

Review and a Case Study of Product Failure

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Abstract

There are many problem faced during manufacturing of product. Product failure poses significant challenges for manufacturing, consumers, and society as a whole. Their study tell about multidisciplinary approach , insights from engineering, quality management and also consumer behaviour these are the important factor that effect product failure. These factor also includes like design flaws, manufacturing defect, material selection, testing the product, product disruption, user feedback. These above factors provide a proper understanding of the factor behind product failure. This study was carried out using a mixture of qualitative and quantitative approaches. Having in-depth interviews with industry experts, surveys of manufacturers and consumers, investigation of different case studies, analysis of warranty claims, and product recalls are just a few of the methods used to acquire data about product.

Introduction

Critical factor in product usually refers to as malfunction or defect that has huge impact on the product like financial loss, reputational damage. Product can be failed due to design flaws, not considering user needs, improper function of product, defect in manufacturing such as not proper inspection, lack of adherence, poor-quality material as we know poor quality of material will lead to weak component, not testing product during manufacturing and development will lead to weakness and flaws in the product. We will also not be able to find issue related to product performance, safety in the product that will lead to increasing in risk of failure. Not proper supply chain distribution of product such as delaying in delivery of product, logistical challenges. Above given defect are interrelated to each other such as design flaws will lead to manufacturing defect, not proper testing will lead to manufacturing issue. Having a proper understanding of the critical point of the product failure will help every company to grow without facing any loss in their product.

Critical factor has huge impact in many industries that are as under. Many industries face common experience that is effect of critical factor that lead to product failure. Industries that are effected by critical factor are as :

- **Automobile Industry:**

Critical factor in automobile are design fault, defect in manufacturing , inappropriate supply chain. Example defect parts that have safety related issue like airbags failure, supply chain disruption can affect the availability of parts that are usually broken in any type of accident.

- **Electronic devices:**

In electronic devices consumer usually face problem in design fault, defect in manufacturing, user related problem that usually user face while using the devices. Electronic devices include item like cell-phones, laptops, and home appliance in these usually failure cause due to software bugs that is software might not be update, batter problem can also be a big problem.

- **Pharmaceutical and Medical devices:**

Major critical factor in this type of industries are related to manufacturing error, incorrect labelling on the devices or product not performing effectively these are important problem. Failure in this industry will lead to huge effect on the patients that under-going any treatment.

- **Food and beverages industry:**

Critical factor in this industry can be poor handling, insufficient control over the quality will impact the food and beverage business. Example if any product do not have proper labelling of the ingredient that is being used in it can have any type of effect on excess use of it.

- **Aerospace and Defence industry:**

Critical factor in aerospace and defence industry includes mistake in design, manufacturing error and not testing it properly can be serious issue for any nation. Failure in this type of industry can lead to disastrous misshaping or can be said as a failed mission.

Company profile

- **Ford:**

Ford is one of the biggest and oldest car company also known as Ford Motor Company. Henry ford founded ford in year 1903, has a long history and a large position in the world's automotive market. Below are some key aspect about Ford Company

- **Technology and innovation:**

Ford has been the leader of technological advancement in the automobile industry. They had made many research and development to add advanced features and technologies to their vehicles, like as hybrid and electric powertrains and possibilities for autonomous driving.

- **Manufacturing and global presence:**

Ford has many manufacturing factories present around the world mainly in North America, Europe, Asia, and South America, among other continents. They have a huge production presence and have customer service around the world.

About Ford product:

Below given is the various stages of concept that help in the creation ford vehicle:

- **Idea and Concept development:**

Firstly Ford starts by coming up with new concepts and ideas for making of new vehicle or to update the vehicle. During this company worker used go through following market research, customer demands and go through new trends in the automobile sector.

- **Design and Engineering:**

When the concept is selected ford designer and engineers come together to develop the vehicle's exterior design, interior design, and engineering requirements. Application like CAD is used to refine design and improve the performance.

- **Manufacturing Planning:**

After the completion of design and testing phase ford's manufacturing team starts creates production plans, including tooling, assembly procedures.

- **Production and quality control:**

In production facilities the assembly, painting, and final inspection of Ford automobiles is done. To make sure every vehicle meets the requirement and customer expectations so for that strict quality control methods are used.

- **Launch and marketing:**

Ford use variety of strategy for launching of vehicle to market. They use to create awareness by different type of advertisement and marketing campaigns.

Problem faced by Ford :

Ford was one of the biggest company in automobile. Seeing its tremendous growth in technology and production many companies tried to bring its growth down. So their was many past controversy .One of the most famous controversy was Firestone Tire Scandal in early 2000s.This controversy has huge effect on ford as this stepped towards negative effect on fords finance, reputation.

The issue move around on the fact that specific Firestone tires installed on Ford Explorer SUVs had a high frequency of tire tread separations and overturning accidents. Due to tyre design and explorer's features many horrific accident has taken place.

The rollover accidents and tire failures of ford cars created emergency for public safety and had received a lot of media and regulatory attention. Allegations of tire design problems and the Explorer's stability during abrupt were at the focus of the dispute.

Firestone tire scandal has a huge impact on ford company. The company experienced lawsuit, inquiries, and a huge drop in sales and stock value. Millions of Firestone tires installed on Ford Explorer SUVs were replaced after Ford began a recall campaign.

Solutions:

As we know after the firestone scandal that as huge impact on ford following has to be done to prevent these type of scandal :

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- **Proper testing:**

Any company before starting or before launching the product the proper testing of the cars should be done by using dummy human so that they can get to know about the defect in cars and can make it more perfectly. Also companies should mark their safety on the scale on 1 -5 so that everyone should get to know about their safety and drive the car properly.

- **Design and engineering:**

Design of the car (automobile) should be in such a way that it should suit the condition of all the area. Design of tyre, structure of car should be done properly that it should avoid getting disbalance.

- **Strengthened quality control:**

In order to guarantee the greatest degree of product integrity and safety, car strengthened its quality control methods both internally and with its suppliers. In order to spot possible problems and take

proactive measures to address them, this included meticulous testing and monitoring of tires and other important components.

- **Research and development team:**

Research and development team of every car company should be proactive and should always try to make working of car more smoothly according to the demand of customer. And always try to make maximum amount of profit.

Recommendation:

Engineers frequently use quantitative methodologies to address issues with products and processes. This case study illustrates how engineering and product development departments may provide the reengineering process greater structure and quantitative tools. This case study is not meant to serve as a "cookbook" method for reengineering any kind of product. Instead, we use this process as an illustration of how businesses may make reengineering more structured.

We advise using a structured process to continuously enhance product reliability by makers of all goods, potentially even service providers. We do not mean to imply that everyone will benefit from the techniques described in this case study. Instead, this serves as an illustration or sketch of how one may create such a strategy for their own area of business. We advise you to start with the nine-step process described. When creating a methodology for your business. Work through each stage and determine whether it applies to your particular product or service. If the action is applicable to your circumstance, change the content to suit your needs. This will entail adapting language to reflect the terminologies or jargon of your industry, examining particular analytical approaches to ensure that they are compatible with the tools frequently used by your staff, and confirming that the completion activities will assist your business operations.

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