

# INTEGRATING THEORY AND PRACTICE: THE CAPITAL BUDGETING PROCESS REPORT

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## Abstract

*One of the most challenging aspects of teaching a capital budgeting course is connecting the wide divide between the theoretical or normative approach to capital budgeting and the applied or positive approach. I have created an assignment in my capital budgeting course to help bridge this divide and the purpose of this paper is to describe the assignment to encourage others to use it in their courses. Additionally, the paper will inform potential instructors of the many benefits obtained through such an assignment and some of the potential concerns.*

## INTRODUCTION

Existing survey articles focus on the use of various performance measures by management in making capital budgeting decisions. These articles date back to the 1950's and continue through the beginning of the 21<sup>st</sup> century.<sup>1</sup> The most recent and often quoted survey, provided by Graham and Harvey [2001], reports the level of use of twelve different performance measures or techniques within a diverse sample of firms.<sup>2</sup> Although these surveys provide useful information for students regarding the most common practices for a relatively large sample of firms, they do not provide the more detailed information regarding why a specific firm chooses certain tools or techniques for specific applications. Additionally, recent articles suggesting that live cases are a very effective learning tool [Baker & Schomburg, 2003, Hruby, et.al., 2003, and Rich, 2005] yet are underutilized [Clarke, 2005]. Clarke reports results from student surveys suggesting that real-life case projects, though time consuming, are engaging, enjoyable, useful for synthesizing course material, and helpful in recognizing and analyzing complex business situations.

I assign a required project to graduate students in my capital budgeting course that combines the benefits of a live case and an inquiry into current practices in the capital budgeting process. The project requires students, working alone or in groups of two, to select a local firm, identify an individual within the firm that is familiar with the capital budgeting process, and interview the individual in an attempt to learn about the firm's capital budgeting process. This exercise has been very successful and the purpose of this paper is to describe the project and its benefits in hopes that other faculty will adopt this project for their courses. I refer to this project as the "capital budgeting process report".

This paper first describes the details of the project and includes the directions presented to the students, the focus of the grading and the timing of specific activities. After describing the procedures, I discuss common student concerns that need to be

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addressed by the instructor. The final section of the paper, and the most important, is a discussion of the benefits of adopting this project.

## **DETAILS OF THE PROJECT**

This assignment requires students to select a firm, identify an individual within the firm with a good understanding of the firm's capital budgeting process, and interview this individual to learn as much as possible about the capital budgeting process. In choosing a firm, my strong suggestion for our part-time students who are working is to choose the firm where they are employed based on accessibility and potential career enhancement benefits. For our international students, I encourage them to select a firm in their native country based on accessibility and the benefits of learning about how firms in other countries structure their capital budgeting process. I strongly warn students against choosing firms that are start-ups because these firms often have not had the opportunity or the experience to develop a sound capital budgeting process. I also warn students against choosing a firm which the individual to be interviewed is not willing to provide the necessary information because of concerns regarding releasing information they consider to be confidential. It is uncommon that the individual interviewed will have these concerns, but if these concerns exist, it will impede a student's ability to create a report that will be interesting.

Table 1 presents a list of the 12 questions that I provide to students that, at a minimum, should be addressed in the interview. These 12 questions closely follow the material discussed in class. I strongly suggest that students provide the individual being interviewed with these questions prior to the interview, in an attempt to improve the quality of responses. My goal is that these questions will provide a starting point for the conversation and that students will then follow up with their own questions. Students are encouraged, based on the subjects' interests, their own interests, and the nature of the firm to ask about related issues as the conversation develops. I suggest to students that in order to make the report interesting, they find one or two techniques employed by the firm that are inconsistent with the capital budgeting theory or procedures discussed in class. After identifying these differences, students are then encouraged to explore further by asking additional follow up questions, with the ultimate goal of identifying why the firm uses these theoretically inconsistent methods. The ultimate objective is for the student to reach a conclusion, which is well supported, regarding whether the firm's deviation from the normative approach makes sense in light of the firm's specific situation. The final objective of their capital budgeting process report is for the student to make recommendations regarding how the firm could improve their processes.<sup>3</sup> I make it clear to the students that their grade on this project is based on them identifying these unusual procedures, presenting the logic behind the use of these procedures, and providing a conclusion as to whether the unusual procedure makes sense given the firm's situation.<sup>4</sup> Table 2 presents the specific grading criterion for this project that is provided to the students in the course syllabus.

[Table 1 Insert Here]

[Table 2 Insert Here]

There are only two deadlines where students are required to submit paperwork. The first requirement is to provide the name of the firm, the industry, the contact person, and the contact person's phone number or email address. I teach this course in a 10-week quarter system, and, therefore, I require the students to submit this basic information by the fourth or fifth week. The logic is to give the students enough time to find a viable individual to interview, but to also ensure that students do not wait to the last minute to identify an individual and work on the project. Ideally, students complete the actual interview in the seventh or eighth week of the quarter in order to balance the need for students to have learned the various techniques and tools used in the capital budgeting process, thereby improving their ability to interact intelligently with their contact, and yet also give them ample time to complete the project.

I give students the option of either completing a well-written four to five page report on the capital budgeting procedures of the firm, or making a 20-30 minute oral presentation during the last class period. Due to time constraints, I limit the class presentations to two student groups each quarter and the groups are basically selected on a first come, first serve basis. I often do not get two groups who offer to do a presentation in which case I will request that a certain group, based on my interest in the firm and its industry and on my perception of the quality of the students, do an oral presentation. I have never been faced with the situation where I could not get at least two groups willing to do a presentation. One of the benefits of utilizing this project in a semester system is that it would allow additional time for more group presentations, as I believe it is very worthwhile for students to learn about the capital budgeting process at as many different firms as possible.

## **POTENTIAL CONCERNS/PITFALLS**

The major concern of the students and, therefore, of a faculty member who is considering adopting this project, is what do you do if a student can not find a contact person at a firm to interview. This certainly was my major concern when I initially considered creating this project for my capital budgeting course. My experience has demonstrated that this concern was dramatically overstated. To lay to rest the students concerned with finding an individual to interview when I introduce this project on the first class session, I always tell the students that if they have trouble finding an individual, I have a list of past interviewees and, should they be unable to identify someone to interview, I will provide them with a name and a contact number. I have assigned this project over the last five years, two sections per year, with approximately 15-student group per section. That implies that approximately 150 student groups have completed this assignment over the years and I can only recall one incident when a student actually needed to come to me for contact information.

There are several reasons that this project works so well at Seattle University.<sup>5</sup> First, the University is located in a vibrant, urban setting. Our location in a major city provides access to many local firms that are potential candidates for interviews. The second factor that contributes to the success of this project is that a majority of our students are part-time students and are employed while earning their graduate degree. This provides students with relatively easy access to individuals aware of the capital

budgeting processes at their firm. As previously mentioned, I strongly suggest that students choose their employer to interview because of this access and the potential career benefits the student will gain through completing this project.

A potentially problem with the make up of our student body is the high proportion of international students, who may have more difficulty in finding a local firm to contact. My initial method to remedy this potential problem was having students work in groups of two, but I quickly realized that this potential problem was actually an excellent opportunity. I now encourage international students to choose a firm from their native country to interview. Many of our international students come from families that own their own business, or have had successful careers working for firms in their own country. As it turns out, the reports that have been completed by international students based on firms from their native countries have been the most interesting because of their unique, international perspective they provide.

Another initial concern I had was the willingness of subjects to commit their time necessary to answer student questions, and their willingness to discuss the firm's capital budgeting process due to the potential proprietary nature of disclosing such information. On the first issue, regarding practitioners' willingness to devote time to students, based on student feedback, this concern was completely unfounded. I continue to be amazed at the willingness of the business community to share their experience with students. The second issue, the confidential nature of the material has also not posed a significant problem. There have been certain specific questions that some individuals are not willing to answer, however, this has not been an issue for the great majority of the cases. Interestingly, the most common question that practitioners are not willing to answer is what their required return on invested capital equals.

## **BENEFITS**

Creating this project has benefited students, the participating firms, the course instructor, and the University. The main beneficiary is the student, who gains a greater understanding of how capital budgeting is conducted in the business world. One of the most challenging aspects of teaching a capital budgeting course is to help students bridge the gap between the academic perspective on capital budgeting procedures and the practice of capital budgeting as reflected in the procedures used in the corporate setting. This project provides students with the detailed knowledge of how particular firms apply capital budgeting procedures, and the in-class presentations provides students with a look into how the process is applied for several firms. Another benefit for students is career advancement. As mentioned earlier, for part time students, working while attending graduate school, I suggest they use their employer as the subject firm. This provides them an opportunity to learn about the capital budgeting processes applied at their firm and exposes them to firm specific knowledge that may lead to career advancement. Furthermore, the students' recommendations regarding the firm's processes and the discussion of the process based on inconsistencies with procedures presented in class, provides students with the opportunity to showcase their advanced knowledge regarding capital budgeting procedures. It is clear that this experience demonstrates to students their depth of knowledge regarding the best practices to be used in capital budgeting process, in some cases significantly more than the "expert" being interviewed.

The firm may benefit from this project in two ways. First, the firm may directly benefit from adopting some of the student's recommendations regarding the firm's current practices. In a similar vein, by simply being asked to describe and justify the firm's capital budgeting methods, the individual being interviewed may consider altering these procedures to improve upon the value creation process. A second benefit of this project for the subject firm is the identification an individual at the firm that can be an effective capital budgeting analyst.

The faculty benefits from this project in many ways. First, practical knowledge is gained regarding capital budgeting processes that are used by the business community. As mentioned earlier, one of the more difficult aspects of an academic teaching a practical course such as capital budgeting is having a good understanding of how capital budgeting is actually practiced. From my experience, PhD programs do not cover the practical aspects of capital budgeting and, therefore, it becomes the responsibility of faculty to learn this on their own. In my opinion, to effectively teach a course on capital budgeting, the instructor needs to have not only a normative understanding of capital budgeting (how it should be done), but also have a positive understanding of capital budgeting (how it is done). Utilizing this project allows the faculty member to be educated in the positive approach to capital budgeting. As mentioned earlier, I have assigned this project over the last five years, two capital budgeting courses per year, with 10 or 20 student groups per course and, therefore, have learned about the capital budgeting practices of 40 to 50 different firms. Another benefit of this project for the faculty and, ultimately future students, is the contacts with potential guest speakers that I have made and used in future course offerings. Inviting guest speakers to class is probably the best way to expose students to the practical aspects of capital budgeting. An additional benefit of utilizing this project is the potential for consulting opportunities. Identifying local firms that are not currently using best practices in their capital budgeting process offers an excellent opportunity to offer consulting services. Finally, faculty utilizing this project will benefit from improved student satisfaction and, therefore, stronger student evaluations. Although, I can provide only anecdotal evidence of improved student satisfaction, it has become clear to me that, despite initial objections from students when this project is initially presented, the outcome is an overwhelming positive appreciation for the experience when it is over. One of the things students gain through completing this project is the reinforcement of the amount of knowledge they have about the capital budgeting process. This realization leads to increased satisfaction with the course and is reflected in their evaluations of the course. The following are examples of students' responses to the question: Was the Capital Budgeting Process Report a worthwhile assignment?

"I loved this assignment. It forced me to discuss the issues in a practical setting. It helped synthesize what I learned in class."

"Very worthwhile. Good chance to assess to what degree the real world is using concepts/tools that are being taught in class."

"Yes, being a new analyst at Zymogenetics it gave me some background into my company. It also quickly showed me areas where I could add value, bringing things from class. My boss talked

to me a lot about using Monte Carlo Simulation as well as Real Option Analysis in the future.”

“Yes, it allowed me to compare what we learned about correct capital budgeting techniques to what our firm actually does. It also allowed me to have exposure to finance people at my company, which is the department I would like to move into upon completing my MBA!”

“I was actually dreading it at first but when our first person flaked out on us, we went with my current boss. With Boeing being as big as it is, I never realized we did “real finance calculations” there. By doing this project, I learned about a new area of Boeing that I would someday like to move into.”

“Yes, I enjoyed it because we actually went and met with the guy in person. Had it been done over email, I don’t think the experience would have been the same. It was good to hear from a working individual that what we were learning in class is actually applied in the outside world.”

“Yes, definitely. Talking to the investment analyst at the firm about same issues discussed in class was helpful in better understanding some concepts as well as learning about the practice and theory differences was enlightening.”

Finally, I believe the business school and the university also benefit from this project, as it provides positive exposure for the school. Sending out knowledgeable students, to discuss specific capital budgeting techniques, offers the local business community a glimpse into the quality of education provided by the business school and thereby improving the reputation of the institution. Furthermore, beyond impressing the business community with our students’ understanding of the capital budgeting process, practitioners also appreciate and support institutions that expose their students to real world experiences and provide a practical business education.

## ENDNOTES

<sup>1</sup> In a survey article by Farragher, Kleiman, and Sahu (1999) they include a table providing a summary or a historical perspective on survey results. More specifically, they report the findings of four survey studies that occurred from the late 1960s to the late 1980s (Klammer – 1972, Gitman and Forrester – 1977, Kim and Farragher – 1981, and Klammer, Koch, and Wilner – 1991). In Farragher, Kleiman, and Sahu (1999) survey, 85% of the firms used a cash flow based performance measure, 7% of the firms used and income based performance measure, and 8% of the firms used both.

<sup>2</sup> Their results show that NPV and IRR are the most often used performance measures, as 75% of the firms claim that they always or almost always use these measures.

<sup>3</sup> A possible extension of this project would be to have the students make a presentation to a group of individuals at the firm presenting these recommendations.

<sup>4</sup> An obvious example would be if the firm the students are investigating is a non-profit organization, a hospital, or an academic institution. Since the institution's objective is not likely to be to maximize shareholders' wealth, their unique capital budgeting objective will lead to different performance measures and ultimately different procedures in selecting projects to invest. Students will often ask whether it is alright to choose these types of institutions and I actually encourage them to do so because, in my opinion, these reports are often the most interesting because of their unique situations.

<sup>5</sup> I am not saying that this project would not work for a University that is not located in a major city, but that I have no experience in assigning this type of project at a different university.

## REFERENCES

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**Table 1. The Twelve Questions Provided to Students**

1. Who is able to identify investment opportunities facing the firm?
2. Who are the decision makers in the firm?
3. What performance measures are used by these decision makers (NPV, IRR, etc.)?
4. What is the cutoff rate (required return, hurdle rate) used and how is it determined?
5. Is the firm using risk-adjusted discount rates or not and, if so, how are they estimated?
6. Is the firm using a singular cut-off rate or multi-divisional cut-off rates? Why?
7. Are there capital constraints applied, if so, how is the level determined?
8. Does the firm lease assets, if so, how do they decide which assets to lease vs. buy?
9. Does the firm do its acquisition analysis internally and, if so, what models are used?
10. Does the firm invest internationally and, if so, how do they adjust for risk?
11. Does the firm have any post-audit processes in place and, if not, why not?
12. Does the firm apply real option analysis, if not, why not?

**Table 2. Grading Criteria for Capital Budgeting Process Report**

90% or more	Extremely Well Written and Easy to Read Extremely Interesting to Read Provides a reasonable response to the 12 suggested questions listed on pages 2 & 3 of this syllabus Discusses All Relevant Aspects of the Process That Are Inconsistent with Course Material Provides and Comments on the Firm's Explanation For This Inconsistency Makes Strong Well Thought Out Recommendations to Improve on the Firm's Capital Budgeting Process
80% or more	Mostly Well Written But With Some Rough Spots Pretty Interesting to Read Provides a reasonable response to at least 9 of the 12 suggested questions listed on pages 2 and 3 of this syllabus Discusses Some Relevant Aspects of the Process That Are Inconsistent with Course Material Discusses Some Explanation For Inconsistency Makes Reasonably Well Thought Out Recommendations to Improve on the Firm's Capital Budgeting Process
70% or more	Not Well Written and Hard to Read Not Very Interesting to Read Provides a reasonable response to at least 6 of the 12 suggested questions listed on pages 2 and 3 of this syllabus Discusses No Aspects of the Process That Are Inconsistent with Course Material Provides No Explanation For Inconsistency Makes No Reasonable Recommendations to Improve on the Firm's Capital Budgeting Process