Coping with Variability and Uncertainty

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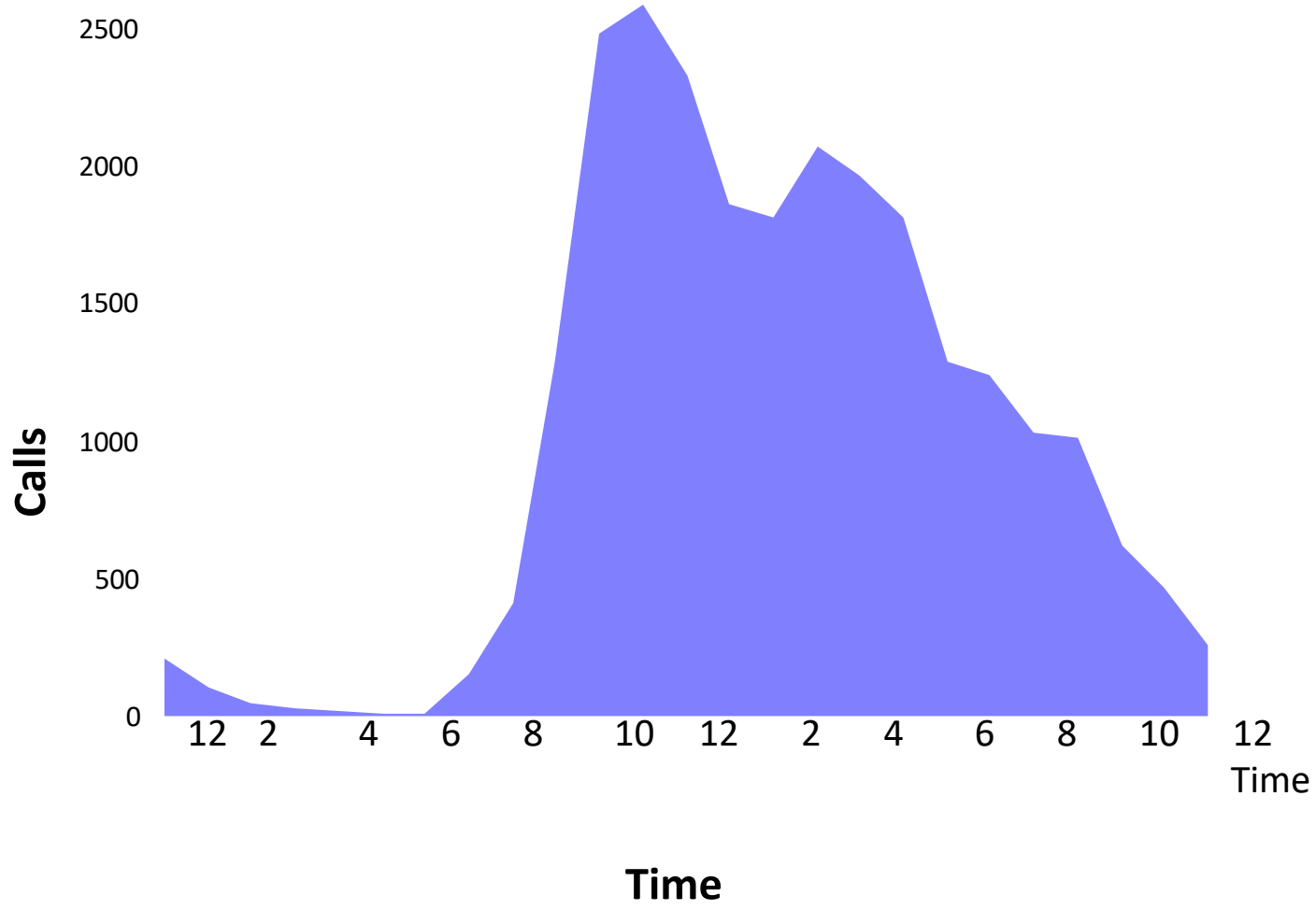
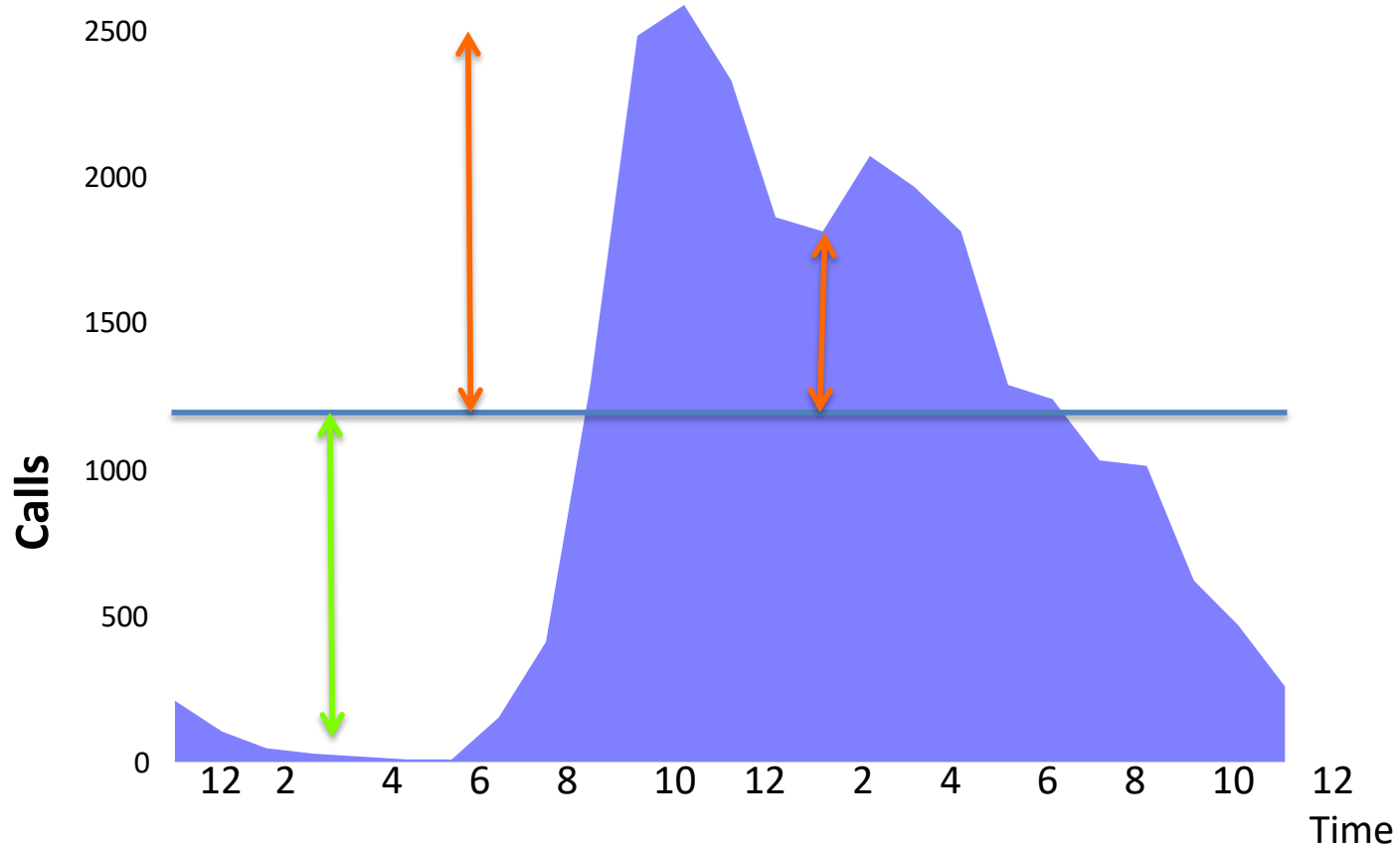
Example of Customer demand over time



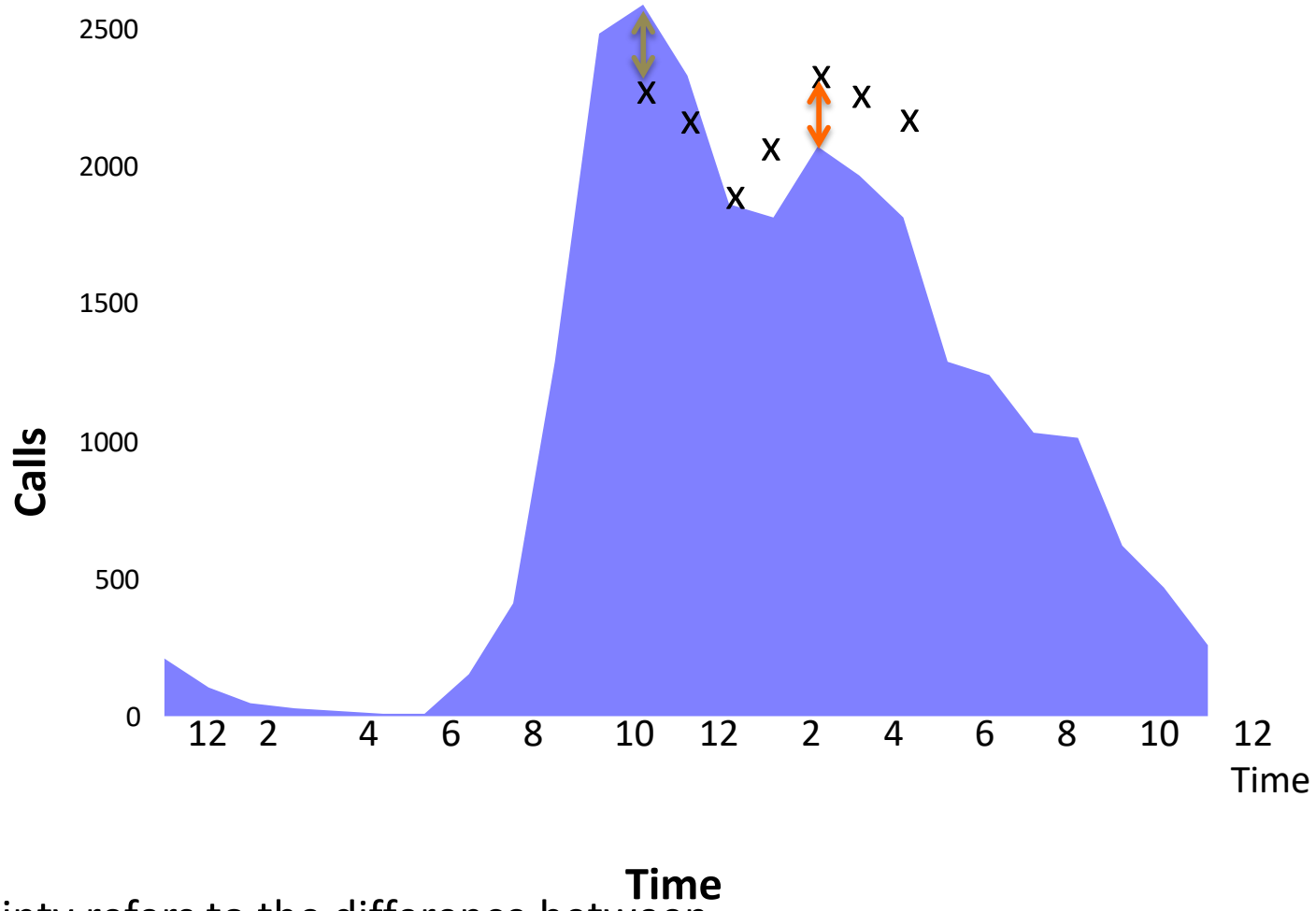
Variability



Time

Variability refers to the variation of the actual demand compared to its average value

Uncertainty



Uncertainty refers to the difference between
the actual value of the demand, and the forecasted one

It is possible to have a high variability and low uncertainty, or high uncertaity and low variability

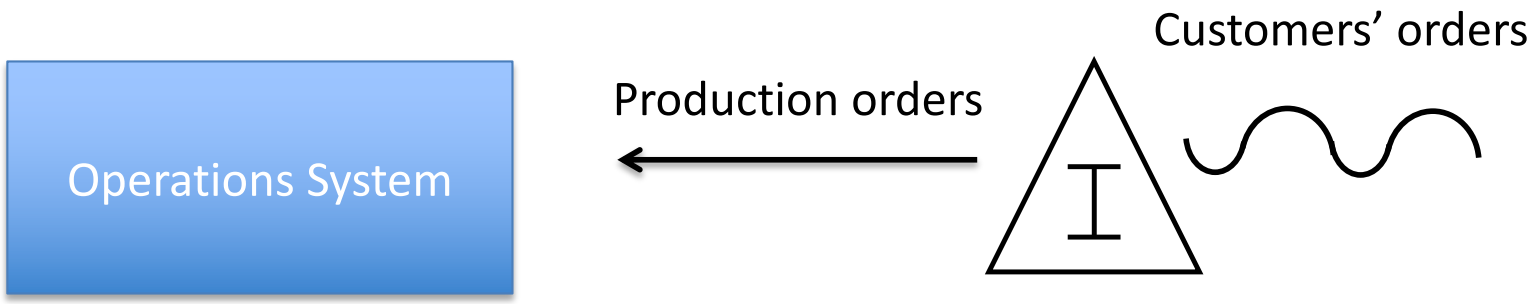
How can we cope with these situations?

Coping with Variability

Variability can be addressed (reduced) using 3 strategies:

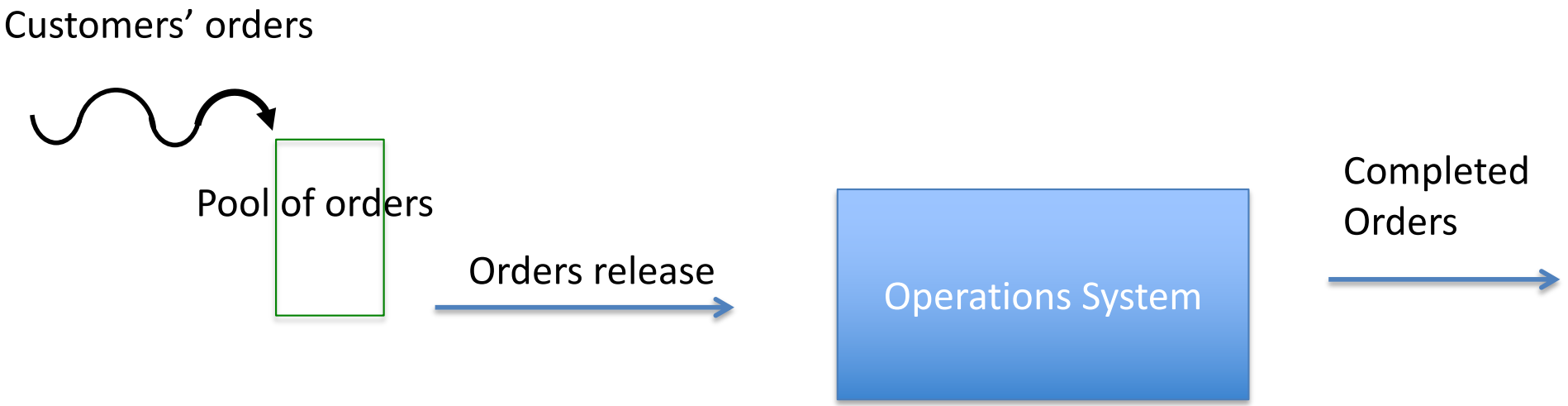
- **Decoupling** demand and capacity (Buffering)
- **Managing** Capacity
- **Managing** Demand

Decoupling Capacity and Demand Downstream: Inventories



Physical products MTS

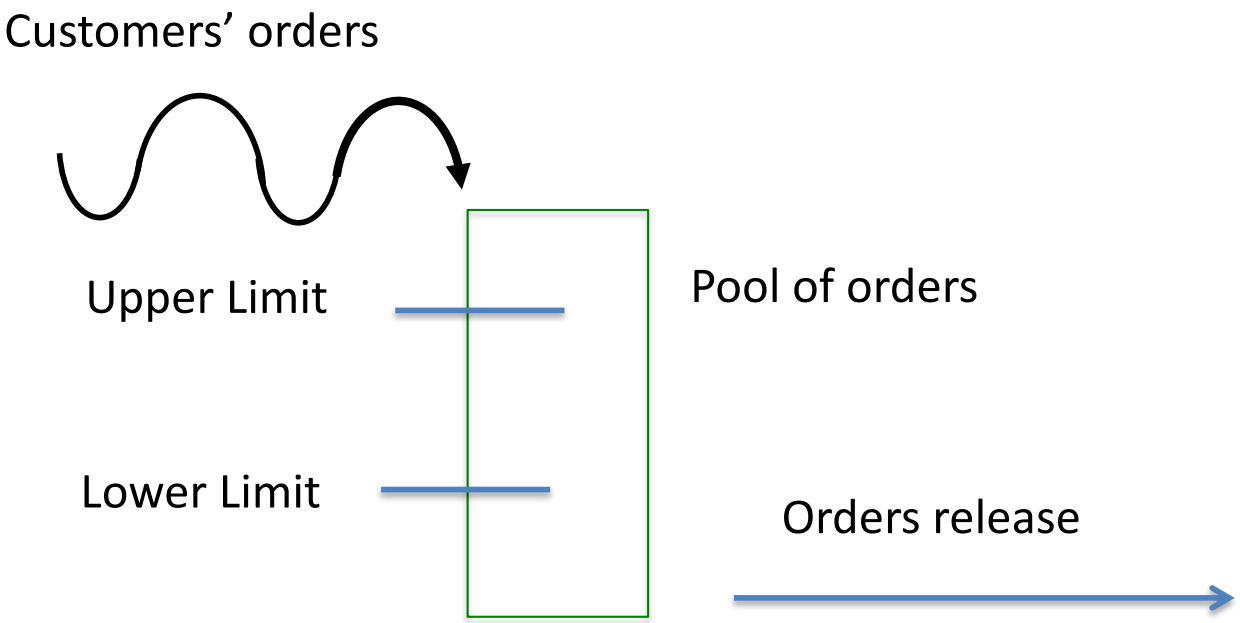
Decoupling Capacity and Demand Upstream: Pre Shop Pool



average Demand rate = average Release rate

Service Companies and MTO manufacturing companies

System regolation (temporary changes)



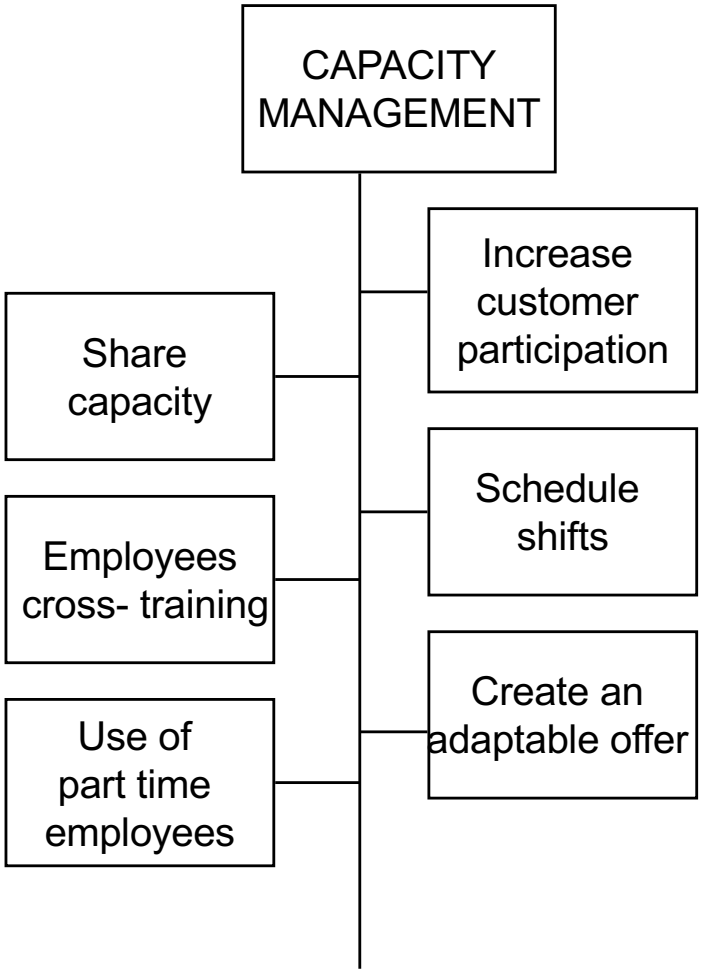
Exceeding UL:

- Decrease orders intake
- Increase capacity (e.g. overtime) and release rate)
- Promise longer delivery date

Below LL:

- Foster sales (e.g. through advertising)
- Decrease capacity (e.g. close for 1 day)
- Promise shorter delivery date

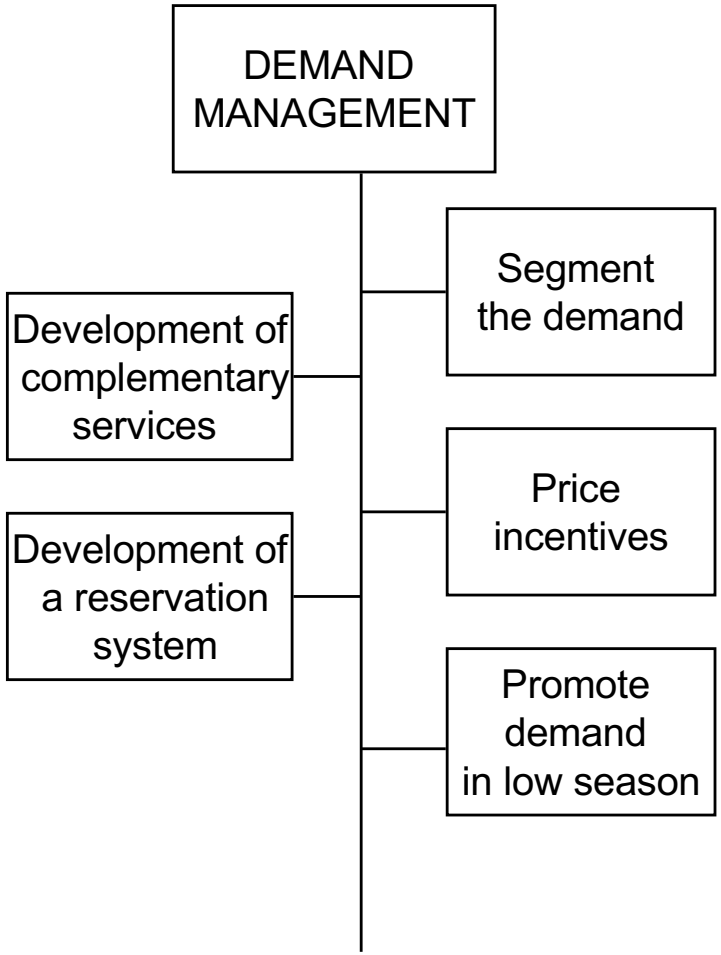
Capacity Management



Critical aspects

- Flexibility (time and cost) in moving the levers
- The Minimum SIZE of the change
- Minimum TIME the change lasts
- How much in advance the demand is known (how much time do you have to change)

Demand Management



Managing Uncertainty

Uncertainty can be addressed using 3 (+1) strategies:

Additional decoupling between demand and capacity

Capacity Buffer (always available, or only upon call. E.g medical doctor)

Manage delays in delivery

Additional strategy

Attack the causes of Uncertainty: Analyse Uncertainty and find an explanations for the deviations from the forecasted value

Understand better the underlying phenomenon

Transform Uncertainty into Variability

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