Managing Processes & Systems & Projects
Deliver
Capacity management (12)
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Capacity Management
Slack et al (2009)

Yield management
- Try to use capacity to its full potential
  - e.g. Airlines --> price discounts, over - undebooking

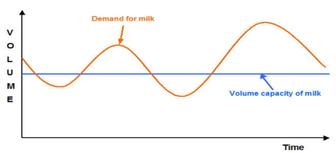
Cumulative demand
- calculate the cumulative demand and its cumulative supply
- **For any capacity plan to meet demand as it occurs its cumulative production line must always lie above its cumulative line**

2 How well are capacity mismatches understood?
- Depends on the mixture of predictable and unpredictable variation
- Make forecasts useful - Make processes flexible to meet change in demand
- **The greater an operations market knowledge, the more capacity management will focus on predictable demand-capacity mismatches**
- If unpredictable --> forecasting makes better sense
  If predictable --> forecasting does not make sense but market knowledge how markets can be changed

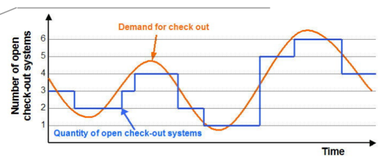
3 What should be the operations base capacity?
- **the higher the base level of capacity is the less capacity fluctuation is needed to satisfy demand**
- operations performance objectives
  - High base leads to capacity cushion but higher costs / inventory
  - Low base leads to the need to build up inventories and increased working capital
- Perishability of output
  - if food etc. high base level required because good can't be stored that long
- degree of variability in demand or supply
  - if high variability then high wait times and slow throughput and low utilization

1 What is the operations current capacity?
- Depends on product or service mix
  - most business take aggregrated view (products and services bundled together)
- Duration of output
  - Peak capacity can't be maintained over time
  - Capacity = what can be sustained of longer time period
- Change of specification of product/service
  - e.g. Postal service over christmas
- Capacity leakage
  - Process doesn't perform as expected
  - Maintenance
  - New requirements etc.
- **OEE = Overall equipment effectiveness**
  - Time equipment is available a
    - **Avalability rate = Total operating time / available operating time**
  - Speed = throughput rate p
    - **Performance rate = net operating time / total operating time**
  - Quality of product or service q
    - Quality rate = Valuable operating time / net operating time
  - **OEE = a x p x q**

4 How can demand-capacity mismatches be managed?
1. Ignore demand fluctuations and keep capacity constant = **level capacity plan**



2. Adjust capacity to fluctuations in demand = **chase demand plan**
   - Overtime,Annualized hours, Part-time staff, Outsourcing, Change output rate, Workforce Size etc



3. Attempt to change demand = **demand management**
   - Goal is to transfer customers demand from peak to quiet periods
     - Constrain customer access
     - Price differentials
     - Scheduling promotion
     - Service differentials

Capacity is the output an operation can deliver in a defined unit of time

Deals with demand and supply sometimes demand should not been fulfilled

There can be a shortage of capacity or fluctuation in demand