



HUMBLE PIES

2014 AICPA Accounting Competition –
Management Accounting

Management Accounting Case Study: An Interactive CGMA Business Game

Solution



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2014 AICPA Accounting Case Competition: Linda's Pies (A Solution)

Round 1: Costing System Recommendation

Executive summary:

1. What information does LP need?

- LP competes through a differentiation strategy based on high quality candy, flavors and packaging.
- Because of its differentiation strategy, LP needs a cost system that can easily handle many different types of pies for decisions relating to pricing, product offerings, and special orders.
- Because all pies go through essentially the same production processes, the cost system does not need to track the specific labor and overhead per individual pie or even order.
- Overall, the cost system needs to provide accurate product costs for specific orders and different types of pies within a wide variety of product combinations.

2. Which general costing approach do you recommend?

a. Pros and cons of the different costing approaches.

Job costing best captures the unique aspects of each job (especially the special ingredients or flavor additives) and provides the most accurate cost per job. On the other hand, it would require separate record-keeping for each job/order for all ingredients, labor, and overhead; even though labor & overhead tend to be about the same for each pie.

Process costing would work well for labor and overhead as these cost are about the same for each pie; probably the easiest and cheapest costing method for LP. However, it would not capture the unique costs of special ingredients or different pie sizes for each order.

Operation costing would use job costing to track the unique costs of each order (esp. special ingredients) and process costing to track labor and overhead as these costs are similar for each pie. On the downside, it might be less accurate than job order costing for labor and overhead costs; it would also be more complex than either job or process costing alone because it requires the use of both methods.

Activity-based costing provides the most accurate assignment of overhead costs to products assuming appropriate activity cost pools and drivers are chosen. However, LP would still need to use job, process, or operation costing to account for direct costs. Using ABC would probably be the most complex costing approach for LP to set up and maintain. There may not be enough diversity in activities among products to justify the use of ABC.

b. Which approach do you recommend for *direct costs*? How would you assign indirect costs to products?

Direct costs: More than one viable answer is possible here. The key point is to address the pros and cons of each potential method and support the recommended approach. A simple operation costing approach may be the most viable costing approach for direct costs at LP.

- All pies go through essentially the same production processes but the pie size, ingredients, flavors, and ingredient additives often vary by batch. Operation costing would treat the labor and overhead as homogenous costs by process area using process costing. The cost of ingredients and any special additives would be identified by order or batch using job costing.

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Indirect costs: LP probably does not have the staff or information systems to implement ABC at this time. Perhaps LP could at least track overhead costs by process area to allocate it more accurately than using a simple plantwide rate. In the future, as the company grows, perhaps a simple ABC model could be added to improve the accuracy of overhead cost assignment.

- c. **Product verses period costs.** For accounting purposes, product costs include those costs necessary to make the product (i.e., direct materials, direct labor, and factory overhead). However, for decision making, management can assign any cost to the product that can be traced directly to the product. In this case, with the possible exception of broker's commissions, LP may want stick with assigning DM, DL, and FOH as product costs as follows:

| Cost Category | Product | Period |
|--|------------------|-----------------|
| Raw Materials | \$327,934 | 0 |
| Bakery labor | 158,767 | 0 |
| Administration Salaries (incl. taxes and benefits) | 41,367 | 0 |
| Supplies (e.g., spices, spoons, packaging) | 3,833 | 0 |
| Freight & Shipping-In | 4,907 | 0 |
| Freight & Shipping-Out | 64,707 | 0 |
| Utilities Electricity | 9,813 | 0 |
| Utilities Gas (ovens) | 3,067 | 0 |
| Water | 920 | 0 |
| Repairs & Maintenance | 4,293 | 0 |
| Rent expense (Building; 85% production, 15% admin) | 16,292 | 2,875 |
| Telephone & Internet (administrative) | 0 | 2,300 |
| CEO salary | 0 | 25,300 |
| Brokers' commissions (4% of sales) | 0 | 30,667 |
| Total Expenses | \$635,900 | \$61,142 |

| Cost Category | Track by: | Assign to Products: |
|--|---|---|
| Raw Materials | By product type (average cost) | Standard cost |
| Bakery labor: 1. Production (incl. mix, pour, bake, freeze) 2. Decoration & Packaging 3. Support (sanitation, warehouse, or other) | <u>By operation:</u> By batch or product type By specific job As "Support labor" | Direct cost per unit Direct cost per unit Based on weight or labor hrs |
| Supplies (e.g., spices, spoons, etc) 1. Production (incl. mix, pour, bake, freeze) 2. Packaging (incl. decorating) 3. Support (sanitation and warehouse) | <u>By operation:</u> "Production supplies" "Packaging supplies" "Support supplies" | Based on production hours Based on packaging hours Based on weight or labor hrs |

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| Cost Category | Track by: | Assign to Products: |
|---------------------------------------|------------------------------------|------------------------------|
| Other Overhead Costs: | | |
| 1. Freight & Shipping-In | Assign to raw materials cost | Based on materials cost |
| 2. Gas & Electric (Dishwasher, ovens) | | Based on weight or labor hrs |
| 3. Rent expense | Separate into Production vs. Admin | Based on weight or labor hrs |
| 4. Repairs & Maintenance | | Based on weight or labor hrs |
| 5. Utilities | Separate into Production vs. Admin | Based on weight or labor hrs |
| 6. Water | | Based on weight or labor hrs |

3. How to collect the information:

- a. **Labor costs.** Create a simple log sheet for each labor area indicating the worker's name, date, and hours worked, and total pies completed. These logs would be totaled at the end of each month and an average cost per pie computed for each area.
- b. **Supplies and other overhead costs.** Create a separate log sheet to track indirect materials, supplies, and other overhead costs by area. These logs would also be totaled at the end of each month and an average cost per pie computed for each area.
- c. **Flavors and Ingredients.** Develop a job cost sheet to track flavor additives and ingredient costs by job or order. The costs of flavor additives might be added to overhead costs and allocated to the pies whereas ingredients could be included with direct costs and traced to each order.

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Round 2: Evaluate Two Investment Opportunities

Option 1: Fast Food Chain

The fast food chain offer guarantees a 3-year agreement with the possibility of extension depending on the success of the agreement. As the following analysis shows, the agreement is estimated to increase profits by \$495K for the 3-year contract (ROI 33%). If the agreement is extended to 6 years, profits will increase by \$990K (ROI per year 33%). Linda's Pies currently has an annual ROI of 10.3%*. Thus, the fast food chain order would increase both profits and ROI for LP even if only for 3 years.

* LP's current ROI = $(\$47,346 \times 12 \text{ mos.}) \div \$5.5 \text{ million operating assets} = 10.3\%$

| | | |
|------------------------|-------------|-------------|
| Price/unit | \$1.50 | \$1.50 |
| volume | 2,200,000 | 4,400,000 |
| Investment | \$500,000 | \$500,000 |
| Margin %: | 15% | 15% |
| Time frame (months): | 36 | 72 |
| Incremental Revenues | \$3,300,000 | \$6,600,000 |
| Incremental Costs | \$2,805,000 | \$5,610,000 |
| Incremental Profit | \$495,000 | \$990,000 |
| Incr. Profit/year | \$165,000 | \$165,000 |
| ROI (per year) | 33.0% | 33.0% |
| Payback period (years) | 3.03 | 3.03 |

Option 2: Labelling machine

The labelling machine option provides both labor savings per month plus additional throughput. As the following analysis shows, this option is estimated to increase profits by \$1 million for the 5-year estimated life of the machine (ROI per year 40%). If the machine life is extended, profits will increase by approximately \$200,000 per year. Linda's Pies currently has an annual ROI of 10.3% (see above). Thus, the labelling machine would increase both profits and ROI for LP for at least 5 years and maybe longer.

| | | |
|--------------------------|-------------|-------------|
| Savings per month | \$14,500 | \$14,500 |
| Additional throughput/mo | \$13,000 | \$13,000 |
| Investment | \$500,000 | \$500,000 |
| Markup %: | 20% | 20% |
| Time frame (months): | 60 | 72 |
| Incremental Savings | \$870,000 | \$1,044,000 |
| Incremental Revenues | \$780,000 | \$936,000 |
| Incremental Costs | \$650,000 | \$780,000 |
| Incremental Profit | \$1,000,000 | \$1,200,000 |
| Incr. Profit/year | \$200,000 | \$200,000 |
| ROI (per year) | 40.0% | 40.0% |
| Payback period (years) | 2.50 | 2.50 |

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Profitability and ROI:

- Both options would be profitable for LP and increase ROI. Ideally, it would be nice if LP could implement both options.
- If LP is only able to implement one option at this time, the labelling machine provides a 40% ROI versus only 33% for the fast food chain option's 3-year contract. If the contract is extended beyond the useful life of the labelling machine, however, it may be more profitable in the long run.

Strategic, technical, behavioral, and risk factors: There are several other factors that LP needs to consider here, including the following:

- Strategic factors:
 - Will the fast food chain be reliable for the contract? Will they change prices after 3 years?
 - Can we negotiate with the fast food management?
 - Will the fast food chain offer affect relationships with our other customers? Will they expect reduced prices?
 - Which option helps or hurts our long-term strategic plans?
 - Will the fast food option lead to other fast food chain opportunities?
 - Will the labelling machine option lead to new product opportunities?
 - Will the labelling machine affect how our target customers will perceive us?
 - Will be able to maintain high quality with the fast food option?
 - Will be able to maintain high quality with the labelling machine option?
- Technical factors:
 - Will LP have to share proprietary information (e.g., recipe, production methods, etc.) with the fast food chain?
 - Will the labelling machine be reliable? Will it require higher maintenance costs?
- Behavioral factors:
 - Conflicts can arise between management incentives and company goals. Are there incentive differences between the two options?
 - Will the fast food contract lead to less motivation to innovate or find new market outlets than if the labelling machine option is taken?
- Risk factors:
 - How likely is the fast food agreement likely to be extended?
 - Is the fast food chain going to be successful during the agreement? Is LP at risk if the fast food chain experiences lower customer volume?
 - Will the labelling machine last the full five years?
 - Payback period is shorter for the labelling machine (2.5 years) than for the fast food option (3.0 years).
 - How confident are we that the labelling machine will save an estimated \$14,500 per month in labor cost and increase throughput by \$13,000 revenues per month?
- Recommendation: More than one viable answer is possible here. The key point is to address the pros and cons of each option and support the recommended action.

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Round 3: Evaluate Two Strategic Alternatives

1. Pete's Steakhouse:

- See analysis on p. 8. Treats 2012 as "Budget" and 2013 as "Actual." Flexible budget based on 2013 customer volume and 2012 price and variable costs per meal.
- A higher average price/meal (\$9.87 vs. 9.51) had a favorable impact of \$386K with a lower sales volume unfavorable impact of \$74.5K.
- There may be cost control issues. Variable costs in 2013 were \$299K unfavorable and fixed operating costs \$19K unfavorable.
- Assuming that the average price/meal increases 12% with Linda's Pies, operating profit for Pete's will increase to \$1,172K, resulting in an ROI of 11.7%, residual income of \$372K, and a payback of 8.5 years.

2. Knoxville factory.

- See analysis on p. 9. Uses May 2014 as guide for fixed costs per month and variable costs as a percentage of sales.
- Year 2015 for the new factory shows an operating loss of (\$280K) and ROI of -2.8%.
- The new factory barely becomes profitable in 2016 (\$45K). In 2017, projected operating income is almost \$700K but ROI is only 7% and residual income shows an economic loss of (\$101K).
- Based on 2017 estimated results, operating profit for LP will increase by almost \$700K per year but ROI and residual income will decline. Payback is 14.3 years (plus 2 years = 16.3 years).

3. Strategic, technical, behavioral, and risk factors: There are several other factors that LP needs to consider here, including the following:

- Strategic factors:
 - Will the Pete's business be reliable for the foreseeable future?
 - Can we negotiate with the Pete's management?
 - Will Pete's Steakhouse business affect relationships with our other customers?
 - Which option helps or hurts our long-term strategic plans?
 - Will the Pete's option lead to other Pete's chain opportunities?
 - Are we able to operate a restaurant chain? Our expertise is wholesale foods.
 - Will the new factory's target customers perceive us differently?
 - Will we be able to maintain high quality with the Pete's option?
 - Will be able to maintain high quality with the Knoxville factory option?
- Technical factors:
 - Will LP have to share proprietary information (e.g., recipe, production methods, etc.) with the Pete's restaurant chain?
 - Can Pete's management team operate the chain for us?
 - Will the new factory be reliable? Will it require higher maintenance costs?
- Behavioral factors:
 - If Pete's management team runs the restaurant chain for us, what incentives are necessary?
 - Will the Pete's contract lead to less motivation to innovate or find new market outlets than if the Knoxville factory option is taken?

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- Risk factors:
 - How likely is the new Pete's Steakhouse average price/meal assumption?
 - Is demand for Pete's Steakhouse going to be strong during the next 10 years? Is LP at risk if Pete's experiences lower customer volume?
 - Will the Knoxville Factory business increase as estimated? How long?
 - Payback period is much shorter for the Pete's option (8.5 years) than for the new factory option (16.3 years).

Recommendation:

- There are significant risks for both options. Could go either way.
- Pete's Steakhouse option is much more profitable in the near future, but can Linda's Pies operate a restaurant chain successfully? May need Pete's management team to run the chain for us.
- The Knoxville Factory option is less profitable in the short term, but perhaps in the long-term it will double the current business. We are already familiar and successful with this business.

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Option 1: Pete's Steakhouse

Profit performance analysis:

| | <u>2013 Actual</u> | <u>Price / Spending</u> | <u>Flex. Budget</u> | <u>Sales Volume</u> | <u>Budget (2012 Actual)</u> | <u>Per unit</u> |
|---------------------|--------------------|-----------------------------|---------------------|-------------------------|---------------------------------|-----------------|
| Customer volume | 1,066,000 | | 1,066,000 | | 1,105,000 | |
| Net sales | \$10,523,440 | \$385,809 | \$10,137,631 | (\$370,889) | \$10,508,520 | \$9.51 |
| Variable costs: | | | | | | |
| Food | 6,340,206 | (\$202,002) | \$6,138,204 | \$224,568 | 6,362,772 | \$5.76 |
| Labor | 696,612 | (\$20,994) | \$675,618 | 24,718 | 700,336 | \$0.63 |
| Other Op Exp | 1,362,399 | (\$75,770) | \$1,286,629 | 47,072 | 1,333,701 | \$1.21 |
| Total Var. Costs | <u>8,399,217</u> | <u>(\$298,766)</u> | <u>8,100,451</u> | <u>296,358</u> | <u>8,396,809</u> | <u>\$7.60</u> |
| Contribution Margin | 2,124,223 | \$87,043 | 2,037,180 | (74,531) | 2,111,711 | <u>\$1.91</u> |
| Fixed Costs: | | | | | | |
| Labor | 298,548 | \$1,596 | 300,144 | \$0 | 300,144 | |
| Other Op Exp | 908,266 | (\$19,132) | 889,134 | \$0 | 889,134 | |
| Total Fixed Costs | <u>1,206,814</u> | <u>(\$17,536)</u> | <u>1,189,278</u> | <u>\$0</u> | <u>1,189,278</u> | |
| Operating Profit | <u>\$917,409</u> | <u>\$69,507</u> | <u>\$847,902</u> | <u>(\$74,531)</u> | <u>\$922,433</u> | |
| Average price/meal | \$9.87 | | \$9.51 | | \$9.51 | |

Estimated 2014 (with Linda's Pies):

| | |
|------------------------|--------------------|
| Increased price/meal | 12% |
| Revised price/meal | \$11.06 |
| Net sales | \$11,786,253 |
| Variable costs: | |
| Food | 7,101,031 |
| Labor | 780,206 |
| Other Op Exp | <u>1,525,887</u> |
| Total Variable Costs | <u>9,407,123</u> |
| Contribution Margin | 2,379,129 |
| Fixed Costs: | |
| Labor | 298,548 |
| Other Op Exp | <u>908,266</u> |
| Total Fixed Costs | <u>1,206,814</u> |
| Operating Profit | <u>\$1,172,315</u> |
| Investment Required | \$10,000,000 |
| Margin | 9.9% |
| Turnover | 1.2 |
| ROI | 11.7% |
| Residual Income | \$372,315 |
| Payback Period (years) | 8.5 |

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Option 2: Knoxville Factory

| <u>Cost Category</u> | <u>Current LP</u> <u>May 2014</u> | <u>Current LP</u> | <u>Knox.</u> <u>Factory</u> <u>2015</u> | <u>Knox.</u> <u>Factory</u> <u>2015</u> | <u>Knox.</u> <u>Factory</u> <u>2016</u> | <u>Knox.</u> <u>Factory</u> <u>2016</u> | <u>Knox.</u> <u>Factory</u> <u>2017</u> | <u>Knox.</u> <u>Factory</u> <u>2017</u> |
|--------------------------|--------------------------------------|-------------------|---|---|---|---|---|---|
| Sales | \$766,667 | 100.00% | \$4,000,000 | 100.00% | \$6,000,000 | 100.00% | \$10,000,000 | 100.00% |
| Less Cost of Goods Sold: | | | | | | | | |
| Variable mfg costs | \$551,948 | 71.99% | \$2,879,727 | 71.99% | \$4,319,591 | 71.99% | \$7,199,319 | 71.99% |
| Fixed mfg costs | \$83,952 | 10.95% | \$1,007,423 | 25.19% | \$1,007,423 | 16.79% | \$1,007,423 | 10.07% |
| Total Cost of Goods Sold | 635,900 | 82.94% | 3,887,151 | 97.18% | 5,327,015 | 88.78% | 8,206,742 | 82.07% |
| Gross Margin | 130,767 | 17.06% | 112,849 | 2.82% | 672,985 | 11.22% | 1,793,258 | 17.93% |
| Less S&A costs: | | | | | | | | |
| Variable | \$30,667 | 4.00% | \$160,002 | 4.00% | \$240,003 | 4.00% | \$400,004 | 4.00% |
| Fixed | \$30,475 | 3.98% | \$365,701 | 9.14% | \$365,701 | 6.10% | \$365,701 | 3.66% |
| Total S&A costs | \$61,142 | 7.98% | \$525,702 | 13.14% | \$605,703 | 10.10% | \$765,705 | 7.66% |
| Operating Profit | \$69,625 | 9.08% | (412,853) | -10.32% | \$67,282 | 1.12% | \$1,027,553 | 10.28% |
| Income Tax | 22,280 | 2.91% | (132,113) | -3.30% | 21,530 | 0.36% | 328,817 | 3.29% |
| Net operating income | \$47,345 | 6.18% | (280,740) | -7.02% | \$45,752 | 0.76% | \$698,736 | 6.99% |
| <u>Other Data:</u> | | | | | | | | |
| Unit volume | 64,500 | | 336,522 | | 504,782 | | 841,304 | |
| Average operating assets | \$5,500,000 | | \$10,000,000 | | \$10,000,000 | | \$10,000,000 | |
| Min. Rate of Return | 8.00% | | 8.00% | | 8.00% | | 8.00% | |
| Average price/pie | \$11.89 | | \$11.89 | | \$11.89 | | \$11.89 | |
| Margin | 6.2% | | -7.0% | | 0.8% | | 7.0% | |
| Turnover | 1.7 | | 0.4 | | 0.6 | | 1.0 | |
| ROI | 10.3% | | -2.8% | | 0.5% | | 7.0% | |
| Residual Income | \$128,140 | | (\$1,080,740) | | (\$754,248) | | (\$101,264) | |
| Payback Period (years) | | | | | | | 14.31 | |