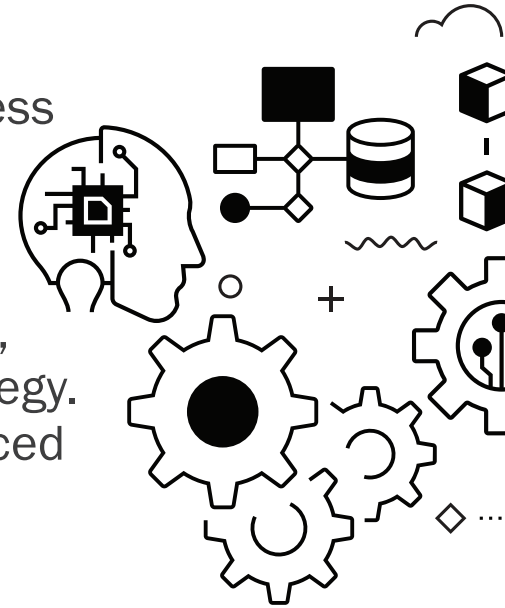


**CONCEPT** Commercialization refers to the process of taking a new product or technology from the research and development stage to the market. This involves developing a plan to manufacture the product at scale, establishing a supply chain, securing funding, and creating a marketing strategy. Commercialization is a crucial step in the advanced manufacturing process.



## BACKGROUND

The history of commercialization can be traced back to the Industrial Revolution in the late 18th century. During this time, technological advancements in manufacturing processes led to the mass production of goods and increased efficiency in production. In the 20th century, the development of new materials and technologies, such as plastics and computers, further revolutionized manufacturing processes. The rise of globalization and the outsourcing of manufacturing to low-cost countries in the late 20th century led to increased competition and a focus on innovation and efficiency. In recent years, advances in automation, artificial intelligence, and data analytics have transformed the manufacturing industry, leading to new opportunities for commercializing technical concepts and ideas.

## EXAMPLES

**TECHNICAL CONCEPT OR IDEA:** This is the initial idea or concept that is being developed into a commercial product or service. This could be a new technology, product, or process that has the potential to meet a market need or solve a problem.

**RESEARCH AND DEVELOPMENT:** This stage involves the exploration and development of the technical concept or idea, including testing and validation of the concept through prototyping and experimentation.

**MARKET ANALYSIS:** This stage involves analyzing the market demand and potential for the product or service, including identifying potential competitors, target market, and pricing strategies.

Make sure it measures up

## APPLICATION

One example of commercialization is the development and marketing of 3D printing technology. 3D printing is a rapid prototyping process that uses computer-aided design (CAD) software to create physical objects by layering materials, such as plastic or metal, on top of one another.

To commercialize this technology, companies have had to invest in research and development to improve the efficiency and accuracy of 3D printing, as well as to develop new applications for the technology. They have also had to develop marketing strategies to promote the benefits of 3D printing to potential customers in industries ranging from healthcare to aerospace.

One successful example of the commercialization of 3D printing technology is Stratasys, a company that specializes in manufacturing 3D printers and related software and services. Stratasys has developed a range of 3D printing technologies, including Fused Deposition Modeling (FDM) and PolyJet, and has marketed them to a variety of industries, including automotive, aerospace, and medical.

## FORMULAS

**MARKET SIZE:** the size of the potential market for a new product or technology, which can be estimated using market research data and surveys.

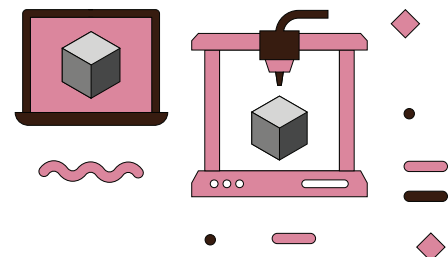
**MANUFACTURING COSTS:** the cost of producing the product at scale, including material costs, labor costs, and overhead costs.

**PROFIT MARGIN:** the difference between the selling price of the product and the cost of production, expressed as a percentage of the selling price.

**RETURN ON INVESTMENT (ROI):** the amount of money gained or lost on an investment, expressed as a percentage of the initial investment.

## REAL WORLD CONNECTIONS

For students, learning about the commercialization process can help them understand how innovative ideas can be transformed into successful businesses, leading to career opportunities in advanced manufacturing. By supporting the commercialization of advanced manufacturing technologies, Nebraska can create new opportunities for growth and development.



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