Teaching Basic Marketing Accountability using Spreadsheets: An Exploratory Perspective

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Revised on

July 30, 2007

For

Journal of Business Research
Special Issues on Advances in Spreadsheet and Database Training

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Abstract

Extant literature suggests that a key problem with marketing is a lack of accountability and a possible way of improving the situation is to use spreadsheets to inculcate marketing accountability among future marketing executives. This study attempts to enhance our understanding of how to impart spreadsheet skills and encourage an accountability mind set among undergraduate marketing students by focusing on a course called Marketing and Money. Assessment data indicate that the course, which captures the spirit of the behavioral model of learning, does in fact enhance student's spreadsheet skill in a consistent manner. In addition, the analysis suggests that in order to increase student's self efficacy, instructors ought to try to make the course perceptually more useful rather than try to reduce its difficulty.

Teaching Basic Marketing Accountability using Spreadsheets: An Exploratory Perspective

“Marketing accountability has emerged as a subject of interest in both practitioner and academic marketing literature..” (Baker and Holt 2004, p 557). The idea is to incorporate finance and accounting concepts into marketing decisions, i.e., making marketing more measurable. Although importance of the marketing - finance interface has been acknowledged in the past (cf. Moorman and Rust 1999), of late it has gained increased momentum (Baker and Holt 2004). This was highlighted by articles in a special edition of Journal of Business Research edited by Zinkhan and Verbrugge (2000a). Different authors have focused on different aspects of the interface, e.g., advertising expenditure and earnings (Graham and Frankenburger 2000); marketing and bottom line (Ambler 2000a, 2000b; Shaw and Mazur 1997); and marketing and shareholders interest (Doyle 2000; Kumar et al. 2000; and McDonald et al. 2000). Zinkhan and Verbrugge (2000b) lament the lack of research attention given to marketing’s relationship with firm performance or shareholder value. Seth and Sisodia (2002) suggest that a fundamental problem with marketing is a lack of accountability. Others argue that one reason for the minimal presence of marketing in the boardroom is that marketers have failed to demonstrate a definitive linkage between marketing activities, costs, and shareholder value (Ambler 2003; Doyle 2000; and Simms 2003). Baker and Holt (2004) identify several constituents, e.g., educators, academics, consultants, and practitioners, who may have contributed to this lack of accountability, and suggest an activity based approach to effective knowledge transfer. These studies have more than emphasized the importance of infusing financial accountability into the marketing profession.

So how do we infuse accountability into marketing education? Educators such as Dembeck and Stout (1997) and Lilien et al. (1998) have advocated the use of spreadsheet based

decision models into marketing classes. They argue that such use of spreadsheet based decision models enhance managerial decision making by enhancing consistency, decision options, group decision making, and mental models (Lilien et al. 1998). However, despite the fact that spreadsheets have been around and their usage in decision making is also not new (cf. Black et al. 2005; Dembeck and Stout 1997; Hwarng 2001; Lilien et al. 1998; Palocksay and Markham 2002; Sosin et al. 2004; Yi and Davis 2003), very few have focused on use of spreadsheet to enhance marketing decision making or introducing accountability into the marketing function, in general. The spreadsheet based Marketing Engineering course by Lilien and Rangaswamy (Lilien et al. 1998) is targeted at the graduate students and focuses on more strategic marketing decisions. The current manuscript addresses a gap by focusing on a course that is targeted at the undergraduate students. The course uses spreadsheets in the context of marketing decisions and develops an accountability mindset among undergraduate marketing students. It is specifically designed for undergraduate students because they are often hired at the operational level and would most likely benefit from *focus, objectivity and structure in learning the basics of managerial decision making. We believe that this is accomplished, in part, by the use of spreadsheets.*

This paper starts out by examining the extant literature that have focused on the use of spreadsheet in an education and training context, and explores some of the theories that help develop a model of learning. This is followed by a narrative of the course context where spreadsheets are used and an explanation of assessment data collected over multiple semesters. Because of the descriptive nature of this study, no hypotheses are proposed. Instead, we simply provide details of the course, which uses Excel Spreadsheets, as a basis for imparting marketing accountability mindset among marketing students. Next is a description of how the course

outcomes were assessed along with descriptive statistics to illustrate whether the course achieved its goals. In addition, correlation analyses are used to assess the relationships between different aspects of course outcomes. Finally, a discussion of the results, limitations and implications is presented.

Extant Literature: Spreadsheet in Business Education

Several authors have approached the use of spreadsheets in decision making from a very diverse perspective (cf. Black et al. 2005; Dembeck and Stout 1997; Hwarng 2001; Grossman 2006; Lilien et al. 1998; Markham and Palocksay 2006; Palocksay and Markham 2002; Sosin et al. 2004; Yi and Davis 2003). Sosin et al. (2004) examine the use of technology (including spreadsheets) in economics education. They found that the relationship between use of technology and student performance is not very clear. They suggest that it is not relevant to ask “whether to use or not use technology, but what technology to use in what manner” (Sosin et al. 2004, p 257). Yi and Davis (2003) develop and validate an observational learning model of computer software training and skill acquisition, which is discussed later in detail. Palocsay and Markham (2002) describe a course that uses spreadsheet in teaching decision support systems to IT students. Markham and Palocksay (2006) detail the use of spreadsheet in scenario analysis in a classroom. Hwarng (2001) employs a simulation in his course that uses the spreadsheet as a platform to teach student the nuances of simulation models. Grossman (2006) describes the process of spreadsheet engineering in a management science course. These examples illustrate the extensive use of spreadsheet for teaching and training purposes, primarily in OR/MS, decision sciences and MIS areas, with a focus on teaching the intricacies of the spreadsheet.

Few of the extant studies have focused on use of spreadsheets to strengthen accountability in marketing functions. Lilien et al. (1998) advocate the use of spreadsheet-based models to make marketing decisions and have incorporated these in their ‘marketing engineering’ course package. They argue that without this shift in decision making approach, managers are limited to conceptual marketing and may suffer from responsibility bias and under-representation of measurable outcome variables. Spreadsheet based decision models provide focus and objectivity in managerial decision making, at the operational as well as strategic levels. Dembeck and Stout (1997) demonstrate that managers in a multinational firm can use spreadsheet software to arrive at an optimal solution to marketing problems such as what to produce and its mix. They suggest that “Decision analysis facilitated with a computerized spreadsheet can help financial managers sift through complex business opportunities and choose the most appropriate ones given their organization’s objective(s).” (p. 33). Black et al. (2005) demonstrate the usefulness of using Microsoft Excel in developing online survey instruments, and conclude that “Excel provides a useful, flexible, and easy to use Internet survey design program” (p 70). Thomas (2000) critiques extant financial reporting methods and suggests alternate performance measures. McDonald (2005) provides a conceptual framework for bringing clarity to measuring marketing effectiveness.

Learning Models for Computer Skill Development:

Yi and Davis (2003) state that industry in US spends about \$57 billion annually on formal training with enhancing computer skills as the most often cited content. Hence, the effectiveness of these training programs is extremely crucial. Yi and Davis (2003) take a detailed look at various learning models – e.g., traditional lecture based model of learning (Bolt et al. 2001;

Compeau and Higgins 1995a; Johnson and Marakas 2000; Simon et al. 1996; and Simon and Werner 1996), computer-aided learning model (Gist et al. 1988, 1989), and self-study oriented model (Simon et al. 1996; Simon and Werner 1996), and based on their review of extant literature conclude that the behavioral model of learning results in better training outcomes than other models. They also contend that although various training methods relying on different learning models are used by industry, the pros and cons of these approaches are not well understood. Detailed discussions of training techniques and behavioral models of learning have been provided by studies such as Donovan and Radosevich (1999); Kozlowski et al. (2001); May and Kahnweiler (2000); and Salas and Cannon-Bowers (2001).

The underlying theoretical rationale for behavioral model of learning comes from social cognition theory (Bandura 1986) which essentially suggests that people learn by first watching someone else perform a target behavior and then reenacting it. The stages in this observational learning processes include attention, retention (cognitive registration), production (overt action to produce desired response), and motivation (favorable consequences of production leads to repeat performance). Yi and Davis (2003) use this social cognitive theoretical framework to develop a comprehensive model for the observational learning process and then test it empirically. They found that the observational learning process had a significant influence on both declarative knowledge and post-training self-efficacy, which, together with task performance constitutes the three most commonly used outcome variables (Colquitt et al. 2000). Yi and Davis (2003) expanded task performance into immediate and delayed task performance. Declarative knowledge captures a person's initial cognitive representation of the task, and knowledge about facts and things. It can be measured either by verbal specification of task objectives or by questions designed to assess a student's understanding of the key concepts (Yi and Davis 2003).

Self-efficacy has been defined as “one’s perceived performance capabilities for specific activity” (Kraiger et al. 1993, p. 320). Yi and Davis (2003) use post-training self-efficacy in their study. While self-efficacy and declarative knowledge capture the cognitive part of the training outcome, task performance captures the behavioral aspects. Extant studies have found a positive relationship between these three outcome variables (see the meta-analysis studies by Colquitt et al. 2000; Locke and Latham 1990; and Stajkovic and Luthans 1998; and Yi and Davis 2003 for a more recent empirical study).

Another relevant theoretical framework often used to explain the adoption of technology is Technology Adoption Model – TAM (cf. Davis 1986; 1989; 1993; Davis, Bagozzi, and Warshaw 1989; Venkatesh and Davis 1996) and it is based on the theory of reasoned action (Ajzen and Fishbein 1980; Fishbein and Ajzen 1975). The TAM framework is relevant because spreadsheet and its usage in decision making are seen as something that involves math and technology by business students in general and marketing students in particular and hence are approached with some fear and apprehension (Grossman 2006; Jordan et al. 1997; Papageorgiou 1996). Grossman (2006) also states that knowledge and use of spreadsheet for serious work is not easy.

TAM model (cf. Davis 1986; 1989; 1993; Davis, Bagozzi, and Warshaw 1989; Venkatesh and Davis 1996) includes two variables – perceived ease of use and perceived usefulness as determinants of behavioral intention and subsequent actual use. Venkatesh and Davis (1996) suggest that direct hands-on experience by users enhances system specific ease of use perception. In addition, both Davis (1989) and Venkatesh and Davis (1996) suggest that perceived ease of use is similar to self efficacy.

Finally, consumer psychology literature under the rubric of *means-end-chain* or *hierarchy of goals* (Gutman 1982; Gutman 1997) suggests that beyond the task level determinants such as ease of use and usefulness, people are driven towards action by higher level goals and outcomes. Gutman (1997) proposes three levels of goals – action goals that are linked to the act itself, outcome goals associated with immediate effects of the action, and the highest level goals or consequences including the indirect effects of the outcome. Since its inception, the means-end-chain has been used to explain consumer behavior in varied context such as perception of soft drinks (Gutman 1997); US President (Bagozzi and Dabholkar (2000), Food retailing (Devlin, Birtwistle, and Macedo (2003); service employees (Pieters, Bottschen and Thelen 1998); and higher education (Gutman and Miaoulis 2003). This means-end-chain model has been investigated in a higher education context, resulting in the finding that it could be used to develop service positioning strategies (Gutman and Miaoulis 2003). These studies suggest that some of the outcome goals associated with education include competence (a direct outcome of the act itself) as well as higher order consequences such as success in life, jobs, and interviews. In our study, the design of the course and the pedagogical tools used allow the students to use the spreadsheets in marketing context. The case-let-based hands-on approach organized by modules that increasingly get more involved and/or difficult and the manageable smaller set activities to be completed in each block help students acquire direct experience. With this, students find it easy to use spreadsheets in marketing decisions and develop a sense of competence. They come to realize that use of such tools in marketing decisions puts them on a firmer ground than if they made these decisions based on gut-feeling and intuition. Repetition of this process during the semester helps them see that it is not that difficult. Success in solving the spreadsheet problems

along with frequent feedback helps the students see the usefulness of the tool in marketing decision making and realize that it may be a good skill for their future.

Relying on these studies, we use perceived ease of use (or post use self efficacy) with different spreadsheet-intensive modules and perceived usefulness of the content knowledge covered in these to assess whether the pedagogy adopted in the course achieves its objectives, We believe that the perceived ease of use and usefulness of the various spreadsheet modules will make students see their benefits and hopefully encourage them to make more use of the spreadsheet in making marketing decision in future – either in other classes or in their work environment. In addition, we also looked at the students’ perception of outcome benefits (i.e., task specific competence and success in life and jobs) resulting from the application of spreadsheet knowledge in marketing decisions.

These form the theoretical basis for the discussion of the context for this study, which is a course that relies on spreadsheets to impart data based decision making skills and an accountability mindset among undergraduate marketing students. In the next section, we present the details of the course.

Study Context: Spreadsheets in marketing decision making

The study context is a course called Marketing and Money (henceforth referred to as M and M) taught at a major comprehensive American university in the Southwest. M and M is a required course for undergraduate Marketing students. It is scheduled to be taken immediately after the Marketing Principles course, but before advanced marketing courses and electives. M and M is intended to reinforce the content knowledge gained in basic accounting and mathematics classes and incorporate this knowledge within the context of marketing decisions to

develop an accountability mind set among marketing students. Students typically come to this class having completed the mandatory sophomore-level MIS and Decision science classes that initially expose most of them to spreadsheets. M and M takes this further by relying heavily on Excel spreadsheets for computation of some of the commonly used marketing metrics,

The M and M course consists of 12 modules through which content knowledge is introduced and reinforced. Ten of these are concept modules and two are “How To” modules. The ten concept modules focus (M01) Percentages and Weighted Average, (M02) Balance Sheet and Income Statement, (M03) Channel Markups, (M04) Contribution and Breakeven, (M05) Product, (M06) Promotion, (M07) Price, (M08) Distribution, (M09) Net Present Value, and (M10) Decision under uncertainty. These concept modules are all structured alike: explanation of concepts interspersed with as well as followed by several one page case-lets from a collection of nearly 200 marketing math oriented case-lets, problems and teaching notes obtained from several colleagues at other universities. Some new case-lets were also specifically written for this class by the professor. All case-lets obtained from other sources were revised to fit to one page, updated (year, focal product etc.) and appended with specific questions intended to take the student towards the final answer, step-by-step. In a typical semester only about 50 of these case-lets are used. This allows easy customization of the course from semester to semester. Therefore, there is no text book for this apparently rather unique undergraduate course.

In a typical module, while the earlier case-lets are manually solved, step-by-step, only the broad steps needed for the solution are provided for the later ones. During the semester, students are afforded the opportunity to solve many of both types of case-lets using Professor-provided highly structured Excel spreadsheets. They can access the Professor’s own Adobe Excel solution, but not the formulae behind the correct solution. This approach is intended to (1) give students

hands-on knowledge about how to use spreadsheets to solve marketing related problems described in the ten concept modules, and (2) reinforce their knowledge by going through the detailed computational process that involves first entering the case-let information in the Excel input cells, then figuring out the formulae for computing the answers in the Excel output cells. We would like to point out that the Excel templates that accompany many a marketing or other textbook have the formulae already in place. Therefore, the student has very little incentive and in our experience, very little clue about “how the correct answer was obtained” in these spreadsheet templates. In contrast, in the M and M Professor-provided spreadsheets, the students receive help in organizing and presenting the case-let data, but are forced to write their own formulae to come up with the correct answers. In addition, this format allows multiple levels of challenge, as desired by the Professor: students could be given the Excel solutions (in PDF format) and the formulae; solutions, but not the formulae (as implemented for the concept modules and assignments based on those); and neither the solution nor the formulae (as implemented for the “How To” modules and assignments based on those).

The “How To” modules are quite different from the concept modules. In the first “How To” (M-How to-01) students learn to develop a detailed Excel spreadsheet for a practice case-let on paper from scratch, as opposed to using the Professor’s spreadsheet. They then solve their own spreadsheet and come up with the answers to the case-let. The second “How To” module (M-How to-02) requires students to create a Power Point presentation from their own just completed M-How to-01 Excel spreadsheet.

During the semester, student skills and knowledge base are assessed through 5 graded assignments, each worth 10% of the semester grade (accounting for 50% of the semester grade). Three of the graded assignments, typically one every month, involve solving 5 mini-case-lets

each from the currently scheduled concept modules, using the Professor's Excel worksheets, as explained above. The fourth graded assignment, a comprehensive case called CC1, involves students creating their own Excel workbook for a brand new case-let, after completing M-How to-01 and practice case-lets therein. Here, the Professor does not provide the solution (Excel or PDF file), but simply provides the bottom line answer to the case-let as "clues" The fifth and last graded assignment, CC2, involves creating the Power point presentation for the CC1 case-let using the just completed Excel spreadsheet from M-How to-01, again after going through the practice case-lets in M-How to-02.

Exhibit 1 provides a description of the ten content modules and the two "How to" modules. Exhibit 2a illustrates a typical mini-case-let, while 2b is its Excel template, in which the ?s in the Inputs section are to be replaced by raw data from the case-let and the Cs in the Outputs section are to be replaced by student-supplied formulae for obtaining the correct answers. Exhibit 2c is the Professor's PDF solution that is available to students, while Exhibit 2d is the Professor's formula sheet in PDF again, which is NOT provided to the students.

A mid term examination (20%) and a final examination (30%), both closed-book (formula sheet is provided) and multiple choice, account for the other half of the semester grade. The mid term exam consists of 25 questions to be completed in 80 minutes, while the final exam doubles the number of questions to 50, but increases the time available to only 120 minutes. The exam questions are designed to test application rather than memory recall. Each question is a micro-case involving a marketing decision situation and the question typically asks students how they would approach the problem and provides 5 answer choices. The exam questions are mostly non-quantitative, emphasizing recognizing the correct approach to the situation, as opposed to number crunching.

Course Assessment:

While the typical college-mandated student evaluation has been implemented, more specific feedback is obtained using an end of the semester questionnaire measuring students' perceived ease of use and self-efficacy (Davis 1989; Kraiger et al. 1993; Venkatesh and Davis 1996; Yi and Davis 2003). The perceived ease of use is measured through self reported difficulty associated with various assignments and concepts taught in the course, on a ten point semantic differential scale of 1 (Not at all difficult) to 10 (Very difficult). Perceived usefulness is also measured likewise on a scale of 1 (Very low) to 10 (Very high). Perceived outcome benefit is measured by asking students to assess their own competence on various outcome variables and its relevance to their future life and jobs using eight questions (A01, A02, and A04 through A09), again on a 1 (Strongly disagree) to 10 (Strongly agree) scale.

Because of the descriptive nature of this investigation, we primarily report descriptive statistics with some associative indicators such as correlations to get a feel for the relationships between various measures. Figure 1 presents a graph of descriptive statistics of the perceived usefulness and difficulty of various graded assignments. The chart indicates a congruent pattern between students' perceived usefulness and difficulty on various assignments with usefulness scores being slightly higher than the difficulty scores, except in the case-let of the bonus assignment and the Mid-term Exam. However, the correlations between them is low (highest R^2 is 0.0324 for CC1). Figure 2 presents a graph of descriptive statistics of the perceived usefulness and difficulty of various concept and 'How to' modules. One again the pattern for perceived usefulness and difficulty seems to be congruent for all the modules but the correlations are very low (highest R^2 is 0.0342 for M-How to-01). Figure 3 presents a trend analysis of self reported

scales (A01, A02, and A04 through A09) measuring competencies gained due to the M and M course across different terms (starting Spring 2004 through Spring 2006). All measures of self assessed competencies exhibit similar trends for their means and generally range between 6.5 and 8.25 on a 0-10 scale. The Cronbach's Alpha score for these eight questions was 0.942. In addition, except for A06 (After taking M&M, I feel more confident about my preparation for job interviews) other measures of competence (A01, A02, A04, A05, A07, A08, and A09) were very tightly clustered. This may be because 'more confidence' could be resulting from improved self-confidence concerning the use of the spreadsheet and may not be directly related to competence.

Finally, we checked for association using correlation coefficients between the composite score for competence (i.e., outcome benefit) as well as perceived difficulty, and usefulness, first for the assignments (Table 1) and then for the concept modules (Table 2.) We are not using multiple regression because prediction is not the objective of this study. We are also not interested in finding which of the assignments or concept modules influence the self assessed competence the most. We are merely interested in finding out whether the self-assessment of competence is associated with usefulness and difficulty. The figures in Table 1 and Table 2 suggest an association between the self assessed competence (strong and significant correlation coefficients) and the student's perceived usefulness of different assignments as well as various concept modules. In comparison, the relationship between competence and student's perceived difficulty of different assignments as well as various concept modules are almost non-existent (mostly non-significant).

Discussion:

The Marketing and Money course has strong links to the behavioral model of learning (cf. Bandura 1986; Donovan and Radosevich 1999; Kozlowski et al. 2001; May and Kahnweiler 2000; and Salas and Cannon-Bowers 2001) – i.e., people learn by first watching someone else perform a target behavior and then reenacting it. Every concept taught in the M and M course is first demonstrated by the instructor. This is first observed and then re-enacted by the students. Afterwards, there is substantial reinforcement in the forms of various assignments. The case-lets used in the concept modules and assignments are designed to represent marketing decision making situations. This seems to enhance the students self efficacy despite the associated difficulty. In fact, our analyses indicate that as the perception of usefulness associated with various assignments increase, the student's self perception of competence or outcome benefits also increases. However, perceived difficulty seems to have little impact on competence

These findings are interesting for the future of spreadsheet and data-based decision making within the marketing context. In order for marketing to become a force in the board room, it needs to demonstrate greater accountability, especially financial and quantitative accountability (Baker and Holt 2004; Ambler 2003; Doyle 2000; and Simms 2003). Courses like M and M, therefore, become crucial for inculcating such an orientation among future managers, i.e., our current students. Some of the students may indeed be a bit scared of anything quantitative and may find assignments and concepts that lean towards quantitative skills a bit too difficult. However, if the usefulness of such assignments and concepts are apparent, then students may be able to at least partially overcome their phobia, resulting in higher levels of competence or self –efficacy. The behavioral model of learning (Bandura 1986) offers some guidance as to how one could enhance learning (Yi and Davis 2003), especially when it involves

using databases and spreadsheets to make marketing decisions. The process outlined in the M and M course could form a basis for successful future educational and training programs that inculcate an accountability mind set among marketing and other managers using a spreadsheet platform. This would be really valuable for the industry since the process used in the M and M course is theoretically rooted and seems to work. Our study also indicates that it is possible to inculcate an accountability mind set among marketing students and managers using the spreadsheet as a platform and the behavioral model of learning may be a way of making such training and education programs more effective. The findings suggest that the key is to make the assignments and concept modules relevant and useful, and not compromise on the rigor or the difficulty associated with them.

Limitation and Implications:

The main limitation is that this investigation is not based on an experiment. We did not investigate the effect of a controlled manipulation on student learning. We simply describe a course that relies on spreadsheet to impart a marketing accountability mindset and report the analysis of routinely collected student feedback data. The course content, its implementation and the feedback instrument have all continuously evolved since 1999 and were not custom created for this study. Self efficacy is captured by a single item measure of ease or difficulty of use [based on assertion by both Davis (1989) and Venkatesh and Davis (1996) that perceived ease of use is similar to self efficacy]. Therefore, what we have presented here are correlational findings rather than cause and effect relationships. We advocate using established multi-scale measure (e.g., Compeau, D. R. and C. A. Higgins 1995; Ramalingam et al. 2004 and 1998) in future research efforts. We did not measure the level of the students' marketing metric skills before the

course and did not investigate the change in these as a result of taking M and M. It is also acknowledged that the ultimate benefit of any knowledge is accrued in the long term, what we call “post-training self efficacy” in the paper. We have very little idea of how M and M has benefited students in the long run, their careers etc, except via limited feedback from the handful of very positive anecdotal letters. We were somewhat constrained by the fact that the M and M course is part of the marketing program curriculum and hence does not lend itself easily to rigorous experimental manipulations and control. Hence it was not possible for us to associate the performance in exams and assignments with the assessment instrument. We also did not employ an external measure of competence or efficacy. However, despite these shortcomings, we believe that this investigation provides a description of a process-based training framework for imparting spreadsheet skills that would inculcate a marketing accountability mindset among marketing students. We also believe that the resultant descriptive statistics and the correlation analysis provide valuable insight into the effectiveness of the spreadsheet based course and an important finding: usefulness is a key determining factor of effectiveness.

We hope that this investigation forms the impetus for future, more detailed research efforts that investigate how to inculcate marketing accountability using spreadsheet and data based analysis platforms. There is a need to incorporate some of the well known learning models and theories to develop a contingency perspective of imparting spreadsheet-based skills. It is imperative that we continue to investigate this phenomenon and expand our knowledge base on how to improve such training and education programs. Otherwise, we would continue to waste a significant portion of the billions of dollars spent on computer based training (Yi and Davis 2003) as well as risk an opportunity lost due to marketing not making its full contribution due to a lack of accountability mindset (Baker and Holt 2004).

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Figure 1
Perceived Usefulness and the Difficulty of Various Graded Assignments

Figure 2
Perceived Usefulness and Difficulty of Content Modules

Measurement Items:

1. Please rate the USEFULNESS (in terms of its learning value) of *EACH Graded Assignment or Topic Module* on a 1 (very low) to a 10 (very high) scale.
2. Please rate the DIFFICULTY (in terms of understanding and doing it) of *EACH Graded Assignment or Topic Module* on a 1 (very low) to a 10 (very high) scale.

Figure 3
Trends in Self Reported Competence Scores

Measurement scale Items for assessing outcome benefits or competence:

A01 M&M taught me various tools useful for Marketing decision making ($\beta = -0.118$).

A02 M&M improved my ability to approach an analytical problem methodically, step by step ($\beta = -0.180$).

A04 After taking M&M, I feel more confident about using basic math and arithmetic in a Marketing decision making context ($\beta = -0.147$).

A05 After taking M&M, I feel more confident about "working the case numbers" in future classes ($\beta = -0.128$).

A06 After taking M&M, I feel more confident about my preparation for job interviews ($\beta = -0.139$).

A07 After taking M&M, I feel more confident about using spreadsheets in my job, career etc. ($\beta = -0.128$).

A08 After taking M&M, I feel more confident about using presentation software in my job, career etc. ($\beta = -0.140$).

A09 I expect that the skills I learned in M&M would be useful in my future life, in general, as well ($\beta = -0.174$).

- Cronbach's Alpha score for these eight item scale was 0.942 for the entire data set (low of 0.908 and a high of 0.961).
- Responses to these course assessment questions were measured on a semantic differential scale anchored between 1 (Strongly Disagree) and 10 (Strongly Agree).

Table 1
Correlations between Self Reported Competence Scores and Usefulness and Difficulty Associated with Various Assignments

	R	Mean	SD	N		R	Mean	SD	N
competence	1.00	7.12	1.93	624	competence	1.00	7.12	1.93	624
q09 "Usefulness: Excel HW 1"	0.51	7.84	1.94	617	Q14d "Difficulty: Excel HW 1"	0.16	5.72	2.36	215
q13 "Usefulness: Excel HW 2"	0.55	7.75	1.95	611	Q14h "Difficulty: Excel HW 2"	0.12	6.04	2.05	214
q11 "Usefulness: CC1"	0.51	7.83	2.05	609	Q14f "Difficulty: CC1"	0.13	6.52	2.18	212
q12 "Usefulness: CC2"	0.43	7.43	2.26	609	Q14g "Difficulty: CC2"	0.04	5.83	2.56	213
Q13a Usefulness: Excel HW 3	0.54	7.38	2.17	115	q14h1 "Difficulty: Excel HW 3"	0.14	6.46	2.11	114
q14 "Usefulness: Module 12 (Bonus): DMU"	0.40	6.66	2.59	403	Q14i "Difficulty: Module 12 (Bonus): DMU"	0.08	6.34	2.41	137
Q14a "Usefulness: MT Exam"	0.44	5.56	2.61	214	Q14j "Difficulty: MT Exam"	0.14	8.21	2.09	210

Correlation Coefficient figures in bold are not significant at $p < 0.0$.

Table 2
Correlations between Self Reported Competence Scores and Usefulness and Difficulty Associated with 12 Course Content Modules

Variables	R	Mean	SD	N	Variables	R	Mean	SD	N
competence	1.00	7.12	1.93	624	competence	1.00	7.12	1.93	624
q25 "Usefulness: Module 01"	0.47	7.55	2.07	616	q39 "Difficulty: Module 01"	0.00	4.31	2.42	617
q26 "Usefulness: Module 02"	0.48	7.26	2.15	590	q40 "Difficulty: Module 02"	-0.02	4.44	2.31	594
q27 "Usefulness: Module 03"	0.57	7.90	2.05	615	q41 "Difficulty: Module 03"	0.03	5.47	2.29	618
q28 "Usefulness: Module 04"	0.58	7.88	1.93	615	q42 "Difficulty: Module 04"	-0.01	5.34	2.26	617
q31 "Usefulness: Module 05"	0.54	7.36	1.96	614	q45 "Difficulty: Module 05"	0.03	5.15	2.14	612
q32 "Usefulness: Module 06"	0.56	7.44	1.91	614	q46 "Difficulty: Module 06"	0.03	5.20	2.11	612
q33 "Usefulness: Module 07"	0.56	7.44	1.95	613	q47 "Difficulty: Module 07"	0.01	5.27	2.17	610
q34 "Usefulness: Module 08"	0.56	7.42	1.96	615	q48 "Difficulty: Module 08"	0.02	5.32	2.18	610
q35 "Usefulness: Module 09"	0.54	7.40	2.10	611	q49 "Difficulty: Module 09"	-0.01	5.65	2.24	607
q36 "Usefulness: Module 10"	0.47	6.87	2.32	474	q50 "Difficulty: Module 10"	0.03	5.77	2.39	481
q29 "Usefulness: Module-How to-01"	0.53	7.45	2.26	613	q43 "Difficulty: Module-How to-01"	0.08	5.04	2.52	615
q30 "Usefulness: Module-How to-02"	0.45	7.23	2.36	614	q44 "Difficulty: Module-How to-02"	0.08	4.44	2.52	613

Correlation Coefficient figures in bold are not significant at $p < 0.0$.

Exhibit 1: A Detailed Description of the 12 Modules

Module #	Module Name and Objective	Detailed Description/Topics Covered	List of Cases
M01 74 slides	Percentages and Weighted Average Objective: Quick remedial to improve understanding	Remedial work to improve interpretation of percentages; Calculation and application of simple trend; Correct understanding of how to calculate a Weighted Average	Fit-It Corporation; Positron Inc Tota Inc; Swaaguth Inc Professor Stingy <i>Two of these become part of Excel Homework 1 (5 cases)</i>
M02 61 slides	Balance Sheet and Income Statement Objective: Basic understanding of Balance Sheet and Income Statement and their relevance to Marketing	Basics of Balance Sheet and Income Statement; Calculating Cost of Goods Sold for channel intermediaries and manufacturers, pro-forma income statement, Calculating and using index numbers and ratios from a balance sheet, income statement and both	Consumer Products Company Bountiful Bakery Company Aaron Enterprises Inc; Stoneham Auto Supplies Lone Star Manufacturing Co Clear Voice Inc <i>Three of these become part of Excel Homework 1 (5 cases)</i>
M03 60 slides	Channel Markups Objective: Correct interpretation of markup information in calculating channel prices	Channel Markups, Markup in a multi-level channel, Expressing, applying and converting markup information, markup chain, markdowns Using markup in pricing a product	Lone Star Lamp Company; Krispy Kreme Company Western Boot Company #1; #2; and #3 Baby Magic Inc <i>Two of these become part of Excel Homework 2 (5 cases)</i>
M04 96 slides	Contribution Analysis and the Breakeven point Objective: Comprehensive understanding of the breakeven point in marketing contexts	Variable Costs, Fixed Costs, Sunk costs, \$ Contribution and % Contribution, Alternative ways of calculating breakeven units and dollars, Profitability and breakeven point, Different ways of handling profit objective in breakeven analysis: \$ profit, % profit/sales, %ROI, % increase in last year's \$ profit, calculating breakeven market share % in units and dollars, incremental breakeven analysis, charting breakeven analysis, relationship between contribution analysis and the income statement	Widgets Inc Bountiful Bakery Metro Manufacturing Co Texas Bearing Company Remington Groomers Galaxy Music Athens Nurseries <i>Three of these become part of Excel Homework 2 (5 cases)</i>

Exhibit 1: A Detailed Description of the 12 Modules (Continue..)

Module #	Module Name and Objective	Detailed Description/Topics Covered	List of Cases
M05M06 65 slides	M05: Product Objective: Learn analyses typically encountered and necessary in introducing a new product	Breakeven, incremental breakeven, profitability Analysis and scenario analysis for alternative assumptions for a new product, Cannibalization analysis	Alamo Manufacturing Co Apfel's I-Tunes; Wipra Inc Great Lakes Inc Hannibal Inc.; Turfex Inc <i>One of these becomes part of Excel Homework 3</i>
	M06: Promotion Objective: Learn analyses typically encountered in promoting a product	Breakeven, incremental breakeven and profitability analysis in the context of promotional choices, Cannibalization in promotion	Texas Diversified Electronics; Pegasus Inc; Texas Grills Inc; Major League Baseball India; BFV-10 Valves; Finn Fones Inc; Baja Foods inc; Gulf States Petroleum Co; La Siesta Inns <i>One of these becomes part of Excel Homework 3 (5 cases)</i>
M07M08 60 slides	M07: Price Objective: Learn analyses typically encountered and necessary in pricing a product	Pricing a product, Markup pricing, Target pricing, perceived value pricing Elasticity of demand	Lone Star lamp Co; Printo Printers John and Jim Bagel Shop Shaaka For Life <i>One of these becomes part of Excel Homework 3 (5 cases)</i>
	M08: Place Objective: Learn analyses typically encountered and necessary in planning a channel of distribution or changing an existing channel of distribution	Placing products: choosing among alternative new channels of distribution by calculating and comparing the distribution costs of each and/or by comparing these to present costs.	Palatial Tiles Inc <i>This becomes part of Excel Homework 3 (5 cases)</i>
M09 62 slides	Net Present Value Objective: Basic understanding of the NPV concept in marketing contexts	Simple Interest vs. Compound Interest, Present and Future Value, Net Present Value, Cost of Capital, Payback Period, IRR	Project A vs. Project B Project X vs. Project Y Project M vs. Project N Widgets Inc; GGK Corporation <i>One of these becomes part of Excel Homework 3 (5 cases)</i>

Exhibit 1: A Detailed Description of the 12 Modules (Continue..)

Module #	Module Name and Objective	Detailed Description/Topics Covered	List of Cases
M10 66 slides	Decision Making under Uncertainty Objective: Basic understanding of how to handle uncertainty in marketing contexts	The Environment of Decision Making, Alternatives vs. Uncertainties, Decision Trees and Probability Tables, Simplifying Decision Trees, value of Perfect Information, Value of Imperfect Information	Tasty Bites Inc. This module was optional and the TBI case could be completed for bonus points
M-How to-01 54 slides	Designing an Excel Workbook Objective: Prepare a workbook from scratch for a case on paper	Design the Inputs section, Outputs section, then solve the workbook, format the cells, format for printing, and print the numeric as well as formula worksheets to look very professional. Also, learn how to print the completed worksheets to Adobe PDF.	South Texas Seafood Company Gulf Coast Publishing Company plus Graded Assignment: Comprehensive Case 1
M-How to-02 55 slides	Designing a PowerPoint presentation Objective: Prepare a presentation from scratch for a case that has been already solved using Excel	Create the basic chart shapes in the completed CC1.xls, import them into PowerPoint, add all bells and whistles, print handouts of the slides without and with the fancy background. Also, learn how to print the completed presentation to Adobe PDF.	South Texas Seafood Company Gulf Coast Publishing Company plus Graded Assignment: Comprehensive Case 2

Exhibit 2a: A Typical Case-let

TEXAS BEARING COMPANY **(this is available to students)**

This case-let is a somewhat modified version of original course materials developed and kindly permitted for use in this class by Prof. Sam Gillespi.

Texas Bearing Company (TBC) is a small manufacturer of precision machine bearings. Typical of the many different sizes that TBC manufactures is the 3 inch carbon steel cone bearing. TBC sells this to wholesale industrial distributors for resale to retailers of replacement parts. The retailers finally sell the bearing to industrial end-user customers, typically at a retail price of \$32.00. TBC estimates that the labor and materials used to make a bearing runs about \$9.48. Additionally, \$13,650 is required to setup the production run, regardless of the number of bearings produced.

TBC's marketing program is fairly lean: two fields sales representatives who call on the industrial distributors referred to above. Each salesperson receives a salary of \$36,000 and travel support of \$9,000. Each sales representative also receives a 5% commission for every bearing sales to a distributor account. TBC's advertising and sales promotion efforts total \$6,000. Retailers average about 40 % markup based on their selling price to industrial customers, while the industrial distributor's markup 33 % on the price paid to TBC for the bearings. Finally, TBC expects a minimum contribution to margin (i.e. CTM or profits) of \$37,000 from its operations.

Questions:

1. What is the selling price of a bearing at each stage in the channel? That is selling price of the retailer, the wholesaler, the manufacturer (TBC).
2. Calculate, if necessary, then itemize, total and show TBC's variable costs per bearing.
3. Calculate TBC's \$C (i.e., UVCN) and %C (i.e. PVCM) per bearing.
4. Itemize and then total TBC's Total Direct Fixed Costs, without the profit objective.
5. What is TBC's Breakeven (RLS) point in units and dollars, without the profit objective?
6. What is TBC's Total Direct Fixed Costs, with the profit objective?
7. What is TBC's Breakeven (RLS) point in units and dollars, with the profit objective?

Exhibit 2b: Excel Template for a Typical Case-let
(this is available to students)

	A	B	C	D	E	F	G
1	Texas Bearing Company						
2	Illustration of breakeven analysis without and with profit						
3	worksheet created by: Dr. Gopala Ganesh, UNT, Denton, Texas						
4							
5	INPUTS SECTION						
6							
7	Information on Prices and Margins :						
8							
9	Retail Price of a typical TBC Bearing						?
10	Average retailer % markup on selling price						?
11	Wholesale % distributor markup on cost						?
12							
13	Information on Variable Costs :						
14							
15	Labor and Material Cost of Each Bearing						?
16	Sales Representative Commission %						?
17							
18	Information on Fixed Costs:						
19							
20	Production Setup						?
21	Salesperson Salary						?
22	Salesperson Travel Support						?
23	Cost of Advertising and Sales Promotion						?
24							
25	Information : Profit Goal						
26							
27	Expected Contribution to Margin						?
28							
29	Information : Other						
30							
31	Number of Field Sales Representatives						?
32							
33	OUTPUTS SECTION						
34							
35	Q1						
36	Retailer's selling price per bearing						c
37	Retailer's cost price per bearing						c
38	Wholesaler selling price per bearing						c
39	Wholesaler Cost						c
40	Hence, TBC (manufacturer) selling price per bearing						c
41							
42	Q2						
43	Labor and material per bearing						c
44	Commission per bearing						c
45	Hence, unit variable cost per bearing or UVC						c
46							
47	Q3						
48	Therefore \$C or UVC per bearing						c
49	and %C or PVCM per bearing						c
50							
51	Q4						
52	Production run setup						c
53	Salesforce salary						c
54	Salesforce travel						c
55	Advertising and promotion						c
56	Total Direct Fixed Costs without profit objective						c
57							
58	Q5						
59	# BEP, without profit objective, rounded up						c
60	\$ BEP, without profit objective						c
61							
62	Q6						
63	Total Direct Fixed costs, with profit objective						c
64							
65	Q7						
66	# RLS, with profit objective, rounded up						c
67	\$ RLS, with profit objective						c

Exhibit 2c: Excel Solution Sheet for a Typical Case-let
(this is available to students)

	A	B	C	D	E	F	G
1	Texas Bearing Company						
2	Illustration of breakeven analysis without and with profit						
3	worksheet created by: Dr. Gopala Ganesh, UNT, Denton, Texas						
4							
5	INPUTS SECTION						
6							
7	Information on Prices and Margins :						
8							
9	Retail Price of a typical TBC Bearing					\$	32.00
10	Average retailer % markup on selling price						40.00%
11	Wholesale % distributor markup on cost						33.00%
12							
13	Information on Variable Costs :						
14							
15	Labor and Material Cost of Each Bearing					\$	9.48
16	Sales Representative Commission %						5.00%
17							
18	Information on Fixed Costs:						
19							
20	Production Setup					\$	13,650.00
21	Salesperson Salary					\$	36,000.00
22	Salesperson Travel Support					\$	9,000.00
23	Cost of Advertising and Sales Promotion					\$	6,000.00
24							
25	Information : Profit Goal						
26							
27	Expected Contribution to Margin					\$	37,000.00
28							
29	Information : Other						
30							
31	Number of Field Sales Representatives						2
32							
33	OUTPUTS SECTION						
34							
35	Q1						
36	Retailer's selling price per bearing					\$	32.00
37	Retailer's cost price per bearing					\$	19.20
38	Wholesaler selling price per bearing					\$	19.20
39	Wholesaler Cost					\$	14.44
40	Hence, TBC (manufacturer) selling price per bearing					\$	14.44
41							
42	Q2						
43	Labor and material per bearing					\$	9.48
44	Commission per bearing					\$	0.72
45	Hence, unit variable cost per bearing or UVC					\$	10.20
46							
47	Q3						
48	Therefore \$C or UVC per bearing					\$	4.23
49	and %C or PVCM per bearing						29.33%
50							
51	Q4						
52	Production run setup					\$	13,650.00
53	Salesforce salary					\$	72,000.00
54	Salesforce travel					\$	18,000.00
55	Advertising and promotion					\$	6,000.00
56	Total Direct Fixed Costs without profit objective					\$	109,650.00
57							
58	Q5						
59	# BEP, without profit objective, rounded up						25,896
60	\$ BEP, without profit objective					\$	373,836.99
61							
62	Q6						
63	Total Direct Fixed costs, with profit objective					\$	146,650.00
64							
65	Q7						
66	# RLS, with profit objective, rounded up						34,634
67	\$ RLS, with profit objective					\$	499,979.55

Exhibit 2d: Excel Formula Sheet for a Typical Case-let
(this is NOT available to students)

	A	G
1	Texas Bearing Company	
2	Illustration of breakeven analysis without and with profit	
3	worksheet created by: Dr. Gopala Ganesh, UNT, Denton, Texas	
4		
5	INPUTS SECTION	
6		
7	Information on Prices and Margins :	
8		
9	Retail Price of a typical TBC Bearing	32
10	Average retailer % markup on selling price	0.4
11	Wholesale % distributor markup on cost	0.33
12		
13	Information on Variable Costs :	
14		
15	Labor and Material Cost of Each Bearing	9.48
16	Sales Representative Commission %	0.05
17		
18	Information on Fixed Costs:	
19		
20	Production Setup	13650
21	Salesperson Salary	36000
22	Salesperson Travel Support	9000
23	Cost of Advertising and Sales Promotion	6000
24		
25	Information : Profit Goal	
26		
27	Expected Contribution to Margin	37000
28		
29	Information : Other	
30		
31	Number of Field Sales Representatives	2
32		
33	OUTPUTS SECTION	
34		
35	Q1	
36	Retailer's selling price per bearing	=G9
37	Retailer's cost price per bearing	=G36*(1-G10)
38	Wholesaler selling price per bearing	=G37
39	Wholesaler Cost	=G38/(1+G11)
40	Hence, TBC (manufacturer) selling price per bearing	=G39
41		
42	Q2	
43	Labor and material per bearing	=G15
44	Commission per bearing	=G16*G40
45	Hence, unit variable cost per bearing or UVC	=SUM(G43:G44)
46		
47	Q3	
48	Therefore \$C or UVC per bearing	=G40-G45
49	and %C or PVCM per bearing	=G48/G40
50		
51	Q4	
52	Production run setup	=G20
53	Salesforce salary	=G21*G31
54	Salesforce travel	=G22*G31
55	Advertising and promotion	=G23
56	Total Direct Fixed Costs without profit objective	=SUM(G52:G55)
57		
58	Q5	
59	# BEP, without profit objective, rounded up	=ROUNDUP(G56/G48,0)
60	\$ BEP, without profit objective	=G59*G40
61		
62	Q6	
63	Total Direct Fixed costs, with profit objective	=G56+G27
64		
65	Q7	
66	# RLS, with profit objective, rounded up	=ROUNDUP(G63/G48,0)
67	\$ RLS, with profit objective	=G66*G40