

Operations management study guide

[Business](#), [Management](#)



1: Operations and Productivity I. What is Operations Management? a. The business functions responsible for planning, coordinating, and controlling the resources needed to produce a company's products and services. b. Production is the creation of goods and services c. OM is the set of activities that create value in the form of goods and services by transforming inputs (human resources, facilities and processes, technologies, raw materials) into outputs (goods & services). d. Basic Management Functions: Planning, Organizing, Staffing, Leading, Controlling Strategic Decisions| Tactical Decisions| Broad in scope * Long-term in nature * All encompassing| * Narrow in scope * Short-term in nature * Concerning a small group of issues|

II. Why Study OM? e. We want and need to know how goods and services are produced f. We want to understand what operations managers do g. OM is such a costly part of an organization III. What OM people do: 10 Critical Decisions 1. Design of Goods and Services: What good or service should we offer? How should we design these products and services? 2. Managing Quality: How do we define quality? Who is responsible for quality? 3. Process and Capacity Design: What process and what capacity will these products require? What equipment and technology is necessary for these processes? 4. Location Strategy: Where should we put the facility? On what criteria should we base the location decision? 5. Layout Strategy: How should we arrange the facility? How large must the facility be to meet our plan? 6. Human Resources and Job Design: How do we provide a reasonable work environment? How much can we expect our employees to produce? 7.

Supply-chain management: Should we make or buy this component? Who should be our suppliers and how can we integrate them into our strategy? 8. Inventory, Material requirements, planning, and JIT: How much inventory of each item should we have? When do we re-order? 9. Intermediate and short-term scheduling: Are we better off keeping people on the payroll during slowdowns? Which jobs do we perform next? 10. Maintenance: How do we build reliability into our processes? Who is responsible for maintenance? IV. Differences in Goods and Services

Services| Manufacturing (GOODS)| * Intangible product * Product cannot be inventoried * High customer contact/interaction * Short response time * Labor intensive| * Tangible product * Product can be inventoried * Low customer contact * Longer response time * Capital intensive| V. Productivity- the ratio of outputs/inputs ** want to improve productivity!!!! h. Service Sector: segment of the economy including trade, financial, lodging, education, legal, medical & others. 80% will be doing service related jobs! i. Service Productivity: labor intensive, frequently focused on unique individual attributes or desires, intellectual task performed by professionals, difficult to evaluate for quality because the end product is hard to define j. ** See types of productivity and calculations k. Productivity at Taco Bell: revised menu, easy preparation meals, efficient layout, training and employee empowerment, new water and energy saving grills 2: Operations Strategy in a Global Environment I. A Global View of Operations: Reasons to Globalize 1. Reduce Costs: foreign locations with lower wage rates can lower direct and indirect costs.

EX: outsourcing jobs, maquiladoras, WTO, NAFTA, EU 2. Improve Supply Chain: locating facilities closer to unique resources. EX: Auto design to California (expertise), Athletic shoe production to China (labor), Perfume manufacturing in France (raw materials) 3. Provide Better Goods and Services: to increase the number of on time deliveries, improved cultural understanding as a result of local presence allows firms to customize products to meet unique cultural needs in foreign markets, and improved customer service by locating facility in home country of customers. 4.

Understand Markets: interacting with foreign customers and suppliers can lead to new opportunities. EX: knowledge of markets helps firms understand where the market is going & helps diversify customer base, add production flexibility, and smooth the business cycle. 5. Learn to Improve Operations: remain open to the free flow of ideas. EX: GM partnered with Japanese auto manufacturers to learn new approaches to production and inventory control. GM to Jap: capital and knowledge of US laws, Jap to GM: production & inventory ideas 6. Attract and Retain Global Talent: offer better employment opportunities worldwide II.

Mission and Strategy a. Mission statements answer the question “ Where are you going? ” It’s purpose needs to benefit society. i. Factors affecting mission include: environment, values, benefit to society, profitability, public growth b. The Strategy answers the question “ How are we going to get there? ” It is an action plan to achieve the mission. ii. Strategies for Competitive Advantage: 1. Differentiation- better at or different 2. Cost Leadership- cheaper 3. Rapid Response III. Product Life Cycle- ***may be any

length from a few hours to decades Introduction| Growth| Maturity| Decline|
 Product design and development critical * Frequent product and process
 design changes * Limited models * Attention to quality| * Product design
 stabilizes * Product and process reliability * Competitive product
 improvements and options * Increase capacity * Enhance distribution| *
 Competitors are now established * Standardization * Fewer product changes
 * Optimum capacity * Increasing stability of process * Long production runs *
 Product improvement and cost cutting or decline will occur| * Little product
 differentiation * Cost minimization * Overcapacity in the industry * Reduce
 capacity * Unless product makes a special contribution to the organization,
 must plan to terminate| IV. Strategy Development c.

Identify key success factors for achieving competitive advantage, build and
 staff the organization, integrate OM with other activities d. Strategy

Development Process: 1. Analyze the environment: SWOT 2. Determine the
 Corporate Mission 3. Form a Strategy V. Process Design Process Focused|

Repetitive Focused| Product Focused| Mass Customization| * Job shops * Print
 shop, ER, fine-dining| * Assembly line * Cars, appliances, fast-food

restaurants| * Continuous * Steel, beer, paper| * High Volume * Computers,
 cafeteria| 5: Design of Goods and Services I. The Design Process a. Product

Design- the selection, definition, and design of products b.

New Product Opportunities: understanding the customer, economic change,
 sociological and demographic change, technological change, political/legal

change c. Issues for Product Design: i. Robust Design: product is designed so
 that small variations in production or assembly do not adversely affect the

product. Results in lower cost and high quality ii. Modular Design: products designed in which parts or components of a product are subdivided into modules that are easily interchanged or replaced. Adds flexibility to both production and marketing. iii. Computer-Aided Design: using computers to design products and prepare engineering documentation, shorter development cycles, improved accuracy, lower cost. iv.

Computer- Aided Manufacturing: utilizing specialized computers and program to control manufacturing equipment. Many benefits including: product quality, shorter design time, production cost reductions, database availability, new range capabilities v. Virtual Reality Technology: computer technology used to develop an interactive, 3D model of the product from the basic CAD data. Allows people to “ see” the finished design before a physical model is built, very effective in large scale designs such as plant layout vi. Value Analysis: focuses on design empowerment during production, seeks improvements leading either to a better product or a product.

Review of successful products that takes place during the production process. vii. Environmentally Friendly Design: products that focus on sustainability and conservation of resources. Make products recyclable, use less harmful ingredients, use less energy. “ Product Design is a Business issue. ” II. Tools for Good Design d. Quality Function Deployment “ QFD” (house of quality)- used during the early design process for determining customer “ wants” and translating them into the attributes each functional area can understand and act on. e. Time-Based Competition: product life

cycles are becoming shorter and the rate of technological change is increasing. EX: cell phones.

So- developing new products faster can result in a competitive advantage f. Acquiring Technology: by purchasing a firm, through joint ventures, through alliances. g. Defining the Product: Bill of Material lists the components of a project, their descriptions & the quantity of each input to make 1 unit of the product. III. The Design of a BOM h. A “ blueprint”, a “ model” i. Specifies materials j. Determines dimensions & tolerances k. Defines appearance l. Sets performance standards IV. Documents for Production m. Assembly Drawing: shows expanded view of product, how it goes together, what the product parts are, details relative locations to show how to assemble the product n.

Assembly Chart: identifies the point of production where components flow into subassemblies and ultimately into the final product o. Route Sheet: lists the operations and times required to produce a component with material specified in the BOM p. Work Order: instructions to produce a given quantity of a particular item q. Engineering Change Notices (ECNs): a correction or modification of an engineering drawing or BOM, change some aspect of the products definition or document 7: Process Strategy and Sustainability I. Four Basic Process Strategies a. Process focus: general purpose equipment and skilled personnel, high cost and low equipment utilization.

EX: hospital, machine, print b. Repetitive focus: facilities organized as assembly lines, characterized by modules with parts and assemblies, less flexibility than process-focused but more efficient. EX: Mercedes building

cars c. Product focus: facilities are organized by product, high volume but low variety of products, less skilled labor. EX: commercial backed goods like beer, steel, glass d. Mass customization: rapid, low-cost production of goods and service to satisfy increasingly unique customer desires. Combines the flexibility of a process focus with the efficiency of a product focus. EX: Dell computers Focused processes bring efficiency.

Focus can be: customers, products, service, technology II. Tools of Process Analysis and Design ** the process designed to achieve a comp. adv. e. Flow charts: shows the movement of materials f. Time-function Mapping: shows flows and time frames g. Value-Stream Mapping: shows flows and time and value added beyond the immediate organization h. Process Charts: uses symbols to show key activities i. Service Blueprinting: defines three levels of customer interaction and identifies potential failure points III. Production Technologies j. Machine Technology: increased precision, productivity, flexibility, improved environmental impact, reduced power requirements, decreased size k.

Automatic Identification Systems (AISs): act card, barcodes l. Process Control: real-time monitoring, sensors collect data, devices read data on periodic basis, computer programs analyze the data m. Vision System: particular aid to inspection, consistently accurate, modest cost, superior to individuals performing the same tasks n. Robot: perform monotonous or dangerous tasks, enhanced consistency and accuracy o. Automated Storage and Retrieval Systems (ASRSs): automated placement and withdrawal of

parts and products, reduced errors and labor, particularly useful in inventory and test areas of manufacturing firms p.

Automated Guided Vehicles (AGVs): electronically guided and controlled carts, used for movement of products and/or individuals q. Flexible

Manufacturing Systems (FMSs): computer controls both the workstation and the material handling the equipment r. Computer-Integrated Manufacturing

(CIM): extension of FMSs IV. Sustainability s. Resources: operations is

primary user, reducing inputs to make a product is a win-win t. Recycling:

burn, bury, or reuse waste, recycling begins at design u. Regulations: laws affect transportation, waste, and noise, increasing regulatory pressure v.

Reputation: leadership may be rewarded, bad reputation can have negative consequences