Cosmo School

Class: 10
Subject: Finance & Banking
Chapter: 05 (Capital Budgeting)

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Important Topics Exposition:
[The important information of this chapter has been provided here at a glance.]

1. ### Concept of Capital Budgeting:
   Capital budgeting is a process related with long tens investment decision. This decision process starts from the purchase of fixed asset and include modernization, replacement of these asset. Fixed asset, business expansion, new product development are also within the scope of this decision.

2. ### Application of capital budgeting:
   Capital Budgeting is applied in all aspect of long term investment decision. Capital budgeting typically involves substantial expenditures thus this decision depends on planned financing. Now we will discuss about some popular application of capital budgeting decision.

   ❖ **Fixed Asset Purchase:**
   To start a new business every business firm has to purchase fixed asset like: fridge purchase of grocery shop, sewing machine purchase of tailoring shop and wheel chair, hair cutting machine purchase for saloon are all long term investment decisions. Whether these long term investment decisions will be profitable or not require an evaluation process of finance. Capital budgeting is such kind of evaluation process. In any type of business which incurs fixed cost is required to apply capital budgeting process before purchase any fixed asset. In running business sometime fixed asset may become obsolete. That time replacement is required for the fixed asset. Business people take this decision by the application of capital budgeting decision.

   ❖ **Business expansion with the intension to increase the production capacity:**
   In case of running institution production capacity was required to increase. By the installation of high capacity machine this purpose can be fulfilled. So, decision of purchasing a high capacity machine can be taken after proper evaluation by the application of capital budgeting technique.

   ❖ **Product diversification:**
   New product may need to be marketed along with the existing products in the market to extend the business of the Company. In case of marketing a new product, decision maker at first has to collect information regarding the life of new product; calculate the cost of production, market demand, administrative cost and expected income. To find out all these require applying the capital budgeting decision.

❖ **Replacement and modernization:**
As firm growth slows and it reaches maturity most capital expenditure made to increase efficiency by replacing or renewing obsolete asset. Such as example, if a saloon owner thinks, if he can afford to purchase some new or modern technology based machine to increase the efficiency in his hair cutting job then he needs to make a comparison between the incremental cash outlay of this decision and the incremental cash inflow by this decision. If incremental cash inflow is higher than the incremental cash outlay then replacement decision will be profitable. It is another application of capital budgeting.

3. Concept of Cash Flow:

Long term decision includes machinery purchase, business expansion, technological up gradation of production process and other decisions associated with huge amount of cash outflow. Cash Flow estimation is the first step of Capital Budgeting decision. To estimate the cash inflow every business has to identify the expected sells amount, expected current expenses, cost of capital and other expenses. In business cash inflow occur from sales revenue and cash outflow occurs from current expenses, cost of capital and from other expenses. If any mistakes occur in estimation then it influences the business decisions.

4. Techniques of Capital Budgeting:

Different techniques are used in guiding the capital budgeting decision. Selection of profitable project in accordance with the objective is the main target of these techniques. Example: Sewing Machine of tailoring shop, fridge of a grocer and hair cutting machine in saloon are all long term investment decision.

Techniques of the capital budgeting is as follows:

    i. ARR (Accounting Rate of Return) Method.
    ii. Pay Back Period Method
    iii. NPV (Net Present Value) Method
    iv. IRR (Internal Rate of Return) Method

5. Concept of ARR:

Easy technique of capital budgeting is ARR method. Information collected from the financial report of the Institution this rate is calculated. In this technique net profit is being considered in lieu of expected cash flow.

$$\text{Formula of ARR} = \frac{\text{Average Net Profit}}{\text{Average Investment}} \times 100$$

In this technique, if all cost including tax is deducted from the sells revenue then net profit comes out. If expected total profit is divided by the total year then average profit comes out and if investment is divided by the 2 then average investment comes out. If average net profit is divided by the average investment then average rate of profit comes out.

Decision Rule:
If project is financed by taking loan from the bank then bank demands interest. Loan will not be granted if ARR is lower. For some companies minimum ARR remain fixed by the company's administrative decision. If calculated ARR for a specific project is lower than the minimum acceptable ARR, then this project will be rejected. On other side if calculated ARR is higher than the minimum acceptable ARR then this project will be accepted.

6. Pay- Back Method:

Pay-Back Method gives the answer about, after how long Invested capital will come back. This method is very popular and easy method of project evaluation or long term investment decision. The payback period is the amount of time required for the firm to recover its initial investment in project, as calculated from cash inflows. In the case of an annuity the payback period can be found by dividing the initial investment by the annual cash inflow. For a mixed stream of cash inflows, the yearly cash inflows must be accumulated until the initial investment is recovered.

In company, management specified their expected payback time as a measurement scale. It is specified by the management by considering the different factors like, nature of project, risk of the project etc.

Formula of Pay Back Time = Investment/Yearly Cash Flow

Decision Rules:

In Payback Time Method, the lower the recovery time or payback time the more it is attractive project for investment. Oppositely larger payback time indicates more riskiness of the project.

Again, if many alternative projects are available for the company then those projects are arranged in ascending or descending order. After that most attractive projects are selected depending on the financial capability of the company and remaining are rejected.

Short Questions for Self Assessment:

1. What is the key to success of finance?
2. What type of decision capital budgeting is?
3. Who has to take the responsibility of failure in the business?
4. Which technique is applied in purchasing fixed asset decision making for business organization?
5. What is product diversification?
6. What is cash inflow?
7. What is the key used as a book rate in the capital budgeting process?
8. Which one is the very popular and easy method of capital budgeting?
9. What kinds of investment decision of buying fridge of grocery store? Explain it.
10. Explain the procedure of verifying profitability in case of purchasing truck.
11. Why the purchase of air-conditioned machine for a saloon is long term investment? Explain.
12. What do you mean by the cash flow?
13. Why Accounting rate of return is comparatively better than Pay-Back Period for capital budgeting? Explain.
14. What is discount rate?

    (Ans: Discount Rate is the interest rate that is divided with future value to determine present value)
15. Explain the limitation of PBP?
16. What is capital budgeting?
17. Cash inflow – Net profit =?

CQs for Self-assessment (Board CQ):

1. Mr. Shohag has invested Tk. 5,00,000 for Jamuna Project for 5years. For the next 5 years the net profit earned from machines for the first year is Tk. 60,000; second year is Tk. 70,000; third year is Tk. 75,000; fourth year is Tk. 80,000 and fifth year is Tk. 85,000. Mr. Shohag makes a deduction from the scheme in a straight forward manner.
   a. Calculate the average mean rate of the Jamuna Project.
   b. Calculate the pay-back time of the Jamuna Project. Which project is acceptable in the pay-back system in the sphere of multiple projects?

2. Mr. Palash want to invest Tk. 7,00,000 for 6 years. For this reason he analysis are two project 'Shanta' and ' Shompa'. From those project next 6 years cash inflow are as follows:

Project	Year – 1 (Taka)	Year – 2 (Taka)	Year – 3 (Taka)	Year – 4 (Taka)	Year – 5 (Taka)	Year – 6 (Taka)
Shanta	2,30,000	1,80,000	2,00,000	1,90,000	1,50,000	1,30,000
Shompa	2,50,000	1,60,000	2,10,000	2,30,000	2,00,000	1,80,000
Shilpa	2,00,000	2,00,000	2,00,000	2,00,000	2,00,000	2,00,000

   a. Calculate the pay-back period of 'Shanta' project.
   b. Calculate the pay-back period of 'Shilpa' project.
   c. Which project is more acceptable of Mr. Palash for investment? Given logic.

3. Mr. Abrar is an industrialist. Recently he is thinking to invest his money in two projects named, 'Chapa' and 'Bely' for 3 years. Basically he will invest in any one project. The initial investment of two projects Tk. 5,00,000. Other information of two projects are as follows:

Anticipation	Project 'Chapa'	Project 'Bely'
Sales – 1st year	Tk. 2,00,000	Tk. 1,00,000
Sales – 2nd year	Tk. 2,50,000	Tk. 2,00,000
Sales – 3rd year	Tk. 1,50,000	Tk. 3,00,000
Current cost	40% on sales	40% on sales
Fixed cost	Tk. 50,000	Tk. 50,000
Depreciation	Tk. 20,000	Tk. 20,000
Tax rate	30%	30%

   a. Calculate the amount of cash-flow of Project 'Chapa'.
   b. Calculate the average rate of return of Project 'Chapa'.
   c. Which project do you think will be more acceptable to Mr. Abrar for investment? Give your logic.

4. Mr. Shohrab wants to invest Tk. 50 lac in a project. He has two options named 'Padma' and 'Meghna' to consider. It has assumed that the 'Padma Project' will generate profit before depreciation and tax for the next 4 years are Tk. 15 lac; Tk. 18 lac; Tk. 20 lac and Tk. 22 lac respectively. Pay-back period for 'Padma Project' is determined for 3.09 years.

   On the other hand, it is assumed that the profit after tax of the 'Meghna Project' for next 4 years will be Tk. 1.05 lac; Tk. 1.75 lac; Tk. 8.75 lac and Tk. 12.25 lac respectively. The tax rate is 30% for both the projects

   a. Calculate the average mean rate of the Padma Project.
   b. Which project will be suitable for Mr. Shohrab? Give your opinion based on pay-back period.