Types of Decisions

- One-time-only special orders
- Insourcing vs. outsourcing
- Make or buy
- Product-mix
- Customer profitability
- Branch/segment: adding or discontinuing
- Equipment replacement

One-Time-Only Special Orders

- Accepting or rejecting special orders when there is idle production capacity and the special orders have no long-run implications
- Decision rule: Does the special order generate additional operating income?
  - Yes—accept
  - No—reject
- Compares relevant revenues and relevant costs to determine profitability

Special Order Illustration

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	A	B	C	D	E	F	G	H
1		Without the Special Order				With the Special Order		Difference: Relevant Amounts
2		30,000				35,000		for the
3		Units to be Sold				Units to be Sold		5,000
4		Per Unit		Total		Total		Units Special Order
5		(1)		(2) = (1) x 30,000		(3)		(4) = (3) – (2)
6	Revenues	$20.00		$600,000		$655,000		$55,000[a]
7	Variable costs:							
8	Manufacturing	7.50		225,000		262,500		37,500[b]
9	Marketing	5.00		150,000		150,000		0[c]
10	Total variable costs	12.50		375,000		412,500		37,500
11	Contribution margin	7.50		225,000		242,500		17,500
12	Fixed costs:							
13	Manufacturing	4.50		135,000		135,000		0[d]
14	Marketing	2.00		60,000		60,000		0[d]
15	Total fixed costs	6.50		195,000		195,000		0
16	Operating income	$ 1.00		$ 30,000		$ 47,500		$17,500
17								
18	[a]5,000 units x $11.00 per unit = $55,000.							
19	[b]5,000 units x $7.50 per unit = $37,500.							
20	[c]No variable marketing costs would be incurred for the 5,000-unit one-time-only special order.							
21	[d]Fixed manufacturing costs and fixed marketing costs would be unaffected by the special order.							

Make-or-Buy Illustration

Relevant Items	Total Relevant Costs		Relevant Cost Per Unit	
	Make	Buy	Make	Buy
Outside purchase of parts		$16,000,000		$16.00
Direct materials	$ 9,000,000		$ 9.00	
Direct manufacturing labor	2,400,000		2.40	
Variable manufacturing overhead	1,600,000		1.60	
Mixed (variable and fixed) materials-handling and setup overhead	2,000,000		2.00	
Total relevant costs[a]	$15,000,000	$16,000,000	$15.00	$16.00
Difference in favor of making CD players	$1,000,000		$1.00	

[a]The $3,000,000 of plant-lease, plant-insurance, and plant-administration costs could be included under both alternatives. Conceptually, they do not belong in a listing of relevant costs because these costs are irrelevant to the decision. Practically, some managers may want to include them in order to list all costs that will be incurred under each alternative.

Make-or-Buy Illustration, Extended

Relevant Items	Alternatives for Soho: 1. Make Video-System DVD Players and Do Not Make Digitek	Alternatives for Soho: 2. Buy Video-System DVD Players and Make Digitek
PANEL A Total-Alternatives Approach to Make-or-Buy Decisions		
Total incremental future costs of making/buying video-system DVD players (from Exhibit 11-6)	$15,000,000	$16,000,000
Deduct excess of future revenues over future costs from Digitek	0	(2,500,000)
Total relevant costs under total-alternatives approach	$15,000,000	$13,500,000

	1. Make Video-System DVD Players	2. Buy Video-System DVD Players
PANEL B Opportunity-Cost Approach to Make-or-Buy Decisions		
Total incremental future costs of making/buying video-system DVD players (from Exhibit 11-6)	$15,000,000	$16,000,000
Opportunity cost: Profit contribution forgone because capacity will not be used to make Digitek, the next-best alternative	2,500,000	0
Total relevant costs under opportunity-cost approach	$17,500,000	$16,000,000

Note that the differences in costs across the columns in Panels A and B are the same: The cost of alternative 3 is $1,500,000 less than the cost of alternative 1, and $2,500,000 less than the cost of alternative 2.

Potential Problems with Relevant-Cost Analysis

- Avoid incorrect general assumptions about information, especially:
  - "All variable costs are relevant and all fixed costs are irrelevant."
  - There are notable exceptions for both costs.

Potential Problems with Relevant-Cost Analysis

- Problems with using unit-cost data:
  - Including irrelevant costs in error
  - Using the same unit-cost with different output levels
    - Fixed costs per unit change with different levels of output

Avoiding Potential Problems with Relevant-Cost Analysis

- Focus on total revenues and total costs, not their per-unit equivalents.
- Continually evaluate data to ensure that it meets the requirements of relevant information.

Insourcing vs. Outsourcing

- Insourcing—producing goods or services within an organization
- Outsourcing—purchasing goods or services from outside vendors
- Also called the make-or-buy decision
- Decision rule: Select the option that will provide the firm with the lowest cost, and therefore the highest profit.

Qualitative Factors

- Nonquantitative factors may be extremely important in an evaluation process, yet do not show up directly in calculations:
  - Quality requirements
  - Reputation of outsourcer
  - Employee morale
  - Logistical considerations—distance from plant, and so on

Opportunity Costs

- Opportunity cost is the contribution to operating income that is foregone by not using a limited resource in its next-best alternative use
  - "How much profit did the firm 'lose out on' by not selecting this alternative?"
- Special type of opportunity cost: holding cost for inventory—funds tied up in inventory are not available for investment elsewhere

Product-Mix Decisions

- The decisions made by a company about which products to sell and in what quantities.
- Decision rule (with a constraint): Choose the product that produces the highest contribution margin per unit of the constraining resource.

Adding or Dropping Customers

- Decision rule: Does adding or dropping a customer add operating income to the firm?
  - Yes—add or don't drop
  - No—drop or don't add
- Decision is based on profitability of the customer, not how much revenue a customer generates.

Customer Profitability Analysis, Illustrated

	Customer			
	Vogel	Brenner	Wisk	Total
Revenues	$500,000	$300,000	$400,000	$1,200,000
Cost of goods sold	370,000	220,000	330,000	920,000
Furniture-handling labor	41,000	18,000	33,000	92,000
Furniture-handling equipment cost written off as depreciation	12,000	4,000	9,000	25,000
Rent	14,000	8,000	14,000	36,000
Marketing support	11,000	9,000	10,000	30,000
Sales-order and delivery processing	13,000	7,000	12,000	32,000
General administration	20,000	12,000	16,000	48,000
Allocated corporate-office costs	10,000	6,000	8,000	24,000
Total costs	491,000	284,000	432,000	1,207,000
Operating income	$ 9,000	$ 16,000	$ (32,000)	$ (7,000)

Customer Profitability Analysis, Extended

	(Loss in Revenues) and Savings in Costs from Dropping Wisk Account (1)	Incremental Revenues and (Incremental Costs) from Adding Loral Account (2)
Revenues	$(400,000)	$400,000
Cost of goods sold	330,000	(330,000)
Furniture-handling labor	33,000	(33,000)
Furniture-handling equipment cost written off as depreciation	0	(9,000)
Rent	0	0
Marketing support	10,000	(10,000)
Sales-order and delivery processing	12,000	(12,000)
General administration	0	0
Corporate-office costs	0	0
Total costs	385,000	(394,000)
Effect on operating income (loss)	$ (15,000)	$ 6,000

Adding or Discontinuing Branches or Segments

- Decision rule: Does adding or discontinuing a branch or segment add operating income to the firm?
  - Yes—add or don't discontinue
  - No—discontinue or don't add
- Decision is based on profitability of the branch or segment, not how much revenue the branch or segment generates.

Adding/Closing Offices or Segments

	(Loss in Revenues) and Savings in Costs from Closing Allied West (1)	Incremental Revenues and (Incremental Costs) from Opening Allied South (2)
Revenues	$(1,200,000)	$1,200,000
Cost of goods sold	920,000	(920,000)
Furniture-handling labor	92,000	(92,000)
Furniture-handling equipment cost written off as depreciation	0	(25,000)
Rent	36,000	(36,000)
Marketing support	30,000	(30,000)
Sales-order and delivery processing	32,000	(32,000)
General administration	48,000	(48,000)
Corporate-office costs	0	0
Total costs	1,158,000	(1,183,000)
Effect on operating income (loss)	$ (42,000)	$ 17,000

Equipment-Replacement Decisions

- Sometimes difficult due to amount of information at hand that is irrelevant:
  - Cost, accumulated depreciation, and book value of existing equipment
  - Any potential gain or loss on the transaction—a financial accounting phenomenon only
- Decision rule: Select the alternative that will generate the highest operating income.

Equipment-Replacement Decisions, Illustrated

	Two Years Together		
	Keep (1)	Replace (2)	Difference (3) = (1) – (2)
Revenues	$2,200,000	$2,200,000	—
Operating costs			
Cash operating costs ($800,000/yr. × 2 years; $460,000/yr. × 2 years)	1,600,000	920,000	$ 680,000
Book value of old machine			
Periodic write-off as depreciation or	400,000	—	—
Lump-sum write-off	—	400,000[a]	
Current disposal value of old machine	—	(40,000)[a]	40,000
New machine cost, written off periodically as depreciation	—	600,000	(600,000)
Total operating costs	2,000,000	1,880,000	120,000
Operating income	$ 200,000	$ 320,000	$(120,000)

[a]In a formal income statement, these two items would be combined as "loss on disposal of machine" of $360,000.

Equipment-Replacement Decisions, Illustrated (Relevant Costs Only)

	Two Years Together		
	Keep (1)	Replace (2)	Difference (3) = (1) – (2)
Cash operating costs	$1,600,000	$ 920,000	$680,000
Current disposal value of old machine	—	(40,000)	40,000
New machine, written off periodically as depreciation	—	600,000	(600,000)
Total relevant costs	$1,600,000	$1,480,000	$120,000

Behavioral Implications

- Despite the quantitative nature of some aspects of decision making, not all managers will choose the best alternative for the firm.
- Managers could engage in self-serving behavior such as delaying needed equipment maintenance in order to meet their personal profitability quotas for bonus consideration.