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Budgeting and Decision Making Exercises I

Larry M. Walther; Christopher J. Skousen



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ISBN 978-87-7681-880-7

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* Figures taken from London Business School's Masters in Management 2010 employment report

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Problem 1

Providence City acquired its power plant from a private company on June 1. No receivables were acquired with the purchase. Therefore, total accounts receivable on June 1 had a zero balance.

Providence plans to bill customers in the month following the month of sale, and 80% of the resulting billings will be collected during the billing month. 90% of the remaining balance should be collectable in the next following month. The remaining uncollectible amounts will relate to citizens who have moved away. Such amounts are never expected to be collected and will be written off.

Electricity sales during June are estimated at $4,500,000, and expected to increase 25% in July. August sales will be 5% less than July sales.

a) For each dollar of sales, now much is expected to be collected?

b) Estimate the monthly cash collections for June, July, August, and September.

c) As of the end of August, how much will be the estimated amount of receivables for which future cash flows are anticipated?

Worksheet 1

a)

b)

June	July	August	September

c)

June	July	August	Total Receivables

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Solution 1

a) For each dollar of sales, 98¢ will be collected (80¢ cents in the month following the month of sale, and 18¢ in the next month (90% of the remaining 20¢ balance)).

b)

	June	July	August	September
Estimated Sales	$ 4,500,000	$ 5,625,000	$ 5,343,750	
Collections:				
Prior month (80%)		$ 3,600,000	$ 4,500,000	$ 4,275,000
Two months prior (18%)		-	810,000	1,012,500
Cash collections		$ 3,600,000	$ 5,310,000	$ 5,287,500

c)

	June	July	August	Total Receivables
Estimated Sales	$ 4,500,000	$ 5,625,000	$ 5,343,750	$ 15,468,750
Less:				
Collected in July	$ 3,600,000	$ -	$ -	$ 3,600,000
Collected in August	810,000	4,500,000	-	5,310,000
To be written off (3%)	90,000	112,500	106,875	309,375
	$ 4,500,000	$ 4,612,500	$ 106,875	$ 9,219,375
Remaining balance	$ -	$ 1,012,500	$ 5,236,875	$ 6,249,375

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Problem 2

Global GPS Systems manufactures rugged handheld GPS computers for use in adverse working environments. Global tries to maintain inventory at 30% of the following month's expected unit sales. Global began the year with 15,000 units in stock, based on the following unit sales projections prepared by the sales manager:

January	30,000
February	37,500
March	27,000
April	33,000

Prepare a schedule of planned unit production budget for January through March.

Worksheet 2

Planned production in units:

	January
Estimated units sold	

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Solution 2

Planned production in units:

	January	February	March
Estimated units sold	30,000	37,500	27,000
Desired ending finished goods*	9,000	11,250	8,100
Total units needed	39,000	48,750	35,100
Less: Beginning finished goods inventory	15,000	9,000	11,250
Scheduled production	24,000	39,750	23,850

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Problem 3

Prepare a direct materials purchasing plan for January, February, and March, based on the following facts.

Global GPS Systems assembles its GPS systems with the following costs. Each GPS requires one computer system and four bateries. Computer Systems cost $140 each, and batteries are $2.50 each. Global is able to reliably obtain computers as needed, and does not maintain them in inventory. However, bateries are stocked in inventory sufficient to produce 20% of the following month's expected production. Planned production is as follows:

January	24,000
February	39,750
March	23,850
April	25,000

In accordance with the stocking plan, January's beginning inventory included 20,000 batteries.

Worksheet 3

Direct materials purchasing plan:

	January	February	March
Scheduled production	24,000	39,750	23,850
Raw materials needed:			
Computers (1 per unit) as needed			
Batteries (4 per unit)			

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Solution 3

Direct materials purchasing plan:

	January	February	March
Scheduled production	24,000	39,750	23,850
Raw materials needed:			
Motors (1 per unit)	24,000	39,750	23,850
Estimated cost per motor	$ 140.00	$ 140.00	$ 140.00
Total estimated motor cost	$ 3,360,000	$ 5,565,000	$ 3,339,000
Batteries (4 per unit)	96,000	159,000	95,400
Plus: Target ending raw material*	31,800	19,080	20,000
Batteries needed	127,800	178,080	115,400
Less: Target beginning raw material	20,000	31,800	19,080
Fan battery purchases	107,800	146,280	96,320
Estimated cost per battery	$ 2.50	$ 2.50	$2.50
Total estimated motor battery	$ 269,500	$ 365,700	$ 240,800
Total estimated costs (computers + batteries)	$ 3,629,500	$ 5,930,700	$ 3,579,800

* 20% of following month's anticipated needs

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Problem 4

Clinton Summerhayes is CFO for a newly formed golf club manufacturing company. Below is the anticipated monthly production for the first year of operation, and beyond. Clinton is interested in learning which of the first twelve months will require cash outlays of more than $25,000 toward the purchase of composite shafts. Each unit requires 4 board feet of composite material at $15.70 per board foot. All composite material is purchased in the month prior to its expected use. Composite shaft purchases are paid for 15% in the month of purchase, 80% in the month following the month of purchase, and 5% in the second month following the month of purchase.

Month	Units
January	0
February	320
March	200
April	300
May	520
June	520
July	400
August	350
September	320
October	220
November	160
December	160
January	240

Which months will require cash outlays in excess of the $25,000 amount? Does the production in any given month necessarily correspond to the cash flow for that same month? What are the business implications of your observation?

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Worksheet 4

Anticipated cash payments

					CASH PAYMENTS			
	Units	Purchasing Activity	Total Board Feet (4 per unit)	Total Cost of Composite Shafts ($15.70 per foot)	Paid in Month (15%)	Paid in Month Relating to Prior Month (80%)	Paid in Month Relating to Two Months Prior (5%)	Total
January	0							
February	320							
March	200							
April	300							
May	520							
June	520							
July	400							
August	350							
September	320							
October	220							
November	160							
December	160							
January	240							

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Solution 4

Anticipated cash payments

	Units	Purchasing Activity	Total Board Feet (4 per unit)	Total Cost of Composite Shafts ($15.70 per foot)	CASH PAYMENTS: Paid in Month (15%)	CASH PAYMENTS: Paid in Month Relating to Prior Month (80%)	CASH PAYMENTS: Paid in Month Relating to Two Months Prior (5%)	CASH PAYMENTS: Total
January	0	320	1,280	$ 20,096	$ 3,014	$ -	$ -	$3,014
February	320	200	800	$ 12,560	$ 1,884	16,077	-	17,961
March	200	300	1,200	$ 18,840	$ 2,826	10,048	1,005	13,879
April	300	520	2,080	$ 32,656	$ 4,898	15,072	628	20,598
May	520	520	2,080	$ 32,656	$ 4,898	26,125	942	31,965
June	520	400	1,600	$ 25,120	$ 3,768	26,125	1,633	31,526
July	400	350	1,400	$ 21,980	$ 3,297	20,096	1,633	25,026
August	350	320	1,280	$ 20,096	$ 3,014	7,584	1,256	21,854
September	320	220	880	$ 13,816	$ 2,072	16,077	1,099	19,248
October	220	160	640	$ 10,048	$ 1,507	11,053	1,005	13,565
November	160	160	640	$ 10,048	$ 1,507	8,038	691	10,236
December	160	240	960	$ 15,072	$2,261	8,038	502	10,802
January	240							

Total payments exceed $30,000 in May and June.

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Problem 5

Scott Logan Equipment produces exercise equipment. The following schedule reveals anticipated monthly production of bicycles for the first three months of the year:

January	9,500
February	10,000
March	11,000

Scott budgets for 1.5 direct labor hours per bicycle, at an average cost of $18.00 per hour. Variable factory overhead is applied at the rate of $7.75 per direct labor hour. Fixed overhead is expected to run $70,000 per month, which includes $9,000 per month of noncash expenses related to depreciation.

Determine the total expected monthly cash outflow for labor and overhead.

Worksheet 5

Estimated monthly cash outflows for direct labor and factory overhead:

	January	February	March
Estimated bicycles produced	9,500	10,000	11,000
Direct labor hours per bicycle	X 1.5	X 1.5	X 1.5

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Solution 5

Estimated monthly cash outflows for direct labor and factory overhead:

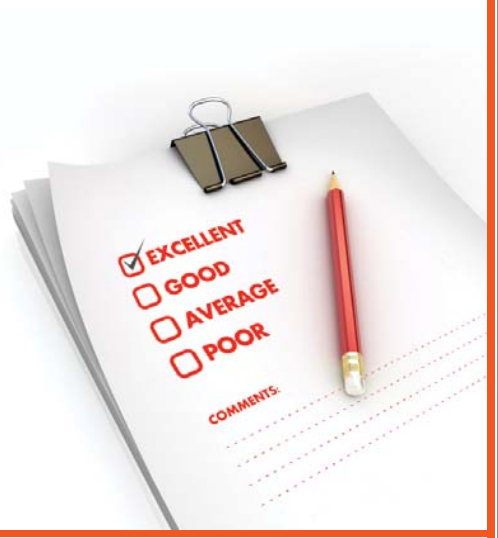
	January	February	March
Estimated bicycles produced	9,500	10,000	11,000
Direct labor hours per bicycle	X 1.5	X 1.5	X 1.5
Total estimated labor hours	14,250	15,000	16,500
Cost per direct labor hour	X $18.00	X $18.00	X $18.00
Cost of direct labor	$ 256,500	$ 270,000	$ 297,000
Total estimated labor hours	14,250	15,000	16,500
Variable factory overhead rate	X $7.75	X $7.75	X $7.75
Total variable factory overhead	$ 110,438	$ 116,250	$ 127,875
Fixed factory overhead	70,000	70,000	70,000
Total factory overhead	$ 180,438	$ 186,250	$ 197,875
Less: Depreciation	(9,000)	(9,000)	(9,000)
Cash paid for factory overhead	$ 171,438	$ 177,250	$ 188,875
Cost of direct labor	$ 256,500	$ 270,000	$ 297,000
Cash paid for factory overhead	171,438	177,250	188,875
Expected cash outflow for labor/overhead	$ 427,938	$ 447,250	$ 485,875

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Problem 6

The chief financial officer for Backyard Playground products had previously established a line of credit with a local bank that enables Backyard to borrow 60% of the company's inventory balance. The company currently has 2,000 units in stock, and is performing "on budget." The budget anticipated that direct labor cost would be $16.50 per hour, and factory overhead is applied to production based on $9.20 per direct labor hour. Each unit requires 4.5 labor hours and 700 pounds of direct material. The direct material costs $0.15 per pound.

Determine the amount of credit available under the borrowing agreement.

Worksheet 6

Amount available under line of credit:

	Units	Per Unit Cost	Per Unit Total
Total available under line of credit			

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Solution 6

Amount available under line of credit:

	Units	Per Unit Cost	Per Unit Total
Direct material	700 pounds	$ 0.15	$ 105.00
Direct labor	4.5 hours	$ 16.50	74.25
Applied factory overhead	4.5 hours	$ 9.20	41.40
			$ 220.65
X Units in finished goods inventory			X 2,000
Finished goods inventory			$ 441,300.00
X Portion available for line of credit			X 60%
Total available under line of credit			$ 264,780.00

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Problem 7

Review the following SG&A budget that was prepared at the beginning of the current year. The economy appears to be slowing, and sales are now expected to run only 80% of plan. How much can now be expected to result for total SG&A?

The only fixed cost that can be reduced relates to the advertising campaign. What are the possible impacts of attempting to save money by cutting a portion of the advertising budget?

Selling, General, and Administrative Budget
For the Year Ending December 31, 20X7

Estimated units sold		85,000
X Per unit variable SG&A	X	$ 5.00
Total variable SG&A	$	425,000
Fixed SG&A		
Salaries	$	467,500
Office		102,000
Advertising		297,500
Other		42,500
Total fixed SG&A	$	909,500
Total budgeted SG&A	$	1,334,500

Worksheet 7

The following revised budget reflects only 68,000 (80% of the volume included in the original plan) units:

Selling, General, and Administrative Budget
For the Year Ending December 31, 20X7

Estimated units sold
X Per unit variable SG&A
Total variable SG&A
Fixed SG&A
Salaries
Office
Advertising
Other
Total fixed SG&A
Total budgeted SG&A

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Solution 7

The following revised budget reflects only 68,000 (80% of the volume included in the original plan) units:

Selling, General, and Administrative Budget
For the Year Ending December 31, 20X7

Estimated units sold		68,000
X Per unit variable SG&A	X	$ 5.00
Total variable SG&A	$	340,000
Fixed SG&A		
Salaries	$	467,500
Office		102,000
Advertising		297,500
Other		42,500
Total fixed SG&A	$	909,500
Total budgeted SG&A	$	1,249,500

Reducing advertising would be a "tricky" decision. While it will immediately reduce costs, it might also impact sales and corporate brand value.

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Problem 8

Scott Logan Equipment's board of directors was presented with the following information about operations for an upcoming three-month period. The board desires to declare a dividend at the end of June, but still maintain cash on hand of $150,000. Scott began April with $175,000 of cash on hand. Prepare a cash budget, and determine how much cash will be available for the dividend? Is there any apparent risk associated with the dividend plan?

	April	May	June
Customer receipts	$ 1,260,000	$ 1,350,000	$ 1,440,000
Cash paid for direct materials	360,000	399,600	477,000
Cash paid for direct labor	441,000	477,000	540,000
Factory overhead*	252,000	261,000	277,200
SG&A**	154,800	160,200	149,400
Taxes	27,000	32,400	28,800
Equipment purchase***			600,000

* Includes depreciation of $80,000
** Includes depreciation of $45,000
*** Equipment purchase to be paid for in July

Worksheet 8

	April	May	June
Beginning cash balance	$ 175,000		
Customer receipts	1,260,000		
Available cash	$ 1,435,000		
Less: Disbursements			
Ending cash balance			

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Solution 8

As the following cash budget reveals, $412,600 will be available for a cash dividend at the end of June (the amount by which ending estimated cash exceeds $150,000). The danger associated with this plan is that the $600,000 equipment purchase must be paid for in July. Paying the dividend will leave the company significantly constrained and potentially unable to make the requisite equipment payment.

	April	May	June
Beginning cash balance	$ 175,000	$ 325,200	$ 470,000
Customer receipts	1,260,000	1,350,000	1,440,000
Available cash	$ 1,435,000	$ 1,675,200	$ 1,910,000
Less: Disbursements			
Direct materials	$ 360,000	$ 399,600	$ 477,000
Direct labor	441,000	477,000	540,000
Factory overhead	172,000	181,000	197,200
SG&A	109,800	115,200	104,400
Taxes	27,000	32,400	28,800
Total disbursements	$ 1,109,800	$ 1,205,200	$ 1,347,400
Ending cash balance	$ 325,200	$ 470,000	$ 562,600