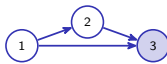


Operations Management

A-Level Business • Topic 9

A-Level Business



Operations Management

What we will cover

- 1 Location & relocation
- 2 Optimum scale
- 3 Managing quality
- 4 Lean production
- 5 Critical path analysis
- 6 Recap



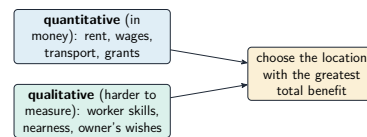
automation drives modern operations

1 Location and scale

Operations Management

Location and scale

Location and relocation



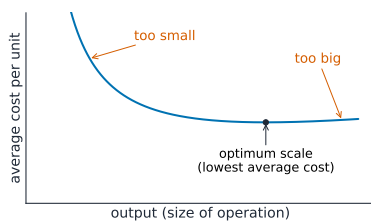
Choosing a place (**location** 选址) or moving (**relocation** 迁址) weighs:

- **quantitative factors** 定量因素 – rent, wages, transport, grants
- **qualitative factors** 定性因素 – skills, nearness, owner's wishes

Offshoring 离岸外包 moves production abroad.

Operations Management
Location and scale

The optimum scale of operation



Average cost falls then rises as a firm grows:

- **economies of scale** 规模经济 – savings from size (bulk buying)
- **diseconomies of scale** 规模不经济 – costs rise if too big

The **optimum scale** 最优规模 is the output where average cost is lowest.

2 Quality and lean operations

Managing quality

quality control

stage → stage → stage → inspect check only at the end

quality assurance

stage → stage → stage quality built in at every stage

Quality 质量 is how well a product meets the customer's needs.

- **quality control** 质量控制 – check at the **end**
- **quality assurance** 质量保证 – build in at every stage
- **TQM** 全面质量管理 – everyone owns quality
- **benchmarking** 标杆管理 – copy the best

Lean production



Lean production 精益生产 makes products with the least possible **waste** 浪费 – of time, materials, space and effort.

Capacity management and technology

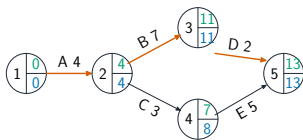


Capacity management 产能管理 matches output to demand; new **technology** 技术 (automation, data) lifts output, quality and cost together.

3 Project planning

Critical path analysis

top = earliest start time critical path (zero float)
bottom = latest finish time



CPA 关键路径分析 plans a project as a network of tasks.

float = LFT – duration – EST.

The **critical path** 关键路径 is the chain with **zero float** – it sets the shortest project time.

4 Recap

Worked example – float in a network

Activity C has EST 8, LFT 15 and a duration of 4 days. Find its float, and say what that means.

- $\text{Float} = \text{LFT} - \text{duration} - \text{EST}$
- $= 15 - 4 - 8 = 3 \text{ days}$
- C can be delayed up to 3 days without delaying the whole project.
- Activities on the critical path have zero float – delay them and the project slips.

Float is spare time, and it shows where resources can safely be moved from. Zero float = critical: those activities need the attention.

Topic 9 – key takeaways

1 Location

quantitative & qualitative factors; offshoring

2 Optimum scale

lowest average cost; economies vs diseconomies

3 Quality

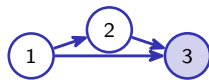
control finds late; assurance & TQM prevent

4 CPA

critical path has zero float; sets project length

Check yourself

- 1 Rent is a quantitative or qualitative factor?
- 2 At the optimum scale, what is lowest?
- 3 Which quality method prevents faults at every stage?
- 4 What is the float of a critical activity?



Answers 1. quantitative 2. average cost per unit 3. quality assurance 4. zero