Visualizing Cash and Accrual Accounting

Pamela J. Rouse, Anne S. Kelly, J. Christopher Stump

Butler University

August 2011

Research Question:

Is student learning of cash and accrual accounting enhanced by using a case study and a business simulation?

Three Methods:

- Traditional approach using textbook materials
- Case study using an actual company
- Lemonade simulation

These methods were used in a sequential fashion, beginning with the textbook materials and ending with the simulation.

Traditional Approach:

Materials include the textbook, solutions manual, and related PowerPoint presentation for Chapter 9 Profit Planning of:

Garrison, R.H., Noreen, E.W., & Brewer, P.C. (2010). *Managerial accounting* (13th ed.). New York: The McGraw-Hill Companies, Inc.

Homework assignments:

Exercise 1 – Schedule of Expected Cash Collections
Exercise 2 – Production Budget
Exercise 3 – Direct Materials Budget
Exercise 10 – Cash Budget Analysis
Problem 15 – Production and Direct Materials Budgets
Problem 25 – Completing a Master Budget
Problem 26 – Cash Budget and Supporting Schedules

A Study of Cash Flow Management for a Midsized Company

Background:
In 2008 Icee Act was a company in the process of growing from $4M annual sales the previous year to $7M in the current year. In the past five years, cash flow was always tight. With increased volumes management anticipated that future cash flow would be much stronger throughout 2008.

Issues/Opportunities:
The accounting and finance function did not have the capability to forecast cash. Accordingly, they could not recommend decisions to the management team about how to handle increased volumes, when cash would be tight or abundant and how to act toward either situation.

The company needs to understand how they will be able to manage the requirements for growth. An important part of that is being able to understand the factors that affect their cash availability every day or at least every week.

Information Available:

- Aged Accounts Receivable and an understanding of payment practices for the top 20 customers
- Accounts Payable Aging
- Sales Forecasts from Marketing Team
- The 2007 Spending History by classification
- Other Information Available

Assignment:
Create a model projecting weekly cash flows for the company. See Projections template tab in Excel file. How can the company address their information needs to optimally manage cash and growth?

Evaluation:
The group case study will be evaluated as follows:

- The quality of your assumptions made in developing your spreadsheet
- The quality of your forecast (spreadsheet)
- The quality of your recommendations

On the day of the presentation, please provide the 1) list of assumptions, 2) forecast spreadsheet, 3) list of recommendations, and 4) peer evaluation sheet.

Icee Act
Cash Flow & Working Capital

Week Ending Sundays:	*Projected* 9-Mar-09 1	*Projected* 16-Mar-09 2	*Projected* 23-Mar-09 3	*Projected* 30-Mar-09 4	*Projected* 6-Apr-09 5	*Projected* 13-Apr-09 6	*Projected* 20-Apr-09 7	*Projected* 27-Apr-09 8	*Projected* 4-May-09 9	*Projected* 11-May-09 10	*Projected* 18-May-09 11	*Projected* 25-May-09 12	*Projected* 1-Jun-09 13	13 Week Total
CASH FLOW PROJECTIONS														
RECEIPTS														
A/R Receipts	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Receipts from Sales after 3.2.09	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other Adjustments - Receipts														-
Total Receipts	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DISBURSEMENTS														
Payroll														-
Employee Health/Benefits														-
Payroll & Payroll Related	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Materials														-
Manufacturing Expense														-
Freight														-
Commission														-
Rent														-
Meals, Travel & Related														-
Utilities														-
Professional Fees														-
Property Tax														-
Other SG&A Costs														-
Total Disbursements	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Beginning Cash Balance (Book)	(31,241)	(31,241)	(31,241)	(31,241)	(31,241)	(31,241)	(31,241)	(31,241)	(31,241)	(31,241)	(31,241)	(31,241)	(31,241)	(31,241)
Weekly Cash Flow	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ending Cash - Book	(31,241)	(31,241)	(31,241)	(31,241)	(31,241)	(31,241)	(31,241)	(31,241)	(31,241)	(31,241)	(31,241)	(31,241)	(31,241)	(31,241)
WORKING CAPITAL														
Accounts Receivable														
Beginning A/R	836,967	836,967	836,967	836,967	836,967	836,967	836,967	836,967	836,967	836,967	836,967	836,967	836,967	836,967
Billings														-
Less: Collections														-
Less: Discounts/Write-Offs/Adj														-
Ending A/R	**836,967**	**836,967**	**836,967**	**836,967**	**836,967**	**836,967**	**836,967**	**836,967**	**836,967**	**836,967**	**836,967**	**836,967**	**836,967**	**836,967**
Inventory														
Beginning Inventory	1,619,951	1,619,951	1,619,951	1,619,951	1,619,951	1,619,951	1,619,951	1,619,951	1,619,951	1,619,951	1,619,951	1,619,951	1,619,951	1,619,951
Purchases - Inventory														-
Less: COGS														-
Other Adjustments - Inventory														-
Ending Inventory	**1,619,951**	**1,619,951**	**1,619,951**	**1,619,951**	**1,619,951**	**1,619,951**	**1,619,951**	**1,619,951**	**1,619,951**	**1,619,951**	**1,619,951**	**1,619,951**	**1,619,951**	**1,619,951**
Accounts Payable														
Beginning A/P	550,345	550,345	550,345	550,345	550,345	550,345	550,345	550,345	550,345	550,345	550,345	550,345	550,345	550,345
Purchases - A/P														-
Less: Payments Made - AP														-
Adjustments - AP														-
Ending A/P	**550,345**	**550,345**	**550,345**	**550,345**	**550,345**	**550,345**	**550,345**	**550,345**	**550,345**	**550,345**	**550,345**	**550,345**	**550,345**	**550,345**

Lemonade 204 BIZ Simulation

Each team will operate a lemonade chain for four accounting periods (weeks) via a computer simulation. There are three distinct activities associated with the business simulation. Phase 1 involves the development of a Profit Plan for each of the four periods. Phase 2 entails tracking the Actual Results using an Excel-based simulation. Phase 3 requires Management Reporting whereby each team prepares a report explaining the difference between the actual results (Phase 2) and the profit plan that was submitted (Phase 1). The following information is provided to students:

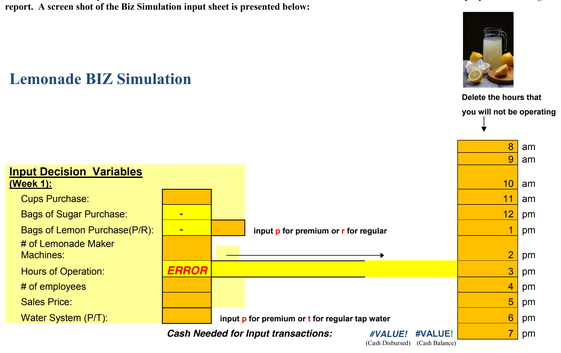
- Appendix A details information about the business environment.
- Appendix B outlines the project requirements and instructions for the three phases of the project (Phase 1 - Profit Plan, Phase 2- Actual Results, and Phase-3 - Management Reporting).
- Appendix C shows the input screen for the decision variables **(see example)** and actual cost information (rent, equipment, direct materials, and direct labor).
- Appendix D includes the project deadlines and due dates.
- Appendix E indicates the basis for evaluation and grading of the simulation activities.
- Appendix F provides the Peer Evaluation Sheet.

In Phase 1 student prepare a Profit Plan. The following budgets are required for each of the four operating weeks:

1. Sales Budget
2. Sales Collection Schedule
3. Production Budget
4. Raw Materials Purchase Budget for each of the following materials
   - Cups
   - Lemons
   - Sugar
5. Inventory Purchase Disbursement Schedule
6. Cash Budget (Assume $30,000 of cash at the beginning of the month).
7. Standard Unit Cost for One Cup of Lemonade (DM only – lemons, sugar, and cups)
8. ***Budgeted Income Statement***
9. Sales dollars needed to break-even over the four week period (labor costs are considered fixed not variable)
10. The "Decision Variables" to be input before running the simulation

Appendix C

In Phase 2, students input their "Decision Variables" into the Biz Simulation to determine the actual results and prepare the management report. A screen shot of the Biz Simulation input sheet is presented below:



Anecdotal Evidence

Prior to the case study and business simulation, many students could prepare a simple cash budget when completing a homework assignment from the textbook. However, many of these same students were not able to successfully convert accrual-based information to the cash basis in an integrated real business case study and business simulation.

In the case study, many students included the sales projections for the current month as cash collections even though some of the sales were scheduled to be collected in future months. Students also included purchases for the current month in the current month's cash disbursements budget, even though some of the purchases were scheduled to be paid in future months.

In the business simulation, many students did not purchase enough cups to meet sales demand and chose more expensive manual labor over a more cost efficient lemonade mixer because they thought purchases in the current period would reduce profits in the current period. They didn't really understand the accrual concept of expensing inventory in the period goods are sold rather than in the period purchased and that the equipment would not be expensed in the period purchased, but in the period used.

A comprehensive integrative quiz was given before and after the case study and business simulation. The quiz and exam questions given after the case study and business simulation reflected a significant improvement in understanding.

In summary, we found that many students could replicate familiar examples or memorize the steps to complete a cash budget and income statement for simple homework, quiz, and exam questions. However, most were unable to successfully complete a comprehensive integrated problem and could not make the connection when asked to apply the cash versus accrual concept in an integrative case study and business simulation. After the case study and business simulation, however, many of these students were able to make the connection when asked to apply the cash versus accrual concept in different situations and in an integrative comprehensive problem. Seeing and doing seemed to help students visualize and grasp the cash versus accrual concept. They seemed to really understand the concept rather than merely replicating familiar examples.

Future Research

Research Methodology: Repeated Measures Design using a Pre-Test, Post-Test 1, and Post-Test 2

Research Context: Profit Planning in the Introduction to Managerial Accounting course

Student Subjects: Full-time, Ages typically range from 18 – 22 years old, Vary as to college and major
Research will meet the Institutional Review Board requirements

Data Collection: Using quizzes, tests, and the final examination

Future Research Timeline