BA 291 – OPERATIONAL MANAGEMENT AND QUALITY CONTROL

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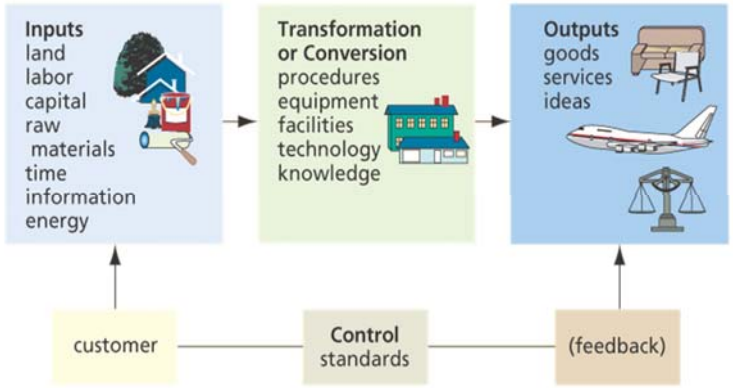
Operations Management

- Operations Management: The development and administration of the activities involved in transforming resources into goods and services
- Operations managers oversee transformation process and the planning and designing of operation system, managing logistic, quality and productivity

Transformation Process



Manufacturing vs. Service Providers

- Produce tangible or intangible goods
- Most goods are manufactured prior to purchase, most services are performed after purchase
- Manufacturing can occur in an isolated environment, away form customers. Customer contact is significant component to most services.
- Uniformity of inputs – automated or customize
- Uniformity of outputs – similar or different
- Labor required – service is more labor intensive
- Measurement of productivity – service industry has great variation

Why managing operations?

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- Increase output
- Increase efficiency (productivity = output/ input)
- Lower cost
- Increase quality of products and services

Factors influenced productivity

- Labor (quality of labor)
- Capital fund
- Management

Planning and designing operation systems

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Planning the products → Designing operations process → Planning capacity → Planning facilities

Planning and designing operation systems

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Planning the products

- Determine what consumers want
- Design product to satisfy the want
- Marketing research (focus group, survey, observation)
- Types and quantities of raw materials
- Skills & quantity of labor
- Processes for transformation to outputs
- Cost and time intensive

Planning and designing operation systems

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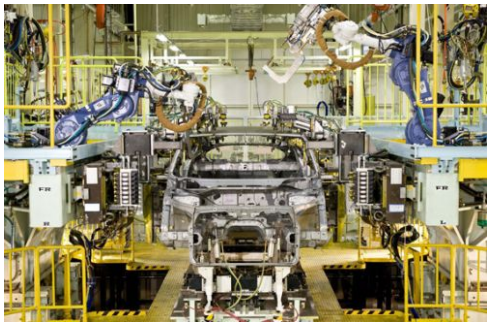
Designing operations process

Typically, products are designed to be manufactured by one of three processes: standardization, modular design or customization



Standardization: The making of identical interchangeable components or products


Modular design: the creation of an item in self-contained units or modules that can be combined or interchanged to create different products




Example of modular design







Prefabrication



Planning and designing operation systems

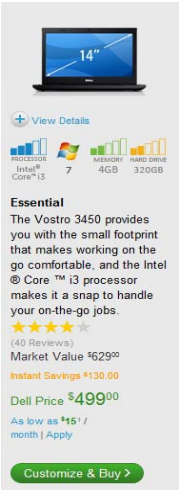
Customization: making products to meet a particular customer's needs or wants. The product produced in this way are generally unique.



Planning and designing operation systems

Mass customization calls for a customer-centre in production and delivery processes, requiring the company to collaborate with individual customers to design each one's desired product or service, which is then constructed from a base of pre-engineered modules that can be assembled in myriad ways.

- Dell computer
- Automobile industry



Planning and designing operation systems

Planning capacity

Capacity – The maximum load that an organizational unit can carry or operate

Capacity levels that fall shot can result in unmet demand but when there is more capacity available than needed, operating cost are driven up.

Planning and designing operation systems

Planning facilities location

Planning facility location

Facility location is the process of identifying the best geographic location for a service or production facility

Choosing country – region – exactly place

Factors affecting facility location

- Customers, suppliers, labor, raw material, infrastructure
- Transportation cost
- The cost of land and construction
- Law and regulations, financial support

Facility location

Making Location Decisions

Step 1: Identify dominant location factors

Step 2: Develop location alternatives

Step 3: Evaluate locations alternatives

- cost comparison method
- factor rating method
- break-even point

Evaluate Facility location

Factor Rating

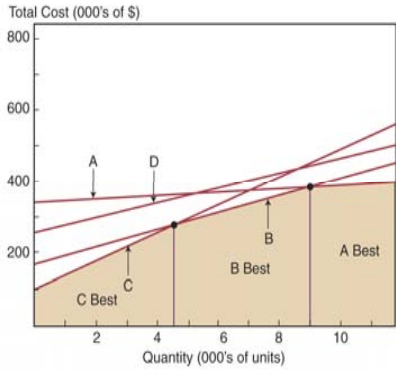
Factor	Factor Weight	Factor Score		Weighted Score	
		Location 1	Location 2	Location 1	Location 2
Cost of living	10	5	2	50	20
Proximity to family	20	4	2	80	40
Climate	30	2	5	60	150
Transportation system	10	5	3	50	30
Quality of life	30	3	5	90	150
TOTAL	100			330	390

Facility location

Break-even Analysis

Clean-Clothes Cleaners is considering four possible sites for its new operation. They expect to clean 10,000 garments. The table and graph below are used for the analysis.

	fix cost	var cost	var cost	total
Location A	350000	5	50000	400000
Location B	170000	25	250000	420000
Location D	100000	40	400000	500000
Location E	250000	20	200000	450000



Planning and designing operation systems

Planning facilities

layout

Fixed-Position Layout--Project organization

All resources needed for a product are brought to a central location. Normally used when a very large product is produced.

Planning and designing operation systems

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Process Layout – a layout that organizes the transformation process into departments that group related processes. Each operation is performed in a different area.

Planning and designing operation systems

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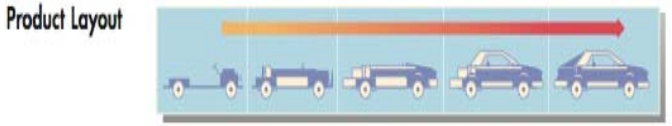
Product Layout (Continuous manufacturing organization, assembly line)

Production is broken down into relatively simple tasks assigned to workers positioned along an assembly line. Workers remain in one location and the product moves from one worker (station) to another.



Managing the Supply Chain

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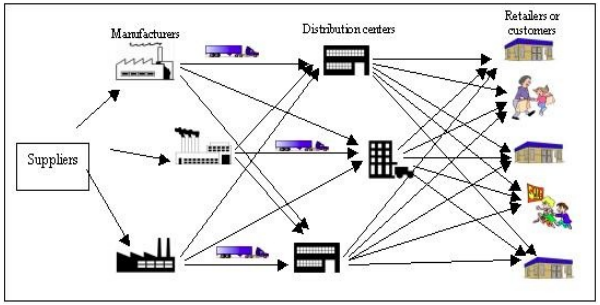
- Connecting and integrating all parties or members of the distribution system in order to satisfy customers
- Include all the activities involved in obtaining and managing raw materials and component parts, managing finished products, packaging them and getting them to customers.



Purchasing and Inventory control

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Purchasing or procurement is the buying of all the materials needed by the organization. The aim is to obtain items of the desired quality in the right quantities at the lowest possible cost.

Inventory control is the process of determining how many supplies and goods are needed and keeping track of quantities on hand, where each item is and who is responsible for it. Aim of inventory control is to determine the proper inventory level for each item.

The important of inventory management

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- Inventory in the warehouse costs money
- Money not tied up in inventory can be used in other productive ventures
- Products lose value every day

Economic Order Quantity

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Order in a large quantity
Economy of scales
Bulk discount

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Order in a large quantity
High storage cost

EOQ is a model that identifies the optimum number of items in order to minimize the costs for managing them (ordering, storing)

Economic Order Quantity

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Company XYZ sells television to customers. It buys the TVs directly from manufacturer at price 1000 bath each. Every oder will cost company XYZ 20 bath. Based on the statistic, customers demand for TV per year is 8000 units. The storage cost is 2 bath per units.

Ordered quantity	Frequence of order	Cost of order (OC)	Averaged storaged number	Storage cost	Total Cost
100	80.00	1600	50	100	1700
200	40.00	800	100	200	1000
300	26.67	533	150	300	833
400	20.00	400	200	400	800
500	16.00	320	250	500	820
600	13.33	267	300	600	867
700	11.43	229	350	700	929
800	10.00	200	400	800	1000
900	8.89	178	450	900	1078
1000	8.00	160	500	1000	1160

Economic Order Quantity

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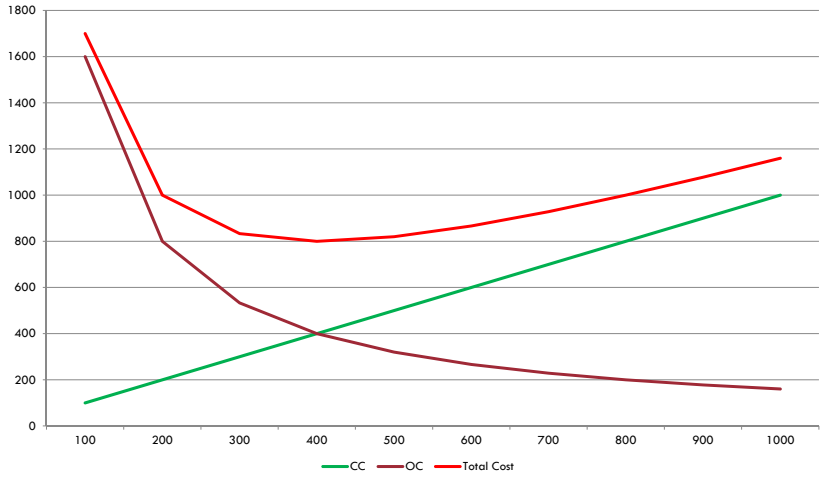

Just-in-time inventory management

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An inventory control system that schedules materials to arrive precisely when they are needed on a production line.

- Reducing raw material inventories: Suppliers deliver materials only at the exact moment need
- Work-in process inventories are kept to minimum because goods are produced only as needed to service the next stage of production.
- Finished good inventories are minimized by matching them exactly to sales demand.
- Stockless system, zero inventory system

Just-in-time inventory management

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Strenghts	Weakness

Outsourcing

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- Outsourcing has become a component of supply chain management in operation. It refers to the contracting of manufacturing or other tasks to independent companies.
- Reason for outsourcing – increase efficiency and customer satisfaction, lower cost

Quality Management

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Quality is the degree to which a good or service meets the demands and requirements of customers.

Quality control is the processes an organization uses to maintain its established quality standard.

Quality is free; by contrast, not having high quality goods and services can be very expensive, especially in term of dissatisfied customers"

Total quality management

Total Quality Management (TQM) – philosophy that uniform commitment to quality will promote a culture that meets customers' perceptions of quality.