

Refining a cost system: Belknap-Catlin LLC

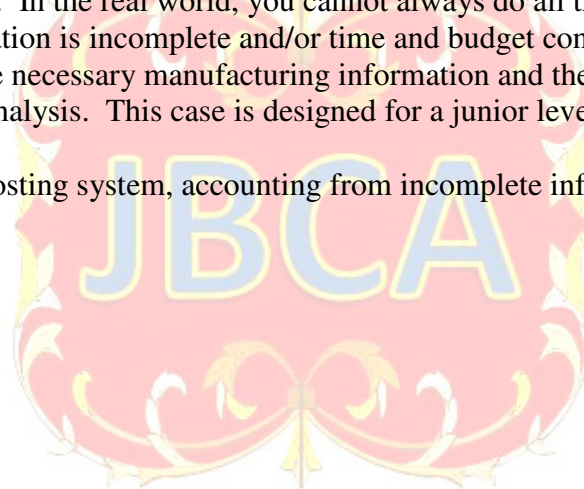
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ABSTRACT

This case introduces the student to practical real world product costing in an environment of incomplete information. Belknap-Catlin LLC is a manufacturer of single use testing devices used in the automotive industry. The company has launched a new product, its sales are good, its costs, based on the company's traditional costing system seem low. Yet overall profitability has declined. The company needs better costing information. Cost Accountant Maggie wants to perform Activity Based Costing analysis but realizes, within the time and budget constraints she faces, that is not possible. In the real world, you cannot always do all the analysis you would like to do – often information is incomplete and/or time and budget constraints interfere. Maggie proceeds by gathering the necessary manufacturing information and then performs a more refined product costing analysis. This case is designed for a junior level cost accounting course.

Key Terms: Refining a costing system, accounting from incomplete information



CLASSROOM USE

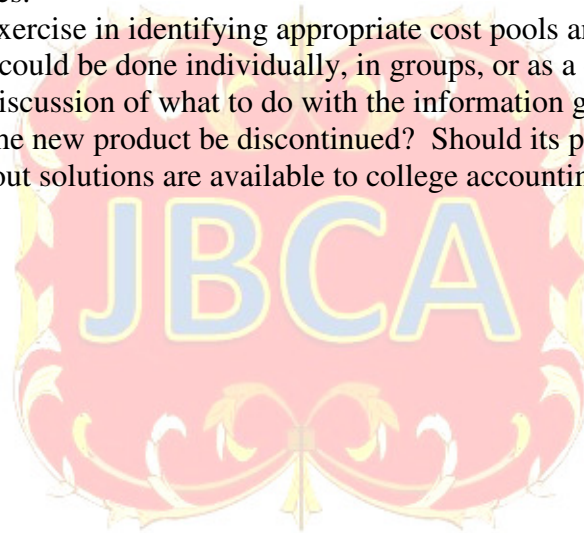
This case is appropriate for students in a cost accounting course as well as students taking introduction to management accounting. The course should be utilized after covering job costing and activity based costing.

Learning objectives include:

- Students will gain an understanding of practical aspects of refining a costing system.
- Students will learn how to solve problems and work with incomplete information.

This is a versatile case which can be used in one or more class sessions. The case could be used in the following manners:

- 1) As a relatively easy product cost problem. The student has sufficient information to calculate product costs using the company's existing single plant-wide allocation method – direct labor hours. Students also have sufficient information to use machine hours as an alternative single plant-wide allocation basis.
- 2) As a more involved refined product costing problem. Using multiple cost pools and multiple cost drives.
- 3) As a conceptual exercise in identifying appropriate cost pools and the related drivers of those costs. This could be done individually, in groups, or as a class.
- 4) As a conceptual discussion of what to do with the information gathered from the refined costing. Should the new product be discontinued? Should its price be increased? Etc. Detailed worked out solutions are available to college accounting instructors.



CASE BODY

Belknap-Catlin LLC is a manufacturer of single use electronic testing devices used in the automotive industry. The company has been in business for several years and is well regarded in its field. Recently the company has faced increased competition both domestically and internationally. The company's existing product offerings are under pricing pressure which has reduced its operating margins. In response, the company has expanded its product line into an even more high tech testing device. Its newest product TPB, is a top of the line offering.

Projections for the new product were modest as the company was introducing an entirely new product, not just new to them but new to the market. The new product – TPB has exceeded sales expectations and the marketing and sales functions of the company are very happy with the results. Selling at \$ 1,800 per unit, the new product is by far the highest margin product in company history. TPB's price was based on production cost estimates. However, Plank (2018) cautions that new products can be mispriced if based on simplified and inadequate costing systems. The launch of the new product has also increased customer interest in the company's other products with sales on a slight upturn, a phenomenon observed by Wan, Evers and Dresner (2012).

Surprisingly however, overall company profitability has declined. This has led to heated debate within the ranks of company management. The company has long utilized a relatively simple costing system. Chwastyk and Kolosowski (2014) observe that good costing is especially important with new products while Zachariassen and Liempd (2011) find a high cost associated with poor quality data. The company's existing costing system allocates manufacturing overhead to product lines based on direct labor hours. This system seems to have worked reasonable well in past as the company's products were all relatively similar with respect to manufacturing inputs. The manufacture of the new product utilizes more specialized inputs: specialized materials, outside labor, and more quality control testing among others. Additionally, since the new product is lower volume it requires more setups and production runs. Cooper and Kaplan (1988) in their seminal work conclude that as conditions change, or new products or new services are introduced, cost accounting systems need to change to keep pace.

Company CFO Sadie would like to implement an Activity Based Costing (ABC) system. Sadie has heard good things about ABC and is increasingly convinced of the need to get better product line costing data. Cagwin and Bouwman (2002) find not only better cost estimates with ABC, but also better overall financial performance. Sadie assigns the task to Maggie a recent college graduate and new cost accountant with the company.

Maggie enthusiastically takes on the project. She has recently passed the Certified Management Exam and is anxious to show her new employer what she can do. Maggie begins the project by reviewing existing cost reports and quarterly financial statements. Very quickly Maggie's enthusiasm turns to disappointment as she realizes the company does not accumulate cost information by activity and further that there was no way she could acquire such information given the time and budget constraints she faced. This has been observed by Soekardan (2016) that information limitations can inhibit the adoption of ABC. Maggie's other work responsibilities will not allow sufficient time to perform a full-fledged ABC analysis, she must work with the information she has. At a minimum Maggie believes that allocating overhead based on Machine Hours is warranted as the company's manufacturing operations have grown increasingly machine intensive. Though Maggie was able to identify the major activities associated with the manufacture of the products she has not been able to come up with

reasonable estimates for the costs of those activities. What Maggie did have was the manufacturing expenses section of the general ledger. The general ledger is a good starting point under such circumstances (Roztocki, Porter, Thomas & Needy, 2004).

Maggie was able to gather other pertinent information. It is as follows:

The four Products are X1, X2, LC1 and TPB. X1, X2, and LC1 are all high volume low cost models while TPB requires special materials, additional labor and is more machine intensive. Additionally, TPB's lower volume requires additional machine set ups and its greater complexity require additional quality control tests. The other products are maintaining good sales volumes. Exhibit 1 includes information about units produced, direct labor hours, machine hours, and inventory held at the end of the period. Note units produced and units sold are assumed to be equal.

All units are essentially the same with respect to materials, excluding special materials. Special materials belong to TPB 90 % and LC1 10 %. Indirect Materials require reclassification, they relate to machine supplies. Labor other is outside labor and relates to TPB only. All direct labor is paid at the same rate. Security primarily guards the facilities. Indirect labor and benefits relate to Direct Labor fab & assembly. Machine and equipment costs are related to machine hours. Occupancy costs relate to the manufacturing plant. Exhibit 2 lists information related to Quality testing and the number of setups.

All units are produced in the common production area. Common production area comprises 60 % of square footage. TPB final assembly occupies 20 % of plant's square footage. The remainder of plant is unoccupied. No allocations are made for excess capacity.

Real Estate taxes and General Insurance relate to the plant. Personal Property Taxes are assessed on equipment. Quality Control costs are dependent upon quality tests. Packaging and Shipping costs do not vary among units. Outside storage costs and warehouse expenses are incurred to store inventory.

Exhibit 3 is the general ledger – manufacturing expenses.

CASE REQUIREMENTS

- 1) Allocate overhead using Belknap-Catlin's traditional method using direct labor as the allocation base.
- 2) Determine the total and per unit cost of manufacturing all four products using direct labor as the manufacturing overhead allocation base.
- 3) Allocate overhead using machine hours.
- 4) Determine the total and per unit cost of manufacturing all four products using machine hours as the manufacturing overhead allocation base.
- 5) Determine appropriate cost pools for a refined costing system.
- 6) Identify appropriate cost allocation bases for all cost pools.
- 7) Determine the total and per unit cost of manufacturing all four products using the refined costing method to allocate all costs.
- 8) Compare results from the three costing methods. Why do they differ? Which method will likely yield the most accurate cost estimates?
- 9) Based on results of the cost analysis, what do you recommend the company do with the new product?

APPENDIX

Exhibit 1 Unit Information

	Units	Direct Labor Hours	Machine Hours	Inventory Units %	Inventory Value %
X1	8,000	16,000	2,000	15	8
X2	16,000	30,000	8,000	60	36
LC1	5,000	11,000	3,750	15	16
TPB	1,000	2,400	1,000	10	40
Total	30,000	59,400	14,750	100	100

Exhibit 2 Other Information

	Quality Tests	# of Set Ups
TPB	50 %	30
All Others	50 %	80

Exhibit 3: General Ledger – Manufacturing Expenses

Direct Materials			
5000	Materials – Fabrication	3,250,000	
5100	Materials – Assembly	360,000	
5105	Materials – Special	850,000	
5150	Materials – Indirect	<u>65,000</u>	
			4,525,000
Direct Labor			
5200	Labor – Fabrication	450,000	
5300	Labor – Assembly	1,250,000	
5350	Labor – Other	225,000	
5360	Labor – Warehouse	<u>120,000</u>	
			2,045,000
Indirect Labor & Benefits			
5400	Supervision	600,000	
5500	Labor – Security	300,000	
5550	Labor – Overtime	80,000	
5600	Health Insurance	290,000	

5601	Life Insurance	85,000	
5604	Short Term Disability Insurance	75,000	
5605	Long Term Disability Insurance	30,000	
5700	Payroll Taxes – FICA	205,000	
5710	Payroll Taxes – FUTA	19,000	
5711	Payroll Taxes – State Unemployment	<u>160,000</u>	
			1,844,000
	Machine and Equipment Costs		
5750	Equipment Depreciation	1,850,000	
5755	Equipment Leases	640,000	
5760	Equipment Repairs	320,000	
5761	Equipment Maintenance	265,000	
5780	Supplies	135,000	
5790	Heat and Power	980,000	
5795	Water	<u>220,000</u>	
			4,410,000
	Occupancy Costs		
5800	Building Rental	720,000	
5820	Building Depreciation	665,000	
5850	Building Repairs	180,000	
5860	Building Maintenance	166,000	
5861	Cleaning and Supplies	<u>80,000</u>	
			1,811,000
	Other and Miscellaneous		
5900	Taxes – Real Property	650,000	
5901	Taxes – Personal Property	160,000	
5940	Insurance – General	800,000	
5960	Quality Control Costs	480,000	
5970	Packaging and Shipping	1,420,000	
5980	Set Up Costs	420,000	
5985	Outside Storage Costs	160,000	
5986	Cafeteria Costs	400,000	
5990	Training Costs	<u>200,000</u>	
			4,690,000
			<u>19,325,000</u>
	Total Manufacturing Expenses		<u>19,325,000</u>

REFERENCES

- Cagwina, D. and Bouwmanb, M. (2002). The association between activity-based costing and improvement in financial performance. *Management Accounting Research* Volume 13, Issue 1, March 2002, Pages 1-39.
- Chwastyk, P. and Kołosowski, M. (2014) Estimating the Cost of the New Product in Development Process. *Procedia Engineering* 69 (2014) Pages 351–360.
- Cooper, R., & Kaplan, R. S. (1988). Measure costs right: make the right decisions. *Harvard business review*, 66(5), 96-103.
- Haug, A., Zachariassen, F., & Liempd, D. (2011). The costs of poor data quality. *Journal of Industrial Engineering and Management*, 4(2), 168-193.
- Plank P. (2018) Price and Product-Mix Decisions Under Different Cost Systems. *Quantitatives Controlling*. Wiesbaden, Springer Gabler.
- Roztock, N., Porter, D, Thomas, R and Needy, K (2004). A Procedure for Smooth Implementation of Activity-Based Costing in Small Companies. *Engineering Management Journal* Vol. 16, Iss. 4, 2004 Pages 19-27.
- Soekardan, D (2016). An Analysis Of Activity Based Costing: Between Benefit And Cost For Its Implementation. *International Journal of Scientific & Technology Research* Volume 5, Issue 6 Pages 334-339.
- Wan, X., Evers, P. and Dresner M (2012) Too much of a good thing: The impact of product variety on operations and sales performance. *Journal of Operations Management* Volume 30, Issue 4, May 2012, Pages 316-324.

