Integrating finance and accounting through a business combination assignment

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ABSTRACT

The traditional approach to business education has been through functional training in specific disciplines. However, changes in the way businesses have operated over the past twenty years have led to calls for a new, integrated approach to business education. Support for an integrated curriculum has come from various professional organizations and accrediting bodies. Business schools have expressed interest in, and support for, better integration within their programs, but progress has been slow. Many approaches to integration exist, ranging from fully integrated curricula to new or collaborative pedagogy. These approaches often present challenges: implementation costs, faculty resistance, and other barriers. Finance, as with other disciplines, faces the silo effect and the concern that finance education is being approached too narrowly. Faculty should consider ways to improve their delivery methods in the classroom. Beyond the option of a fully integrated program, improvements might include team teaching, linked course design, deliberate course sequencing, shared case studies, and integrated assignments. New pedagogy should include an emphasis on technology and communication, both of which have been identified as important skills in modern business. This paper presents an integrative merger and acquisition assignment which addresses important strategic dimensions affecting the finance and accounting disciplines. Bringing together these disciplines simulates the business world's integration of responsibilities. The Excel-based assignment expands student exposure to technology and facilitates group work and communication through variable inputs and scenarios. By addressing multiple issues deemed important to financial management and business education, the assignment offers a valuable addition to finance pedagogy.

Keywords: Curriculum integration, business combinations, ratio analysis

INTRODUCTION

The Call for Integration within Business Programs

For over two decades, the academic community has wrestled with the issue of how to improve business education. The argument has been made that programs are too focused on functional disciplines. The individual disciplines have been referred to as silos and Stover, Morris, Pharr, Reyes, and Byers (1997) state business schools should "break down the silos." The functional approach is considered to be too narrow for addressing the issues that arise in modern businesses, but it continues to be the central approach of business schools (Cannon, Klein, Koste, & Magal 2004). Individual disciplines are structured around particular skill sets, and faculty instruction occurs within their own specific area of expertise. In the business world, however, the business disciplines are interconnected. Business executive C.S. "Bud" Kulesza (as cited in Randall, 1999) notes that accounting and finance departments are separated only in the academic setting, whereas the business community has already found the benefits of joining together the functions.

The current business environment is one in which employees collaborate together and work in cross-functional teams. The complexity of business raises the need for multi-disciplinary skills, so employees are expected to have familiarity, if not expertise, in a broader range of knowledge. Professional organizations such as the Institute of Management Accountants (IMA) and the American Institute of Certified Public Accountants (AICPA) have recognized the changing face of business and stated the need for a broader educational agenda (Leauby & Wentzel, 2007; Walker & Ainsworth, 2001). Significantly, the AACSB (2011) has called for an integrated learning experience to be formed through the interaction of faculty members.

A number of studies have reinforced the calls for an integrated curriculum. Such integration is approached in a number of different ways and with a range of complexity. Hamilton, McFarland, and Mirchandani (2000) identified over 20 different approaches that have been used by over 35 universities. The authors draw on that breadth of information to develop their own organizing framework. The integration they propose involves a blend of classroom and experiential learning in the context of both social themes and business alignment. Such integration is intended to illustrate "the direct and broad-based interactions that must occur within business organizations" (105).

On one end of the integration spectrum, Athavale, Davis, and Myring (2008) support an integrated curriculum using a "broad-based, multidisciplinary, organization-centric approach" (295). They note many benefits of integration, including student recognition of the dependencies between functional areas, an emphasis on communication and cross-functional teamwork, and a better understanding of organizational dynamics. Their survey of AACSB business school deans found the respondents believed in the importance of curriculum integration and deemed it to be a critical factor in student success. However, this approach presents a number of challenges. One of the challenges is the cost of overhauling the business curricula (Athavale, et al., 2008; Cannon, et al., 2004; Hamilton, et al., 2000; McLeod & Cotter, 1999). Berry (2009) believes course delivery is a significant issue due to faculty training and existing course structures. Given the challenges that exist, it might not be surprising that a recent study by Athavale, Myring, Davis, and Truell (2010) found "few business schools have made credible strides in integrating the curriculum" (13). The reasons cited are consistent with those mentioned here – resource availability and faculty support.

Other authors focus integration efforts on the learning process. Research by Saunders (2001) cites the earlier work of Barr and Tagg (1995) who called for a shift from a lecture-driven "instruction paradigm" to a "learning paradigm" that involves a variety of teaching and assessment techniques. Ardalan (2006) supports this paradigm shift, having conducted a broad review of learning styles, which led to the author's inclusion of case study assignments in the classroom. Both Walker and Ainsworth (2001) and Berry (2009) recommend an integrated, process-based approach that is consistent with business tends toward process-managed operations. The process model for business is based on how work is done rather than what is done. Similarly, the process model for educational environments stresses how students are taught more than what they are taught. The model is intended to be "experiential in design and fully integrated in concept and execution" (Berry, 2009, 56). Cannon et al. (2004) highlight the nature of integration in the context of business processes and the corresponding integration of concepts and processes in the classroom.

Still other authors describe how to achieve integration by incorporating team teaching. Various models could be utilized such as having all professors for the class present and utilize a strong interaction, having all processors present but alternating between participation and observation, and rotating responsibilities so only one professor is present (Hamilton, et al., 2000; Helms, Alvis, & Willis, 2005). Benefits of this interdisciplinary approach include the involvement of multiple faculty specializations and styles and a broader perspective than the functional silos. Leon and Tai (2004) note the team teaching format is conducive to the use of class projects, and those projects create opportunities for communication and collaboration on the various disciplines. The team teaching approach also has some challenges, such as the coordination and cost of faculty time, determining faculty evaluation processes, departmental structures, students' adjustments to multiple teaching styles, and the potential for heavier student workloads (Dharan, 2007; Hamilton, et al., 2000; Helms, et al., 2005; Leon & Tai, 2004).

On the opposite end of the integration spectrum, Campbell, Heriot, and Finney (2006) emphasize pedagogy and how students are taught. In fact, the authors speak in favor of the functional model, noting silos exist for a reason, particularly at the undergraduate level, and schools operate somewhere on a continuum between a functional and integrative model. They cite the recommendations of Hamilton et al. (2000) for greater use of pedagogical tools such as cases, simulations, student teams, and live projects. They state that the need for improvement in business programs is to pursue a more integrative pedagogy, suggesting "less dramatic, but equally profound, changes are sufficient to respond to the need for team skills" (325). Hamilton, et al., (2000) also noted that such tools offer a straightforward and low-cost approach to integration.

Elam and Spotts (2004) present a marketing class example of a team-based experiential project that is based on a live case study, but they note the realism of working with an actual company is a "double-edged sword" (51). While experiential learning is a learning style that provides benefits to students through the active involvement with a company, it is possible the hands-on experience becomes too complex and unstructured. This could interfere with the learning process and result in frustration for students. Danvers (2006) included an Excel-based, financial planning and decision analysis case in an accounting class and found the example helped to develop technology skills, critical thinking, and other general business skills.

Assignments have been developed to link a number of different disciplines to financial management, which is the focus of the assignment presented here. Leauby and Wentzel (2007) used the process to integrate managerial accounting and finance. They found that through the

use of integrated cases and examples, "students learn to interpret the same information from different perspectives and to integrate material across related disciplines" (40). The IMA notes the blend of accounting and finance ties together the historical perspective of accounting to the more forward looking perspective of finance, and integrating the disciplines results in a more strategic viewpoint (Leauby & Wentzel, 2007). Stretcher, Hynes, and Maniam (2010) sought to carry over "knowledge, skills, and attitudes" from communication classes to finance. This provides an opportunity for students to apply these traits in a cross-disciplinary manner. McLeod and Cotter (1999) used a Harvard Business School merger and acquisition case to integrate organizational behavior and finance. While a single case is a modest means of integration, the authors state "a series of small wins can form the building blocks toward the change necessary" (252). Their integrated assignment brought together two disciplines that are traditionally far apart in the curricula. They state the benefits of an integrated assignment are that it allows students to put into practice the materials learned in the individual disciplines while also providing a foundation for a more fully integrated curriculum. In summary, the use of integrative assignments has been a low cost approach many faculty find appealing as a first step toward curriculum integration. Their popularity is due in part to the fact that when used appropriately, these assignments "can provide a sound conceptual basis for building students' cross-disciplinary understanding" (Michaelsen, 1999, 10).

An Integrated Merger and Acquisition Assignment

The assignment described below provides an opportunity to integrate the disciplines of finance and accounting. The intended use is in a first course in finance or financial management. By that time it is expected students will have completed the introductory accounting course sequence. As noted previously, assignments have been used to integrate finance with disciplines such as marketing, organizational behavior, communication, and managerial accounting. A study by Didia and Hasnat (1998) identified correlations between performance in accounting and introductory finance courses, so it is natural to link together these disciplines. Blaylock and Lacewell (2008) observed that a student's performance in a finance class may be affected by the timing and quantity of prerequisite courses such as accounting. Therefore, it becomes important to find opportunities to reintroduce and reinforce earlier topics as covered in the prerequisite courses.

The assignment revolves around an Excel-based merger and acquisition scenario. Murphy and McCarthy (2010) note the field of consolidations accounting is a challenge to teach and even more of a challenge for students to learn. Yet the subject is important and should be addressed (Nurnberg & Sweeney, 2007). Business executive Max Messner (as cited in Randall, 1999) observes the growing role of financial professionals and notes "accounting and finance managers can provide valuable assistance with short-term and long-term planning efforts, whether it's guidance related to merger and acquisition activity or a specific revenue enhancement initiative" (34).

The assignment presents a brief set of facts about two companies along with straightforward balance sheet data, although the data is not formatted into the financial statement. Students organize the balance sheet and then select several of the acquisition inputs, such as purchase price, the financing mode (debt and equity options), and the fair value of the subsidiary's land and patents. Built-in parameters provide a system of checks and balances and keep the overall data within controlled ranges. The parameters also ensure goodwill will be

generated, which will facilitate discussion of the topic. Once the inputs are entered into the spreadsheet, the consolidated balance sheet is automatically generated, including the consolidation entries, as well as a series of ratios.

The inclusion of ratios and the subsequent financial analysis of the data is a critical component of the assignment. Jewell and Mankin (2009) state that student exposure to financial analysis is inadequate. They also state that financial ratios often differ between the accounting and finance disciplines, so the current assignment allows the instructor to highlight similarities and differences between the disciplines. Because students control some of the inputs, the statements and the ratios will not be the same for every situation. As a result, no "right" answer exists, and the focus can be placed on financial statement terminology, consolidation concepts, ratio calculations, financial analysis, and the strategic issues of an acquisition.

Students proceed to a simplified scenario for the year following acquisition. Here again, students control several of the inputs through the use of spreadsheet spinners, which results in an income statement and additional ratios. They are asked to prepare a memorandum discussing the acquisition, the ratios generated by their inputs, and the overall financial analysis of the data.

As an alternative approach to students selecting their own inputs, nine brief scenarios are given. These scenarios are conducive to group work where students can be teamed up to develop the financial statements and ratios based on their particular scenario. The groups can work jointly on the memorandum or be asked to share a classroom presentation on their findings.

The assignment offers many benefits:

- It integrates the disciplines of finance and accounting, which have many similarities, but also some nuanced differences, such as certain ratio definitions.
- The assignment involves the use of spreadsheet technology, giving students exposure to a key tool, though it is done in a structured manner. While it is true that many students enter business programs having worked with technology tools, their experience varies considerably, and they often lack depth and sophistication. Further, it is quite possible they learned improper techniques (Harrast, Strong, & Bromley, 2010). Additional training is therefore necessary. AACSB standards (2011) identify competency in technology and information systems as a topical area of business school coverage. A study by Sosin, Blecha, Agarwal, Bartlett, and Daniel (2004) found student performance was positively impacted by technology usage. From their analysis, they determined the issue was no longer whether or not to utilize technology, but rather the manner in which it would be used. Students must recognize that as financial managers make greater use of technology, their focus shifts from transactional processing to strategic planning and analysis (LeRouge, 2000). By controlling the spreadsheet set-up and minimizing student calculations, the assignment allows the instructor and students to focus their attention on the nature of the acquisition and the resultant financial results as generated.
- Through the scenarios, the assignment supports group work and communication activities. Helms, et al. (2005) refer to a study of the National Association of Colleges and Employers where it was found communication and teamwork skills were rated near the top of desirable skills by prospective employers. A survey by Robert Half International (as cited in Randall, 1999) revealed 96% of CFOs identified communication abilities as a key factor for success. According to Stretcher, et al. (2010), students must become "integrated communicators" who

> understand a number of disciplines and can work with multiple stakeholders. Several other studies that recommend integration and improved pedagogy emphasize the importance of communication and group work (for example, Ardalan, 2006; Athavale, et al., 2008; Campbell, et al., 2006). The AACSB (2011) has also identified communication as one of the core learning abilities.

Overall, the assignment achieves many of the goals of curriculum integration.

THE ASSIGNMENT

Illuminator Corporation ("IC") is a publicly-traded pharmaceutical company that has focused its research and development on various energy pills that improve the user's mental vitality. IC's products have all been patented. While originally developed to aid in certain types of clinical depression, the pills have gained broader appeal because of the boost they provide. In the U.S., the FDA has approved the pills for prescription use only. The pills are available in other countries on a non-prescription basis, and their popularity has grown through positive feedback on social media websites. IC has applied to the FDA for over-the-counter (OTC) usage.

Because of the success of IC and anticipated approval of OTC usage for its products, the company was acquired by a larger pharmaceutical, Parentis, Inc. ("PI"), on December 31, 2011. IC's shareholders readily accepted PI's offer to purchase 100% of its shares based on three primary factors:

1. Product cost economies based on PI's purchasing power and vendor networks.
2. Expanded sales opportunities connected to PI's advertising budgets, brand recognition, and distribution channels.
3. The prospects for greater stock price appreciation.

At the date of acquisition, PI and IC reported the following general ledger account balances (in thousands):

	PI	IC	
Plant and equipment	$30,000	$10,000	(debit)
Mortgage payable	5,000	1,000	(credit)
Inventory	30,000	3,000	(debit)
Retained earnings	69,500	14,100	(credit)
Cash	5,000	1,000	(debit)
Other current liabilities	8,000	4,000	(credit)
Accumulated depreciation	3,000	2,000	(credit)
Patents	1,000	200	(debit)
Common stock	500	100	(credit)
Land	10,000	2,000	(debit)
Accounts payable	15,000	2,000	(credit)
Accounts receivable	25,000	7,000	(debit)

Shares issued and outstanding for PI and IC equal 100 and 20 shares, respectively.

Instructions

1. Using the balances provided above, complete the asset, liability, and equity sections of the "Pre-acquisition Balance Sheets" spreadsheet (see Figure 1, Appendix). Please list the assets and liabilities in order of liquidity. Hint: Plant and Equipment on the spreadsheet is reflected on a "net" basis. You may wish to use the debit-credit balances provided to assist you with the placement of the balance sheet items.
2. After completing the spreadsheet, enter and print your assumptions regarding the following in the "Input Boxes" (see Figure 2, Appendix) provided:
    a. Fair value ("FV") of IC's land and patents (5-year remaining useful life) at the date of acquisition. (Note: You can assume the FV of all IC assets other than land and patent equal their general ledger amounts.)
    b. The purchase price of IC.
    c. The portion of the purchase price financed with debt (i.e., long-term notes payable), if any.
3. Evaluate the liquidity and solvency of the consolidated entity at the date of acquisition based on the following ratios:
    a. Current ratio
    b. Quick ratio
    c. Working capital
    d. Debt to assets
    e. Debt to equity
    f. Debt to tangible net worth (i.e., total equity less intangible assets)
4. Describe how your evaluation would change (if at all) based upon the following independent scenarios:
    a. Your purchase price is doubled
    b. Your purchase price is doubled and debt represents 100% of the purchase price.
    c. Your purchase price is doubled and debt represents 50% of the purchase price
    d. Your purchase price is doubled and debt represents 0% of the purchase price.
    e. Your purchase price is doubled, debt represents 100% of the purchase price, and the FV of the patent equals 25% of the purchase price.
    f. Your purchase price is doubled, debt represents 100% of the purchase price, and the FV of the patent equals 50% of the purchase price.
    g. Your purchase price is doubled, debt represents 100% of the purchase price, and the FV of the patent equals 75% of the purchase price.
5. Briefly describe what you perceive to be the purpose(s) of the elimination/consolidation column entries within the consolidated balance sheet spreadsheet (see Figure 3, Appendix).
6. The "Consolidated Income Statement" spreadsheet (see Figure 4, Appendix) for the year following the acquisition projects results for PI (using the financing assumptions entered in part 2 and an assumed interest rate of 6% on any long-term notes payable) and IC (using, as a starting point, historical averages for IC for the three years prior to acquisition).
    a. Using these initial amounts, evaluate the projected profitability of the consolidated entity based on the following ratios:
        i. Gross profit percentage

ii. Net profit percentage
iii. Return on average assets (assumes ending assets equal beginning assets plus consolidated income plus capital expenditures equaling 10% of plant and equipment (net) at the date of acquisition)
iv. Return on average stockholders' equity (assumes ending equity equals beginning equity plus consolidated income)
v. Earnings per share (assumes each PI share issued to acquire IC has a market value of $100).

b. As an alternative to the above, assume PI management feels the following nine scenarios have an equal likelihood of occurring during the year following acquisition:

Scenario 1
- IC maximizes sales and minimizes CGS
- FV of IC's land equals 200% of its pre-acquisition balance sheet amount
- FV of IC's patent equals 500% of its pre-acquisition balance sheet amount
- Purchase price equals 200% of the FV of IC's net assets
- Purchase price is financed with 0% debt

Scenario 2
- IC maximizes sales and minimizes CGS
- PI minimizes interest expense on its long-term notes payable
- FV of IC's land equals 200% of its pre-acquisition balance sheet amount
- FV of IC's patent equals 500% of its pre-acquisition balance sheet amount
- Purchase price equals 200% of the FV of IC's net assets
- Purchase price is financed with 50% debt

Scenario 3
- IC maximizes sales and minimizes CGS
- PI minimizes interest expense on its long-term notes payable
- FV of IC's land equals 200% of its pre-acquisition balance sheet amount
- FV of IC's patent equals 500% of its pre-acquisition balance sheet amount
- Purchase price equals 200% of the FV of IC's net assets
- Purchase price is financed with 100% debt

Scenario 4
- IC sales and CGS do not change relative to historical averages
- FV of IC's land equals 150% of its pre-acquisition balance sheet amount
- FV of IC's patent equals 350% of its pre-acquisition balance sheet amount
- Purchase price equals 300% of the FV of IC's net assets
- Purchase price is financed with 0% debt

Scenario 5

- IC sales and CGS do not change relative to historical averages
- PI's interest rate on its long-term payables equal 6%
- FV of IC's land equals 150% of its pre-acquisition balance sheet amount
- FV of IC's patent equals 350% of its pre-acquisition balance sheet amount
- Purchase price equals 300% of the FV of IC's net assets
- Purchase price is financed with 50% debt

Scenario 6

- IC sales and CGS do not change relative to historical averages
- PI's interest rate on its long-term payables equal 6%
- FV of IC's land equals 150% of its pre-acquisition balance sheet amount
- FV of IC's patent equals 350% of its pre-acquisition balance sheet amount
- Purchase price equals 300% of the FV of IC's net assets
- Purchase price is financed with 100% debt

Scenario 7

- IC sales equal $38,000
- IC's cost of goods sold equals 55% of sales
- FV of IC's land equals its pre-acquisition balance sheet amount
- FV of IC's patent equals 500% of its pre-acquisition balance sheet amount
- Purchase price equals 400% of the FV of IC's net assets
- Purchase price is financed with 0% debt

Scenario 8

- IC sales equal $38,000
- IC's cost of goods sold equals 55% of sales
- PI's interest rate on its long-term notes payable equals 5%
- FV of IC's land equals its pre-acquisition balance sheet amount
- FV of IC's patent equals 500% of its pre-acquisition balance sheet amount
- Purchase price equals 400% of the FV of IC's net assets
- Purchase price is financed with 50% debt

Scenario 9

- IC sales equal $38,000
- IC's cost of goods sold equals 55% of sales
- PI's interest rate on its long-term notes payable equals 5%
- FV of IC's land equals its pre-acquisition balance sheet amount
- FV of IC's patent equals 500% of its pre-acquisition balance sheet amount
- Purchase price equals 400% of the FV of IC's net assets
- Purchase price is financed with 100% debt

Use the spin buttons and input boxes to generate ratios for each scenario:

i. Gross profit percentage
ii. Net profit percentage
iii. Return on average assets
iv. Return on average stockholders' equity
v. Earnings per share

Prepare a schedule summarizing the ratios for each scenario and average the results to help PI evaluate the projected profitability of the consolidated entity.

7. Prepare a 1-2 page memo describing various relationships that appear to exist between changes in assumptions (either through input boxes or spinner boxes) and various financial statement ratios (either on the date of acquisition or the year after acquisition).
8. Briefly describe how well the assignment reinforces various accounting principles in preparation for a first course in finance.

Student Results

The assignment was tested with a small number of graduate business students to determine their understanding of the requirements, ease of use of the spreadsheet, recollection of accounting concepts, and ability to analyze ratios and interpret the results. The benefit of such testing is to see the assignment through the eyes of students, which offers valuable insights into the students' perspective (Konings, Brand-Gruwel, & van Merrienboer, 2010; Watkins, 2004).

Participating students were registered for an on-line, eight-week finance class at the researchers' university. Prior to the start of the class, students received an email from the instructor introducing the assignment and inviting them to complete the requirements. Students who completed the assignment would substitute it for one of seven required homework practice sets in the class, each representing 10% of the final course grade. Two-thirds of the students (N=12) registered for the class agreed to participate. Students were given approximately one week to work on the assignment and write up their responses prior to the first day of class. The instructor for the course recorded a Camtasia video that explained the assignment and the spreadsheet, and the participants were encouraged to watch the video before beginning. At the completion of the assignment, all participants submitted their required schedules, a memorandum on the ratios, and a description of their perspective on the assignment. 75% of the participants had completed a required accounting course two or three semesters prior to the upcoming term. Only one of the twelve students had declared an accounting or finance concentration in the MBA program.

The information submitted by the participants proved to be very enlightening. Overall, the responses were positive. The following points are of note:

- The students were all able to compile the financial statements and the related financial ratios without difficulty. They found the input sheets, Excel formatting, and spreadsheet spinners "easy to use." The error messages built into the model helped to keep them on track.
- The assignment's foundation in accounting proved to be beneficial. As one student noted, the assignment "was a good refresher…it reminded me of some of the important accounting principles." Several students expressed pride in their ability to recall the nature of debits and credits. The expressions of satisfaction

over recollection of such basic accounting concepts were surprising. More will be said on this shortly.

- The use of Excel served its purposes of facilitating the desired focus on ratio analysis and the consolidation scenario. Student responses included the following:
  - "The Excel spreadsheets were a great tool for this assignment as they allowed us to focus on what the numbers meant instead of how to obtain the numbers which, as future managers, I think is huge to understand."
  - "I feel that if a student, like me, could be able to create such a spreadsheet, we would feel well equipped to be financial managers."
  - "This assignment is a great way to use the awesome functions of Excel."
  - "I would like more practice with analysis. Sometimes we get so bogged down in numbers that we don't spend a lot of time on analysis."
- One student acknowledged the effort to provide integration between disciplines, noting "I also appreciate faculty working together to connect the dots in a program."
- A few students commented favorably on the use of multiple scenarios. Those students stated they gained a better grasp of the relationships between different ratios because of the diverse input options.

It should be observed that the student comments focused primarily on process – inputting data, building financial statements and ratios, and working with Excel. In this regard, the assignment served its purpose of giving students a tool with which they quickly became comfortable and which allowed them to generate a significant amount of analytical data under several different scenarios. However, the desired outputs from the assignment focused on ratio analysis and comprehension of a business combination. Students' understanding of the ratios and ability to perform in-depth analysis were inconsistent. Specifically, while students performed well on concepts such as gross profit percentage and liquidity, written analysis was sporadic on ratios such as debt to equity (42% of students made comment), return on assets (17%), the effect of interest expense on ROE and EPS (33%), and the effect of the subsidiary's fair value of assets on the ratios (17%). Analysis of the business combination was weak as very few substantive comments were made. The assignment presented nine scenarios for analysis, and the quality of student evaluations regressed as the scenario count progressed. 83% of students adequately evaluated the changes in the first three scenarios while the percentage drops to 50% for the middle set of scenarios and 33% for the final three scenarios.

CONCLUSIONS AND FUTURE IMPLICATIONS

Student testing of the assignment leads to several conclusions. First, the assignment is a beneficial tool for classroom use. Students demonstrated a quick understanding of spreadsheet navigation and were able to arrive at the appropriate data in the financial statements and ratios. Because they did not encounter difficulties or frustrations in compiling the data, students were able to focus their efforts on data analysis. Through the use of an Excel spreadsheet, students improved their competencies working with technology.

Second, the multiple scenarios appear to have been a bit too daunting for students to sort through on their own. As the results demonstrated, by the final set of scenarios student effort had dwindled. A few solutions to this are possible. First, selected scenarios could be assigned to

highlight key points. Next, different scenarios could be assigned to different students followed by in-class comparisons or presentations of results. Finally, student groups could be utilized in which the workload is distributed to team members and then consolidated in a report or presentation.

Third, students did not adequately analyze the relationship between combination scenarios and the resulting ratios in their comments. This serves as a reminder that the assignment is intended to be a pedagogical tool to support classroom learning. When used within the context of a course design, the instructor will have the opportunity to review ratios and the process of ratio analysis either before or after the completion of the assignment, and student results can be shared as part of a classroom discussion. The instructor should also be prepared to discuss the business combination either before or after the assignment. Ideally, a discussion could touch upon the reasons for a purchase premium, the nature of the patent's fair value, and the intangible aspects represented by the creation of a goodwill asset.

Fourth, while students demonstrated some recollection of accounting material and were pleased with their ability to do so, their emphasis on the accounting basics of debits and credits was instructive. Faculty should be careful with their presumptions about student retention of accounting details. More importantly, the limited demonstration of accounting knowledge highlights the need for cross-disciplinary assignments, particularly for general MBA students. An integration of disciplines provides an opportunity to reinforce earlier learning and to connect disciplines together.

An integrated curriculum has been a goal in business education for many years, and support for such integration is provided by the professional workplace and accrediting bodies. A number of approaches to integration have been explored including full program integration, team teaching, and integrated assignments. The business combination assignment as presented offers an opportunity to integrate accounting and finance while also enhancing technology skills and providing opportunities for group work and communication.

The assignment offers one means of functional integration. The assignment could be developed further by building on the first year's results and increasing the emphasis on the strategic nature of business combinations and the accounting concepts of fair value, goodwill, and asset impairments. Similar models for other disciplines could be developed to expand the integration of curriculum. As faculty and students become more accustomed to utilizing integrative assignments, business schools can assess whether to pursue a path towards full program integration.

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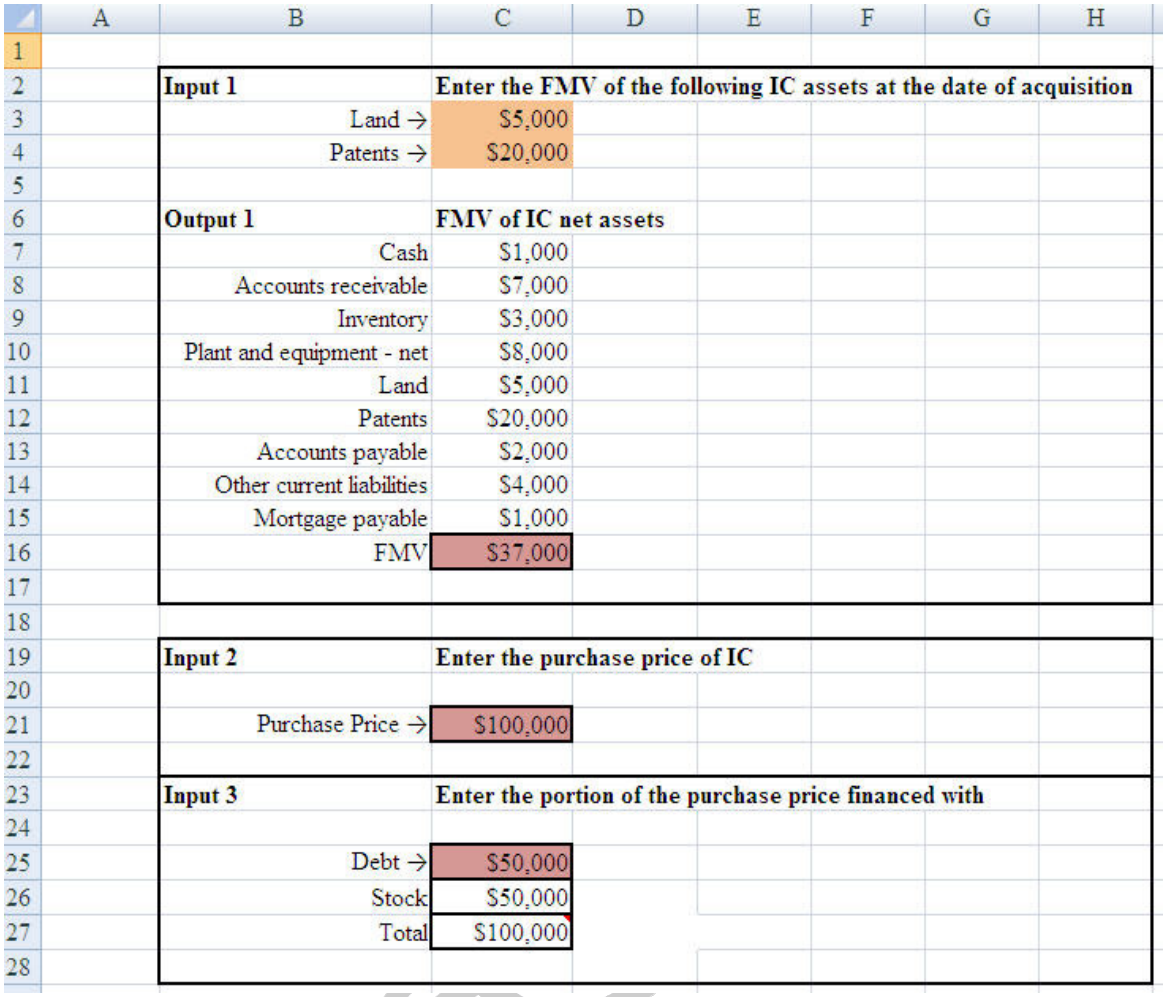
APPENDIX

Figure 1: Pre-acquisition Balance Sheets Spreadsheet

	A	B	C	D
1		**Illuminator Corporation**		
2		**(in thousands)**		
3		**Assets**	**PI**	**IC**
4	Start here →	Cash	$5,000	$1,000
5		Accounts receivable	$25,000	$7,000
6		Inventory	$30,000	$3,000
7		Plant and equipment - net	$27,000	$8,000
8		Land	$10,000	$2,000
9		Patents	$1,000	$200
10		**Total assets**	$98,000	$21,200
11		**Liabilities**		
12		Accounts payable	$15,000	$2,000
13		Other current liabilities	$8,000	$4,000
14		Mortgage payable	$5,000	$1,000
15		**Total liabilities**	$28,000	$7,000
16		**Equity**		
17		Common stock	$500	$100
18		Retained earnings	$69,500	$14,100
19		**Total liabilities & equity**	$98,000	$21,200

Figure 2: Input Box Spreadsheet



	A	B	C	D	E	F	G	H
1								
2		**Input 1**	**Enter the FMV of the following IC assets at the date of acquisition**					
3		Land →	$5,000					
4		Patents →	$20,000					
5								
6		**Output 1**	**FMV of IC net assets**					
7		Cash	$1,000					
8		Accounts receivable	$7,000					
9		Inventory	$3,000					
10		Plant and equipment - net	$8,000					
11		Land	$5,000					
12		Patents	$20,000					
13		Accounts payable	$2,000					
14		Other current liabilities	$4,000					
15		Mortgage payable	$1,000					
16		FMV	$37,000					
17								
18								
19		**Input 2**	**Enter the purchase price of IC**					
20								
21		Purchase Price →	$100,000					
22								
23		**Input 3**	**Enter the portion of the purchase price financed with**					
24								
25		Debt →	$50,000					
26		Stock	$50,000					
27		Total	$100,000					
28								

Figure 3: Consolidated Balance Sheet Spreadsheet

	A	B	C	D	E	F	G
1	**Illuminator Corporation (in thousands)**						
2				**Elimination/consolidation entries**			
3	**Assets**	**PI**	**IC**	**Debits**	**Credits**	**Consolidated Total**	
4	Cash	$5,000	$1,000			$6,000	
5	Accounts receivable	$25,000	$7,000			$32,000	
6	Inventory	$30,000	$3,000			$33,000	
7	Plant and equipment - net	$27,000	$8,000			$35,000	
8	Land	$10,000	$2,000	$3,000		$15,000	
9	Patents	$1,000	$200	$19,800		$21,000	
10	Goodwill			$63,000		$63,000	
11	Investment in subsidiary	$100,000			$100,000	$0	
12	**Total assets**	$198,000	$21,200			$205,000	
13	**Liabilities**						
14	Accounts payable	$15,000	$2,000			$17,000	
15	Other current liabilities	$8,000	$4,000			$12,000	
16	Mortgage payable	$5,000	$1,000			$6,000	
17	Long term notes payable	$50,000				$50,000	
18	**Total liabilities**	$78,000	$7,000			$85,000	
19	**Equity**						
20	Common stock	$50,500	$100	$100		$50,500	
21	Retained earnings	$69,500	$14,100	$14,100		$69,500	
22	**Total liabilities & equity**	$198,000	$21,200	$100,000	$100,000	$205,000	
23							

24	**Ratio**	**Formula**	**Computation**	**Result**
25	Current ratio	Current assets ÷ Current liabilities	($6000+$32000+$33000)÷($17000+$12000)	2.45
26	Quick ratio	(Current assets - Inventories) ÷ Current liabilities	($6000+$32000)÷($17000+$12000)	1.31
27	Working capital	Current assets - Current liabilities	($6000+$32000+$33000)-($17000+$12000)	$42,000
28	Debt to assets	Total liabilities ÷ Total assets	$85000÷$205000	41%
29	Debt to equity	Total liabilities ÷ Common shareholders' equity	$85000÷($50500+$69500)	71%
30	Debt to tangible net worth	Total liabilities ÷ (Total equity - intangible assets)	$85000÷($50500+$69500-($21000+$63000))	236%

Figure 4: Consolidated Income Statement Spreadsheet

	A	B	C	D	E	F	G	H	I	J
1	**Year after Acquisition (in thousands)**									
2	**Balance Sheet**							**Consolid. Entries**		
3	**Income Statement**			**PI**	**IC**			**Debits**	**Credits**	**Consolid. Total**
4	Sales			$200,000	$25,000					$225,000
5	Cost of goods sold			$110,000	$17,500	70%				$127,500
6	Gross profit			$90,000	$7,500					$97,500
7	Operating expenses			$60,000	$7,000					$67,000
8	Incr. patent amortization							$3,960		$3,960
9	Incr. int.exp. - LT N/P	6%		$3,000						$3,000
10	Pre-tax income			$27,000	$500			-$3,960		$23,540
11	Income tax exp.@ 30%									$7,062
12	**Net income**									$16,478
13										
14	**Ratios**	**Formula**					**Computation**			**Result**
15	Gross profit percentage	Gross profit÷Sales					$97500÷$225000			43.33%
16	Net profit percentage	Net income÷Sales					$16478÷$225000			7.32%
17	ROA	Net income÷((Beg assets+End assets)÷2)					$16478÷($205000+$224978)÷2			7.66%
18	ROE	Net income÷((Beg equity+End equity)÷2)					$16478÷($120000+$136478)÷2			12.85%
19	EPS	Net income÷Shares outstanding					$16478÷600			$27.46
20										
21	**Note**									
22	End assets=Beg assets+Consolidated income+(10%Plant&Equip)=$205000+$16478+0.1($35000)=$224978									
23	Beg equity=Common stock+Retained earnings=$50500+$69500=$120000									
24	End equity=Beg equity+Consolidated income=$120000+$16478=$136478									
25	Shares outstanding=Beginning PI shares+PI shares issued									
26										