Reading 32: Capital Budgeting

LOS 32a: describe the capital budgeting process and distinguish among the various categories of capital projects

Capital budgeting describes the process which companies use to make decisions on capital projects, i.e., projects with a lifespan of one year or more. It is a cost-benefit exercise which seeks to produce end results and benefits which are greater than the costs of the capital budgeting efforts.

There are several steps involved in the capital budgeting process. The specificity of the procedures adopted by a manager is, however, dependent on factors such as the manager's level in the company, the size, and complexity of the particular project being evaluated, and the size of the company.

Capital Budgeting Process

The typical steps involved in the capital budgeting process are:

Step 1: Generate ideas – Generating good ideas is the most important step.

Step 2: Analyze individual proposals – Information is gathered which helps to forecast cash flows for each project and then evaluate the project's profitability.

Step 3: Plan the capital budget – This step involves looking at project timing, scheduling, prioritizing, and coordinating.

Step 4: Monitor and post-audit – How the project is performing is assessed and actual results (revenues, expenses, cash flows, etc.) are compared with planned or projected results.

Categories of Capital Projects

Capital budgeting projects may be classified in a number of ways. One common classification is as follows:

- **Replacement projects:** Sometimes capital budgeting decision involves replacing broken down, worn out or older equipment with newer, more efficient equipment.
- **Expansion projects:** These increase the size of a company's business activities, and ultimately the size of the company.
- **New products and services:** capital budgeting projects which aim to increase a company's product and service offerings carry more uncertainty than expansion projects.
- **Regulatory, safety, and environmental projects:** These are usually undertaken due to a requirement by a governmental agency, insurance company or some other external party. Oftentimes they do not generate any revenue for the company, and it may actually be more prudent to shut down that part of the business that is related to the project.
- **Other:** These projects tend to not be subject to the usual capital budgeting analysis, and include, for example, pet projects of the company's CEO.

Question

Which of the following is *least likely* a typical classification for a capital project?

A. Expansion project

B. Modernization project

C. New products and services project

Solution

The correct answer is B.

A modernization project is not a typical classification used to describe capital projects. However, expansion projects and new products and services projects are typical classifications that are used.

Reading 32 LOS 32a:

Describe the capital budgeting process and distinguish among the various categories of capital projects

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LOS 32b: describe the basic principles of capital budgeting

Since capital budgeting describes the process by which all companies make decisions on their capital projects, it is not unusual for some fairly sophisticated techniques to be employed. Regardless of this, capital budgeting relies heavily on just a few basic principles.

Principles of Capital Budgeting

Capital budgeting typically adopts the following principles:

- Decisions are based on cash flows and not on accounting concepts such as net income.
- The timing of cash flows is critical.
- Cash flows are based on opportunity costs. A comparison is made between the incremental cash flows that occur with an investment and without the investment.
- Cash flows are analyzed on an after-tax basis. Taxes have to be fully reflected in capital budgeting decisions.
- The financing costs are ignored. Financing costs are already reflected in the required rate of return and therefore including them again in the cash flows and in the discount rate would lead to double counting.
- The capital budgeting cash flows are not the same as accounting net income.

Capital Budgeting Concepts

In addition to the basic capital budgeting principles outlined above, there are several concepts that capital managers should be aware of in the capital budgeting process. These include:

- **Sunk costs**: These are costs which have already been incurred.
- **Opportunity cost**: This refers to what a resource is worth if it is put to its next-best

use.

- **Incremental cash flow**: This is the cash flow which is realized because of a decision.

- **Externality**: This refers to the effect of an investment on other things besides the investment itself. If possible, these should be part of the investment decision. Cannibalization is one example of an externality. This occurs when an investment results in customers and sales moving away from another part of a company.

- **Conventional cash flows versus nonconventional cash flows**: A conventional cash flow pattern is one which has an initial cash outflow followed by a series of cash inflows. Conversely, a nonconventional cash flow pattern is one in which the initial cash outflow is not followed by cash inflows only, but the cash flows can flip from positive to negative again (or even change signs several times).

Question

Which of the following statements is *most likely* accurate?

A. In capital budgeting, only pre-tax cash flows should be considered.

B. The timing of cash flows is crucial to the capital budgeting process.

C. A nonconventional cash flow pattern is one that has an initial cash outflow followed by a series of cash inflows.

Solution

The correct answer is B.

Capital budgeting analysts make an extraordinary effort to detail precisely when cash flows occur.

Option A is incorrect because cash flows are analyzed on an after-tax basis; taxes have to be fully reflected in capital budgeting decisions.

Option C is incorrect because a conventional cash flow pattern (not a nonconventional cash flow pattern) is one which has an initial cash outflow followed by a series of cash inflows.

Reading 32 LOS 32b:

Describe the basic principles of capital budgeting

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LOS 32c: explain how the evaluation and selection of capital projects is affected by mutually exclusive projects, project sequencing, and capital rationing

There are several project interactions that make the incremental cash flow analysis very challenging for analysts. Specifically, the evaluation of capital projects, as well as their selection, may be greatly affected by the extent to which there are mutually exclusive projects and project sequencing and capital rationing occur.

Mutually Exclusive Projects

Mutually exclusive projects are capital projects which compete directly with each other. For example, if a manager has a choice to make between undertaking projects X and Y, and must choose either of the two and not both, then projects X and Y are said to be mutually exclusive. This scenario differs from independent projects which are those projects whose cash flows are independent of each other and can, therefore, be undertaken together.

Project Sequencing

The purpose of project sequencing is to arrange projects in a logical order for completion. It enables a project manager to determine the order of project completion which best manages the time and resources that are available.

Through project sequencing, investing in one project may create the option to invest in future projects. For example, a manager may invest in one project today and then invest in another project in a year’s time if the financial results of the first project or new economic conditions are favorable.

Capital Rationing

Capital rationing is the act of placing restrictions on the amount of new investments or projects that a company can undertake. It may occur either through the imposition of a higher cost of capital for investment consideration or by the establishment of a ceiling on specific portions of a budget.

Capital rationing is more frequent whenever a company has a fixed amount of funds available to invest. If however the company has more profitable projects than it has funds available for, then it will be forced to allocate these scarce funds in a manner which achieves maximum shareholder value subject to the funding constraints.

The opposite of capital rationing occurs whenever unlimited funds are available to a company. In this situation, a company can raise the required funds for all profitable projects simply by paying the required rate of return.

Question

Which of the following is an accurate example of mutually exclusive projects?

A. A manager can choose to invest in both projects A and B at the same time.

B. A manager can choose between investing in either project A or B, but not both.

C. A manager can choose to invest in project A first and then invest in project B shortly after the start of project A.

Solution

The correct answer is B.

Option B accurately describes two mutually exclusive projects.

Options A and C are incorrect because they involve two projects being invested in at the same time. Once two projects are mutually exclusive, you cannot invest in both at the same time.

Reading 32 LOS 32c:

Explain how the evaluation and selection of capital projects is affected by mutually exclusive projects, project sequencing, and capital rationing

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