

Using a Practical Case to Introduce and Apply Managerial Accounting Cost Concepts

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Understanding cost concepts and their practical application is a fundamental requirement of managerial accounting. To facilitate learning, this case provides students with a simple and practical active learning activity. The case allows students to experience decision making involving various cost concepts. It was developed for use either as a complement to in-class activities or as a standalone assignment. The case challenges students to think beyond the manufacturing environment by exploring the application of cost concepts for a small private service company. Classroom testing indicates that students found the case to be appropriately challenging, and required them to think critically.

INTRODUCTION

Many managerial accounting textbooks introduce definitions of cost concepts within the first several chapters. Examples include Garrison, Noreen, Brewer, (2015); Hilton and Platt (2014); Horngren, Sundem, Burgstahler, Schatzberg (2014); and Weygandt, Kimmel and Kieso (2014). The placement of cost concepts in the introductory phase of the course highlights the importance of understanding these key concepts early in the learning process. Students' success in managerial accounting depends on their ability to understand various types of costs and how cost-behavior impacts decision making. While it is important to gain a theoretical understanding of cost concepts, it is more impactful when students can develop a deeper, practical understanding by becoming actively engaged. The Accounting Education Change Commission (AECC) stressed the need to implement teaching approaches that incorporate active learning (AECC, 1990 and 1992).

The goal of this case study is to provide a learning experience for students that will increase their engagement, develop their understanding of cost concepts, and allow them to demonstrate their ability to apply their knowledge of cost concepts to a service-based company.

LITERATURE REVIEW

The use of case-based learning is one approach to enhance student engagement and their understanding of classroom concepts. Cases can simulate real-world situations (Weil, Oyelere, Yeoh, and Firer, 2001) and challenge students to develop problem-solving, decision-making, critical thinking and communication skills (Sawyer, Tomlinson and Maples, 2000). The challenge for accounting educators is

to abandon the traditional lecture-based approach and adopt more interactive learning methods. In particular, case studies help reduce the gap between theoretical classroom concepts and practice. Case based learning is well suited for teaching accounting as the practice of accounting is replete with situations that require critical thinking (Hassall, 2004; Healy and McCutcheon, 2010). This teaching method enhances the students' ability to remember information in context (Johnstone and Biggs, 1998).

Cases describing real life situations have been used in a wide variety of disciplines to help learners develop skills that are required for success outside of the classroom. Students should be challenged to do more than just memorize facts and definitions; they should be required to demonstrate higher levels of thinking. The AICPA's Core Competency Framework states in part that, "transferring knowledge from one situation to another" is a skill that students should possess (AICPA, 1999). Thus, this case contributes to the literature by examining cost concepts beyond the traditional manufacturing environment in an effort to challenge students to demonstrate their ability to transfer knowledge.

METHODOLOGY

The case was assigned to graduate students enrolled in a managerial accounting course at a regional university in the southwest. The graduate course is taken by master's students who may be majoring in accounting, management, marketing or finance. The class is a required three-credit course for all graduate programs. The case was distributed to the students after completing twelve weeks of course work. The students were allowed three weeks to complete the case. The students worked independently to complete the case and submitted their responses at the end of the semester.

The case is designed to be flexible and implemented in a manner that is consistent with course requirements. Suggested methods of implementation are discussed in a subsequent section, Implementation.

Case Material

Douglas and Pamela Frank are a married couple. They both worked for a railroad company for 30 years. At age 57, Douglas and age 52, Pamela retired and moved to the small town of Ovilla, TX, which has a population of approximately 3,500 residents. When the Franks moved to the town, they decided to start a child care business in their home called Nanna's House.

Nanna's House is licensed by the state. The state charges an annual fee of \$225 to maintain the license. Insurance is required at a cost of \$3,840 annually. The facility is licensed to care for a maximum of six children. The Franks charge a fee of \$800 per month for each child. The monthly fee is based on a full day of care, from 8:00 a.m. to 4:00 p.m. If additional time is required beyond 4:00 p.m., parents must pay an additional charge of \$15 per hour for each child. The couple provides two meals and a snack for the children. The cost of the meals and snack is \$3.20 per child per day. There are six children currently enrolled.

The facility is very nice. It is an 820 square foot addition to their home that was built in 1964. The Franks purchased the home and completed the renovations for \$79,500 and they believe the addition has a useful life of 25 years. The facility has a large open space for play, reading, and other activities. There is a section for sleeping which contains small cots. The facility is equipped with a small kitchen, two bathrooms and a small laundry area. The daycare increased the Franks' utility cost by \$50 each month.

During the first week of operations, the washer and dryer stopped working. Both appliances were old and had been used by the couple for many years. The old appliances cost a total of \$440. While a laundry room was not initially a necessity, it became increasingly important for laundering the soiled clothes of the children, blankets, and sheets. A company nearby, Red Oak Laundry and Dry Cleaning, can launder clothing for the Franks, including pick-up and delivery, for \$52 per month. Alternatively, the Franks can take clothes to the laundromat once a week, which is three miles away (one way). The applicable mileage rate is \$0.56/mile. They can launder the clothes themselves at a cost of \$8 per week. The self-service alternative does not include detergent or fabric sheets. The couple would need to purchase these items in order to use the laundromat. Purchasing laundry supplies in bulk from MegaMart would cost \$35 every

quarter. The final alternative is for the Franks to purchase a washer and dryer. The cost of the appliances is: washer \$420 and dryer \$380. The additional accessories for both appliances, needed for installation, cost \$43.72. The store will deliver the appliances at a total cost of \$35. The cost of installing the appliances is free. Both appliances are expected to last 8 years. According to the manufacturer the washer will increase energy costs by \$120 per year. The dryer will increase energy costs by \$145 per year.

The Franks need some assistance in decision making and evaluation. They have contacted Emily Smith, their accountant, to provide some advice.

Requirements

Respond to the following Case Discussion Questions to help Douglas and Pamela make their decisions.

Case Discussion Questions

(If necessary, the Franks will use straight line depreciation. For monthly calculations, use 4.33 weeks per month.)

1. Consider the different types of costs discussed in this course. List the costs discussed in the case and provide one specific example of each.

EXAMPLE.

Cost	Specific Example
Fixed cost	Annual license fee of \$225. The license fee does not change regardless of the couple's activities.

Note: You cannot use this specific example of a fixed cost. There are however other fixed costs that you may use.

2. Based on the information provided, what information is relevant to the decision to purchase the appliances? What information is irrelevant to the decision to purchase the appliances? Why?
3. What could it cost the couple to launder clothes? Show your detailed calculations for each.
4. The couple has made a significant investment in this business. How long will it take for the couple to recoup their investment? Is the time required to recoup the investment a good measure of the success of the company? If not, how would you measure the success of the company? Explain.
5. As Emily Smith, prepare a letter to the Franks advising them on their laundry needs. What is your recommendation and why?
6. The Franks have a wait list for their daycare. They can hire an employee for \$9 per hour for 40 hours each week. With the additional employee, the Franks can accept three additional children. Should the Franks hire the additional employee? Show your detailed calculations.
7. The Franks home can accommodate a maximum of nine children. They can move the daycare from their home to rented space in town, which can accommodate up to 14 children. The space will cost \$650 per month and the utilities will cost \$125 per month. Additionally, insurance will now cost the Franks \$5,000 per year. Per state regulations, each adult can supervise no more than three children. As Emily Smith, prepare a letter to the Franks advising them on their space options. Should they continue to operate the facility at home or should they rent space in town? How many children should they accept? How many employees will they need to hire? Show your detailed calculations for each scenario.

CASE LEARNING OBJECTIVES AND IMPLEMENTATION GUIDANCE

Objectives

The case describes a new family-owned company which provides daycare services. While the context of this case is a departure from a manufacturing environment that is typically discussed in managerial and

cost accounting courses, it allows students to transfer their knowledge of cost concepts from a manufacturing environment to a non-manufacturing environment. Understanding cost concepts in various contexts prepares students for their professional careers. The objectives of this case are as follows:

1. Students will identify basic managerial accounting concepts
2. Students will apply basic managerial accounting concepts
3. Students will use costs to analyze alternatives and make decisions
4. Students will evaluate the performance of a business
5. Students will demonstrate strategic decision making
6. Students will demonstrate professional communication skills

Implementation

The case can be used in an undergraduate or graduate managerial accounting course which caters to students without a strong accounting background. The structure of the case allows it to be used at the beginning of the course; this will get the students immediately engaged in the course. The first two identification questions can be used as part of a class discussion. These questions help to ensure that students understand basic cost concepts before moving forward. The remaining questions could be completed individually or in small teams. Alternatively, the entire case could be assigned as an individual project.

Teaching notes which includes suggested solutions for the case requirements are provided in Appendix 1.

CLASSROOM TESTING

The results presented represent the most recent administration of the case. The responses from the students sampled (19), indicate that the learning objectives were met. We gathered students' perceptions of the case using our Case Validation survey. Students were asked to respond to questions based on a 7-point Likert scale, where 1 represents "do not agree" and 7 represents "agree."

The results of the Case Validation questions are provided in Table 1. The responses of the students indicate that they strongly agreed (5.44) that the case material was useful in helping them understand managerial cost concepts. Similarly, they strongly perceived that the information provided in the case was representative of a real situation (5.61), interesting (5.67), and easy to understand (5.83). The case was moderately challenging (4.67), i.e. not too easy (3.94) and not too difficult (3.39). Finally, the students were asked if the case made them to think critically. To which they strongly agreed that the case required them to exercise critical thinking skills (5.76).

**TABLE 1
CASE VALIDATION RESULTS**

	Mean rating (1 = do not agree; 7 = agree)
This case helped me understand managerial cost concepts.	5.44
This case was realistic.	5.61
This case was interesting.	5.67
This case was easy to understand.	5.83
This case was challenging.	4.67
This case was too easy?	3.94
This case was too difficult.	3.39
This case made me think critically about factors that should be included when determining cost?	5.76

In addition to discrete responses, students were allowed to provide additional comments by responding to open-ended questions which asked, “What additional information, if any, should have been provided in the case?” and “What additional comments, if any, would you like to provide about the case?” A selection of their unedited comments is presented in Table 2.

TABLE 2
UNEDITED COMMENTS

What additional information, if any, should have been provided in the case?

“It also would have been helpful to have any available data on how frequently parents utilize the day care facility’s services past 4 p.m., since this would increase the Franks’ revenue.”

“Tax rate not provided. Tax considerations are relevant.”

“Additional information on the retirement benefits and their lifestyle needs and goals would have also been beneficial in evaluating this case.”

“How many days a week the child care business will be opened.”

What additional comments, if any, would you like to provide about the case?

“I really enjoyed working on this case; I thought it was a great example that shows a practical, relatable example of managerial costs and decision making.”

“I enjoyed this case overall.”

“I think this case provided real value to me in terms of considering costs in capital expenditure decisions. I am thankful I had the opportunity to do this as it presented a real-life scenario I can use in future business decisions like this I will assuredly come across.”

“I enjoyed the case and the details. It seemed quite realistic and had a lot of different elements to consider. It was a great case to practice use of the terms and practices of managerial accounting.”

Responses to the open-ended questions indicate that most students enjoyed the case, found it useful and deemed the practical nature of it relatable. Some students wanted more details about tax rates, overtime charges and days of operations. While this information is definitely useful, leaving students partially uninformed was by design. We wanted students to demonstrate the ability to think beyond the structure of the case and consider additional elements that might impact the decision-making process. Their responses indicate that our goal was achieved.

CONCLUSION

It is imperative that students in managerial accounting understand and apply basic cost concepts. This practical case was developed to increase student engagement in learning and applying cost concepts. The results of student responses to the case requirements and the case validation survey indicate that the objectives of the case were met and that students were engaged in learning.

REFERENCES

- AECC (Accounting Education Change Commission). (1990). Position Statement Number One: Objectives of education for accountants. *Issues in Accounting Education* 5 (2): 307–312.
- _____. (1992). The first course in accounting: position statement no. two. *Issues in Accounting Education*, 7 (2): 249–251.
- AICPA (American Institute of Certified Public Accountants). (1999). Broad business perspective competencies. Available at: www.aicpa.org
- Garrison, R., Noreen, E. Brewer, P. (2015). *Managerial Accounting*, New York, NY: McGraw Hill.

- Hassall, T. & Milne, M. J. (2004). Using case studies in accounting education, *Accounting Education*, 13 (2), 135-138.
- Healy, M., & McCutcheon, M. (2010). Teaching with cases: An empirical investigation of accounting lecturers' experiences. *Accounting Education: An International Journal* 19 (6), 555–567.
- Hilton, R. W. & Platt, D.E. (2014). *Managerial Accounting: Creating Value in a Dynamic Business Environment*, New York, NY: McGraw Hill.
- Horngren, C.T., Sundem, G. L., Burgstahler, D., & Schatzberg, J. (2014). *Introduction to Management Accounting*, Upper Saddle River, NJ: Pearson, Prentice Hall.
- Johnstone, K. M., & Biggs, S. F. (1998). Problem-based learning: Introduction, analysis, and accounting curricula implications. *Journal of Accounting Education* 16 (3/4), 407-427.
- Sawyer, A.J., Tomlinson, S. R. & Maples, A. J. (2000). Developing essential skills through case study scenarios. *Journal of Accounting Education* 18 (3), 257 – 282.
- Weil, S., Oyelere, P., Yeoh, J., & Firer, C. (2001). A study of students' perceptions of the usefulness of case studies for the development of finance and accounting-related skills and knowledge. *Accounting Education*, 10 (2), 123–146
- Weygandt, J. J., Kimmel, P. D., & Kieso, D. E. (2014). *Managerial Accounting: Tools for Business Decision Making*, New York, NY: Wiley.

APPENDIX 1

TEACHING NOTES

Question 1.

Consider the different types of costs discussed in this course. List the costs discussed in the case and provide one specific example of each.

The first question in the case asks students not only to identify the costs from the case, but also provide a specific example of the cost. The case contains examples of: Fixed, Variable, Incremental, and Sunk Costs. This question reinforces the students' understanding of the behavior costs. Exhibit 1 discusses the costs contained in the case and specific examples for each.

EXHIBIT 1 COSTS AND SPECIFIC EXAMPLE

Cost	Specific Example
Fixed cost	Annual license fee of \$225. The license fee does not change regardless of the couple's activities.
Fixed cost	Annual insurance \$3,840. The insurance cost does not change regardless of the couple's activities.
Variable cost	The total collected for child care at a rate of \$800 per child will change proportionately with the change in the number of children enrolled.
Variable cost	The total collected for child care at a rate of \$15 per child will change proportionately with the change in the number of children that remain late.
Variable cost	The total spent for snacks at a rate of \$3.20 per child will change proportionately with the change in the number of children enrolled.
Sunk cost	The cost to renovate the home, \$79,500, has been spent.
Fixed cost/Incremental cost	The increase cost of utilities, \$50, is fixed. The case notes that the increase will occur each month as a result of having the daycare, i.e. the number of children is not a factor. This cost can also be considered an incremental cost, a change in the cost of utilities as a result of having the daycare.
Sunk cost	The cost of the old appliances, \$440, has been spent.

Variable cost	The cost of the laundry service, \$52/per month, will vary in total depending on the number of months that the Franks use the service during the year.
Variable cost	The total cost of mileage at a rate of \$0.56/mile will change proportionately with the total miles driven.
Variable cost	The total cost to launder the clothes themselves at a rate of \$8.00/week will change proportionately with the number of weeks of laundering.
Variable cost	The total cost of laundry supplies will vary in proportion to the number of times supplies are purchased during the year at a rate of \$35/quarter laundry supplies.
Fixed cost	The total cost of the washer, \$420, and dryer, \$380, are fixed. The total cost will not vary regardless of the activities of the couple.
Fixed cost	The total cost of the installation, \$43.72, is fixed. The total cost of the installation will not vary regardless of the activities of the couple.
Fixed cost	The total cost for delivering the appliances is fixed, \$35 delivery. The total cost for delivering the appliances will not vary regardless of the activities of the couple.
Fixed cost/Incremental	The increase in the energy cost for the washer is a fixed annual cost of \$120. The case notes that the increase will occur annually as a result of having the appliance, i.e. the number of children in the daycare is not a factor. This cost can also be considered an incremental cost, a change in the cost of utilities as a result of owning the appliances.
Fixed cost/Incremental	The increase in the energy cost for the dryer is a fixed annual cost of \$145. The case notes that the increase will occur annually as a result of having the appliance, i.e. the number of children in the daycare is not a factor. This cost can also be considered an incremental cost, a change in the cost of utilities as a result of owning the appliances.

Question 2.

Based on the information provided, what information is relevant to the decision to purchase the appliances? What information is irrelevant to the decision to purchase the appliances? Why?

The second question requires students to distinguish between costs that are relevant and irrelevant to the decision of purchasing the appliances. This question challenges the students to consider two concepts of relevance 1) whether the cost will be incurred because of a decision that is made in the future and 2) whether the cost is different among alternatives. The cost is relevant if it meets either of these criteria.

Relevant

If the Franks decide to purchase the appliances then the relevant costs are as follows:

- Cost of new appliances
- Delivery cost of new appliances
- Installation cost of new appliances
- Additional cost of utilities

If the Franks decide to examine all of their alternatives, then they must consider the difference in costs among those alternatives. Thus, the following costs will also become relevant:

- Pick-up and delivery cost of laundry service
- Self-service laundry costs: mileage, laundering, detergent

Irrelevant

Students should understand that costs that have already been incurred (sunk) or costs that do not differ among alternatives are irrelevant to future decisions. The following costs are irrelevant to their decision to purchase the appliances:

- Cost of the old appliances
- Cost of the detergent is irrelevant, only if the alternatives exclude pick-up and delivery service

Not Explicitly Addressed

Opportunity cost. For this question students may also want to discuss the concept of opportunity cost, several who completed the case did. While the case does not specifically mention alternatives given up, students inferred opportunities given up by 1) spending time driving to the laundromat and 2) using the extra space in their home for the new appliances. If this question is used as an in-class discussion, this may be an appropriate place to introduce the concept of opportunity cost.

Qualitative considerations. For this questions students may also want to assess a cost for qualitative characteristics. The qualitative characteristic most often cited was convenience. Students noted that cost of convenience should be considered. i.e. the convenience of having the delivery service or the convenience of having the appliances in the home. The case however does not specifically address qualitative characteristics. If this question is a part of an in-class discussion, this may be an appropriate place to introduce the concept of qualitative characteristics and how they affect the decision-making process.

Question 3.

What could it cost the couple to launder clothes? Present at least two different possible costs. Show your detailed calculations for each.

This question builds on the information previously discussed in question 2. The relevant costs previously identified should be used to determine the most cost effective alternative. The question requires the students to analyze two of the choices available. Students however provided an analysis for all three alternatives. Subsequently, the question was revised to require an analysis of all three alternatives. Exhibit 2 provides the calculations for each alternative. The results indicate that purchasing the appliances is the most cost effective alternative, panel a. Selecting the self-serve alternative is the most costly, panel b.

EXHIBIT 2 ANALYSIS OF ALTERNATIVES

Panel A: Purchase appliances	
The annual cost of the appliances	\$109.84 ^a
Increase in annual cost of energy (\$120 + 145)	265.00
Annual cost of detergent	140.00
Total annual cost for the appliances	\$514.84

Notes:

^a Washer \$420.00 + Dryer 380.00 + Installation 43.72 + Delivery 35.00 = Total cost of appliances \$878.72. The appliances have an eight (8) year life. Thus we divide the cost over eight (8) years. The cost allocated per year is \$109.84.

Panel B: Self-serve laundry	
Cost of driving	\$174.72 ^a
Cost of laundering clothes	416.00 ^b
Cost of detergent	140.00 ^c
Total annual cost for the appliances	\$730.72

Notes:

^a Cost of driving: 6 miles per week x \$0.56/mile = \$3.36/week x 52 weeks = \$174.72

^b Cost of laundering clothes: = \$8.00/week x 52 weeks = \$416.00

^c Cost of detergent: = \$35/quarter x 4 quarters = \$140.00

Panel C: Delivery laundry service	
Monthly cost for pickup/delivery service	\$52.00
x Number of months of service	12.00
Total annual cost for pickup/delivery service	<u>\$624.00</u>

Question 4.

The couple has made a significant investment in this business. How long will it take for the couple to recoup their investment? Is the time required to recoup the investment a good measure of the success of the company? If not, how would you measure the success of the company? Explain.

The first part of the question allows students to assess the amount of time which is required to recover an investment. It requires the use of the Payback Method. The formula for the Payback Method and accompanying calculations are as follows.

$$\text{Payback period} = \frac{\text{Initial investment}}{\text{Net annual cash inflow}} = \frac{\$79,500}{47,432} = 1.68 \text{ years}$$

Calculations

Two amounts are required:

- 1) The numerator, the amount of the investment is given, \$79,500.
- 2) The amount for the denominator is calculated in Exhibit 3.

**EXHIBIT 3
DENOMINATOR CALCULATION FOR
PAYBACK PERIOD**

Cash from childcare fees	\$57,600.00 ^a
Annual costs	
Meal/snacks	4,988.16 ^b
Utilities	600.00 ^c
State license	225.00 ^d
Insurance	3,840.00 ^e
Appliances	514.84 ^f
Net annual cash inflow	<u>\$47,432.00</u>

Notes:

^a Cash from childcare fees: \$800 per child per month x 6 children x 12 months

^b Meal/snacks: 6 children x \$3.20 per child per day x 5 days per week x 4.33 weeks per months x 12 months

^c Utilities: \$50 per month x 12 months

^d State license: Given in the case material

^e Insurance: Given in the case material

^f Appliances: Calculated in Exhibit 2 panel a

The second part of the question allows students to consider whether the payback method is a sufficient measure of success and to consider other alternatives to measuring the success of the business. Students should understand that success is relative, i.e. it requires a benchmark. Thus, the payback period calculated is only meaningful if there is an established benchmark. If this question is used as an in-class discussion, this may be an opportune time to discuss the concept of the time value of money and its effect on decision-making.

An alternative measure of success might include return on investment (ROI). The case material excludes taxes, interest, or other capital assets. Thus the calculation for ROI is as follows.

$$\text{ROI} = \frac{\text{Net income}}{\text{Initial investment}} = \frac{\$44,252}{79,500} = 55.66\%$$

Calculations

Two amounts are required:

- 1) The amount for the numerator is calculated in Exhibit 4.
- 2) The denominator, the amount of the investment is given, \$79,500.

EXHIBIT 4 NUMERATOR CALCULATION FOR ROI

Revenue	\$57,600.00 ^a
Expenses:	
Meals	4,988.16 ^b
License	225.00 ^c
Insurance	3,840.00 ^d
Laundry	514.80 ^e
Depreciation	3,180.00 ^f
Utilities	600.00 ^g
Net income (monthly)	\$44,252.04

Notes:

^a Revenue: \$800 per child per month x 6 children x 12 months

^b Meals: 6 children x \$3.20 per child per day x 5 days per week x 4.33 weeks per months x 12 months

^c License: Given in the case material

^d Insurance: Given in the case material

^e Laundry: Calculated in Exhibit 2 panel a

^f Depreciation: \$79,500 ÷ 25 years

^g Utilities: \$50 per month x 12 months

Question 5.

As Emily Smith, prepare a letter to the Franks advising them on their laundry needs. What is your recommendation and why?

While the first four questions require a certain level of communication, this question specifically focuses on the student's ability to clearly communicate how and why their decision was made. Responses may vary, but should be well supported by the calculations previously made.

Question 6.

The Franks have a wait list for their daycare. They can hire an employee for \$9 per hour for 40 hours each week. With the additional employee, the Franks can accept three additional children. Should the Franks hire the additional employee? Show your detailed calculations.

This question allows students to conduct an incremental analysis. They are challenged to consider the incremental effects of making changes. The students should consider the change in cost for 1) an additional employee and 2) feeding additional children. The additional children will result in an increase in revenue. Thus, students must consider the change in revenue. The incremental changes are shown below.

- Incremental revenue = 3 additional children per month * \$800 per month = \$2,400
- Additional employee cost = \$9 per hour x 40 hours per week x 4.33 weeks in a month = \$1,558.80
- Additional cost for food = \$3.20 per child/day * 3 children * 5 days per week * 4.33 weeks per month = \$207.84

The incremental revenue generated by enrolling three additional students, \$2,400.00, exceeds the total incremental cost of the additional employee and the incremental cost of food for the additional children, \$1,766.64. The Franks would have a net benefit of \$633.36, if they exercise this option.

Question 7.

The Frank’s home can accommodate a maximum of nine children. They can move the daycare from their home to rented space in town, which can accommodate up to 14 children. The space will cost \$650 per month and the utilities will cost \$125 per month. Additionally, insurance will now cost the Franks \$5,000 per year. Per state regulations, each adult can supervise no more than three children. As Emily Smith, prepare a letter to the Franks advising them on their space options. Should they continue to operate the facility at home or should they rent space in town? How many children should they accept? How many employees will they need to hire? Show your detailed calculations for each scenario.

For this question students should rely on their understanding of financial accounting and managerial concepts. This question compels students to understand that enrollment decisions and facility location are management decisions which require an understanding of strategic goals. They see how enrollment decisions impact the number of employees required as well as additional costs for food.

For each option related to this question an income statement is provided in Exhibit 5. The option to remain in the current location and provide service to either six or nine children is provided in panel a. The option to move to the larger facility and provide service to either 12 or 14 children is provided in panel b. The calculations show that service for nine children will require one additional employee; service for 12 children will require two additional employees; service for 14 children will require three additional employees.

**EXHIBIT 5
OPERATION LOCATION OPTIONS**

Panel A: Remain in the current location		
	6 children	9 children
Revenue ^a	\$4,800.00	\$7,200.00
Expenses:		
Meals ^b	415.68	623.52
License ^c	18.75	18.75
Insurance ^d	320.00	320.00
Laundry ^e	42.90	42.90
Depreciation ^f	265.00	265.00
Rent ^g	0.00	0.00
Utilities ^h	50.00	50.00
Employee ⁱ	0.00	1,558.80
Net income (monthly)	<u>\$3,687.67</u>	<u>\$4,321.03</u>

Panel B: Move to the larger facility		
	12 children	14 children
Revenue ^a	\$9,600.00	\$11,200.00
Expenses:		
Meals ^b	831.36	969.92
License ^c	18.75	18.75
Insurance ^d	416.67	416.67
Laundry ^e	42.90	42.90
Depreciation ^f	0.00	0.00
Rent ^g	650.00	650.00
Utilities ^h	125.00	125.00
Employee ⁱ	3,117.60	4,676.40
Net income (monthly)	<u>\$4,397.72</u>	<u>\$4,300.36</u>

Notes:

^a Revenue: \$800 per child per month x 6 children x 12 months

^b Meals: \$3.20 per child/day x Number of children x 5 days/week x 4.33 weeks/month

^c License: \$225 annually ÷ 12 months = \$18.75

^d Insurance: \$5,000 annually ÷ 12 months = \$416.67

^e Laundry (Exhibit 2, panel a): \$514.84 ÷ 12 months = \$42.90

^f Depreciation: (\$79,500 ÷ 25 years) ÷ 12 months = \$265.00

^g Rent: Cost of rent provided in the question

^h Utilities: Cost of utilities provided in the question

ⁱ Employee: \$9/hour x 40 hours/week x 4.33 weeks/month = \$1,558.80 per month per employee

Based on their findings, the students must decide the best course of action. They are asked to prepare a letter explaining their recommendation. The letter prepared by the students will vary. However, the results of the calculations show that the most significant increase in the monthly income occurs when there are more than six children. The difference in income however among nine, 12 and 14 children is not significant. Students may point out that there is a point of diminishing return.

If this question is used as an in-class discussion, this question can facilitate a discussion about strategic management. It demonstrates the importance of having goals, understanding variables, and understanding both financial and managerial concepts.