**Accounting for Managerial Decisions**

Jeffery Morse

Brandman University

Author Note

For correspondence concerning this paper, Jeffery Morse can be reached at

jmorse@mail.brandman.edu

Problem #1: Managerial Overview

Use the information below to calculate the missing amounts (shown by letters) in the Schedule of Raw Materials Placed in Production and the Schedule of Cost of Goods Manufactured.





Equations.

Beginning balance (BB) + Transfers in (TI) – Ending balance (EB) = Transfers out (TO)

**Schedule of Raw Materials Placed in Production**

Raw Materials Inventory is added tto Current period raw materials to equal 60,000.

A + 20,000 = 60,000 using principle of equality we can subtract 20,000 from both sides and solve for A. A= 60,000 – 20,000,

 A=$40,000

B = Raw materials – (TO) = 60,000 – 50,000 = 10,000

B=$10,000

C= Raw materials – indirect materials = Direct Materials Placed. 50,000-4,000 = 46,000

C= $46,000

Schedule of Cost of Goods Manufactured

C (Direct materials) from the schedule of raw materials is place into D (direct materials) in the schedule of cost of goods.

D=$46000

Since DM + DL + MOH = total costs. Then 326000 – 46000 – 64000 = DL = 216000

E=$216000

WIP + Costs = Total costs of WIP, 90,000+326,000 = 416,000

F= $416,000

F – Wip (EB) = Cost of goods Manufactured. 416,000 – 78,000 = $338,000

Problem #2: Job Costing

Auto Machinery makes automobile production equipment and uses normal costing. Overhead is applied on the basis of $12 per machine hour.

The following information relates to the August jobs:

 Job 22 Job 33 Job 44

Materials used $40,000 $ 74,000 $43,000

Direct labor $96,000 $117,000 $84,000

Machine hours 9,200 7,700 6,400

Jobs 22 and 33 were completed and sold, but Job 44 remained in inventory at the end of August. For August, actual overhead incurred totaled $274,000.

Required:

1. Compute the amount of overhead to be applied to each job.

Total machine hours are 9200 + 7700 + 6400 = 23300 hours. 23300 \* 12 = 279600

Job 22 9200/23300 = 39% = $110400, job 33 = 7700/23300 = 33% = $92400, job 34 = 6400/23300 = 28% = $76800

1. Compute Cost of Goods Sold for August and ending WIP Inventory at August 31.

The problem states that job 44 was not sold. So for Job 22 and Job 33 the totals are as follows.

DM + DL + MOH = Costs DM ( 40000+74000) 114000 + DL (96000+ 117000) 213000 + MOH ( (9200 \*12) +(7700 \* 12))202800 = $529800 WIP Inv is 43000 + 84000 + (6400\*12)76800 = $203800

1. Compute the amount of over- or under applied overhead for August.

Applied MOH is 279600 actual MOH was 274000. 279600-274000 = $5600 MOH was over applied by $5600

1. Assume that revenue for Jobs 22 and 33 amounted to $1,090,000, selling expenses totaled $218,000, general and administrative expenses were equal to $98,000, and over- or under applied overhead is immaterial. Using this information, prepare an income statement for the manufacturer for August.

Auto Machinery Company

Income Statement

Month ending August – 31

Sales $1,090,000

Cost of goods sold $203,800

Gross Profit $886,200

Less Operating Expenses

 Selling $218,000

 General and Admin $98,000

Operating Profit $570,200

Problem #3: Process Costing

Calculate the number of equivalent units for each of the following independent cases.

1. A trade school has 1,000 students enrolled in classes during the current term. The dean is interested in knowing the number of full-time equivalent students enrolled. The average student takes 40% of a full load of classes. What is the number of full-time equivalent students? 1000 \* 40% = 400 full time students
2. A total of 8,500 units of product remain in the Finishing Department at the end of the year. Direct materials are 60%complete, and direct labor is 50% complete. What amount of equivalent units remain in the Finishing Department for direct materials and direct labor at year end?

 DM = 8500 \* 60% = 5100 completed so 3400 remain

 DL = 8500 \* 50% = 4250 completed so 4250 remain

1. The natal care unit of a Hope Hospital has 50 nurses working on a part-time basis, with the average nurse working 70% of a full load. What is the number of full-time equivalent nurses employed by the hospital?

 50 \*70% = 35 full –time equivalent nurses

1. A total of 3,000 units of product remain in the Fabricating Department at the end of the year. These products are 45% complete with respect to direct materials and 20% complete in terms of direct labor. What is the equivalent units remaining in the Fabrication Department for direct materials and direct labor at year end?

 DM = 3000 \* 45% = 1350 equivalent DM completed 1650 remaining

 DL = 3000 \*20% = 600 equivalent DL completed 2400 remaining

Problem #4: Process Costing

Use the following information to calculate the cost per equivalent unit for direct materials, direct labor, overhead, and in total for the Assembly Department of Dessert Company for the month of June.

 Direct Direct

 Materials Labor Overhead

Total costs to be accounted for $600,000 $1,200,000 $1,800,000

Total equivalent units accounted for 30,000units 24,000 units 24,000 units

Cost per equivalent units = cost / units for each item.

DM = 600000/30000 = $20 per unit

DL = 1200000/24000 = $50 per unit

MOH = 1800000/24000 = $75 per unit

Problem #5: Cost Behavior Analysis

Riley Company would like to estimate production costs on an annual basis. Costs incurred for direct materials and direct labor are variable costs. The accounting records indicate the following production costs were incurred last year for 40,000 units:

Direct materials $ 60,000

Direct labor 80,000

Manufacturing overhead 200,000 (20% fixed; 80% variable)

*Required:*

Use account analysis to estimate the fixed costs per year, and the variable cost per unit.

DM = 60000/ 40000 = $1.5 per unit

DL = 80000/40000 = $2 per unit

MOH

 Fixed = 200000 \*20% = 40000

 Variable = 200000\*80% = 160000

Variable MOH is 160000/40000 = $4 per unit

Total per unit costs DM + DL + MOH = 1.5 + 2 + 4 = $7.5 per unit. Fixed costs per year are $40,000 Y = 7.5x + 40000

Problem #6: Cost Profit Volume Analysis

The local nonprofit youth symphony is planning a concert fundraiser. The organization estimates that 550 tickets can be sold for $16 per person. The fixed costs are $720. The local chamber of commerce office will process ticket orders for a fee of $4 per ticket, to relieve the youth symphony of this responsibility.

1. How many tickets does your organization have to sell to break even?

Plugging in the info. Y = 16x – (720 + 4x)

Collecting like terms. Y = 16x – 4x -720, (Y = 12x – 720) is our equation.

And our Contribution Margin = 16 – 4 = $12

To break even we set Y to 0, 0 = 12x -720

Addition property of equality. 720 = 12x

We can use BE = (Total Fixed + Target Profit) / Contribution Margin Ratio)

Division property of equality 720/12 = x = 60

 The organization will have to sell 60 tickets to break even.

1. How many tickets does your organization have to sell to earn a profit of $4,320?

To make $4,320 profit we set that equal to Y, 4320 = 12x - 720

Addition property of equality 4320 + 720 = 12x, 5040 = 12x

Division property of equality 5040/12 = x = 420

 The organization will have to sell 420 tickets to make $4,320 profit.

1. How much must your organization have in sales dollars to break even (rounded to the nearest cent)? Units \* price = 60 \* 16 = $960.00 to break even.

 The organization will have to sell $960.00 worth of tickets to break even.

1. How much must your organization have in sales dollars to earn a profit of $4,320 (rounded to the nearest cent)? 420 \* 16 = $6720.00, Algebraically

Or The Contribution ratio is (S –V)/S or 12/16 = 75%

So (FC + Target Profit)/ Cont. Ratio. (720 + 4320)/75% = $6720.00

 The organization will have to sell $6720.00 worth to have a profit of $4,320.00

1. What is the organization's margin of safety in units and in sales dollars?

Margin of Safety = expected sales or units – Breakeven sales or units.

Units 420(expected) – 60(break even) = 360 units in the margin of safety in Units

Sales (420 \* 16) – (60 \* 16) = $5760.00 is the margin of safety in dollars.

Problem #7: Cost Profit Volume Analysis

Assume that Snowmobile Company produces two products: Racer and Cruiser. Below are the data for each:

 Racer Cruiser

Selling price $6,000 $4,000

Variable cost 3,600 2,650

In the past, Snowmobiles had difficulty finding skilled workers. However, the company recently hired additional labor, thereby eliminating this resource constraint. The company now is faced with limited available machine-hours. It has a total of 4,000 machine hours available each month. The Racer requires 50 machine-hours per unit and the Cruiser requires 15 machine-hours per unit.

1. What is the contribution margin provided by each product?

 Racer CM = S-V = 6000 – 3600 = $2400

 Cruiser CM = S-V = 4000 – 2650 = $1350

1. Calculate the contribution margin per unit of constrained resource for each model.

 Racer CM/ unit of constraint = 2400 / 50 = 48

 Cruiser CM / unit of constraint = 1350 / 15 = 90

1. Which model would the company prefer to sell to maximize overall company profit?

 Since Cruiser (90) is greater than Racer (48) than the Cruiser would be the preferable product for overall profit.

Problem #8: Using Relevant Revenue and Costs to Make Decisions Sandwiches Galore is a small shop looking to expand its product offerings. The company is evaluating two alternatives: tacos and soups. Annual projections for sales of tacos are as follows: Sales $144,000; variable costs $80,000; fixed costs $16,000. Annual projections for sales of soups are as follows: Sales $60,000; variable costs $20,000; no additional fixed costs.

Required:

Perform differential analysis to determine which alternative is more profitable, and by how much. Assume that adding tacos is alternative 1 and adding soups is alternative 2.

 Alternative 1 (Tacos) Alternative 2 (Soup)

Sales $144,000 $60,000

Variable Costs $80,000 $20,000

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Contribution Margin $64,000 $40,000

Fixed Costs $16,000 0

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Gross Profit $48,000 $40,000

Alternative 1 (Tacos) is determined to be more profitable by $8,000 annually.

Problem #9: Activity Based Costing Roseville Engineering provides watershed and design services for its customers. Total overhead costs this coming year are expected to be $8,000,000 ($2,000,000 in the Watershed Department, and $6,000,000 in the Design Department). If the company chooses to use the plant-wide approach, overhead will be allocated using direct labor costs. Direct labor costs are expected to total $4,000,000. The Watershed Department expects to incur direct labor costs of $500,000, and the Design Department expects to work 120,000 direct labor hours.

Required:

1. Assume Roseville Engineering uses the plant-wide approach to allocating overhead costs, and uses direct labor costs as the allocation base. Calculate the predetermined overhead rate and explain how this rate will be used to allocate overhead costs.

 Watershed Design Totals

DM ? ? ?

DL $500,000 120,000\*x=? $4,000,000

MOH $2,000,000 $6,000,000 $8,000,000

For plant wide we can use expected MOH / cost driver. Here it would be $8,000,000/$4,000,000 or $2 of POR (predetermined overhead rate) for every $1 in DL

We can use the predetermined overhead rate to estimate overhead for future costs by multiplying the POR 2 by the expected DL in hours. Basically our MOH would be DL +(2\*DL). Or 3 times our DL in this case.

1. Assume Roseville Engineering uses the department approach for allocating overhead costs rather than the plant wide method. The Watershed Department allocates overhead based on direct labor costs and the Design Department allocates overhead based on direct labor hours. Calculate the predetermined overhead rate for each department and explain how these rates will be used to allocate overhead costs.

Simply put we can use expected MOH / cost driver

For watershed we have $2,000,000/$500,000 or $4 for every $1 of DL

And for Design it would be $6,000,000 / 120,000 or $50 for every hour of DL

We could also try another way.

First we find the DL cost for Design. 4,000,000 = 500,000 + (120,000 \* x)

Subtraction property of equality 4,000,000 – 500,000 = 120,000 \*x,

 3,500,000 = 120,000 \* x

Division property of equality 3,500,000/120,000 = x = 29.16667 /hr

If we suppose that the watershed is making about the same hourly wage then 500,000 / 29.1667 = 17,143 hours

Total labor hours are 17143 + 120000 = 137,143 hours.

To find the predetermined overhead rate we divide estimated overhead by the base driver

8,000,000/ 137,143 = $58.33 per direct labor hour plant wide.

Department

While design would be the same as the above of $6,000,000 / 120,000 or $50 for every hour of DL. Watershed would be $2,000,000 / 17143 = $116.67 per DL hour.