

Operations Management, 10e (Heizer/Render)
Chapter 7 Process Strategy

1) A firm's process strategy is its approach to transforming resources into goods and services.

Answer: TRUE

Diff: 1

Topic: Four process strategies

Objective: LO7-1

2) Intermittent processes are organized around processes.

Answer: TRUE

Diff: 1

Topic: Four process strategies

Objective: LO7-1

3) In process-focused facilities, equipment utilization is low.

Answer: TRUE

Diff: 2

Topic: Four process strategies

Objective: LO7-1

4) The typical full-service restaurant uses a product-focused process.

Answer: FALSE

Diff: 2

Topic: Four process strategies

Objective: LO7-1

5) Harley-Davidson, because it has so many possible combinations of products, utilizes the process strategy of mass customization.

Answer: FALSE

Diff: 2

Topic: Four process strategies

Objective: LO7-1

6) A value-stream map includes both (1) inventory quantities, and (2) symbols for customers and suppliers.

Answer: TRUE

Diff: 2

Topic: Process analysis and design

Objective: LO7-3

7) The assembly line is a classic example of a repetitive process.

Answer: TRUE

Diff: 1

Topic: Four process strategies

Objective: LO7-1

8) One essential ingredient of mass customization is modular design.

Answer: TRUE

Diff: 2

Topic: Four process strategies

Objective: LO7-1

9) The tool that calculates which process has the lowest cost at any specified production volume is a crossover chart.

Answer: TRUE

Diff: 2

Topic: Four process strategies

Objective: LO7-2

10) The term *focused processes* refers to the quest for increased efficiency, whether in goods or services, that results from specialization.

Answer: TRUE

Diff: 2

Topic: Four process strategies

Objective: LO7-1

11) Service blueprinting is a process analysis technique that focuses on the customer and the provider's interaction with the customer.

Answer: TRUE

Diff: 2

Topic: Process analysis and design

Objective: LO7-4

12) Activity times should not be included in a service blueprint.

Answer: FALSE

Diff: 2

Topic: Process analysis and design

Objective: LO7-4

13) A process map with the addition of a time axis becomes a process chart.

Answer: FALSE

Diff: 2

Topic: Process analysis and design

Objective: LO7-3

14) Time-function mapping is a flowchart with time added to the horizontal axis.

Answer: TRUE

Diff: 2

Topic: Process analysis and design

Objective: LO7-3

15) Process maps use distance, but not time, to show the movement of material, product, or people through a process.

Answer: FALSE

Diff: 2

Topic: Process analysis and design

Objective: LO7-3

16) Professional services typically require low levels of labor intensity.

Answer: FALSE

Diff: 2

Topic: Service process design

Objective: LO7-4

17) An example of the *postponement* strategy for improving service productivity is having the customer wait until you have sufficient time to serve the customer.

Answer: FALSE

Diff: 2

Topic: Service process design

Objective: LO7-4

18) Process control is the use of information technology to monitor and control a physical process.

Answer: TRUE

Diff: 1

Topic: Production technology

AACSB: Use of IT

Objective: LO7-5

19) One use of camera-and-computer-based vision systems is to replace humans doing tedious and error-prone visual inspection activities.

Answer: TRUE

Diff: 1

Topic: Production technology

AACSB: Use of IT

Objective: LO7-5

20) Automated storage and retrieval systems are commonly used in distribution facilities of retailers.

Answer: TRUE

Diff: 2

Topic: Production technology

AACSB: Use of IT

Objective: LO7-5

21) Flexible manufacturing systems, because of easily changed control programs, are able to perform such tasks as manufacturing one-of-a-kind parts economically.

Answer: TRUE

Diff: 2

Topic: Production technology

AACSB: Use of IT

Objective: LO7-5

22) Production technology has had a major impact on services, but as yet there has been little reduction in service labor requirements.

Answer: FALSE

Diff: 2

Topic: Technology in services

AACSB: Use of IT

Objective: LO7-5

23) Optical checkout scanners and ATMs are examples of technology's impact on services.

Answer: TRUE

Diff: 2

Topic: Technology in services

AACSB: Use of IT

Objective: LO7-5

24) Successful process redesign focuses on departmental areas where small, continuous improvements can be made.

Answer: FALSE

Diff: 2

Topic: Process redesign

Objective: LO7-5

25) Processes can be environmentally friendly and socially responsible while still contributing to profitable strategies.

Answer: TRUE

Diff: 1

Topic: Sustainability

AACSB: Ethical Reasoning

Objective: LO7-5

26) In selecting new equipment and technology, decision-makers look for flexibility—the ability to respond with little penalty in time, cost, or customer value.

Answer: TRUE

Diff: 2

Topic: Selection of equipment and technology

Objective: LO7-5

27) An organization's process strategy

A) will have long-run impact on efficiency and flexibility of production

B) is the same as its transformation strategy

C) must meet various constraints, including cost

D) is concerned with how resources are transformed into goods and services

E) All of the above are true.

Answer: E

Diff: 2

Topic: Four process strategies

Objective: LO7-1

28) A job shop is an example of a(n)

A) repetitive process

B) continuous process

C) line process

D) intermittent process

E) specialized process

Answer: D

Diff: 2

Topic: Four process strategies

Objective: LO7-1

- 29) Three types of processes are
- A) goods, services, and hybrids
 - B) manual, automated, and service
 - C) process focus, repetitive focus, and product focus
 - D) modular, continuous, and technological
 - E) input, transformation, and output

Answer: C

Diff: 2

Topic: Four process strategies

Objective: LO7-1

- 30) Which of the following industries is most likely to have low equipment utilization?

- A) auto manufacturing
- B) commercial baking
- C) television manufacturing
- D) chemical processing
- E) restaurants

Answer: E

Diff: 2

Topic: Four process strategies

Objective: LO7-1

- 31) A product-focused process is commonly used to produce

- A) high-volume, high-variety products
- B) low-volume, high-variety products
- C) high-volume, low-variety products
- D) low-variety products at either high- or low-volume
- E) high-volume products of either high- or low-variety

Answer: C

Diff: 2

Topic: Four process strategies

Objective: LO7-1

- 32) Which one of the following products is most likely made in a job shop environment?

- A) a daily newspaper
- B) paper forms
- C) television sets
- D) cigarettes
- E) canned vegetables

Answer: B

Diff: 2

Topic: Four process strategies

Objective: LO7-1

33) Which of the following products is likely to be assembled on a repetitive process line?

- A) automobiles
- B) personal computers
- C) dishwashers
- D) television sets
- E) all of the above

Answer: E

Diff: 2

Topic: Four process strategies

Objective: LO7-1

34) An assembly line is an example of a

- A) product-focused process
- B) process-focused process
- C) repetitive process
- D) line process
- E) specialized process

Answer: C

Diff: 2

Topic: Four process strategies

Objective: LO7-1

35) Arnold Palmer Hospital uses which focus?

- A) process
- B) repetitive
- C) product
- D) mass customization
- E) A and D

Answer: A

Diff: 2

Topic: Four process strategies

Objective: LO7-1

36) One of the similarities between process focus and mass-customization is

- A) the volume of outputs
- B) the process layout
- C) the standard cost
- D) the variety of inputs
- E) All of the above are similarities

Answer: D

Diff: 2

Topic: Four process strategies

Objective: LO7-1

37) Frito-Lay is to _____ focus as Harley Davidson is to _____ focus.

- A) process, repetitive
- B) product, repetitive
- C) repetitive, product
- D) process, product
- E) product, mass customization

Answer: B

Diff: 2

Topic: Four process strategies

Objective: LO7-1

38) One of the similarities between repetitive focus and mass customization is

- A) the wide variety of outputs
- B) module inputs
- C) the process layout
- D) the standard cost
- E) component inputs

Answer: A

Diff: 2

Topic: Four process strategies

Objective: LO7-1

39) Flexible equipment is most closely associated with which approach?

- A) product
- B) process
- C) mass customization
- D) repetitive
- E) A and C

Answer: C

Diff: 2

Topic: Four process strategies

Objective: LO7-1

40) Swift movement through the facility is typical of goods in which approach?

- A) product
- B) process
- C) mass customization
- D) repetitive
- E) A and C

Answer: E

Diff: 2

Topic: Four process strategies

Objective: LO7-1

41) High fixed costs and low variable costs are typical of which approach?

- A) product
- B) process
- C) mass customization
- D) repetitive
- E) A and C

Answer: E

Diff: 2

Topic: Four process strategies

Objective: LO7-1

42) Goods made to order are typical of _____ and _____ approaches while goods made to forecast are typical of _____ and _____ approaches.

- A) process, mass customization; repetitive, product
- B) product, mass customization; repetitive, process
- C) product, process; repetitive, mass customization
- D) repetitive, product; mass customization, process
- E) repetitive, process; mass customization, product

Answer: A

Diff: 2

Topic: Four process strategies

Objective: LO7-1

43) Smooth FM Radio uses a _____ approach when it mixes pre-recorded local segments with its national music blocks.

- A) mass customization
- B) product focus
- C) process focus
- D) repetitive focus
- E) both D and A

Answer: A

Diff: 2

Topic: Four process strategies

Objective: LO7-1

44) Which of the following companies use a mass customization approach?

- A) Dell
- B) Align Technology
- C) Frito-Lay
- D) Arnold Palmer hospital
- E) A and B

Answer: E

Diff: 2

Topic: Four process strategies

Objective: LO7-1

45) Which of the following transformations generally has the highest equipment utilization?

- A) process-focused process
- B) repetitive process
- C) product-focused process
- D) specialized process
- E) modular process

Answer: C

Diff: 2

Topic: Four process strategies

Objective: LO7-1

46) Harley Davidson

- A) utilizes job shops to make each of its modules
- B) uses product focused manufacturing
- C) uses a large number of modules to build a small number of different bikes
- D) uses work cells to feed its assembly line
- E) All of the above are true.

Answer: D

Diff: 2

Topic: Four process strategies

Objective: LO7-1

47) Which of the following is **false** regarding repetitive processes?

- A) They use modules.
- B) They allow easy switching from one product to the other.
- C) They are the classic assembly lines.
- D) They have more structure and less flexibility than a job shop layout.
- E) They include the assembly of basically all automobiles.

Answer: B

Diff: 2

Topic: Four process strategies

Objective: LO7-1

48) When done correctly, mass customization

- A) increases pressure on supply-chain performance
- B) helps eliminate the guesswork that comes with sales forecasting
- C) drives down inventories
- D) increases pressure on scheduling
- E) all of the above

Answer: E

Diff: 2

Topic: Four process strategies

Objective: LO7-1

49) Which of the following phrases best describes *product focus*?

- A) low volume, high variety
- B) finished goods are usually made to order
- C) processes are designed to perform a wide variety of activities
- D) high fixed costs, low variable costs
- E) raw material inventories are low relative to the value of the product

Answer: D

Diff: 3

Topic: Four process strategies

Objective: LO7-1

50) Which of the following phrases best describes *process focus*?

- A) low volume, high variety
- B) finished goods are usually made to a forecast and stored
- C) operators are modestly skilled
- D) high fixed costs, low variable costs
- E) raw material inventories are high relative to the value of the product

Answer: A

Diff: 3

Topic: Four process strategies

Objective: LO7-1

51) Which of the following characteristics best describes *repetitive focus*?

- A) It uses sophisticated scheduling to accommodate custom orders.
- B) Its output is a standardized product produced from modules.
- C) It is too expensive when volumes are low or flexibility is required.
- D) It is widely used for the manufacture of steel.
- E) Its costs are often known only after a job is done.

Answer: B

Diff: 3

Topic: Four process strategies

Objective: LO7-1

52) Utilization in process-oriented facilities is frequently low because

- A) the postponement strategy for improving service productivity is being used
- B) scheduling in process-oriented facilities is not very complex
- C) with high fixed costs, utilization is not very important
- D) excess capacity for peak demands is desirable
- E) low raw material inventories cause machines to be idled

Answer: D

Diff: 2

Topic: Four process strategies

Objective: LO7-1

53) A quasi-custom product

- A) gets its apparent customization from the combinations available from a small number of modules
- B) is often the output of repetitive focus facilities
- C) is a valid description of a fast food sandwich
- D) is only possible when the *focus* strategy of service productivity improvement is in use
- E) All but **D** are true.

Answer: E

Diff: 2

Topic: Four process strategies

Objective: LO7-1

54) Process A has fixed costs of \$1000 and variable costs of \$5 per unit. Process B has fixed costs of \$500 and variable costs of \$15 per unit. The crossover point between process A and process B is

- A) 50 units
- B) 200 units
- C) \$2,500
- D) \$5,000
- E) \$9,500

Answer: A

Diff: 2

Topic: Four process strategies

AACSB: Analytic Skills

Objective: LO7-2

55) Process X has fixed costs of \$10,000 and variable costs of \$2.40 per unit. Process Y has fixed costs of \$9,000 and variable costs of \$2.25 per unit. Which of the following statements is **true**?

- A) The crossover point is approximately 6667 units.
- B) It is impossible for one process to have both of its costs lower than those of another process.
- C) Process Y is cheaper than process X at all volumes; there is no crossover point.
- D) Process X should be selected for very large production volumes.
- E) Process X is more profitable than process Y and should be selected.

Answer: C

Diff: 2

Topic: Four process strategies

AACSB: Analytic Skills

Objective: LO7-2

56) The crossover point is that production quantity where

- A) variable costs of one process equal the variable costs of another process
- B) fixed costs of a process are equal to its variable costs
- C) total costs equal total revenues for a process
- D) total costs for one process equal total costs for another process
- E) the process no longer loses money

Answer: D

Diff: 2

Topic: Four process strategies

Objective: LO7-2

57) Product Focused processes

- A) allow more customization, but are not very efficient
- B) are desirable because resource needs increase slowly with the complexity of a process
- C) are processes that are specialized for relatively few products or customer groups
- D) apply only to service firms, not to manufacturers
- E) are profitable because customers demand flexibility, not specialization

Answer: C

Diff: 2

Topic: Process analysis and design

Objective: LO7-1

58) Value Stream Mapping

- A) is a variation on time function mapping
- B) examines the supply chain to determine where value is added
- C) extends time function mapping back to the supplier
- D) starts with the customer and works backwards
- E) All of the above are true.

Answer: E

Diff: 2

Topic: Process analysis and design

Objective: LO7-3

59) One fundamental difference between a process chart and a process map is that

- A) the process chart uses a time dimension, while a process map is not time-oriented
- B) the process chart includes the supply chain, while the process map stays within an organization
- C) the process chart is more like a table, while the process map is more like a schematic diagram
- D) the process chart focuses on the customer and on the provider's interaction with the customer, while the process map does not deal directly with the customer
- E) None of these is true, because a process chart and a process map are the same thing.

Answer: C

Diff: 2

Topic: Process analysis and design

Objective: LO7-3

60) Service blueprinting

- A) provides the basis to negotiate prices with suppliers
- B) mimics the way people communicate
- C) determines the best time for each step in the process
- D) focuses on the provider's interaction with the customer
- E) can only be successful with two-dimensional processes

Answer: D

Diff: 2

Topic: Service process design

AACSB: Communication

Objective: LO7-3

61) A drawing of the movement of material, product, or people is a

- A) flow chart
- B) process chart
- C) service blueprint
- D) process map
- E) none of the above

Answer: A

Diff: 2

Topic: Process analysis and design

Objective: LO7-3

62) Strategies for improving productivity in services are

- A) separation, self-service, automation, and scheduling
- B) lean production, strategy-driven investments, automation, and process focus
- C) reduce inventory, reduce waste, reduce inspection, and reduce rework
- D) high interaction, mass customization, service factory, and just-in-time
- E) none of the above

Answer: A

Diff: 2

Topic: Service process design

Objective: LO7-4

63) Which of the following is not a strategy for improving service productivity?

- A) self-service
- B) automation
- C) scheduling
- D) separation
- E) mass customization

Answer: E

Diff: 2

Topic: Service process design

Objective: LO7-4

64) In mass service and professional service, the operations manager should focus on

- A) automation
- B) equipment maintenance
- C) sophisticated scheduling
- D) human resources
- E) all of the above

Answer: D

Diff: 2

Topic: Service process design

Objective: LO7-4

65) In mass service and service factory quadrants of the service process matrix, the operations manager could focus on all of the following except

- A) automation
- B) standardization
- C) tight quality control
- D) removing some services
- E) customization

Answer: E

Diff: 2

Topic: Service process design

Objective: LO7-4

66) Which of the following is true regarding opportunities to improve service processes?

- A) Automation can do little to improve service processes, because services are so personal.
- B) Layout is of little consequence, since services seldom use an assembly line.
- C) If a work force is strongly committed, it need not be cross-trained and flexible.
- D) All of the above are true.
- E) None of the above is true.

Answer: E

Diff: 2

Topic: Service process design

Objective: LO7-4

67) Which of the following are typical of process control systems?

- A) They have sensors.
- B) The digitized data are analyzed by computer, which generates feedback.
- C) Their sensors take measurements on a periodic basis.
- D) The sensors' measurements are digitized.
- E) all of the above

Answer: E

Diff: 2

Topic: Production technology

AACSB: Use of IT

Objective: LO7-5

68) Which of the following is **true** regarding vision systems?

- A) They are consistently accurate.
- B) They are modest in cost.
- C) They do not become bored.
- D) All of the above are true.
- E) None of the above is true.

Answer: D

Diff: 2

Topic: Production technology

AACSB: Use of IT

Objective: LO7-5

69) The use of information technology to monitor and control a physical process is known as

- A) process control
- B) computer-aided design
- C) information numeric control
- D) numeric control
- E) none of the above

Answer: A

Diff: 2

Topic: Production technology

AACSB: Use of IT

Objective: LO7-5

70) Which of the following technologies would enable a cashier to scan the entire contents of a shopping cart in seconds?

- A) ASRS
- B) AGV
- C) CAD/CAM
- D) RFID
- E) FMS

Answer: D

Diff: 2

Topic: Production technology

AACSB: Use of IT

Objective: LO7-5

71) "Automatic placement and withdrawal of parts and products into and from designated places in a warehouse" describes

- A) AGV
- B) CAD/CAM
- C) CIM
- D) ASRS
- E) FMS

Answer: D

Diff: 2

Topic: Production technology

AACSB: Use of IT

Objective: LO7-5

- 72) Computer-integrated manufacturing (CIM) includes manufacturing systems that have
- A) computer-aided design, a flexible manufacturing system, inventory control, warehousing and shipping integrated
 - B) transaction processing, management information systems, and decision support systems integrated
 - C) automated guided vehicles, robots, and process control
 - D) robots, automated guided vehicles, and transfer equipment
 - E) all of the above

Answer: A

Diff: 2

Topic: Production technology

AACSB: Use of IT

Objective: LO7-5

- 73) Which one of the following technologies is used **only** for material handling, **not** actual production or assembly?

- A) robots
- B) CNC
- C) CAD
- D) AGVs
- E) FMS

Answer: D

Diff: 2

Topic: Production technology

AACSB: Use of IT

Objective: LO7-5

- 74) A system using an automated work cell controlled by electronic signals from a common centralized computer facility is called a(n)

- A) adaptive control system
- B) robotics
- C) flexible manufacturing system
- D) automatic guided vehicle (AGV) system
- E) manufacturing cell

Answer: C

Diff: 2

Topic: Production technology

AACSB: Use of IT

Objective: LO7-5

75) "Operators simply load new programs, as necessary, to produce different products" describes

- A) CAD
- B) automated guided vehicles
- C) flexible manufacturing systems
- D) vision systems
- E) process control

Answer: C

Diff: 2

Topic: Production technology

AACSB: Use of IT

Objective: LO7-5

76) Which of the following is not one of the essential ingredients for mass customization?

- A) high machine utilization
- B) personnel and facility flexibility
- C) reliance on modular design
- D) rapid throughput
- E) very effective scheduling

Answer: A

Diff: 2

Topic: Four process strategies

Objective: LO7-1

77) Advances in technology

- A) have impacted the manufacturing sector only
- B) have had only limited impact on services
- C) have failed to change the level of customer interaction with an organization
- D) have had dramatic impact on customer interaction with services and with products
- E) have dramatically changed health care, but have not changed retailing

Answer: D

Diff: 2

Topic: Technology in services

Objective: LO7-5

78) Process redesign

- A) is the fundamental rethinking of business processes
- B) can focus on any process
- C) tries to bring about dramatic improvements in performance
- D) focuses on activities that cross functional lines
- E) all of the above

Answer: E

Diff: 2

Topic: Process reengineering

Objective: LO7-3

79) Ethical and environmentally friendly processes include which of the following?

- A) emission controls
- B) recycling
- C) efficient use of resources
- D) reduction of waste by-products
- E) all of the above

Answer: E

Diff: 2

Topic: Technology in services

AACSB: Ethical Reasoning

Objective: LO7-5

80) Making environmentally sound products through efficient processes

- A) is unprofitable, as long as recyclable materials prices are soft
- B) is known as lean manufacturing
- C) can still be profitable
- D) is easier for repetitive processes than for product-focused processes
- E) none of the above

Answer: C

Diff: 2

Topic: Sustainability

AACSB: Ethical Reasoning

Objective: LO7-5

81) Flexibility can be achieved with

- A) movable equipment
- B) inexpensive equipment
- C) sophisticated electronic equipment
- D) modular equipment
- E) all of the above

Answer: E

Diff: 2

Topic: Selection of equipment and technology

Objective: LO7-5

82) Which of the following statements regarding ethical and environmentally friendly processes is **true**?

- A) Operations managers can be environmentally sensitive, but they must avoid following a low cost strategy.
- B) Processes can be environmentally friendly or socially responsible, but not both.
- C) Operations managers can be environmentally sensitive and still follow a low cost strategy.
- D) Using energy-efficient lighting saves so little that it should not be labeled environmentally friendly.
- E) The only business strategy consistent with ethical and environmentally sensitive management is the differentiation strategy.

Answer: C

Diff: 2

Topic: Sustainability

AACSB: Ethical Reasoning

Objective: LO7-5

83) The four R's of sustainability do not include

- A) recycling
- B) resources
- C) regulations
- D) reputation
- E) responsibility

Answer: E

Diff: 2

Topic: Sustainability

Objective: LO7-5

84) Which of the following is true regarding the concept of **flexibility**?

- A) It is the ability to change production rates with little penalty in time, cost, or customer value.
- B) It can be accomplished with sophisticated electronic equipment.
- C) It may involve modular, movable, even cheap equipment.
- D) All of the above are true.
- E) None of the above is true.

Answer: D

Diff: 2

Topic: Selection of equipment and technology

Objective: LO7-5

85) An organization's approach to transforming resources into goods and services is called its _____.

Answer: process strategy

Diff: 2

Topic: Four process strategies

Objective: LO7-1

86) The process strategy that is organized around processes to facilitate low-volume, high-variety processes is called a(n) _____.

Answer: process focus

Diff: 2

Topic: Four process strategies

Objective: LO7-1

87) _____ is a process strategy that uses a product-oriented production process that uses modules.

Answer: Repetitive focus

Diff: 2

Topic: Four process strategies

Objective: LO7-1

88) _____ is a rapid, low-cost production process that caters to constantly changing unique customer desires.

Answer: Mass customization

Diff: 2

Topic: Four process strategies

Objective: LO7-1

89) _____ represent an organization's attempt to gain increased efficiency through specialization, which can include, for example, concentrating on certain classes of customers.

Answer: Focused processes

Diff: 2

Topic: Four process strategies

Objective: LO7-1

90) A(n) _____ uses symbols to analyze the movement of people or material.

Answer: process chart

Diff: 1

Topic: Process analysis and design

Objective: LO7-3

91) A special form of time-function mapping, which goes beyond the organization into its supply chain, is _____.

Answer: value-stream mapping

Diff: 2

Topic: Process analysis and design

Objective: LO7-3

92) _____ is a process analysis technique that focuses on the customer and the producer's interaction with the customer.

Answer: Service blueprinting

Diff: 1

Topic: Process analysis and design

Objective: LO7-4

93) The strategy for improving service productivity that customizes at delivery, rather than at production, is _____.

Answer: postponement

Diff: 2

Topic: Service process design

Objective: LO7-4

94) _____ involves the ability to respond with little penalty in time, cost, or customer value.

Answer: Flexibility

Diff: 2

Topic: Selection of equipment and technology

Objective: LO7-5

95) _____ is the use of information technology to control a physical process.

Answer: Process control

Diff: 2

Topic: Production technology

AACSB: Use of IT

Objective: LO7-5

96) _____ is a computer-controlled warehouse that provides for the automatic placement of parts into and from designated places within the warehouse.

Answer: Automated storage and retrieval system or ASRS

Diff: 2

Topic: Production technology

AACSB: Use of IT

Objective: LO7-5

97) A(n) _____ uses an automated work cell controlled by electronic signals from a common centralized computer facility.

Answer: flexible manufacturing system or FMS

Diff: 2

Topic: Production technology

AACSB: Use of IT

Objective: LO7-5

98) _____ is the fundamental rethinking and radical redesign of business processes to bring about dramatic improvements in performance.

Answer: Process reengineering

Diff: 2

Topic: Process redesign

Objective: LO7-5

99) Why is Harley-Davidson identified as a repetitive manufacturer, not a mass customizer?

Answer: Harley-Davidson manufactures a variety of motorcycles on an assembly line. They are not a product-focused process. While Harley-Davidson's motorcycles display lots of variety, they are not as individualized as Dell's personal computers. The variety comes from choices in predefined modules, and there is apparently no place for a customer to get customization that would go beyond what is available in these modules.

Diff: 2

Topic: Four process strategies

Objective: LO7-1

100) What is the link between focused processes and specialization? What kinds of focus are possible?

Answer: Focused processes are a means of obtaining increased productivity through forms of specialization. Focus can take several forms, including concentrating on specific classes of customers, working only with products in selected product families, specializing in a specific service, or working with a narrow range of technology.

Diff: 2

Topic: Four process strategies

Objective: LO7-1

101) Describe Value-Stream Mapping. Explain how it is different from process mapping.

Answer: Value-Stream Mapping is a variation on time-function mapping or process mapping. The most fundamental difference between them is that Value-Stream Mapping is not confined to the organization itself. In particular, in its analysis of where value is added, it extends the analysis to the organization's supply chain.

Diff: 2

Topic: Process analysis and design

Objective: LO7-3

102) How are modules useful in manufacturing processes?

Answer: Modules are parts or components of a product previously prepared. By using modules, the final product can be quickly assembled. Using a different combination of modules allows for quasi-customization.

Diff: 2

Topic: Four process strategies

Objective: LO7-1

103) What is mass customization?

Answer: Mass customization is rapid, low-cost production of goods and services that fulfill increasingly unique customer desires. It brings us the variety of products traditionally provided by the process focus, with low costs associated with standardized high volume production (the product focus).

Diff: 2

Topic: Four process strategies

Objective: LO7-1

104) Name the four basic process strategies; describe them in a complete sentence or two each.

Answer: The four process strategies are process focus, product focus, repetitive focus, and mass customization. Process is a job shop--high variety and low volume; repetitive is an assembly line--relatively standardized products with options from modules; product is for high volume, low-variety, such as oil refining, flour milling; mass customization is for high volume, high variety.

Diff: 2

Topic: Four process strategies

Objective: LO7-1

105) Why is equipment utilization in process-focused service industries often low?

Answer: Equipment utilization is low because excess capacity to meet peak demand loads is often desirable, and scheduling is typically difficult.

Diff: 2

Topic: Four process strategies

Objective: LO7-1

106) Compare an intermittent process to a continuous process on the basis of variety, volume, equipment utilization, and inventory.

Answer: Intermittent has high variety, low volume, low utilization, general purpose equipment. Since most output is made to order, there is little inventory of raw materials or finished goods. Continuous has low variety, high volume, high utilization, and specialized equipment. Just-in-time practices keep inventory very low.

Diff: 2

Topic: Four process strategies

Objective: LO7-1

107) The textbook described four basic process models, and hinted that there are others. Construct an example of a hybrid process. Can this process be applied in any well-known organization? How common do you think hybrid processes are?

Answer: Most students will graft elements of process onto elements of product or repetitive. Examples may include food service, where "process" may typify most operations, but salad bars add an element of "repetitive." In health care, hybrids of process and repetitive can readily be found. .TOPIC

Four process strategies

Diff: 2

Topic: Four process strategies

AACSB: Reflective Thinking

Objective: LO7-1

108) In an affluent society, how do we produce a wide number of options for products at low cost?

Answer: In an affluent society we produce a wide variety of options for products at low cost, primarily by use of modular components assembled in repetitive facilities, but automation is allowing more overlap of different types of production processes.

Diff: 2

Topic: Four process strategies

Objective: LO7-1

109) Name the tools of process analysis and design. Describe them in a sentence or two each.

Answer: Five tools of process analysis and design include flowcharts, time-function mapping, value-stream mapping, process charts, and service blueprinting. Flowcharts are a schematic or drawing of the movement of material, product, or people. Time-function mapping is a flow chart, with the addition of time on the horizontal axis. Value-stream mapping shows how to add value in the flow of materials and information in the entire production process. Process charts use symbols, time, and distance to provide an objective and structured way to analyze and record the activities that make up a process. Service blueprinting focuses on the customer and the provider's interaction with the customer.

Diff: 2

Topic: Process analysis and design

Objective: LO7-1

110) Provide an example of the *focus* strategy for improving service productivity.

Answer: The focus strategy refers to restricting the offerings. Examples will vary, but a restaurant with a limited menu would be one example.

Diff: 2

Topic: Service process design

Objective: LO7-4

111) Provide an example of the *postponement* strategy for improving service productivity.

Answer: The postponement strategy refers to customizing the product at delivery, not at production. Examples will vary, but a home builder might leave some tasks unfinished until the house is sold, so that the buyer can make those final decisions. Carpeting, paint colors, cabinet doors, and some appliance choices might be good examples.

Diff: 2

Topic: Service process design

Objective: LO7-4

112) Identify the typical elements in a process control system.

Answer: Sensors collect data; analog devices read data on a periodic basis; measurements are digitized and transmitted to a computer; data are analyzed; and output occurs in the form of signals, diagrams, charts, messages, etc.

Diff: 2

Topic: Production technology

AACSB: Use of IT

Objective: LO7-5

113) Identify the advances being made in technology to enhance production.

Technology used to enhance production include numerical control, process control, vision systems, robots, automated storage and retrieval systems, automated guided vehicles, flexible manufacturing systems, and computer integrated manufacturing.

Diff: 2

Topic: Production technology

AACSB: Use of IT

Objective: LO7-5

114) Identify the techniques for improving service productivity. For any two techniques, describe in a short paragraph, and include an example.

Answer: The seven techniques are separation, self-service, postponement, focus, modules, automation, scheduling, and training.

- Separation: structuring the service such that the customer must go where the service is offered (a medical facility)
- Self-service: let customers perform their own comparisons (supermarket shopping)
- Postponement: customizing at time of delivery or in the final stages of the process (dealer installed versus factory installed options on automobiles, boats, etc.; Wendy's Hamburgers)
- Focus: restricting the product offerings, options, or degree of customization allowed (limited number of factory installed options on a new automobile)
- Modules: services selected from modular choices (health insurance programs)
- Automation: identifying services that may lend themselves to automation (automatic teller machines)
- Scheduling: precise personnel scheduling (keep close watch on how many checkout lanes are needed)
- Training: clarifying options, teaching problem avoidance (maintenance personnel, counselors)

Diff: 3

Topic: Service process design

Objective: LO7-4

115) Explain, in your own words, what a flexible manufacturing system is. List the benefits of flexible manufacturing systems.

Answer: An FMS is a system using an automated work cell controlled by electronic signals from a common centralized computer facility. Benefits of an FMS include improved capital utilization, low direct labor cost, reduced inventory, and consistent quality.

Diff: 2

Topic: Production technology

AACSB: Use of IT

Objective: LO7-5

116) Describe some major challenges to implementing a successful build-to-order system?

Product design must be imaginative and fast. Process design must be rapid, flexible, and able to accommodate changes in design and technology. Inventory management requires tight control. Tight schedules that track orders and material from design through delivery can be effectively implemented only with dedicated personnel. Responsive partners in the supply chain yield effective collaboration.

Diff: 2

Topic: Four process strategies

Objective: LO7-1

117) Identify five examples of technology's impact on services. Specifically, identify one of these that has led to labor cost reductions. Discuss briefly. Can you add an item, not identified in the textbook, to this list?

Answer: Textbook identifies about three dozen examples. Students may add examples like PointCast (or other "push" information technologies), Amazon.com (fully electronic Internet-based shopping), or examples from entertainment (video gaming, network gaming).

Diff: 2

Topic: Technology in services

AACSB: Use of IT

Objective: LO7-5

118) Why do modern operations managers look for flexibility in their equipment?

Answer: Flexibility in equipment provides managers the ability to respond to changes in demand with little penalty in time, cost, or customer value.

Diff: 2

Topic: Selection of equipment and technology

Objective: LO7-5

119) How are environmental issues linked to the process choice? Won't being an environmentally conscious firm drive up costs and take away any competitive advantage? Discuss, with examples to support your position.

Answer: Environmental issues are directly on point in the process decision. The process choice selects equipment that has emissions, creates waste in work or in packaging, etc. Not all environmentally conscious activities are cost-adding. But even if they were, cost is not the only thing affected. Customers may be attracted to products that are made from recycled materials, or that are more recyclable. This translates into revenue enhancement, not an element of cost. The competitive advantage centers on the customer, not the cost.

Diff: 2

Topic: Sustainability

AACSB: Ethical Reasoning

Objective: LO7-5

120) A product is currently made in a process-focused shop, where fixed costs are \$9,000 per year and variable cost is \$50 per unit. The firm is considering a fundamental shift in process, to repetitive manufacture. The new process would have fixed costs of \$90,000, and variable costs of \$5. What is the crossover point for these processes? For what range of outputs is each process appropriate?

Answer: The crossover is at 1800 units annually. For volumes under 1800, the process focus is cheaper; for volumes over 1800 units, the repetitive focus is cheaper.

Diff: 2

Topic: Four process strategies

AACSB: Analytic Skills

Objective: LO7-2

121) Big John's Manufacturing currently produces its lead product on a machine that has a variable cost of \$0.32 per unit, and fixed costs of \$75,000. Big John is considering purchasing a new machine that will drop the variable cost to \$.28 per unit, but has a fixed cost of \$150,000. What is the cross-over point between the two machines?

Answer: 1,875,000 units

Diff: 2

Topic: Four process strategies

AACSB: Analytic Skills

Objective: LO7-2

122) The local convenience store makes personal pan pizzas. Currently, their process makes complete pizzas, fully cooked, for the customer. This process has a fixed cost of \$20,000, and a variable cost of \$1.75 per pizza. The owner is considering a different process that can make pizzas in two ways: completely cooked (as before), or partially cooked and then flash frozen, for the customer to finish at home. This alternate process has a fixed cost of \$24,000, but a lower variable cost (because much less energy is used in baking) of \$1.25 per pizza.

a. What is the crossover point between the existing process and the proposed process?

b. If the owner expects to sell 9,000 pizzas, should he get the new oven?

Answer: (a) the crossover is 8,000 units (b) for production quantities of 8,000 or larger, the new, more flexible process has lower cost.

Diff: 2

Topic: Four process strategies

AACSB: Analytic Skills

Objective: LO7-2

123) A firm is about to undertake the manufacture of a product, and is weighing the process configuration options. There are two intermittent processes under consideration, as well as a repetitive focus. The smaller intermittent process has fixed costs of \$3,000 per month, and variable costs of \$10 per unit. The larger intermittent process has fixed costs of \$12,000 and variable costs of \$2 per unit. A repetitive focus plant has fixed costs of \$50,000 and variable costs of \$1 per unit.

a. At what output does the large intermittent process become cheaper than the small one?

b. At what output does the repetitive process become cheaper than the larger intermittent process?

Answer: (a) at 1125 units, the large job shop becomes cheaper than the small job shop; (b) at 38,000 units, the repetitive shop is cheaper than the larger job shop.

Diff: 2

Topic: Four process strategies

AACSB: Analytic Skills

Objective: LO7-2

124) An organization is considering three process configuration options. There are two different intermittent processes, as well as a repetitive focus. The smaller intermittent process has fixed costs of \$3,000 per month, and variable costs of \$10 per unit. The larger intermittent process has fixed costs of \$12,000 per month and variable costs of \$2 per unit. A repetitive focus plant has fixed costs of \$50,000 and variable costs of \$1 per unit.

a. If the company produced 20,000 units, what would be its cost under each of the three choices?

b. Which process offers the lowest cost to produce 40,000 units? What is that cost?

Answer:

(a) at 20,000 units, the costs are small intermittent = \$203,000; large intermittent = \$52,000; and repetitive = \$70,000 (b) at 40,000 units, repetitive process is cheapest, at \$90,000 (small intermittent = \$403,000, and large intermittent = \$92,000).

Diff: 2

Topic: Four process strategies

AACSB: Analytic Skills

Objective: LO7-2

125) A product is currently made in a process-focused shop, where fixed costs are \$8,000 per year and variable cost is \$40 per unit. The firm currently sells 200 units of the product at \$200 per unit. A manager is considering a repetitive focus to lower costs (and lower prices, thus raising demand). The costs of this proposed shop are fixed costs = \$24,000 per year and variable costs = \$10 per unit. If a price of \$80 will allow 400 units to be sold, what profit (or loss) can this proposed new process expect? Do you anticipate that the manager will want to change the process? Explain.

Answer:

Old: TR = \$40,000, TC = \$16,000, therefore Profit = \$24,000.

New: TR = \$80 x 400 = \$32,000, TC = \$24,000 + \$10 x 400 = \$28,000, for a profit of \$4,000.

Most will say NO; the larger repetitive process is less profitable than the smaller process-focused shop.

Diff: 2

Topic: Four process strategies

AACSB: Analytic Skills

Objective: LO7-2

126) Brandon's computer shop is considering two different configuration options. The first one is to have each computer built by the sales associates when they have free time. The second option is to hire a dedicated assembly technician. Option A has variable costs of \$50 per computer and no fixed costs. Option B has a fixed cost of \$1,000 but variable costs of only \$5 per computer. What is the cross-over point?

Answer: $50X=1000+5X$, $X(\text{cross-over point}) = 22.2$ computers

Diff: 2

Topic: Four process strategies

AACSB: Analytic Skills

Objective: LO7-2

127) A non-profit organization is planning a raffle to raise money. It has two options for tickets. The first option is to do the tickets by hand, with fixed costs of \$50 and variable costs of \$.05 per ticket. The second option is to outsource production. This would result in fixed costs of \$500 and variable costs of \$.01. If the organization plans to sell 10,000 tickets which option should it choose?

Answer: $50 + .05X = 500 + .01X$, $X = 11,250$ tickets (students may solve for the cross-over point and realize higher VC option is cheaper at 10,000 since it is below the cross-over point). Another viable method is to find the cost for each option, yielding Option 1 = $50 + .05(10000) = \$550$ and Option 2 = $500 + .01(10000) = \$600$. Thus the organization should choose the first option.

Diff: 2

Topic: Four process strategies

AACSB: Analytic Skills

Objective: LO7-2

128) Kirstin is thinking about opening a Chinese restaurant and needs to buy a rice cooker. Machine A has fixed costs of \$100 and variable costs of \$1/pound. Machine B has fixed costs of \$500 and variable costs of \$.1/pound. If Kirstin plans to sell 100 pounds of rice which machine should she choose? What is the cross-over point?

Answer:

Machine A costs $100 + 1(100) = \$200$

Machine B costs $\$500 + .1(100) = \510

Thus she should buy machine A.

Cross over is when $100 + X = 500 + .1X$, $X = 444.4$ pounds of rice

Diff: 2

Topic: Four process strategies

AACSB: Analytic Skills

Objective: LO7-2

129) Bridget is considering how to get to work over the summer. She has two options. Option A is to buy a seasonal bus pass for \$100. Option B is to pay \$.25 for each ride. Identify the fixed and variable costs for each option. If she has to ride both to and from work, how many days of work would it take for the seasonal pass to cost the same amount as Option B?

Answer:

Option A: VC=0 FC=100

Option B: VC=.25 FC=0

$100 = .25X$, $X = 400$ rides, since she has to take 2 rides each time she works, she would need to work 200 days for the two options to cost the same amount.

Diff: 2

Topic: Four process strategies

AACSB: Analytic Skills

Objective: LO7-2

130) Karla's candle factory is considering two different machines. Machine A is highly automated with FC of \$25,000 and VC of \$.1/candle. Machine B is actually no machine but rather hand labor with FC of \$10,000 and VC of \$.5/candle. If demand for Karla's candles is 25,000, which machine should she pick?

Answer:

Machine A: $\$25,000 + .1(25000) = \$27,500$

Machine B: $\$10,000 + .5(25000) = \$22,500$

Karla should pick Machine B

Diff: 2

Topic: Four process strategies

AACSB: Analytic Skills

Objective: LO7-2

131) Mary is considering purchasing a machine from two suppliers. Supplier A's machine has an annual fixed cost of \$10,000 and a unit variable cost of \$2.10. Supplier B's machine has an annual fixed cost of \$16,000 and a unit variable cost of \$3.00. How large should Mary's annual demand be in order to make Supplier B's machine the better choice?

Answer: The answer is that there is no demand for which Supplier B's machine will be better. Both Supplier B's fixed and variable costs are higher than Supplier A's.

Diff: 2

Topic: Four process strategies

AACSB: Analytic Skills

Objective: LO7-2