Operations Management (Canadian) 6th edition Stevenson Test Bank

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Chapter 02
Competitiveness, Strategic Planning, and Productivity

True / False Questions

1. The variety of models and options available to customers is an example of key purchasing criteria that establishes the basis of competition.
TRUE

Accessibility: Keyboard Navigation
Difficulty: Easy
Learning Objective: 02-01 List and discuss the primary ways that organizations compete.
Topic: 02-01 Competitiveness

2. A characteristic that was once an order winner may become an order qualifier, and vice versa.
TRUE

Accessibility: Keyboard Navigation
Difficulty: Medium
Learning Objective: 02-01 List and discuss the primary ways that organizations compete.
Topic: 02-01 Competitiveness

3. Order qualifiers are those characteristics of an organization's goods or services that cause them to be perceived as better than the competition.
FALSE

Accessibility: Keyboard Navigation
Difficulty: Medium
Learning Objective: 02-01 List and discuss the primary ways that organizations compete.
Topic: 02-01 Competitiveness

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4. The purchasing criteria of quality and timeliness of delivery are order winners for all companies.
FALSE

Accessibility: Keyboard Navigation
Difficulty: Hard
Learning Objective: 02-01 List and discuss the primary ways that organizations compete.
Topic: 02-01 Competitiveness

5. It is important that an organization has a clear and simple mission/vision/values statement.
TRUE

Accessibility: Keyboard Navigation
Difficulty: Medium
Learning Objective: 02-02 Describe a company's strategic planning; mission/vision/values; goals and objectives; strategies; tactics; and action plans; operations strategy and its formulation; and generic operations strategies.
Topic: 02-03 Mission, Vision, and Values

6. A mission statement should provide a guide for the formulation of strategies for the organization.
TRUE

Accessibility: Keyboard Navigation
Difficulty: Easy
Learning Objective: 02-02 Describe a company's strategic planning; mission/vision/values; goals and objectives; strategies; tactics; and action plans; operations strategy and its formulation; and generic operations strategies.
Topic: 02-03 Mission, Vision, and Values

7. If you think of goals as destinations, then tactics are the roadmaps for reaching the destinations.
FALSE

Accessibility: Keyboard Navigation
Difficulty: Hard
Learning Objective: 02-02 Describe a company's strategic planning; mission/vision/values; goals and objectives; strategies; tactics; and action plans; operations strategy and its formulation; and generic operations strategies.
Topic: 02-02 Strategic Planning

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8. Strategic planning includes both determining long-term plans and implementing them through allocation of resources and action plans.
TRUE

Accessibility: Keyboard Navigation
Difficulty: Easy
Learning Objective: 02-02 Describe a company's strategic planning; mission/vision/values; goals and objectives; strategies; tactics; and action plans; operations strategy and its formulation; and generic operations strategies.
Topic: 02-02 Strategic Planning

9. Organizational strategy must be determined without considering the realities of functional area strengths and weaknesses.
FALSE

Accessibility: Keyboard Navigation
Difficulty: Easy
Learning Objective: 02-02 Describe a company's strategic planning; mission/vision/values; goals and objectives; strategies; tactics; and action plans; operations strategy and its formulation; and generic operations strategies.
Topic: 02-02 Strategic Planning

10. Tactics are short-term projects to accomplish a specific objective, assigned to an individual, with a deadline and the resources needed identified.
FALSE

Accessibility: Keyboard Navigation
Difficulty: Medium
Learning Objective: 02-02 Describe a company's strategic planning; mission/vision/values; goals and objectives; strategies; tactics; and action plans; operations strategy and its formulation; and generic operations strategies.
Topic: 02-02 Strategic Planning

11. The hierarchy of planning and decision-making is: mission/vision, goals, strategies, tactics, and action plans.
TRUE

Accessibility: Keyboard Navigation
Difficulty: Medium
Learning Objective: 02-02 Describe a company's strategic planning; mission/vision/values; goals and objectives; strategies; tactics; and action plans; operations strategy and its formulation; and generic operations strategies.
Topic: 02-02 Strategic Planning

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12. Making trade-offs among competitive priorities should be avoided in developing operations strategies.
FALSE

Accessibility: Keyboard Navigation
Difficulty: Medium
Learning Objective: 02-02 Describe a company's strategic planning; mission/vision/values; goals and objectives; strategies; tactics; and action plans; operations strategy and its formulation; and generic operations strategies.
Topic: 02-04 Operations Strategy

13. Formulating an operations strategy requires focusing solely on the operations function, leaving the concerns of other functions and the status of external markets to broader organizational strategic planning.
FALSE

Accessibility: Keyboard Navigation
Difficulty: Medium
Learning Objective: 02-02 Describe a company's strategic planning; mission/vision/values; goals and objectives; strategies; tactics; and action plans; operations strategy and its formulation; and generic operations strategies.
Topic: 02-04 Operations Strategy

14. In large manufacturing organizations, the operations function tends to adopt a passive role in strategic planning, relying on the functional areas of marketing and finance to establish the strategic direction of the organization.
FALSE

Accessibility: Keyboard Navigation
Difficulty: Medium
Learning Objective: 02-02 Describe a company's strategic planning; mission/vision/values; goals and objectives; strategies; tactics; and action plans; operations strategy and its formulation; and generic operations strategies.
Topic: 02-04 Operations Strategy

15. Vertical integration refers to the ownership of a major part or the whole of the supply chain.
TRUE

Accessibility: Keyboard Navigation
Difficulty: Easy
Learning Objective: 02-02 Describe a company's strategic planning; mission/vision/values; goals and objectives; strategies; tactics; and action plans; operations strategy and its formulation; and generic operations strategies.
Topic: 02-02 Strategic Planning
Topic: 02-04 Operations Strategy

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16. Matching a competitor on quality or price is usually sufficient to gain market share.
FALSE

Accessibility: Keyboard Navigation
Difficulty: Easy
Learning Objective: 02-01 List and discuss the primary ways that organizations compete.
Topic: 02-01 Competitiveness

17. Time-based strategies focus on reducing the time required to accomplish certain activities, such as new product development or delivery to the customer.
TRUE

Accessibility: Keyboard Navigation
Difficulty: Medium
Learning Objective: 02-02 Describe a company's strategic planning; mission/vision/values; goals and objectives; strategies; tactics; and action plans; operations strategy and its formulation; and generic operations strategies.
Topic: 02-04 Operations Strategy

18. Typically a manufacturing firm would not consider Enterprise Resource Planning (ERP) software as part of the organizations operations strategy.
FALSE

Accessibility: Keyboard Navigation
Difficulty: Easy
Learning Objective: 02-02 Describe a company's strategic planning; mission/vision/values; goals and objectives; strategies; tactics; and action plans; operations strategy and its formulation; and generic operations strategies.
Topic: 02-04 Operations Strategy

19. In the 1990's Japanese manufacturing companies tended to shift their strategic orientation away from continuous improvement towards strategies based on low labour costs.
FALSE

Accessibility: Keyboard Navigation
Difficulty: Medium
Learning Objective: 02-02 Describe a company's strategic planning; mission/vision/values; goals and objectives; strategies; tactics; and action plans; operations strategy and its formulation; and generic operations strategies.
Topic: 02-04 Operations Strategy

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20. Productivity is defined as the ratio of output to input.
TRUE

Accessibility: Keyboard Navigation
Difficulty: Easy
Learning Objective: 02-03 Define and measure productivity; solve typical problems; explain why measuring the productivity of services is difficult; and describe factors affecting productivity.
Topic: 02-05 Productivity

21. Labour costs are included as one of the inputs in all productivity measures.
FALSE

Accessibility: Keyboard Navigation
Difficulty: Medium
Learning Objective: 02-03 Define and measure productivity; solve typical problems; explain why measuring the productivity of services is difficult; and describe factors affecting productivity.
Topic: 02-05 Productivity

22. Labour productivity is one example of a multifactor productivity measurement.
FALSE

Accessibility: Keyboard Navigation
Difficulty: Easy
Learning Objective: 02-03 Define and measure productivity; solve typical problems; explain why measuring the productivity of services is difficult; and describe factors affecting productivity.
Topic: 02-06 Measuring Productivity

23. Tracking productivity measures over time enables managers to judge organizational performance and to decide where improvements are needed.
TRUE

Accessibility: Keyboard Navigation
Difficulty: Medium
Learning Objective: 02-03 Define and measure productivity; solve typical problems; explain why measuring the productivity of services is difficult; and describe factors affecting productivity.
Topic: 02-06 Measuring Productivity

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24. Productivity is directly related to competitiveness.
TRUE

Accessibility: Keyboard Navigation
Difficulty: Easy
Learning Objective: 02-03 Define and measure productivity; solve typical problems; explain why measuring the productivity of services is difficult; and describe factors affecting productivity.
Topic: 02-06 Measuring Productivity

25. Even though labour cost as a proportion of total cost has been decreasing in manufacturing companies, labour productivity is still the main measure being used to gauge the performance of individuals and plants.
TRUE

Accessibility: Keyboard Navigation
Difficulty: Medium
Learning Objective: 02-03 Define and measure productivity; solve typical problems; explain why measuring the productivity of services is difficult; and describe factors affecting productivity.
Topic: 02-06 Measuring Productivity

26. Labour productivity is an example of a total productivity measure.
FALSE

Accessibility: Keyboard Navigation
Difficulty: Easy
Learning Objective: 02-03 Define and measure productivity; solve typical problems; explain why measuring the productivity of services is difficult; and describe factors affecting productivity.
Topic: 02-06 Measuring Productivity

27. Service productivity is easier to measure than manufacturing productivity because it is more labour intensive.
FALSE

Accessibility: Keyboard Navigation
Difficulty: Easy
Learning Objective: 02-03 Define and measure productivity; solve typical problems; explain why measuring the productivity of services is difficult; and describe factors affecting productivity.
Topic: 02-07 Productivity Measurement of Services

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28. Workers are the main determinant of productivity.
FALSE

Accessibility: Keyboard Navigation
Difficulty: Medium
Learning Objective: 02-03 Define and measure productivity; solve typical problems; explain why measuring the productivity of services is difficult; and describe factors affecting productivity.
Topic: 02-08 Factors that Affect Productivity

29. Computer automation will always result in increased productivity.
FALSE

Accessibility: Keyboard Navigation
Difficulty: Medium
Learning Objective: 02-03 Define and measure productivity; solve typical problems; explain why measuring the productivity of services is difficult; and describe factors affecting productivity.
Topic: 02-08 Factors that Affect Productivity

30. Variability of the output of services makes it more difficult to measure service productivity.
TRUE

Accessibility: Keyboard Navigation
Difficulty: Easy
Learning Objective: 02-03 Define and measure productivity; solve typical problems; explain why measuring the productivity of services is difficult; and describe factors affecting productivity.
Topic: 02-07 Productivity Measurement of Services

31. Vision and strategy are at the centre of the Balanced Scorecard framework.
TRUE

Accessibility: Keyboard Navigation
Difficulty: Medium
Learning Objective: 02-02 Describe a company's strategic planning; mission/vision/values; goals and objectives; strategies; tactics; and action plans; operations strategy and its formulation; and generic operations strategies.
Topic: 02-02 Strategic Planning

Multiple Choice Questions

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32. Product variety is an example of:
A. a generic operations strategy.
B. operations infrastructure.
C. a process type.
D. a dimension of flexibility.
E. a key purchasing criteria.

Accessibility: Keyboard Navigation
Difficulty: Medium
Learning Objective: 02-01 List and discuss the primary ways that organizations compete.
Topic: 02-01 Competitiveness

33. Which of the following is not one of the competitive priorities organizations emphasize as the basis of competing with one-another?
A. Cost
B. Quality
C. Product duplication
D. Flexibility
E. Delivery reliability

Accessibility: Keyboard Navigation
Difficulty: Easy
Learning Objective: 02-01 List and discuss the primary ways that organizations compete.
Topic: 02-01 Competitiveness

34. Which of the following is not a key purchasing criterion?
A. Price
B. Variety
C. Quality
D. Timeliness
E. Vendor relations

Accessibility: Keyboard Navigation
Difficulty: Easy
Learning Objective: 02-01 List and discuss the primary ways that organizations compete.
Topic: 02-01 Competitiveness

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35. Characteristics that customers perceive as minimum standards of acceptability are called:
A. order winners.
B. order qualifiers.
C. core competencies.
D. distinctive competencies.
E. minimum attributes.

Accessibility: Keyboard Navigation
Difficulty: Easy
Learning Objective: 02-01 List and discuss the primary ways that organizations compete.
Topic: 02-01 Competitiveness

36. Strategies have a(n) _____ impact on the general direction and basic character of a company.
A. long-term.
B. medium-term.
C. short-term.
D. insignificant.
E. tactical.

Accessibility: Keyboard Navigation
Difficulty: Easy
Learning Objective: 02-02 Describe a company's strategic planning; mission/vision/values; goals and objectives; strategies; tactics; and action plans; operations strategy and its formulation; and generic operations strategies.
Topic: 02-02 Strategic Planning

37. The shared beliefs of an organizations stakeholders are its:
A. policies.
B. vision.
C. strategy.
D. mission.
E. values.

Accessibility: Keyboard Navigation
Difficulty: Easy
Learning Objective: 02-02 Describe a company's strategic planning; mission/vision/values; goals and objectives; strategies; tactics; and action plans; operations strategy and its formulation; and generic operations strategies.
Topic: 02-03 Mission, Vision, and Values

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38. Of the following, which aspect of strategic planning involves medium or short-term projects to accomplish specific objectives?
A. Goals and objectives
B. Functional strategies
C. Action plans
D. Forecasts
E. Mission/vision statements

Accessibility: Keyboard Navigation
Difficulty: Medium
Learning Objective: 02-02 Describe a company's strategic planning; mission/vision/values; goals and objectives; strategies; tactics; and action plans; operations strategy and its formulation; and generic operations strategies.
Topic: 02-04 Operations Strategy

39. Which of the following is not a major decision-making category for operations policies and action plans?
A. Facility
B. Capacity
C. Process types and technology
D. Human Resources
E. Productivity

Accessibility: Keyboard Navigation
Difficulty: Medium
Learning Objective: 02-02 Describe a company's strategic planning; mission/vision/values; goals and objectives; strategies; tactics; and action plans; operations strategy and its formulation; and generic operations strategies.
Topic: 02-04 Operations Strategy

40. Which of the following is not a step for formulating an operations strategy?
A. Link the organizational goals to the operations strategy.
B. Conduct an audit to determine the strengths/weaknesses of the current operations strategy.
C. Define the mission and values of the organization.
D. Assess the degree of focus at each plant.
E. Segment the customers into types.

Accessibility: Keyboard Navigation
Difficulty: Hard
Learning Objective: 02-02 Describe a company's strategic planning; mission/vision/values; goals and objectives; strategies; tactics; and action plans; operations strategy and its formulation; and generic operations strategies.
Topic: 02-04 Operations Strategy

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41. The generic operations strategy that emphasizes capital-intensive methods to achieve higher labour productivity and lower unit costs is referred to as _____.
A. low labour cost strategy
B. scale-based strategy
C. focused factories strategy
D. outsourcing
E. flexible factories strategy

Accessibility: Keyboard Navigation
Difficulty: Medium
Learning Objective: 02-02 Describe a company's strategic planning; mission/vision/values; goals and objectives; strategies; tactics; and action plans; operations strategy and its formulation; and generic operations strategies.
Topic: 02-04 Operations Strategy

42. Radical process redesign based on process re-orientation, breaking down functional silos and integrating operations into customer-focused processes are tactics associated with what generic operations strategy?
A. Low labour cost strategy
B. Scale-based strategy
C. Focused factories strategy
D. Business process reengineering
E. Flexible factories strategy

Accessibility: Keyboard Navigation
Difficulty: Easy
Learning Objective: 02-02 Describe a company's strategic planning; mission/vision/values; goals and objectives; strategies; tactics; and action plans; operations strategy and its formulation; and generic operations strategies.
Topic: 02-04 Operations Strategy

43. Time-Based strategies do not focus on:
A. the time to deliver a product.
B. maintaining quality.
C. planning time.
D. production design time.
E. changeover time.

Accessibility: Keyboard Navigation
Difficulty: Easy
Learning Objective: 02-02 Describe a company's strategic planning; mission/vision/values; goals and objectives; strategies; tactics; and action plans; operations strategy and its formulation; and generic operations strategies.
Topic: 02-04 Operations Strategy

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44. Productivity is expressed as:
A. output plus input.
B. output minus input.
C. output times input.
D. output divided by input.
E. input divided by output.

Accessibility: Keyboard Navigation
Difficulty: Easy
Learning Objective: 02-03 Define and measure productivity; solve typical problems; explain why measuring the productivity of services is difficult; and describe factors affecting productivity.
Topic: 02-05 Productivity

45. A measure of productivity which reflects a combination of some or all of the resources used to obtain a certain output is:
A. labour productivity.
B. machine productivity.
C. multifactor productivity.
D. materials productivity.
E. overhead productivity.

Accessibility: Keyboard Navigation
Difficulty: Easy
Learning Objective: 02-03 Define and measure productivity; solve typical problems; explain why measuring the productivity of services is difficult; and describe factors affecting productivity.
Topic: 02-06 Measuring Productivity

46. Canvalves Company produces cast bronze valves on an assembly line. It currently produces 800 valves each 8-hour shift. If the production is increased to 1,200 valves each shift, the productivity increases by:
A. 50%
B. 33%
C. 25%
D. 67%
E. 75%

Accessibility: Keyboard Navigation
Difficulty: Medium
Learning Objective: 02-03 Define and measure productivity; solve typical problems; explain why measuring the productivity of services is difficult; and describe factors affecting productivity.
Topic: 02-06 Measuring Productivity

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47. In an assembly operation at a furniture factory, six employees assembled an average of 450 standard dining chairs per 5-day week. What is the labour productivity of this operation?
A. 90 chairs/worker/day
B. 20 chairs/worker/day
C. 15 chairs/worker/day
D. 75 chairs/worker/day
E. 50 chairs/worker/day

Accessibility: Keyboard Navigation
Difficulty: Easy
Learning Objective: 02-03 Define and measure productivity; solve typical problems; explain why measuring the productivity of services is difficult; and describe factors affecting productivity.
Topic: 02-06 Measuring Productivity

48. The weekly output of a fabrication process is shown below together with data for labour and material inputs. Standard selling price is $125 per unit. Overhead is charged weekly at the rate of $1,500 plus .5 times direct labour cost. Assume a 40-hour week and an hourly wage of $16. Material cost is $10 per linear foot. What is the average multifactor productivity?

Week	Output	# Workers	Material (feet)
1	392	5	2720
2	408	6	2790

A. 1.463
B. 1.456
C. 1.431
D. 1.422
E. 1.475

Accessibility: Keyboard Navigation
Difficulty: Hard
Learning Objective: 02-03 Define and measure productivity; solve typical problems; explain why measuring the productivity of services is difficult; and describe factors affecting productivity.
Topic: 02-06 Measuring Productivity

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49. Which of the following is not true of productivity measures?
A. Productivity is mainly used for manufacturing and not used for services.
B. Productivity measures can track performance over time.
C. Labour productivity is used in labour wage negotiations.
D. Productivity measures can be used to measure the performance of an organization or an entire country.
E. Productivity contributes to organizational competitiveness.

Accessibility: Keyboard Navigation
Difficulty: Medium
Learning Objective: 02-03 Define and measure productivity; solve typical problems; explain why measuring the productivity of services is difficult; and describe factors affecting productivity.
Topic: 02-06 Measuring Productivity

50. Which of the following is not a factor that affects productivity?
A. Use of computers in an office.
B. Design of the workspace.
C. Use of Internet and e-mail.
D. Standardizing work process.
E. Analysis of competitors.

Accessibility: Keyboard Navigation
Difficulty: Medium
Learning Objective: 02-03 Define and measure productivity; solve typical problems; explain why measuring the productivity of services is difficult; and describe factors affecting productivity.
Topic: 02-08 Factors that Affect Productivity

51. Which of these factors does not affect productivity?
A. Methods and management
B. Capital equipment
C. Technology
D. Labour
E. Hiring policies

Accessibility: Keyboard Navigation
Difficulty: Easy
Learning Objective: 02-03 Define and measure productivity; solve typical problems; explain why measuring the productivity of services is difficult; and describe factors affecting productivity.
Topic: 02-08 Factors that Affect Productivity

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52. Which of the following is not a general factor that affects productivity?
A. Methods and management
B. Equipment and technology
C. Competitors
D. Labour

Accessibility: Keyboard Navigation
Difficulty: Medium
Learning Objective: 02-03 Define and measure productivity; solve typical problems; explain why measuring the productivity of services is difficult; and describe factors affecting productivity.
Topic: 02-08 Factors that Affect Productivity

53. Which of the following is not one of the major components of the Balanced Scorecard framework?
A. Financial
B. Human resources
C. Internal business processes
D. Learning and growth
E. Customer

Accessibility: Keyboard Navigation
Difficulty: Medium
Learning Objective: 02-02 Describe a company's strategic planning; mission/vision/values; goals and objectives; strategies; tactics; and action plans; operations strategy and its formulation; and generic operations strategies.
Topic: 02-02 Strategic Planning

54. Which of the following determines where the organization desires to be in the future?
A. Mission statement
B. Values statement
C. Goals statement
D. Vision statement
E. Action plans

Accessibility: Keyboard Navigation
Difficulty: Easy
Learning Objective: 02-02 Describe a company's strategic planning; mission/vision/values; goals and objectives; strategies; tactics; and action plans; operations strategy and its formulation; and generic operations strategies.
Topic: 02-03 Mission, Vision, and Values

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55. Which of the following is a set of well coordinated policies, objectives, and action plans, directly affecting the operations function, which is aimed at securing a long-term sustainable advantage over the competition.
A. Generic strategy
B. Operations strategy
C. Action plans
D. Strategic planning
E. Functional strategy

Accessibility: Keyboard Navigation
Difficulty: Medium
Learning Objective: 02-02 Describe a company's strategic planning; mission/vision/values; goals and objectives; strategies; tactics; and action plans; operations strategy and its formulation; and generic operations strategies.
Topic: 02-04 Operations Strategy

56. What is the major difference between vertical integration and outsourcing?
A. Vertical integration is ownership of a part of the supply chain, outsourcing has no ownership.
B. Outsourcing is ownership of a part of the supply chain, vertical integration has no ownership.
C. Outsourcing uses external suppliers to perform some production/service functions while production/service functions through vertical integration are strictly in-house.
D. Outsourcing is a long term operations strategy where vertical integration is short term.
E. Vertical integration is usually limited to services, where as outsourcing usually deals with production of goods.

Accessibility: Keyboard Navigation
Difficulty: Medium
Learning Objective: 02-02 Describe a company's strategic planning; mission/vision/values; goals and objectives; strategies; tactics; and action plans; operations strategy and its formulation; and generic operations strategies.
Topic: 02-04 Operations Strategy

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57. Segmenting customers into types is part of formulating an Operations Strategy. Which of the following is not one of the four competitive priorities used in segmentation?
A. Cost
B. Quality
C. Delivery
D. Location
E. Flexibility

Accessibility: Keyboard Navigation
Difficulty: Hard
Learning Objective: 02-02 Describe a company's strategic planning; mission/vision/values; goals and objectives; strategies; tactics; and action plans; operations strategy and its formulation; and generic operations strategies.
Topic: 02-04 Operations Strategy

58. The generic operations strategy that reduces the time needed to add new product and process designs and allows volume and design changes and product variety is referred to as _____.
A. low labour cost strategy
B. scale-based strategy
C. focused factories strategy
D. outsourcing
E. flexible factories strategy

Accessibility: Keyboard Navigation
Difficulty: Medium
Learning Objective: 02-02 Describe a company's strategic planning; mission/vision/values; goals and objectives; strategies; tactics; and action plans; operations strategy and its formulation; and generic operations strategies.
Topic: 02-04 Operations Strategy

59. Which of the following is not a measure of labour productivity?
A. Units of output per labour hour
B. Value-added per labour hour
C. Units of output per shift
D. Units of output per machine hour
E. Dollar value of output per labour hour

Accessibility: Keyboard Navigation
Difficulty: Easy
Learning Objective: 02-03 Define and measure productivity; solve typical problems; explain why measuring the productivity of services is difficult; and describe factors affecting productivity.
Topic: 02-06 Measuring Productivity

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60. Service productivity measurement is more problematic than manufacturing due to which of the following issues?
A. Output is tangible
B. Low degree of variability
C. Involves intellectual activities
D. Inputs are consistent
E. Output has a low degree of variability

Accessibility: Keyboard Navigation
Difficulty: Medium
Learning Objective: 02-03 Define and measure productivity; solve typical problems; explain why measuring the productivity of services is difficult; and describe factors affecting productivity.
Topic: 02-07 Productivity Measurement of Services

Short Answer Questions

61. A company has introduced a process improvement that reduces processing time for each unit, so that output is increased by 25% with less material, but one additional worker required. Under the old process, five workers could produce 60 units per hour. Labour costs are $12/hour, and material input was previously $16/unit. For the new process, material is now $10/unit. Overhead is charged at 1.6 times direct labour cost. Finished units sell for $31 each. What increase in productivity is associated with the process improvement?

Before :	$\frac{60(31)}{5(12) + 60(16) + 1.6(5)(12)}$	=	$\frac{1{,}860/hr}{1{,}116/hr}$	= 1.667
After :	$\frac{60(1.25)(31)}{6(12) + 75(10) + 1.6(6)(12)}$	=	$\frac{2{,}325/hr}{937.2/hr}$	= 2.481
Productivity increase = $\frac{(2.481 - 1.667) \times 100}{1.667}$		=	48.83%	

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Topic: 02-06 Measuring Productivity

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62. The manager of a carpet store is trying to determine optimal installation crew size. He has tried various crew sizes with the results shown below. Compute the average labour productivity for each crew size. Which crew size do you recommend?

Crew Size	Yards Installed
2	706
4	1,308
3	1,017
3	1,002
4	1,288
2	692

Crew Size	Yards Installed	Labour Productivity
2	706	353 yards/worker
4	1,308	327 yards/worker
3	1,017	339 yards/worker
3	1,002	334 yards/worker
4	1,288	322 yards/worker
2	692	346 yards/worker

Crew Size	Avg. Labour Productivity
2	(353 + 346)/2 = 349.5 yards/worker
3	(339 + 334)/2 = 336.5 yards/worker
4	(327 + 322)/2 = 324.5 yards/worker

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Recommend optimal crew size = 2

Accessibility: Keyboard Navigation
Difficulty: Easy
Learning Objective: 02-03 Define and measure productivity; solve typical problems; explain why measuring the productivity of services is difficult; and describe factors affecting productivity.
Topic: 02-06 Measuring Productivity

63. The weekly output of a production process is shown below, together with data for labour and material inputs. The standard inventory value of the output is $125 per unit. Overhead is charged weekly at the rate of $1500 plus .5 times direct labour cost. Assume a 40-hour week and an hourly wage of $16. Material cost is $10 per running foot. Compute the average multifactor productivity for this process.

Week	Output	# Workers	Material (ft.)
1	412	6	2840
2	364	5	2550
3	392	5	2720
4	408	6	2790

Wk 1:	$\frac{412(125)}{6(40)(16) + 2{,}840(10) + .5(6)(40)(16) + 1.500}$	=	$\frac{51{,}500}{35{,}660}$	= 1.444
Wk 2:	$\frac{365(125)}{5(40)(160 + 2{,}550(10) + .5(5)(40)(16) + 1{,}500}$	=	$\frac{45{,}500}{31{,}800}$	= 1.431
Wk 3:	$\frac{392(125)}{5(40)(16) + 2{,}720(10) + .5(5)(40)(16) + 1{,}500}$	=	$\frac{49{,}000}{33{,}500}$	= 1.463
Wk 4:	$\frac{408(125)}{6(40)(16) + 2{,}720(10) + .5(6)(40)(16) + 1{,}500}$	=	$\frac{51{,}000}{35{,}160}$	= 1.451
Avg.	= (1.444 + 1.431 + 1.463 + 1.451)/4 = 5.789/4	=	1.447	

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