

Introduction to Design Manufacturing

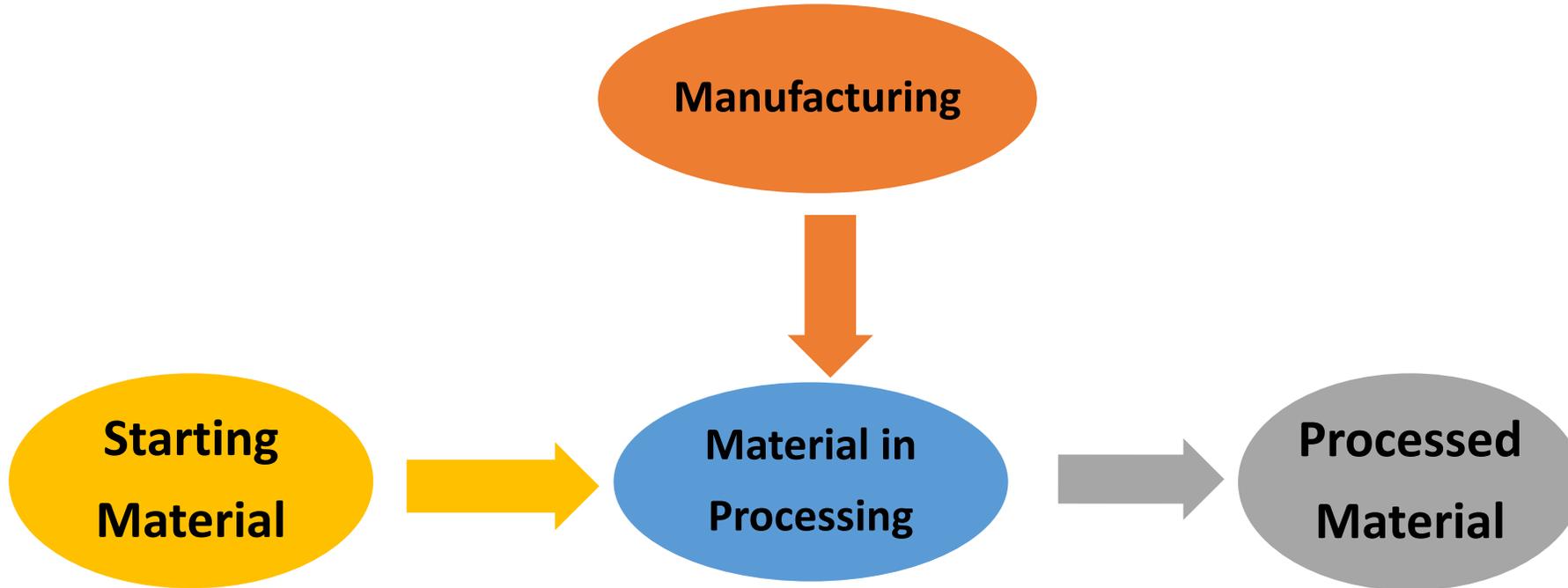
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Introduction to design manufacturing

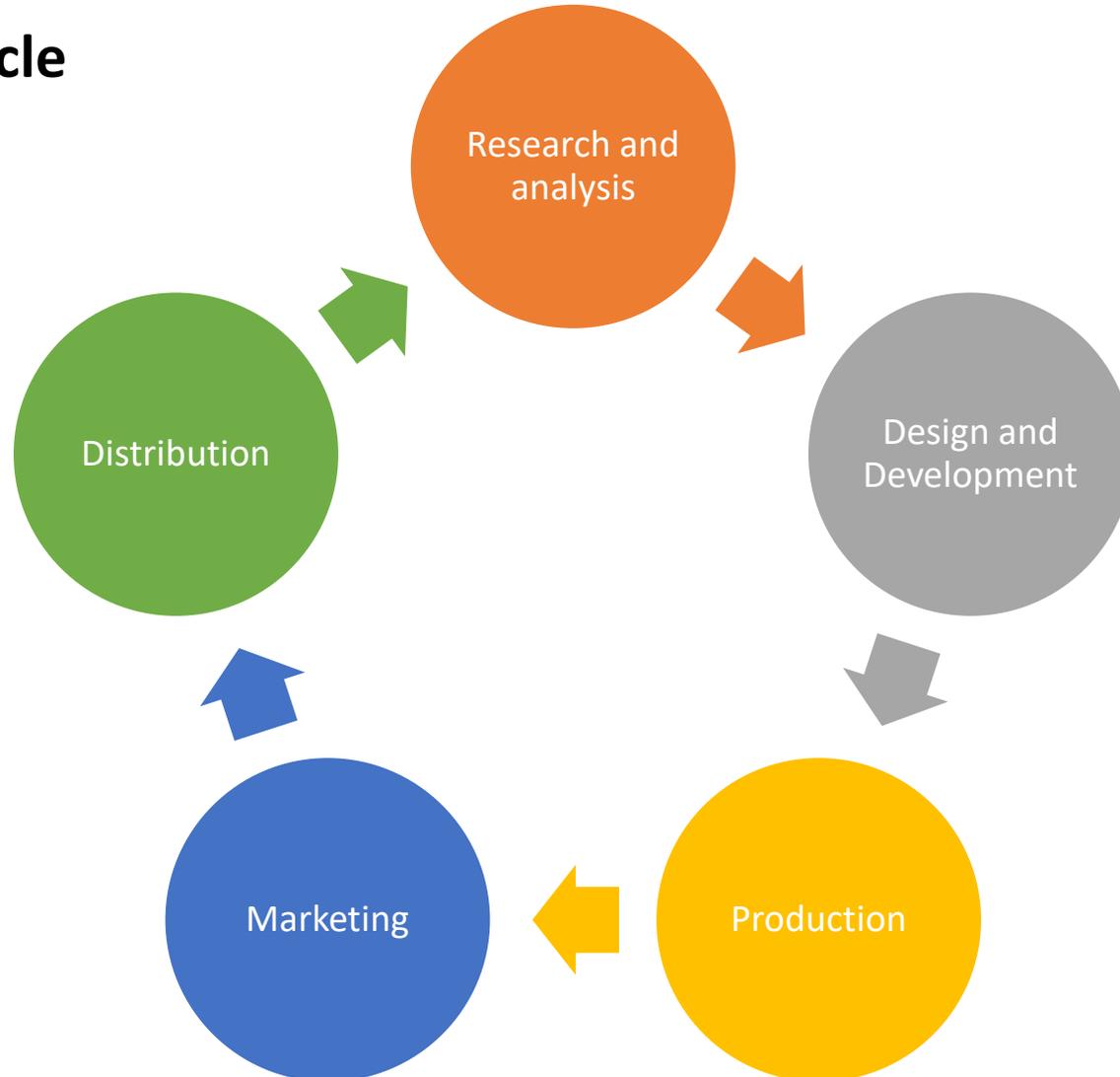


Introduction to design manufacturing

- Manufacturing is derived from the Latin word *manufactus*, where *manus* means **hand** and *factus* means **made**.
- The practical definition of manufacturing is – **a process of converting or processing raw materials into usable products.**
- Items used in manufacturing can be raw materials or processed part components of a larger product.
- The manufacturing usually happens on a large-scale production line with machinery and skilled labour.

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The Manufacturing cycle



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- 1. Research and Analysis:** Research and analyze your product need as well as other products that are already in the market.
- 2. Design and Development:** Making different models or prototypes that will satisfy the function and developing the model/prototype further.
- 3. Production:** The processes for making the product on a large scale or at least economically feasible scale.
- 4. Marketing:** Marketing strategy and product marketing techniques for selling.
- 5. Distribution:** Includes delivery methods from production to market.

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Types of manufacturing

Make-To-Stock (MTS)

- A factory produces goods to stock stores and showrooms.
- By **predicting** the market for their goods, the manufacturer will **plan production activity** in advance.
- If they **produce too much** they may need to **sell surplus at a loss** and in **producing too little** they might **miss the market** and not sell enough to cover costs.



Tata Motors is one of the biggest car manufacturer in the world that make cars and other commercial vehicle s to stock them for future customer demands

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Types of manufacturing

Make-To-Order (MTO)

- The producer/factory waits for orders before manufacturing stock.
- Inventory is easier to control and the owner does not need to rely as much on market demand.
- Customer waiting time is longer and the manufacturer needs a constant stream of orders to keep the factory in production.

Make-To-Assemble (MTA)

- The factory produces component parts in anticipation of orders for assembly.
- By doing this, the manufacturer is ready to fulfil customer orders but if orders do not materialize, the producer will have a stock of unwanted parts.



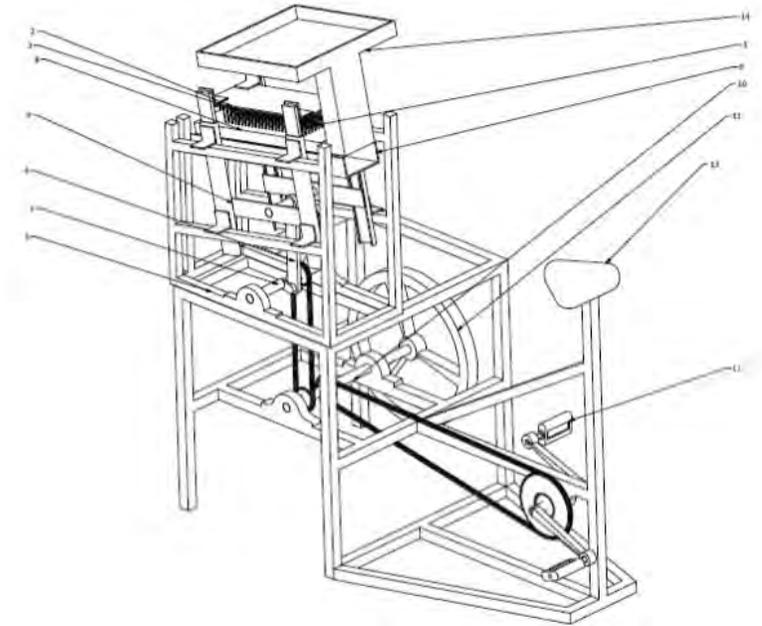
TOYOTA

Toyota motors started the concept of Make-to-order concept in manufacturing of automobiles

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Example of manufacturing

- This is an example of manufacturing an ***Amla* pricking machine** which was developed at IIT Kanpur.
- The key points of this machine are **Low cost, Easy to operate, Long life** and **Increasing per person productivity.**
- Following are the images of the manufacturing involved in making this machine.



Concept design of *Amla* pricking machine that was later manufactured at IIT Kanpur

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Example of manufacturing



Frame or product platform fabrication using square tube trusses

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Example of manufacturing



**Fabrication of needle pushing mechanism
for pricking**



Assembling needles into the push plate

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Example of manufacturing : Final Product



Thank You