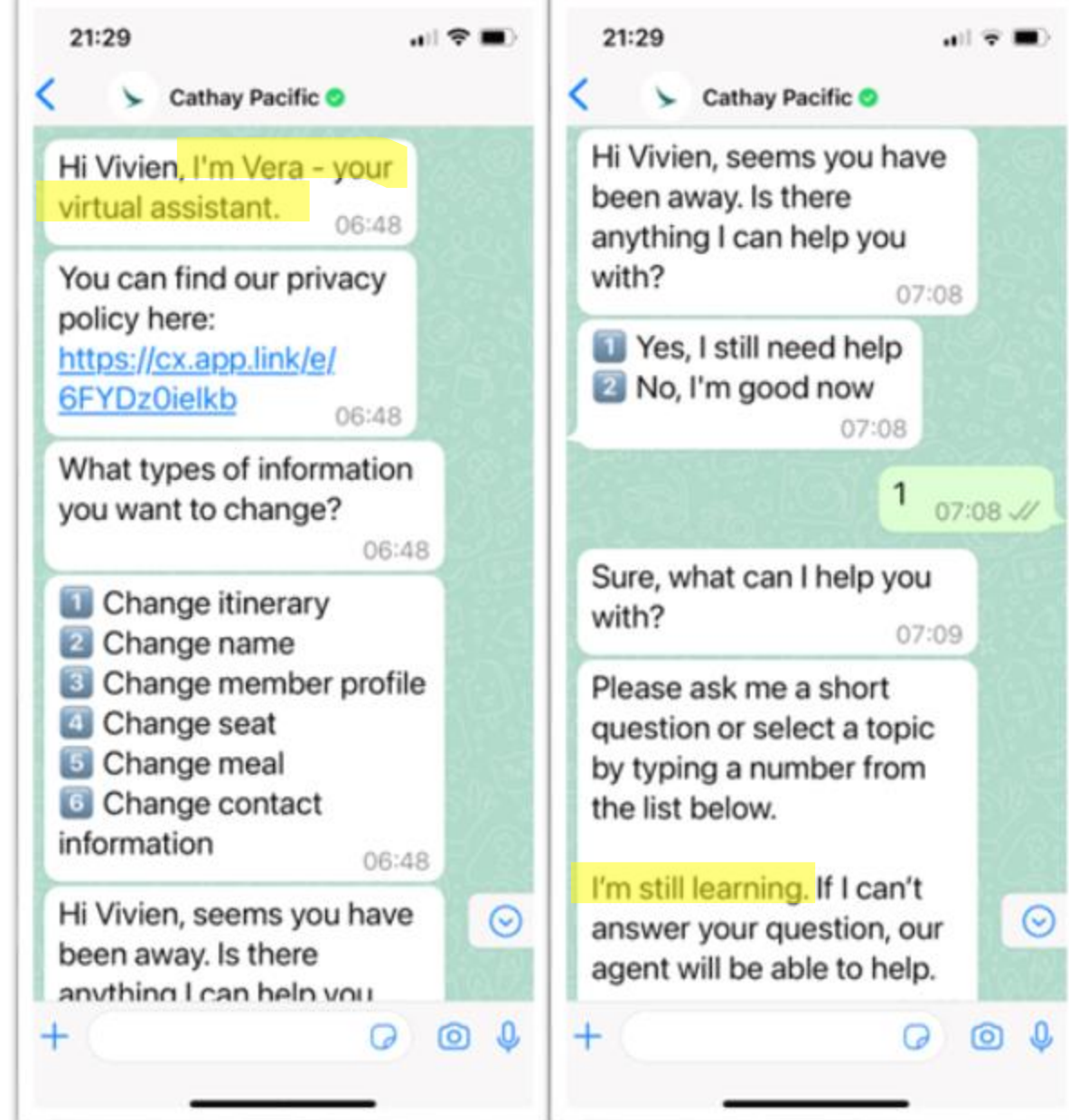
Critical infrastructures

- Critical infrastructures refers to the essential and interrelated physical structures and facilities needed for the effective function of a business.
- Examples include:
 - Artificial neural networks
 - Data centers
 - Cloud computing



Artificial neural networks

- Artificial neural networks (ANN) are a form of machine-learning that uses learning algorithms that can independently adapt as they receive new input.
- This means ANNs can solve problems without having to be explicitly programmed to do so.
- ANNs are the basic building blocks of artificial intelligence.



Chatbots are an example of an ANN. They are frequently used by commercial banks, hotels and airlines to deal with customer queries in real time.

Data centres

- A data centre is a physical facility or space of networked computers and component resources that support businesses in housing their critical applications and data.

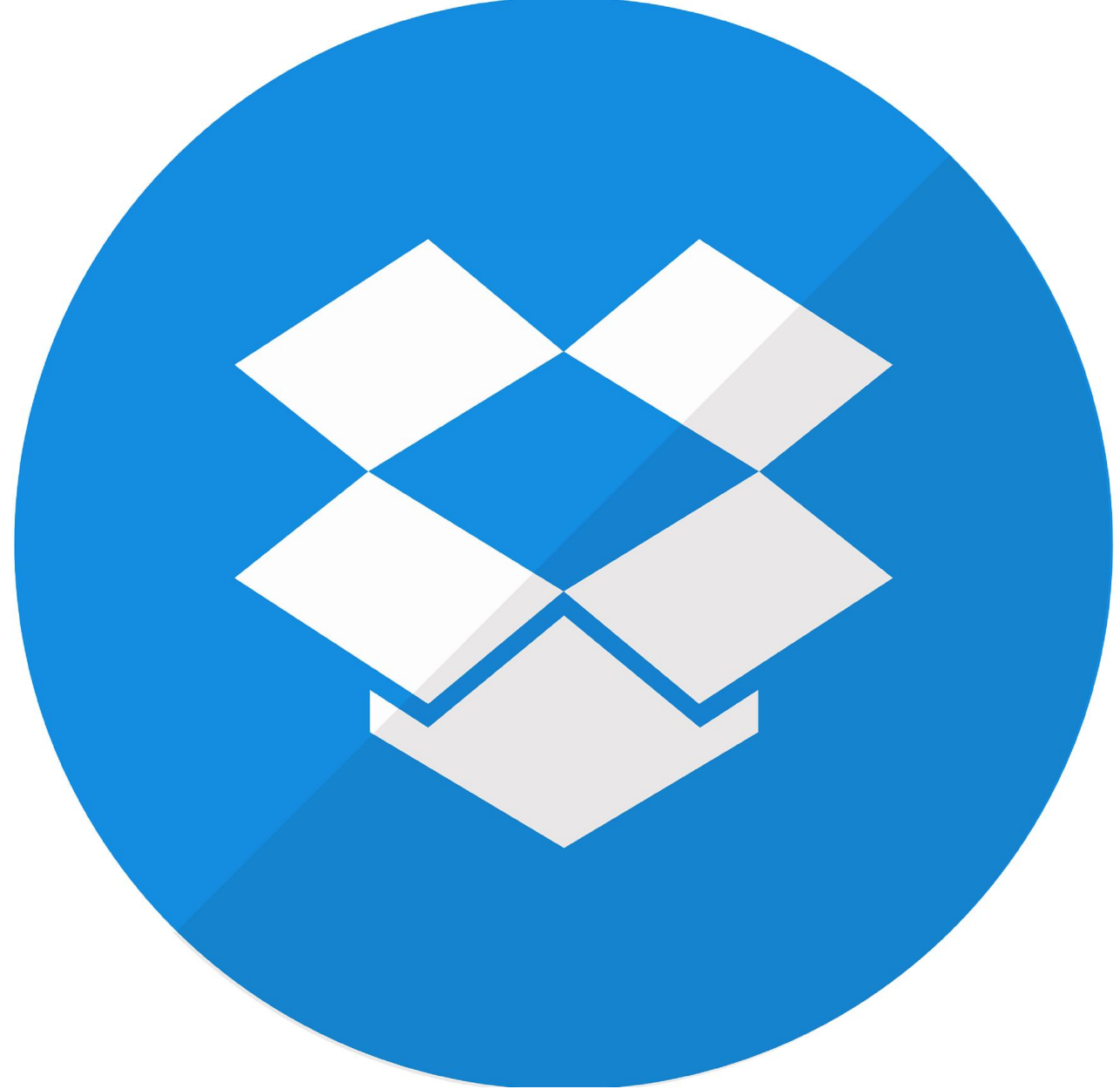


Services provided by data centres include:

- Data backup and archiving
- Email and file sharing
- Database systems
- Big data, artificial intelligence and machine learning
- Virtual communications and collaboration systems

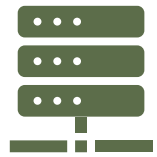
Cloud computing

- Cloud computing is similar to data centres except that it is a virtual resource or online space that enables businesses to store, organize and retrieve data in safe and efficient ways.



Dropbox is an example of a cloud computing provider.

Data centres versus cloud computing



Data centres

- A physical resource
- Relatively significant investment costs
- High maintenance costs
- Does not rely on having internet or Wi-Fi connections



Cloud computing

- A virtual resource
- Relatively insignificant investment costs
- Relatively low maintenance costs
- Requires stable internet or Wi-Fi connections

Virtual reality

Virtual reality

- Virtual reality (VR) is an artificial three-dimensional environment created by software.
- It allows people to explore and interact with others in a near-reality way.



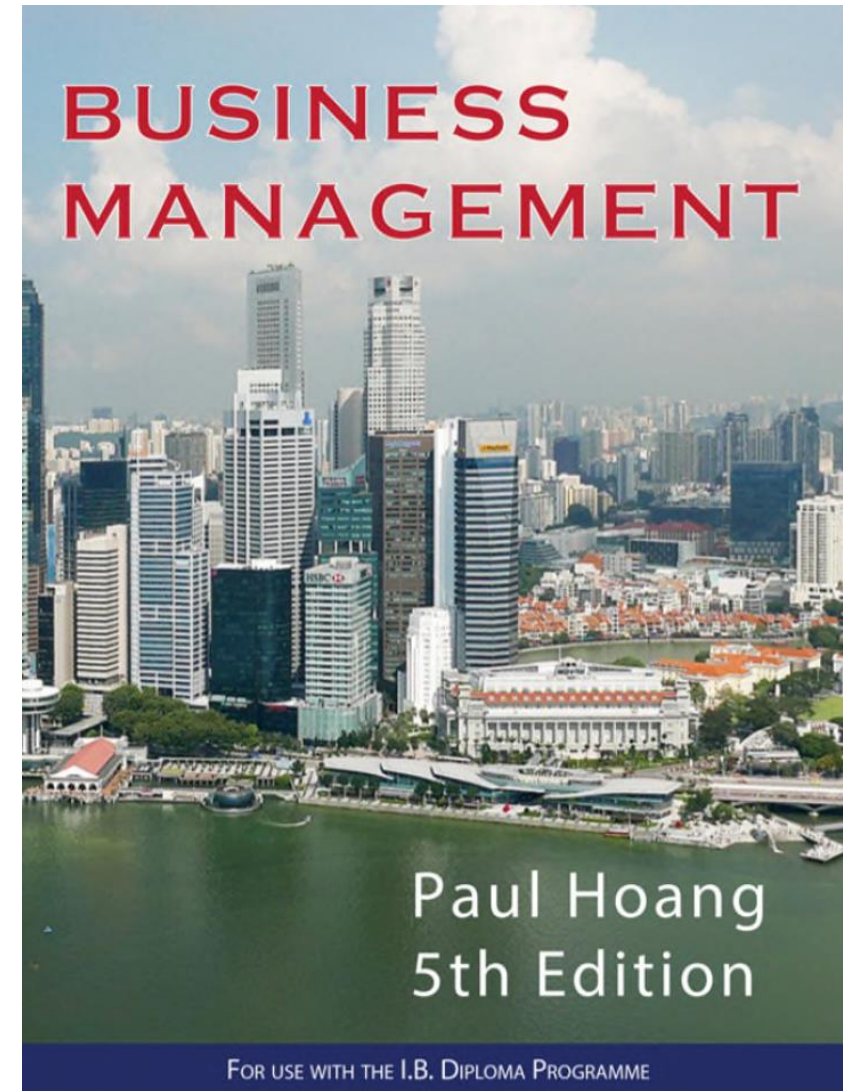
VR has both entertainment and commercial use. For example, airlines use VR technologies in their flight simulators to train and test pilots.



Approaches to learning

- Hoang textbook
- Activity 43.1 *Research skills*
 - Page 592

BUSINESS MANAGEMENT



The internet of things (IoT)

The internet of things (IoT)

- The internet of things (IoT) refers to a broad system of physical objects embedded with electronics, software and sensors that connect to the internet.
- The purpose of the IoT is for connected devices to self-report in real-time so that data can be used to improve efficiency.



Benefits and drawbacks of IoT



Advantages

- Removes the need to depend on human intervention to collect, process and interpret data.
- Works faster and more accurately, in real-time.



Disadvantages

- Data security and privacy concerns mean that firms need to operate within the law governing the collection, storage and transfer or sharing of data.
- Concerns on the growing dependency on the internet that could render firms unable to function efficiently without it.

Artificial intelligence (AI)


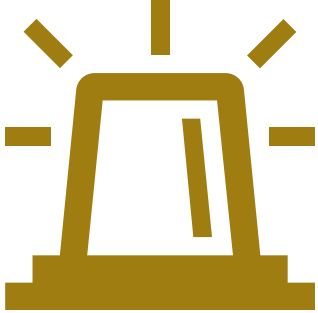



Artificial intelligence

- Artificial intelligence (AI) is an aspect of computer science that focuses on the ability of smart machines to perform tasks that typically require human intelligence.
- AI can boost operational efficiency and complete complex tasks that cannot be easily done by human beings.



Self-driving cars use AI combined with multiple sensors to generate huge amounts of data. This data combined with self-learning technologies process and validate the autonomous driving system.

Examples of AI in the business world

				
<p>Human resource management</p> <ul style="list-style-type: none"> • AI is increasingly being used in the pre-screening process in recruitment and selection. 	<p>Cybersecurity</p> <ul style="list-style-type: none"> • AI is used to understand, detect and remove unwanted cyber threats. 	<p>Data analysis</p> <ul style="list-style-type: none"> • AI enables the collection and processing of huge amounts of data quickly for firms. 	<p>Financial management</p> <ul style="list-style-type: none"> • AI allows for the automation of financial management processes such as billing and invoicing. 	<p>Automated customer services</p> <ul style="list-style-type: none"> • Chatbots are an example of allowing firms to provide customers with service without the need to hire so many workers.



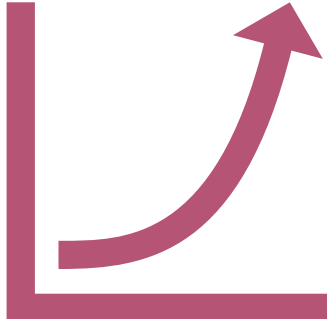

Big data

Big data

- Big data is the process of collecting and analyzing large amounts of data sets in order to identify trends and patterns that can be used in strategic planning and business decision making.



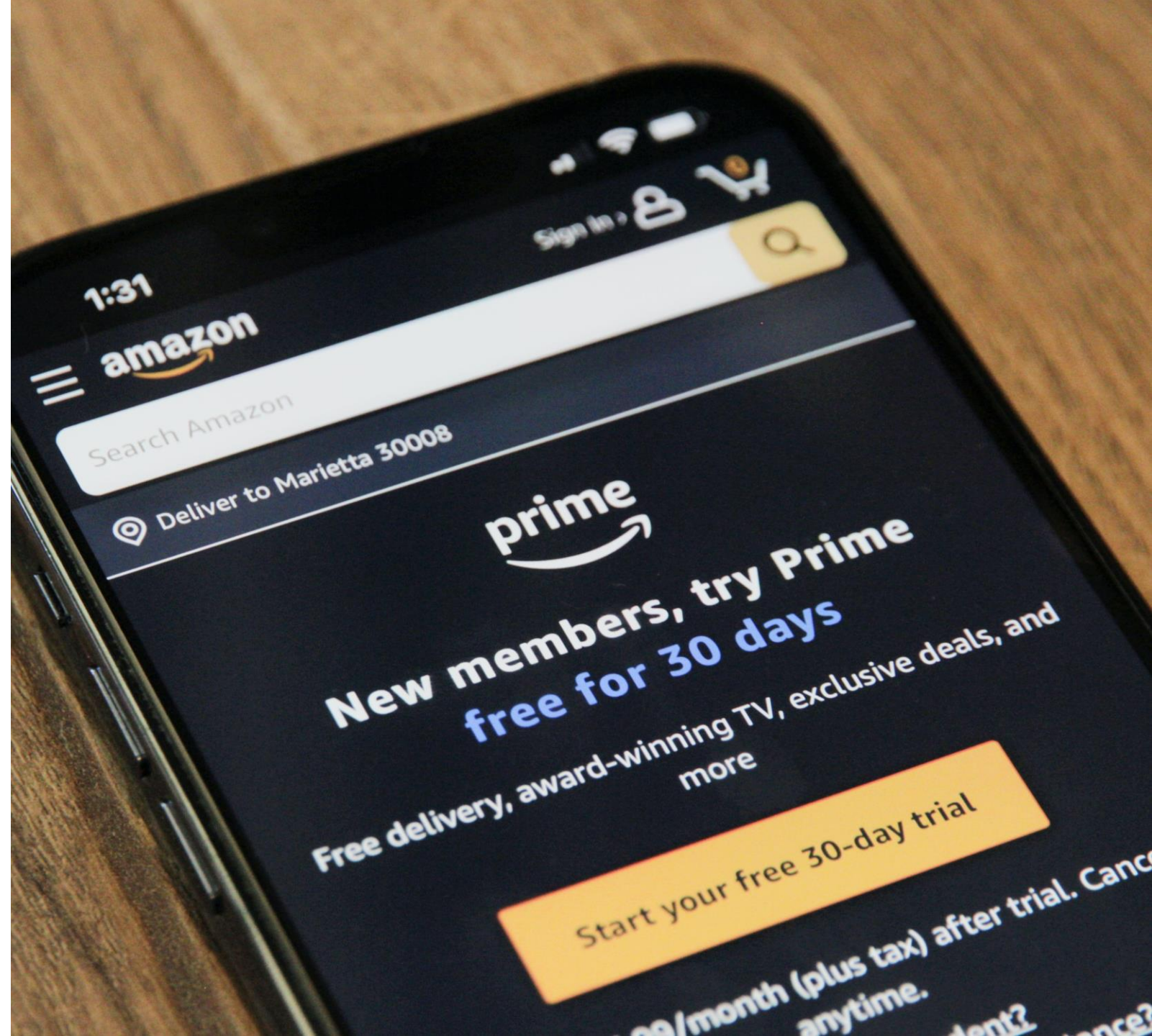
Benefits of big data

 A blue icon of a clipboard with a checklist, representing marketing or research.	 A gold icon of a funnel, representing tracking and monitoring.	 A pink icon of a line graph with an upward arrow, representing dynamic pricing.	 A purple icon of a shopping cart on a smartphone screen, representing tailored customer experience.
Marketing <ul style="list-style-type: none">• Market research is revolutionised by big data as it can generate insights into the changing needs and wants of customers rapidly in real time.	Tracking and monitoring <ul style="list-style-type: none">• Big data enables firms to have more control over its operations. This enables firms to improve their efficiency and financial performance	Dynamic pricing <ul style="list-style-type: none">• Many firms such as airlines and ride-share providers analyse big data in real time for dynamic pricing strategies.	Tailored customer experience <ul style="list-style-type: none">• Big data allows for firms to analyze buying patterns and behaviours and make tailored recommendations for future purchases.

Customer loyalty programmes

Customer loyalty programmes

- Customer loyalty programmes (CLP) refers to any customer-retention strategy that incentivizes customers to continue buying the same products and brands of the business, instead of switching to those provided by competitors.
- The purpose of CLPs is to encourage repeat purchases.



Types of loyalty programmes

- Watch the video to learn more about four common types of CLPs.
- Create a CLP for your IA business (or an alternative one of your choice).
- Feedback to the class about:
 1. How your CLP works
 2. Why the CLP would benefit the business.



The four common types of CLPs are points-based, tiered, paid and value-based.

Advantages and disadvantages of CLPs



Advantages

- Customer retention is cheaper than trying to reach new customers.
- Likelihood of success as they make customers feel special and valued, leading to repeat purchases.



Disadvantages

- CLPs must be well designed so customers feel they are getting value for money. Otherwise, there is little incentive to remain loyal.
- Data analytics must be performed purposefully to avoid drawing irrelevant conclusions from the sheer volume of big data that is generated.

The use of data to manage and monitor employees; Digital Taylorism

Digital Taylorism

- This is a modern approach to F.W. Taylor's scientific management theory on motivation.
- Firms use staff monitoring systems to track what employees are doing.
- The data gathered allows a firm to continuously evaluate and measure the performance of its employees.

BUSINESS MANAGEMENT



This video contrasts Digital Taylorism with the 1936 film *Modern Times*. *Modern Times* was a spoof on the type of manufacturing environment on which F.W. Taylor would have based his theory on motivation.

Benefits of data and staff monitoring systems



Benefits

- Improved coordination and control.
- Training and development needs can be identified easily.
- Improved productivity and efficiency
- A clearly defined system to appraise employees and determine their rewards.
- Prevention of illegal behaviour in the workplace.

Limitations of data and staff monitoring systems



Limitations

- Monitoring employees without their knowledge or consent is considered unethical and/or illegal in most parts of the world.
- Thus, employers have to have ethically and legally justifiable reasons to perform such monitoring, surveillance and data collection.

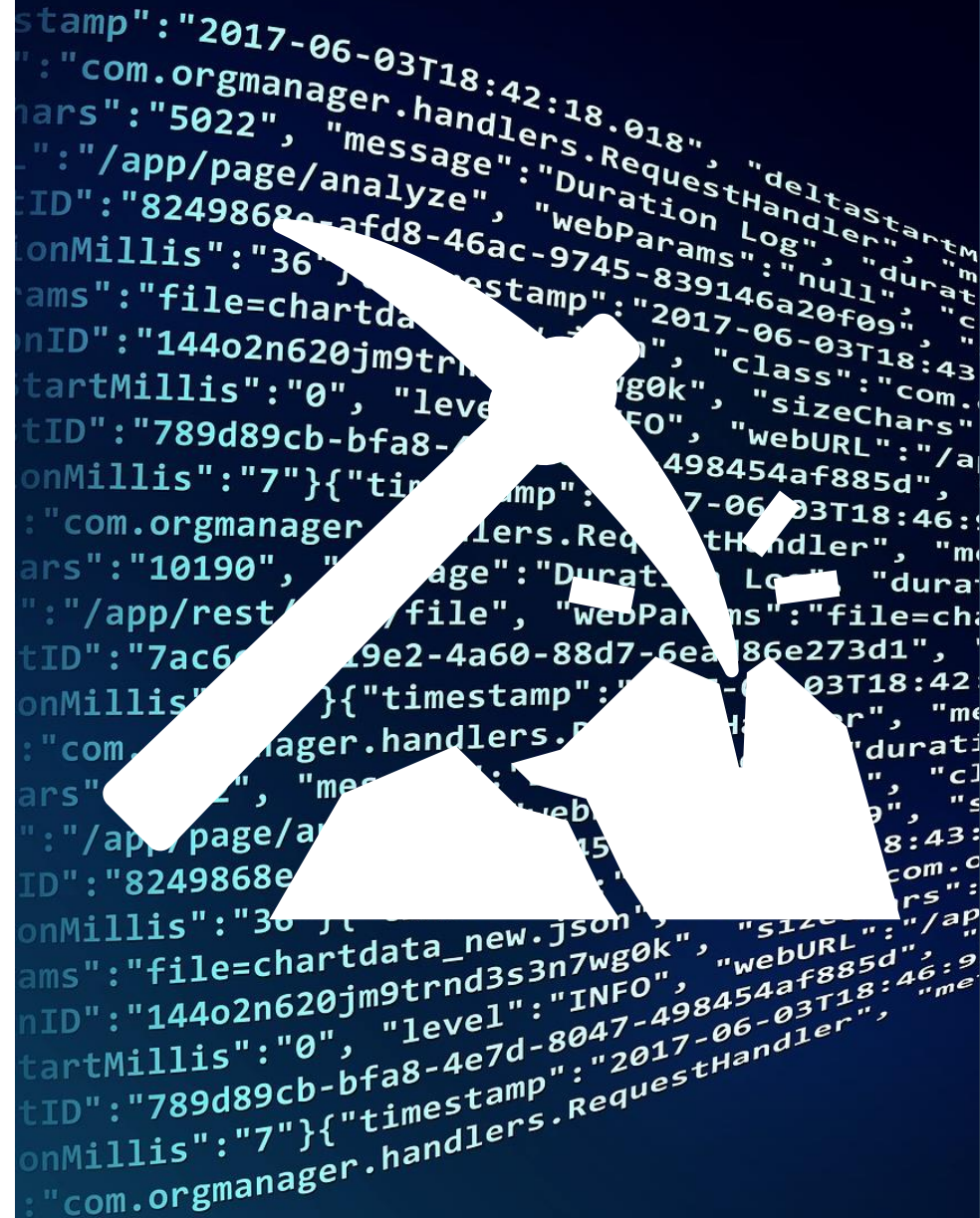
The use of data mining to inform decision-making

Data mining

- Data mining is the process of extracting raw data from large amounts of different data sets and summarizing this into useful (usable) information in a coherent structure.
- When used correctly, data mining offers huge competitive advantages for a business.

Business applications for data mining

- Consumer profiling
- Marketing planning
- Sales forecasting
- Market research
- Customer loyalty schemes
- Market basket analysis
- Production planning
- Research and development

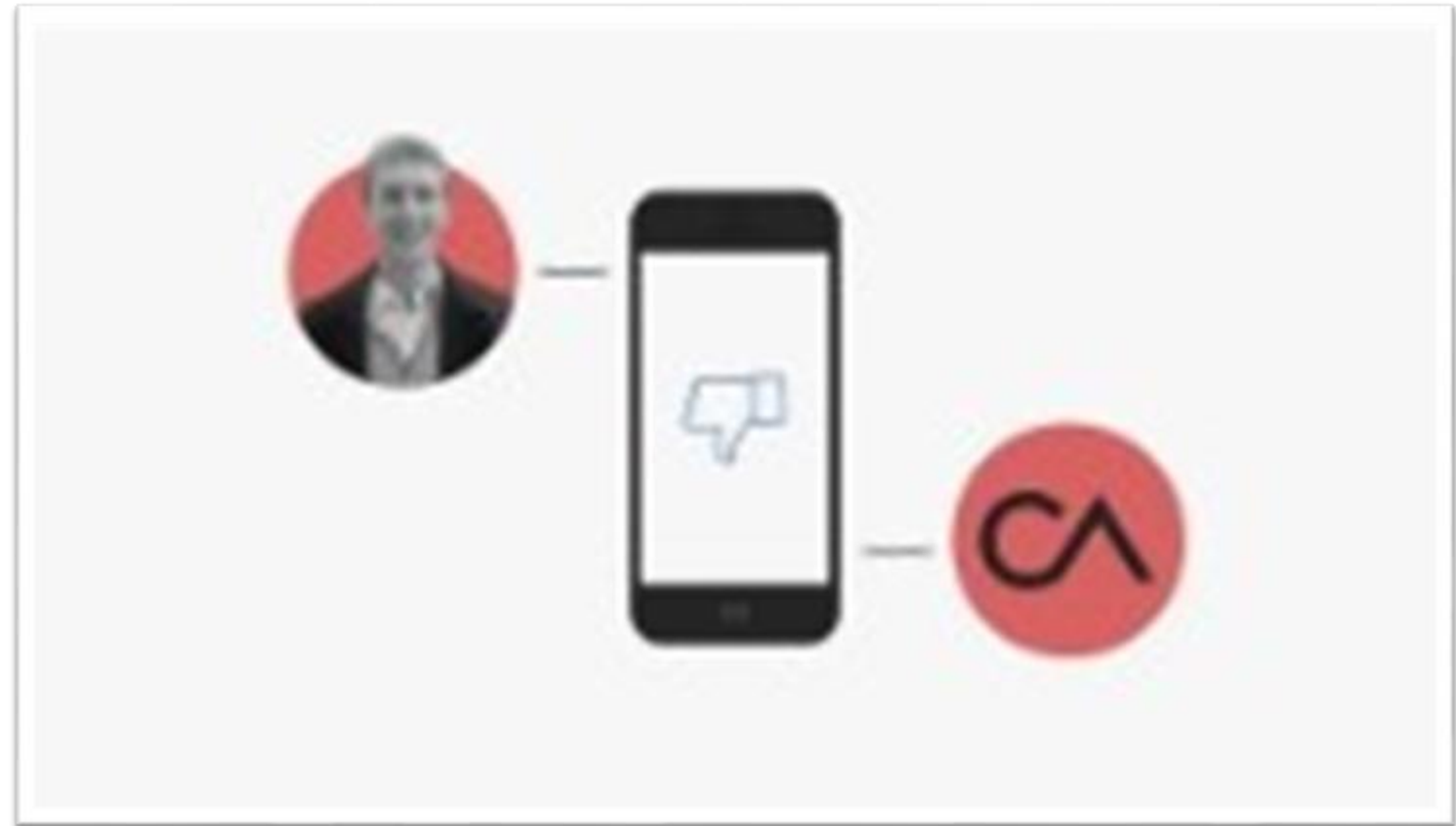


Management information systems

The benefits, risks and ethical implications of advanced computer technologies and technological innovation on business decision-making and stakeholders

Management information systems (MIS)

- MIS refers to the study of advanced computer technologies and their impact on organizations, people and the relationships among them.
- The benefits and risks have been outlined for the elements of MIS on previous slides.
- The biggest issue facing the use of MIS in business management are ethical considerations in the collection, use and sharing of data.



In the 2010s, personal data belonging to millions of *Facebook* users was collected by a firm called *Cambridge Analytica* without the consent of users. This sparked a large scale government inquiry into *Facebook* about data privacy.

The purpose of this infographic is to summarize the relationships between the following aspects of management information systems:

- Data analytics
- Database
- Cybersecurity and cybercrime
- Critical infrastructures
- Virtual reality
- The internet of things
- Artificial intelligence
- Big data
- Customer loyalty programmes
- Digital Taylorism
- Data mining

BMT: Descriptive statistics and MIS

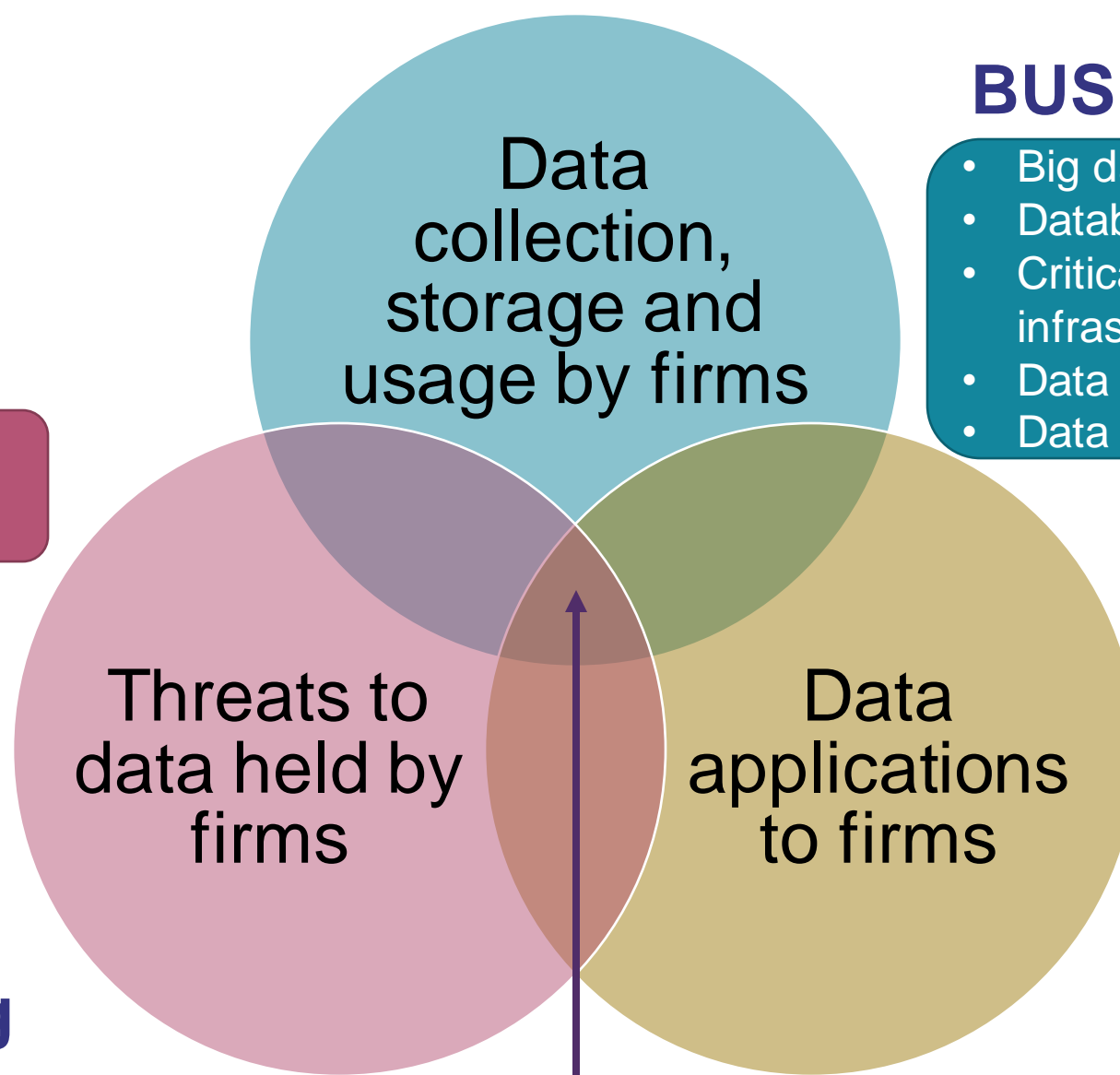
Create an infographic for topic
5.9 Management Information
Systems.



BUSINESS MANAGEMENT

- Big data
- Database
- Critical infrastructures
- Data mining
- Data analytics

Cybersecurity
and cybercrime



- Virtual reality
- The internet of things
- Artificial intelligence
- Customer loyalty programmes
- Digital Taylorism

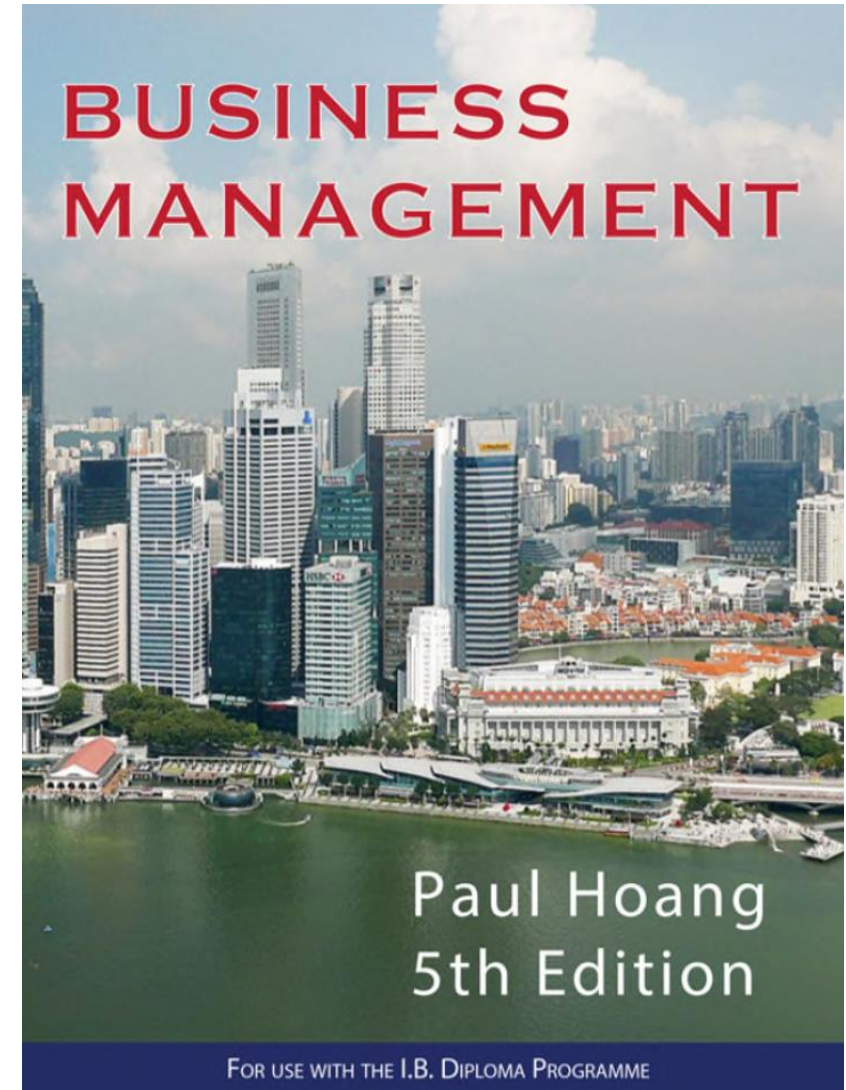
Management information systems
in Business Management

**Example of
an
infographic
summarizing
MIS in
Business
Management**

Over to you

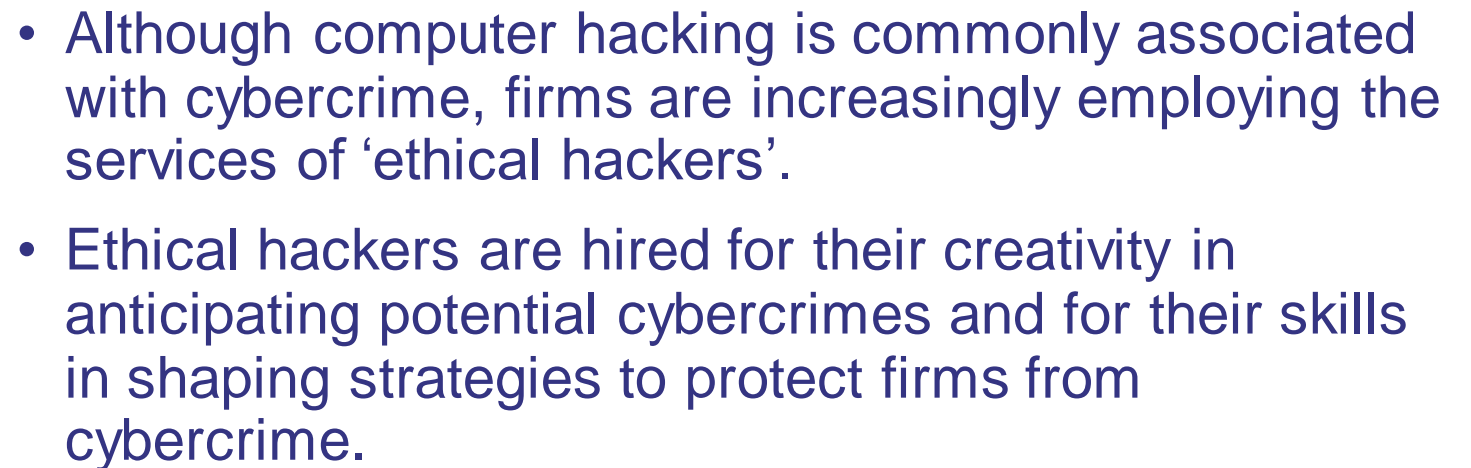
- Hoang textbook
- Question 43.1 *Meta*
 - Page 601
- Answer all parts

BUSINESS MANAGEMENT



To what extent is it ethical for an employer to scrutinize the social media posts of a prospective employee (job applicant)?





Over to you

- Hoang textbook
- *Review Questions*
 - Page 601

BUSINESS MANAGEMENT

