

Principles of Construction Management

COTM 2151



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lecture 1. Construction
Industry and Functions of
Management

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1.1. Construction Industry and Its Management Requirements

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INTRODUCTION

1.1. Construction Industry and Its Management Requirements

- Construction and the ability to build things has transcended from **the most ancient human skills of the Primary age** to the **modern ages of Industrialization and Information.**
- During the whole of Primary age, the construction industry has largely related to **talents of human beings** on how to construct **shelters** and **small roads** and **river improvements.**
- Generally speaking, the focus during this age is largely on **fulfilling humans' basic needs and major figurative and monumental ones.**

□ .

□ This leads to **creating appropriate technology** that develop progressively **in line with increasing productivity.**

□ This brought the development of society into the **Industrialization age** where mass production for **assembly** is becoming possible.

□ This brought different approaches to **construction methods** and their **completion times**

□ This period has mainly created conscious way of technology improvements for first **mass**

- ▮ As the **number of humans' enlarge** and their **demands become more**, a need to fulfill such demands amass and in short period of time pressed human beings to **search for alternatives** in order to live peacefully for their co-existence
- ▮ Subsequently, the concept of competition such that **time, quality** and **cost** values were starting to govern.
- ▮ The development of technology and the concepts of competitions opened a considerable role for management functions such as **planning, implementing and controlling cycles**

Management

- ▮ is defined as the art of arranging and/or organizing various **activities, operating equipment** and **group of people** in a suitable manner to create **systematic operation** with continuity to achieve a common goal.
- ▮ As construction is also one of the industries which need the proper systematic coordination of **activities, materials, labor and operating equipment**, therefore managing such industry is necessary.
- ▮ management also involves the implementation of the function of management: **planning, organizing, implementing and controlling**. These functions are the very essence of management.

1.2. What is construction management?

- The management towards **coordinating** different workmen, **availing** the required machinery and material at the **right time**, **executing** the project **economically** and successfully, and **controlling** over the **quality**, **time** and **sequence** of flow of construction in a **well planned and organized manner** is called **Construction Project Management**
- In our world construction **resources are scarce, hard to obtain easily and becoming expensive** every day in spite of the fact that their demand is high. It is **this reality** which obliged us to utilize them efficiently and effectively

1.3 .Management Requirements:

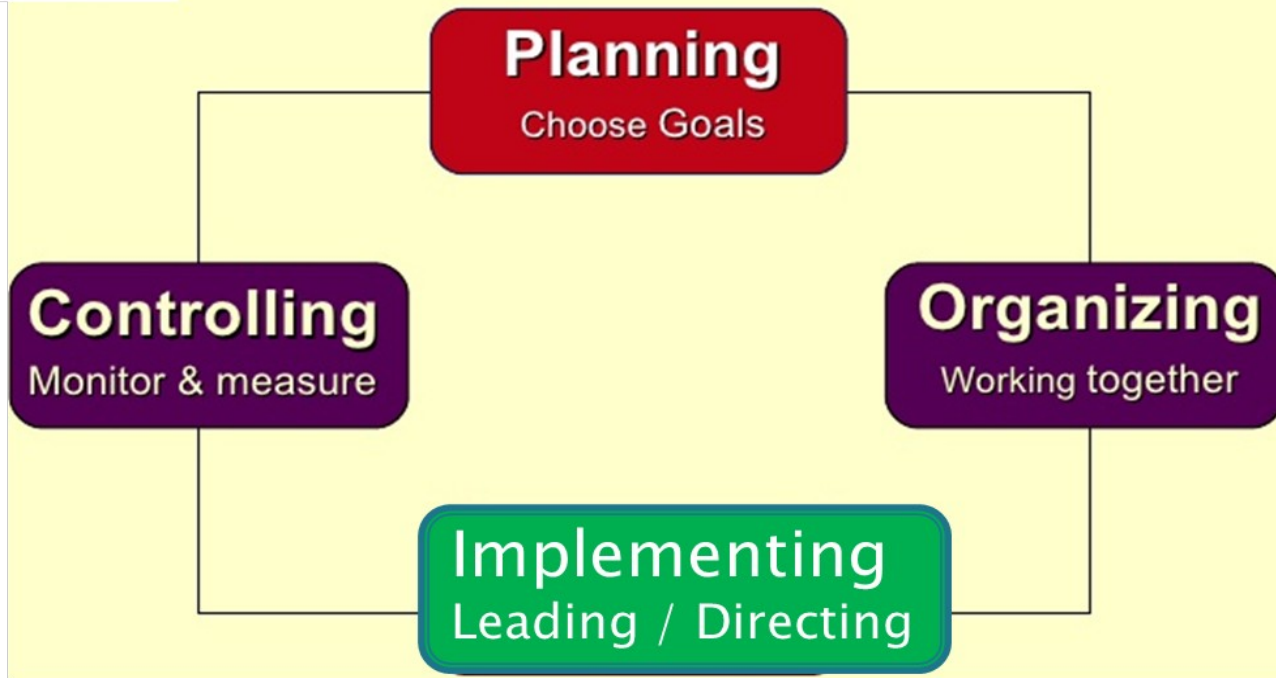
- ▢ proper planning and organization of the works,
- ▢ effective use of resources,
- ▢ completion of works within estimated budget and specified time,
- ▢ timely delivery and utilization of materials,
- ▢ necessary quality of the work,
- ▢ proper usage of equipment and latest methods of construction and technology
- ▢ building up of reputation for high quality of workmanship,
- ▢ controlling over the contract agreed upon and specification,

- motivation of people to work to their best and creating an organization that works as a team,
- taking of sound decisions at the lowest practical management level through delegation of authorities
- proper communication and reporting of the works executed,
- provisions of safe and satisfactory working conditions for all workers,
- monitoring of the works to be executed against planning,
- proper sequence of flow of construction, and
- proper coordination of the resources to create an organization that works as wholesome to fulfill the objectives

1.4.Functions of Management

Functions of management can be described in four major elements

Four Functions of Management



PLANNING:

- Deciding in advance :
 - What to do
 - How to do
 - When to do
 - Who is going to do it
- Bridges a gap between where we are today and where we want to reach.
- Thus, planning is a **systematic thinking** about **ways & means** for accomplishment of **pre-determined goals**.
- Planning is necessary to ensure **proper utilization** of **human & non-human** resources.
- It is an exercise in problem solving & decision making.

ORGANIZING:

- It is the process of **and physical arranging people resources** to carryout **plans** and accomplishes **organizational objectives**.
- According to Henry Fayol, “To organize a business is to provide it with everything useful for its functioning i.e. raw material, tools, capital and personnel’s”. To organize a business involves **determining & providing** human and non-human resources to the organizational structure
- Establishing the framework of working:
 - How many units or sub-units or departments are needed.
 - How many posts or designations are needed in each department.
 - How to distribute authority and responsibility among employees

IMPLEMENTING:

- It is the process where by the actual work is executed. This helps in executing the task defined in the planning stage with proper organization system together with monitoring quality, time and cost of the works.
- Proper inspection and supervision, recording data of executed works, availing all necessary resources at the right place and at the right time with their proper coordination are necessary to achieve the required goal efficiently and successfully.
- The most important aspect in implementation of works is **leading / directing**.

Leading / Directing is:

- Giving direction or instruction to employees to get the job done.
- Leadership qualities are required.
- Motivating employees by providing monetary and non-monetary incentives.
- Communicating with them at regular intervals.
- It is that part of managerial function which activates the organizational methods to work efficiently for achievement of organizational purposes.

MONITORING/ CONTROLLING:

- It implies measurement of accomplishment against the standards and correction of deviation if any to ensure achievement of organizational goals.
- The purpose of monitoring/controlling is to ensure that everything occurs in conformities with the standards. An efficient system of control helps to predict deviations before they actually occur.
- According to Theo Haimann, “**Controlling is the process of checking whether or not proper progress is being made towards the objectives and goals and acting if necessary, to correct any deviation**”.

Effective management can take place when proper planning, organizing, implementing, continuous communication, feed back for monitoring/controlling purpose and future planning are carried out successfully

- Therefore monitoring/controlling has following steps:
 - Establishment of **standard performance**.
 - Measurement of **actual performance**.
 - **Comparison** of actual performance with the standards and finding out deviation if any.
 - **Corrective** action

Management Scopes and Levels

- Managers could be classified into different categories depending upon the scopes and levels of management they are involved in. Depending on the nature and scope of the job managers are performing, they can be classified under either
 - ▢ Functional or
 - ▢ General managers.

- Functional managers are responsible for a work group segmented according **to functions**;
- General managers involve in managing **several different functions or departments** which are responsible for different tasks. While Functional managers greatest challenge is lack of communication skill; that of General Managers is technical skills
- Managers exist at various levels in the organizational hierarchy but are dependent on their sizes and forms. That is, while small organizations may have only one, big ones several layers.
- Generally speaking, a relatively large organization possesses three levels of managers:
 - ▮ **Top, Middle and First - line or Lower** managers and could resemble pyramidal shape.
 - ▮ These levels of managers do perform certain job or level – specific skills which are more important to their respective levels.



Top Management	Middle Management	Lower Management
Conceptual	Conceptual	Conceptual
Human	Human	Human
Technical	Technical	Technical

◦ From the figure above, **Technical skills** (the basic knowledge required to perform a task) are **more important to lower management levels**; **Human skills** (the ability to work well with other people individually and in a groups) are **more important to middle management levels** and **Conceptual skills** (Abilities which allow a person to visualize concepts, understand abstract ideas, solve problems, and understand how systems, programs and ideas interrelate) are **more important to top management levels**.

1.5. UNIQUE' CHARACTERISTICS OF CONSTRUCTION AND THEIR EFFECTS IN THE INDUSTRY

- Aside from major characteristics that have defining effects on its functioning, the construction industry is espoused to have a number of characteristics that sets it as '**unique**' from most other industries.
- These embrace:
 - political,
 - social and economic aspects and
- Are believed to have a telling effect in the way the industry is functioning.

- **Such effective characteristics are:**
 - a. Nature of Production**
 - b. Nature of the product**
 - c. Demand for the industry's products**
 - d. The structure of the industry**
 - e. The Workforce**

a. NATURE OF PRODUCTION

- ◆ The place of production of construction has to be necessarily the place where the product is going to be used:-
 - Working place is changing regularly
 - Workers & different partners and in different chains are constantly moving from one site to another
 - The site of production is the site of product(has to be built yet)
- ◆ So work in construction industry is mostly exposed to inclement weather, and therefore, to seasonal cycles and disruption

The work is of temporary duration

- labor contracts are of a fixed term nature.

Hence, insecurity of employment and earnings is significantly higher than in other industries.

Due to instability of the production process: -

the incidence of accidents is significantly higher than in most other industry (perhaps only less than mining).

For peculiarity of production process reasons, there are some peculiarities in the construction industry's labor relations:

- with very often lower wages
- particular vocational training systems
- social funds to compensate disadvantages caused by health and safety risks,
- disruption of earnings, and fluctuation with negative effects on earnings, vacation, and pensions

b. NATURE OF THE PRODUCT

- outputs of construction are generally:

*large,
heavy,
durable,*

*expensive,
heterogeneous, and
immobile*

But being required over a wide geographical area.

Due to location of production and location of products, (products immobile):-

Construction market is mostly restricted to be local.

Thus it is dominated by small enterprises that perfectly meet the low-size scale of most sites

the specialization of trade respectively and the geographic market

C Demand for the industry's products

- ◆ Other consumer products that are readily produced in bulk,
But **the product** of construction industry is **based upon**:
 - the initiation of the clients.
 - the requirements of the clients.
- ◆ Clients must **first define** their requirements in terms of:
 - the product they want
- ◆ Only then can the construction industry build it.

The level and type of demand cannot **be controlled**, manipulated or easily created by the industry itself

Hence unlike most industries where effective demand for their products is created and managed by the producers themselves,

Demand for construction products is mainly secondary or derive.

But the demand is determined by the demand & output of other goods and services

- **Investment goods for w/h the ultimate use is either**

- as a means to further production

- an addition to or improvement of the infrastructure of the economy

- A social investment or

- An investment good for direct enjoyment,

which it creates or helps create

D THE STRUCTURE OF THE INDUSTRY

product & production characteristics stated above largely determine the structure of the industry

- ▮ proliferation of many small firms, each forming temporary alliances upon project basis .
- ▮ construction industry is highly fragmented:

with the planning, design and procurement is separated from its construction process.

The industry is characterized by high levels of **uncertainty**.

▮ The **demand is so variable** and the environment so **competitive** for work that creates low levels of profitability.

It is only logical that the industry has to respond to the character and pattern of demand as it arises:

Because:

The construction industry is large

- its activities are fragmented
- include a wide range of types and sizes of construction works

The vast majority of works are small

- each is insignificant, combined, they represent a large part of the construction industry's total output.

- Time lags tends to be long and variable & there are large fluctuations in the demand for construction over time.

Because of all the above reasons and 'peculiarities', it is claimed that:

e. The Work force

The skills, commitment & effective organization of the work force are crucial in determining whether or not the industry can produce a high quality of output at a fair price

- **HOW . . . ??**

- **THROUGH:-**

- changing working patterns and challenge existing attitudes

- effective communication,

- education, training, participation and involvement

Generally:

- The common working practices:-
 - self-employment and
 - labor-only sub-contracting
- differentiates the construction industry from most other industries.
- These contribute heavily to disadvantages for which the construction industry has been criticized:-
 - the temporary nature of the work,
 - poor site safety record,
 - lower wages and lower social status of its labour force,
 - inadequacy of training (skills shortage)



Thank you