



Chapter 15

QUESTION REVIEW FROM GROUP 6

15-17 Question Review

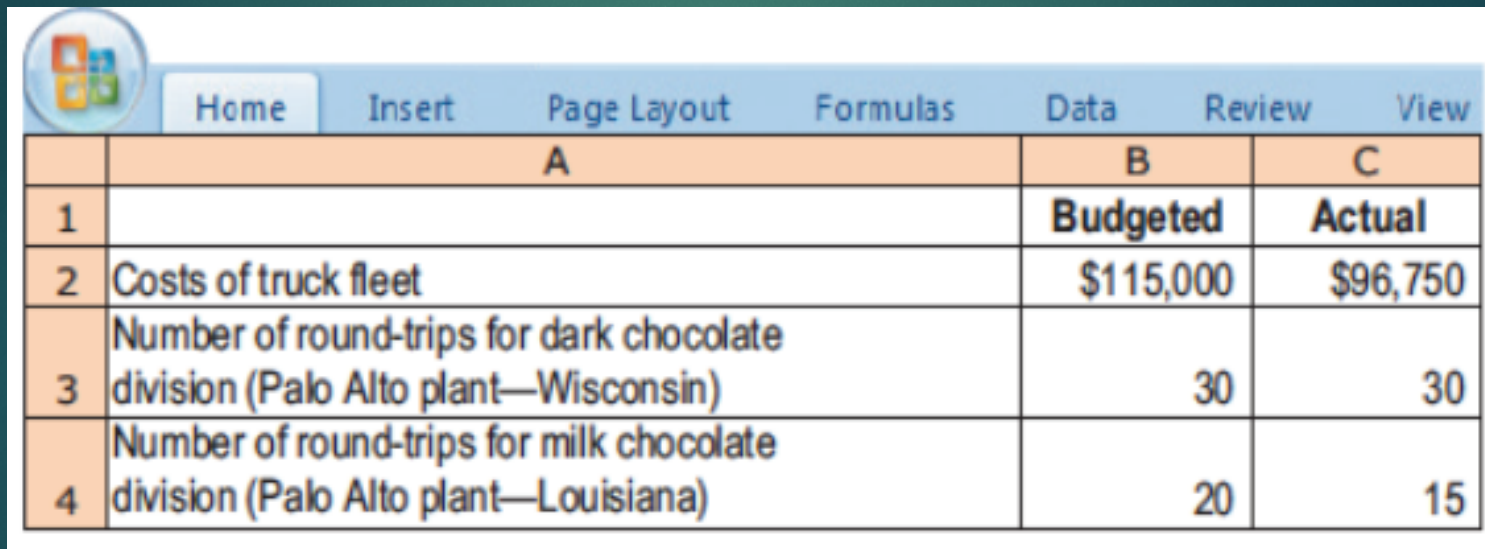
Single-rate method, budgeted versus actual costs and quantities.

Chocolat Inc. is a producer of premium chocolate based in Palo Alto. The company has a separate division for each of its products: dark chocolate and milk chocolate. Chocolat purchases ingredients from Wisconsin for its dark chocolate division and from Louisiana for its milk chocolate division. Both locations are the same distance from Chocolat's Palo Alto plant.

Chocolat Inc. operates a fleet of truck as a cost centre that charges the divisions for variable costs (drivers and fuel) and fixed cost (vehicle depreciation, insurance, and registration fees) of operating the fleet. Each division is evaluated on the basis of its operating income. For 2013, the trucking fleet had a practical capacity of 50 round-trips between the Palo Alto plant and the two suppliers. It recorded the following information:

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	A	B	C
1		Budgeted	Actual
2	Costs of truck fleet	\$115,000	\$96,750
3	Number of round-trips for dark chocolate division (Palo Alto plant—Wisconsin)	30	30
4	Number of round-trips for milk chocolate division (Palo Alto plant—Louisiana)	20	15

Answer

1. Using the single-rate method, allocate costs to the dark chocolate division and the milk chocolate division in these three ways.
 - a. Calculate the budgeted rate per round-trip and allocate costs based on round-trips budgeted for each division.

$$\text{Budgeted rate} = \frac{\text{Costs of truck fleet}(\mathbf{Budgeted})}{\text{Total number of round trips}(\mathbf{Budgeted})} = \frac{\$115,000}{(30 + 20)}$$
$$= \$2,300$$

$$\begin{aligned} \text{The dark chocolate division: } & \$2,300 \text{ per round trip} \\ & \times 30 \text{ round trips}(\mathbf{Budgeted}) \\ & = \$69,000 \end{aligned}$$

$$\begin{aligned} \text{The milk chocolate division: } & \$2,300 \text{ per round trip} \\ & \times 20 \text{ round trips}(\mathbf{Budgeted}) \\ & = \$46,000 \end{aligned}$$

Answer

b. Calculate the budgeted rate per round-trip and allocate costs based on actual round-trips used by each division.

$$\begin{aligned} \text{Budgeted rate} &= \frac{\text{Costs of truck fleet (Budgeted)}}{\text{Total number of round trips (Budgeted)}} = \frac{\$115,000}{(30 + 20)} \\ &= \$2,300 \end{aligned}$$

The dark chocolate division: $\$2,300 \text{ per round trip} \times 30 \text{ round trips (Actual)}$
 $= \$69,000$

The milk chocolate division: $\$2,300 \text{ per round trip} \times 15 \text{ round trips (Actual)}$
 $= \$34,500$

Answer

c. Calculate the actual rate per round-trip and allocate costs based on actual round-trips used by each division.

$$\text{Actual rate} = \frac{\text{Costs of truck fleet(Actual)}}{\text{Total number of round trips(Actual)}} = \frac{\$96,750}{(30 + 15)} = \$2,150$$

$$\begin{aligned} \text{The dark chocolate division: } & \$2,150 \text{ per round trip} \times 30 \text{ round trips(Actual)} \\ & = \$64,500 \end{aligned}$$

$$\begin{aligned} \text{The milk chocolate division: } & \$2,150 \text{ per round trip} \times 15 \text{ round trips(Actual)} \\ & = \$32,250 \end{aligned}$$

Answer

2. Describe the advantages and disadvantages of using each of the three methods in requirement 1. Would you encourage Chocolat Inc. to use one of these three methods? Explain and indicate any assumptions you made.

Budgeted rate & budgeted quantity:

- Both division knew their transportation cost for the following year.
- Transportation cost would not be affected by the actual usage of the trucking fleet.
- Might motivate to over-use the trucking fleet.

Budgeted rate & actual quantity:

- The two division knew their transportation cost per round-trips beforehand.
- Control their transportation costs by minimizing the round trips they used.
- Make a better operating decision by utilizing the trucking fleet.

Answer

2. Describe the advantages and disadvantages of using each of the three methods in requirement 1. Would you encourage Chocolat Inc. to use one of these three methods? Explain and indicate any assumptions you made.

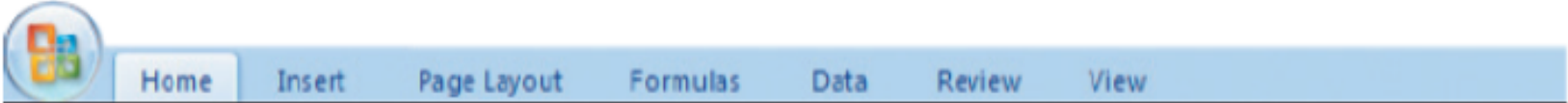
Actual rate & actual quantity:

- Must wait until year-end to know their transportation costs.
- The use of actual rate & actual quantity makes the costs allocated to one division a function of the actual demand of the other division.
- Milk chocolate division used less than its budget.
- Dark chocolate division used all its budgeted.
- Dark chocolate division bears a larger portion of the fixed cost by doing nothing.

To sum up, **budgeted rate & actual quantity method** is the most suitable one for allocating Chocolat Inc.'s costs when single-rate method was assumed in this problem.

15-19 Question Review

Support-department cost allocation; direct and step-down methods. Phoenix Partners provides management consulting services to government and corporate clients. Phoenix has two support departments—administrative services(AS) and information system (IS)—and two operating departments—government consulting(GOVT) and corporate consulting (CORP). For the first quarter of 2013, Phoenix’s cost records indicate the following:

							
	A	B	C	D	E	F	G
1		SUPPORT			OPERATING		
2		AS	IS		GOVT	CORP	Total
3	Budgeted overhead costs before any						
4	interdepartment cost allocations	\$600,000	\$2,400,000		\$8,756,000	\$12,452,000	\$24,208,000
5	Support work supplied by AS (budgeted head count)	—	25%		40%	35%	100%
6	Support work supplied by IS (budgeted computer time)	10%	—		30%	60%	100%

Answer

1. Allocate the two support departments' costs to the two operating departments using the following methods:

	AS	IS	GOVT	CORP

a. Direct method	\$600,000	\$2,400,000		
Allocate of AS costs (40/75,35/75)	(600,000)		\$ 320,000	\$ 280,000
Allocate of IS costs (30/90,60/90)	<u> 0</u>	<u>(2,400,000)</u>	<u>800,000</u>	<u>1,600,000</u>
	<u>\$ 0</u>	<u>\$ 0</u>	<u>\$1,120,000</u>	<u>\$ 1,880,000</u>
b. Step-down method (alloc. AS first)	\$600,000	\$2,400,000		
Allocate of AS costs (0.25,0.40,0.35)	(600,000)	150,000	\$ 240,000	\$ 210,000
Allocate of IS costs (30/90,60/90)	<u> 0</u>	<u>(2,550,000)</u>	<u>850,000</u>	<u>1,700,000</u>
	<u>\$ 0</u>	<u>\$ 0</u>	<u>\$1,090,000</u>	<u>\$ 1,910,000</u>
c. Step-down method (alloc. IS first)	\$600,000	\$2,400,000		
Allocate of IS costs (0.10,0.30,0.60)	240,000	(2,400,000)	\$ 720,000	\$1,440,000
Allocate of AS costs (40/75,35/75)	<u>(840,000)</u>	<u> 0</u>	<u>448,000</u>	<u>392,000</u>
	<u>\$ 0</u>	<u>\$ 0</u>	<u>\$1,168,000</u>	<u>\$ 1,832,000</u>

Answer

2. Compare and explain differences in the support-department costs allocated to each operating department.

- The direct method ignores any services to other support department.
- The step-down method partially recognizes services to other support departments.
- The information systems support group (with total budget of \$2,400,000) provides 10% of its services to the AS group. The AS support group (with total budget of \$600,000) provides 25% of its services to the information systems support group.
- AS group is allocated first, \$2,550,000 is then assigned out from the IS Group.
- Given CORP's disproportionate(2:1)usage of the services of IS, results in the highest overall allocation of costs to CORP.
- By contrast, GOVT is assigned relatively more in support costs when AS costs are assigned second.

Answer

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3. What approaches might be used to decide the sequence in which to allocate support departments when using the step-down method?

When using the **step-down method**, there are **three approaches** that could decide the sequence in which to allocate support departments:

a. Allocate support departments on a ranking of the percentage of their total services provided to other support departments.

Administrative Services 25% VS Information Systems 10%

b. Allocate support departments on a ranking of the total dollar amount in the support departments

Information Systems \$2,400,000 VS Administrative Services \$600,000

c. Allocate support departments on a ranking of the dollar amounts of service provided to other support departments

1. Information Systems

$(0.10 \times \$2,400,000) = \$240,000$

2. Administrative Services

$(0.25 \times \$600,000) = \$150,000$

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Allocation of common costs

Evan and Brett are students at Berkeley college. they share an apartment that is owned by Brett is considering subscribing to an Internet provider that has the following packages available:

Package	Per Mouth
Internet Access	\$75
Phone Service	\$25
Internet Access+ Phone Service	\$90

Evan spends most of his time on the Internet(" everything can be found online now").Brett preferred to spend his time talking on the phone rather than using the Internet("going online is a waste of time"). They agree that the purchase of the \$90 total package is a "Win-win" situation.

1.Allocate the \$90 between Evan and Brett using (a) the stand-alone cost-allocation method, (b) the incremental cost-allocation method, and (c) the shapley value method.

2.Which method would you recommend they use and why.

Answer

Three Methods of allocating the \$90 are:

(a) stand-alone cost-allocation method

$$\text{Evan : } \frac{\$75}{\$75+\$25} \times \$90 = \$67.5 \qquad \text{Brett: } \frac{\$25}{\$75+\$25} \times \$90 = \$22.50$$

(b) incremental cost allocation method

Assume Brett is the primary user and Evan is the incremental user:

<u>User</u>	<u>Cost allocated</u>	<u>cumulative costs allocated</u>
Brett	\$25	\$25
Evan	<u>\$65 (\$90-\$25)</u>	\$90
Total	<u>\$90</u>	

Answer

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(b) incremental cost allocation method (con't)

Assume Evan is the primary user and Brett is the incremental user:

<u>User</u>	<u>Cost allocated</u>	<u>cumulative costs allocated</u>
Brett	\$75	\$75
Evan	<u>\$15 (\$90-\$75)</u>	\$90
Total	<u>\$90</u>	

Answer

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2. Which method would you recommend they use and why.

The **Shapley value** approach is recommended.

- Incremental method is fairer.
 - avoids considering one user as the primary user and allocating more of the common costs to that user.
 - considers each party as first the primary party and then the incremental party.

From the calculations show above, Evan is allocated \$75 as the primary party and \$65 as the incremental party, for an average of \$70 $\{(\$75 + \$65) \div 2\}$. The Brett is allocated \$25 as the primary party and \$15 as the incremental party, for an average of \$20 $\{(\$25 + \$15) \div 2\}$. Shapley value methods allocates, the average of the costs allocated as the primary party and as the incremental party: \$70 to Evan and \$20 to Brett.

- Common costs is not clear-cut and can generate disputes
- Managers should specify the rules for such allocations in advance.
- Exercise judgement when allocating common costs by thinking about fairness to each party.

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Fixed-cost allocation. Baker University completed construction of its newest administrative building at the end of 2013. The University's first employees moved into the building on January 1, 2014. The building consists of office space, common meeting rooms (including a conference center), a cafeteria, and even a workout room for its exercise enthusiasts. The total 2014 building space of 250,000 square feet was utilized as follows:

Usage of Space	% of Total Building Space
Office space(occupied)	52%
Vacant office space	8%
Common meeting room space	25%
Workout room	5%
Cafeteria	10%

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The new building cost the university \$60 million and was depreciated using the straight-line method over 20 years. At the end of 2014 three department occupied the building: executive offices of the president, accounting , and human resources. Each department's usage of its assigned space was as follows:

Department	Actual Office Space Used(sq. ft.)	Planned Office Space Used (sq. ft.)	Practical Capacity Office Space(sq. ft.)
Executive	32,500	24,800	36,000
Accounting	52,000	52,080	66,000
Human resources	45,500	47,120	48,000

Answer

1. How much of the total building cost will be allocated in 2014 to each of the departments, if the total cost is allocated to each department on the basis of the following?

- a. Actual usage of the three departments
- b. Planned usage of the three departments
- c. Practical capacity of the three departments

1. Total building cost in 2014 = $\$60\text{million} / 20\text{years} = \3million

a. Allocation using actual usage

Department	Actual usage (sq. ft.)	Percentage (1)	Allocation = (1)*\$3,000,000
Executive	32,500	25%	750,000
Accounting	52,000	40%	1,200,000
Human resources	<u>45,500</u>	<u>35%</u>	<u>1,050,000</u>
Total	<u>130,000</u>	<u>100%</u>	<u>\$3,000,000</u>

Answer

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b. Allocation using planned usage

Department	Planned usage (sq. ft.)	Percentage (1)	Allocation = (1)*\$3,000,000
Executive	24,800	20%	600,000
Accounting	52,080	42%	1,260,000
Human resources	<u>47,120</u>	<u>38%</u>	<u>1,140,000</u>
Total	<u>124,000</u>	<u>100%</u>	<u>\$3,000,000</u>

c. Allocation using practical capacity

Department	Practical capacity (sq. ft.)	Percentage (1)	Allocation = (1)*\$3,000,000
Executive	36,000	24%	720,000
Accounting	66,000	44%	1,320,000
Human resources	<u>48,000</u>	<u>32%</u>	<u>960,000</u>
Total	<u>150,000</u>	<u>100%</u>	<u>\$3,000,000</u>

Answer

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2. Assume that Baker University allocates the total annual building cost in the following manner:

a. All vacant office space is absorbed by the university and is not allocated to the departments.

b. All occupied office space costs are allocated on the basis of actual square footage used.

c. All common area costs are allocated on the basis of a department's practical capacity.

d. Calculate the cost allocated to each department in 2014 under this plan.

Do you think the allocation method used here is appropriate? Explain.

Answer

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2.

Usage of Space	% of total building space (1)	Allocation of total cost= \$3,000,000*(1)
Office space	52%	1,560,000
Vacant office space	8%	240,000
Common meeting space	25%	750,000
Workout room	5%	150,000
Cafeteria	<u>10%</u>	<u>300,000</u>
Total	<u>100%</u>	<u>3,000,000</u>

a. \$240,000 of **vacant office space** cost will be absorbed by the university and will not be allocated to the department.

Answer

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b. Allocation of **office space** cost on the basis of actual usage (\$1,560,000)

Department	Actual usage (sq. ft.)	Percentage (1)	Allocation = (1)*\$1,560,000
Executive	32,500	25%	390,000
Accounting	52,000	40%	624,000
Human resources	<u>45,500</u>	<u>35%</u>	<u>546,000</u>
Total	<u>130,000</u>	<u>100%</u>	<u>\$1,560,000</u>

Answer

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c. Allocation of common area cost on the of practical capacity
(\$750,000+150,000+300,000=1,200,000)

Department	Practical capacity (sq. ft.)	Percentage (1)	Allocation = (1)*\$1,200,000
Executive	36,000	24%	288,000
Accounting	66,000	44%	528,000
Human resources	<u>48,000</u>	<u>32%</u>	<u>384,000</u>
Total	<u>150,000</u>	<u>100%</u>	<u>\$1,200,000</u>

Answer

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Total cost allocation to each department in 2014

Department	Allocation of Office space cost	Allocation of Common area cost	Total cost
Executive	390,000	288,000	678,000
Accounting	624,000	528,000	1,152,000
Human resources	<u>546,000</u>	<u>384,000</u>	<u>930,000</u>
Total	<u>\$1,560,000</u>	<u>\$1,200,000</u>	<u>\$2,760,000</u>

The allocation method used in part 2 is more fair than in part 1. Department does not need to pay for their unused office space. It creates an incentive for central administration to fill the vacant space with department, so that \$240,000 can be allocated down.

However, it is more appropriate to allocate office space cost using the practical capacity rather than the actual usage so that the cost can be allocated based on the space the department intends to use originally. And the department can try to utilize the space they originally assigned.

Finally, allocating the common space cost based on the practical capacity is fair because the allocation of cost is based on assigned space by department rather than actual usage by department.



Thank you !

We welcome any questions.