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Budgeting and Decision Making Exercises II

Larry M. Walther; Christopher J. Skousen



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ISBN 978-87-7681-881-4

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

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Problem 1

Bryan Singler is evaluating results for three separate business segments under his control. Selected financial information for each segment follows:

	Sales	Operating Income	Average Assets
Segment A	$ 3,600,000	$ 250,000	$ 3,750,000
Segment B	6,300,000	1,125,000	10,800,000
Segment C	2,880,000	400,000	7,980,000

Rank order the three segments based on "margin," "turnover," and "return on investment." How is it possible that the rankings differ based on which evaluative model is used?

Worksheet 1

	Sales	Operating Income	Average Assets
Segment A	$ 3,600,000	$ 250,000	$ 3,750,000
Segment B	6,300,000	1,125,000	10,800,000
Segment C	2,880,000	400,000	7,980,000

Margin (operating income ÷ sales)

	Segment A	Segment B	Segment C

Turnover (sales ÷ average assets)

	Segment A	Segment B	Segment C

ROI (operating income ÷ average assets)

	Segment A	Segment B	Segment C

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Solution 1

	Sales	Operating Income	Average Assets
Segment A	$ 3,600,000	$ 250,000	$ 3,750,000
Segment B	6,300,000	1,125,000	10,800,000
Segment C	2,880,000	400,000	7,980,000

Margin (operating income ÷ sales)

Segment A	Segment B	Segment C
0.0694	0.1786	0.1389
3rd	**1st**	**2nd**

Turnover (sales ÷ average assets)

Segment A	Segment B	Segment C
0.9600	0.5833	0.3609
1st	**2nd**	**3rd**

ROI (operating income ÷ average assets)

Segment A	Segment B	Segment C
0.0667	0.1042	0.0501
2nd	**1st**	**3rd**

This problem illustrates the importance of comprehensive analysis. For example, the company with the best turnover also has the worst margin and second best ROI. Depending on the variable of focus, the manager could achieve different rankings of the various segments.

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Problem 2

University Inn's most recent monthly expense analysis report revealed significant cost overruns. The manager was asked to explain the deviations. Below is the "budget v. actual" expense report for the month in question.

University Inn
Budget v. Actual Expense Report
For the Month Ending October 31, 20X8

	Actual	Budget	Variance
Utilities	$ 81,800	$ 72,000	$ (9,800)
Laundry	32,890	28,800	(4,090)
Food service	63,000	56,000	(7,000)
Rent/taxes	100,800	100,800	-
Staff wages	88,700	85,000	(3,700)
Management salaries	70,000	72,000	2,000
Water	24,024	16,000	(8,024)
Maintenance	28,090	24,000	(4,090)
	$ 489,304	$ 454,600	$ (34,704)

The Inn has observed that utilities, water, food service, staff wages, and laundry costs all vary with activity. The other costs are fixed. The budget reflected above was based upon an assumed 80% occupancy rate. The university's football team was on a winning streak and numerous alumni were returning to campus in October, resulting in a 92% occupancy rate during the month.

Prepare a ""flexible budget"" based upon a 92% occupancy rate, and identify whether the Inn is being efficienctly or inefficiently run. Comment on specific costs, and note why a flexible budget can improve performance evaluations.

Worksheet 2

University Inn
Budget v. Actual Expense Report
For the Month Ending October 31, 20X8

	Actual	Budget	Variance
Utilities	$ 81,800	$ -	$ -
Laundry	32,890	-	-
Food service	63,000	-	-
Rent/taxes	100,800	-	-
Staff wages	88,700	-	-
Management salaries	70,000	-	-
Water	24,024	-	-
Maintenance	28,090	-	-
	$ 489,304	$ -	$ -

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Solution 2

University Inn
Budget v. Actual Expense Report
For the Month Ending October 31, 20X8

	Actual	Budget	Variance
Utilities	$ 81,800	$ 82,800	$ 1,000
Laundry	32,890	33,120	230
Food service	63,000	64,400	1,400
Rent/taxes	100,800	100,800	-
Staff wages	88,700	97,750	9,050
Management salaries	70,000	72,000	2,000
Water	24,024	18,400	(5,624)
Maintenance	28,090	24,000	(4,090)
	$ 489,304	$ 493,270	$ 3,966

* These variable costs are 115% (92/80) of the amounts included in the static budget.

With the exception of water usage and maintenance costs, each category reflects better-than-budgeted financial performance. The flexible budget reveals that most of the "cost overruns" are attributable to increases in costs due to increases in volume. The manager should probably be congratulated for cost control rather than criticized for cost overruns.

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Problem 3

Head Stone produces granite grave stones. These monuments are etched with the name of the deceased and other information. Each monument typically requires 300 pounds of granite. The standard cost for granite is estimated at $150 per ton (2,000 pounds). During a recent month, 200 monuments were constructed. The company purchased and used 25 tons of material at a cost of $175 per ton.

Compute the total variance for materials, and determine how much is related to price and how much is related to quantity.

Worksheet 3

Materials variances:		
Actual quantity (tons)		-
Actual price	$	-
Actual cost of direct materials	$	-
Output - number of monuments		-
Standard quantity of input per monument (15% of a ton)		-
Standard quantity of input to achieve output (tons)		-
Standard price per unit of input	$	-
Standard cost of direct materials	$	-
Total materials variance (standard cost v. actual cost)	$	-
Materials price variance:		
Standard price	$	-
Actual price		-
	$	-
Actual quantity		-
Unfavorable materials price variance	$	-
Materials quantity variance:		
Standard quantity		-
Actual quantity		-
		-
Standard price	$	-
Favorable materials quantity variance	$	-

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Solution 3

Materials variances:		
Actual quantity (tons)		25
Actual price	X	$175
Actual cost of direct materials	$	4,375
Output - number of monuments		200
Standard quantity of input per monument (15% of a ton)	X	.15
Standard quantity of input to achieve output (tons)		30
Standard price per unit of input	X	$150
Standard cost of direct materials	$	4,500
Total materials variance (standard cost v. actual cost)	$	125
Materials price variance:		
Standard price	$	150
Actual price	$	(175)
	$	(25)
Actual quantity	X	25
Unfavorable materials price variance	$	(625)
Materials quantity variance:		
Standard quantity		30
Actual quantity		(25)
		5
Standard price	X	$150
Favorable materials quantity variance	$	750

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Problem 4

Parent Golf produces handmade golf clubs. The process is labor intensive. The speed at which a club can be built depends on the skill level of the individual worker. Management has established a standard of 4 labor hours per club. The standard wage rate is $11 per hour. During a recent month, 1,500 custom clubs were produced. Management was pleased that only 5,100 labor hours were worked, however total wages amounted to $81,600.

Compute the total variance for labor, and determine how much is related to rate and efficiency components.

Worksheet 4

Labor variances:		
Actual hours of labor		-
Actual rate	X	-
Actual cost of direct labor	$	-
Output - number of clubs		-
Standard hours per club	$	-
Standard hours to achieve output		-
Standard rate per hour	$	-
Standard cost of direct labor	$	-
Total labor variance (standard cost v. actual cost)	$	-
Labor rate variance:		
Standard rate	$	-
Actual rate		-
	$	-
Actual hours		-
Unfavorable labor rate variance	$	-
Labor efficiency variance:		
Standard hours		-
Actual hours		-
		-
Standard rate	$	-
Favorable labor efficiency variance	$	-

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Solution 4

Labor variances:		
Actual hours of labor		5,100
Actual rate	X	$16
Actual cost of direct labor	$	81,600
Output - number of clubs		1,500
Standard hours per club	X	4
Standard hours to achieve output		6,000
Standard rate per hour	X	$11
Standard cost of direct labor	$	66,000
Total labor variance (standard cost v. actual cost)	$	(15,600)
Labor rate variance:		
Standard rate	$	11
Actual rate		(16)
	$	(5)
Actual hours	X	5,100
Unfavorable labor rate variance	$	(25,500)
Labor efficiency variance:		
Standard hours		6,000
Actual hours		(5,100)
		900
Standard rate	X	$11
Favorable labor efficiency variance	$	9,900

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Problem 5

At the beginning of the year, Fort Worth Manufacturing estimated that its annual variable factory overhead would be $923,400, and its fixed factory overhead would be $1,798,200. The company's payroll consisted of 27 direct labor employees, and each was expected to work 1,800 direct labor hours. Fort Worth applies overhead to products based on direct labor hours. Each finished unit produced by the company is anticipated to require four direct labor hours.

Actual production and cost information for the year is as follows:

Total units produced	12,000
Actual variable overhead	$ 910,000
Actual fixed overhead	$ 1,750,000
Actual labor hours	45,500

a) Compute the variable overhead variances.

b) Compute the fixed overhead variances.

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Worksheet 5

(a) Variable overhead variances	
Actual cost of variable overhead	$ -
Standard hours	-
Standard rate per hour	$ -
Standard cost of variable overhead	$ -
Actual use at standard cost	$ -
Total favorable variable overhead variance	$ -
Variable overhead spending variance	$ -
Variable overhead efficiency variance	$ -
(b) Fixed overhead variances	
Actual cost of fixed overhead	$ -
Standard hours	-
Standard rate per hour	$ -
Standard cost of variable overhead	$ -
Budgeted fixed overhead	$ -
Total unfavorable fixed overhead variance	$ -
Fixed overhead spending variance	$ -
Fixed overhead volume variance	$ -

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Solution 5

(a) Variable overhead variances			
Actual cost of variable overhead	$	910,000	
Standard hours (12,000 units X 4 hours)		48,000	
Standard rate per hour (($923,400/(27 X 1,800 hours))	X	$19	
Standard cost of variable overhead	$	912,000	
Actual use at standard cost (45,500 X $19)	$	864,500	
Total favorable variable overhead variance ($912,000 - $910,000)	$	2,000	F
Variable overhead spending variance ($864,500 - $910,000)	$	45,500	U
Variable overhead efficiency variance ($912,000 - $864,500)	$	43,500	U
(b) Fixed overhead variances			
Actual cost of fixed overhead	$	1,750,000	
Standard hours (12,000 units X 4 hours)		48,000	
Standard rate per hour (($1,798,200/(15 X 1,800 hours))	X	$37	
Standard cost of variable overhead	$	1,776,000	
Budgeted fixed overhead	$	1,798,200	
Total unfavorable fixed overhead variance ($1,776,000 - $1,750,000)	$	26,000	F
Fixed overhead spending variance ($1,798,200 - $1,750,000)	$	48,200	F
Fixed overhead volume variance ($1,776,000 - $1,798,200)	$	(22,200)	U

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Problem 6

Freddie Ishola Incorporated uses a standard cost system, and calculates and records variances related to direct materials and direct labor. The following information was available for March:

Purchases of raw materials - actual cost	$ 273,100
Purchases of raw materials - standard cost	286,755

All of the purchased raw material was transferred to work in process, and the materials quantity variance was unfavorable by $25,000.

Direct labor - actual cost	$ 267,300
Direct labor - standard cost for output	262,350

The labor efficiency variance was favorable by $14,000.

a) Prepare the journal entry that is needed to record the purchase of raw materials at standard price, and the related variance.

b) Prepare the journal entry that is needed to record the transfer of raw materials to production at standard usage rates, and the related unfavorable quantity variance.

c) Prepare the journal entry that is needed to record the increase in work in process for the standard direct labor costs, and record the related rate and efficiency variances.

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Worksheet 6

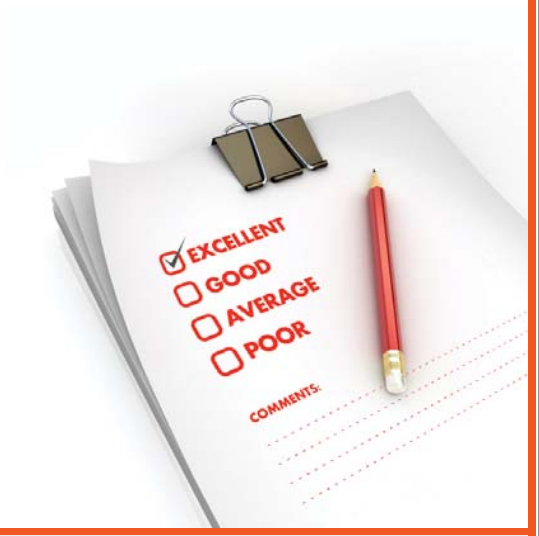
GENERAL JOURNAL			
Date	**Accounts**	**Debit**	**Credit**
31-Mar			
31-Mar			
31-Mar			

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Solution 6

GENERAL JOURNAL			
Date	**Accounts**	**Debit**	**Credit**
31-Mar	Raw Materials Inventory	286,755	
	Materials Price Variance		13,655
	Accounts Payable		273,100
	To record purchase of raw materials at standard price and related favorable variance		
31-Mar	Work in Process	261,755	
	Materials Quantity Variance	25,000	
	Raw Materials Inventory		286,755
	To transfer raw materials to production at standard usage rates and related unfavorable quantity variance		
31-Mar	Work in Process	262,350	
	Labor Rate Variance	18,950	
	Labor Efficiency Variance		14,000
	Wages Payable		267,300
	To increase work in process for the standard direct labor costs, and record the related rate and efficiency variances		

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Problem 7

Exercise House manufactures and sells a home exercise kit. The kit is sold via 30-minute televised commercials that run on periodic Saturdays. Below are typical results for a Saturday campaign, assuming 3,750 units were actually sold. However, volume has been known to fluctuate from 3,000 to 4,500 units. Prepare a flexible budget scenario, assuming volumes of 3,000, 3,500, 4,000 and 4,500 units. If Exercise House wants to at least cover costs at volumes of 3,500 units and above, what is the minimum selling price per kit?

Exercise House
Expense Report
For a Typical Campaign Selling 3,750 Units

Variable expenses:	
Home exercise kit	$ 138,750
Shipping and handling	20,625
Toll-free phone	7,500
Credit card fees	15,000
Miscellaneous items	28,125
Total variable expenses	$ 210,000
Fixed expenses	
TV commercial	$ 112,500
Actors and models	11,250
Studio rental	37,500
Total fixed expenses	$ 161,250
Total expenses	$ 371,250

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Worksheet 7

Exercise House
Flexible Expense Budget/Alternative Scenarios
For a Typical Campaign

	3,000 units	3,500 units	4,000 units	4,500 units
Variable expenses:				
Home exercise kit	$ -	$ -	$ -	$ -
Shipping and handling	-	-	-	-
Toll-free phone	-	-	-	-
Credit card fees	-	-	-	-
Miscellaneous items	-	-	-	-
Total variable expenses	$ -	$ -	$ -	$ -
Fixed expenses				
TV commercial	$ -	$ -	$ -	$ -
Actors and models	-	-	-	-
Studio rental	-	-	-	-
Total fixed expenses	$ -	$ -	$ -	$ -
Total expenses	$ -	$ -	$ -	$ -

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Solution 7

Exercise House
Flexible Expense Budget/Alternative Scenarios
For a Typical Campaign

	3,000 units	3,500 units	4,000 units	4,500 units
Variable expenses:				
Home exercise kit	$ 111,000	$ 129,500	$ 148,000	$ 166,500
Shipping and handling	16,500	19,250	22,000	24,750
Toll-free phone	6,000	7,000	8,000	9,000
Credit card fees	12,000	14,000	16,000	18,000
Miscellaneous items	22,500	26,250	30,000	33,750
Total variable expenses	$ 168,000	$ 196,000	$ 224,000	$ 252,000
Fixed expenses				
TV commercial	$ 112,500	$ 112,500	$ 112,500	$ 112,500
Actors and models	11,250	11,250	11,250	11,250
Studio rental	37,500	37,500	37,500	37,500
Total fixed expenses	$ 161,250	$ 161,250	$ 161,250	$ 161,250
Total expenses	$ 329,250	$ 357,250	$ 385,250	$ 413,250

The variable expenses per unit are determined by dividing the given total variable costs by 3,750 units (e.g., $138,750/3,750 = $37 per unit for the kit, etc.) The per unit values are multiplied times the various outcomes (e.g., $37 per kit X 3,000 kits = $111,000, etc.).

The unit selling price would need to be at least $102.07 to breakeven at 3,500 units ($357,250/3,500 units).