

UGANDA INSTITUTION OF PROFESSIONAL ENGINEERS

PROJECT FINANCING & LIFE CYCLE MANAGEMENT

Capital Budgeting and Project Appraisal



Facilitator

Eng. Musinguzi Begumisa

MSc (Eng) MPIM MBA BSc (Eng)

Team Lead - Praus Engineering Group

17TH-18TH NOVEMBER 2022

PRESENTATION OUTLINE

- Learning objectives
- Mode of evaluation
- Introduction to capital budgeting
- Project investment decisions
- Steps and techniques used in capital budgeting
- Introduction to project appraisal
- Types of project appraisal
- Deciding a project based on cost benefit analysis

CAPITAL BUDGETING AND PROJECT APPRAISAL

Learning Objectives

The Engineer should be able to have the following skills at the end of the presentation:

- Define and comprehend the concept of capital budgeting
- Identify the process of appraising a project
- Understand the limitations and challenges of investment decisions
- Identify the major techniques used in capital budgeting and project appraisal
- Appreciate the complexity and need for expertise in making investment decisions

CAPITAL BUDGETING AND PROJECT APPRAISAL

Mode of evaluation of participant comprehension

The presenter will assess uptake of presentation by:

- Comprehension survey submitted to UIPE
- Level of engagement of participants
- Remembrance of facts, statistics and details
- Verbal feedback from the participants

CAPITAL BUDGETING AND PROJECT APPRAISAL

Introduction to Capital Budgeting

- Capital budgeting involves choosing projects that add value to a company
- It's a method of analyzing and comparing substantial future investments and expenditures to determine which ones are most worthwhile
- Involves projects such as acquiring land or purchasing fixed assets like a new truck or machinery or new plant or a big investment
- The process involves analyzing a project's cash inflows and outflows to determine whether the expected return meets a set benchmark.

Ponder on this!

“

THE AMOUNT OF MONEY THAT A PERSON HAS
IN HIS BANK ACCOUNT IS NOT DETERMINED
BY HIS STARTING CAPITAL BUT BY HIS
KNOWLEDGE ABOUT MONEY AND HIS ABILITY
TO MANAGE IT PROPERLY.

”

-Sunday Adelaja

CAPITAL BUDGETING AND PROJECT APPRAISAL

Features of Capital Budgeting

- Involves the exchange of current funds for future benefits
- Involves large investments in fixed assets and development projects
- Irreversible decisions
- The process involves high risk
- Funds are invested in Long Term assets
- Involves difficult decisions
- Future benefits will occur to the firm over a series of years

CAPITAL BUDGETING AND PROJECT APPRAISAL

Tips for Improving the CB Process

- Diversify your income stream. If funding from donors or grant programs suddenly dries up, your cash flow can be put at risk especially for non-profits. find new funding opportunities are through **capital campaigns** and **corporate partnerships**.
- Focus on where you **can cut costs**. Use in-kind gifts (office space, technology, software, legal services) from organization to raise capital
- Have a plan in the case of a funding shortage: Have **an operating reserve** that consists of liquid, unrestricted assets that an organization use in shortage

Disadvantages of Capital Budgeting:

CAPITAL BUDGETING AND PROJECT APPRAISAL

Drawbacks of Capital Budgeting

- Investment **assumptions** for investment proposals under consideration are usually not practically true in some particular circumstances.
- **Estimation** of future cash flows and outflows may not be accurate. The future is always uncertain and the data collected for future may not be exact
- There are certain **soft factors** like morale of the employees, good-will of the firm etc. which cannot be correctly quantified
- **Urgency** is another limitation in the evaluation of capital investment decisions.
- **Uncertainty** and risk pose the biggest limitations to the techniques of capital budgeting

CAPITAL BUDGETING AND PROJECT APPRAISAL

Implication of Investment Decisions

- Effects of CB decisions will last for many years, and will have to be endured over **longer periods** than consequences of current operating expenditures.
- Decisions to invest in fixed assets have long-term effects on the rate of growth and the direction of growth of company.

CB decisions have also long term implications on

- Risk Complexion of the Company. e.g. fluctuation of profits;
- Long Term Survival of the company;
- Competition for Market share;
- Operating costs.

CAPITAL BUDGETING AND PROJECT APPRAISAL

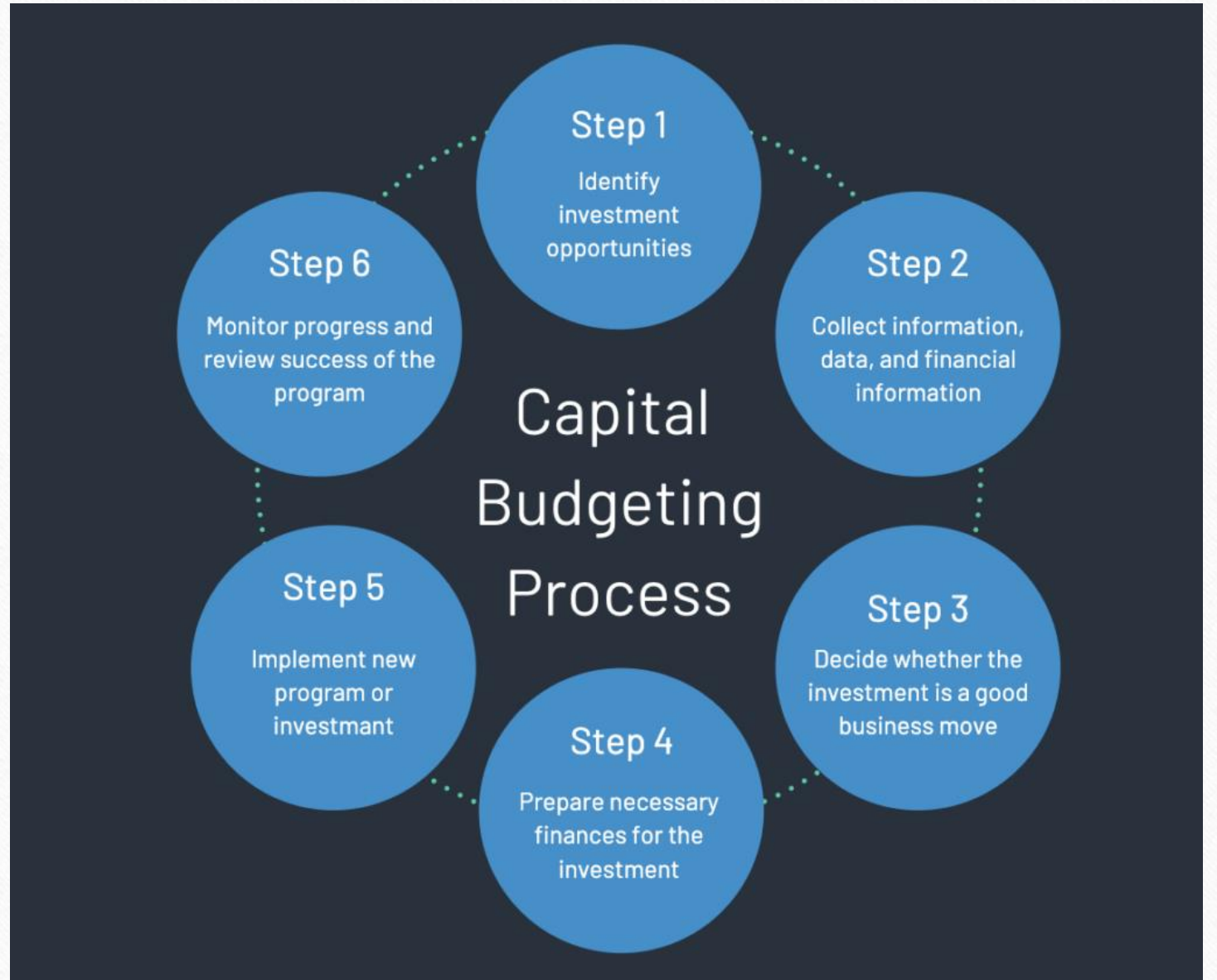
Uncertainty and Risk in Making Investment Decisions

Factors that cause uncertainty include:

- Political factors - Policies, changing government priorities;
- Economical factors - Inflation, Price changes, demand & supply, competition;
- Ecological factors - Environs, drought, etc.
- Social factors - culture, social values, etc.;
- Technological factors - IT, obsolescence;
- Legal Factors.

Hence the difficulty in making CB decisions.

The Capital Budgeting Process



CAPITAL BUDGETING AND PROJECT APPRAISAL

Steps Involved in Capital Budgeting - List

- **Project Generation**
- **Project Evaluation**
- **Project Selection**
- **Project Execution**
- **Project Monitoring**

CAPITAL BUDGETING AND PROJECT APPRAISAL

Steps – Project Generation

- Generate new projects from top management;
- Generate new ideas from functional managers, heads of departments & supervisors;
- Generate new ideas from all other remaining employees in the organization including those at the lowest rank on the organizational echelons;
- Generate new expansions, alterations or modifications programs;
- Generate cost reduction of existing products and programs etc;
- Establish a systematic way of generating projects

CAPITAL BUDGETING AND PROJECT APPRAISAL

Steps – Project Evaluation/Appraisal

- Estimation of Benefits and Costs;
- Selection of criteria for judging desirability of projects;
- Choosing Criteria that are consistent with the objective of Wealth Maximization;
- Choosing Criteria that do not discriminate or favor certain projects; and
- Choosing Criteria that rank projects correctly.
- Appraise/evaluate projects.

CAPITAL BUDGETING AND PROJECT APPRAISAL

Steps – Project Selection

- First, projects are evaluated using criteria set for screening the financial desirability;
- Second, top Management should screen the projects at multiple levels; i.e. Finance Directorates, Top Mgt Team, BOD, & AGM Levels for companies.
- Finally, Financially viable projects are selected & approved for implementation

CAPITAL BUDGETING AND PROJECT APPRAISAL

Steps – Projects Execution

- Implementation of selected & approved projects
- Follow up, & Monitoring, i.e. Reporting the results of operations – Via Financial Statements;
- Control of project costs by setting targets such as Budgets, Implementing & Reporting Results, Determining Variances & Causes thereof, and Taking Remedial Action.;
- Performance evaluation, i.e. Ex-Ante M&E, Midstream M&E, and Ex-Post M&E.

CAPITAL BUDGETING AND PROJECT APPRAISAL

Techniques used in Capital Budgeting - List

1. The Net Present Value Method - **NPV**
2. The Internal Rate of Return - **IRR**
3. The Pay Back Period Method – **PBP**
4. The Profitability Index (Cost Benefit Ratio) – **PI**
5. The Accounting Rate of Return - **ARR**
6. Cash Flow Analysis (Via Income Statement & Cash Budget)

$$NPV = \sum_{n=0}^N \frac{C_n}{(1+r)^n} \quad ARR = \frac{\text{Average annual profit}}{\text{Average investment}} \times 100$$

$$IRR = \sum_{t=1}^t \frac{C_t}{(1+r)^t} - C_0$$

$$DPB \rightarrow \sum_{n=1}^N \frac{CF_n}{(1+r)^n} \equiv \sum_{n=1}^N \frac{I_n}{(1+r)^n} \equiv I_0$$

CAPITAL BUDGETING AND PROJECT APPRAISAL

Techniques – Payback Period

- The payback period : Length of time it takes for an investment to make back the money that was spent on it. **Used to estimate project viability.**
- Payback analysis calculates how long it will take to recoup the costs of an investment.
- Obtained by dividing the initial investment in the project by the average yearly cash inflow that the project will generate.
- Payback analysis is the **simplest form** of capital budgeting analysis, but it's also the **least accurate.**
- **Example:** If it costs \$400,000 for the initial cash outlay, and the project generates \$100,000 per year in revenue, it'll take four years to recoup the investment.
- Used when companies have only a limited amount of funds to invest in a project

CAPITAL BUDGETING AND PROJECT APPRAISAL

Techniques – Average Rate of Return

- ARR: a way of comparing the profitability of different choices over the expected life of an investment. **In order to make an investment decision.**
- ARR: Average annual amount of cash flow generated over the life of an investment.
- Calculated by aggregating all expected cash flows and dividing by the number of years that the investment is expected to last.
- **Example:** an investment expected to generate returns of \$22,000 in the first year, \$32,000 in the second year, and \$36,000 in the third year. The average of this amount is \$30,000. The initial investment was \$300,000, so the average rate of return is 10%

CAPITAL BUDGETING AND PROJECT APPRAISAL

Techniques – Net Present Value

- NPV is the difference between what the item is currently worth vs. what the item will be worth in the future. **Used to estimate productivity.**
- **Key Principle:** Money in the future is worth less than money in the bank today.
- NPV: Used to calculate today's value of a future stream of payments.
- Positive NPV is desirable. It means that the discounted present value of all future cash flows related to that project or investment will be positive, and therefore attractive.
- To calculate NPV, you need to estimate **future cash flows** for each period and determine the **correct discount rate**.
- A good investment will have minimal or no loss in the net present value.

CAPITAL BUDGETING AND PROJECT APPRAISAL

Techniques – Internal Rate of Return (IRR)

- IRR: Method of calculating an investment's rate of return. Calculation excludes external factors, such as the risk-free rate, inflation, the cost of capital, or financial risk.
- **IRR used to compare and rank projects based on their projected yield.**
- It is the expected compound annual rate of return that will be earned on a project or investment
- When calculating IRR, expected cash flows for a project or investment are given and the NPV equals zero.
- Initial cash investment for the beginning period will be equal to the present value of the future **cash flows** of that investment
- If the IRR is **greater than or equal to the cost of capital**, the company would accept the project as a **good investment**.

CAPITAL BUDGETING AND PROJECT APPRAISAL

Techniques – Profitability Index (PI)

- PI: Ratio of payoff to investment of a proposed project. Used for ranking projects & allows you to **quantify the amount of value created per unit of investment**
- It helps to determine **how profitable a project can be** and determine the costs and benefits of a potential project in order to evaluate whether to proceed with a project or not.
- Profitability Index = **Present Value of Future Cash Flows ÷ Initial Investment in the Project.**
- The rule is that a profitability index or **ratio greater than 1** indicates that the project should proceed.
- **For example:** A project that costs \$1 million and has a present value of future cash flows of \$1.2 million has a PI of 1.2. **It is a GO**

CAPITAL BUDGETING AND PROJECT APPRAISAL

Cost Benefit Analysis for Public Sector Investments

- **CBA:** Process used to measure the benefits of a decision or taking action minus the costs associated with taking that action. Standard approach for quantifying **intangible benefits** additional goals to assess the economic viability .
- Formal economic analyses (based on net present values) are inadequate for public investment analyses as the anticipated objectives are often broader than pure market concerns.
- Additional objectives such as local capacity-building, employment generation, import substitution, multiplier effects, foreign currency earnings, as well as encouraging advocacy on women in development and/or disability issues are considered.
- Social cost-benefit analysis is often viewed as the public expenditure equivalent of net-present value methods used in evaluating private investments.

CAPITAL BUDGETING AND PROJECT APPRAISAL

Project Appraisal

- Project appraisal is the process of assessing, in a structured way, the case for proceeding with a project or proposal, or the **project's viability**.
- Appraising a project means evaluating the proposed solution against its ability to solve the identified problem or need.
- Without having appraised a project, it is financially and technically unreasonable to proceed with further planning & development of the project.
- In terms of results, identify and predict risks and their impacts on delivering the results which were planned for in the project plan and contract.
- Financially, determine if an investment has a satisfactory return for your organization

CAPITAL BUDGETING AND PROJECT APPRAISAL

Project Appraisal – Financial Appraisal

Financial appraisal examines the financial flows generated by the project itself, and the direct costs of the project measured at market prices.

To determine whether the financial costs and returns are properly estimated and whether the project is financially viable.

Following minimum details are determined in the financial appraisal;

- i. PI
- ii. NPV
- iii. CBR
- iv. IRR
- v. PBP

CAPITAL BUDGETING AND PROJECT APPRAISAL

Project Appraisal – Economic Appraisal

Economic appraisal: How far the project contributes to the development of the sector, industrial development, social development, maximizing the growth of employment,

Adjusts costs and benefits to take account of opportunity costs benefits that include the indirect effects of the project that are not captured by the price mechanism:

- Employment creation,
- Social implications,
- Creation of political stability,
- Multiplier effects etc.

CAPITAL BUDGETING AND PROJECT APPRAISAL

Project Appraisal – Social Appraisal

- A Social Appraisal considers impact of the project's interventions and if these are in line with social objectives of the project.
- Depending upon the policies of the organization, it could include gender assessment, impact on children, etc.
- Social appraisal examines the distributional consequences of project choices, both inter temporal concerns (i.e. effects over a period of time, today versus the future); and also intra temporal concerns (e.g. concerns between groups in society at a specific point in time).

CAPITAL BUDGETING AND PROJECT APPRAISAL

Steps in Cost Benefit Analysis - List

- Step 1:** Identify all costs and benefits using the principle of opportunity cost
- Step 2:** Measure the benefits and costs using money as a unit of account
- Step 3:** Consider the likelihood or probability of the cost or benefit occurring and carry out sensitivity analysis)
- Step 4:** Take account of the timing of the cost and benefit (i.e. discounting). A £1,000 benefit now is worth more than £1,000 benefit in 10 years time.

CAPITAL BUDGETING AND PROJECT APPRAISAL

Is the Project Worth?

- Yes if **discounted benefits** outweigh **discounted costs**.
- Are the numbers making sense?
- Does it have the good will of the community?
- Will it improve the lives of the people?
- If the government has to choose between competing projects then the ones with the highest positive net present value should be undertaken.

CAPITAL BUDGETING AND PROJECT APPRAISAL

Recap

1. **Projects require huge financial resources and their selection and implementation requires careful decision making processes**
2. **Project financing is either through loan financing or choosing between competing demands**
3. **Thus; project appraisal is a critical step in making the right / best decisions. Capital Budgeting methods are handy in this respect.**
4. **Public sector appraisal is broader in terms of factors to be considered i.e. financial, economic and social.**

Delicate Balance!!



KEY TAKE AWAYS?

LET'S TALK

THANK YOU!