Introduction to Business Operations - N12814

Introduction

- An operation is where you take an input and transforming it into an output, to be a successful operation is where you add extra value during the operation.

The three main types of transformed resource are…

1. Materials
- These can be transformed either physically, by location, by ownership or by storage.

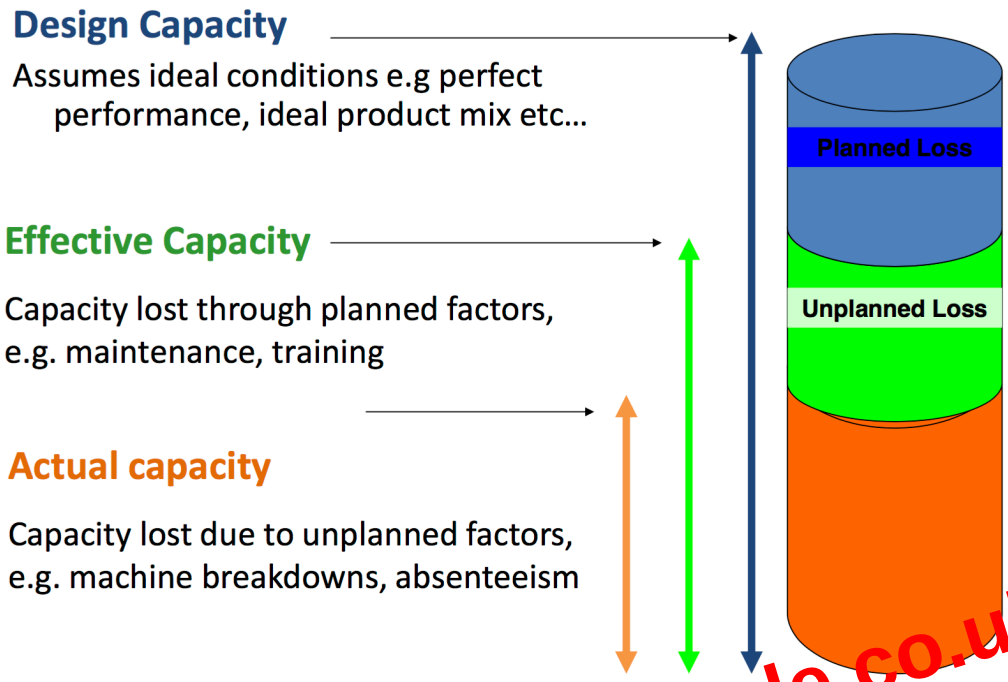
2. Information
- This can be transformed by property (e.g. accountants analysing details), by possession (e.g. market research), by storage (e.g. libraries), or by location.

3. Customers
- They can be transformed physically e.g. hairdressers.
- By storage e.g. hotels
- By location e.g. airplanes

Operations management – Managing the transformation of an organisation's inputs into finished goods and services.

The Transformation Process

- This is the measure of the amount of goods and services that were provided e.g. number of customers per show or number of customers on a flight.



1. Design capacity
- Maximum theoretical output of a system in a given period under ideal conditions

2. Effective capacity
- Capacity a firm expects to achieve given the current operating constraints.

3. Actual capacity
- The capacity remaining after loss of output due to both planned factors and unplanned factors include equipment breakdown, worker illness and variability.

$$Utilisation = \frac{Actual\ output}{Design\ capacity}$$

$$Efficiency = \frac{Actual\ output}{Effective\ capacity}$$

Service Design

CHARACTERISTICS OF SERVICES

The characteristics of services are split into 4…

1. Tangibility
- Pure services do not have tangible inventory

2. Simultaneity
- Services are produced and consumed simultaneously (can perish)

3. Degree of customer contact
- Can be highly interactive, this lead to a need for in-depth understanding of processes including interactions.

4. Heterogeneity
- Different customers can have a wide variety of expectations and this can make standardisation of processes difficult.

Service design

The service concept is the overall set of expected benefits that the customer is buying is termed.

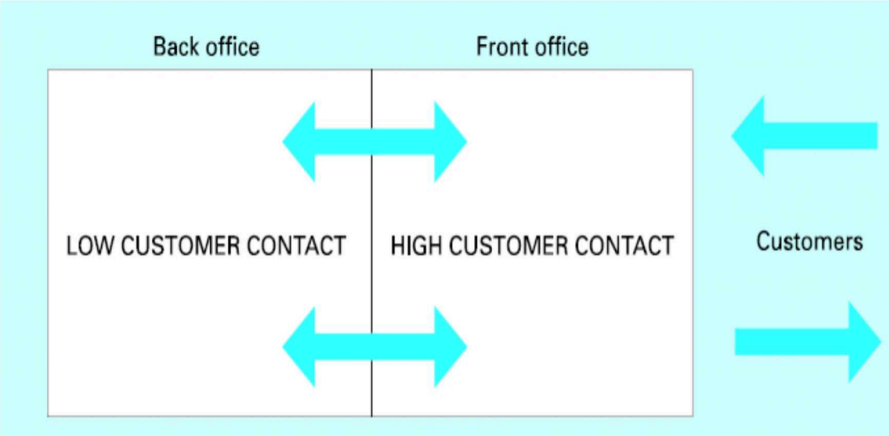
The service package is a bundle of goods and services with the following four features…

1. Explicit services
- Those that are readily observable by the sense and consist of the essential features of the service.

2. Implicit services
- Those that relate to psychological benefits that the customer may sense only vaguely, but can still be very important.

3. Supporting facility
- The physical resources that must be in place before a service can be offered.

Service delivery system design



	Passenger Airline
Front office – *direct customer contact*	Reservation and booking Check in In-flight attendance Flight transfers Information desk
Middle office – *indirect customer contact*	Ticket pricing Flight schedules Holiday flight offers
Back office – *no customer contact*	Aircraft maintenance Flight preparation Accounts Refunds

- The degree of customer contact can vary across different parts of the service operations.
- Front office focuses on customer interaction
- Back-office focus on efficiency.

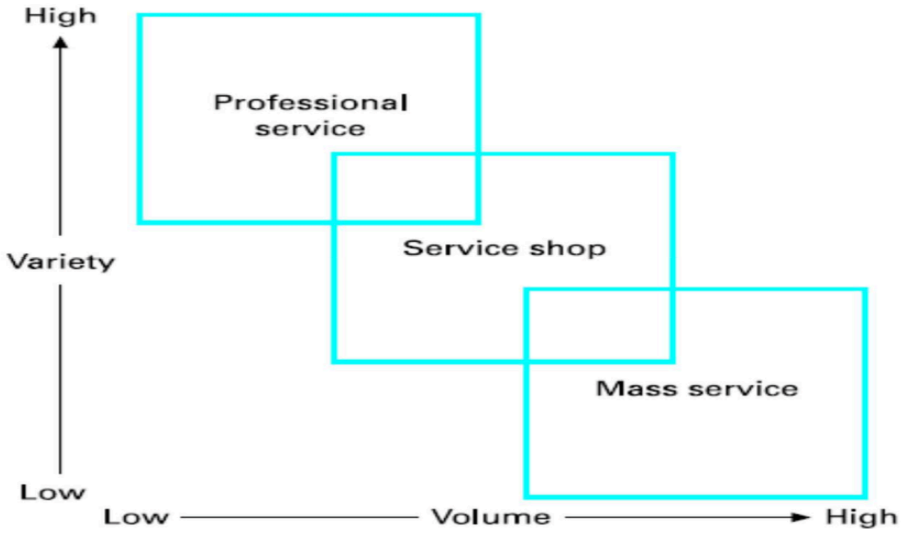
Determining front and back office activities

1. Identify whether some service activities can be undertaken away from the customer
- Some services are inherently front office requiring direct customer contact

2. Once away from the customer, should activities go to the back office or stay at front.
- Be made more efficient
- Improve customer perceptions of service

3. Where should the service activities to be split to be most effective?

Service process types



Queuing and Handling Product Variety

QUEUING

- Known as the problem of variable demand
- Many operational systems involve queues or networks of queues
- Particularly important in services because of impact on customers, costs, safety critical services.
- Core problem in operations management
- The provision of adequate service levels to satisfy demands that may be highly variable over time.
- Demand may vary in when it occurs and the type and magnitude of service required.

<u>How to manage queues</u>

Variability of demand and service content leads to queuing.

The nature and impact of queues will depend on…

- Process structure (series, parallel, complex)
- Queue discipline
- Different arrival and service patterns

Many performance metrics are of interest…

- Queue and throughput time, queue length, lost business
- Average and extreme behaviour may be of interest

Queuing theory helps us predict behaviour.

Approaches to managing variability and queues

- Identify and work to acceptable levels of service
- Manage demand to spread it more effectively
- Reduce variability to improve system performance and achieve high levels of system utilisation
- Poor resources and share the strain
- Replace multiple queues by a single queue or multiple services by a single service facility
- Management policies and actions are often the most important factors in achieving improved performance.

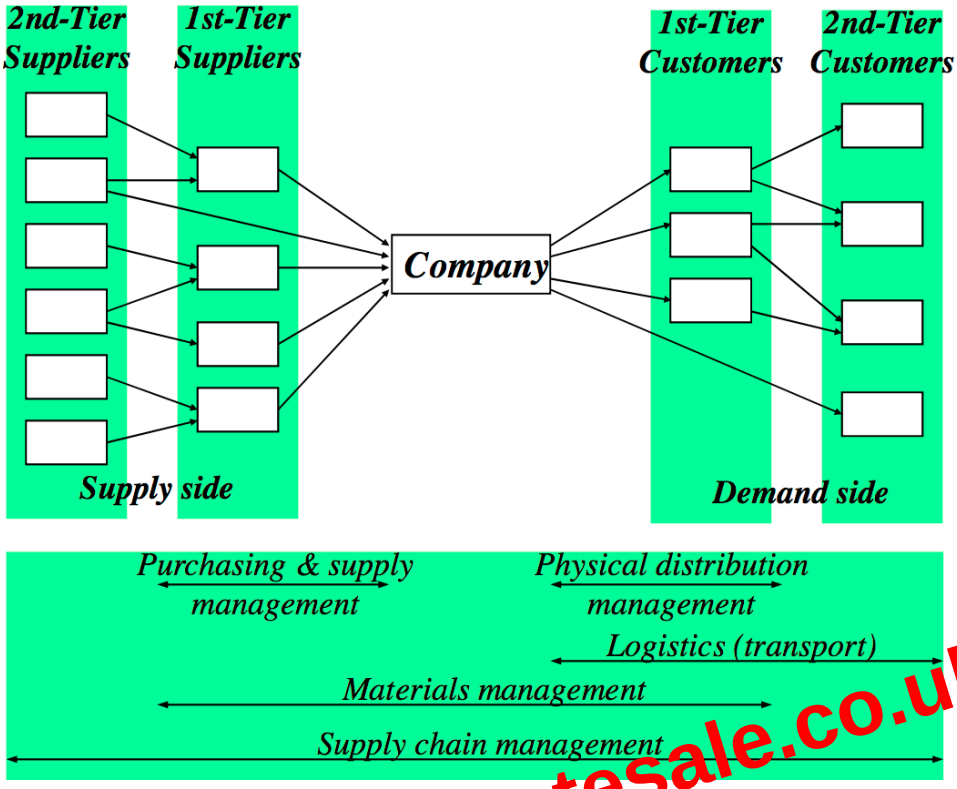
The Psychology of Queues

- In service design you need to understand the customer's perspective & design the service appropriately

For queuing…

- Unoccupied time feels longer than occupied time
- Process waits feel longer than in-process waits.
- Anxiety makes waits seem longer
- Uncertain waits feel longer than known, finite waits
- Unexplained waits feel longer than explained waits
- Unfair waits feel longer than equitable waits
- The more valuable the service, the longer the customer will wait
- Solo waits feel longer than group waits

Supply chain structure & common terminology



Supply chain networks in clothing and automotive

Clothing…

- International networks
- Various forms of ownership/relationships
- Unlikely to won the supply network and plants
- May own their own Regional distribution centre network
- Retail network is their shops

Automotive…

- International networks
- Various forms of ownership/relationships
- May own their own assembly plants

The causes…

- Responding to market research
- Inflated orders
- Demand forecast (may be wrong forecast)
- Long cycle times (If overseas, may take a while)
- Lack of visibility to demand information

The consequences are…

- Increased safety stock
- Reduced service level
- Inefficient allocation of resources
- Increased transportation costs

Challenges in SCM

- Ramping up is being able to build up capacity quickly. If it is a good customer, they must produce quickly
- Businesses may not want their suppliers to know what they are doing due to leaked information.

Physical configuration

Network physical configuration has big effect on performances in the way of costs, delivery and reliability.

ISO 9000 Quality Standard

- A quality standard between suppliers and a customer
- Developed by the International Standards Organisation (ISO).
- Having a predefined quality standard reduces the complexity of managing a number of different quality standards when a customer has many suppliers.
- The focus is on processes

ISO Certification

- A specific organisation or facility is certified to the standard.
- A facility must document its procedures for every element of the standard to achieve certification.
- Procedures are audited by third parties periodically
- System ensures that the organisation is following a documented, and thus consistent, procedure. This makes errors easier to find and fix.