

PART 5

Short-Term Financial Decisions

CHAPTERS IN THIS PART

14 Working Capital and Current Assets Management

15 Current Liabilities Management

**INTEGRATIVE CASE 5:
CASA DE DISEÑO**

Principles of Managerial Finance Solution

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CHAPTER 14

Working Capital and Current Assets Management

INSTRUCTOR'S RESOURCES

Overview

This chapter introduces the fundamentals and describes the interrelationship of net working capital, profitability, and risk in managing the firm's current asset accounts. The chapter then focuses on the management of three major current asset accounts—cash, accounts receivable and inventory. A brief discussion of general inventory management policies, international inventory management, and several specific inventory management techniques: ABC, economic order quantity (EOQ), reorder point, materials requirement planning (MRP), and just-in-time (JIT). The key aspects of accounts receivable management are discussed: credit policy, credit terms, and collection policy. The chapter also discusses the additional risk factors involved in managing international accounts receivable. Examples demonstrate the effect of changes in credit policy. Also discussed is the impact of changes in cash discounts

PMF DISK

This chapter's topics are not covered on the *PMF Tutor* or the *PMF Problem-Solver*.

PMF Templates

The following spreadsheet templates are provided:

<u>Problem</u>	<u>Topic</u>
14-1	Cash conversion cycle
14-6	EOQ, reorder point, and safety stock

Study Guide

The following *Study Guide* examples are suggested for classroom presentation:

<u>Example</u>	<u>Topic</u>
2	Aggressive versus conservative financing strategy
4	Loss of loan discounts
7	Accounts receivable and cost

ANSWERS TO REVIEW QUESTIONS

- 14-1** *Short-term financial management*, the management of the firm's current assets and liabilities, is one of the financial manager's most important functions. Managing these accounts wisely results in a balance between profitability and risk that has a positive impact on the firm's value. Current assets represent about 40% of total assets, and current liabilities account for 26% of total liabilities in U.S. manufacturing firms. Therefore, managing these current balance sheet accounts to achieve an appropriate balance between profitability and risk takes a large amount of a financial manager's time.

The basic definition of *net working capital* is the difference between current assets and current liabilities. An alternative definition is that portion of current assets financed by long-term funding (when current assets exceed current liabilities-*positive working capital*) or that portion of the firm's fixed assets financed with current liabilities (when current assets are less than current liabilities-*negative working capital*).

- 14-2** The more predictable a firm's cash inflows, the lower the level of net working capital with which it can safely operate. This is true since the more predictable or certain the receipt of cash inflow, the less cushion (i.e., net working capital) needed to absorb unexpected funds requirements. The higher a firm's net working capital, the higher its liquidity may be, since more current assets are available to provide for payment of short-term obligations. However, if current assets are predominantly illiquid inventories or prepaid expenses, liquidity may not be improved with higher net working capital. Also, positive net working capital is financed with long-term funds which are usually more costly and can place more constraints on the firm's operations.

Technical insolvency occurs if a firm is unable to meet its payments when due. Generally, the higher the firm's net working capital, the lower the risk, or chance, of technical insolvency. Increasing net working capital indicates increased liquidity and therefore a decreased risk of technical insolvency, and vice versa.

- 14-3** If a firm increases the ratio of current-to-total assets, it will have a larger proportion of current assets. Because current assets are less profitable, overall profitability will decrease. The firm will have more net working capital (due to increased current assets), lower risk of technical insolvency, and also may have greater liquidity. It is also important to consider the composition of current assets. The "nearer" a current asset is to cash, the greater its liquidity may be and the lower its risk. For example, an investment in accounts receivable is less risky than inventory.

The higher the ratio of current liabilities to total assets, the more current liabilities in relation to long-term funds held by the firm. Since in most economic conditions, current liabilities are a cheaper form of financing than long-term funds, the reduced financing costs should increase the firm's profits. At the same time, the firm has less net working capital, thereby reducing liquidity and increasing the risk of technical insolvency. A decrease in the ratio would increase both profits and risk.

- 14-4** A firm's *operating cycle* is the period when a firm has its money tied up in inventory and accounts receivable until cash is collected from the sale of the finished product. It is calculated by adding the average age of inventory (AAI) to the average collection period (ACP). The *cash conversion cycle* (CCC) is the number of days in the firm's operating cycle (OC) minus the average payment period (APP) for inputs to production. The CCC takes into account the time at which payment is made for material; this spontaneous form of financing partially or fully offsets the need for negotiated financing while resources are tied up in the operating cycle.

- 14-5** If a firm does not face a seasonal cycle then they will face only a permanent funding requirement. With seasonal needs the firm must also make a decision as to how they wish to meet the short-term nature of

their seasonal cash demands. They may choose either an aggressive or conservative policy toward this cyclical need.

- 14-6** An *aggressive strategy* finances a firm's seasonal needs, and possibly some of its permanent needs, with short-term funds, including trade credit as well as bank lines of credit or commercial paper. This approach seeks to increase profit by using as much of the less expensive short-term financing as possible, but increases risk since the firm operates with minimum net working capital, which could become negative. Another factor contributing to risk is the potential to quickly arrange for long-term funding, which is generally more difficult to negotiate, to cover shortfalls in seasonal needs.

The *conservative strategy* finances all expected fund requirements with long-term funds, while short-term funds are reserved for use in the event of an emergency. This strategy results in relatively lower profits, since the firm uses more of the expensive long-term financing and may pay interest on unneeded funds. The conservative approach has less risk because of the high level of net working capital (i.e., liquidity) which is maintained; the firm has reserved short-term borrowing power for meeting unexpected fund demands.

- 14-7** The longer the cash conversion cycle the greater the amount of investment tied up in low return assets. Any extension of the cycle can result in higher costs and lower profits.

- 14-8** Financial managers will tend to want to keep inventory levels low to reduce financing costs. Marketing managers will tend to want large finished goods inventories. Manufacturing managers will tend to want high raw materials and finished goods inventories. The purchasing manager may favor high raw materials inventories if quantity discounts are available for large purchases.

Inventory is an investment because managers must purchase the raw materials and make expenditures for the production of the product such as paying labor costs. Until cash is received through the sale of the finished goods the cash expended for creation of the inventory, in any of its forms, is an investment by the firm.

- 14-9** The *ABC system* divides inventory into three categories of descending importance based on certain criteria established by the firm, such as total dollar investment and cost per item. Control of the A items is the most sophisticated due to the high investment involved, while B and C items would be subject to less strict controls.

The *economic order quantity (EOQ)* looks at all of the various costs of inventory and determines what order size minimizes total inventory cost. The model analyzes the tradeoff between order cost and carrying cost and determines the order quantity that minimizes the total inventory cost.

The *just-in-time (JIT)* system is a form of inventory control that attempts to reduce (at least theoretically) raw materials and finished goods inventory to zero. Ideally, the firm has only work-in-process inventory. JIT relies on timely receipt of high quality materials and workmanship; this system requires extensive cooperation among all parties.

Materials Requirement Planning (MRP) is a computerized system that breaks down the bill of materials for each product in order to determine what to order, when to order it, and what priorities to assign to ordering. MRP relies on EOQ and reorder point concepts to determine how much to order.

- 14-10** The need to ship materials and products to foreign countries creates challenges for international inventory managers. Time delays, damaged goods, and theft may occur. The primary concern becomes having materials/goods where needed, on a timely basis, rather than ordering the most economical amount.
- 14-11** A firm uses a *credit selection process* to determine if credit should be extended to a customer and if so, how much. The credit manager may use the *five Cs of credit* to focus the analysis of a customer's creditworthiness:
1. *Character* - the applicant's past record of meeting financial, contractual, and moral obligations.
 2. *Capacity* - the applicant's ability to repay the requested credit amount; this is evaluated through financial statement analysis, particularly liquidity and debt ratios.
 3. *Capital* - the applicant's financial strength, measured by ownership position (percentage of equity) and profitability ratios.
 4. *Collateral* - the assets available to secure the applicant's credit.
 5. *Conditions* - the current economic and business environment, as well as any special circumstances, affecting either party to the credit transaction.

Character and capacity are the most important aspects in deciding whether to extend credit. Capital, collateral, and conditions are considered when structuring the credit arrangement.

- 14-12** *Credit scoring* is the ranking of an applicant's overall credit strength. It is derived as a weighted average of scores on key financial and credit characteristics. Credit scoring is not generally used in mercantile credit decisions because the necessary statistical characteristics are not available.
- 14-13** The trade-offs in tightening credit standards are that, while investment in accounts receivable and bad debt expenses may decrease, sales volume may also decrease.
- 14-14** The risks of international credit management include exposure to foreign exchange rate fluctuations and delays in shipping goods and receiving payment. Companies must extend credit in the local currency of countries where they do business. If the currency depreciates against the dollar between the time the invoice is sent and the payment is collected, the seller will have a loss.
- 14-15** A firm's credit terms conform to those of its industry for competitive reasons. If their terms are less restrictive than their competitors they will attract less credit worthy customers that may default on payments. If their credit terms are too restrictive they will lose business to its competitors.
- 14-16** Active monitoring allows manager to determine if credit customers are complying with the stated credit terms. Slow payments lengthen the average collection period and the firm's investment in accounts receivable.

Average collection period is used to determine the average number of days that it takes to collect accounts receivable. The collection period includes both the time from sale until the customer places the payment in the mail and the time to receive, process, and collect the payment once received.

The *aging of account receivable* breaks the firms existing accounts receivable balance into groups based on the length of time the receivable has been outstanding. The length of time usually consists of intervals, such as 30-60 days and 61-90 days.

- 14-17** *Float* refers to funds that have been dispatched by a payer but are not in a form that can be spent by the payee. The three components of float are mail float, processing float, and clearing float.

Part 5 Short-Term Financial Decisions

14-18 The firm desires to reduce collection float to decrease the investment in accounts receivable. Benefits are received from increasing the payment float by also reducing the firm's net working capital investment.

14-19 The three main advantages of *cash concentration* are:

1. It creates a large pool of funds for making short-term cash investments. Having a large pool of money allows for increased variety in the selection from available securities and also reduces transaction costs.
2. The internal control and tracking of transactions is improved.
3. Allows for improved payment strategies that can lead to reduced idle cash balances.

14-20 Three mechanisms of cash concentration are 1. Depository transfer checks, 2. Automated clearing house, and 3. Wire transfers.

The objective of zero-balance accounts is to eliminate no earning cash balance in corporate checking accounts.

14-21 To be marketable, a security must have both a ready market and safety of principal. The market should have *breadth* (a large number of participants) and *depth* (the ability to absorb a large dollar amount of a particular security). While both are desirable, depth of market is more important in maintaining stability of security prices.

Government issues of marketable securities, such as Treasury and federal agency issues, have relatively low yields due to their low risk and exemption from state and local (but not federal) taxes.

SOLUTIONS TO PROBLEMS**14-1 LG 2: Cash Conversion Cycle**

- a. Operating cycle = Average age of inventories
 OC + Average collection period
 = 90 days + 60 days
 = 150 days
- b. Cash Conversion Cycle = Operating cycle - Average payment period
 CCC = 150 days - 30 days
 = 120 days
- c. Resources needed = (total annual outlays ÷ 360 days) x CCC
 = [\$30,000,000 ÷ 360] x 120
 = \$10,000,000
- d. Shortening either the average age of inventory or the average collection period, lengthening the average payment period, or a combination of these can reduce the cash conversion cycle.

14-2 LG 2: Changing Cash Conversion Cycle

- a. AAI = 360 days ÷ 8 times inventory = 45 days
 Operating Cycle = AAI + ACP
 = 45 days + 60 days
 = 105 days
- Cash Conversion Cycle = OC - APP
 = 105 days - 35 days = 70 days
- b. Daily Cash Operating Expenditure = Total outlays ÷ 360 days
 = \$3,500,000 ÷ 360
 = \$9,722
- Resources needed = Daily Expenditure x CCC
 = \$9,722 x 70
 = \$680,540
- c. Additional profit = (Daily expenditure x reduction in CC) x
 financing rate
 = (\$9,722 x 20) x .14
 = \$27,222

14-3 LG 2: Multiple Changes in Cash Conversion Cycle

- a. AAI = 360 ÷ 6 times inventory = 60 days
 OC = AAI + ACP
 = 60 days + 45 days
 = 105 days

Part 5 Short-Term Financial Decisions

$$\begin{aligned}\text{CCC} &= \text{OC} - \text{APP} \\ &= 105 \text{ days} - 30 \text{ days} \\ &= 75 \text{ days}\end{aligned}$$

$$\begin{aligned}\text{Daily Financing} &= \$3,000,000 \div 360 \\ &= \$8,333\end{aligned}$$

$$\begin{aligned}\text{Resources needed} &= \text{Daily financing} \times \text{CCC} \\ &= \$8,333 \times 75 \\ &= \$624,975\end{aligned}$$

b.

$$\begin{aligned}\text{OC} &= 55 \text{ days} + 35 \text{ days} \\ &= 90 \text{ days}\end{aligned}$$

$$\begin{aligned}\text{CCC} &= 90 \text{ days} - 40 \text{ days} \\ &= 50 \text{ days}\end{aligned}$$

$$\begin{aligned}\text{Resources needed} &= \$8,333 \times 50 \\ &= \$416,650\end{aligned}$$

c.

$$\begin{aligned}\text{Additional profit} &= (\text{Daily expenditure} \times \text{reduction in CCC}) \\ \text{x financing rate} &= (\$8,333 \times 25) \times .13 \\ &= \$27,082\end{aligned}$$

d. Reject the proposed techniques because costs (\$35,000) exceed savings (\$27,082).

14-4 LG 2: Aggressive versus Conservative Seasonal Funding Strategy**a.**

<u>Month</u>	<u>Total Funds Requirements</u>	<u>Permanent Requirements</u>	<u>Seasonal Requirements</u>
January	\$2,000,000	\$2,000,000	\$ 0
February	2,000,000	2,000,000	0
March	2,000,000	2,000,000	0
April	4,000,000	2,000,000	2,000,000
May	6,000,000	2,000,000	4,000,000
June	9,000,000	2,000,000	7,000,000
July	12,000,000	2,000,000	10,000,000
August	14,000,000	2,000,000	12,000,000
September	9,000,000	2,000,000	7,000,000
October	5,000,000	2,000,000	3,000,000
November	4,000,000	2,000,000	2,000,000
December	3,000,000	2,000,000	1,000,000

Average permanent requirement = \$2,000,000

Average seasonal requirement = \$48,000,000 ÷ 12
= \$4,000,000

b. 1. Under an aggressive strategy, the firm would borrow from \$1,000,000 to \$12,000,000 according to the seasonal requirement schedule shown in **a.** at the prevailing short-term rate. The firm would borrow \$2,000,000, or the permanent portion of its requirements, at the prevailing long-term rate.

2. Under a conservative strategy, the firm would borrow at the peak need level of \$14,000,000 at the prevailing long-term rate.

c. Aggressive = (\$2,000,000 x .17) + (\$4,000,000 x .12)
= \$340,000 + \$480,000
= \$820,000
Conservative = (\$14,000,000 x .17)
= \$2,380,000

d. In this case, the large difference in financing costs makes the aggressive strategy more attractive. Possibly the higher returns warrant higher risks. In general, since the conservative strategy requires the firm to pay interest on unneeded funds, its cost is higher. Thus, the aggressive strategy is more profitable but also more risky.

14-5 LG 3 EOQ Analysis

$$\text{a. (1) EOQ} = \sqrt{\frac{(2 \times S \times O)}{C}} = \sqrt{\frac{(2 \times 1,200,000 \times \$25)}{\$0.54}} = 10,541$$

Part 5 Short-Term Financial Decisions

$$(2) \text{ EOQ} = \sqrt{\frac{(2 \times 1,200,000 \times 0)}{\$0.54}} = 0$$

$$(3) \text{ EOQ} = \sqrt{\frac{(2 \times 1,200,000 \times \$25)}{\$0.00}} = \infty$$

EOQ approaches infinity. This suggests the firm should carry the large inventory to minimize ordering costs.

- b. The EOQ model is most useful when both carrying costs and ordering costs are present. As shown in part a, when either of these costs are absent the solution to the model is not realistic. With zero ordering costs the firm is shown to never place an order. When carrying costs are zero the firm would order only when inventory is zero and order as much as possible (infinity).

14-6 LG 3: EOQ, Reorder Point, and Safety Stock

$$a. \text{ EOQ} = \sqrt{\frac{(2 \times S \times O)}{C}} = \sqrt{\frac{(2 \times 800 \times \$50)}{2}} = 200 \text{ units}$$

$$b. \text{ Average level of inventory} = \frac{200 \text{ units}}{2} + \frac{800 \text{ units} \times 10 \text{ days}}{360} \\ = 122.22 \text{ units}$$

$$c. \text{ Reorder point} = \frac{(800 \text{ units} \times 10 \text{ days})}{360 \text{ days}} + \frac{(800 \text{ units} \times 5 \text{ days})}{360 \text{ days}} \\ = 33.33 \text{ units}$$

	<u>Change</u>	<u>Do Not Change</u>
(2) Carrying costs		(1) ordering costs
(3) Total inventory cost		(5) economic order quantity
(4) Reorder point		

14-7 LG 4: Accounts Receivable Changes without Bad Debts

$$a. \begin{array}{ll} \text{Current units} & = \$360,000,000 \div \$60 = 6,000,000 \text{ units} \\ \text{Increase} & = 6,000,000 \times 20\% = 1,200,000 \text{ new units} \\ \text{Additional profit contribution} & = (\$60 - \$55) \times 1,200,000 \text{ units} \\ & = \$6,000,000 \end{array}$$

$$b. \text{ Average investment in accounts receivable} = \frac{\text{total variable cost of annual sales}}{\text{turnover of A/R}}$$

$$\begin{aligned}\text{Turnover, present plan} &= \frac{360}{60} = 6 \\ \text{Turnover, proposed plan} &= \frac{360}{(60 \times 1.2)} = \frac{360}{72} = 5\end{aligned}$$

Marginal Investment in A/R:

$$\frac{\text{Average investment, proposed plan:}}{5} = \frac{(7,200,000 \text{ units} \times \$55)}{5} = \$79,200,000$$

Average investment, present plan:

$$\frac{(6,000,000 \text{ units} \times \$55)}{6} = \underline{\underline{\$55,000,000}}$$

$$\text{Marginal investment in A/R} = \underline{\underline{\$24,200,000}}$$

* Total units, proposed plan = existing sales of 6,000,000 units + 1,200,000 additional units.

c. Cost of marginal investment in accounts receivable:

$$\begin{array}{r} \text{Marginal investment in A/R} \quad \$24,200,000 \\ \text{Required return} \quad \quad \quad \times .14 \\ \hline \text{Cost of marginal investment in A/R} \quad \underline{\underline{\$3,388,000}} \end{array}$$

d. The additional profitability of \$6,000,000 exceeds the additional costs of \$3,388,000. However, one would need estimates of bad debt expenses, clerical costs, and some information about the uncertainty of the sales forecast prior to adoption of the policy.

14-8 LG 2: Accounts Receivable Changes and Bad Debts

a. Bad debts

$$\begin{array}{r} \text{Proposed plan } (60,000 \times \$20 \times .04) \quad \$48,000 \\ \text{Present plan } (50,000 \times \$20 \times .02) \quad \underline{20,000} \end{array}$$

b. Cost of marginal bad debts \$28,000

c. No, since the cost of marginal bad debts exceeds the savings of \$3,500.

d. Additional profit contribution from sales:

$$\begin{array}{r} 10,000 \text{ additional units} \times (\$20 - \$15) \quad \$50,000 \\ \text{Cost of marginal bad debts (from part b)} \quad (28,000) \\ \hline \text{Savings} \quad \underline{3,500} \\ \text{Net benefit from implementing proposed plan} \quad \underline{\underline{\$25,500}} \end{array}$$

This policy change is recommended because the increase in sales and the savings of \$3,500 exceed the increased bad debt expense.

e. When the additional sales are ignored, the proposed policy is rejected. However, when all the benefits are included, the profitability from new sales and savings outweigh the increased cost of bad debts. Therefore, the policy is recommended.

14-9 LG 4: Relaxation of Credit Standards

Part 5 Short-Term Financial Decisions

Additional profit contribution from sales:		
1,000 additional units x (\$40 - \$31)		\$ 9,000
Cost of marginal investment in A/R:		
Average investment, proposed plan:		
<u>11,000 units × \$31</u>		
360	\$56,833	
60		
Average investment, present plan:		
<u>10,000 units × \$31</u>		
360	<u>38,750</u>	
45		
Marginal investment in A/R	\$18,083	
Required return on investment	<u>x .25</u>	
Cost of marginal investment in A/R		(4,521)
Cost of marginal bad debts:		
Bad debts, proposed plan (.03 x \$40 x 11,000 units)	\$13,200	
Bad debts, present plan (.01 x \$40 x 10,000 units)	<u>4,000</u>	
Cost of marginal bad debts		<u>(9,200)</u>
Net loss from implementing proposed plan		(\$4,721)

The credit standards should not be relaxed since the proposed plan results in a loss.

14-10 LG 5: Initiating a Cash Discount

Additional profit contribution from sales:		
2,000 additional units x (\$45 - \$36)		\$18,000
Cost of marginal investment in A/R:		
Average investment, proposed plan:		
<u>42,000 units × \$36</u>		
360	\$126,000	
30		
Average investment, present plan:		
<u>40,000 units × \$36</u>		
360	<u>240,000</u>	
60		
Reduced investment in A/R	\$114,000	
Required return on investment	<u>x .25</u>	
Cost of marginal investment in A/R		28,500
Cost of cash discount:		
(.02 x .70 x \$45 x 42,000 units)		<u>(26,460)</u>
Net profit from implementing proposed plan		<u>\$20,040</u>
Since the net effect would be a gain of \$20,040, the project should be accepted.		

14-11 LG 5: Shortening the Credit Period

Reduction in profit contribution from sales:		
2,000 units x (\$56- \$45)		(\$22,000)
Cost of marginal investment in A/R:		
Average investment, proposed plan:		
10,000 units × \$45		
<u>360</u>	\$45,000	
36		
Average investment, present plan:		
12,000 units × \$45		
<u>360</u>	<u>67,500</u>	
45		
Marginal investment in A/R	\$22,500	
Required return on investment	<u>x.25</u>	
Benefit from reduced		
Marginal investment in A/R		5,625
Cost of marginal bad debts:		
Bad debts, proposed plan (.01 x \$56 x 10,000 units)	\$ 5,600	
Bad debts, present plan (.015 x \$56 x 12,000 units)	10,080	
Reduction in bad debts		<u>4,480</u>
Net loss from implementing proposed plan		<u>(\$11,895)</u>
This proposal is not recommended.		

14-12 LG 5: Lengthening the Credit Period

Preliminary calculations:

$$\text{Contribution margin} = \frac{(\$450,000 - \$345,000)}{\$450,000} = .2333$$

$$\begin{aligned}\text{Variable cost percentage} &= 1 - \text{contribution margin} \\ &= 1 - .233 \\ &= .767\end{aligned}$$

- a.** Additional profit contribution from sales:
 (\$510,000 - \$450,000) x .233 contribution margin \$14,000

- b.** Cost of marginal investment in A/R:
 Average investment, proposed plan:
 \$510,000 × .767
360 \$65,195
 60

Average investment, present plan:
 \$450,000 × .767
360 28,763
 30

- Marginal investment in A/R (\$36,432)
 Required return on investment x .20
 Cost of marginal investment in A/R (\$7,286)

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c.	Cost of marginal bad debts:	
	Bad debts, proposed plan (.015 x \$510,000)	\$ 7,650
	Bad debts, present plan (.01 x \$450,000)	4,500
	Cost of marginal bad debts	<u>(3,150)</u>
d.	Net benefit from implementing proposed plan	<u>(\$10,436)</u>

The net benefit of lengthening the credit period is minus \$10,436; therefore the proposal is not recommended.

14-13 LG 6: Float

- a.** Collection float = $2.5 + 1.5 + 3.0 = 7$ days
- b.** Opportunity cost = $\$65,000 \times 3.0 \times .11 = \$21,450$

The firm should accept the proposal because the savings (\$21,450) exceed the costs (\$16,500).

14-14 LG 6: Lockbox System

- a.** Cash made available = $\$3,240,000 \div 360$
= $(\$9,000/\text{day}) \times 3 \text{ days} = \$27,000$
- b.** Net benefit = $\$27,000 \times .15 = \$4,050$

The \$9,000 cost exceeds \$4,050 benefit; therefore, the firm should not accept the lockbox system.

14-15 LG 6: Zero-Balance Account

Current average balance in disbursement account	\$420,000
Opportunity cost (12%)	<u>x .12</u>
Current opportunity cost	\$ 50,400
Zero-Balance Account	
Compensating balance	\$300,000
Opportunity cost (12%)	<u>x .12</u>
Opportunity cost	\$ 36,000
+ Monthly fee (\$1,000 x 12)	<u>12,000</u>
Total cost	\$ 48,000

The opportunity cost of the zero-balance account proposal (\$48,000) is less than the current account opportunity cost (\$50,000). Therefore, accept the zero-balance proposal.

CHAPTER 14 CASES**Assessing Roche Publishing Company's Cash Management Efficiency**

Chapter 14's case involves the evaluation of a furniture manufacturer's cash management by its treasurer. The student must calculate the operating cycle, cash conversion cycle, and resources needed and compare them to industry standards. The cost of the firm's current operating inefficiencies is determined and the case also looks at the decision to relax its credit standards. Finally, all the variables are consolidated and a recommendation made.

a. Roche Publishing:

$$\begin{aligned}
 \text{Operating Cycle} &= \text{Average Age of Inventory} \\
 &\quad + \text{Average Collection Period} \\
 &= 120 \text{ days} + 60 \text{ days} \\
 &= 180 \text{ days} \\
 \\
 \text{Cash Conversion Cycle} &= \text{Operating Cycle} - \text{Average Payment Period} \\
 &= 180 \text{ days} - 25 \text{ days} \\
 &= 155 \text{ days} \\
 \\
 \text{Resources needed} &= \frac{\text{Total annual outlays}}{360 \text{ days}} \times \text{Cash Conversion Cycle} \\
 &= \frac{\$12,000,000}{360} \times 155 = \$5,166,667
 \end{aligned}$$

b. Industry

$$\begin{aligned}
 \text{Industry OC} &= 85 \text{ days} + 42 \text{ days} \\
 &= 127 \text{ days} \\
 \\
 \text{Industry CCC} &= 127 \text{ days} - 40 \text{ days} \\
 &= 87 \text{ days} \\
 \\
 \text{Industry Resources needed} &= \frac{\$12,000,000}{360} \times 87 = \$2,900,000
 \end{aligned}$$

$$\begin{array}{rcl}
 \text{c. Roche Publishing Resources needed} & & \$5,166,667 \\
 \text{Less: Industry Resources needed} & & \underline{2,900,000} \\
 & & \$3,266,667
 \end{array}$$

$$\text{Cost of inefficiency: } \$3,266,667 \times .12 = \$ 392,000$$

d. To determine the net profit or loss from the change in credit standards we must evaluate the three factors that are impacted:

1. Changes in sales volume
2. Investment in accounts receivable
3. Bad-debt expenses.

Changes in sales volume

Total contribution margin of annual sales:

Under present plan = $(\$13,750,000 \times .20) = \$2,750,000$

Under proposed plan = $(\$15,000,000 \times .20) = \$3,000,000$

Increase in contribution margin = $\$250,000 (\$3,000,000 - \$2,750,000)$.

Investment in accounts receivable:

Turnover of accounts receivable:

Under present plan = $\frac{360}{\text{Average collection period}} = \frac{360}{60} = 6$

Under proposed plan = $\frac{360}{\text{Average collection period}} = \frac{360}{42} = 8.57$

Average investment in accounts receivable:

Under present plan = $\frac{(\$13,750,000 \times .80)}{6} = \frac{\$11,000,000}{6} = \$1,833,333$

Under proposed plan = $\frac{(\$15,000,000 \times .80)}{8.57} = \frac{\$12,000,000}{8.57} = \$1,400,233$

Cost of marginal investment in accounts receivable:

Average investment under proposed plan	\$1,400,233
- Average investment under present plan	<u>1,833,333</u>
Marginal investment in accounts receivable	- 433,100
x Required return on investment	<u>.12</u>
Cost of marginal investment in A/R	- \$ 51,972

Cost of marginal bad debts:

Bad debt would remain unchanged as specified in the case.

Net profits from implementation of new plan:

Additional profit contribution from sales:

$(\$1,250,000 \times .20)$ 250,000

Cost of marginal investment in AR:

Average investment under proposed plan	1,400,233
Average investment under present plan	<u>1,833,333</u>
Marginal investment in AR	-433,100

Cost of marginal investment in AR

$(.012 \times 433,100)$ -51,972

\$ 198,028

- | | | |
|----|---|----------------|
| e. | Savings from reducing inefficiency | \$ 392,000 |
| | Net profits from implementation of new plan | <u>198,028</u> |
| | Annual savings | \$ 590,028 |
- f. Roche Publishing should incur the cost to correct its cash management inefficiencies and should also soften the credit standards to save a total of \$509,028 per year.