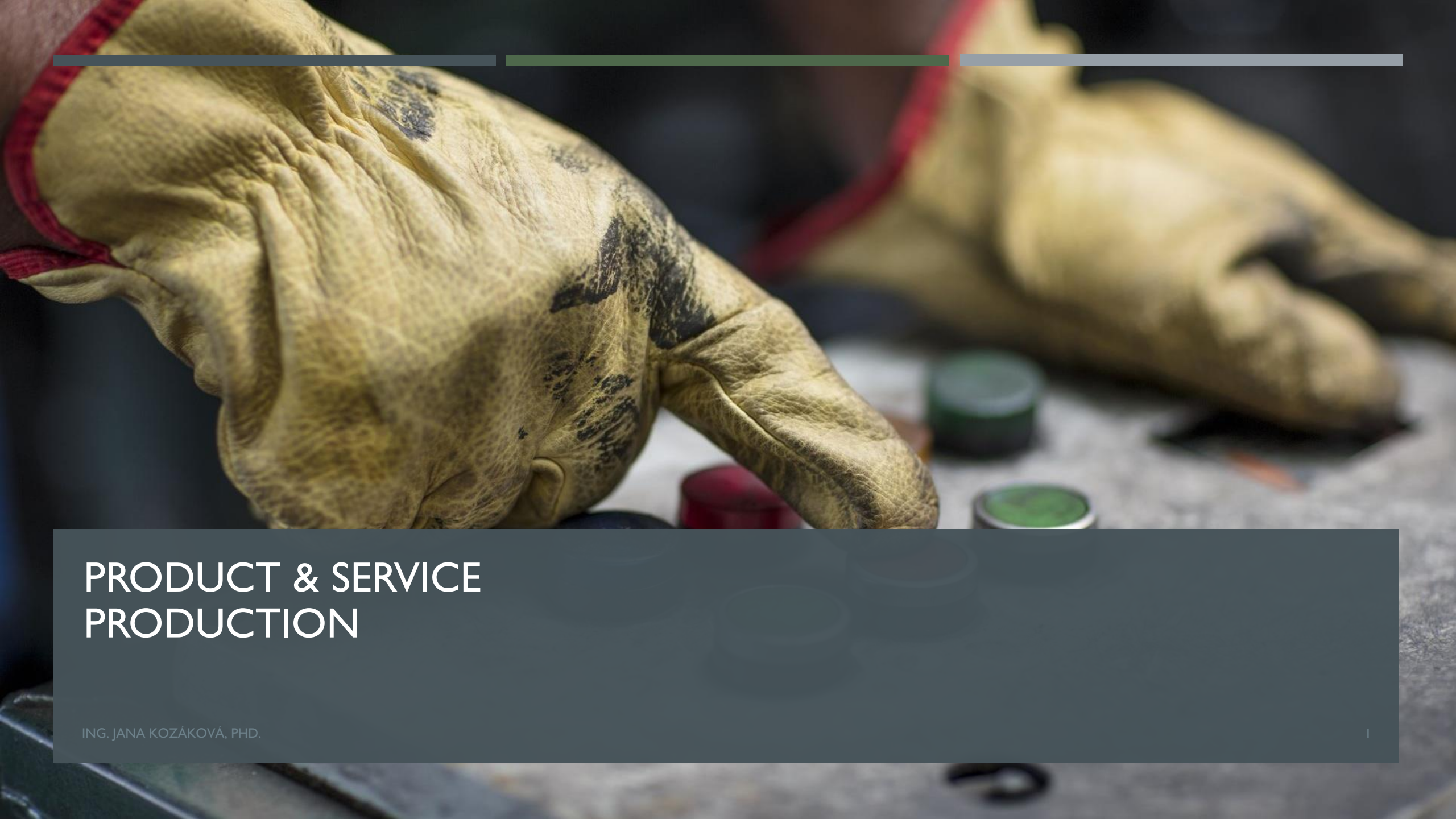

PRODUCT & SERVICE PRODUCTION

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Product & Service

Part 1

Differences between production and service organizations

- Operations Management is fundamental to an organization's achievement of its mission and competitive goals.
- It is involved in creating value in the products.
- Products can be **tangible or intangible**.
- Tangible products are called 'goods' or 'manufacturing', while intangible products include 'services‘.
- These are collectively referred to as „products“.
- Effective Operations Management is critical for organizations that provide goods as well as for organizations that provide **services and contracts**.
- A firm's success or failure can depend on how it manages operations on a daily basis.
- Goods are tangible items that are usually produced in one location and purchased in another. They can be transferred from one place to another and stored for purchase by a consumer at a later time.

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Goods are products such as cars, washing machines, televisions, packaged foods, etc.

Services are intangible products that are consumed as they are created. Services now dominate the economies of most industrialized nations. Service organizations include hotels, hospitals, law offices, educational institutions, and public utilities.

They provide such services as a restful and satisfying vacation, responsive health care, legal defense, knowledge enrichment, and safe drinking water.

Services also include 'back-office' support for internal customers of an organization, such as IT Notes support, training, and legal services. Services take place in direct contact between a customer and representatives of the service function.

Comparison between Goods and Services

Operations Factors	Goods	Services
Value	Value is provided by physical processing during manufacturing.	Value is provided by availability of the service, leading to sensory or psychological satisfaction.
Tangibility	Goods are tangible; specifications are easily defined; and goods can be inspected for quality.	Services are intangible; operational characteristics are difficult to specify; and services cannot be inspected for quality prior to consumption.
Process design	Manufacturing can be isolated from the customer and designed for efficiency.	The service process must be designed to occur in the presence of the customer.
Inventory	Products can be stored for later consumption	Services are consumed as they are created.
Capacity	Manufacturing capacity can be designed for average demand.	Capacity must be designed for maximum demand.
Quality	Manufacturing processes can achieve a high level of precision and repeatability.	Consistency of human performance is more difficult to maintain; customer perceptions are subjective
Location	Facilities can be located to minimize operations and transportation costs.	Service facilities must be located near the customer.

Organizations

- Organizations can be divided into **two broad categories**: manufacturing organizations and service organizations, each posing unique challenges for the operations function.
- There are two primary distinctions between these categories.

- First, manufacturing organizations produce physical, tangible goods that can be stored in inventory before they are needed.
- By contrast, service organizations produce intangible products that cannot be produced ahead of time.

- Second, in manufacturing organizations most customers have no direct contact with the operation.
- Customer contact occurs through distributors and retailers.
- For example, a customer buying a car at a car dealership never comes into contact with the automobile factory.
- However, in service organizations the customers are typically present during the creation of the service.
- Hospitals, colleges, theaters, and barber shops are examples of service organizations in which the customer is present during the creation of the service.

Differences between manufacturing and service organizations

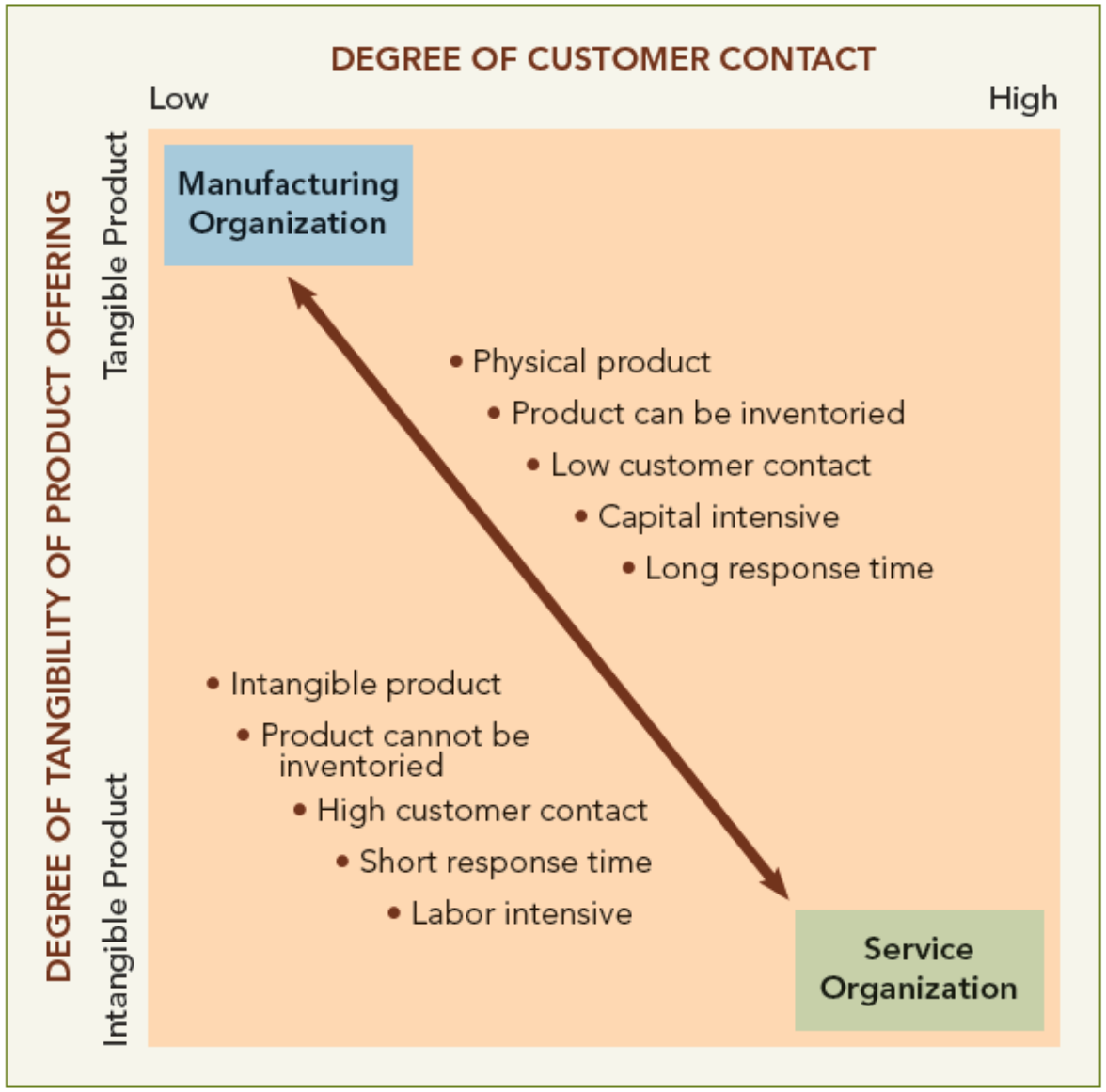
- The differences between manufacturing and service organizations are not as clear-cut as they might appear, and there is much overlap between them.
- Most manufacturers provide services as part of their business, and many service firms manufacture physical goods that they deliver to their customers or consume during service delivery.
- For example:
  - A manufacturer of furniture may also provide shipment of goods and assembly of furniture.
  - A barber shop may sell its own line of hair care products.
- Even in pure service companies some segments of the operation may have low customer contact while others have high customer contact.

- The former can be thought of as "back room" or "behind the scenes" segments.
- Think of a fast-food operation such as Wendy's, for which customer service and customer contact are important parts of the business.
- However, the kitchen segment of Wendy's operation has no direct customer contact and can be managed like a manufacturing operation.
- Similarly, a hospital is a high-contact service operation, but the patient is not present in certain segments, such as the lab where specimen analysis is done.

Quasi-manufacturing organizations

- In addition to pure manufacturing and pure service, there are companies that have some characteristics of each type of organization.
- It is difficult to tell whether these companies are actually manufacturing or service organizations.
- Think of a post office, an automated warehouse, or a mail-order catalog business.
- They have low customer contact and are capital-intensive, yet they provide a service.
- We call these companies quasi-manufacturing organizations.

- Tangibility of product and customer contact



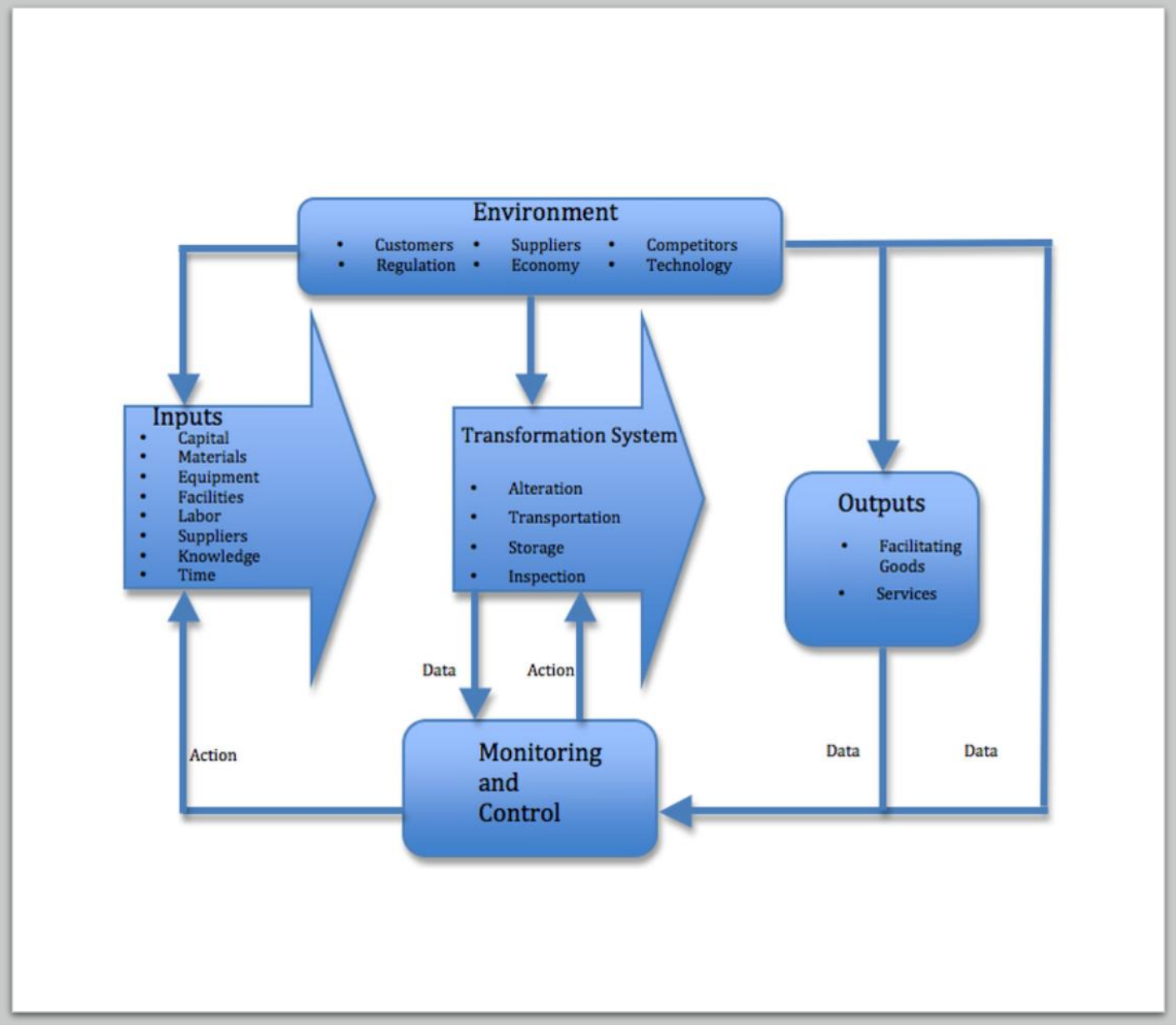
Product + service = CIRCULAR ECONOMY

Production

Part 2

Production process

- **Production**: deliberate human activity that aims to create the necessary values (i.e. products and services) to meet current market needs and make a profit.
- the main and most important activity of production units, which result in the creation of new utility values - products.
- In the production process **input elements** (e.g. raw materials, materials, semi-finished products, energy and information) are **transformed into products** and services under the effective operation of DHM workers and resources (non-current tangible assets - depreciated).
- it plays a **vital role** in achieving a firm's strategic plans or goals.



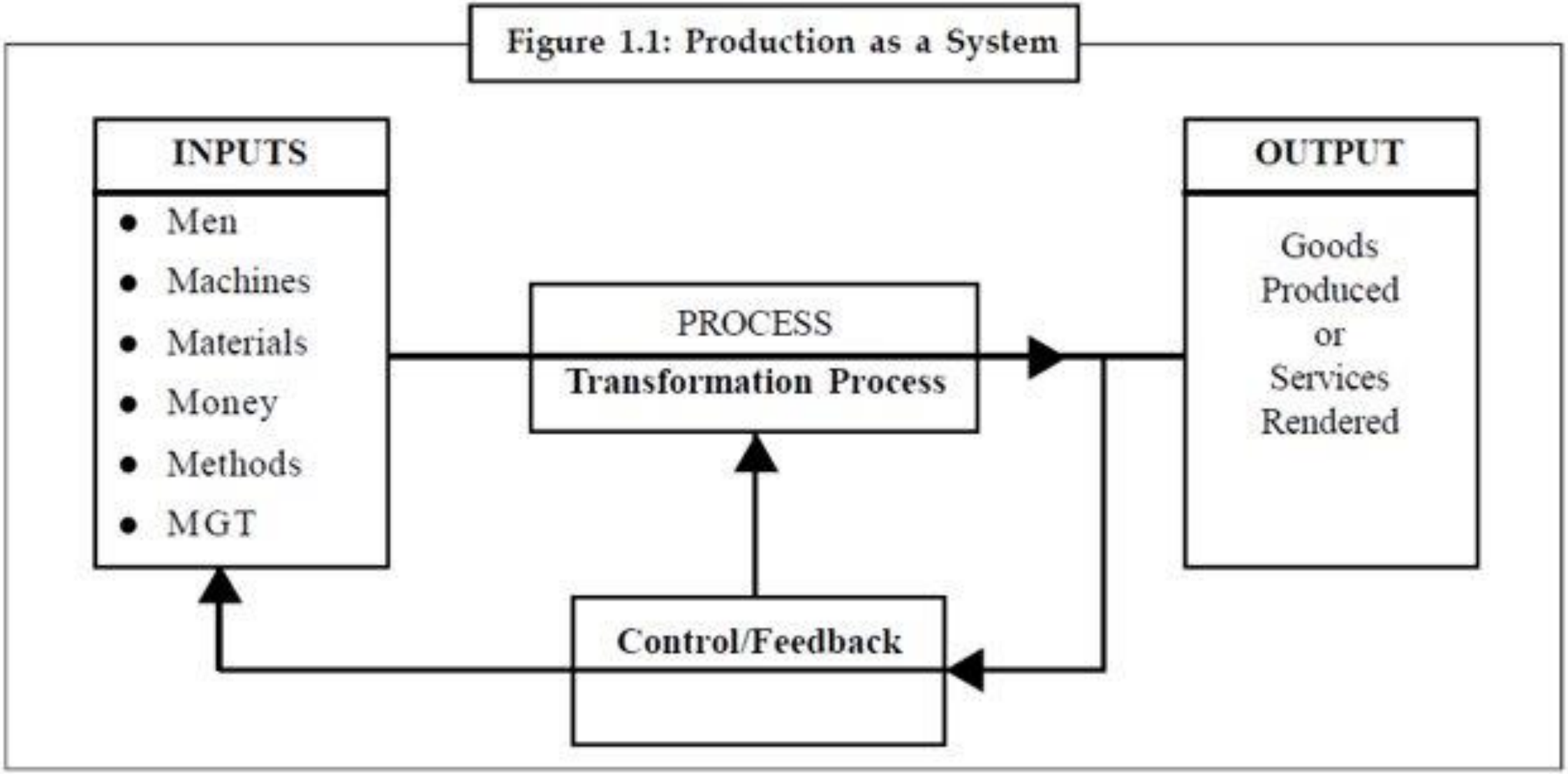


Figure 1.1: Production as a System
INPUTS
Men
Machines
Materials
Money
Methods
MGT
PROCESS
Transformation Process
OUTPUT
Goods Produced or Services Rendered
Control/Feedback

Production subsystems

- Technology employed in production: determines the way in which workers and technical equipment act on raw materials, materials and semi-finished products in their conversion into a product or service.
- The technology used has a significant impact on speed, efficiency, quality of production as well as ecology. It is key to continuously improve it using the latest available advancements in technological development.
- Transformation of inputs should be done in an as efficient as possible manner: optimal consumption of production factors (so to keep costs low).
- From a system point of view, production can be characterized by three subsystems:
    - **Sources or production factors** (factors): such as personnel, materials, energy, machinery, equipment, production areas, working environment and assets.
    - **Production process**: characterized by conversion of input elements into a product (service).
    - **Products with** their **useful value** as a result of a given transformation.

The most important factor of production is man-producer, with tax producers acting as members of certain social groups or production and consumer collectives (and not as isolated individuals).

Classification Production

In general terms and according to history, production is classified as follows:

Unit production: one or several units of the same product are made in the production process
(e.g. production process of a dress or of a prototype).
Low productivity and high production costs.

Batch production: products are made at specified amounts (according to the customers' demand, so it can vary).
Labor productivity increases and production costs decrease.
For example: food production (bakery: a bakery will produce one after another croissants, rolls, brown bread and white bread).

Mass production: high degree of repeatability and continuous production of bulk of the same product.
The production process remains always the same. Being specialization high, it is possible to achieve high level of productivity and because of standardization, lower costs. For example, Taylor method and Ford.

Computer-integrated manufacturing (CIM): approach of using computers to control entire production process. It allows for more flexibility and ease to exchange information with the managers at all levels of the business entity (more transparency). ... requirements to constant change in customers need, a very fast cycle of R&D development to which production should adapt as quick as possible and in the most efficient way and lower innovation cycles.

Benefits of CIM

- reduces development times and reducing development costs,
- Increases the flexibility and response of the ability of the undertaking,
- reduces rolling times,
- reduces stocks,
- reduces personnel costs,
- reduces of committed capital,
- increases the flexibility of working time,
- improves the quality of production,
- increases capacity utilisation,
- optimal use of hardware,
- multi use of software,
- increases task integration
- better informational transparency.

Comparison and framework characteristics of different types of production:

CHARACTERISTICS	**UNIT**	**SERIAL**	**MASS**	**CIM**
Number and nature of machinery	2-4 Universal	5 - 10 Multi purpose	20-30 Single Purpose	4-8 Multi purpose
Number of employees	2-3	tens-hundreds	thousands	hundreds-dozens
Organizational structure	Sigle stage	functional 2-3 stage	Hierarchycal, multi-stage	1-2 stages
Management system	Personal relat.	linear	bureaucratic	democratic
Manpower	Universal	Wider specialisation, qualifications and retraining	Close specialisation	Broader multi-blown qualification
In-house direction	Ownership	Workshops	Division	Economic renting
Size of company	Small	Small to medium	Large	Small to medium
Method of manufacture	Integrated	division of operations	Significant spin-off of operation	Reintegration
Assortment of production	Unlimited	limited	very narrow	unlimited within the field
Type of production	Single piece	Small series	Big series	Small series
Flexibility of production	High	Relatively high	Very simple	High

Source: Paška 2009

- Thank you for your attention.