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|  | **Allocation of Support-Department Costs, Common Costs, and Revenues** |
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Transition Notes

This chapter includes a rewritten section dealing with budgeted versus actual usage with expanded material on allocation bases. There is expanded material explaining the use of budgeted rates for allocating support-department costs. The section on allocating common costs has been streamlined. Most end-of-chapter problem material is new or has been revised.

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| **Problem Material**  **Correlation Chart** |

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| --- | --- | --- | --- | --- |
| **15th**  **Edition** | **14th**  **Edition** |  | **15th**  **Edition** | **14th**  **Edition** |
| 16 | 16 Revised |  | 27 | 27 Revised |
| 17 | 17 |  | 28 | 28 Revised |
| 18 | 18 |  | 29 | 29 |
| 19 | 19 |  | 30 | 30 Revised |
| 20 | 20 |  | 31 | 31 Revised |
| 21 | 21 |  | 32 | 32 Revised |
| 22 | 22 |  | 33 | 33 Revised |
| 23 | 23 Revised |  | 34 | 34 Revised |
| 24 | 24 Revised |  | 35 | 35 Revised |
| 25 | 25 Revised |  | 36 New |  |
| 26 | 26 Revised |  |  |  |

**I. LEARNING OBJECTIVES**

1. Distinguish between the single-rate method from the dual-rate method.
2. Understand how divisional incentives are affected by the choice between allocation based on budgeted and actual rates and budgeted and actual usage.
3. Allocate multiple support-department costs using the direct method, the step-down method, and the reciprocal method.
4. Allocate common costs using the stand-alone method and the incremental method.
5. Explain the importance of explicit agreement between contracting parties when the reimbursement amount is based on costs incurred.
6. Understand how bundling of products gives rise to revenue-allocation issues and the methods for doing so.
7. **CHAPTER SYNOPSIS**

Allocation of indirect costs is an area of constant discussion in many companies, with division, department, and product managers often questioning the amount of indirect costs allocated to their respective sections. This chapter discusses allocation of support department costs using the direct method, the step-down method, and the reciprocal method. The chapter presents the stand-alone method and the incremental method as techniques for allocation of common costs. The concept of bundled products and allocation of bundled product revenues is also introduced. Cost reimbursement based on contract provisions is also discussed.

1. **POINTS OF EMPHASIS**
2. It is important that the students grasp allocation issues including single- versus dual-rate allocation before moving into the methods for allocating costs to the service departments.
3. Likewise, students need to see the varying effects of actual versus budgeted cost allocations.
4. Work through each of the methods for allocating costs with multiple support departments—direct, step-down, and reciprocal. Illustrate the differences obtained under each method. If the differences are small, point out that the simplest method would work best in the particular case.
5. Allocating common costs and allocating revenues of bundled products are really two sides of the same process. If the students grasp allocating common costs early, allocating bundled revenues should be fairly simple.
6. **CHAPTER OUTLINE**

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| **LEARNING**  **OBJECTIVE** | 1 |
| Distinguish the single-rate method  … one rate for allocating costs in a cost pool  from the dual-rate method  … two rates for allocating costs in a cost pool—one for variable costs and one for fixed costs | |
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* 1. Companies distinguish operating departments from support departments. An **operating department,** which is also called a **production department,** is one that directly adds value to the product or service. A **support department,** which is also called a **service department,** provides support and assists operating departments and other service departments.

TEACHING POINT. If students do not grasp the difference in operating departments and support departments early, they will not learn the material in this chapter. Identify several departments that might be found in a typical manufacturing organization, and have the students identify them as operating or support departments.

* 1. Costs incurred in the support departments must be allocated ultimately to the operating departments and eventually to the final cost object. A predetermined rate is normally utilized to make the allocations to the operating departments. A *single-rate*or a *dual-rate method* may be utilized.
  2. The **single-rate method** makes no distinction between fixed and variable costs. It allocates costs in each cost pool to cost objects using the same rate per unit of a single allocation base.
  3. The **dual-rate method** divides the costs of each support department into two pools—a variable-cost pool and a fixed-cost pool.
  4. When using either the single-rate or dual-rate method, managers may allocate costs based upon:
* Budgeted rates and budgeted hours.
* Budgeted rates and actual hours.
* Actual rates and actual hours—this approach is not often used in practice.

TEACHING POINT. It will be helpful if the students can visualize these concepts in action. Exercise 15-16 is a good illustration of different approaches to allocation.

**Refer to Quiz Question 1 Exercise 15-16 and 15-17**

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| **LEARNING**  **OBJECTIVE** | 2 |
| Understand how divisional incentives are affected by the choice between allocation based on budgeted and  actual rates,  … budgeted rates provide certainty to users about charges and motivate the support division to engage in cost control  and budgeted and actual usage  … budgeted usage helps in planning and efficient utilization of fixed resources, actual usage controls consumption of variable resources | |
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2.1 Once the decision has been made regarding single- or dual-rate allocation, the manager must next turn to the issue of choosing between allocating budgeted or actual costs.

2.2 When allocations are based on *budgeted usage,* user divisions know in advance their allocated costs. This can be of benefit in short-term and long-term planning.

2.3 A disadvantage of using budgeted costs is that there is an incentive for managers to underestimate their planned usage, thus being assigned a lower percentage of allocated costs. This can be overcome in part by assessing a higher charge for exceeding budgeted usage.

2.4 Allocating costs based on *actual usage* gives a more accurate allocation based on actual costs and usage.

2.5 Actual allocations have several disadvantages: a lack of timely information, reduced incentives for support to manage costs, and increased accounting costs.

2.6 A third approach is to allocate fixed costs on the basis of *practical capacity* supplied. This approach will charge each division with services actually used. In addition, variations in actual usage in one division will not affect allocations in other divisions. Finally, the costs of unused capacity are highlighted and not allocated to divisions.

TEACHING POINT. This is an excellent time to discuss “game playing” with students to show how a department manager can lower the amount being allocated to the department by low-balling estimated usage (when budgeted capacity is used). Likewise, you can illustrate the lack of incentive on the part of supplying departments to control costs if actual costs are used for allocation. Enter into a discussion of how the problems presented by these two approaches might be resolved.

2.7 Generally, it is found to be preferable to allocate fixed costs based on capacity, under the approach that fixed costs provide capacity and variable costs allocated based on actual usage.

(Exhibit 15-1 displays the impact of variations in actual usage on division cost allocations.)

**Refer to Quiz Question 2 Exercise 15-18 and Problem 15-27**

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| **LEARNING**  **OBJECTIVE** | 3 |
| Allocate support-department costs using the direct method,  … allocate support-department costs directly to operating departments  the step-down method,  … partially allocates support-department costs to other support departments  and the reciprocal method  … fully allocates support-department costs to other support departments | |
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* 1. When allocating costs from multiple support departments, a new set of problems arise. These problems arise because support departments utilize the services of other support departments and it must be decided how to handle these allocations. There are three approaches that may be utilized.
  + The **direct method** allocates support department costs to operating departments only, ignoring usage of a support department by other support departments.
  + The **step-down method** or **sequential allocation method** allocates support-department costs to other support departments and to operating departments in a sequential manner that partially recognizes the mutual services provided among all support departments.
  + A common step-down sequence begins with the support department that renders the highest percentage of its total services to other support departments. Another approach is to begin with the department providing the highest dollar amount to other support departments.
  + Once costs are allocated out of a support department under the step-down method, no additional costs are allocated to that department.
  + The **reciprocal method** fully recognizes the mutual services provided among all support departments. These allocations can be performed by using repeated iterations of allocations or by formulating and solving linear equations expressing the relationships among the departments.
  + There are three steps involved in the reciprocal method.

**Step 1:** Express support-department costs and reciprocal relationships in the form of linear equations.

**Step 2:** Solve the set of linear equations to obtain the complete reciprocated costs of each support department.

**Step 3:** Allocate the complete reciprocated costs of each support department to all other departments based on the usage percentages.

TEACHING POINT. Work through exercises, such as 15-19 and 15-20, that illustrate each of these approaches. Do the step-down method using one approach, and then have the students do it using the other approach. Discuss the differences obtained using the various methods.

* 1. The direct and step-down methods have the advantage of simplicity. The reciprocal method is theoretically the most precise, but is difficult to implement, especially with a large number of support departments. However, this difficulty is being lessened by the use of computers. In determining which method to utilize, the company should consider the amount of differences obtained under each of the approaches.

(Exhibits 15-2 to 15-6 illustrate allocation of support-department costs.)

**Refer to Quiz Questions 3, 4, and 5 Exercises 15-19,15-20, 15-21, and 15-22**

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| **LEARNING**  **OBJECTIVE** | 4 |
| Allocate common costs using the stand-alone method  … uses cost information of each user as a separate entity to allocate common costs  and the incremental method  … allocates common costs primarily to one user and the remainder to other users | |
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* 1. **Common costs** are costs that are shared by two or more users. These can be the costs of operating a facility, an activity, or other cost objects.
  2. These common costs must be allocated in some equitable fashion. Two methods that are frequently used for these allocations are the **stand-alone cost-allocation method** and the **incremental cost-allocation method.**

TEACHING POINT. Brainstorm with the students for examples of common costs. For example, software that students buy for college is a common cost for all classes in which they use the computer. To get into the allocation issue, tell them they must purchase Excel for use in the Cost Accounting class. After purchasing it, however, they find use for it in three other classes. If they are trying to determine the cost of each class, how should the cost of the software be allocated? Pursue other similar situations.

* 1. The **stand-alone cost-allocation method** determines the weights for cost allocation by considering each user of the cost as a separate entity. The cost is allocated among the users based upon the total cost for each separately.
  2. The **incremental cost-allocation method** ranks the individual users of the cost object in the order of users most responsible for the common cost and uses this ranking to allocate cost among those users. The first ranked user is the *primary user* and is assigned allocated costs up to the cost as a stand-alone user. The second ranked user is the *first incremental user* and is assigned cost equal to the additional cost that arises from having two users. This continues until costs have been assigned to all users.

TEACHING POINT. Illustrate these two methods with a problem. Exercise 15-23 is a good example to walk through with the students.

**Refer to Quiz Question 6 Exercises 15-23 and 15-24**

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| **LEARNING**  **OBJECTIVE** | 5 |
| Explain the importance of explicit agreement between contracting parties when the reimbursement amount is based on costs incurred  … to avoid disputes regarding allowable cost items and how indirect costs should be allocated | |
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5.1 Frequently, the price paid on a contract may be based on some definition of cost. In order to bill the price correctly, there must be explicit agreement about the definitions of cost, and what can be included and excluded.

5.2 Contract disputes often arise with respect to cost allocation. This highlights the importance of explicit definitions of the contract terms.

TEACHING POINT. In addition to explicit contract terms, the buyer needs some oversight or control over costs incurred. In one case, the terms of the contract required that all checks to be charged to the contract be signed by the buyer. This proved to be an effective control in this case, as the builder of a hotel “gave” the company coffee mugs for the restaurant, but billed the hotel for them, plus a percentage. In the same contract, the builder fenced the backyard at his personal residence, and tried to include it as a cost of the contract.

5.3 In contracting with the U.S. Government, most contractors are reimbursed in one of two ways:

* **The contractor is paid a set price without analysis of actual contract cost data.** This method frequently accompanies competitive bidding, where there are established prices for the items sold in substantial quantities to the general public.
* **The contractor is paid after analysis of actual contract cost data.** These are often contracts that state reimbursement will be based on allowable costs plus a fixed fee, otherwise known as a **cost-plus contract.**

5.4 In many government contracts there is a great deal of uncertainty about the final cost to produce new equipment. This is especially true in defense department contracting. Due to the uncertainty involved, these contracts are rarely subjected to competitive bidding.

5.5 To be fair to all in the pricing of the merchandise, the government will assume a share of the risk of potentially high costs with a cost-plus contract.

5.6 An **allowable cost** is a cost that the contract parties agree to include in the costs to be reimbursed.

TEACHING POINT. This is a good point for a discussion on professional ethics. Government contracts are known for cost overruns and outlandish pricing. What is the role of the cost accountant in these cases? Discuss this statement that blames the accounting system: “As for the $1,000 hammer. In many cases this is the fault of the accounting system. When a vendor delivers an airplane to the military, there is a fixed cost and a variable cost assigned to each part. The variable cost is the actual cost of the item as delivered from a vendor (the hardware store). In the case of the hammer this would be $10. The fixed cost is calculated by dividing all of the overhead by the number of parts. If the overhead is $990,000,000 and there are 1,000,000 parts, each is ascribed a fixed cost of $990. Thus the $1,000 hammer.”

**Refer to Quiz Question 7**

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| **LEARNING**  **OBJECTIVE** | 6 |
| Understand how bundling of products  … two or more products sold for a single price  gives rise to revenue-allocation issues  … allocating revenues to each product in the bundle to evaluate managers of individual products  and the methods for doing so  …using the stand-alone method or the incremental method | |
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6.1 When multiple products are bundled and sold at a single price, revenues must be allocated to the products included in the bundle.

6.3 **Revenue allocation** occurs when revenues are related to a particular revenue object but cannot be traced to it in an economically feasible manner.

6.4 A **revenue object** is anything for which a separate measurement of revenues is desired.

6.5 A **bundled product** is a package of two or more products or services that is sold for a single price, but whose individual components may be sold as separate items at their own stand-alone prices.

TEACHING POINT. Discuss examples of bundled products or services and why companies sell them in this manner. Examples would include a computer and printer; a DVD and a Blu-Ray; a vacation package that includes air fare, hotel room, and rental car.

6.6 There are two methods frequently used to allocate revenue from bundled products: the **stand-alone revenue-allocation method** and the **incremental revenue-allocation method.**

6.7 Under the **stand-alone revenue allocation method** the individual prices of each product are used as weights to assign revenue to the product.

Revenue as a stand alone product

Total stand alone product revenues × selling price of bundle = Revenue assigned to product

Under the i**ncremental revenue-allocation method,** ranks of the individual products are assigned by management. This ranking is used to allocate bundled revenues to individual products. The first ranked, or primary, product is assigned its full amount of revenues, followed by the second ranked, or first incremental product, and so on.

6.9 Rankings of products can be based on stand-alone unit sales, importance of each of the individual products, or managerial intuition.

TEACHING POINT. You can relate allocation of bundled revenues to the allocation of common costs covered earlier in the chapter. Exercise 15-25 is a good illustration of this concept and will help to reinforce this procedure.

**Refer to Quiz Questions 8, 9, and 10 Exercise 15-25 and Problem 15-34**

**V. Other Resources**

To download these and other resources, visit the Instructor’s Resource Center [*www.pearsonhighered.com*](http://www.pearsonhighered.com/).

The following exhibits were mentioned in this chapter of the Instructor’s Manual, and have been included in the **PowerPoint Lecture presentation** created specifically for this chapter. You may use the PowerPoint Lecture presentations “as is”, or modify them to suit your individual needs.

Exhibit 15-1 displays the impact of variations in actual usage on division cost allocations.

Exhibits 15-2 to 15-6 illustrate allocation of support department costs.

**CHAPTER 15 QUIZ**

1. The use of a dual-rate cost-allocation method recognizes the
2. improvements in technology allowing for use of multiple cost pools.
3. need to use both budgeted and actual cost rates when allocating.
4. need to use both budgeted and actual usage of quantities when allocating.

d. behavior aspect of costs.

1. Managers are affected by risks they have to take and would prefer to use
2. actual rates for cost allocation because the rates are calculated from real amounts.
3. actual rates for cost allocation because actual rates are easier to justify to users.
4. budgeted rates for cost allocation because the rates are known in advance.
5. budgeted rates for cost allocation because any variances are transferred to users.

**The following data apply to questions 3 through 5.**

Billy Stone, Inc. budgets the following amounts for its Buildings & Grounds and Computer Services Departments in servicing each other and the two manufacturing divisions of Signs and Mailers:

Used By

Supplied By Building & Grounds Computer Services Signs Mailers

Buildings & Grounds — 0.20 0.60 0.20

Computer Services 0.15 — 0.30 0.55

The actual results for the time period were as follows:

Used By

Supplied By Building & Grounds Computer Services Signs Mailers

Buildings & Grounds — 0.10 0.60 0.30

Computer Services 0.25 — 0.35 0.40

Actual cost data for each department are:

Fixed Variable

Buildings & Grounds $ 50,000 $90,000

Computer Services $100,000 $21,000

1. Total fixed costs allocated from Buildings & Grounds to the Signs Department, using the preferred allocation basis, by the direct allocation method are

a. $37,500.

b. $33,333.

c. $30,000.

d. $25,000.

1. Total variable costs allocated from Computer Services to Mailers Department, using the preferred allocation basis, by the step-down allocation method (begin with Building & Grounds) are

a. $8,400.

b. $12,000.

c. $16,000.

d. $25,235.

1. The equation to determine the total variable costs of Computer Services using the preferred allocation basis for the reciprocal allocation method is
2. CS = $21,000 + 0.25 B&G.
3. CS = $21,000 + 0.20 B&G.
4. CS = $21,000 + 0.15 B&G.
5. CS = $21,000 + 0.10 B&G.
6. If a cost is incurred for more than one user, that cost is considered a(n)
7. homogeneous cost.
8. common cost.
9. stand-alone cost.
10. incremental cost.
11. Which of the following is often the most basic cause of contract disputes?
12. Allowable costs
13. Cost-allocation issues
14. Use of common costs
15. Writing into the contract “rules of the game”
16. Bundling of products creates the need for revenue allocation for each of the following *except* when
17. selling prices for the bundle are set to recoup the stand-alone prices of each product in the bundle.
18. the manager is responsible for profitability on a product-by-product basis.
19. the manager’s bonus is based upon product profitability.
20. persons involved with product development are compensated by percentage of revenues realized.

**Use the following information for questions 9 and 10.**

Trio Company sells three products, Do, Ra, and Mi, for prices of $8, $7, and $5, respectively. They also offer combinations of the products for reduced overall prices. The following packages are available: (1) a package containing Do and Ra sells for $13.50, (2) a package of Do and Mi sells for $11.50, (3) a package containing Ra and Mi sells for $10.50, and (4) a package of all three products, Do, Ra, and Mi, sells for $17.00.

1. If Trio Company uses the stand-alone method (based on selling prices) to allocate revenues to products, the amount of revenues to be allocated to Do from a package of all three products, as described in (4) above, sold would be

a. $8.00.

b. $6.80.

c. $5.95.

d. $4.25.

1. If Trio Company uses the incremental-revenues allocation method and has designated Ra as the primary product, the amount of revenues from a bundled package of all three products to be allocated to Ra would be

a. $7.00.

b. $6.80.

c. $5.95.

d. $4.25.

**CHAPTER 15 QUIZ SOLUTIONS**

# 1. d

# 2. c

# 3. a

# 4. c

# 5. a

# 6. b

# 7. b

# 8. a

# 9. b

# 10. a

**Quiz Question Calculations**

3. 0.60/0.80 × $50,000 = $37,500

4. Building & Grounds allocation to Computer Services

90,000 × 0.10 = $9,000, giving CS a total of $30,000 variable costs

0.40/0.75 × $30,000 = $16,000

1. Although the question asks only for the equation, the calculations are shown here if you wish to complete the problem.

CS = $21,000 + 0.10 B&G B&G = $90,000 + 0.25 CS

B&G = $90,000 + 0.25 CS B&G = $90,000 + 0.25($30,769)

CS = $21,000 + 0.10($90,000 + 0.25 CS) B&G = $97,692

0.975 CS = $21,000 + $9,000

CS =$30,769

1. $8 + $7 + $5 = $20 Do: 8/20 × $17 = $6.80

Ra: 7/20 × $17 = $5.95

Mi: 5/20 × $17 = $4.25