

Instructional Case: J & S Bicycle Shop

Carol B. Gaumnitz, St. Cloud State University, USA
Bruce R. Gaumnitz, St. Cloud State University, USA
Kate Mooney, St. Cloud State University, USA

ABSTRACT

This case is designed to develop and assess critical thinking and decision making skills in the presence of conflicting goals. Strategic/critical thinking and decision modeling are identified in the AICPA's Core Competency Framework. The case setting is a choice among alternative inventory methods for a small business that is seeking a loan to finance expansion. Students are instructed to justify their choice of inventory method based upon information found in a list of documents. These documents contain both relevant and irrelevant information. Although the inventory calculations are simple, neither they nor the method chosen are the focus of the case. Students need to evaluate the evidence in the documents, and no single recommendation is uniquely correct. Students' written responses are evaluated on how well the recommendations are developed and supported by the evidence.

Keywords: Critical Thinking; Decision-making; Inventory

SCENARIO

John and Sue are graduates of YOUR University's College of Business, where they majored in marketing. After several years of work experience, John and Sue decided to start their own retail business selling bicycles, named J & S Bicycle Shop. Their first year was very successful; sales were better than they expected.

Since bicycle sales are slow in the winter, John and Sue want to expand their business to include ski equipment. A bank loan will be needed to finance the expansion. John and Sue have an appointment in the near future with a loan officer at their bank. The loan officer has asked for a set of financial statements for the first year of operation prepared using generally accepted accounting principles (GAAP).¹ To prepare these statements, choices must be made among alternative accounting methods available under GAAP.

The loan officer indicated that approval of the loan will be based on the amount of business assets available for collateral. In addition, the banker is interested in both current and future net income and the sufficiency of cash flows to cover the payment of principal and interest. John and Sue's main concern, however, is in the long-term profitability of their business and in its ability to generate cash flows. Their goal is to run a business that provides both of them with an adequate income.

John and Sue have observed that the cost of bicycles has been steadily rising over the last year, and they expect this to continue. John and Sue have maintained records of merchandise purchases and total sales, but no calculations for cost of goods sold have been made. These records are consistent with a periodic inventory system. One of the accounting choices that needs to be made is the choice of inventory cost-flow method. The two methods John and Sue are considering for assigning costs of merchandise to ending inventory and cost of goods sold are last-in, first-out (LIFO) and first-in, first-out (FIFO). From their college accounting classes, they know that rising prices will yield different results under LIFO and FIFO, resulting in trade-offs between annual profits and reported year-end assets. They also remember that each method had advantages and disadvantages, but they are unsure how these relate to their business.

¹ The loan officer is not requiring audited financial statements for this preliminary appointment.

While at YOUR University, you majored in accounting. As a friend of John and Sue, you have been asked to help them choose an inventory cost-flow method. They asked you to send them a written recommendation on inventory costing.

CASE REQUIREMENTS

Below is a list of documents for you to use in forming your recommendation. While your personal values and experiences are important, your recommendation should be based on the facts in the case and the evidence provided in these resources. Use the *Accounting Standards Codification* database to identify any additional alternatives, apart from LIFO and FIFO, that are available under GAAP. If any of these alternatives is better, explain why.

Before forming your recommendation, you will need to calculate both ending inventory and cost of goods sold for a periodic inventory system using LIFO and FIFO since these amounts affect profitability and reported collateral. If your recommendation is for an alternative method, your calculations should also include ending inventory and cost of goods sold for this alternative method. Include your calculations in an attachment, not to exceed one page, to your recommendation. Your attachment should clearly display the calculations of ending inventory and cost of goods sold for John and Sue’s business using LIFO, FIFO, and any additional method(s) you choose to present.

Your recommendation and reasoning should be presented in no more than two typed pages using double spacing, not counting the attached calculations. Support your recommendation with references to the documents (i.e., identify the specific information that led you to your recommendation). For your convenience, you may refer to these as Document A, Document B, etc. If you are referencing the *Accounting Standards Codification* database (available in *FARS*), provide a proper citation to the appropriate paragraph.

DOCUMENTS

- A. Inventory Records for J&S Bicycle Shop (attached)
- B. Excerpt from *Accounting Trends and Techniques*, New York: American Institute of Certified Public Accountants, 2007, p. 146 (attached)
- C. §472 of *Internal Revenue Code* (The code is available online at www.law.cornell.edu/uscode. Under “Find US Code Material” enter “26” in the Title box and “472” in the Section box.)
- D. Hilsenrath, J., “Inflation Fears Cut Two Ways At the Fed,” *The Wall Street Journal*, April 5, 2010, Eastern Edition, New York, NY (Article is available through many libraries’ online databases. In ABI/INFORM, type title of article as search phrase and limit search to 04/05/2010.)
- E. “AICPA Statement on SEC Roadmap for IFRS,” AICPA News Release, August 27, 2008, Washington, D.C. (News release is available online at www.aicpa.org. In search box, type “Press Releases,” click on “AICPA Media Center—Press Releases by Date,” at bottom of page click on “View Archived Press Releases,” click on “2008,” and scroll down to 8/27/08.)
- F. Deloitte Touche Tohmatsu, *IFRSs in your pocket 2011*, August 2011, p. 59-60 (Copy is available online at www.deloitte.com/us/IFRS. On right side of screen, click on “IFRS in your pocket 2011,” and open attached Adobe file.)
- G. *Accounting Standards Codification* database found in Financial Accounting Standards Board’s *Financial Accounting Research System (FARS)*, 2012.

DOCUMENT A

Inventory Records for J&S Bicycle Shop

Purchase No. 1	150 bicycles @ \$128 each	\$19,200
Purchase No. 2	80 bicycles @ \$180 each	14,400
Purchase No. 3	<u>120 bicycles @ \$210 each</u>	<u>25,200</u>
Total Cost of Goods Available for Sale	350 bicycles	\$58,800

A physical count of the merchandise in John and Sue's store at the end of the year revealed that 65 bicycles remain unsold in ending inventory. The 65 bicycles in ending inventory include three bicycles from Purchase No. 1, 12 bicycles from Purchase No. 2, and 50 bicycles from Purchase No. 3.

DOCUMENT B

Excerpt from *Accounting Trends and Techniques*

Inventory Cost Determination

Methods	Number of Companies			
	2006	2005	2004	2003
First-in first-out (FIFO)	385	385	386	384
Last-in first-out (LIFO)	228	229	239	251
Average cost	159	155	169	167
Other	30	30	27	31
Use of LIFO				
All inventories	11	16	20	26
50% or more of inventories	109	113	108	120
Less than 50% of inventories	88	76	85	77
Not determinable	20	24	26	28

Source: *Accounting Trends and Techniques*, New York: American Institute of Certified Public Accountants, 2007, p. 146.

CONCLUSION

Strategic/critical thinking and decision making are important skills for accounting majors as indicated in the AICPA's Core Competency Framework, yet these skills cannot be easily taught in the classroom. This case is designed to introduce these skills to new accounting majors by having them evaluate conflicting evidence, both relevant and irrelevant, and then make a recommendation to a small business. The choice of inventory method was used because the inventory calculations will be easy for most students. The simplicity of the accounting keeps the focus of the case on the critical analysis of the decision. The written recommendations are evaluated on how well the recommendations are developed and supported by the evidence. These are the actions necessary for development of critical thinking and decision making.

ACKNOWLEDGEMENT

The authors wish to thank Professor Kristin Portz, Department of Accounting, Herberger Business School, St. Cloud State University, for using this case in her Intermediate I accounting course.

AUTHOR INFORMATION

Carol B. Gaumnitz is a professor in the Department of Accounting, Herberger Business School, St. Cloud State University, where she teaches introductory and intermediate financial accounting. She earned B.S. and M.S. degrees from Western Michigan University and a Ph.D. degree from University of Wisconsin-Madison. She is an Ohio CPA (inactive). Her publications include articles on taxation, financial reporting, and accounting education. E-mail: cbgaumnitz@stcloudstate.edu. Corresponding author.

Bruce R. Gaumnitz is a professor in the Department of Accounting, Herberger Business School, St. Cloud State University, where he teaches intermediate and advanced financial accounting. He earned a B.A. degree from Macalester College, an MBA from University of Minnesota, and M.S. and Ph. D. degrees from University of Wisconsin—Madison. His certifications include Minnesota CPA (inactive), CMA (inactive) and CIA. His publications include articles on taxation, financial reporting, accounting education, and business ethics. E-mail: brgaumnitz@stcloudstate.edu

Kate Mooney is a professor and chairperson of the Department of Accounting, Herberger Business School, St. Cloud State University, where she teaches financial accounting. She earned a B.S. degree from St. Cloud State University and a Ph.D. degree from Texas A & M University. She is a Minnesota CPA and was appointed by the governor to the Minnesota Board of Accountancy, where she was elected secretary/treasurer of the Board. In 2012, she was appointed to a second term on the Board. In August 2010, she was selected to participate in the Pathways Commission, a national commission formed in response to the U.S. Department of the Treasury Advisory Committee's report on human capital requirements for the accounting profession. Her publications include articles on financial reporting and accounting education. E-mail: kkmooney@stcloudstate.edu

REFERENCES

1. American Institute of Certified Public Accountants (AICPA), 2010, Core Competency Framework & Educational Competency Assessment Web Site, <http://ceae.aicpa.org/Resources/Education+and+Curriculum+Development/>.
2. Collegiate Learning Assessment. 2008. *CLA in the Classroom Performance Task Academy Handbook*, New York, New York or www.claintheclassroom.org.
3. Financial Accounting Standards Board. 2012. *Financial Accounting Research System (FARS)* database.

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TEACHING NOTES

INTRODUCTION

This case is designed to develop and assess critical thinking and decision making skills in the presence of conflicting goals. Students also gain practice in online research and written communication. The case scenario involves choosing an inventory cost flow method for a small business seeking a loan to finance expansion of the business. Thus, the business has conflicting goals of profitability, loan collateral, and maximizing cash flows. This makes the case more real and relevant. The advantages and disadvantages of alternative methods must be analyzed by the students in order to form their recommendation. Student recommendations are evaluated on how well they are developed and defended by the evidence provided in a set of documents.

Students may be introduced to the case with a brief discussion in class. They are then asked to prepare a written recommendation to friends who have a small business with big plans for expansion. In this hypothetical situation, students are given some information, and must search via library databases and the Internet for some of the documents. The documents include (A) the inventory records for the business, (B) an excerpt from *Accounting Trends and Techniques* showing that more firms use FIFO than LIFO, (C) §472 of the *Internal Revenue Code* that indicates LIFO must be used for financial reporting if it is used for tax purposes, (D) an article discussing the possibility of inflation, (E) the AICPA News Release announcing plans for adopting international financial reporting standards (IFRS), (F) a pocket guide to IFRS that indicates that LIFO will not be allowed under IFRS, and (G) the *Accounting Standards Codification* database for researching other inventory cost flow methods. While most of the information in the documents is relevant, some of the information is not particularly relevant to the decision. In addition, students must calculate the balance sheet and income statement effects of the alternative methods.

LEARNING OBJECTIVES

The learning objectives for this case relate to the AICPA Core Competency Framework (AICPA, 2008). The relevant competency is identified parenthetically after each learning objective. To complete the case, students should:

1. Identify relevant information and evaluate the relevance and reliability of that information. (Broad Business Perspective Competency of “Strategic/Critical Thinking”)
2. Analyze the impact, pros, and cons of potential solutions and use reasonable guidelines for forming a recommendation in light of conflicting or ambiguous data. (Functional Competency of “Decision Modeling”)
3. Acknowledge that other recommendations could be made and consider the alternatives when forming the recommendation. (Functional Competency of “Decision Modeling”)
4. Calculate the balance sheet and income statement effects of the alternative methods. (Functional Competency of “Measurement”)
5. Convey thoughts effectively through written communication. (Personal Competency of “Communication”)

By omitting the details for finding the documents included in the case, the following learning objective could also be included. To complete the case, students should:

6. Employ relevant research skills for locating data. (Functional Competency of “Research”)

EVIDENCE OF EFFICACY

This instructional case was used as a writing assignment in the first intermediate financial accounting course that includes the inventory topic. The case was introduced in class in about ten minutes. The introduction included where to get the case materials, due date, and general encouragement. The case was loaded on course learning platform software, and students downloaded the case from that location. Students were given the opportunity to post questions on the case on the course's web site discussion board, where anyone could answer the questions. The discussion board was monitored closely. The instructor answered questions when appropriate, but discussion and answers by other students were welcomed.

Two different instructors tested the case in different semesters for a total of five sections of intermediate accounting students. The same grading rubric was used in all sections, and the results indicated that most students were able to support their recommendation using relevant documents. The recommendations also indicated that students understood the advantages and disadvantages of LIFO and FIFO based on the balance sheet and income statement effects.

CUSTOMIZING THE CASE

To make the case seem more local to students, the name of the university may be changed to your school's name. The type of business could also be changed, as long as the business has inventory. More or less information can be given on how to access the documents used in the case, and other documents could be included. As written, the case includes detailed instructions for finding the documents. These directions could be eliminated or made more general. For example, students could be directed to the Internal Revenue Service's website to find §472 of the Internal Revenue Code.² When changing documents, at least one non-relevant document should be included. Having both relevant and irrelevant information is essential for critical thinking; students need to analyze the value of each data source.³ A memorandum, business letter, or essay may be required for the written recommendation.

When the papers are returned, the case provides the basis for an interesting class discussion. The choice of inventory method serves as an example of how businesses critically analyze the alternatives when choosing among various accounting methods that are all acceptable under GAAP. The conversion to IFRS could also be discussed, especially how this conversion will affect small businesses as opposed to large multinational corporations.

Students may be given a rubric that describes what constitutes various levels of performance. A suggested student rubric is included in Table 1. This rubric can help improve the students' written recommendations since it lists the steps necessary to critically analyze the decision (i.e., evaluating the evidence, acknowledging alternatives, forming the recommendation). An additional advantage of the rubric is a reduction of grading disputes. For example, a quick reference to the rubric explains why a paper with a misspelled word(s) received a low score on written communication.

² The Internal Revenue Service website sends the user to the Cornell website referenced in the document list in the case.

³ Including relevant and irrelevant documents for a critical thinking case is part of the format presented in the CLA in the Classroom Performance Task Academy.

Table 1: Student Rubric

Criteria	Below Expectations	Meets Expectations	Exceeds Expectations
Evaluation of Evidence in Documents	Student fails to recognize relevance of most documents and writes in generalities. Student does not make any connections among the information from the different documents.	Student considers some of the documents but does not use all information relevant to their recommendation. Student loosely connects the information from the different documents.	Student considers all of the documents and determines which are relevant to the recommendation. Student draws explicit connections in the information from the different documents.
Acknowledging Alternative Recommendations	Student treats the problem as a simple one requiring an uncomplicated response. Student fails to identify or dismisses alternative recommendations.	Student recognizes that the problem has no single answer. Student mentions the possibility of alternative recommendations, without providing details.	Student recognizes that the problem has more than one answer. Student acknowledges other options and weights them in the recommendation.
Forming Recommendation	Student provides little basis for recommendation.	Student provides some information from documents but does not clearly explain the basis for recommendation.	Student constructs sound arguments to support recommendation. Recommendation is based on most relevant evidence in documents.
Supporting Calculations	Calculations contain one or more errors. Calculations are hand written.	Correct calculations are presented but presentation could be improved.	Correct calculations are clearly labeled in a well organized presentation.
Written Communication	Student's written recommendation is wordy with weak organization. Student uses inappropriately casual language. Writing has errors in grammar, spelling, and/or sentence structure.	Student's written recommendation is clear but wordy and is adequately organized. Writing uses perfect grammar and spelling, but may include awkward sentence structure.	Student's written recommendation is concise and well organized. Writing uses business tone with perfect grammar, spelling, and sentence structure.

This case can also be used for assessment purposes. Since the case fits in an early course in most accounting majors, it can serve as a baseline for assessment of any of the learning objectives for the case. It is especially useful for assessment of both critical thinking and written communication.

SUGGESTED SOLUTION

The solution may be in the form of a memorandum, business letter, or essay. As written, the case requirements specify an essay with an attachment showing the calculations of ending inventory and cost of goods sold under LIFO and FIFO. The case requirements also instruct the student to identify any additional alternatives under GAAP for inventory costing. Alternatives to LIFO and FIFO are identified in 330-10-30 of the *Accounting Standards Codification* database. Relevant paragraphs that might be cited are as follows:

330-10-30-9: Cost for inventory purposes may be determined under any one of several assumptions as to the flow of cost factors, such as first-in first-out (FIFO), average, and last-in first-out (LIFO). The major objective in selecting a method should be to choose the one which, under the circumstances, most clearly reflects periodic income.

330-10-30-10: The cost to be matched against revenue from a sale may not be the identified cost of the specific item which is sold, especially in cases in which similar goods are purchased at different times and at different prices. While in some lines of business specific lots are clearly identified from the time of purchase through the time of sale and are costed on this basis, ordinarily the identity of goods is lost between the time of acquisition and the time of sale.

330-10-30-11: Accordingly, if the materials purchased in various lots are identical and interchangeable, the use of identified cost of the various lots may not produce the most useful financial statements. This fact has resulted in the

general acceptance of several assumptions with respect to the flow of cost factors such as FIFO, average, and LIFO to provide practical bases for the measurement of periodic income.

If a student chooses to recommend average cost or specific identification, then calculations of ending inventory and cost of goods sold for those methods should also be included in the calculations attached to the student's recommendation. The calculations for all four methods are provided in Table 2. Each solution should include some or all of these calculations in the attachment to the recommendation.

Table 2: Inventory Calculations

	Ending Inventory	Cost of Goods Sold
LIFO	65 @ \$128 = \$8,320	(85 @ \$128) + (80 @ \$180) + (120 @ \$210) = 10,880 + 14,400 + 25,200 = \$50,480
FIFO	65 @ \$210 = \$13,650	(150 @ \$128) + (80 @ \$180) + (55 @ \$210) = 19,200 + 14,400 + 11,550 = \$45,150
Average Cost	(\$58,800 ÷ 350) = \$168 65 @ \$168 = \$10,920	(285 @ \$168) = \$47,880
Specific Identification	(3 @ \$128) + (12 @ \$180) + (50 @ 210) = 384 + 2,160 + 10,500 = \$13,044	(147 @ \$128) + (68 @ \$180) + (70 @ \$210) = 18,816 + 12,240 + 14,700 = \$45,756

The case does not have a single correct recommendation. Instead, each student's written response is evaluated on how well his or her recommendation is supported by the evidence. For grading the written portion, a checklist is provided in Table 3 for scoring each student's response. This checklist provides a list of likely arguments a student might make for each inventory method. Most students will not include everything on the checklist. Once the checklist is filled out, the student's written response can be evaluated using the grading rubric provided in Table 4. The rubric includes three levels of performance, emerging, developing, and mastering, but it could be expanded to include more levels.⁴

⁴ The student rubric included in Table 1 labels the levels of performance as below expectations, meets expectations, and exceeds expectations, which may be clearer to students.

Table 3: Scoring Checklist

Recommends LIFO		✓
Relevant Advantages	Tax savings will result from increasing prices assigned to cost of goods sold.	
	Projected inflation will result in continuing tax savings.	
	Higher cash flows due to tax savings during inflation will help cover loan payments.	
	Higher cash flows due to tax savings during inflation will allow for withdrawals or salary for owners.	
	Matching most current costs to current selling prices gives the best measure of net income.	
Irrelevant advantages	LIFO has a high potential for income manipulation.	
Relevant disadvantages	Banker may view lower reported inventory value as providing less apparent collateral for the loan.	
	Management of LIFO inventory requires closer attention to avoid dipping into old layers.	
Irrelevant disadvantages	Lower reported inventory value for collateral is irrelevant. The market value of inventory is what matters for collateral, and it is the same regardless of cost flow method.	
	More companies use FIFO than LIFO.	
	The switch to IFRS will require changing from LIFO.	
	LIFO usually does not match physical flow of goods.	
	LIFO has a high potential for income manipulation.	
Recommends FIFO		
Relevant advantages	Management of FIFO inventory level is easier with no worry about dipping into old layers.	
	FIFO gives the best measure of current cost of inventory.	
	Higher reported income during inflation may justify higher salaries for owners.	
	Banker may view higher reported inventory value as providing more apparent collateral for the loan.	
Irrelevant advantages	Higher reported inventory value for collateral is irrelevant. The market value of inventory is what matters for collateral, and it is the same regardless of cost flow method.	
	More companies use FIFO than LIFO.	
	The switch to IFRS will not require changing inventory methods.	
	FIFO usually matches physical flow of goods.	
Relevant disadvantages	FIFO yields lower cash flows than LIFO due to paying higher taxes during inflation.	
	Higher reported income during inflation may result in higher salary expectations by employees.	
Recommends Average Cost		
Relevant advantages	Average cost is a compromise between LIFO's higher income or FIFO's higher reported inventory value.	
	If prices move in an unpredictable fashion, then business will not be hurt by higher taxes from lower prices being assigned to cost of goods sold.	
Irrelevant advantages	All units are treated alike for accounting purposes.	
	Owners do not need to keep track of inventory layers.	
Relevant disadvantages	Average cost yields lower cash flows than LIFO due to paying higher taxes during inflation.	
Recommends Specific Identification		
Relevant advantages	Specific identification matches the actual costs to goods.	
Irrelevant advantages	Specific identification results in more accurate inventory costing.	
Relevant disadvantages	Benefits of using LIFO or FIFO are lost.	
	More detailed inventory record keeping is necessary.	
	Specific identification usually yields lower cash flows than LIFO due to paying higher taxes during inflation.	

Table 4: Grading Rubric

Criteria	Emerging	Developing	Mastering
Evaluation of Evidence in Documents —Learning Objective No. 1	Uses at least one document to support recommendation.	Considers IFRS issue relevant because of owners' hopes for future expansion (possible SEC registration) OR considers IFRS irrelevant for a two person business. Considers Accounting Trends & Techniques relevant to follow the industry standard. Considers inflation issue relevant because of journal article.	Considers IFRS issue relevant because of owners' hopes for future expansion (possible SEC registration). Considers Accounting Trends & Techniques irrelevant for start-up bicycle company. Considers inflation issue as irrelevant because of economic conditions OR considers inflation issue relevant because of predictions of higher inflation from government deficits. Considers income tax effects during inflation.
Acknowledging Alternative Recommendations —Learning Objective No. 3	Lists LIFO, FIFO, and average cost as alternatives without citation.	Lists LIFO, FIFO, and average cost with citation in 330-10-30 using the <i>Accounting Standards Codification</i> database.	Lists LIFO, FIFO, average cost, and specific identification with citation in 330-10-30 using the <i>Accounting Standards Codification</i> database.
Forming Recommendation —Learning Objective No. 2	LIFO	Recommends LIFO because of cash savings from tax effects.	Supports recommendation with LIFO advantages and FIFO disadvantages. Recognizes relevant and irrelevant advantages and disadvantages. Relates recommendation to goals of securing bank loan based on collateral value and adequate cash flow to cover loan payments and provide withdrawals for owners.
	FIFO	Recommends FIFO because of higher net income.	Supports recommendation with FIFO advantages and LIFO disadvantages. Recognizes relevant and irrelevant advantages and disadvantages. Relates recommendation to goals of securing bank loan based on collateral value and adequate cash flow to cover loan payments and provide withdrawals for owners.
	Other	Recommends average cost or specific identification as a compromise.	Supports recommendation with advantages of recommended method and disadvantages of LIFO and FIFO. Relates recommendation to goals of securing bank loan based on collateral value and adequate cash flow to cover loan payments and provide withdrawals for owners.
Supporting Calculations —Learning Objective No. 4	Appendix contains incorrect calculations of ending inventory and/or cost of goods sold for LIFO and FIFO. Calculations are hand written.	Appendix contains one page correct calculations of ending inventory and cost of goods sold for LIFO, FIFO, and alternative(s).	Appendix contains one page correct calculations of ending inventory and cost of goods sold for LIFO, FIFO, and alternative(s). Clearly labeled and well organized presentation.
Written Communication —Learning Objective No. 5	Student's written recommendation is wordy with weak organization. Student uses inappropriately casual language. Writing has errors in grammar, spelling, and/or sentence structure.	Student's written recommendation is clear but wordy and is adequately organized. Writing uses perfect grammar and spelling, but may include awkward sentence structure.	Student's written recommendation is concise and well organized. Writing uses business tone with perfect grammar, spelling, and sentence structure.