Business As level
Operation and Project Management

Operation Management

The process of managing resources e.g. labour / capital / stock at the operational level to achieve efficient production and provision of goods / services.

Functions of Operation Management

- ⇒ *To design, create, produce goods and services for an organisation and its customers – effectively.*
- ⇒ *To direct and control the transformation process so that it is efficient and effective and adds value.*
- ⇒ *To procure appropriate inputs in a cost-effective way.*
- ⇒ *To manage an appropriate inventory level effectively.*
- ⇒ *To focus on quality, speed of response, flexibility, type/cost of the production process.*
- ⇒ *To achieve an effective labour/capital production mix.*
- ⇒ *To incorporate latest technological approaches into the production process.*
- ⇒ *To choose the optimal location for the business.*

Transformation Process

An activity (process) or group of activities that takes inputs and converts them into outputs.

Value Added

The difference between the price of a finished product/service and the cost of the input involved in producing it

Ways of value addition(food business)

- ⇒ *Reduce costs by changing supplier or purchasing in bulk or reducing wastage of ingredients.*
- ⇒ *Increase prices to reflect enhanced product / service provision.*
- ⇒ *Producing more unique / distinctive 'celebrity chef' meals.*

⇒ *Creating a more superior/distinctive eating environment / ambience.*
⇒ *Upgrade the kitchen to produce more distinctive food offerings.*
⇒ *Offer a more comprehensive / distinctive menu.*
⇒ *Carry out more effective promotion.*

Key Point: Value can be added by increasing selling price or decrease in input cost

Intellectual Capital

The amount by which the market value of a company exceeds its tangible assets (physical and financial) – the collective knowledge and skills of a company.

It can be due to the knowledge, experience, enterprise, customer relationships, and organizational technology of a business – regarded as an important intangible asset.

Importance of Intellectual Capital

⇒ *This knowledge, experience, professional skills, relationships, networks can be source of value or profit.*
⇒ *Adds to the goodwill on statement of financial position.*
⇒ *It can be source of distinctive competitive advantage as it is applied to other more tangible resources – land, labour, capital.*
⇒ *It provides an extra capability that other organizations may not have.*
⇒ *Some industries are entirely based on power of intellectual assets (software industry)*

Productivity

The effectiveness/efficiency of productive effort i.e. the amount of output produced against the inputs used to produce

Productivity = output / # of employees

Productivity= Output/ time period

Ways of improving productivity

⇒ *improve the training of staff to raise skill levels – staff could become more efficient*
⇒ *improve worker motivation – intrinsic and extrinsic rewards*
⇒ *invest in more effective/advanced technology – might mean more capital intensive process of production*
⇒ *more efficient management, e.g. better supplies, better machine maintenance, better people management.*
⇒ *Set clear goals and measure performance.*
⇒ *Recruit better employees.*
⇒ *Give better feedback.*
⇒ *Improve quality assurance/control.*
⇒ *Reduce waste.*

⇒ *Introduce Kaizen/cell production (lean Production).*
⇒ *Improved communication.*

Labour intensive Process

Benefits of labour intensive production process

- ✓ *More labour may afford the opportunity to give a more unique product in production processes e.g. hand-crafted furniture.*
- ✓ *More labour may afford the opportunity to give a more personal service when dealing with the customer face-to-face.*
- ✓ *Labour intensive production is more appropriate and necessary for some businesses e.g. hotels and restaurants due to the customer service nature of the business.*
- ✓ *In certain situations, it is less expensive to use labour than expensive machines especially in countries where labour is inexpensive.*
- ✓ *In some businesses, machines are not appropriate for the work being carried out, perhaps it involves a complex set of actions or decisions.*
- ✓ *Capital investment can be expensive and finance may not be available.*
- ✓ *There is less of a fixed cost associated with many types of labour and, particularly in recession times, labour is more flexible and costs can be cut by 'laying off' staff.*
- ✓ *Businesses might get government grants to support new jobs, encouraging labour intensive approaches.*

limitations in using a labour-intensive production process.

- ✖ *Repetitive and boring jobs are often done better using capital.*
- ✖ *Some dangerous or heavy lifting jobs are better done using capital.*

Capital Intensive Process

Capital intensive processes rely mainly on capital i.e. plant and machinery, IT systems, etc. rather than labour. Many car plants use robots for heavy lifting and paint spraying. Initial cost is high but can save on labour costs in the long term.

Benefits of Capital intensive process

- ✓ *Production can continue 24/7 so output is high, good for flow production*
- ✓ *Quality of work is consistent so good for standardised products*
- ✓ *Work is accurate and precise so less customer dissatisfaction and waste*
- ✓ *Good for tasks which are dangerous and unpleasant for people*
- ✓ *More output per hour than labour so unit costs fall*
- ✓ *Machines don't need breaks or holidays or get ill and no HR issues*

Effectiveness

Effectiveness is meeting business objectives by using inputs appropriately to meet customer needs (doing the right thing)

Efficiency

Efficiency is producing output at the highest ratio of output to input ('doing the thing right') and should be the concern of all businesses and business operations.

Importance of efficiency

- ⇒ *A concern for efficiency is at the heart of objectives such as survival, high productivity, profitability, growth, market share*
- ⇒ *To be successful a business needs to be efficient in the deployment of all resources – land, labour and capitalisation*
- ⇒ *Inefficiency can result in high costs leading to un-competitiveness and loss of market share*
- ⇒ *The transformation operations process needs to add value – inefficiencies will reduce value added*
- ⇒ *A manufacturing business will need to focus on input resource efficiencies and will be concerned with the most efficient production methods and waste reduction in order to control and improve costs. This requires a focus on capital, labour and land deployment, not just at the operations level but throughout the business.*
- ⇒

Ways of improving efficiency

- ⇒ *Improve / increase employee training / recruitment – more skills.*
- ⇒ *Improve staff motivation / morale.*
- ⇒ *Job rotation to reduce monotony.*
- ⇒ *Invest in more advanced equipment – e.g. robotics.*
- ⇒ *Change the actual system of production – e.g. to flow production.*
- ⇒ *Decrease waste.*
- ⇒ *More efficient management / supervision.*
- ⇒ *Better communication channels.*
- ⇒ *More appropriate inventory management.*

Production Methods

Job Production

A job production process involves the output of a single product at a time according to individual specifications.

Advantages (Cake Business)

- ✓ *Customers can have their cake personalised to their requirements – increase revenue/profits*
- ✓ *Allows business to charge a higher price*
- ✓ *Higher quality cakes – increase word of mouth promotion for business*
- ✓ *Ability to hire and develop highly skilled and versatile staff.*
- ✓ *Workers more likely to be motivated – more demanding and interesting work.*

Disadvantages

- ✖ *Higher cost – requires specialist skills and inventory*
- ✖ *Loss of economies of scale*
- ✖ *Inventory is perishable but need to keep in stock, just in case*
- ✖ *Higher price leading to lower demand*

Batch Production

Batch production – groups of items are made together. Each batch is finished before starting the next block of goods.

Advantages

- ✓ *Allows faster production than job production.*
- ✓ *Teams can work on different parts of the batches, division of labour.*
- ✓ *Is flexible so many types / designs of items e.g. gold Jewellery / silver can be made.*
- ✓ *Allows small levels of stock to be built up so product is always available.*
- ✓ *Possibility of economies of scale in raw material purchasing.*
- ✓ *Partly finished items can be processed quickly through final production stages to meet urgent orders.*
- ✓ *Reduced need for expensive skilled employees.*

Disadvantages

- ✖ *Not going to be unique pieces so price will be lower.*
- ✖ *Employees may be less motivated than if doing job production as work is less specialised.*

PROBLEMS IF BUSINESS CHANGES FROM JOB TO BATCH PRODUCTION

- ⇒ *Lower morale/job satisfaction – workers are used to working on unique product and will have immense pride in their work. This may fall if working on a batch production line.*
- ⇒ *Deskilling – if machinery is being used, this may replace the skills of the employees used to make unique product*
- ⇒ *Training needs – the new machinery will involve training, how will business manage this*
- ⇒ *Fear of change/communication issues – employees are likely to be very wary of the new machinery/batch production. business needs to have a clear communication and employee participation strategy.*

Flow Production

Flow production – the continuous movement of products through the production process. When one task is finished the next task starts.

Importance of flow production

- ⇒ *Producing items in a continually moving process might be the best production for the business, e.g. in production of identical standardised cars on an assembly line.*
- ⇒ *Can make use of high technology methods – robot arms.*
- ⇒ *Can mass produce items to a consistent standard.*
- ⇒ *Offers economies of scale and low costs for a one-size-fits-all product –*
- ⇒ *possible price reductions and increased sales can result.*
- ⇒ *Can produce different content products on the same production line (e.g. Coke, Sprite).*
- ⇒ *The market demands high volume, capital is available, unskilled workforce available might suggest a choice of flow production.*

Mass Customization

Mass customisation is a production process where there is a flow production of products with many standardised components but with flexible equipment – often computer controlled that allows for variations in the product – the production process is supported by a flexible and multi-skilled workforce.

Mass customisation is a company's ability to efficiently mass produce

products that meet individual consumer wants and needs.

Examples may include functional and aesthetic features of computers, cars, clothing, M&Ms, trainers, cards, chocolates, a flower bouquet for a special occasion etc.

Benefits

- *High customer satisfaction as they are getting exactly what they want which leads to improved company reputation and sales.*
- *Reduced costs of inventories of unsold goods and raw materials*
- *Higher profit expected if customer demand and satisfaction is high*
- *High level of added value and therefore premium price can be charged*
- *High level of involvement of consumer in design / production process*
- *Customised products more attractive to consumers than uniform products*
- *Companies can develop strong relationships with their customers and this loyalty leads to return business time and again*
- *Workforce is more fulfilled as they take part in numerous tasks as opposed to one production line responsibility*

WHICH METHODS IS BEST (EVALUATION)

⇒ **skills of employees**

⇒ **the requirements of the target market**

⇒ **the extent of demand.**

It may be more profitable to use job production in the niche market for exclusive designer jewellery with a high profit margin, but this will only be achieved if the staff are skilled enough to be able to produce unique items of sufficiently high quality to justify a high enough price. Batch production for most items may allow higher output.

Economies of Scale

reductions in the unit costs of a business resulting from an increase in the scale of operations

⇒ *purchasing economies – discounts for bulk buying.*

⇒ *technical economies – use of flow production lines and sophisticated computer equipment; high cost equipment spread over large-scale production.*

⇒ *financial economies – large firms advantaged in raising loan finance and at better rates.*

⇒ *marketing economies – these costs (e.g. sales force) spread over a higher level of sales.*
⇒ *managerial economies – large businesses able to employ more specialised managers.*
⇒ *Concentration economies of scale – business may be situated in an area with other business and gain from reduced cost deliveries, passing trade etc. this may have led to either a decrease in direct or indirect costs or an increase in revenue, either of which could have contributed to the increased profits and profit margins.*

Diseconomies of scale

The situation where (average) costs of production increase when the scale of operation is increased.

⇒ *Diseconomies of scale are generally related to management challenges/ problems associated with directing a large organisation, often with many divisions and spread across different locations/ countries.*
⇒ *Communication is often a major problem leading to diseconomies - excessive use of non-personal communication – mass of messages – long chains of command – messages distorted – information is delayed – poor decision-making – lack of feedback – management efficiency reduced.*

⇒ *Impersonal organisations – lose contact with employees – de-motivation – danger of staff alienation, especially in flow line manufacturing companies (use team work and job enrichment to address these issues).*

⇒ *Poor co-ordination – with growth – difficult often to maintain control over the disparate parts of the organisation – purpose and mission not understood – duplication of effort – bureaucracy – this poor co-ordination can lead to higher production costs.*

⇒ *Top heavy companies – company politics.*

Technology

Benefits of technology (Car manufacturing)

- ✓ *Improvements in quality of design and manufacture.*
- ✓ *More standardised product quality, less room for human error.*
- ✓ *Improved productivity (allowing for 24/7 production – no need for rest days or holidays)*
- ✓ *Lower average cost (extra fixed cost more than compensated by reduction in operating costs)*
- ✓ *Speedier development of new cars.*
- ✓ *Quicker process of product design and development – animation and virtual reality can conserve resources (time, materials, energy)*
- ✓ *Lead to more customer choice, more flexible manufacturing, less lead time, less waste, higher finished quality.*

Effects of technology on business

- ⇒ *Technological change / advancement could mean greater efficiency in productive process.*
- ⇒ *However, failures in newly installed technology may cause disruption to production.*
- ⇒ *Might require business to purchase new technically advanced machinery – new investment required.*
- ⇒ *Changes in technology will take time to implement.*
- ⇒ *Businesses that do not invest in and use new technology may fall*
- ⇒ *behind competitors.*
- ⇒ *Impact on employees – new training required to work new advanced*
- ⇒ *machinery.*
- ⇒ *Might mean fewer staff in operations management.*

Computer Aided Design

CAD is the use of computer technology to assist in the design of a product. CAD packages allow designers to produce 2D/3D models of products using touch screens, light pens etc. – virtual reality is constructed, use of scanners, digital cameras, enhanced the ability and possibilities of the design function.

Benefits of Computer Aided Design

- ⇒ *Flexibility – allows business to design product and edit the designs (and allows customers to edit designs) with minimal cost implications. Designs can be sent electronically to customers for approval – this may speed up the lead time from order to production.*

⇒ *Accuracy – CAD may allow the designs to be more accurate and improve the quality of business product.*
⇒ *Reduced storage space for designs – can save business costs.*
⇒ *Easier to find previous designs and reproduce past designs/reprints.*
⇒ *It may be quicker to produce designs using CAD than hand drawing – this can reduce costs*
⇒ *Templates can be set up to save time/costs*
⇒ *CAD can be linked with CAM to speed up the production process/less chance for errors.*
⇒ *Assists in reducing costs in the long term so help in maximising value for shareholders (links to mission statement)*

Computer Aided Manufacturing

CAM uses computer software to assist in the manufacture of products, the process of using specialised computer to control, monitor, and adjust the tools and machinery used to manufacture, robotics and other forms of automation.

benefits

✓ *Assists in reducing costs in the long term so help in maximising value for shareholders (links to mission statement).*
✓ *Reduces costs and will help continue to improve profits.*
✓ *Assist business in being competitive – the car industry and suppliers are competitive, so CAM will reduce cost pressures and assist business in being price competitive*

Limitation of technology (CAM, CIM)

✖ *Damage to the relationship of workers*
✖ *Initial cost of technology*
✖ *Training of workers*
✖ *Reliability of the machinery (repair / breakdown)*
✖ *May conflict with CSR, CAM could result in redundancies if automation develops further and may be seen as not socially responsible (damage to image)*
✖ *Impact on employees and morale – fear of redundancies, change, could conflict with the mission statement from an employee perspective.*

Process Innovation

new or improved method of production by using equipment, software such as robots in manufacturing, computer tracking of inventory, internet tracking of parcels

Aspects of process innovation

⇒ *How the product is produced*
⇒ *The equipment used to produce the products*
⇒ *The technology used in production*

Benefits of process innovation

- ✓ *Possible economies of scale*
- ✓ *Expansion of business product portfolio*
- ✓ *Mass customisation – could have more varieties of their current candy – may*
- ✓ *be able to have specific candy for organisations*
- ✓ *Can customise product for national and international markets – especially*
- ✓ *important because of the growth in the international market*
- ✓ *Replace of old machinery – more efficient?*
- ✓ *Save direct costs by making workers redundant*
- ✓ *Increased efficiency*

Process innovation and Operational efficiency (international parcel delivery business)

process innovation – new or improved method of using techniques, equipment or software.

operational efficiency – ability to deliver products/services in the most cost-effective manner whilst still ensuring high quality of products/service/support.

Importance

- ⇒ *Necessity of establishing a competitive advantage in a very competitive industry.*
- ⇒ *Customers demand service regularity, consistency, safety, door-to-door services and customised solutions.*

Ways of Process Innovation (parcel Delivery business)

- ⇒ *Development of software packages that*
  - *Reduce costs through route optimisation.*
  - *Provide customers with specific time-guaranteed delivery.*
  - *- Use barcode systems to speed up the logistics of global delivery by effective sorting of parcels.*
  - *Use tracking systems that give customers specific information of the delivery process.*
- ⇒ *Innovation might come through Non-human delivery (drones) work being done e.g. Amazon/Domino's Pizza*
- ⇒ *Efficient partnerships with SMEs in foreign countries to complete the logistics cycle – spreading their ICT knowledge.*
- ⇒ *Providing more real time informed decision-making that improves loading operations and ensures that fewer trailers are travelling with spare capacity.*
- ⇒ *Logistical decisions to work through the night in specific locations.*
- ⇒ *Building a smarter and more connected distribution network.*

EVALUATION

⇒ **Cost of implementation**

⇒ **Other measures like use of employees and personal interaction with customers may be more important.**

⇒ **process innovation can lead to significant cost reductions and improvements in operational efficiency, however this his to be balanced against the effect on other stakeholders.**

Relocation of business

The movement of a business from one area/region to another.

Why business do relocate

⇒ *The rising costs of an existing facility/to save costs.*
⇒ *Tax breaks/government incentives in a different location.*
⇒ *Growth that requires expansion in a new location.*
⇒ *To move closer to the target market.*
⇒ *To move closer to a larger group of consumers.*
⇒ *Workforce issues – availability of labour/capital.*
⇒ *Quality of life issues in a new location.*
⇒ *To avoid trade barriers.*
⇒ *Better transport links.*
⇒ *Economic issues/recession.*
⇒ *Move nearer to distribution channels.*
⇒ *Proximity to suppliers.*

Inventory Management

The activities involved in maintaining an appropriate/optimal amount/ level of inventory to assist cash flow and keep costs low. To ensure uninterrupted production/service levels i.e. JIT inventory

Advantages of effective inventory management

- ✓ *Ensures there are sufficient inventories to meet unforeseen changes in demand – prevents shortages.*
- ✓ *Ensures out of date inventories are not held e.g. fresh food or technological products.*
- ✓ *Prevents wastage due to unsuitable storage – makes better use of resources/saves money.*
- ✓ *Prevents excessive storage costs and high opportunity cost.*
- ✓ *Good management can secure good discounts from suppliers – saving*
- ✓ *money.*
- ✓ *Leads to repeat customers – as they know their needs will be met.*

Cost and benefits of low level inventory

Costs

- ✖ *Insufficient inventory to meet demand will likely lead to lost sales and reduced revenue.*
- ✖ *Loss of customer loyalty if items are not available.*
- ✖ *Lack of raw materials can lead to idle production.*
- ✖ *Exceptional / new orders may not be met.*
- ✖ *Low levels of inventory will likely prevent bulk buy discount.*
- ✖ *Needs good relationship with supplier, which may be hard to achieve.*

Benefits

- ✓ *The opportunity cost of capital invested in stock is reduced.*
- ✓ *More usable cash available.*
- ✓ *Storage costs are reduced.*
- ✓ *Reduced risk of wastage / obsolescence.*
- ✓ *Easier organisation of inventory.*
- ✓ *More space available.*

Benefits of high level inventory

- ✓ *A buffer against anticipated high demand.*
- ✓ *Respond to seasonal variations in demand.*
- ✓ *To eliminate/reduce the risk of stock-out costs.*
- ✓ *In anticipation of future supply problems.*
- ✓ *To provide sufficient levels of inventory to meet customer demand.*
- ✓ *To take advantage of discounts for bulk purchasing.*
- ✓ *To respond to anticipated future price rises by suppliers.*
- ✓ *To improve customer service with high levels of product/service availability.*
- ✓ *To reduce transportation costs.*

Inventory Control Chart

- ⇒ *Can be used to make sure business do not run out of stock – v important as some business require quick response(retailer)*
- ⇒ *Can analyse the lead time required for re-orders*
- ⇒ *Can make sure business do not hold too much stock*

Buffer Stock

Keeping safety stock, extra stock that is maintained to reduce the risk of a shortfall in components due to uncertainties in supply and demand.

Lead time

The normal time taken between ordering new inventory and its delivery / receiving the goods

Just In Time Inventory

A method of managing inventory where inventory is ordered when required / according to the level of production / or only when a customer order has been placed.

Benefits (JIT) (Manufacturing Business)

- ✓ *Stock levels of raw materials, components, work in progress and finished goods can be kept to a minimum*
- ✓ *Less stock holding reduces storage space and saves rent/insurance costs*
- ✓ *Less working capital tied up in stock as stock is only bought when needed*
- ✓ *Less likelihood of stock perishing, becoming obsolete or out of date*
- ✓ *Better able to keep up with changing trends and customer demand than with more long-term production methods*
- ✓ *Avoids build-up of unsold finished product if demand suddenly changes*
- ✓ *Less time is spent on checking and re-working the product of others as the emphasis is on getting the work right first time*
- ✓ *Storage areas can be used for more productive processes*

- ✓ *Potential quicker response to customer demand and greater potential output/production*
- ✓ *Defect rates reduced, less wastage, greater customer satisfaction*
- ✓ *Parts used in production may be newer, more up to date, and at lower*
- ✓ *cost*

Limitation

- ✖ *failure of supply delivery could mean empty shelves, product shortage –*
- ✖ *delivery costs (frequent) may be high –*
- ✖ *may not be able to benefit from bulk buying (depends on the size of the retail business) –*
- ✖ *very dependent on quality of supplier (it may, of course, be its own delivery service in a large retail business).*
- ✖ *It is often difficult for retailers to accurately calculate customer demand.*
- ✖ *Expensive to introduce JIT in a business.*
- ✖ *Opens a business to a number of risks especially those associated with the supply chain. A minor disruption in production from just one supplier can force a manufacturer to stop production at very short notice. Toyota had a fire in its supplier of brake parts and had to stop production within 3 days losing $15 billion as a result.*

Evaluation

- ⇒ **assessment of risk for a business of using JIT**
- ⇒ **it may well depend on the nature of a business (manufacturer and retailer)**
- ⇒ **relationship with stakeholders especially suppliers.**

Factors affecting the level of inventory held by business

- ⇒ *type of product/material (e.g. perishable goods)*
- ⇒ *type of industry (retailing, manufacturing)*
- ⇒ *depends on stock wastage*
- ⇒ *concern for discount on bulk purchases*
- ⇒ *a business needs to weigh up the costs and benefits of holding inventory- too much and costs are high – too little and sales may be lost.*