Operations Management in the Health Sector

Summary

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Capacity

• Health care is a service industry
• In the service industry one of the key challenges is meeting peak demand
• Covering peak demand with capacity can lead to inefficiencies due to overstaffing for off-peak hours
• ➔ important to do staffing based on demand analysis; example: Walk-In Clinic case (see next slide)
**Scheduling**

- Queuing effects can be widely observed in the service sector.
- If the server cost is higher than the client cost (e.g., per hour basis) → make sure to have a pool of clients waiting.
- If the server cost is lower than the client cost → add capacity to serve clients.
- Generally, high utilization levels of resources will give rise to queuing effects (i.e., even when average capacity > average demand, you will still see a waiting line).
- Queuing effects in services generally can be addressed via psychology (first cut approach), followed by in-depth analysis and possibly operational improvements.
Queues: Pitfalls of Specialization

- Generally, service specialization only useful if offset by higher revenues (e.g., Business Class passengers); else: specialization removes pooling and thus decreases efficiency; i.e., gives rise to following problems:

  - **Problem of integrality**
    - One service line needs 3.5 therapists
    - Another line needs 4.5 therapists
    - → need to hire 9 therapists to meet demand

  - **Problem of uncertain demand**
    - As demand for service lines fluctuates (and it does: see Exhibit 4), therapists will not be able to be assigned from one service line to another → loss of pooling effect
Queues: Psychological perspective

- First and second law of services:
  I) Satisfaction = Perception - Expectation
  II) It’s hard to play catch-up once you left a bad impression

- Principles of waiting:
  - Unoccupied time feels longer than occupied time
  - Pre-Process waits feel longer than in-process waits
  - Anxiety makes wait feel longer
  - Uncertain waits seem longer than known waits
  - Unexplained waits feel longer than explained waits
  - Unfair waits feel longer than fair waits
  - The more valuable the service to me, the longer I’ll wait
  - Waiting alone feels longer than waiting in group (but: risky!)

The Physiology of Queues

- Physiological aspects can also help improve the customer experience.
  - Noise
  - Illumination
  - Distances
  - Ventilation
  - Access
  - Climate
  - Comfort
  - Crowding
  - Provision of information about the queue
  - Active or passive maintenance of the queue discipline
Process Flow

- Always a good idea to map the process flow and clearly identify queues
- In queuing networks (i.e., one service process followed by another) speeding up early stages doesn't necessarily speed up whole process ➔ start from back to check queues
- Network should be analyzed for peak demand
- Use staffing concepts (e.g., different staffing during different days/hours, overlapping shifts etc.) to meet demand shifts during different periods

Scheduling OR slots: Buffers

- Two limiting operational strategies: railway schedule (never depart before due time, try to arrive to next station on time) and roadrunner or relay race (depart as soon as a runner receives the baton from the previous one)
- Trade off between a very large buffer for each slot (protect the beginning of each slot) and no buffer (increase OR occupancy)
- An intermediate stage is to ask doctors to be ready on call some time before their scheduled starting time. Then keep them informed on how the previous surgeries evolve.
- Pooling of several operations reduce the need for buffers.
- Resource buffer (as in Critical Chain Project Management) - keep downstream activities informed about current state of affairs (particularly if finish early, so that they can start early)
Health Care Service Sector

- Service management: always two customers - internal and external
- If internal customers (i.e., employees) are dissatisfied with their job, service quality will suffer
- In health care MUST treat doctors and nurses with greatest care - i.e., very difficult to implement changes
- Resources can be VERY expensive (e.g., trained doctor with experience), so must be doubly careful not to upset this group

Strategy

- Often, the answer to problems lies outside the current framework → make sure you are using the right framework!
- Who is your client?
- What are your cost drivers?
- What are your key performance indicators (KPI)?
- What is your objective? (this is often the most difficult question)
- ....