Manufacturing/Production Systems and Basic Concepts and

ORGANIZATION DIMENSION OF BUSINESS

ITISE

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Difference Between Manufacturing and Production

- Manufacturing and Production, are the two terms related to conversion of raw materials into finished products.
- **Manufacturing** is the process of transforming raw materials into ready goods, with the help of machinery.
- On the other hand, **production** alludes to the processes or methods, that converts inputs like raw material or semi finished goods, to make finished product or services, which may or may not use machinery.

- Manufacturing is a process that involves making something that uses raw material as input, whereas Production may or may not include raw material as input.
- We can also say that manufacturing is production, but production is not merely manufacturing.

BASIS FOR COMPARISON	MANUFACTURING	PRODUCTION
Meaning	The process of producing merchandise by using resources like labor, machines, tools, raw materials, chemicals and others is known as a Manufacturing.	Production is a process of making something used for consumption by combining various resources.
Concept	A process in which raw material is used to generate output.	A process of converting inputs into outputs.
Compulsory resources	Men and Machine	Men
Form of input	Tangible	Tangible and Intangible
Form of Output	Goods only	Goods and Services
Creation of	Goods that are suitable for use	Utility

Definition of Manufacturing

- Manufacturing is a process of **producing something useful through raw materials with the help of machinery or by hands in factories**.
- The term manufacturing is used in the industrial sector where the input is transformed into the output on a large scale. The input can be in the form of raw material, components, and parts.

- The most important feature of manufacturing is the man-machine setup. The product manufactured can either be directly sold to the final consumers or other manufacturing entities to produce other items like equipment, appliances, aircraft, household, etc.

Definition of Production

- The activity of transforming both material and non-material inputs into the output that create utility is known as **Production**.
- The transformation includes conversion of raw materials into work in progress and works in progress into finished goods ready for sale. Here, the material input includes raw material, components, partly finished goods, etc. and non-material goods include ideas, information, skill, art, talent, etc.

- The production of goods and services employs manpower and sometimes machines. The output generated should be used for consumption, or it must possess a value so that it can be sold to the consumer.
- In economics, the **production of goods and services is done to satisfy human wants**. There are four factors of production that are used in the activity; they are **land, labor, capital and entrepreneur**. The participation and coordination of all these factors can lead to a successful production.

Key Differences Between Manufacturing and Production

- The following are the major differences between manufacturing and production:

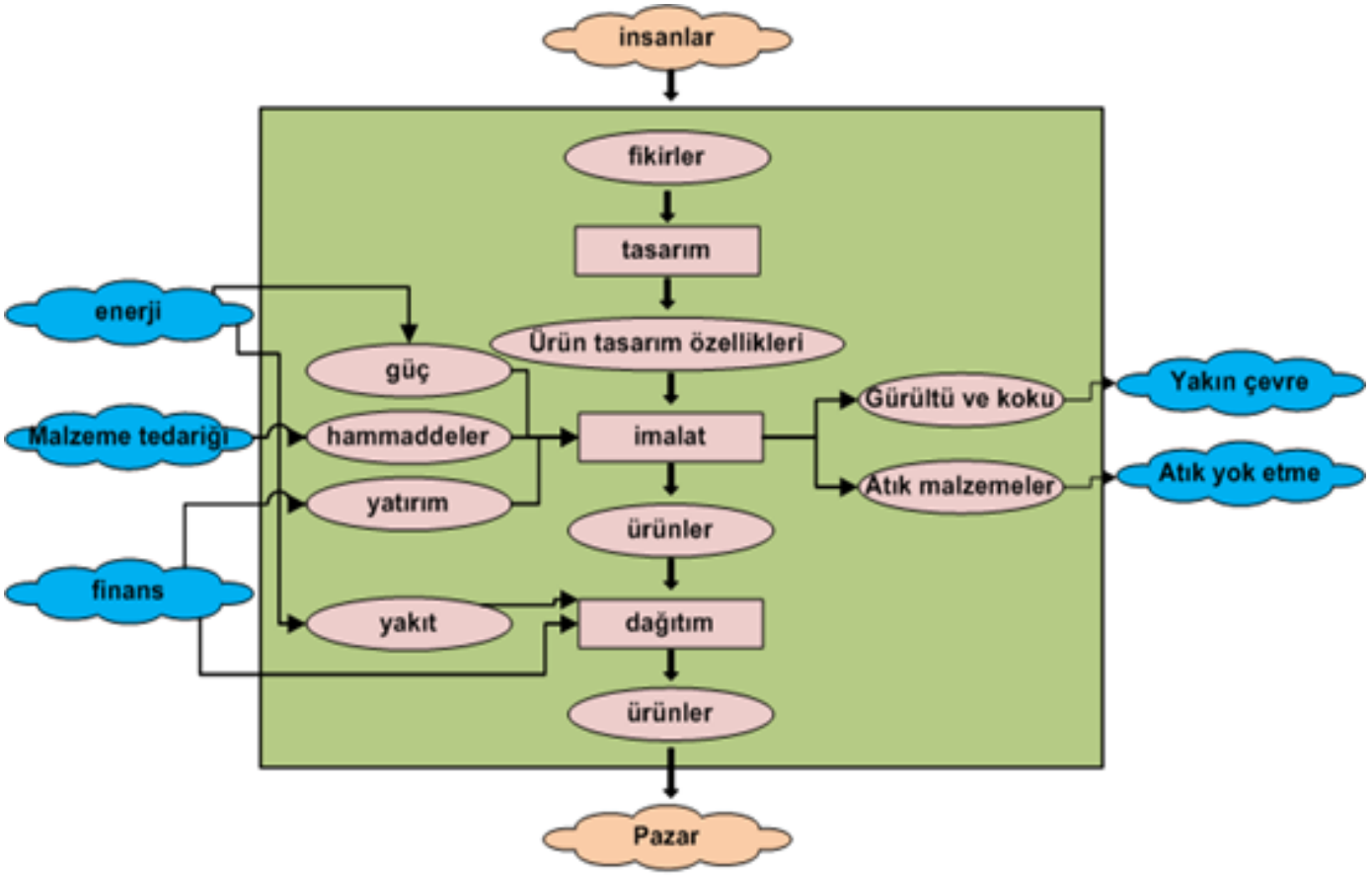
- **When the raw material is used as input to produce goods with the use of machinery is known as a Manufacturing. The process of transforming resources into finished products is known as Production.**

- Manufacturing consists of the generation of all those goods that are suitable for use or it can be sold out. Conversely, production involves the creation of the utility.
- In manufacturing, the use of machinery is a must whereas production can be done with or without the use of machinery.

- All types of manufacturing activities are used in production, but production may not necessarily be known as manufacturing.
- In manufacturing, the output generated will be tangible in nature, i.e. goods only, but in the case of production it produces both tangible and intangible outputs, i.e. goods as well as services.
- Men-machine setup should be there for manufacturing of goods, which is not in the case of production, the only man is sufficient for producing output.

Basic features of production / manufacturing;

- Specialization,
- Diversification,
- Standardization,
- Integration,
- Expansion and Contraction,



Design and manufacturing process

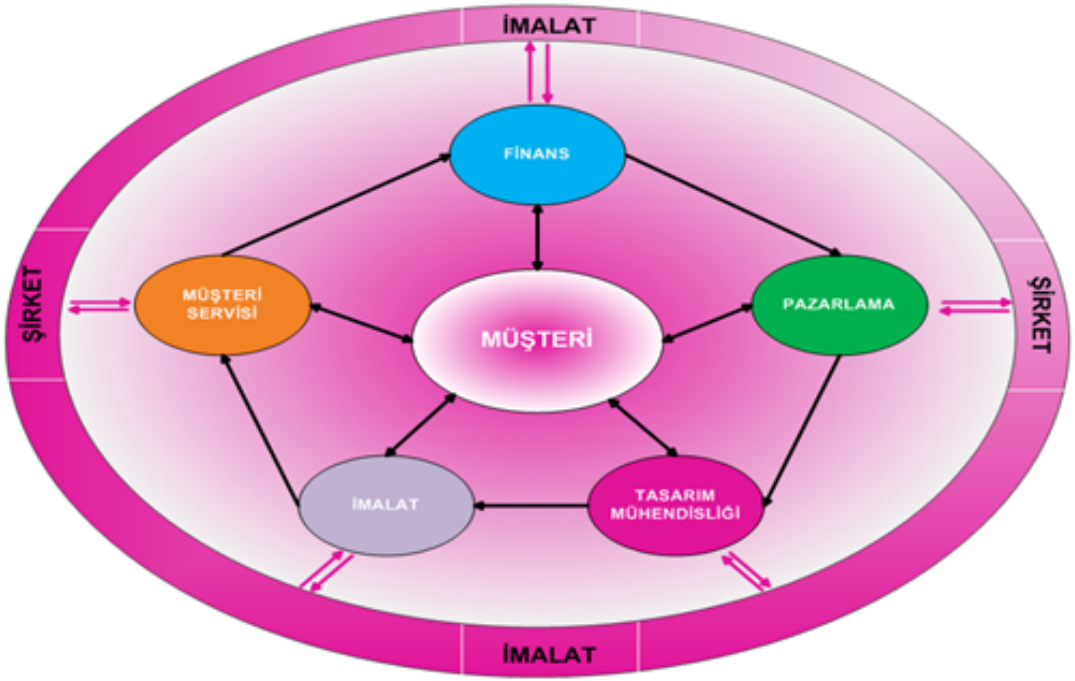
The production / manufacturing systems aim to realize the following elements in the most appropriate way in accordance with the operating policies.

- Output amount,
- Costs (material, labor, distribution, stock, etc.),
- Usage (material, available equipment, workforce), Quality and product reliability,
- Delivery on time,
- Investments (transformation of assets),
- Ability to adapt to product change, flexibility,
- Ability to adapt to change of quantity, flexibility.

The need for production planning is important for 4 reasons;

- Increased complexity of production and distribution systems,
- The need to adapt between business functions,
- To understand the changes in the market (customer requests) in advance and to make adjustments accordingly,
- The most economical way to use resources is to be able to.

The figure below shows how customers play an important role in the manufacturing business.



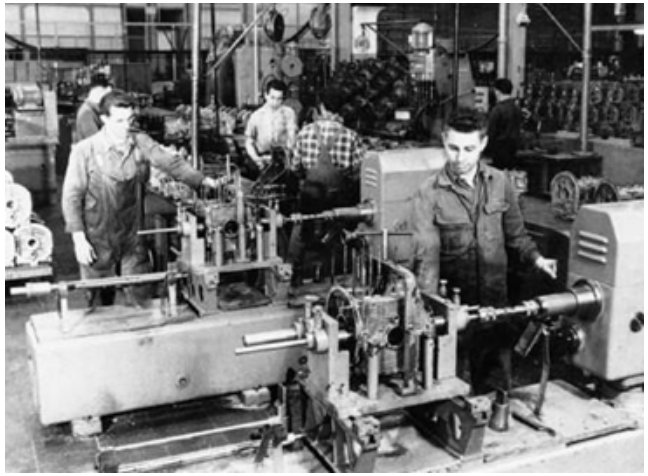
Conventional Manufacturing / Production Systems and Classification of Manufacturing / Production Systems

Manufacturing companies; can be classified according to their size, types of goods they produce, production methods. The classification to be considered here is the most commonly used classification based on production quantity and production flow.

Discrete and mass production

Discrete Production

A product is produced once or repeated at specific intervals. In other words, this type of production can be one-off or repeated. This occurs again at uncertain intervals if the demand is uncertain, but at certain intervals if the demand is certain.



Major Features of Discrete Production

- Product is manufactured according to order,
- Production quantities are low,
- There is a wide range of products,
- General purpose equipment and therefore low speed and efficiency,
- The workload on the benches is unbalanced,
- There is a high quantity of raw materials and semi-finished products,
- Changes are frequently made in plans and programs.

Mass Production

it is aimed to produce one type of product at indefinite intervals. In short, a single type of product is produced continuously with a large quantity. It is also called **mass** production or **flow type** production.

Main Features of Mass Production

- The product is produced for stock purposes, not for order,
- Production quantities are high,
- Special equipment is needed therefore high speed and efficiency is seen,
- Narrow product range / Single product production,
- Workload is balanced
- Stock levels are low,
- Plans and programs rarely change.

Other Classifications for Production

- Project Type Production
- Workshop Type Production
- Bulk Type Production
- Flow Type Process
- Cellular Production

Project Type Production

In this type of production, only one product is produced. Production is carried out according to customer demand. This type of production companies, dams, shipbuilding shipyards, the companies that manufacture aircraft can give as an example.

Production times may vary. Sometimes it can take weeks, sometimes months, sometimes years. In this type of production, only one product is produced, single, large and very complex.

Workshop Type Production (Production According to Order, Part Type Production, Jop Shop)

The production range is small but the product range is quite wide. Production is aimed at customer demands.

Because all the products produced are for different purpose and different purpose; the processes in the production process vary.

Since there are general-purpose equipment in this type of production, when a special production is usually performed, some machines are overloaded and others may remain idle.

Bulk Type Production

A single product and expert work force are in the foreground in mass, mass type production. Generally, the products produced are the same, but there are model differences between the products (version).

Main characteristics of bulk type production; high amount of production is the design of the enterprise and equipment according to the product. In bulk type production, product quantities are very high. Therefore, production is performed in a way to respond to long-term demands.

Flow Type Production Systems

It is seen that this type of production is discussed in mass type production in different sources.

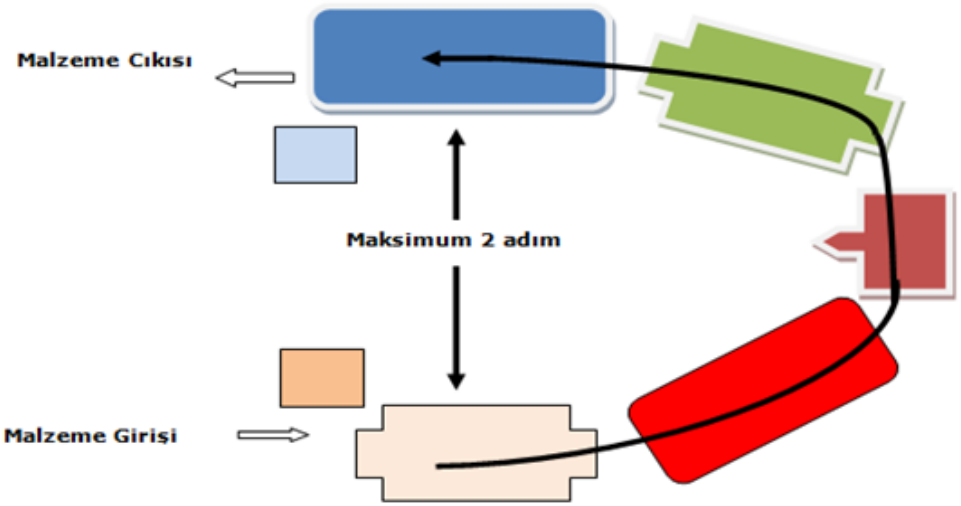
Flow type production; oil refineries, sugar factories and cement factories.

Flow Type Production Systems

In this type of production, the basic properties of the stack type are effective. The production speed is very high in such systems. It is almost impossible to use the facilities that aim at such a single product for different purposes. For example; it is not possible to convert an iron and steel factory to produce a different product.

Cellular Production System

The cellular production system is the system in which the production of a particular group of components with similar production characteristics in the system is the process for the production of a complete set of components and, in particular, machines or equipment groups.



Classification according to Production Methods: Classification according to production methods is examined under 5 sub-headings.

- Primary (primary) Production,
- Analytical Production,
- Synthetic Production,
- Fabrication Production ,
- Assembly Production

Classification according to Product Types: Production of iron and steel, production of coal, production of electrical equipment, production of electronic products and production of textile products.

Classification according to Production Quantity or Flow: Production according to the order, batch production, continuous production.

Other Production Types: Production of research, production of models and prototypes, production of test models, production of pilot products, production of finished products, production of transition circuit for new models, production of starting circuits, production of demonstration and demonstration products, production of export products, modification, repair and return products It manufactures.

ORGANIZATION DIMENSION OF BUSINESS

Businesses; economic, social and technical organizations that produce or market goods and services in accordance with the wishes and needs of consumers. Businesses need a certain organizational structure to exist and to achieve their goals.

The main benefits of organization in a business;

Ensures that the work of the company is carried out in unity. Makes management easier. The manager knows what the employees are doing and the degree of responsibility.

Various principles and characteristics of organizations;

- Unity of purpose,
- Competence,
- Business division and specialization,
- Hierarchy,
- Unity of command,
- Responsibility,
- Equivalence of authority and responsibility,
- Equilibrium principle,
- Continuity,
- Facilitating leadership,
- Description of tasks.

The organizational structure is shown in diagrams. These schemes are called as Organization Charts.

The organization chart can be defined in different ways. These:

- It is a graph showing the various elements of the structure of an organization.
- It is a graph that displays the structure of the business as a whole and considers the various relationships between the services in a complementary order.
- In a sense, it is a bird's-eye view of the organization.

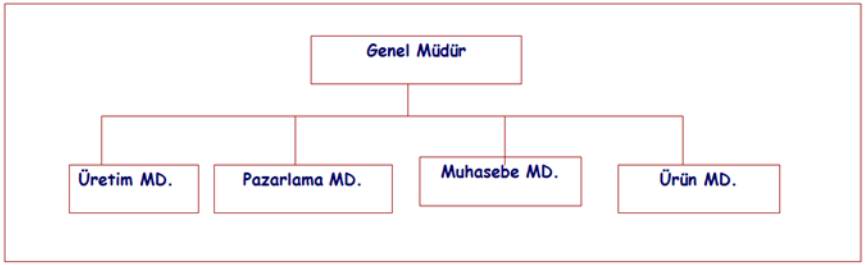
An organizational chart contains vertical and horizontal groups.

Vertical Groups; It covers the sub-top relations in the same study area. In this way, the superiors can learn about their views, and the subordinates can communicate the positive negative issues to the superiors.

Horizontal Groups; They are groups formed by the gathering of individuals from the same hierarchical level.

Classical Organization Models

Functional Organization; Segmentation according to functions is the most common type of partitioning. Here things and tasks are brought together according to their qualities. Each department manager is responsible for the related activities. Therefore, the biggest load in such a structure falls to the top manager of the organization.

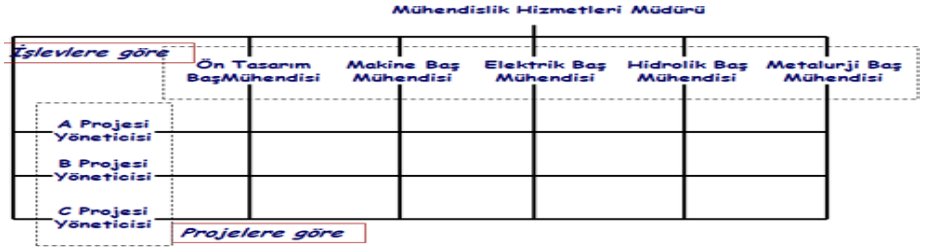


Functional Organization

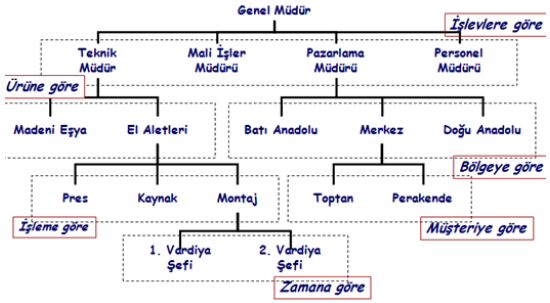
Functional structure is a structure that strengthens the tendency of narrow-mindedness because it only looks at the problems in terms of its function. This sometimes leads to the preference of unit interests in the organizational interests. Other important weak points; is the heavy processing of the communication process because it is foreseen to communicate with the unit manager channel. In addition, this organization can enhance efficiency and efficiency as it allows for specialization. Facilitates coordination within a given function. As a result, such a structure is simple, understandable and logical structure.

Project Organization; In many production areas, while the organization problems are handled at the firm level, due to the characteristics of the product and the production process, a new level of organization is discussed in which the organizational problems in the structure production system are discussed.

This level is also called as project organization. The fact that the project type works has unique problems brings with it different organizational structure.



Matrix Organization; is a type of organization that focuses on both the project and the functional task. It seems that this organization is contradictory to the general principles such as each subordinate is tied to a top, taking orders from the top and giving it to the top. This structure, as the name suggests, is based on two types of relationship. These are Vertical and Horizontal relationship.



New Organization Structures

The classical organization models described in the previous chapter began to lose their function in the 21st century. In today's organizations; new management approaches and information technologies have created change and different structures have emerged.

- Smart Organizations / Learning Organizations
- Virtual Organizations

Smart Organizations / Learning Organizations

These are organizations that give importance to information exchange. Smart organizations; it is a form of management that provides strategic superiority in the market by accumulating information and renewing it by integrating it with its own business culture, strategies and objectives. It is inevitable to use information technologies in order to realize its goals in this direction.

Virtual Organizations

A virtual organization is that businesses in different geographic regions are connected to each other through communication technologies in order to produce specific products and act as if they were a single business.

In a virtual organization, employees offer goods and services to their customers, such as a single business with information technologies, for the production of a product or service in a variety of locations without meeting in a certain location.

Features of Virtual Organizations

Virtual organizations are created with their own units of a business or with other businesses outside,

In the management of virtual organizations, the hierarchy is small.

The organizational structure in virtual organizations is not vertical but horizontal.

In virtual organizations, a member of the network is a complement to the activities of other members by performing a function,

Members are in a long-term relationship with each other, Virtual organizational structures are quite flexible.

The virtual organization renews the parts that make up it according to changing conditions,

There is unity of purpose among the members of the virtual organization,

There is no single leader in virtual organizations.

Leadership is shared between individuals and groups with different responsibilities.

THANKS