CHAPTER 18
ADDITIONAL ASPECTS OF PRODUCT COSTING SYSTEMS

Changes from Eleventh Edition

All changes to Chapter 18 were minor.

Approach

Our treatments of job costing and process costing are as brief as we can make them and still get the general points across. Students do need to understand the general idea of these cost accumulation procedures to be able to visualize how cost data are actually collected. The details, however, are appropriately left for an advanced course. The principal pedagogical problem here is how to get across the idea of equivalent production in process costing. Some introductory texts omit this idea, but this strikes us as dangerous because some student is almost sure to ask what happens in a process cost system if not all the units are completed by the end of the period. If the answer is not in the text, the instructor either has to duck the question, or attempt the difficult task of explaining it on the spot. In the text and in most problems, we assume that units are 50 percent completed as to labor and overhead. Since this assumption is widely used in practice, we see no point in complicating the text by introducing other percentages.

Certainly, the most difficult part of this chapter is the section on development of overhead rates. In our experience, mastery of this material greatly reduces the omnipresent problems students have later with production overhead variances. We also find in this regard that students need to be referred back to the text section, "Why Overhead Rates Are Predetermined," especially in later discussions of the overhead volume variance. We have placed emphasis on the flexible overhead budget to help minimize these learning difficulties.

We feel that the section on activity-based costing (ABC) provides the appropriate level of depth for a required course. Students need to understand the potential benefits of ABC as well as the fact that it is not a panacea. It is important for students to realize that ABC is a decision-support model rather than a transaction processing system. Four of the five cases included in this chapter describe both traditional and ABC systems so that students can more easily understand the differences.

Cases

Huron Automotive Company gives practice in computing and using costing rates and shows the differences that result from different definitions of cost centers. It also has two optional questions involving differential analysis, for the instructor who wishes to keep emphasizing that full costs are not used for all cost-related management decisions.

California Creamery is a simple activity-based costing case. It requires students to calculate the costs of producing two products using traditional and ABC approaches. (This is a new case in the Twelfth Edition.)

Wilkerson Company is a slightly more complicated activity-based costing case. It requires students to calculate the costs of three products using on a new set of cost drivers, to compare those costs with those calculated using traditional direct labor-based allocation bases, and then to understand what the numbers mean.

Safety Monitoring Devices, Inc. is another activity-based costing case that adds a few wrinkles, such as regarding motivations for change and cost of complexity. (This is a new case in the Twelfth Edition.)

Dakota Office Products requires students to understand the mechanics of customer profitability analysis and then to use the information for strategic decision making purposes.

Problems

Problem 18-1: Elliott Company

a. $\text{Overhead rate} = \frac{\text{Production overhead}}{\text{Direct labor dollars}} = \frac{\$135,000}{\$90,000} = \$1.50 \text{ per direct labor dollar}$

b.	Work in Process Inventory	22,500	
	Raw Materials Inventory		6,000
	Direct Labor		6,600
	Production Overhead (6,600 x $1.50)		9,900
c.	Overhead absorbed @ $1.50/direct labor hour	$9,900	
	Actual overhead	9,550	
	Overabsorbed	$ 350	

Problem 18-2: Ryan Corporation

Cost Distributions

		Cost Center		
		A	B	C
(a)	Heat, light, power	$24,000	$ 8,000	$8,000
(b)	Depreciation:			
	Building	2,400	300	300
	Furniture and fixtures		600	200
	Machinery and equipment	20,000		
(c)	Insurance:			
	Inventories	100	100	
	Building	1,040	130	130
	Furniture and fixtures		45	15
	Machinery and equipment	850		
(d)	Building repairs	3,200	400	400
	Machinery repairs	1,900		
(e)	Telephone expense	360	1,080	360
	Totals	$53,850	$10,655	$9,405

Calculations

(a) Heat, light, power--basis of distribution, cubic feet:

A	600,000	
B	200,000	
C	200,000	1,000,000 cubic feet

6/10 x $40,000 = $24,000 A
2/10 x $40,000 = $8,000 B
2/10 x $40,000 = $8,000 C

(b) Building depreciation--basis of distribution, square feet:

Manufacturing	48,000	
Selling	9,000	
Administrative	3,000	60,000 square feet

48/60 x $3,000 = $2,400 A
6/60 x $3,000 = 300 B
6/60 x $3,000 = 300 C
Furniture and fixtures depreciation – 75% ($800) = $600 B
25% ($800) = $200 C

(c) Insurance--basis of distribution, square feet for building:

48/60 x $1,300 = $1,040 A
6/60 x $1,300 = $130 B
6/60 x $1,300 = $130 C
Insurance on inventories--half B; half A
Insurance on furniture and fixtures -- 75% ($60) = $45 B
25% ($60) = $15 C

(d) Building repairs--basis for distribution, square feet:

48/60 x $4,000 = $3,200 A
6/60 x $4,000 = $400 B
6/60 x $4,000 = $400 C

(e) Telephone--basis for distribution, number of extensions:

Total extensions -- 45
9/45 x $1,800 = $360 A
27/45 x $1,800 = $1,080 B
9/45 x $1,800 = $360 C

Problem 18-3: Mid-City College

a. ($000)

		Service Centers		Instruction Centers		
	Total	Bldg. and Grounds	Cent. Adm.	Arts and Sciences	Education	Bus. Adm.
Overhead costs	$10,500	$1,575	$1,050	$3,150	$2,625	$2,100
Buildings and Grounds		(1,575)	262	525	438	350
Central Administrator			(1,312)	525	315	472
Overhead	$10,500	$ 0	$ 0	$4,200	$3,378	$2,922

*Reassignment of Building and Grounds Department using percent of space occupied:

Cost Center	Percent of Floor Space	Cost Reassignment
Central Administration	15	$\frac{15}{90}$ x $1,575 = $262
Arts and Sciences	30	$\frac{30}{90}$ x $1,575 = 525
Education	25	$\frac{25}{90}$ x $1,575 = 438
Business Administration	20	$\frac{20}{90}$ x $1,575 = 350
Total	90	$1,575

**Reassignment of Central Administration Department using number of employees:

Cost Center	Number of Employees	Cost Reassignment
Arts and Sciences	80	$\frac{80}{200}$ x $1,312 = $ 525
Education	48	$\frac{48}{200}$ x $1,312 = 315
Business Administration	72	$\frac{72}{200}$ x $1,312 = 472
Total	200	$1,312

b.

Instruction Center	Overhead Cost	Number of Students	Overhead Cost per Student
Arts and Sciences	$4,200	6,000	$ .70
Education	3,378	2,500	1.35
Business Administration	2,922	1,500	1.95
	$10,500	10,000	

Problem 18-4 Weld

a. Actual overhead Canning Company

Busy season	$180,000	÷ 15,000 hours	=	$12 per hour
Slack season	$ 80,000	÷ 5,000 hours	=	$16 per hour

At 1 hour per case, a case has $12 of factory overhead cost in the busy season and $16 in the slack season.

Inventory at December 31 will consist of all "busy season" production, so at $12 per hour, the overhead cost component is 25,000 cases x $12 = $300,000.

b. Predetermined overhead

Total factory overhead costs	
6 months @ $180,000	$1,080,000
6 months @ 80,000	480,000
Total	$1,560,000
Total direct labor hours	
6 months @ 15,000	90,000
6 months @ 5,000	30,000
Total	120,000

$1,560,000 ÷ 120,000 hours = $13.00 per hour

Inventory at December 31 will have an overhead cost component of 25,000 cases x $13.00 =

$325,000.

c. In this case, where the same type of product is packed each month, the most valid overhead rate to use is probably the annual rate of $13.00 per hour. A case of a given product whether packed in the slack season or the busy season should bear the same share of indirect cost, assuming the same production techniques, raw materials, and labor usage.

Problem 18-5 Journey's End, Inc.

This is a pretty standard, but simplified, activity-based costing situation. The main twist is that distribution channels, rather than products or customers, is the cost object. Students must do the Stage I allocations (trace the costs to activities), compute the proper Stage II cost driver percentages (showing the channels' consumption of the activities), to apply those percentages in allocating the activity costs to the channels.

1. **Tracing the costs to activities.** The SG&A line-item costs should be multiplied by the percentages shown in the activity table, as follows:

Table TN-1

SG&A line-item:	Activity						
	Customer mailing	Take phone or Internet order	Take field order	Special negotiation—field order	Process customer invoice	Other	Total
Marketing and sales support	$600	$600	$1,800	$3,000	0	0	$6,000
Design	0	0	0	810	0	90	900
Information systems	0	200	0	0	200	1,600	2,000
General administration	0	0	0	300	300	2,400	3,000
Total	$600	$800	$1,800	$4,110	$500	$4,090	$11,900

2. **Channels' consumption of the activities.** These are calculated from the second major table in the problem, as follows:

Table TN-2

Activity	Channel			Total
	Catalog	Corporate	Retail	
Customer mailings	98%	1%	1%	100%
Number of phone orders	97%	1%	2%	100%
Number of field orders	0	50%	50%	100%
Number of field orders requiring special negotiation	0	75%	25%	100%
Total number of orders invoices	77%	11%	12%	100%

3. **Allocating the activity costs to channels.** This is done by multiplying the percentages in Table TN-2 by the dollar figures in Table TN-1, as follows:

Table TN-3

Activity	---------- Channel ----------			Total
	Catalog	Corporate	Retail	
Customer mailings	$588[1]	$6	$6	$600
Number of phone orders	776	8	16	800
Number of field orders	0	900	900	1,800
Number of field orders requiring special negotiation	0	3,083	1,027	4,110
Total number orders/invoices	385	55	60	500
Total	$1,749	$4,052	$2,009	7,810
			Other	4,090
				$11,900

One error that some students might make is to allocate the "other" costs to channels, by assuming a cost driver. No reasonable basis for a cost driver assumption is provided in the case. Allocating these costs could swamp the meaningful allocations that could be made.

Table TN-4 summarizes the channel profit information revealed from this new analysis.

Table TN-4

	--------- Channel ---------			Total
	Catalog	Corporate	Retail	
Sales	$30,000	$10,000	$20,000	$60,000
Cost of Sales	15,000	6,500	14,000	35,500
Gross margin	15,000	3,500	6,000	24,500
SG&A	1,749	4,052	2,009	11,900
Net profit from channels	$13,251	$(552)	$3,991	$16,690

[1] 98% x $600

Channel profit % sales	44.2%	(5.5%)	20.0%	27.8%
			Other costs	4,090
			Net profit	12,600
			Net profit % sales	21.0%

Question 2 in the suggested assignment asks for the implications of this analysis. Here are some of the questions raised:

- Should the company continue to use the channel now revealed to be a loser (corporate)?
- Are there some cross selling possibilities or sticky or unavoidable costs that make it undesirable to exit the corporate business?
- Should/can prices be raised in certain areas?
- Can some of the costs (e.g., those related to the costly negotiation process, commissions) be reduced?
- Should a minimum order size be instituted in the corporate business?
- Should the company's cost system be altered to consider SG&A costs on a regular basis?

Cases

Case 18-1: Huron Automotive Company*

Note: *This case is unchanged from the Eleventh Edition.*

Approach

This case deals with the problems of defining cost centers and the implications of various possible decisions, a significant matter that is discussed only briefly in the text. After considering the various questions involving the use of cost information that are raised in the case, the student should appreciate the fact that the definition of cost centers can have an important effect on the allocation of costs to products and departments. Students should also see that there is no single "right" answer to the problem.

The case also raises the alternative of using predetermined overload rates. It should be recognized that this issue is separable from the number-of-cost-centers question: i.e., predetermined rates could be used with either a one- or five-cost center approach.

Question 3 is quite difficult, although it illustrates an interesting phenomenon: how a charge in one cost center can affect the allocation of costs to other cost centers. The question can be omitted without harm to the central theme. Instead of question 3, the instructor can assign questions 4 and 5, but only if he or she wants to begin introducing differential accounting at this point. If all six questions are assigned, the case requires at least part of a second discussion session. (Question 6 should be assigned regardless of the instructor's preference regarding questions 3-5).

*This teaching note was prepared by James S. Reece. Copyright © by James S. Reece.

Comments on Questions

Questions 1 and 2 appear on the next page of this manual. These percentage changes definitely indicate a significant amount of difference. However, the evaluation of the difference lies in the answers given to questions 2 and 6: Question 2 leads to a discussion of whether the proposed methods of costing yield a more accurate cost than does the present method; question 6 leads to a discussion of whether a useful purpose will be served by the greater degree of accuracy, if there is in fact more accuracy. It should be noted that a decision that a proposed system is not more accurate or that a useful purpose is not served makes the above percentage differences irrelevant.

Under the present method, the average hourly charge is a weighted average with machining and assembly having by far the greatest weight. Since assembly has the lowest charge per hour, it tends to lower the average, while machining tends to raise the average. The result is particularly apparent in the cost difference in spare parts and work for other divisions.

Questions 1 and 2

Costing of a 100-unit batch of CS-29 carburetors:

			First Proposal		Revised Proposal	
Department	*Hours*	*(%)*	*Rate*	*Total*	*Rate*	*Total*
Casting/Stamping	21	(17)	$52.97	$1,112.37	$53.12	$1,115.52
Grinding	12	(10)	48.14	577.68	46.75	561.00
Machining	58	(46)	87.52	5,076.16	86.50	5,017.00
Assembly	35	(28)	40.19	1,406.65	39.14	1,369.90
Total, proposed method	126	= 101% due to rounding		8,172.86		8,063.42
Total, present method	126		55.96	7,050.96	55.96	7,050.96
Difference				$1,121.90	(16% more)	$1,012.46 (14% more)

Note: Indicated cost is higher under the proposed methods primarily because a CS-29 carburetor spends a higher-than-average proportion of time in the highest machining department and a less-than-average proportion in the low-cost assembly department. (Based on Exhibit 1, the "average" product spends 8%, 7%, 24%, 12%, and 49% of its time respectively in the five departments.

Costing of spare parts for inventory:

			First Proposal		Revised Proposal	
Department	*Hours*	*(%)*	*Rate*	*Total*	*Rate*	*Total*
Casting/Stamping	304	(18)	$52.97	$16,102.88	$53.12	$16,148.48
Grinding	270	(16)	48.14	12,997.80	46.75	12,622.50
Machining	1,115	(66)	87.52	97,584.80	86.50	96,447.50
Total, proposed method	1,689			126,685.48		125,218.48
Total, present method	1,689		55.96	94,516.44	55.96	94,516.44
Difference				$32,169.04	(34% more)	$30,702.04 (32% more)

Note: Indicated cost is higher under the proposed methods primarily because spares do not pass through the low-cost assembly department, and because they spend a higher-than-average proportion of time in the machining department.

Costing of work done for other divisions:

			First Proposal		Revised Proposal	
Department	*Hours*	*(%)*	*Rate*	*Total*	*Rate*	*Total*
Casting/Stamping	674	(20)	$52.97	$ 35,701.78	$53.12	$ 35,802.88
Grinding	540	(16)	48.14	25,995.60	46.75	25,245.00
Machining	2,158	(64)	87.52	188,868.16	86.50	186,667.00
Total, proposed method	3,372			250,565.54		247,714.88
Total, present method	3,372		55.96	188,697.12	55.96	188,697.12
Difference				$ 61,868.42	(33% more)	$ 59,017.76 (31% more)

Note: The difference in indicated cost arises for the same reasons as given above for spare parts.

The differences between the costs that result from the two proposed methods are not so great as the differences between the present method and either proposal. This is because the actual average overhead cost per hour in each department in July (Exhibit 2) did not differ greatly from the predetermined rates in Exhibit 4. The greatest difference in departmental actual versus predetermined rates is in assembly (5% higher actual than predetermined), which doesn't enter into the calculations for spares or work for other divisions.

The machining department costs dominate all three calculations, and there is only 1.7% ($62.52 versus $61.50) difference in the overhead rates. Of course, whether the same would be true for months other than July depends on the variations in monthly volumes from the normal volume in those other months.

All three of these examples cited show that the present method gives lower costs than those under the proposed methods. However, it should be noted that some products are being overvalued by the present system. It is reasonable to assume that there are some products that require a relatively large amount of assembling time. Such products would, under the present system, be costed at more than their costs under the proposed systems. Although some students usually overlook this, the fact is that total production costs are not changed by a decision to use five cost centers instead of one, so if the proposal increases the costs of some activities, of necessity some activities will show lower costs with five cost centers.

Question 3

a. *Plant as a single cost center*:

Labor cost in custom work reduced by 30 percent	$ 81,664	* 30% = $24,499
Reduced labor cost for the plant:	$ 658,448	- 24,499 = $633,949
Overhead is:		
Increased by new depreciation: $400,000/60 months =	$ 6,667	
Decreased by variable costs with reduced labor:		
10% *$40.48 * 3,712 hours *30% =	4,508	
Net increase in overhead	$ 2,159	
Total overhead becomes $1,099,323 + $2,159 =	$1,101,482	
Total labor cost	633,949	
Total cost becomes	$1,735,431	

Total hours become 31,412 - (3,712*30%) = 30,298 hours
Plant-wide rate per hour is $1,735,431/30,298 hours = $57.28
Custom work costs if entire plant is treated as a single cost center:

Prior to new machine: 3,712 hrs. @ $55.96 =	$207,724
After new machine: 2,598 hrs. @ $57.28 =	148,813
Net decrease of 28%, or in total dollars =	$ 58,911

b. *Treating each department as a cost center*:

Present overhead is $40.48 *3,712 hours =	$150,262
Add: Additional overhead (net)	2,159
New total custom work overhead	$152,421
New total hours: 3,712 *70% = 2,598 hrs.	
New hourly overhead rate: $152,421/2,598 =	$ 58.67
Labor hourly rate	22.00
New custom work hourly rate	$ 80.67
Custom work costs using five cost center approach:	
Prior to new machine: 3,712 hrs. @ $62.48 =	$231,926
After new machine: 2,598 hrs. @ $80.67 =	209,581
Net decrease of 9.6%, or in total dollars =	$ 22,345

c. *The calculations are shown above*. Note that if there is only one cost center, the purchase of a new machine results in a substantial decrease in the cost of custom carburetors and fuel injectors; whereas if there are five cost centers, the purchase of the machine results in significantly less change in the cost of items going through the custom work department. This is an interesting phenomenon. The proposed system reflects more accurately what has actually happened to costs. Furthermore, under the single cost center, an event in one department (such as the purchase of the machine in custom work) can have repercussions on the costs of other departments, and indeed can even affect the cost of products that do not pass through custom world. (A full discussion should also consider matters mentioned in question 6 below.)

Question 4

On a full-cost basis, we have the following indicated margins for a batch of 100 model CS-29 carburetors:

	Present Method	*Proposed Method*
Revenues (100 units @ $113)	$11,300	$11,300
Less: Materials	4,200	4,200
Labor and overhead	7,051*	8,173*

Gross margin	$ 49	$ (1,073)

*From Question 1 calculations.

This suggests that with the more accurate costing under the proposed method, carburetor CS-29 is a "loss leader". Students will suggest increasing the price and/or cutting costs. I then ask them to assume neither is feasible: then many will want to drop the product. However, consider the differential income, assuming all overhead is fixed (and nondifferential with respect to CS-29):

Revenues	$11,300	$11,300
Less: Materials	4,200	4,200
Labor	2,641*	2,785†
Differential income	$ 4,459	$ 4,315

*1.26 hrs. @ $20.96

†21 hrs. @ $21.60 + 12 hrs. @ $18.00 + 58 hrs. @ $25.00 + 35 hours @ $19.00 = $2,785

Both methods reveal that, if Huron has excess capacity, in the short run (at least), CS-29 should not be dropped, unless so doing would save about $5,400 in overhead costs that were assumed to be nondifferential in the above calculation (proposed method). The "moral" of this question is: neither the present nor the refined full cost data were helpful in making this decision, although the refined data did signal that CS-29 is, in a long-run sense, a "sick" product.

Question 5

Again, a differential analysis is called for. The relevant numbers for both a full-cost analysis and a differential analysis are as follows:

Full-cost analysis:	*CS-29*	*CS-30*
Revenues	$11,300	$11,300
Less Materials	4,200	8,000
Labor and overhead	8,173*	3,867†
Gross margin	$ (1,073)	$ (567)

*From Question 1 calculations

†12 hrs. @ $52.97 + 7 hrs. @ 48.14 + 17 hrs. @ $87.52 + 35 hrs. @ $40.19 = $3,867

Differential cost analysis (assuming all overhead costs are fixed):	*CS-29*	*CS-30*
Revenues	$11,300	$11,300
Less: Materials	4,200	8,000
Labor	2,785*	1,475**
Differential income	$ 4,315	$ 1,825

*21 hrs. @ $21.60 + 12 hrs. @ $18.00 + 58 hrs. @ $25.00 + 35 hrs. @ $19.00 = $2,785 (see Question 4.)

**12 @ $21.60 + 7 @ $18.00 + 17 @ $25.00 + 35 @ $19.00 = $1,475

This analysis shows that, if all factory overhead is nondifferential with respect to whether CS-29 or CS-30 carburetors are produced, CS-29 is the more attractive product.

Note that the full-cost analysis would be valid if all overhead costs assigned to the CS-29 and CS-30 carburetors were in fact differential; i.e., Huron would prefer to fill the order with the CS-30 if differential CS-29 overhead costs were $5,388 ($8,173 - $2,785) and differential CS-30 overhead costs were $2,392 ($3,867 - $1,475). But if we assume all overhead is unaffected by this decision, CS-29 is preferred. Thus,

there must be some percentage rate of overhead-variability that would make Huron indifferent as to which carburetor is shipped. Let X equal this percentage. (For the following calculation to be feasible, we must assume X is the same for both carburetors, which is an admittedly questionable assumption; but I feel the worth of illustrating a sensitivity analysis at this point in the course warrants it.)

For CS-29 income	≥	CS-30 income
4,315-X (5,388)	≥	1,825 - X (2,392)
2,996X	≤	2,490
C	≤	.83

Thus, if less than 83 percent of the overhead assigned to each product is variable, then shipping CS-29 is more attractive than shipping CS-30. Again note that neither the present nor the proposed costing method was particularly helpful in making this kind of decision. In fact, the indiscriminate use of cost data can lead to the wrong decision in both of the question 4 and 5 decisions.

Question 6

In my opinion, the following comments concerning benefits from the proposed five-cost-center approach are valid. They are based on an overall conclusion that this approach will provide more accurate costs, product by product, than the present method.

a. *Pricing*. Since Huron appears be a price follower, I see no benefits here from the proposed method. A possible exception might be the pricing of spares.

b. *Cost control*. Again, I see no benefits from the proposal in this regard. If Huron wants better cost control, it should develop flexible budgets for labor and overhead on a department-by-department (responsibility center) basis.

c. *Inventory valuation*. I see no benefits here from the proposal's more accurate costing. If adopted for tax purposes, it appears that the proposed approach would cause a one-shot tax increase (because since more production costs are capitalized in inventoriable spares, less will be charged to cost of the goods sold which are not inventoried).

d. *Charges to other divisions*. In the long run, it is probably beneficial that these transfer prices be made more accurate. For example, there is no reason for the machining department to maintain capacity for an outside division and then "sell" this capacity at below the "true" full costs. More accurate costs here might suggest in the long run that some other division's machining capacity should be expanded.

e. *Judging departmental performance*. (Same comments as for cost control.)

f. *Diagnostic uses*. It is here that I think the proposal has most merit; for example, if carburetor CS-29 is revealed to be a "loss leader" by more accurate costing, I think this is something of which management should be aware.

Overall, I conclude that the proposal should be adopted in this case, but only because the costs of implementing it appear to be minimal. If the proposal were costly, the chief benefit, diagnostic information, could be gained by an annual ad hoc five-cost-center product costing, without changing the routine costing system. Whatever students' assumptions about implementation costs, I feel they all should recognize that the proposal should not be adopted solely on the justification of improved accuracy; the improved accuracy is worthless if it doesn't lead to better decision making (as reflected in higher income).

Incidentally, whether the one- or five-cost center approach is used, at least the overhead portion of the hourly costing rate should be a predetermined rate based on estimates of annual volume and overhead costs; otherwise, month-to-month volume variations will result in erratic product costs, because of spreading the monthly fixed overhead over varying volumes. Thus, the revised proposal is superior to the first proposal.

Case 18-2: California Creamery*

Note: *This case is new for the Twelfth Edition.*

Purpose of Case

This case provides a simple setting that illustrates activity-based cost (ABC) principles and the effects that such a system can have. It can be used as an exam case when the examination period is short. Students who understand ABC principles well can read the case and answer a basic set of questions in one hour.

Suggested Assignment Questions

1. Compute the full production cost (per gallon) of the Polynesian Fantasy and Vanilla products using:
   a. Will's old costing method;
   b. The new costing method (Louise's suggestion).

2. What are the effects, if any, of changing the company's costing method? Specifically, are the differences between the two costing methods material in terms of:
   a. their effect on individual product costs?
   b. their effect on total company profits? (Assume no changes in any operating decisions, such as prices and production volumes.)

   If there are material differences, why do they exist? If there are no material differences, why do they not exist?

3. What should Will do now? Explain.

Question 1

Under the old system, the only difference shown between the costs of Polynesian Fantasy and Vanilla ice creams was due to the $.20 difference in direct material costs (see Table 1). The overhead rate was 200% of direct labor dollars ($600,000 ÷ $300,000).

Table 1
Old System Costs

	Polynesian Fantasy		Vanilla	
DM	2.00		1.80	
DL	1.20		1.20	
		1.20 *		1.20 *
OH	**2.40**	200%	**2.40**	200%
	5.60		**5.40**	

* This teaching note was written by Kenneth A. Merchant.

The new system costs took some calculating. Table 2 shows the calculation of the cost driver rates. Table 3 uses these rates to calculate the product costs. The total costs for Polynesian Fantasy and Vanilla are $9.07 and $4.64 respectively.

Table 2
New System—Calculate cost drivers

Activity	Budgeted Cost	Activity cost driver	Budgeted activity	Cost driver rate
Purchasing	$80,000	Purchase orders	909	**$88.01**
Material handling	95,000	Setups	1,846	**51.46**
Blending	122,000	Blender hrs	1,000	**122.00**
Freezing	175,000	Freezer hrs	1,936	**90.39**
Packaging	110,000	Packaging machine hrs	1,100	**100.00**
Quality control	18,000	Batches	286	**62.94**
Total mfg OH cost	600,000			

Table 3
New System—Calculate product costs

	Polynesian Fantasy			Vanilla		
Purchasing	(2,000/50) =	40	$3,520.40	(100,000/1,000) =	100	$8,801.00
Material handling	3 * (2,000/100) =	60	3,087.76	3 * (100,000/2,500) =	120	6,175.20
Blending	(36 min * 20) ÷ 60=	12	1,464.00	(18 min * 1,000) ÷ 60 =	300	36,600.00
Freezing	1 hr * 20 =	20	1,807.85	1 hr * 1,000 =	1,000	90,390.00
Packaging	(18 min * 20) ÷ 60 =	6	600.00	(12 min * 1,000) ÷ 60 =	200	20,000.00
Quality control	(2,000/100) =	20	1,258.80	(100,000/2,500) =	40	2,517.60
		TOTAL	**$11,738.7**		TOTAL	**$164,488.8**
		OH	**6**		OH	**0**
			2,000 gallons			100,000 gallons
		TOTAL OH per gallon	**5.87**		TOTAL OH per gallon	**1.64**
		DM	2.00			1.80
		DL	1.20			1.20
		Total cost per gallon	**$9.07**		Total cost per gallon	**$4.64**

Question 2

Cost system designs have no effect on real *product costs*—whatever those real costs are is not affected by what the cost accountants are doing. However, there is a material difference between the costs revealed by the two cost models. Will's understanding of reality would improve materially if he adopted the new cost system. The new cost system is a better cost model. The differing cost effects of machine times and batch sizes are averaged out in the old system.

Until and unless operating decisions are changed, the effect on *total company profits* of switching to the new cost system would be zero. All the differences at the product level even out in the aggregate.

Question 3

With the new insights from a better cost system, Will might usefully take any of a number of actions, affecting such areas as cost system design, product offerings, prices and promotions, product designs, and manufacturing processes (e.g., batch sizes).

Case 18-4: Safety Monitoring Devices, Inc*

Note: *This case is new in the Twelfth Edition.*

Purpose of Case

This case describes a standard, but simplified, activity-based costing situation. Students are asked to calculate the costs of two products using three different cost systems and then to explain both the differences between the systems and possible implications.

Suggested Assignment Questions

1. Calculate the full cost per unit of ODD and TGD using:
   a. The existing costing method
   b. Greg's proposed ABC method
   c.
2. Greg and Lourdes also considered an "**in-between method**" that they would hold in their "back pocket" just in case they'd fail to convince Richard and Mark to adopt the ABC method. The "in-between method" proposes to allocate overhead costs based on 2 drivers only (direct material cost and machine hours), as shown in Table TN-1:

Table TN-1
Proposed Overhead Cost Allocation Bases for the "In-Between Method"

Corporate		**Suggested Allocation Base:**
R&D	$300,000	Machine Hours
Marketing	380,000	Machine Hours
General Administration	750,000	Machine Hours
Total Corporate Overhead Costs	**$1,430,000**	
Manufacturing		
Purchasing	$120,000	DM$
Materials Handling	125,000	DM$
Machine Setup	180,000	Machine Hours
Supervision	225,000	Machine Hours
Quality Control	195,000	Machine Hours
Packaging & Shipping	210,000	Machine Hours
Machine Depreciation	165,000	Machine Hours

*This teaching note was prepared by Kenneth A. Merchant based on notes from Wim A. Van der Stede. Copyright © by Kenneth A. Merchant.

Plant (incl. Upkeep, Depreciation, Property Taxes, and Insurance)	240,000	Machine Hours
Miscellaneous (e.g., indirect materials)	110,000	Machine Hours
Total Manufacturing Overhead Costs	**$1,570,000**	
TOTAL COMPANY OVERHEAD	**$3,000,000**	

Using this information, compute the full cost per unit of ODD and TGD.

3. What are the effects, if any, of changing the company's costing method on:
   a. Individual product costs.
   b. Total company profits (assuming there are no changes in any operating decisions, such as prices and production volumes).

   If there are substantive differences, explain why they exist. If there are no differences, explain why they do not exist.

4. Could cost system limitations have been a cause of the requests Lourdes was receiving to discount ODDs back in 2001, which is when SMD was still a one-product, ODD-only company?

5. What were (a) Lourdes' and (b) Greg's motivations for wanting changes made to the cost system?

6. What should Richard do regarding the cost system alternatives?

Question 1

A. existing cost method—use DL hrs to spread OH costs.
[include corporate overhead...case says "spread the totality of all the overhead cost to products"]

- find total DL hrs for the entire production
  - ODD: 25,000 units x 4 DL hrs/unit = 100,000
  - TGD: 12,500 units x 4 DL hrs/unit = 50,000
  - total DL hrs = **150,000**
- b) find OH rate
  - total OH = 1,430K + 1,570K = 3,000,000
  - OH rate = total OH / total DL hrs = **20 per DL hour**
- c) find full cost per unit

	ODD	TGD
DM (given)	$ 88.00	$111.00
DL (given)	64.00	64.00
OH = DL hrs/unit x OH rate	**80.00**	**80.00**
full cost/unit	**$232.00**	**$255.00**

B. proposed ABC method

- find rates for each cost to be allocated

	Budgeted	Driver	Total driver	Rate	
Corporate overhead					
R&D	$300,000	Pr. type	5	Given	**$60,000.00**
Marketing	380,000	Pr. type	2	Given	**190,000.00**
General Administration	750,000	Pr. Units	37,500	25k + 12.5k	**20.00**
Manufacturing overhead					
Purchasing	120,000	POs	300	90+210	**400.00**
Materials handling	125,000	Part #s	50	18+32	**2,500.00**
Machine set-up	180,000	Batches	120	24+96	**1,500.00**
Supervision	225,000	DL hrs.	150,000	25K*4+12.5*4	**1.50**
Quality control	195,000	Pr. Units	37,500	25k+12.5K	**5.20**
Packaging and shipping	210,000	Shipments	400	80+320	**525.00**
Machine depreciation	165,000	M hrs.	137,500	25K*3+12.5K *5	**1.20**
Plant	240,000	Pr. Units	37,500	25.K*3 + 12K*5	**6.40**
Miscellaneous	110,000	M hrs.	137,500	25K + 12.5K	**0.80**

- find total OH cost allocated to each

		ODD		TGD		
	Driver rate	Driver units	Allocated cost	Driver units	Allocated cost	Total
Corporate overhead						
R&D	60,000.00	1	60,000	4	240,000	300,000
Marketing	190,000.00	1	190,000	1	190,000	380,000
General Administration	20.00	25,000	500,000	12,500	250,000	750,000

Manufacturing overhead						
Purchasing	400.00	90	36,000	210	84,000	120,000
Materials handling	2,500.00	18	45,000	32	80,000	125,000
Machine setup	1,500.00	24	36,000	96	144,000	180,000
Supervision	1.50	100,000	150,000	50,000	75,000	225,000
Quality control	5.20	25,000	130,000	12,500	65,000	195,000
Packaging & shipping	525.00	80	42,000	320	168,000	210,000
Machine depreciation	1.20	75,000	90,000	62,500	75,000	165,000
Plant	6.40	25,000	160,000	12,500	80,000	240,000
Miscellaneous	0.80	75,000	60,000	62,500	50,000	110,000
TOTAL			$1,499,000		$1,501,000	
Total cost per unit			$59.96		$120.08	

c) find full cost per unit

	ODD	TGD	
DM	$88.00	$111.00	
DL	64.00	64.00	
OH	59.96	120.08	(total allocated OH cost (from b)/production units
Full cost/unit	$211.96	$295.08	

Question 2

in-between method = allocate OH cost using 2 drivers (DM & m hrs)

a) find allocated OH cost per unit

Total DM-based OH cost	$ 245,000
Total DM$	3,587,500

DM-based OH rate	**0.07 per DM$**
Total machine hour OH cost	$2,755,000
Total machine hours	137,500
Machine hour-based OH rate	**20.04 per MH**

	ODD	TGD
Allocated DM-based OH/unit	$6.01	$7.58
Allocated mhr-based OH/unit	60.11	100.18
Total allocated OH/unit	**$66.12**	**$107.76**

b) find full cost per unit

	ODD	TGD
DM	$88.00	$111.00
DL	64.00	64.00
OH	66.12	107.76
Full cost/unit	$218.12	$282.76

Question 3

a) effects of changing costing method on individual product costs

Changing the costing method does have material effects on product costs:

	ODD	TGD
Existing costing method	$232.00	$255.00
Proposed ABC method	211.96	295.08
"In-between" method	218.12	282.76

The direct material and direct labor costs are identical in all systems. All the differences are in the assignment of overheads to products. The existing system, which lumps all overheads into a single cost pool, assigns overhead equally, despite the fact that production of the two products consumes quite different amounts of overhead. The proposed ABC system uses multiple cost pools, which better reflect the individual products' consumption of overhead resources. Thus, ODD (the "simple" product) gets *less* overhead assigned to it, so full reported costs go *down* (--8.6%) relative to the old system. TGD (the "complex" product) is gets *more* overhead assigned to it, so its reported cost goes *up* (+15.7%). This is to be expected given this product's small batch sizes, etc. This new understanding of costs should have material effects on some management decisions, such as pricing.

b) effect on total company profits

Total company profits are *unaffected* by the change in the cost accounting system, assuming no changes in any operating decisions, such as pricing and production volumes. The total overhead stays the same. It is just reported differently.

Question 4

Could cost system limitations have been a cause of the requests Lourdes was receiving to discount ODDs back in 2001, which is when SMD was still a one-product, ODD-only company? Absolutely, yes. The new plant had overcapacity, the costs of which were fully allocated to the current production volumes, which were entirely the ODD product. In addition, development of TGDs had started, but TGD production had not yet begun. Thus, ODD ended up being burdened with these increased R&D overhead costs also.

The solution to this problem at that time would not have been the introduction of an activity-based cost system because SMD was still a single-product company. The issue could have been resolved by taking the excess capacity out of the equation, such as by using "normal capacity" in the burden rate computations, as well as by not allocating R&D, at least not the R&D associated with TGD, to ODD.

Question 5

Lourdes and Greg both had two concerns: better decision making and bigger bonuses. Lourdes was concerned that with better information she could make better pricing decisions and do better sales planning. Greg would have better information for making process improvements that would lead to cost reductions. The information might, for example, lead to production in larger batches and fewer shipments. Better decision making will lead to higher profits and larger bonuses.

Question 6

What should Richard do?

The strongest argument for change is that the ABC system will more accurately reflect the "true" product costs, allowing for better pricing. Specifically, it will allow the reduction of ODD prices without the sacrificing of margins. TGD prices can be increased. The system will also reveal the differential overhead consumption patterns of each of the products, thereby potentially generating insights for production alignment and process improvements.

The new system might avoid the "death spiral." This destructive phenomenon would occur because relatively more and more TGD would be sold. The business would get skewed toward the lower-margin product because of the distortion of the current costing method.

Taken together, the improved decision making will lead to increased sales revenues and reduced costs, thus improving company competitiveness and profitability.

But Richard might want to consider the "in-between" cost method. While it is not as accurate as the ABC method, the product cost data it provides are reasonably close to those of the ABC method, and it is a simpler system that would be easier to administer.

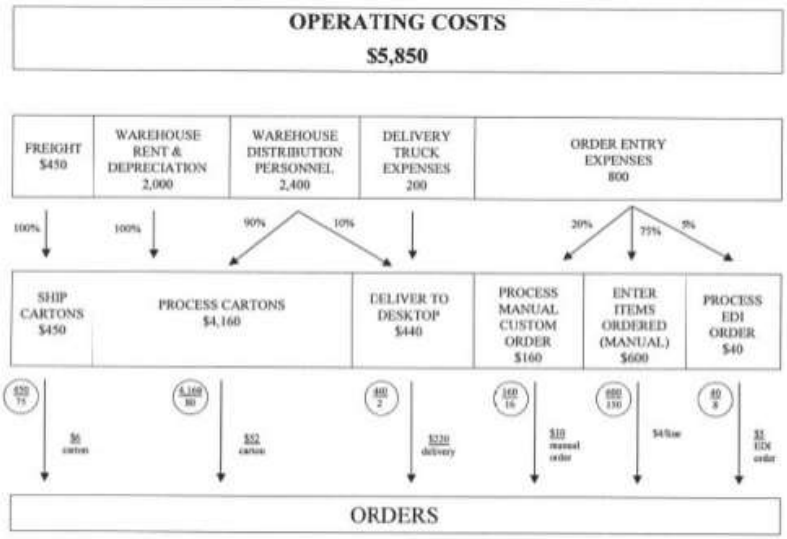

Exhibit TN-2 Customer Profitability

	Customer A	Customer B		
Sales		$ 103,000		$ 104,000
Cost of items purchased		85,000		85,000
Gross margin		$ 18,000		$ 19,000
Number of cartons ordered	200	10,400	200	10,400
Number of cartons shipped,				
commercial freight	200	1,200	150	900
Number of desktop deliveries	-	-	25	5,500
Number of orders, manual	6	60	100	1,000
Number of line items, manual	60	240	180	720
orders				
Number of EDI orders	6	30	-	-
Average Accounts Receivable	$ 9,000	900	$ 30,000	3,000
Customer Contribution (Loss)		$ 5,170		$ (2,520)
		6.1%		–3.0%

Accounting Text and Cases 12 Ed. Chapter 18

Gaurav Dutta, Student at K J Somaiya Institute of Management Studies and Research
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Accounting Text and Cases 12 Ed. Chapter 18

1. 1. CHAPTER 18 ADDITIONAL ASPECTS OF PRODUCT COSTING SYSTEMS Changes from Eleventh Edition All changes to Chapter 18 were minor. Approach Our treatments of job costing and process costing are as brief as we can make them and still get the general points across. Students do need to understand the general idea of these cost accumulation procedures to be able to visualize how cost data are actually collected. The details, however, are appropriately left for an advanced course. The principal pedagogical problem here is how to get across the idea of equivalent production in process costing. Some introductory texts omit this idea, but this strikes us as dangerous because some student is almost sure to ask what happens in a process cost system if not all the units are completed by the end of the period. If the answer is not in the text, the instructor either has to duck the question, or attempt the difficult task of explaining it on the spot. In the text and in most problems, we assume that units are 50 percent completed as to labor and overhead. Since this assumption is widely used in practice, we see no point in complicating the text by introducing other percentages. Certainly, the most difficult part of this chapter is the section on development of overhead rates. In our experience, mastery of this material greatly reduces the omnipresent problems students have later with production overhead variances. We also find in this regard that students need to be referred back to the text section, “Why Overhead Rates Are Predetermined,” especially in later discussions of the overhead volume variance. We have placed emphasis on the flexible overhead budget to help minimize these learning difficulties. We feel that the section on activity-based costing (ABC) provides the appropriate level of depth for a required course. Students need to understand the potential benefits of ABC as well as the fact that it is not a panacea. It is important for students to realize that ABC is a decision-support model rather than a transaction processing system. Four of the five cases included in this chapter describe both traditional and ABC systems so that students can more easily understand the differences. Cases Huron Automotive Company gives practice in computing and using costing rates and shows the differences that result from different definitions of cost centers. It also has two optional questions involving differential analysis, for the instructor who wishes to keep emphasizing that full costs are not used for all cost-related management decisions. California Creamery is a simple activity-based costing case. It requires students to calculate the costs of producing two products using traditional and ABC approaches. (This is a new case in the Twelfth Edition.) Wilkerson Company is a slightly more complicated activity-based costing case. It requires students to calculate the costs of three products using on a new set of cost drivers, to compare those costs with those calculated using traditional direct labor-based allocation bases, and then to understand what the numbers mean. 1
2. 2. Accounting: Text and Cases 12e – Instructor’s Manual Anthony/Hawkins/Merchant Safety Monitoring Devices, Inc. is another activity-based costing case that adds a few wrinkles, such as regarding motivations for change and cost of complexity. (This is a new case in the Twelfth Edition.) Dakota Office Products requires students to understand the mechanics of customer profitability analysis and then to use the information for strategic decision making purposes. Problems Problem 18-1: Elliott Company a. Overhead rate = dollarlabordirectper$1.50 000,90$ 000,135$ dollarslaborDirect overheadProduction == b. Work in Process Inventory.....22,500 Raw Materials Inventory.....6,000 Direct Labor.....6,600 Production Overhead (6,600 x $1.50).....9,900 c. Overhead absorbed @ $1.50/direct labor hour.....$9,900 Actual overhead.....9,550 Overabsorbed.....$ 350 Problem 18-2: Ryan Corporation Cost Distributions Cost Center __A__ __B__ __C__ (a) Heat, light, power.....$24,000 $ 8,000 $8,000 (b) Depreciation: Building.....2,400 300 300 Furniture and fixtures 600 200 Machinery and equipment.....20,000 (c) Insurance: Inventories.....100 100 Building.....1,040 130 130 Furniture and fixtures 45 15 Machinery and equipment.....850 (d) Building

repairs.....3,200 400 400
Machinery repairs.....1,900 (e)
Telephone expense.....360 1,080 360
Totals.....$53,850 $10,655
$9,405 Calculations (a) Heat, light, power--basis of distribution, cubic feet: A 600,000 B 200,000 C 200,000 1,000,000 cubic feet
6/10 x $40,000 = $24,000 A 2/10 x $40,000 = $8,000 B 2/10 x $40,000 = $8,000 C 2

3. 3. ©2007 McGraw-Hill/Irwin Chapter 18 (b) Building depreciation--basis of distribution, square feet:
Manufacturing.....48,000
Selling.....9,000
Administrative.....3,000 60,000 square feet 48/60 x
$3,000 = $2,400 A 6/60 x $3,000 = 300 B 6/60 x $3,000 = 300 C Furniture and fixtures depreciation -- 75% ($800) = $600 B 25%
($800) = $200 C (c) Insurance--basis of distribution, square feet for building: 48/60 x $1,300 = $1,040 A 6/60 x $1,300 = $130 B
6/60 x $1,300 = $130 C Insurance on inventories--half B; half A Insurance on furniture and fixtures -- 75% ($60) = $45 B 25% ($60)
= $15 C (d) Building repairs--basis for distribution, square feet: 48/60 x $4,000 = $3,200 A 6/60 x $4,000 = $400 B 6/60 x $4,000 =
$400 C (e) Telephone--basis for distribution, number of extensions: Total extensions -- 45 9/45 x $1,800 = $360 A 27/45 x $1,800 =
$1,080 B 9/45 x $1,800 = $360 C Problem 18-3: Mid-City College a. ($000) Service Centers Instruction Centers Total Bldg. and
Grounds Cent. Adm. Arts and Sciences Education Bus. Adm. Overhead
costs.....$l0,500 $1,575 $1,050
$3,150 $2,625 $2,100 Buildings and
Grounds.....(1,575) 262 525 438 350
Central Administrator.....
(1,312) 525 315 472 Overhead $10,500 $ 0 $ 0 $4,200 $3,378 $2,922 3

4. 4. Accounting: Text and Cases 12e – Instructor's Manual Anthony/Hawkins/Merchant *Reassignment of Building and Grounds
Department using percent of space occupied: Cost Center Percent of Floor Space Cost Reassignment Central
Administration.....15 15 90 x$1,575 =
$262 Arts and Sciences.....30
525x$1,575 90 30 =
Education.....25 438x$1,575
90 25 = Business Administration.....20
350x$1,575 90 20 =
Total.....90 $1,575
**Reassignment of Central Administration Department using number of employees: Cost Center Number of Employees Cost
Reassignment Arts and
Sciences.....80 80 200 x$1,312 = $
525 Education.....48 48 200
x$1,312 = 315 Business
Administration.....72 72 200 x$1,312 = 472
Total.....200 $1,312 b .
Instruction Center Overhead Cost Number of Students Overhead Cost per Student Arts and
Sciences.....$ 4,200 6,000 $ .70
Education.....3,378 2,500
1.35 Business Administration.....2,922
1,500 1.95 $10,500 10,000 Problem 18-4 Weld a. Actual overhead Canning Company Busy
season.....$180,000 ÷ 15,000
hours = $12 per hour Slack
season.....$ 80,000 ÷ 5,000
hours = $16 per hour At 1 hour per case, a case has $12 of factory overhead cost in the busy season and $16 in the slack season.
Inventory at December 31 will consist of all "busy season" production, so at $12 per hour, the overhead cost component is 25,000
cases x $12 = $300,000. b. Predetermined overhead Total factory overhead costs 6 months @
$180,000.....$1,080,000 6 months @
80,000.....480,000
Total.....$1,560,000 Total
direct labor hours 6 months @
15,000.....90,000 6 months @
5,000.....30,000
Total.....120,000
$1,560,000 ÷ 120,000 hours = $13.00 per hour Inventory at December 31 will have an overhead cost component of 25,000 cases x
$13.00 = 4

5. 5. ©2007 McGraw-Hill/Irwin Chapter 18 $325,000. c. In this case, where the same type of product is packed each month, the most valid overhead rate to use is probably the annual rate of $13.00 per hour. A case of a given product whether packed in the slack season or the busy season should bear the same share of indirect cost, assuming the same production techniques, raw materials, and labor usage. Problem 18-5 Journey's End, Inc. This is a pretty standard, but simplified, activity-based costing situation. The main twist is that distribution channels, rather than products or customers, is the cost object. Students must do the Stage I allocations (trace the costs to activities), compute the proper Stage II cost driver percentages (showing the channels' consumption of the activities), to apply those percentages in allocating the activity costs to the channels. 1. Tracing the costs to activities. The SG&A line-item costs should be multiplied by the percentages shown in the activity table, as follows: Table TN-1 SG&A line-item: ---------- Activity ---------- Customer mailing Take phone or Internet order Take field order Special negotiation— field order

Process customer invoice Other Total Marketing and sales support $600 $600 $1,800 $3,000 0 0 $6,000 Design 0 0 0 810 0 90 900 Information systems 0 200 0 0 200 1,600 2,000 General administration 0 0 0 300 300 2,400 3,000 Total $600 $800 $1,800 $4,110 $500 $4,090 $11,900 2. Channels' consumption of the activities. These are calculated from the second major table in the problem, as follows: Table TN-2 Activity ---------- Channel ---------- TotalCatalog Corporate Retail Customer mailings 98% 1% 1% 100% Number of phone orders 97% 1% 2% 100% Number of field orders 0 50% 50% 100% Number of field orders requiring special negotiation 0 75% 25% 100% Total number of orders invoices 77% 11% 12% 100% 5

6. 6. Accounting: Text and Cases 12e – Instructor's Manual Anthony/Hawkins/Merchant 3. Allocating the activity costs to channels. This is done by multiplying the percentages in Table TN-2 by the dollar figures in Table TN-1, as follows: Table TN-3 Activity ---------- Channel ---------- TotalCatalog Corporate Retail Customer mailings $5881 $6 $6 $600 Number of phone orders 776 8 16 800 Number of field orders 0 900 900 1,800 Number of field orders requiring special negotiation 0 3,083 1,027 4,110 Total number orders/invoices 385 55 60 500 Total $1,749 $4,052 $2,009 7,810 Other 4,090 $11,900 One error that some students might make is to allocate the "other" costs to channels, by assuming a cost driver. No reasonable basis for a cost driver assumption is provided in the case. Allocating these costs could swamp the meaningful allocations that could be made. Table TN-4 summarizes the channel profit information revealed from this new analysis. Table TN-4 ---------- Channel ---------- TotalCatalog Corporate Retail Sales $30,000 $10,000 $20,000 $60,000 Cost of Sales 15,000 6,500 14,000 35,500 Gross margin 15,000 3,500 6,000 24,500 SG&A 1,749 4,052 2,009 11,900 Net profit from channels $13,251 $(552) $3,991 $16,690 1 98% x $600 6
7. 7. ©2007 McGraw-Hill/Irwin Chapter 18 Channel profit % sales 44.2% (5.5%) 20.0% 27.8% Other costs 4,090 Net profit 12,600 Net profit % sales 21.0% Question 2 in the suggested assignment asks for the implications of this analysis. Here are some of the questions raised: • Should the company continue to use the channel now revealed to be a loser (corporate)? • Are there some cross selling possibilities or sticky or unavoidable costs that make it undesirable to exit the corporate business? • Should/can prices be raised in certain areas? • Can some of the costs (e.g., those related to the costly negotiation process, commissions) be reduced? • Should a minimum order size be instituted in the corporate business? • Should the company's cost system be altered to consider SG&A costs on a regular basis? Cases Case 18-1: Huron Automotive Company* Note: This case is unchanged from the Eleventh Edition. Approach This case deals with the problems of defining cost centers and the implications of various possible decisions, a significant matter that is discussed only briefly in the text. After considering the various questions involving the use of cost information that are raised in the case, the student should appreciate the fact that the definition of cost centers can have an important effect on the allocation of costs to products and departments. Students should also see that there is no single "right" answer to the problem. The case also raises the alternative of using predetermined overload rates. It should be recognized that this issue is separable from the number-of-cost-centers question: i.e., predetermined rates could be used with either a one- or five-cost center approach. Question 3 is quite difficult, although it illustrates an interesting phenomenon: how a charge in one cost center can affect the allocation of costs to other cost centers. The question can be omitted without harm to the central theme. Instead of question 3, the instructor can assign questions 4 and 5, but only if he or she wants to begin introducing differential accounting at this point. If all six questions are assigned, the case requires at least part of a second discussion session. (Question 6 should be assigned regardless of the instructor's preference regarding questions 3-5). * This teaching note was prepared by James S. Reece. Copyright © by James S. Reece. 7
8. 8. Accounting: Text and Cases 12e – Instructor's Manual Anthony/Hawkins/Merchant Comments on Questions Questions 1 and 2 appear on the next page of this manual. These percentage changes definitely indicate a significant amount of difference. However, the evaluation of the difference lies in the answers given to questions 2 and 6: Question 2 leads to a discussion of whether the proposed methods of costing yield a more accurate cost than does the present method; question 6 leads to a discussion of whether a useful purpose will be served by the greater degree of accuracy, if there is in fact more accuracy. It should be noted that a decision that a proposed system is not more accurate or that a useful purpose is not served makes the above percentage differences irrelevant. Under the present method, the average hourly charge is a weighted average with machining and assembly having by far the greatest weight. Since assembly has the lowest charge per hour, it tends to lower the average, while machining tends to raise the average. The result is particularly apparent in the cost difference in spare parts and work for other divisions. Questions 1 and 2 Costing of a 100-unit batch of CS-29 carburetors: First Proposal Revised Proposal Department Hours (%) Rate Total Rate Total
Casting/Stamping.....21 (17) $52.97 $1,112.37 $53.12 $1,115.52
Grinding.....12 (10) 48.14 577.68 46.75 561.00
Machining.....58 (46) 87.52 5,076.16 86.50 5,017.00
Assembly.....35 (28) 40.19 1,406.65 39.14 1,369.90 Total, proposed
method.....126 = 101% due to rounding 8,172.86 8,063.42 Total, present
method.....126 55.96 7,050.96 55.96 7,050.96
Difference.....$1,121.90 (16% more) $1,012.46 (14% more) Note: Indicated cost is higher under the proposed methods primarily because a CS-29 carburetor spends a higher-than-average proportion of time in the highest machining department and a less-than-average proportion in the low-cost assembly department. (Based on Exhibit 1, the "average" product spends 8%, 7%, 24%, 12%, and 49% of its time respectively in the five departments. 8
9. 9. ©2007 McGraw-Hill/Irwin Chapter 18 Costing of spare parts for inventory: First Proposal Revised Proposal Department Hours (%) Rate Total Rate Total
Casting/Stamping.....304 (18) $52.97 $16,102.88 $53.12 $16,148.48
Grinding.....270 (16) 48.14

12,997.80 46.75 12,622.50
Machining.....1,115 (66) 87.52 97,584.80 86.50 96,447.50 Total, proposed method.....1,689 126,685.48 125,218.48
Total, present method.....1,689 55.96 94,516.44 55.96 94,516.44
Difference.....$32,169.04 (34% more) $30,702.04 (32% more) Note: Indicated cost is higher under the proposed methods primarily because spares do not pass through the low-cost assembly department, and because they spend a higher-than-average proportion of time in the machining department. Costing of work done for other divisions: First Proposal Revised Proposal Department Hours (%) Rate Total Rate Total
Casting/Stamping.....674 (20) $52.97 $ 35,701.78 $53.12 $ 35,802.88
Grinding.....540 (16) 48.14 25,995.60 46.75 25,245.00
Machining.....2,158 (64) 87.52 188,868.16 86.50 186,667.00 Total, proposed method.....3,372 250,565.54 247,714.88
Total, present method.....3,372 55.96 188,697.12 55.96 188,697.12
Difference.....$ 61,868.42 (33% more) $ 59,017.76 (31% more) Note: The difference in indicated cost arises for the same reasons as given above for spare parts. The differences between the costs that result from the two proposed methods are not so great as the differences between the present method and either proposal. This is because the actual average overhead cost per hour in each department in July (Exhibit 2) did not differ greatly from the predetermined rates in Exhibit 4. The greatest difference in departmental actual versus predetermined rates is in assembly (5% higher actual than predetermined), which doesn't enter into the calculations for spares or work for other divisions. The machining department costs dominate all three calculations, and there is only 1.7% ($62.52 versus $61.50) difference in the overhead rates. Of course, whether the same would be true for months other than July depends on the variations in monthly volumes from the normal volume in those other months. All three of these examples cited show that the present method gives lower costs than those under the proposed methods. However, it should be noted that some products are being overvalued by the present system. It is reasonable to assume that there are some products that require a relatively large amount of assembling time. Such products would, under the present system, be costed at more than their costs under the proposed systems. Although some students usually overlook this, the fact is that total production costs are not changed by a decision to use five cost centers instead of one, so if the proposal increases the costs of some activities, of necessity some activities will show lower costs with five cost centers. 9

10. 10. Accounting: Text and Cases 12e – Instructor's Manual Anthony/Hawkins/Merchant Question 3 a. Plant as a single cost center: Labor cost in custom work reduced by 30 percent.....$ 81,664 * 30% = $24,499 Reduced labor cost for the plant:.....$ 658,448 - 24,499 = $633,949
Overhead is: Increased by new depreciation: $400,000/60 months =.....$ 6,667 Decreased by variable costs with reduced labor: 10% *$40.48 * 3,712 hours *30% =.....4,508 Net increase in overhead.....$2,159 Total overhead becomes $1,099,323 + $2,159 =.....$1,101,482 Total labor cost.....633,949 Total cost becomes.....$1,735,431 Total hours become 31,412 - (3,712*30%) = 30,298 hours Plant-wide rate per hour is $1,735,431/30,298 hours = $57.28 Custom work costs if entire plant is treated as a single cost center: Prior to new machine: 3,712 hrs. @ $55.96 =.....$207,724 After new machine: 2,598 hrs. @ $57.28 =.....148,813 Net decrease of 28%, or in total dollars =.....$ 58,911 b. Treating each department as a cost center:
Present overhead is $40.48 *3,712 hours =.....$150,262
Add: Additional overhead (net).....2,159 New total custom work overhead .....$152,421 New total hours: 3,712 *70% = 2,598 hrs. New hourly overhead rate: $152,421/2,598 =.....$ 58.67 Labor hourly rate.....22.00 New custom work hourly rate.....$ 80.67 Custom work costs using five cost center approach: Prior to new machine: 3,712 hrs. @ $62.48 =.....$231,926 After new machine: 2,598 hrs. @ $80.67 =.....209,581 Net decrease of 9.6%, or in total dollars =.....$ 22,345 c. The calculations are shown above. Note that if there is only one cost center, the purchase of a new machine results in a substantial decrease in the cost of custom carburetors and fuel injectors; whereas if there are five cost centers, the purchase of the machine results in significantly less change in the cost of items going through the custom work department. This is an interesting phenomenon. The proposed system reflects more accurately what has actually happened to costs. Furthermore, under the single cost center, an event in one department (such as the purchase of the machine in custom work) can have repercussions on the costs of other departments, and indeed can even affect the cost of products that do not pass through custom world. (A full discussion should also consider matters mentioned in question 6 below.) Question 4 On a full-cost basis, we have the following indicated margins for a batch of 100 model CS-29 carburetors: Present

Method Proposed Method Revenues (100 units @ $113).....$11,300 $11,300 Less: Materials.....4,200 4,200 Labor and overhead.....7,051* 8,173* 10

11. 11. ©2007 McGraw-Hill/Irwin Chapter 18 Gross margin .....$ 49 $ (1,073) *From Question 1 calculations. This suggests that with the more accurate costing under the proposed method, carburetor CS-29 is a “loss leader”. Students will suggest increasing the price and/or cutting costs. I then ask them to assume neither is feasible: then many will want to drop the product. However, consider the differential income, assuming all overhead is fixed (and nondifferential with respect to CS-29): Revenues.....$11,300 $11,300 Less: Materials.....4,200 4,200 Labor.....2,641* 2,785+ Differential income.....$ 4,459 $ 4,315 *1.26 hrs. @ $20.96 + 21 hrs. @ $21.60 + 12 hrs. @ $18.00 + 58 hrs. @ $25.00 + 35 hours @ $19.00 = $2,785 Both methods reveal that, if Huron has excess capacity, in the short run (at least), CS-29 should not be dropped, unless so doing would save about $5,400 in overhead costs that were assumed to be nondifferential in the above calculation (proposed method). The “moral” of this question is: neither the present nor the refined full cost data were helpful in making this decision, although the refined data did signal that CS-29 is, in a long-run sense, a “sick” product. Question 5 Again, a differential analysis is called for. The relevant numbers for both a full-cost analysis and a differential analysis are as follows: Full-cost analysis: CS-29 CS-30 Revenues.....$11,300 $11,300 Less Materials.....4,200 8,000 Labor and overhead 8,173* 3,867+ Gross margin.....$ (1,073) $ (567) * From Question 1 calculations + 12 hrs. @ $52.97 + 7 hrs. @ 48.14 + 17 hrs. @ $87.52 + 35 hrs. @ $40.19 = $3,867 Differential cost analysis (assuming all overhead costs are fixed): CS-29 CS-30 Revenues.....$11,300 $11,300 Less: Materials.....4,200 8,000 Labor.....2,785* 1,475* Differential income.....$ 4,315 $ 1,825 *21 hrs. @ $21.60 + 12 hrs. @ $18.00 + 58 hrs. @ $25.00 + 35 hrs. @ $19.00 = $2,785 (see Question 4.) **12 @ $21.60 + 7 @ $18.00 + 17 @ $25.00 + 35 @ $19.00 = $1,475 This analysis shows that, if all factory overhead is nondifferential with respect to whether CS-29 or CS-30 carburetors are produced, CS-29 is the more attractive product. Note that the full-cost analysis would be valid if all overhead costs assigned to the CS-29 and CS-30 carburetors were in fact differential; i.e., Huron would prefer to fill the order with the CS-30 if differential CS-29 overhead costs were $5,388 ($8,173 - $2,785) and differential CS-30 overhead costs were $2,392 ($3,867 - $1,475). But if we assume all overhead is unaffected by this decision, CS-29 is preferred. Thus, 11
12. 12. Accounting: Text and Cases 12e – Instructor’s Manual Anthony/Hawkins/Merchant there must be some percentage rate of overhead-variability that would make Huron indifferent as to which carburetor is shipped. Let X equal this percentage. (For the following calculation to be feasible, we must assume X is the same for both carburetors, which is an admittedly questionable assumption; but I feel the worth of illustrating a sensitivity analysis at this point in the course warrants it.) For CS-29 income ≥ CS-30 income 4,315-X (5,388) ≥ 1,825 - X (2,392) 2,996X ≤ 2,490 C ≤ .83 Thus, if less than 83 percent of the overhead assigned to each product is variable, then shipping CS-29 is more attractive than shipping CS-30. Again note that neither the present nor the proposed costing method was particularly helpful in making this kind of decision. In fact, the indiscriminate use of cost data can lead to the wrong decision in both of the question 4 and 5 decisions. Question 6 In my opinion, the following comments concerning benefits from the proposed five-cost-center approach are valid. They are based on an overall conclusion that this approach will provide more accurate costs, product by product, than the present method. a. Pricing. Since Huron appears be a price follower, I see no benefits here from the proposed method. A possible exception might be the pricing of spares. b. Cost control. Again, I see no benefits from the proposal in this regard. If Huron wants better cost control, it should develop flexible budgets for labor and overhead on a department-by-department (responsibility center) basis. c. Inventory valuation. I see no benefits here from the proposal’s more accurate costing. If adopted for tax purposes, it appears that the proposed approach would cause a one-shot tax increase (because since more production costs are capitalized in inventoriable spares, less will be charged to cost of the goods sold which are not inventoried). d. Charges to other divisions. In the long run, it is probably beneficial that these transfer prices be made more accurate. For example, there is no reason for the machining department to maintain capacity for an outside division and then “sell” this capacity at below the “true” full costs. More accurate costs here might suggest in the long run that some other division’s machining capacity should be expanded. e. Judging departmental performance. (Same comments as for cost control.) f. Diagnostic uses. It is here that I think the proposal has most merit; for example, if carburetor CS-29 is revealed to be a “loss leader” by more accurate costing, I think this is something of which management should be aware. Overall, I conclude that the proposal should be adopted in this case, but only because the costs of implementing it appear to be minimal. If the proposal were costly, the chief benefit, diagnostic information, could be gained by an annual ad hoc five-cost-center product costing, without changing the routine costing system. Whatever students’ assumptions about implementation costs, I feel they all should recognize that the proposal should not be adopted solely on the justification of improved accuracy; the improved accuracy is worthless if it doesn’t lead to better decision making (as reflected in higher income). 12
13. 13. ©2007 McGraw-Hill/Irwin Chapter 18 Incidentally, whether the one- or five-cost center approach is used, at least the overhead portion of the hourly costing rate should be a predetermined rate based on estimates of annual volume and overhead costs; otherwise, month-to-month volume variations will result in erratic product costs, because of spreading the monthly fixed overhead over varying volumes. Thus, the revised proposal is superior to the first proposal. Case 18-2: California Creamery* Note: This case is new for the Twelfth Edition. Purpose of Case This case provides a simple setting that illustrates activity-based cost (ABC) principles and the effects that such a system can have. It can be used as an exam case when the examination period is short. Students who understand

ABC principles well can read the case and answer a basic set of questions in one hour. Suggested Assignment Questions 1. Compute the full production cost (per gallon) of the Polynesian Fantasy and Vanilla products using: a. Will's old costing method; b. The new costing method (Louise's suggestion). 2. What are the effects, if any, of changing the company's costing method? Specifically, are the differences between the two costing methods material in terms of: a. their effect on individual product costs? b. their effect on total company profits? (Assume no changes in any operating decisions, such as prices and production volumes.) If there are material differences, why do they exist? If there are no material differences, why do they not exist? 3. What should Will do now? Explain. Question 1 Under the old system, the only difference shown between the costs of Polynesian Fantasy and Vanilla ice creams was due to the $.20 difference in direct material costs (see Table 1). The overhead rate was 200% of direct labor dollars ($600,000 ÷ $300,000). Table 1 Old System Costs Polynesian Fantasy Vanilla DM 2.00 1.80 DL 1.20 1.20 OH 2.40 1.20 * 200% 2.40 1.20 * 200% 5.60 5.40 * This teaching note was written by Kenneth A. Merchant. 13

14. 14. Accounting: Text and Cases 12e – Instructor's Manual Anthony/Hawkins/Merchant The new system costs took some calculating. Table 2 shows the calculation of the cost driver rates. Table 3 uses these rates to calculate the product costs. The total costs for Polynesian Fantasy and Vanilla are $9.07 and $4.64 respectively. Table 2 New System—Calculate cost drivers Activity Budgeted Cost Activity cost driver Budgeted activity Cost driver rate Purchasing $80,000 Purchase orders 909 $88.01 Material handling 95,000 Setups 1,846 51.46 Blending 122,000 Blender hrs 1,000 122.00 Freezing 175,000 Freezer hrs 1,936 90.39 Packaging 110,000 Packaging machine hrs 1,100 100.00 Quality control 18,000 Batches 286 62.94 Total mfg OH cost 600,000 Table 3 New System—Calculate product costs Polynesian Fantasy Vanilla Purchasing (2,000/50) = 40 $3,520.40 (100,000/1,000) = 100 $8,801.00 Material handling 3 * (2,000/100) = 60 3,087.76 3 * (100,000/2,500) = 120 6,175.20 Blending (36 min * 20) ÷ 60= 12 1,464.00 (18 min * 1,000) ÷ 60 = 300 36,600.00 Freezing 1 hr * 20 = 20 1,807.85 1 hr * 1,000 = 1,000 90,390.00 Packaging (18 min * 20) ÷ 60 = 6 600.00 (12 min * 1,000) ÷ 60 = 200 20,000.00 Quality control (2,000/100) = 20 1,258.80 (100,000/2,500) = 40 2,517.60 TOTAL OH $11,738.7 6 TOTAL OH $164,488.8 0 2,000 gallons 100,000 gallons TOTAL OH per gallon 5.87 TOTAL OH per gallon 1.64 DM 2.00 1.80 DL 1.20 1.20 Total cost per gallon $9.07 Total cost per gallon $4.64 Question 2 Cost system designs have no effect on real product costs—whatever those real costs are is not affected by what the cost accountants are doing. However, there is a material difference between the costs revealed by the two cost models. Will's understanding of reality would improve materially if he adopted the new cost system. The new cost system is a better cost model. The differing cost effects of machine times and batch sizes are averaged out in the old system. Until and unless operating decisions are changed, the effect on total company profits of switching to the new cost system would be zero. All the differences at the product level even out in the aggregate. 14

15. 15. ©2007 McGraw-Hill/Irwin Chapter 18 Question 3 With the new insights from a better cost system, Will might usefully take any of a number of actions, affecting such areas as cost system design, product offerings, prices and promotions, product designs, and manufacturing processes (e.g., batch sizes). Case 18-4: Safety Monitoring Devices, Inc* Note: This case is new in the Twelfth Edition. Purpose of Case This case describes a standard, but simplified, activity-based costing situation. Students are asked to calculate the costs of two products using three different cost systems and then to explain both the differences between the systems and possible implications. Suggested Assignment Questions 1. Calculate the full cost per unit of ODD and TGD using: a. The existing costing method b. Greg's proposed ABC method c. 2. Greg and Lourdes also considered an "in-between method" that they would hold in their "back pocket" just in case they'd fail to convince Richard and Mark to adopt the ABC method. The "in- between method" proposes to allocate overhead costs based on 2 drivers only (direct material cost and machine hours), as shown in Table TN-1: Table TN-1 Proposed Overhead Cost Allocation Bases for the "In-Between Method" Corporate Suggested Allocation Base: R&D $300,000 Machine Hours Marketing 380,000 Machine Hours General Administration 750,000 Machine Hours Total Corporate Overhead Costs $1,430,00 0 Manufacturing Purchasing $120,000 DM$ Materials Handling 125,000 DM$ Machine Setup 180,000 Machine Hours Supervision 225,000 Machine Hours Quality Control 195,000 Machine Hours Packaging & Shipping 210,000 Machine Hours Machine Depreciation 165,000 Machine Hours * This teaching note was prepared by Kenneth A. Merchant based on notes from Wim A. Van der Stede. Copyright © by Kenneth A. Merchant. 15

16. 16. Accounting: Text and Cases 12e – Instructor's Manual Anthony/Hawkins/Merchant Plant (incl. Upkeep, Depreciation, Property Taxes, and Insurance) 240,000 Machine Hours Miscellaneous (e.g., indirect materials) 110,000 Machine Hours Total Manufacturing Overhead Costs $1,570,00 0 TOTAL COMPANY OVERHEAD $3,000,00 0 Using this information, compute the full cost per unit of ODD and TGD. 3. What are the effects, if any, of changing the company's costing method on: a. Individual product costs. b. Total company profits (assuming there are no changes in any operating decisions, such as prices and production volumes). If there are substantive differences, explain why they exist. If there are no differences, explain why they do not exist. 4. Could cost system limitations have been a cause of the requests Lourdes was receiving to discount ODDs back in 2001, which is when SMD was still a one-product, ODD-only company? 5. What were (a) Lourdes' and (b) Greg's motivations for wanting changes made to the cost system? 6. What should Richard do regarding the cost system alternatives? Question 1 A. existing cost method—use DL hrs to spread OH costs. [include corporate overhead...case says "spread the totality of all the overhead cost to products"] ♦ find total DL hrs for the entire production □ ODD: 25,000 units x 4 DL hrs/unit = 100,000 □ TGD: 12,500 units x 4 DL hrs/unit = 50,000 □ total DL hrs = 150,000 ♦ b) find OH rate □ total OH = 1,430K + 1,570K = 3,000,000 □ OH rate = total OH / total DL hrs = 20 per DL hour ♦ c) find full cost per unit ODD TGD DM (given) $ 88.00 $111.00 DL (given) 64.00 64.00 OH = DL hrs/unit x OH rate 80.00 80.00 full cost/unit $232.00 $255.00 B. proposed ABC method ♦ find rates for each cost to be allocated 16

17. 17. ©2007 McGraw-Hill/Irwin Chapter 18 Budgeted Driver Total driver Rate Corporate overhead R&D $300,000 Pr. type 5 Given $60,000.0 0 Marketing 380,000 Pr. type 2 Given 190,000.0 0 General Administration 750,000 Pr. Units 37,500 25k + 12.5k 20.00 Manufacturing overhead Purchasing 120,000 POs 300 90+210 400.00 Materials handling 125,000 Part #s 50 18+32 2,500.00 Machine set-up 180,000 Batches 120 24+96 1,500.00 Supervision 225,000 DL hrs. 150,000 25K*4+12.5*4 1.50 Quality control 195,000 Pr. Units 37,500 25k+12.5K 5.20 Packaging and shipping 210,000 Shipment s 400 80+320 525.00 Machine depreciation 165,000 M hrs. 137,500 25K*3+12.5K *5 1.20 Plant 240,000 Pr. Units 37,500 25.K*3 + 12K*5 6.40 Miscellaneous 110,000 M hrs. 137,500 25K + 12.5K 0.80 ♦ find total OH cost allocated to each ODD TGD Driver rate Driver units Allocated cost Driver units Allocated cost Total Corporate overhead R&D 60,000.00 1 60,000 4 240,000 300,00 0 Marketing 190,000.0 0 1 190,000 1 190,000 380,00 0 General Administration 20.00 25,000 500,000 12,500 250,000 750,00 0 17

18. 18. Accounting: Text and Cases 12e – Instructor's Manual Anthony/Hawkins/Merchant Manufacturing overhead Purchasing 400.00 90 36,000 210 84,000 120,00 0 Materials handling 2,500.00 18 45,000 32 80,000 125,00 0 Machine setup 1,500.00 24 36,000 96

144,000 180,00 0 Supervision 1.50 100,000 150,000 50,000 75,000 225,00 0 Quality control 5.20 25,000 130,000 12,500 65,000 195,00 0 Packaging & shipping 525.00 80 42,000 320 168,000 210,00 0 Machine depreciation 1.20 75,000 90,000 62,500 75,000 165,00 0 Plant 6.40 25,000 160,000 12,500 80,000 240,00 0 Miscellaneous 0.80 75,000 60,000 62,500 50,000 110,00 0 TOTAL $1,499,000 $1,501,000 Total cost per unit $59.96 $120.08 c) find full cost per unit ODD TGD DM $88.00 $111.00 DL 64.00 64.00 OH 59.96 120.08 (total allocated OH cost (from b)/production units Full cost/unit $211.96 $295.08 Question 2 in-between method = allocate OH cost using 2 drivers (DM & m hrs) a) find allocated OH cost per unit Total DM-based OH cost $ 245,000 Total DM$ 3,587,500 18

19. 19. ©2007 McGraw-Hill/Irwin Chapter 18 DM-based OH rate 0.07 per DM$ Total machine hour OH cost $2,755,000 Total machine hours 137,500 Machine hour-based OH rate 20.04 per MH ODD TGD Allocated DM-based OH/unit $6.01 $7.58 Allocated mhr-based OH/unit 60.11 100.18 Total allocated OH/unit $66.1 2 $107.7 6 b) find full cost per unit ODD TGD DM $88.00 $111.0 0 DL 64.00 64.00 OH 66.12 107.76 Full cost/unit $218.1 2 $282.7 6 Question 3 a) effects of changing costing method on individual product costs Changing the costing method does have material effects on product costs: ODD TGD Existing costing method $232.0 0 $255.0 0 Proposed ABC method 211.96 295.08 “In-between” method 218.12 282.76 The direct material and direct labor costs are identical in all systems. All the differences are in the assignment of overheads to products. The existing system, which lumps all overheads into a single cost pool, assigns overhead equally, despite the fact that production of the two products consumes quite different amounts of overhead. The proposed ABC system uses multiple cost pools, which better reflect the individual products’ consumption of overhead resources. Thus, ODD (the “simple” product) gets less overhead assigned to it, so full reported costs go down (-- 8.6%) relative to the old system. TGD (the “complex” product) is gets more overhead assigned to it, so its reported cost goes up (+15.7%). This is to be expected given this product’s small batch sizes, etc. This new understanding of costs should have material effects on some management decisions, such as pricing. b) effect on total company profits Total company profits are unaffected by the change in the cost accounting system, assuming no changes in any operating decisions, such as pricing and production volumes. The total overhead stays the same. It is just reported differently. Question 4 19
20. 20. Accounting: Text and Cases 12e – Instructor’s Manual Anthony/Hawkins/Merchant Could cost system limitations have been a cause of the requests Lourdes was receiving to discount ODDs back in 2001, which is when SMD was still a one-product, ODD-only company? Absolutely, yes. The new plant had overcapacity, the costs of which were fully allocated to the current production volumes, which were entirely the ODD product. In addition, development of TGDs had started, but TGD production had not yet begun. Thus, ODD ended up being burdened with these increased R&D overhead costs also. The solution to this problem at that time would not have been the introduction of an activity-based cost system because SMD was still a single-product company. The issue could have been resolved by taking the excess capacity out of the equation, such as by using “normal capacity” in the burden rate computations, as well as by not allocating R&D, at least not the R&D associated with TGD, to ODD. Question 5 Lourdes and Greg both had two concerns: better decision making and bigger bonuses. Lourdes was concerned that with better information she could make better pricing decisions and do better sales planning. Greg would have better information for making process improvements that would lead to cost reductions. The information might, for example, lead to production in larger batches and fewer shipments. Better decision making will lead to higher profits and larger bonuses. Question 6 What should Richard do? The strongest argument for change is that the ABC system will more accurately reflect the “true” product costs, allowing for better pricing. Specifically, it will allow the reduction of ODD prices without the sacrificing of margins. TGD prices can be increased. The system will also reveal the differential overhead consumption patterns of each of the products, thereby potentially generating insights for production alignment and process improvements. The new system might avoid the “death spiral.” This destructive phenomenon would occur because relatively more and more TGD would be sold. The business would get skewed toward the lower- margin product because of the distortion of the current costing method. Taken together, the improved decision making will lead to increased sales revenues and reduced costs, thus improving company competitiveness and profitability. But Richard might want to consider the “in-between” cost method. While it is not as accurate as the ABC method, the product cost data it provides are reasonably close to those of the ABC method, and it is a simpler system that would be easier to administer. 20
21. 21. ©2007 McGraw-Hill/Irwin Chapter 18 21
22. 22. Accounting: Text and Cases 12e – Instructor’s Manual Anthony/Hawkins/Merchant Exhibit TN-2 Customer Profitability Customer A Customer B Sales $ 103,000 $ 104,000 Cost of items purchased 85,000 85,000 Gross margin $ 18,000 $ 19,000 Number of cartons ordered 200 10,400 200 10,400 Number of cartons shipped, commercial freight 200 1,200 150 900 Number of desktop deliveries - - 25 5,500 Number of orders, manual 6 60 100 1,000 Number of line items, manual 60 240 180 720 orders Number of EDI orders 6 30 - - Average Accounts Receivable $ 9,000 900 $ 30,000 3,000 Customer Contribution (Loss) $ 5,170 $ (2,520) 6.1% –3.0% 22

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