Introduction to Manufacturing: Product Development - Internet Explorer

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Industry Knowledge for Business Advantage

Introduction to Manufacturing:

Product Development

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To begin the course, click here

Program Level: Basic

Prerequisite Learning: None

Development Concepts

Introduction

Simply put - the product development process designs and makes products. Many new products stem from finding innovative uses for science and technology and bringing them to the marketplace.

The diagram below explains some of the major product development activities.

R&D

This generally refers to the department responsible for applying science and technology to commercial products.

Research and Development are often two separate initiatives.

In some industries (such as high tech and chemicals) research activities are often partially outsourced to smaller companies or universities.

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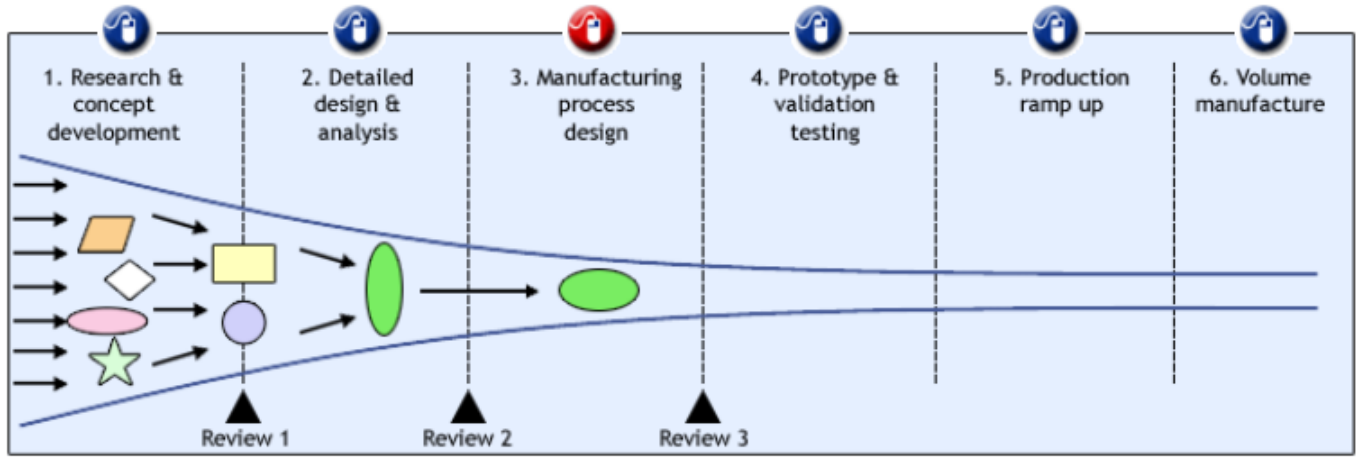
Key Activities

Development Phases



3. Manufacturing process design

Now the development team has work out the best way to make the product. An entirely new production facility may need to be built, or an existing factory may need to be upgraded.

They must also specify what machines and equipment will be used and the precise operations each one will perform.

Due to constraints of the machinery or processes available, some revision of the design is common.

This is illustrated on the diagram by the slight change of shape.

Process industries

In industries such as food or chemicals, the manufacturing process is often the key part of the product definition. The phase called "R&D" covers both product and process design.

Developing the manufacturing process focuses on growing the process from laboratory trials to industrial scale.

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The Development Organization

Roles

Organizational structure

Product development teams are often grouped together in a technical part of the organization, under a vice-president (VP) of engineering, chief technology officer (CTO) or technical director.

The organizational chart shows typical job titles for a discrete manufacturer. In the process sector, titles will often include "research" rather than "engineering".

The roles below are also very important:

Engineers » Technicians »

Product Manager

Sometimes also called Product Marketing Manager, this person combines their understanding of market trends, competitors' offerings and the company's capabilities, to create the product specification.

It is their responsibility to ensure the product meets customers' needs, performance requirements, and fits within the corporate strategy.

They constantly communicate with the engineering team throughout development to ensure a marketing focus is maintained in all engineering decisions.

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Product Information

Production Processes

The production process means the resources and steps taken to make a product - to calibrate all the machinery, mix all the necessary chemicals, assemble different components, and create something usable for sale to an end customer.

This applies to all types of manufacturing, from the **engineer-to-order** approach of the aerospace industry, to line assembly in an automotive plant, to the processes in the chemicals industry.

Everything Must be Recorded

Details of the processes and equipment used must be documented as an essential part of regulatory compliance.

For instance, if a chemical has been tainted, it is necessary to know what equipment was used to produce it so that other batches produced on the same equipment can be checked.

Similarly if a machined part has quality issues, the entire batch must be identified, along with the machine used to make it, so staff can check that there aren't any other defect components.

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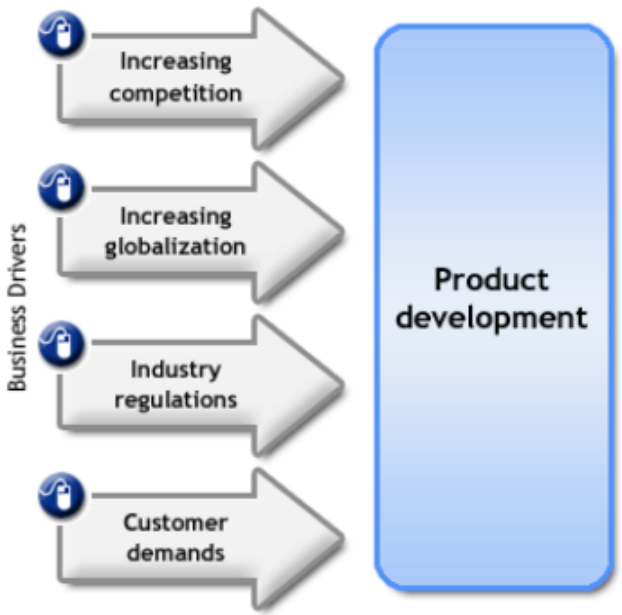
Challenges and Initiatives

Development Challenges

All companies are subject to external influences, referred to as "business drivers". These often include macroeconomic conditions such as interest rates, or currency exchange rates. They might also include regulatory changes introduced in response to climate change concerns.

This section considers four typical business drivers affecting product development, and the initiatives companies take to respond to them. Click on the icon below for a description of the business driver.



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IT for Product Development

Product Lifecycle Management

Product Lifecycle Management (PLM) is the name given to the collection of software applications that all work together to manage product data. This occurs from the concept phase and initial design, right through to the moment that the product is "retired" and disposed of.

PLM – Making Collaboration Possible

The aim of PLM is to make sure that everyone involved in new product creation has access to up-to-date, consistent product information. In addition to this, one of the main benefits of PLM is that this information is secure, which is essential for protecting Intellectual Property.

Think of the people involved in the creation of can to contain a soft drink. Physical design, testing, branding, labelling, manufacture, storage and distribution and compliance with regulations all need to add their stamp on the final product, which often changes as the design process goes on.

Saving Time and Money

The responsibility for each of these disciplines may lie with different teams, all struggling to ensure their area is represented in the finished product.

Imagine the people responsible for labelling, complaining that the visual design and branding teams haven't left them any room to add the ingredients list and other important information!

And the Result...?

By ensuring that the right information is always visible to the right people at the right time, PLM streamlines the design process, reduces errors, improves innovation and speeds up the time it takes to introduce new products.

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Final Assessment

Question 2 of 5

During the design process, when are most product costs committed?

- During the concept phase
- During the detailed design phase
- During the production phase

Submit answer and proceed to the next question

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