

Excel Cases in Cost Accounting as Part of Multi-Faceted Approach to Integrating Excel into the Accounting Curriculum

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The one skill that both our alum and firms recruiting on campus always stress is Excel skills for our students. In response to this need, we've developed a multi-faceted approach to improving our students' Excel skills. We've set goals for most of our accounting courses so that a certain percentage of assignments are done using Excel. We've added a stand-alone online Excel course as a requirement for all accounting majors. The topics in that course mirror the MS Excel certification exam and all students are encouraged to take the exam. The fee is covered for students who pass the certification exam.

We also want ensure that students continue to use those Excel skills as they progress through the accounting curriculum. This paper first contrasts three methods of assigning numerical questions: homework management system, traditional Excel templates in many textbooks, and the advanced Excel technique suitable for various accounting topics. We will demonstrate the cases in cost accounting that we've used and the learning outcomes we expect from our students.

1. Preference of Excel templates over homework management systems in fostering Excel skills

Homework management systems have provided interactive learning and faster feedback to students, while simplified grading for faculty. However, in such an environment, the skills we would like students to master with regard to Excel proficiency cannot be developed. Thus, for any course, if publishers provide Excel assignments with templates, we prefer this over the homework management system.

We have used Excel templates for undergraduate financial accounting (Phillips, McGraw-Hill), MBA accounting for decision making (Marshall, McGraw-Hill), Accounting Entity (Hoyle, McGraw-Hill), in which students need to create formula and links among cells and worksheets. To assess learning outcomes, we have to check whether formula or links are implemented, and if not, we comment on Blackboard and students need to revise and resubmit. As many as three attempts can be given to strengthen to solidify the learning process.

CASE 1: Demonstrate the depreciation example from Marshall (*Excel file Depreciation1.xlsx, worksheet “Traditional”*).

Note that in this example, students learn Excel functions such as SLN and DDB, as well as implementing some formula and linking cells. This exercise is one step above those that only require basic summation and subtraction formula.

Through revisions, students become proficient in incorporating formula and linked cells wherever possible. This skill is especially important for consolidation type of exercises in advanced accounting.

2. Disadvantages of textbook Excel templates

In Managerial and Cost Accounting, one popular text book by Horngren provides Excel labs that gives only the background numbers in Excel, whereas Pollard uses predesigned Excel templates in each chapter to illustrate specific concepts. The Pollard approach seems to be the widely adopted one, in which Excel is used as a facilitator of the concept taught in a chapter. This has its advantage in a sense that students visually see the interrelationship among accounts, and in certain financial accounting exercises, relationship among various financial statements.

Horngren 14e Excel labs gives only the numbers in Excel format.

Canseco Company	Beginning of 2011	End of 2011
Direct materials inventory	\$22,000	\$26,000
Work-in-process inventory	21,000	20,000

Finished goods inventory	18,000	23,000
Purchases of direct materials		75,000
Direct manufacturing labor		25,000
Indirect manufacturing labor		15,000
Plant Insurance		9,000
Depreciation -- plant and building, and equipment		11,000
Repairs and maintenance -- plant		4,000
Marketing, distribution, and customer-service costs		93,000
General and administrative costs		29,000

Other textbooks Excel templates we have either used or examined are listed below.

Fundamentals of Financial Accounting (Phillips 4e)

http://highered.mheducation.com/sites/0078025370/student_view0/chapter2/excel_templates.html

Advanced Accounting (Hoyle 12e)

http://highered.mheducation.com/sites/0077862228/student_view0/chapter3/excel_templates.html

Managerial Accounting (Oliver 1e)

http://media.pearsoncmg.com/ph/bp/bp_harrison_BP/Oliver_ManAcct1e/OliverStudentResources1e.html

Financial Accounting (Horngren 11e)

http://media.pearsoncmg.com/ph/bp/bp_harrison_BP/horngren_ifa11e/index.html

Cost Accounting (Horngren 14e)

http://media.pearsoncmg.com/ph/bp/bp_harrison_BP/Horngren_CostAcct14e/index.html

Accounting: What the Numbers Mean (Marshall 10e)

http://highered.mheducation.com/sites/007802529x/student_view0/chapter6/excel_problems.html

http://highered.mheducation.com/sites/007802529x/student_view0/chapter13/excel_problems.html

We can see that there are notable differences in the sophistication of the Excel templates provided by publishers. Even given the best examples that have shown inter-worksheet links and embedded functions, there is a big disadvantage of this “facilitator” approach. Students and perhaps faculty may mistakenly think they are applying advanced Excel

techniques, when, in reality, the embedded formula and links provided limited learning of Excel skills once students gain proficiency in entering certain formula.

3. Advanced Excel cases integrated with accounting curricula

In order to continuously improve students' skills in Excel, we have introduced advanced Excel techniques in various classes, both at the graduate and undergraduate level. For Example 1 on depreciation, we have two higher level Excel exercise teaching Vlookup, IF clause, Year, Today, SUMIF, MIN, VALUE, and cross footing test etc.

This turned out to be an iterative process in that students have various problems learning the functions. We provide the solution in Word document, and students implement the exercise in Excel. When evaluating their homework, we noticed that some students would focus on getting the correct numbers, but not learning the functions. We would ask them to revise by incorporating the correct formula even if their numbers are correct.

CASE 2: Advanced Excel on Depreciation (*Depreciation1.xlsx*)

To demonstrate learning outcome, we would should (1) the template, (2) a version that did not implement correct formula or function, and (3) a revised version.

Typical instructor comments: "Column H is still not right. Formula need to be consistent."

My
name

Depreciation Schedule for year

Account Number	Description	Date Placed in Service	Estimated Useful Life	Acquisition Cost	Salvage Value	Beginning Accumulated Depreciation	Current Period Depreciation	Ending Accumulated Depreciation
11001	Desk	4/5/2008	5	\$500	\$100			
11100	Laptop	5/2/2009	5	\$2,400	\$400			
11200	Workstation	3/25/2008	5	\$1,900	\$250			
11050	Chair	2/1/2005	5	\$750	\$50			
11500	Software	7/1/2010	3	\$750	\$0			
11500	Software	6/30/2009	3	\$2,100	\$0			
11500	Software	1/31/2007	3	\$900	\$0			
11300	Monitor	2/20/2009	4	\$800	\$100			
11300	Monitor	9/30/2005	4	\$1,200	\$100			
11300	Monitor	10/15/2008	4	\$600	\$100			

11001	Desk	4/4/2009	5	\$1,000	\$150
11001	Desk	8/8/2005	5	\$1,500	\$250
11050	Chair	6/30/2010	5	\$1,250	\$125

Totals \$15,650 \$1,625 \$0 \$0
Cross-footing test ----->

Asset Name	Net Book Value
Desk	\$0
Laptop	\$0
Workstation	\$0
Chair	\$0
Software	\$0
Monitor	\$0

CASE 3: Depreciation with VLOOKUP function (1) template (2) wrong version; (3) revised version (*Depreciation2.xlsx*).

Typical instructor comments: Column J needs to have formula

4. Cost Accounting Cases

Cost accounting is one of the best subject to incorporate advanced Excel techniques because of its standalone topics.

4.1. Comparison of two types of Excel cases in Cash budget

When we discuss budget especially cash budget, the Template approach is to just enter certain formula as show in Example 4.

CASE 4: lower-level Excel in cash budget (*low_budget.xlsx*)

Note this type of Excel exercise emphasizes more content knowledge in the subject being taught.

CASE 5: advanced Excel cash budget with spinner and scroll that enables sensitivity analysis. (*spinner and scroll.xlsx*)

This case develops proficiency in both the content (cash budget) and the Excel skill, in that students have to first understand the cash collection pattern and enter formula to represent the pattern, then learn how to implement the spinner and scroll, a higher order Excel skill not typically seen in cost accounting courses. Students also practice how to protect a worksheet, as well as important section within a worksheet.

4.2 CVP analysis and Excel Solver

An Excel exercise provided by a typical text book may require students to solve breakeven points or target income, as well as filling in contribution income statements under various scenarios.

CASE 6: A traditional CVP analysis case. We can see that Excel is only used in a limited capacity serving as teaching course content. (*Solver.xlsx, worksheets “Traditional1” and “Traditional2”*)

CASE 7: using Excel Solver to find the best combination of product sales given certain constraints. (*Five solver outputs in Solver.xlsx*)

This case demonstrate the powerful Excel solver technique when applied to CVP analysis. Students not only appreciate the theory, but also the advance Excel skill that is embedded in the case requirement.

To assess learning outcomes in Example 7, we check how many scenarios students can successfully implement, and ask them to revise if their solver result does not contain five worksheets.

5. Conclusion

In summary, numerical exercises can be completed in three ways, homework management system, traditional Excel templates provided by many textbooks, and the advanced Excel skills we have incorporated into the accounting discipline.

The advantage of incorporating these advanced techniques within an accounting subject area, rather than waiting until the information systems course, is that students retain better both the content and the Excel skills.

An added benefit of this approach is that students maintain a heightened level of interest whenever a case involving new “tricks” is introduced. As we go over the various “programming” mistakes in class, students respond enthusiastically on ways to improve their worksheets, thus engaging in more active learning within a group setting.

As we are preparing our accounting graduates to meet the demand of the workforce, it is important faculty explore how higher-order Excel techniques can be integrated with content areas.

References

Textbook Excel Templates

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