E2-17. Automatic versus Manual Processing

LO2
Office Depot (ODP)
Homework MBC

Assume **Office Depot** processes 2,500,000 photocopies per month at its service center. Approximately 50% of the photocopies require collating. Collating is currently performed by high school and college students who are paid $10 per hour. Each student collates an average of 5,000 copies per hour. Management is contemplating the lease of an automatic collating machine that has a monthly capacity of 6,000,000 photocopies, with lease and operating costs totaling $3,000, plus $0.05 per 1,000 units collated.

Required

a. Determine the total costs of collating 1,000,000 and 2,000,000 per month:
   1. With student help.
   2. With the collating machine.

b. Determine the monthly volume at which the automatic process becomes preferable to (costs less than) the manual process.

E2-18. High-Low Cost Estimation

LO3
YRC Worldwide (YRCW)
Homework MBC

Assume the local **YRC Worldwide** delivery service hub has the following information available about fleet miles and operating costs:

Year	Miles	Operating Costs
Year 1	695,000	$219,500
Year 2	855,000	267,500

Required

Use the high-low method to develop a cost-estimating equation for total annual operating costs.

E2-19. Scatter Diagrams and High-Low Cost Estimation

LO3, 4
Pearle Vision (LUX)
Homework MBC

Assume the local **Pearle Vision** has the following information on the number of sales orders received and order-processing costs.

Month	Sales Orders	Order-Processing Costs
1	3,300	$ 90,970
2	1,650	55,412
3	4,840	132,770
4	3,080	90,090
5	2,530	76,752
6	1,320	47,410
7	2,200	68,750

Required

a. Use information from the high- and low-volume months to develop a cost-estimating equation for monthly order-processing costs.

b. Plot the data on a scatter diagram. Using the information from representative high- and low-volume months, develop a cost-estimating equation for monthly order-processing costs.

c. What factors might have caused the difference in the equations developed for requirements (*a*) and (*b*)?

E2-20. Scatter Diagrams and High-Low Cost Estimation

LO3, 4
Coles County Highway Department
Homework MBC

From April 1 through October 31, **Coles County Highway Department** hires temporary employees to mow and clean the right-of-way along county roads. The County Road Commissioner has asked you to help her in determining the variable labor cost of mowing and cleaning a mile of road. The following information is available regarding current-year operations:

All sales are on account (credit) with 50% collected in the month of sale, 30% collected in the month after sale, and 20% collected in the second month after sale. There are no uncollectable accounts. The March cash receipts are

a. $140,000
b. $235,000
c. $285,000
d. None of the above

4. Refer to question 3 and determine the accounts receivable at the end of March:

a. $147,000
b. $205,000
c. $235,000
d. $285,000

5. Presented is selected second quarter budget data for the Arnold Company.

	Sales
April	20,000 units
May	30,000 units
June	36,000 units

Additional information:

- Each unit of finished product requires three pounds of raw materials.
- Arnold maintains ending finished goods inventories equal to 20% of the following month's budgeted sales.
- Arnold maintains raw materials inventories equal to 25% of the following month's budgeted production.
- April 1 inventories are in line with Arnold's inventory policy.

Arnold's budgeted purchases (in pounds) for April are

a. 66,000 pounds
b. 72,900 pounds
c. 89,400 pounds
d. None of the above

6. Presented is additional information for the Arnold Company (refer to question 5):

• Price per pound of raw materials	$20
• Direct labor per unit of finished product	0.40 hours at $25 per hour
• Total monthly factory overhead	$200,000 + $10 per direct labor hour

Arnold's total manufacturing cost budget for April is

a. $880,000
b. $1,680,000
c. $1,828,000
d. $1,966,000

Questions

Q9-1. What are the primary phases in the planning and control cycle?
Q9-2. Does budgeting require formal or informal planning? What are some advantages of this style of management?
Q9-3. Identify the advantages and disadvantages of the incremental approach to budgeting.
Q9-4. Explain the minimum level approach to budgeting.
Q9-5. How does activity-based budgeting predict a cost objective's budget?
Q9-6. Explain the continuous improvement concept of budgeting.
Q9-7. Which budget brings together all other budgets? How is this accomplished?
Q9-8. What budgets are normally used to support the cash budget? What is the net result of cash budget preparations?
Q9-9. Define *budgeted financial statements*.

continued from previous page

DEWALT
Manufacturing Cost Budget
For First Quarter

	Drills	Saws	Total
Variable manufacturing overhead			
Direct labor hours	130,000	126,000	
Variable manufacturing overhead rate	× $1.50	× $1.50	
Total variable overhead	$ 195,000	$ 189,000	384,000
Fixed manufacturing overhead			214,000
Total			$9,918,000

e.

DEWALT
Cash Budget
For First Quarter

Cash balance, beginning		$ 1,800,000
Collections on sales		
Current quarter's sales ($11,000,000 × 0.50)	$5,500,000	
Previous quarter's sales ($8,400,000 × 0.50)	4,200,000	9,700,000
Cash available from operations		11,500,000
Less budgeted disbursements		
Materials (purchases budget)	5,794,000	
Labor (manufacturing cost budget)	3,576,000	
Manufacturing overhead (manufacturing cost budget) ([$384,000 + 214,000] − 156,000 noncash)	442,000	
Selling and administrative ($340,000 − $90,000 depreciation)	250,000	(10,062,000)
Cash balance, ending		$ 1,438,000

f.

DEWALT
Contribution Income Statement
For First Quarter

Sales (sales budget)		$11,000,000
Less variable costs of goods sold		
Drills (60,000 × $85.00)	$5,100,000	
Saws (40,000 × $99.50)	3,980,000	(9,080,000)
Contribution Margin		1,920,000
Less fixed costs		
Manufacturing overhead	214,000	
Selling and administrative expenses	340,000	(554,000)
Net income		$ 1,366,000

Review 9-5—Solution

__2__ *a.* The marketing department is asked to provide an estimate as to how much it will spend on print ads during the next fiscal year.

__1__ *b.* The marketing department provides a budget amount for print ads for the next fiscal year that includes the expected expenditures plus 10% to account for uncertainty.

__4__ *c.* Tristan Renken owns and operates a food truck that sells Mexican food along the beaches in Chicago. Tristan only operates the food truck during the summer and developed a budget to estimate how much he will make during the upcoming summer season.

__3__ *d.* Top management hosts semi-annual meetings to discuss the budget and current performance vs. the budget. Management provides employees with tools to help gauge their own performance against the budget expectations.

Plant Manager—The standards are unrealistic. They assume an ideal work environment that does not allow materials defects or errors by the workers or machines. Consequently, morale has gone down and productivity has declined. Standards should be based on expected actual prices and recent past averages for efficiency. Thus, if we improve over the past, we receive a favorable variance.

Controller—The goal of accounting reports is to measure performance against an absolute standard and the best approximation of that standard is ideal conditions. Cost standards should be comparable to "par" on a golf course. Just as the game of golf uses a handicap system to allow for differences in individual players' skills and scores, it could be necessary for management to interpret variances based on the circumstances that produced the variances. Accordingly, in one case, a given unfavorable variance could represent poor performance; in another case, it could represent good performance. The managers are just going to have to recognize these subtleties in standard cost systems and depend on upper management to be fair.

Human Resources Director—The key to employee productivity is employee satisfaction and a sense of accomplishment. A set of standards that can never be met denies managers of this vital motivator. The current standards would be appropriate in a laboratory with a controlled environment but not in the factory with its many variables. If we are to recapture our old "team spirit," we must give the managers a goal that they can achieve through hard work.

Required

Discuss the behavioral issues involved in Merit Inc.'s standard cost dilemma. Evaluate each of the three responses (pros and cons) and recommend a course of action.

LO8 **C10-45. Evaluating a Companywide Performance Report**

Mr. Chandler, the production supervisor, bursts into your office, carrying the company's prior year performance report and thundering, "There is villainy here, sir! And I shall get to the bottom of it. I will not stop searching until I have found the answer! Why is Mr. Richards so down on my department? I thought we did a good job last year. But Richards claims my production people and I cost the company $11,700! I plead with you, sir, explain this performance report to me." Trying to calm Chandler, you take the report from him and ask to be left alone for 15 minutes. The report is as follows:

DICKENS COMPANY, LIMITED
Performance Report
For the Prior Year

	Actual	Budget	Variance
Unit sales	9,000	7,500	
Sales	$526,500	$450,000	$ 76,500 F
Less manufacturing costs			
Direct materials	42,750	37,500	5,250 U
Direct labor	19,350	15,000	4,350 U
Manufacturing overhead	192,100	190,000*	2,100 U
Total	(254,200)	(242,500)	(11,700) U
Gross profit	272,300	207,500	64,800 F
Less selling and administrative expenses			
Selling (all fixed)	52,750	50,000	2,750 U
Administrative (all fixed)	54,785	50,000	4,785 U
Total	(107,535)	(100,000)	(7,535) U
Net income	$164,765	$107,500	$ 57,265 F
Performance summary			
Budgeted net income			$107,500
Sales department variances			
Sales revenue	$ 76,500 F		
Selling expenses	2,750 U	$ 73,750 F	
Administration department variances		4,785 U	
Production department variances		11,700 U	57,265 F
Actual net income			$164,765

*Includes fixed manufacturing overhead of $160,000.

Review 10-6—Solution

Revenue variance	=	(AQ × AP) – (BQ × BP)
	=	(150 × $26) – (125 × $25)
	=	$775 F
Sales price variance	=	(AP – BP) × AQ
	=	($26 – $25) × 150
	=	$150 F
Sales volume variance	=	(AQ – BQ) × BP
	=	(150 – 125) × $25
	=	$625 F

Review 10-7—Solution

a.

Actual fixed overhead cost	$6,250,000
Budgeted fixed overhead cost	(6,000,000)
Fixed overhead budget variance	$ 250,000 U

b.

Fixed overhead rate = $6,000,000/2,000,000 = $3.00/barrel

Budgeted fixed overhead cost	$6,000,000
Applied fixed overhead (2,100,000 barrels × $3.00)	(6,300,000)
Volume variance	$ 300,000 F

Review 10-8—Solution

a.

	Actual Results	Flexible Budget	Static Budget
Sales	$385,000	$420,000	$300,000
Variable manufacturing costs	154,000	140,000	100,000
Variable selling costs	63,000	70,000	50,000
Contribution margin	$168,000	$210,000	$150,000

b.

Variance	Amount
Sales price variance	$ 35,000 U
Net sales volume variance	(60,000) F
Variable manufacturing cost flexible budget variance	14,000 U
Variable selling cost flexible budget variance	(7,000) F
Net variances	$(18,000) F

The sales volume variance results from difference in units from budget while the remaining variances result from differences of unit dollar amounts.

c.

	Variance
Sales department	$(32,000) F
Production department	14,000 U
Net variances	$(18,000) F

E11-30. Balanced Scorecard Preparation LO4

Homework MBC

The following information is in addition to that presented in exercise M11-23 for the Worldwide Auditors' Association. In the budget for the current year, the organization had set a membership goal of 75,000 members with the following anticipated results:

Worldwide Auditors' Association
Planned Revenues and Expenses
For Year Ending November 30

($ in thousands)		
Revenues		$54,436
Expenses		
Salaries	28,000	
Other personnel costs	7,000	
Occupancy costs	6,000	
Reimbursement to local units	2,500	
Other membership services	1,500	
Printing and paper	500	
Postage and shipping	300	
General and administrative	1,000	46,800
Excess of revenues over expenses		$ 7,636

Additional information follows:

- One-year subscriptions to *Worldwide Auditor* were anticipated to be 8,000 units.
- Advertising revenue was budgeted at $450,000. Each magazine was budgeted at a cost of $48.
- A total of 25,000 technical reports was anticipated at an average price of $100 with average costs of $36.
- The budgeted one-day courses had an anticipated attendance of 25,000 with an average fee of $600. The two-day courses had an anticipated attendance of 5,000 with an average fee of $1,000 per person.
- The organization began the year with net capital assets of $84,100,000 with a planned cost of capital of 6%.

Required

a. Prepare a balanced scorecard for IAA for November with calculated key performance indicators presented in two columns for planned performance and actual performance—include key financial, customer, and operating performance indicators.
b. Which of the evaluation areas you selected indicated success and which indicated failure?
c. Give some explanations of the successes and failures.

Problems

P11-31. Multiple Segment Reports LO1

Homework MBC

Worldwide Communications, Incorporated, sells telecommunication products throughout the world in three sales territories: Europe, Asia, and the Americas. For July, all $\boxed{\$1,045,000}$ of administrative expense is traceable to the territories, except $200,000, which is common to all units and cannot be traced or allocated to the sales territories. The percentage of product line sales made in each of the sales territories and the assignment of traceable fixed expenses follow:

	Sales Territory			
	Europe	Asia	The Americas	Company
Handset sales	40%	35%	25%	100%
Switchboard sales	35%	35%	30%	100%
Automated switches sales	10%	15%	75%	100%
Fixed administrative expense	$350,000	$275,000	$220,000	$845,000
Fixed selling expense	$155,000	$175,000	$550,000	$880,000

The fixed selling expenses were $1,440 for March, of which $860 was a direct expense of the Seattle market and $580 was a direct expense of the Portland market. Fixed administrative expenses were $1,135, which management has decided not to allocate when using the contribution approach.

Required

a. Prepare a segment income statement showing the margin for each territory (city) for March. Include a column combining the two territories.
b. Prepare segment income statements showing the product margin for each product. Include a column for the combined products.
c. If the rolls line is dropped and fixed baking expenses do not change, what is the product margin for loaves and baguettes?
d. What other type of segmentation might be useful to The Essential Baking Company. Explain.

P11-33. Segment Reporting and Analysis LO1

Homework MBC

Business Book Publishers, Inc. has prepared income statements segmented by divisions, but management is still uncertain about actual performance. Financial information for May is given as follows:

	Textbook Division	Professional Division	Company Total
Sales.	$150,000	$307,500	$457,500
Less variable expenses			
Manufacturing	24,000	153,750	177,750
Selling and administrative	7,500	15,375	22,875
Total	(31,500)	(169,125)	(200,625)
Contribution margin	118,500	138,375	256,875
Less direct fixed expenses	(15,000)	(150,000)	(165,000)
Net income	$103,500	$ (11,625)	$ 91,875

Management is concerned about the Professional Division and requests additional analysis. Additional information regarding May operations of the Professional Division is as follows:

	Professional Division		
	Accounting Books Segment	Executive Books Segment	Management Books Segment
Sales.	$105,000	$105,000	$97,500
Variable manufacturing expenses			
as a percentage of sales.	60%	40%	50%
Other variable expenses			
as a percentage of sales.	5%	5%	5%
Direct fixed expenses	$37,500	$55,100	$37,500
Allocated common fixed expenses.	$ 3,000	$ 1,500	$ 4,500

The professional accounting books are sold to auditors and controllers. The current information on these markets is as follows:

	Accounting Books Segment		
	Auditors Market	Controllers Market	Total
Sales.	$22,500	$82,500	$105,000
Variable manufacturing expenses			
as a percentage of sales.	60%	60%	—
Other variable expenses			
as a percentage of sales.	5%	5%	—
Direct fixed expenses	$11,250	$22,500	$33,750
Allocated common fixed expenses.	$ 1,125	$ 1,500	$ 2,625

Solutions to Review Problems

Review 11-1—Solution

a. In the short run, the National Division income would decrease by the product margin of wireless or $7 million.

b.

	Segments (Territories)		
(in thousands)	U.S.	International	Wireless Total
Sales	$12,000	$18,000	$30,000
Less variable costs	(8,400)	(12,600)	(21,000)
Contribution margin	3,600	5,400	9,000
Less direct fixed costs	(500)	(800)	(1,300)
Territory margin	3,100	4,600	7,700
Less allocated segment costs	(200)	(600)	(800)
Territory income	$ 2,900	$ 4,000	6,900
Less unallocated common costs			(900)
Wireless income			$ 6,000

c. The Product Margin for the wireless product line in Panel B was $7 million and reflected $2 million of direct fixed costs that were attributable to that product line in the National Division. However, when the wireless product segment income statement is further segmented into geographic segments, only $1.3 million of the $2 million could be directly traced to the two geographic territories. Therefore, $700,000 of costs that were direct costs at the product segment level became common costs (either allocated or unallocated) at the territory segment level. This reflects the general notion that as segmentation is extended down to lower and lower levels, the total amount of common costs increases and direct costs decrease. Hence, segmentation rarely is extended to more than three levels.

Review 11-2—Solution

a. No.

	Current Sales	Proposed Sales
Selling price	$ 24.00	$ 13.50
Variable costs	(16.00)	(16.00)
Unit contribution margin	$ 8.00	$ (2.50)
Unit sales	× 200,000	× 100,000
Contribution margin	$1,600,000	$(250,000)

Currently, the division is making $250,000 on 200,000 posters ($1,600,000 – $1,350,000 fixed costs); but under the proposal, with a $250,000 negative contribution, it would revert to a break-even situation:

Current contribution margin		$1,600,000
Fixed costs	$1,350,000	
Loss on special order	250,000	(1,600,000)
Net income		$ 0

As a general rule, a project should never be undertaken if the contribution margin is negative.

b. What the Retail Division does with the posters after receiving them is of no concern to the Publication Division. Hence, the Publication Division would still object to a transfer price of $13.50. However, for the company, the proposal does have a contribution of $18 per unit ($44 – $16 – $10). Consequently, the order is desirable from the viewpoint of the company.

c. If the company believes in autonomous divisions, it should not require the Publication Division to sell, nor should it dictate a higher transfer price. On the other hand, the company may want to create incentives to encourage (but not require) the two division managers to reach some compromise transfer price that would increase the contribution and profits of both divisions, and the company as a whole.