

Innovations in the Automotive Industry

This paper outlines innovation in the automotive industry from the perspective of three highly distinct automotive companies: Toyota, highly focused on process and teamwork, GM, a company recovering from bankruptcy, BMW, a manufacturer of luxury automobiles, and Tesla, a start-up high performance electric vehicle company. Each of these companies was studied from the perspective of their ability to innovate within production and manufacturing processes, product innovation and development, and business operations and management. Highly distinct innovation processes were found due to the distinct nature of each of the businesses and the influence of each company's culture. All of these companies must continue to innovate to ensure their products are attractive to both current and future customers.

The design and manufacturing of automobiles is a highly complex, capital intensive industry, with total annual sales in the billions of dollars, supporting many economies, and represents one of the largest purchases many people will make in their entire lives. Although the basic use of an automobile is quite simple, going from A to B, the entire system is composed of a complex web of mechanical, electrical, and chemical components, tied together in an attractive package that meets both comfort and styling demands, that must be both safe and efficient. It must also be affordable, reliable, and of high quality.

All of these elements must come together into a package that the customer finds both appealing and attractive. Automotive companies must not only dream up of concepts that draw the eyes of future customers, but also design and test every single component of the vehicle, and transfer that design to a mass production environment focused on efficiency and quality. With so many requirements, only those companies that are truly innovative can compete. This study will examine how automotive companies use innovation in their core functions: production/manufacturing, product development, and business operations. The study will focus on four companies each of which are unique in terms of not only their geographic location, but also their internal philosophies and guiding principles: Toyota, the ultimate practitioner of Lean Production, General Motors, formerly the biggest of the Big 3, BMW, known for exceptional performance and luxury, and Tesla, the disruptive start-up. Each of these companies will be examined based upon the three core functions and each will provide a unique perspective on Innovation in the Automotive Industry.

Conclusion

This study demonstrates the many different paths that automotive manufacturers can follow to innovate within production and manufacturing processes, product development and design, and business operations and management. The four companies were differentiated by their geographical location, market focus, size, and company structures. Toyota is highly focused on process development and team work, adopting a philosophy developed on the production line and that pervades throughout the company. General Motors unravelled through bankruptcy and is going through a painful restructuring, and attempting to refocus its energies into organizational efficiency. BMW continues to grow as a luxury automotive manufacturer, maintaining both flexibility and structure throughout all of its processes. Lastly, Tesla is the game changer, an automotive start-up that was successfully able to scale up and show that the big auto manufacturers were not the only game in town. The automotive industry is still strong, and has demonstrated its vitality through its dependence on innovation within its entire structure. Innovation will continue to drive these companies, and their acceptance or ignorance of this will determine their success or failure.