

Chapter 4—Relevant Costs and Benefits for Decision Making

1. Mambo Company is considering a new machine for its production plant to replace an old machine that originally cost \$14,000 and has \$11,000 of accumulated depreciation. The new machine can be purchased at a cash cost of \$20,000, but the distributor of the new machine has offered to take the old machine in as a trade-in, thereby reducing the cost of the new machine to \$18,000.

Based only on this information, calculate the total relevant cost of acquiring the new machine.

- a. \$18,000, or the net cash paid to the distributor
 - b. \$20,000, or the gross cost of the new machine
 - c. \$21,000, or the net cash paid plus the book value (\$3,000) of the old machine
 - d. \$19,000, or the gross cost of the new machine minus the \$1,000 loss on disposing of the old machine.
2. Refer to the previous question. Suppose that Mambo had the opportunity to sell the old machine to a friend at another company for \$2,500 but chose instead to trade the machine in on the new machine, to avoid the risk of the friend not being satisfied with the old machine.

Using this additional information, calculate the relevant cost of the new machine.

- a. \$18,000, or the net cash paid to the distributor
 - b. \$20,000, or the gross cost of the new machine
 - c. \$18,500, or the net cost of the new machine plus the opportunity cost of \$500, which is the difference between the trade-in value of the old machine and the amount offered by the friend for the old machine.
 - d. \$19,000, or the gross cost of the new machine minus the \$1,000 loss on disposing of the old machine.
3. Refer to the previous questions. In addition to the information provided in Questions 1 and 2, now suppose that the product that the new machine makes is expected to be produced for only three more years. The old machine is expected to last for three additional years, but the new machine will save labor cost of \$3,000 per year over the next three years. At the end of the three years, both machines would be obsolete and would have no expected salvage value.

Assuming a differential analysis approach, determine the total cost associated with keeping the old machine, the total cost of buying the new machine, and the differential cost of buying the new machine.

	Total Cost of Keeping Old Machine	Total Cost of Buying New Machine	Differential Cost of New Machine
a.	\$14,000	\$20,000	\$(6,000)
b.	\$14,000	\$18,000	\$(4,000)
c.	\$ 3,000	\$11,500	\$(8,500)
d.	\$ -0-	\$ 9,500	\$(9,500)

4. In a relevant cost analysis situation, which of the following costs are never relevant?
- Future outlay costs
 - Opportunity costs
 - Sunk costs
 - All of the above are always relevant
5. Baker Company, an Ohio company that sells a branded product regionally to retail customers in Midwest. It normally sells its product for \$40 per unit; however, it has received a one-time offer from a private-brand company on the West Coast to buy 1,000 units at \$25 per unit. Even though the company has excess capacity to produce the units, the president of the company immediately rejected the offer; however, the chief accountant stated that it might be a profitable opportunity for the company, even though \$25 is below its unit cost of \$28, calculated as follows:

Direct materials	\$12.00
Direct labor	4.00
Variable overhead	7.00
Depreciation & other fixed overhead	<u>5.00</u>
Total unit cost	\$28.00

Also, the special order will save \$2 per unit in packaging costs since the product will be bulk packaged instead of being individually packaged.

Calculate the amount of profit or loss per unit if Baker accepts the special order.

- \$4 loss
 - \$2 loss
 - \$4 profit
 - \$2 profit
6. Zortex, Inc. had been making a component for one of its products, but is now considering outsourcing the component to a Japanese company, which has offered to sell an unlimited quantity of components for \$5 per unit. If Zortex outsources, it could shut down a whole department and rent the building for \$1,500 per month. The cost of making the component is \$4.25 per unit, which includes \$2.00 of fixed costs, of which only \$1.50 per unit can be avoided if the department is shut down. Zortex currently produces about 1,000 units per month.

What is the cost advantage or disadvantage of per unit of outsourcing the component?

- \$0.75 disadvantage
- \$1.50 disadvantage
- \$0.50 advantage
- \$0.25 advantage

7. Nordic Company makes a semi-finished machine component for the heavy equipment industry that has a unit contribution margin of \$200 to Nordic. A major customer has been purchasing 100 units per month from Nordic for many years, but has indicated that it would prefer to purchase them already machined to its specifications. It has offered to pay an additional \$25 per unit for the finished units. To meet those specifications, Nordic would have to rent additional equipment at a cost of \$2,000 per month and incur labor and other direct costs of \$15 per unit. Calculate the per-unit advantage or disadvantage of further processing.
- \$10 disadvantage
 - \$35 advantage
 - \$20 advantage
 - \$10 advantage

8. Delta, LTD makes three products (Alpha, Beta, and Gamma), all of which use a very rare ingredient called Omicron. Delta can purchase only 900 ounces of Omicron per month from its Greek source. Below is data for the three products:

	<u>Alpha</u>	<u>Beta</u>	<u>Gamma</u>
Unit selling price	\$82	\$70	\$100
Unit variable costs	40	43	55
Unit contribution margin	42	27	45
Omicron (ounces per unit)	20	15	15

How should Delta allocate the 900 ounces of Omicron assuming it can sell unlimited quantities of all three produces?

- All 900 ounces should be allocated to Alpha
 - All 900 ounces should be allocated to Beta
 - All 900 ounces should be allocated to Gamma
 - None of the above
9. Refer to Question 8. Assume that the maximum number of units that can be sold is: 25 units of Alpha, 25 units of Beta, and 15 units of Gamma.
- How many ounces of Omicron will be allocated to each product?
- All 900 ounces will be allocated to Gamma
 - 225 ounces to Gamma, 500 ounces to Alpha, and 175 ounces to Beta
 - 225 ounces to Gamma, 175 ounces to Alpha, and 500 ounces to Beta
 - 115 ounces to Gamma, 510 ounces to Alpha, and 275 ounces to Delta