***Chapter 8 Summary Question Solutions***

1. Definitions: (definitions drawn from chapter 8 where possible)
   1. Quality: The degree of excellence in a good or service and its ability to satisfy the customer.

*This is quality ice cream – just fresh eggs, cream, sugar and strawberries!*

* 1. Automation: Replacement of human activity with technology.

*The production system has been automated. Robots are now in charge of lifting the engines into place, instead of human labour.*

* 1. FMS: A flexible manufacturing system involves computer control of all aspects of the operations system.

*The FMS detected the machine breakdown immediately and notified the supervisor in charge. The system highlighted the faulty part and recommended the solution required. This helped minimize the disruption associated with the breakdown because human labour was not required to search for the fault and develop a remedy.*

* 1. JIT: An inventory management system which aims to avoid holding any stock (either as inputs or finished goods). Supplies arrive just as needed for production, and finished products are immediately dispatched or sold to customers.

*The JIT strategy works well until there is a supplier issue that disrupts production. If just one supplier is late or cannot deliver at all, our production stops because we have no inventory of inputs.*

* 1. Virtual factory: A virtual factory refers to the decentralisation of productive activities so that production does not occur at one worksite; also referred to as decentralisation.

*Whilst the head office of ‘Australian Ski Wear’ is located in Melbourne. The garments are manufactured by a company in China. Australian Ski Wear has a virtual factory.*

* 1. Total Quality Management: A quality management approach where all staff members are responsible for ongoing organisational improvement.

*Where TQM is used, everyone is responsible for organisational improvement. Employees work in quality circles to identify, develop and implement initiatives which lead to quality improvements.*

1. Approaches to quality management:

Quality control – Involves checking the products being produced at various stages of the production process. The purpose is check that the products meet predetermined quality standards and to identify and remove defective products before they make their way to the ultimate consumer. The business will reflect on the defects found and then develop strategies that aim to prevent that defect from occurring again. For example, an organisation that produces soft drink might check the inputs prior to mixing, check the liquid after the mixing stage and check the finished product after it has been bottled.

Quality assurance – QA involves employing an independent consultant to examine the entire production process and advise on the adjustments that need to be made in order for the business to meet the standard required for national or international quality certification. Once the business makes the necessary adjustments, they will be certified. This means that an independent organisation has judged the business as having met national or international standards of quality excellence. For example, a biscuit factory may hire a consultant from SAI Global to advise them on how to achieve ISO certification.

Total quality management – TQM is an organisation wide approach where every employee is expected to work towards continual quality improvement in everything they do. Employees are divided into quality circles, groups of employees who work together to identify where quality can be improved and develop strategies for improving quality.

1. Distinguish between the terms:
   1. Automation and technology: Technology refers to the use of machinery and equipment to complete tasks that human labour might otherwise be employed to do. Automation is a type of technology that completes tasks with minimal human intervention.
   2. JIT and inventory: Inventory refers to raw materials, component parts, work-in-progress and finished goods that require storage at a production facility. The just-in-time approach to inventory management removes the need for inventory storage. Where JIT is used, inputs are delivered to the production facility just as they are required and finished goods are picked up for transport to customers as soon as they have been produced.
   3. Quality management and TQM – Quality management is about ensuring that the products and services being produced are of high quality. TQM is one approach to quality management.
2. Improvements in operational productivity and business competitiveness:
   1. robotics: Robotics involves the use of programmable machines to perform manual tasks. Robots can be programmed to work 24/7, completing repetitive and dangerous tasks that are not suited for human labour. They help to improve productivity by replacing human labour. Robots are expensive to purchase initially, but businesses save on labour costs and benefit from being able to complete tasks quicker, to a higher quality standard wither fewer errors. This creates a better product, which helps drive business competitiveness.
   2. CAD: Computer aided design is software that helps create and modify product designs. In the past, designers sketched their designs and created a physical mock-up or draft of their design. This process was time consuming. Every change required calculations to be redone and a new model to be constructed. The use of CAD software speeds up the process of design construction and modification which speeds up the process of product development. This reduces the cost of production development and innovation. Businesses that can produce new and improved products faster than their competitors can respond to changing customer needs quicker, which helps keep them ahead of the competition.
   3. scanning technology: Scanners are electronic devices that sense and process data. Scanning technology has been adopted in supermarkets to replace human labour. Instead of employing check out staff to scan items, and request payment supermarkets have installed scanning bays that require customers to check out their own items and follow computer prompts to process payment. Customers are often slower at scanning items compared to check out staff. Indeed, some customers resent having to scan their own items and would prefer to interact with a staff member. However, supermarkets have saved a lot of money in labour costs (and therefore improved their productivity) by transitioning to self-scan technology.
   4. JIT: Just-in-time is an inventory management approach. Where JIT is used, inputs are delivered to the production facility just as they are required and finished goods are picked up for transport to customers as soon as they have been produced. As a result, a business using JIT does not need to purchase or rent a storage facility. Warehousing can be very expensive. Businesses that use JIT improve their productivity by allocating their money to its most productive use. Money that would have been spent on warehousing can be invested elsewhere in the business.
3. Identify technology:
4. FMS - Involves computer control of all aspects of the operations system.
5. CAD – Software that facilitates the creation and modification of design.
6. Robotics - Involves the use of programmable machines to perform manual tasks.
7. The internet (email) – Employees can request meetings, delegate tasks, discuss projects through this form of instant communication.
8. CIM – Combination of CAD and CAM.
9. Scanning technology - Electronic devices that sense and process data. Inputs are scanned on arrival, and as they are utilized. Finished products are scanned as they leave the facility.

*Nick – Can you please check this one with the authors? I think the question could be a little clearer. There could be multiple answers for each sub-part. Thanks! ☺*

1. Universal responsibility:

Universal responsibility is about everyone in the organisation being accountable for achieving something.

* 1. TQM is a quality management strategy where every employee is expected to work towards continual quality improvement in everything they do. Universal responsibility is central to TQM. Employees are divided into quality circles, groups of employees who work together to identify where quality can be improved and develop strategies for improving quality.
  2. An EMS or environmental management system is a series of policies and practices that focuses on an organisation’s approach to environmental issues. Universal responsibility is important to the success of any EMS. For an organisation to reduce its impact on the environment all employees need to be committed to the cause. They need to understand their obligations under the EMS, and work together towards achieving its objectives.
  3. JIT is an inventory management approach where inputs are delivered to the production facility just as they are required and finished goods are picked up for transport to customers as soon as they have been produced, removing the need for inventory storage. Universal responsibility is important for the JIT system to work. For example, employees need to work together to ensure that the right quantity of the right inputs are ordered with enough lead time to arrive at the manufacturing facilities just as they are required for production. Employees also need to work together to ensure that the appropriate logistics solutions have been determined for delivery of finished products. JIT requires complex analysis and cooperation between staff members and multiple electronic systems.