Lancaster University
Management School

MSCI 102
Introduction to Operations Management

Anas Iftikhar

Lecturer in logistics and supply chain management, Dept of Management Science.

a.iftikhar@Lancaster.ac.uk

Teaching and support team

Lancaster University Management School

Lecturers

- Anas Iftikhar – also module convenor
- Sunil Banga s.banga@lancaster.ac.uk

Seminar tutors

- Xiaosheng Zheng (Postgraduate Researcher) x.zheng20@lancaster.ac.uk
- Henry Kasadha (Postgraduate Researcher) h.Kasadha@lancaster.ac.uk

UG administration: Helena Greenwood h.greenwood@Lancaster.ac.uk

Teaching sessions

Lancaster University Management School

IMPORTANT: Read the course outline on Moodle

- 2 Lectures / week x 15 weeks
  - Every Monday and Thursday
  - Check your timetable every week carefully
  - Participate / post questions on discussion forum for the week
  - Talk to your seminar tutors if you find anything hard to follow
- 1 Seminar /week (weeks 12-25)
  - Check your timetable for your group seminar time and location
  - Seminars will be on the topic of the previous week
  - Problem solving and application - based on a case from the text or a problem sheet
  - You need to work on the problem before the seminar
  - You'll get a briefing at the seminar where you can check your answers
  - Attendance is required and will be registered by the University

Assessment

Lancaster University
Management School

- One small-group piece of coursework (50%)
    - set week 14, release week 15 (briefing session)
    - in groups of 4, self-chosen by default
    - Submission deadline ??
- One final exam in summer (50%)
    - briefings in last week of teaching

Indicative schedule (also on Moodle under announcements)

Lancaster University Management School

Week	Topic
11	Introduction to OM
12	Supply Chains
13	Inventory Management
14	Capacity Analysis (CWA set)
15	Coursework Briefing
16	Demand forecasting (no seminars in week 16)
17	ERP & Lean
18	Quality Management
19	Risk Management
20	Project Planning & Control

Week	Topic
21	Supplementary Topics in OM
22	Sustainable Operations
23	Humanitarian operations
24	Research in operations management
25	Exam Briefing

Moodle

Lancaster University
Management School

- Announcements will be made on Moodle
- Overheads posted on Moodle at least 24 hours before each lecture
- Seminar cases and problems posted by the end of the previous week, usually on Thursday
- Seminar solutions posted in the following week after all seminars have been held – usually on Monday

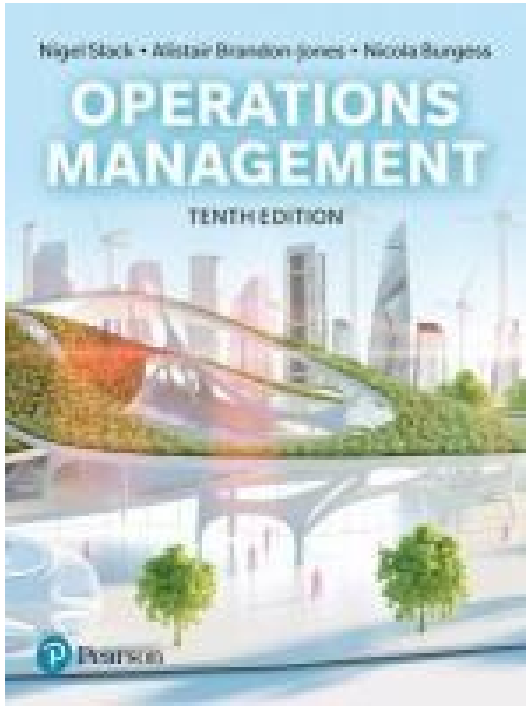
Textbook

Lancaster University
Management School

Slack *et al* (200X).

Operations Management, Pearson

- 10th (2022) edition
- available as e-book from library
- occasional set reading
- occasional cases
- reinforcing, alternative reading



Making contact

Lancaster University Management School

1. Registration, dates, hand-ins, regulations etc…
   - h.greenwood@lancaster.ac.uk
2. Help with topics / general support: contact the relevant seminar tutors.
3. Specific lecture, CWA, Exam questions…contact lecturer tutors – preferably after lectures or using the Moodle general questions forum.

Do ask if you need help but always make an attempt first

- proper learning requires an attempt at something

When you email…

Lancaster University
Management School

•Please use your Lancaster email account

- every year important emails get spammed

Please check that –

- You are emailing from your Lancaster address – emails from private accounts will not receive a response
- Address to the person you are emailing
- Include subject heading
- Include content in email – don’t send emails with just a subject heading or attachment
- Check spelling

What are Operations?

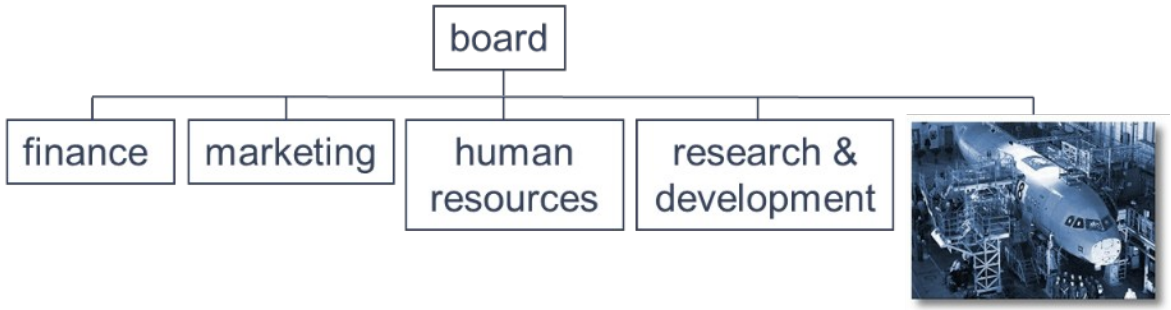
Lancaster University Management School

The production of goods or delivery of service

The ‘other’ part of the business….

The part responsible for 60-70% of the costs, assets & people (Hill, 2005)

The part we take for granted



What are Operations?

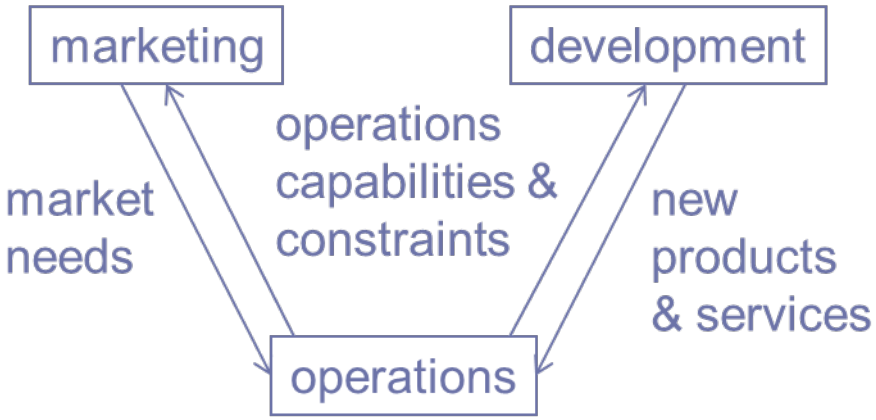
Lancaster University Management School

One of the 3 ‘core’ functions (Slack et al)

- Developing the market (marketing)
- Creating products and services (design and development)
- Producing and delivering to the market (operations)

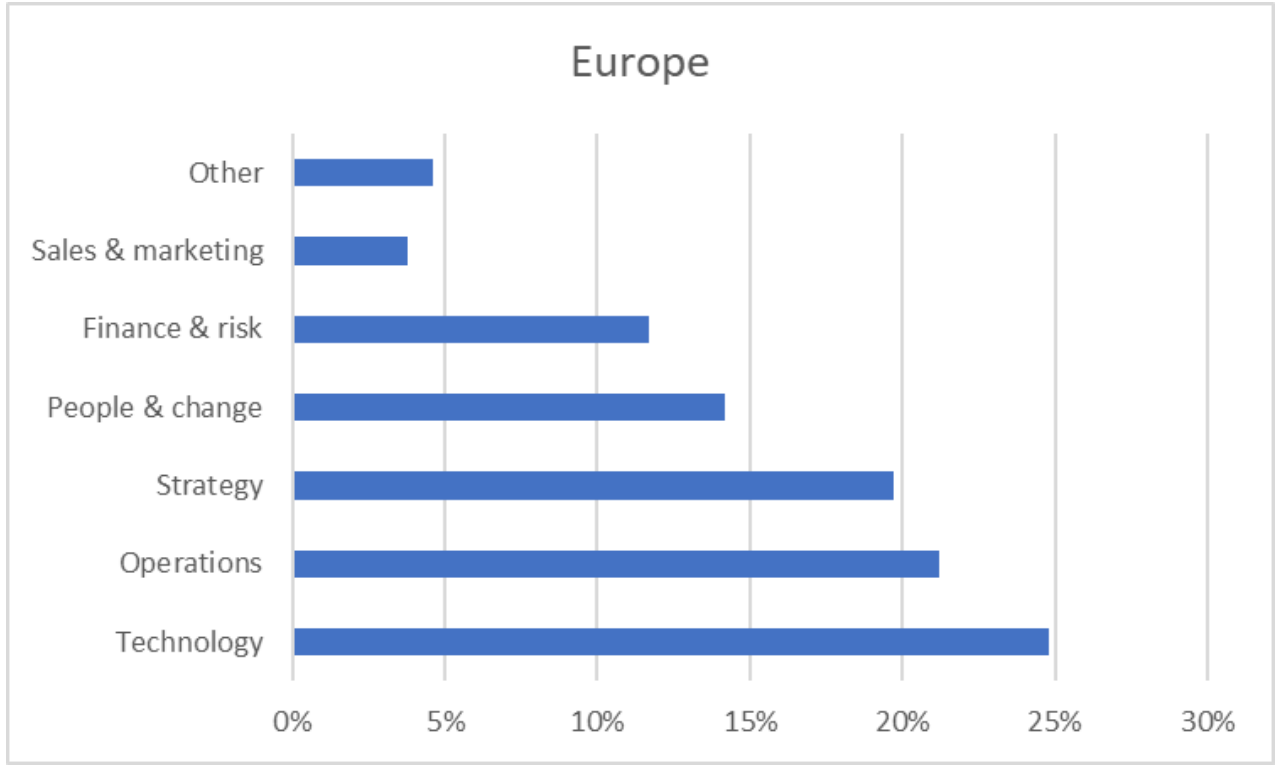
Compare mere ‘supporting functions’:

- Accounting & finance
- Human resources



Size of operations consulting

Lancaster University
Management School



Note(s): Europe; 2020
Source(s): FEACO; Statista

The purpose of the course

Lancaster University Management School

To introduce you to basic principles of operations management

- In both manufacturing & service contexts
- Emphasising methods of analysis
- Helping you to be future consumers (maybe producers) of analysis

What does ‘Operations Management’ do?

Lancaster University Management School

Solves the problem of how to build airliners from millions of items (usually) on time

…when 2 000 workers involved in final assembly alone

…when lead-times vary from milliseconds to weeks

…when errors happen, people go sick, machines fail

…when raw materials to major assemblies come from all over the world

i.e. Scheduling & control systems

What does ‘Operations Management’ do?

Lancaster University Management School

Solves the problem of how to provide you with an iceberg lettuce …

…when it can come from 1 of 10 distribution centres

…when these have 3 suppliers, only 1 in the UK

…when 1 is an all-year supplier, the others aren’t

…when each offers different lead-times

…when the lead-times vary by season

…when the order period varies by season

…when the demand varies by season

…when the shelf-life varies by season

…when this is one of 30 000 product lines in store

i.e. Supply chain management

What does ‘Operations Management’ do?

Lancaster University Management School

Solves the problem of how to make components of devices the same size to within microns

…when they’re produced in different parts of the world

…by very different people in different moods and tempers

…using different machines with different specifications

…in different climates and cultures

…at different times of day

i.e. Statistical process control

What does ‘Operations Management’ do?

Lancaster University Management School

Solves the problem of ensuring successful (usually) surgery

…when there needs to be co-ordination between dozens of

…when a dozen or so staff involved in the operation are scheduled on time

…when 100’s of items are needed for the surgery and you can’t run out of inventory

…when dozens of procedures need to be implemented to ensure a smooth operation

…when risk is managed as a ‘never event’,
i.e. 0% failure probability

i.e. Planning, Coordination, Standard Operating Procedures (SoP) controls

What will you be able to do?

Lancaster University Management School

Solve problems in operations by:

- using simple mathematical models (inventory analysis)
- using specific planning methods (project planning & control)
- using systems to manage suppliers (supply chain management)
- using basic coordination principles (ERP and Lean Management)
- using statistics to control variation (quality control)
- using practices to focus improvement effort (quality management)

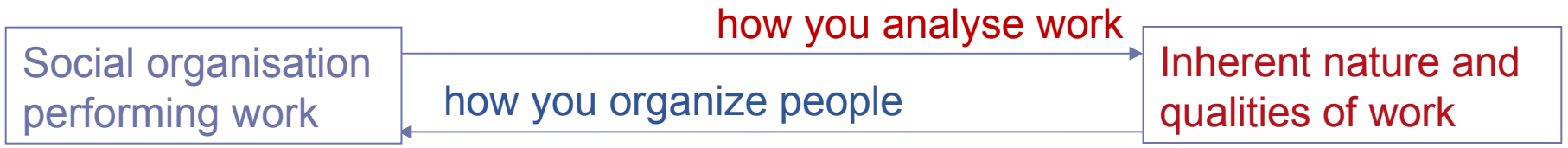
'You can't do much carpentry with your bare hands, and you can't do much thinking with your bare brain' (Bo Dahlbom)

The main themes

Lancaster University
Management School

Solving the mostly logical (rather than social) problems of producing products and delivering services:

- Dealing with complexity, scale & uncertainty
- Achieving improvement, change & competitiveness
- Concerning the nature of work rather than the people doing it



Operations as a SYSTEM

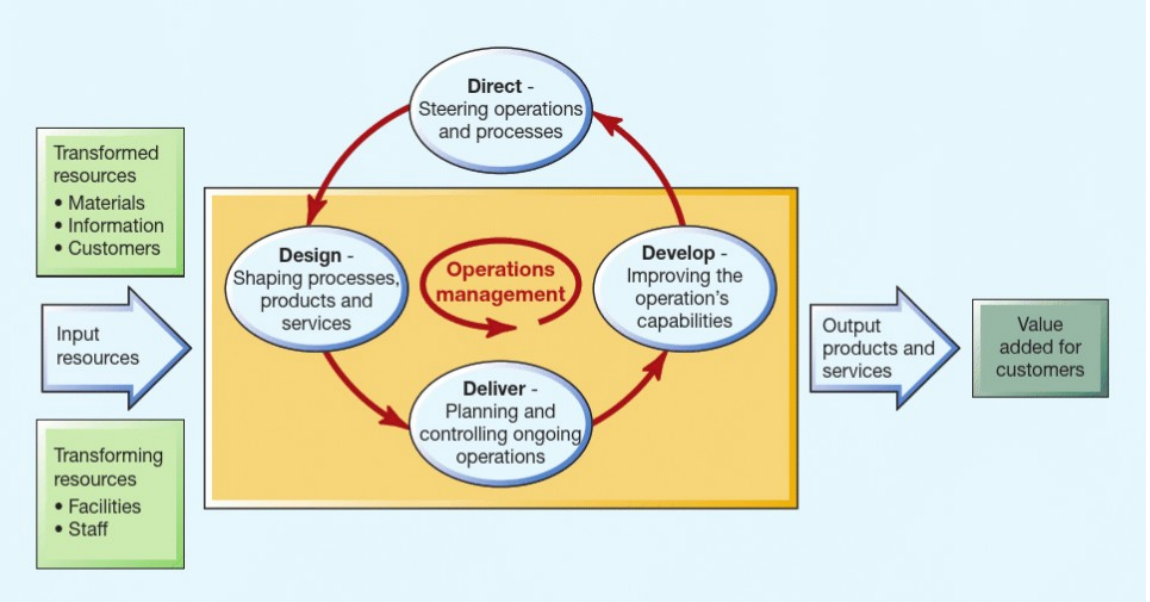
Lancaster University Management School

Understanding operations as a whole

…before studying the specific components

Not in the text as a single topic

…but referencing several early chapters

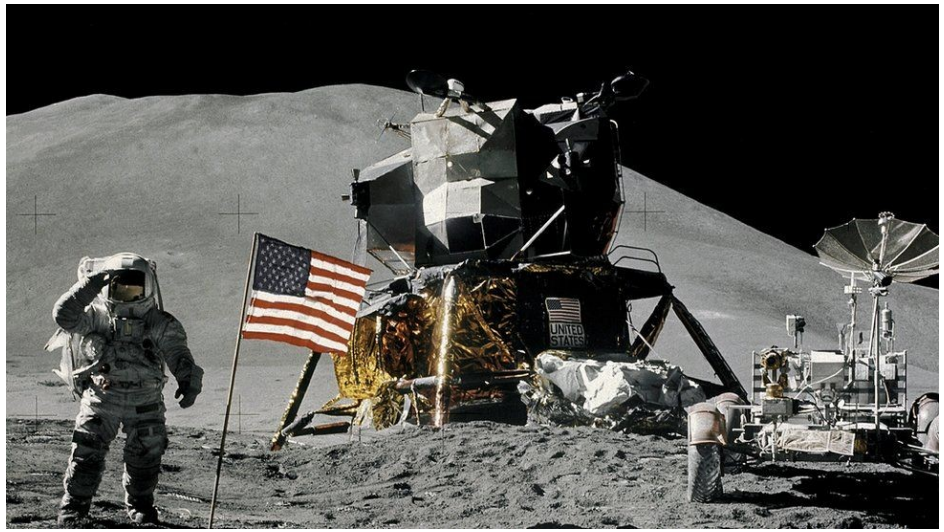


Slack et al.

Operations as a SYSTEM

How did they do that?

- Land a man on the moon in the Apollo programme?
- They had a ‘system’ for
  - …getting money and political support
  - …developing new technologies
  - …producing vehicles and infrastructure
  - …operating space missions



@bbc

Operations as a SYSTEM

How did they do that?

- Lose the Challenger & Columbia in the Shuttle programme?
- They had a ‘system’ which failed to
  - …reconcile engineers’ and managers’ thinking
  - …incorporate sufficient checks and balances
  - …resist political and public pressure
  - …avoid drift and degradation

@bbc

Operations as a SYSTEM

Lancaster University Management School

What is a 'system'?

Think of a supermarket operations as a *system*: suppliers, distribution centres, warehouses, retail outlets, transportation, contracts and invoices.

What makes this a system?

1. It is all labelled as 'Tesco' and is loyal to the 'Tesco' brand
2. It all belongs to a single legal entity which is recognised in law as a responsible body
3. It is together a coherent collection of parts whose relationships and interactions are crucial to its continued functioning
4. It is all engaged in the production, transport and retailing of foodstuffs

Operations as a SYSTEM

Lancaster University Management School

Which of the following are general characteristics of a system:

1. It is a complex whole where relationships between components define system behaviour
2. The components in a system are modified by interactions with each other and with external elements
3. The components maintain & reproduce their own distinct structures & boundaries
4. The interactions between components via exchange of materials and information can produce qualitatively new characteristics in a system
5. None of the above
6. All of the above

Operations as a SYSTEM

Lancaster University Management School

1. It is a complex whole where relationships between components define system behaviour
2. The components in a system are modified by interactions with each other and with external elements
3. The components maintain & reproduce their own distinct structures & boundaries
4. The interactions between components via exchange of materials and information can produce qualitatively new characteristics in a system
5. Systems exhibit certain properties…which we will look at in Lecture 2
   - Purpose
   - Transformation

Before we close…

Lancaster University Management School

Reminder…

- Be punctual – the lecture will start promptly at the scheduled hour
- Please do not talk in lectures – if you have a question, raise your hand and I will come to you
- Do attend the seminars every week – these don't just repeat what has been taught in lectures
- Attempt the seminar cases/problems each week – it is important for you to understand the analysis and practical application of what is being taught
- Post your questions on discussion forum – everyone else will be able to see the answers too

Lancaster University
Management School

Thank you.