Financial Management for Engineers

Dr. Raza Ali Khan

Associate Professor

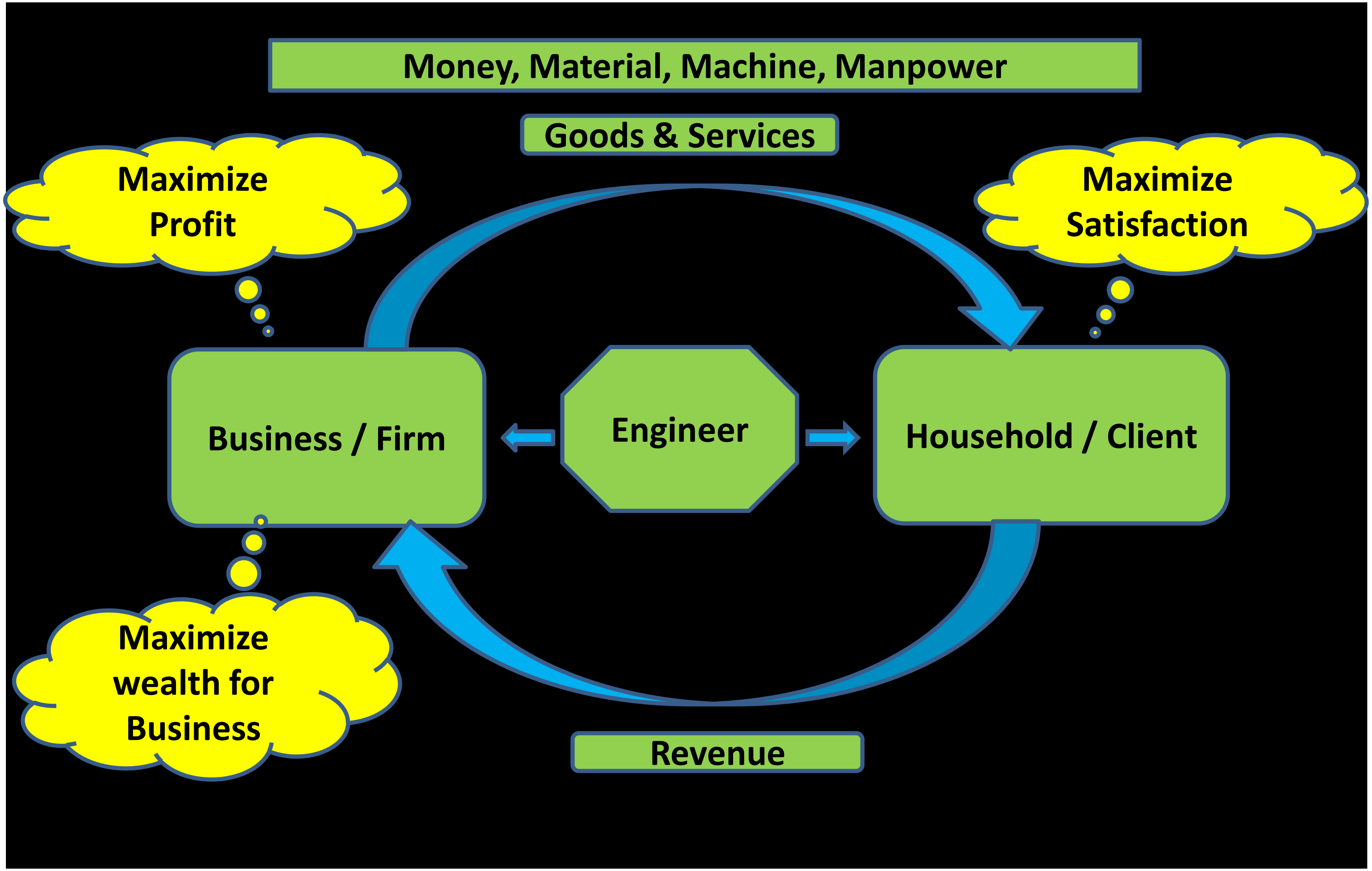
Civil Engineering Department

NED University of Engineering & Technology

Objective of Engineering

- Most effective utilization of energy and material or efficient utilization of engineering resources in order to produce goods and services for the society.

Economic Activity Flow Chart



Financial Management

- Strong money management is one of the major requirements for the successful business.

- Financial management is an art and science of money management.

Fundamental Questions for Starting New Firm/Business

1) What type of business organization you want to establish?

You must have the knowledge about:

- **Nature of business**
- **Types of business organization**
- **Merits & demerits**
- **Market**

2) What long-term investments should you take on?

You must have the knowledge about:

- **Investment Opportunities**
- **Amount of investment**
- **Timing**
- **Associated risk**

3) Where will you get the long-term financing to pay for your investment?

You must have the knowledge about :

- **Sources of funding**
- **Funding agencies**
- **Lending rate**

4) How would you manage your everyday financial activities such as collecting from clients and paying supplier?

You should understand about:
Working capital management

Business Organizations

	Sole proprietorship	Partnership	Corporation
Who owns the business?	**The Manager**	**Partners**	**Shareholders**
Are managers and owners separate?	**No**	**No**	**Usually**
Owner liabilities?	**Unlimited**	**Unlimited**	**Limited**
Ability to generate capital	Limited	Limited	Huge
Business Tax	**No (Only PI tax)**	**No (Only PI tax)**	**Yes + PI tax**

Capital Budgeting

The second question concerns the firm’s long-term investments.

- The process of planning and managing a firm’s long-term investment is called **capital budgeting**. It is also known as **Investment appraisal.**

Why capital budgeting is important ?

Capital budgeting process enables a company to:

- **Develop and formulate long-term strategic goals:** C.B process creates a framework for businesses to plan out future long-term direction.

- **Seek out new investment projects:**

Evaluation of new projects, an important function for all businesses as they seek to compete and profit in their industry.

- **Estimate and forecast future cash flows:** CB process enables executives to take a potential project and estimate its future cash flows, which helps to determine, a project should be accepted or rejected

Importance of Capital Budgeting

- **Facilitate the transfer of information:**

The capital budgeting process facilitates the transfer of information to the appropriate decision makers within a company.

Monitoring and Control of Expenditures: This is an important and crucial steps and has significant benefits of capital budgeting process.

- **Creation of Decision:** when a capital budgeting process is in place, a company is then able to create a set of decision rules that can categorize which projects are acceptable and which projects are unacceptable.

Methods of C.B

- **Net Present Value (NPV)**

Decision rule : NPV > 0 (desirable project)

- **Internal Rate of return (IRR)**

Decision rule : IRR > i % (Acceptable)

- **Payback Period**

Payback period < desired period (Acceptable)

- **Profitability Index (PI)**

Decision rule : B/C > 1

- **Equivalent Annuity**

Decision rule: EUAB > EUAC

Key Elements of Capital Budgeting

- Evaluating the size,
- Timing, and
- Future cash flow risk

Capital Structure

The third question concerns the firm's financial structure.

A firm's **capital structure** (or financial structure) is the specific mixture of long-term debt and equity the firm uses to finance its operations.

Important Concerns:

- How much should the firm borrow?
- What mixture of debt and equity is best?
- What are the least expensive sources of funds for the firm?

Working Capital Management

The term *working capital* refers to difference a firm's short-term assets, such as inventory, and its short-term liabilities, such as money owed to suppliers. This involves a number of activities related to the firm's receipt and disbursement of cash.

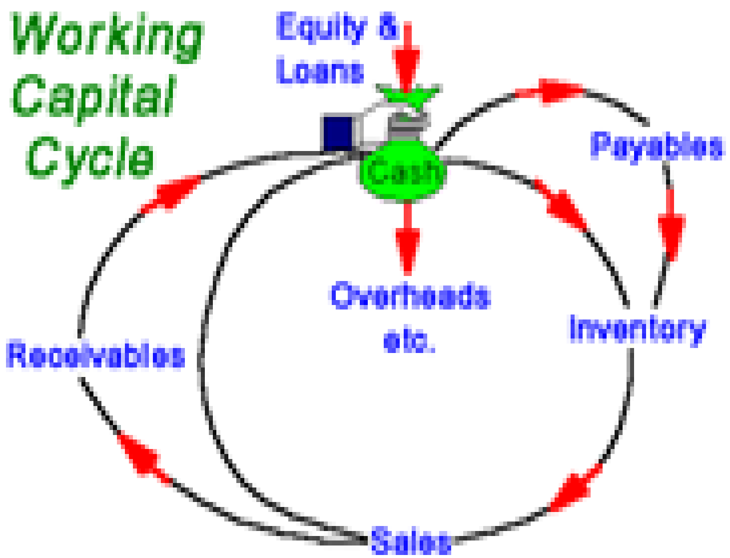
Questions about Working Capital:

(1) How much cash and inventory should keep on hand?

(2) Should the firm sell on credit? If so, what terms will offer, and to whom will extend them?

(3) How will the firm obtain any needed short-term financing?

Working Capital Cycle



If you	*Then ......*
• Collect receivables (debtors) faster	You release cash from the cycle
• Collect receivables (debtors) slower	Your receivables soak up cash
• Get better credit (in terms of duration or amount) from supplier	You increase your cash resources
• Shift inventory (stocks) faster	You free up cash
• Move inventory (stocks) slower	You consume more cash

Principles of FM

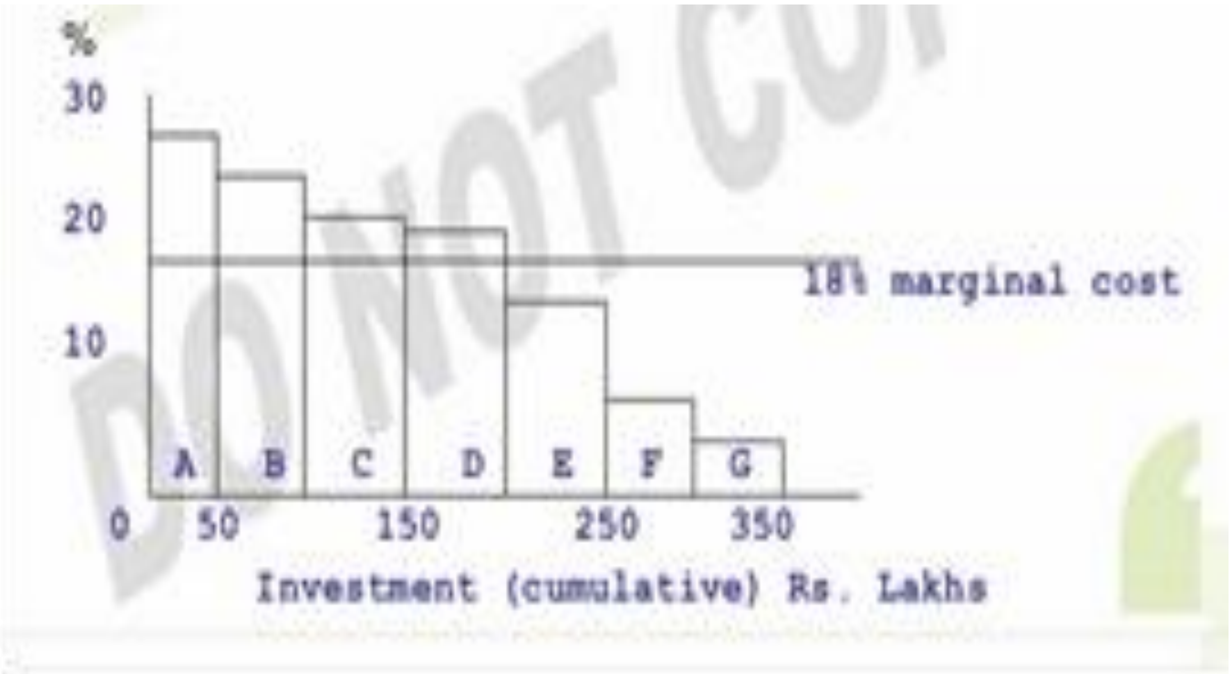
Strategic Principle :
All financial decisions be integrated with overall corporate objectives and strategies.

Optimization Principle :
Maximum utilization of funds should be the goal of financial management. This mandates proper balance between fixed and working capital.

Risk – Return Principle :
Maintain proper balance between risk and return.

Principles of FM

Marginal Principle :
An enterprise should continue to work until its marginal income equals its marginal cost.



Principles of FM

Suitability Principle :
Source of fund selected to finance an asset should match with the character of the asset.

Timing Principle :

This principle demands that finance manager should time his investment and financing decisions in such a way to seize all available market opportunities.

Flexibility Principle: :
The financial plan needs to have a built-in flexibility to meet dynamic business environment.

Key Elements of FM

Financial Planning

Management need to ensure that enough funding is available at the right time to meet the needs of the business.

Financial Control

Financial control is a critically important activity to help the business ensure that the business is meeting its objectives.

Financial Decision-making

The key aspects of financial decision-making relate to investment, financing and dividends

Scope of FM

- Estimating Financial requirements
- Deciding capital structure
- Selecting source of finance
- Selecting a pattern of investment
- Proper cash management
- Implementing financial control
- Proper use of surplus

Possible Goals of Financial Management

If we were to consider possible financial goals, we might come up with some ideas like the following:

- Avoid financial distress and bankruptcy.
- Beat the competition.
- Maximize sales or market share.
- Minimize costs.
- Maximize profits.
- Maintain steady earnings growth.

Thank You