

Comparison of Manufacturing & Product Development Considerations

Manufacturing and product development are compared based on their focus and challenges. Manufacturing emphasizes repeatability, efficiency, and cost-effectiveness in producing consistent products at scale. In contrast, product development is centered on innovation, addressing customer needs, and navigating uncertainty during the creation of new products. While manufacturing prioritizes operational excellence, product development requires iterative processes and cross-functional collaboration to ensure market success.

Consideration	Product Development	Manufacturing
Availability of design requirements	Desired 100% upfront, but reality is that information arrives over the course of product development, requiring iteration/adjustment of design and/or rework.	Available 100% upfront (e.g., nut and bolt specifications).
Type of process	One-time process. Variability exists in the design process so that value can be added (the team adds value when they do something differently).	Repetitive manufacturing process.
Cost impact of change	Exponential. The later the change happens in the timeline, the larger the impact (i.e., exponential curve).	Linear. Change can happen anywhere along the timeline and have a linear impact.
Outputs	Designs “recipes” for complex products/solutions, valued ultimately in terms of impact on profit by the business, and in terms of valued functionality/utility by the customer. Value impacted by passage of time.	Tangible products (nuts and bolts). Inherent value relatively unaffected by time. The cost to produce each unit is the same as the one before and after it, so the cost is always the same.
Inventory	Design in process. Often, high value of inventory because cycle time for design in process turns is longer and number of turns is lower.	Work in process. Strategy is often to reduce work in process/inventory value through fast inventory turns.
Holding cost	Holding costs are high because of the low number of inventory turns and the increased risk of obsolescence as timelines lengthen. (Holding costs and design are very sensitive to time.)	Kept low by minimizing inventory volume through fast/multiple inventory turns annually