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Improving Quality Product of A Motorcycle's Suspension at An Automotive Company Using Quality Function Deployment Value Analysis (QFDVA) (An Indonesian Case)

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Abstract

A Motorcycle's suspension is a part of motorcycle that contributes in handling, braking, and providing safety and comfort by keeping the rider and passengers comfortably isolated from road noise, bumps and vibrations. In order to serve these functions, the suspension needs several components to be assembled as a complete motorcycle unit. Before implementing QFDVA, the company had over budgeted several related components used to isolate the unit form noise, which is preceively top priority by customer, on IDR 217,569. After implementing QFDVA, the company has found that in order to isolate the unit form noise, it shall lower its budget on those related components to IDR 194,817 or about 12% from its original budget.

Keywords: Voice of Customer, Quality Function Deployment and Value Added (QFDVA)

1. Introduction

In Indonesia, motorcycle plays an important role as transportation means. This is due to the lack of other cheap transportation means. This has been proven by the increasing number of motorcycle sales [1]. Therefore, people nowadays have been demanding for both good quality and comfortable motorcycle as their means of transportation. On the other side, the automotive industry for manufacturing motorcycle has also seen decrease due to competition among the players.

In order to meeting consumer demands and overcoming the competition, an automotive company has to be both innovative and cost effective [2]. Most company only uses Quality Function Deployment (QFD) to produce good suspension but felt its cost-ineffectiveness due to the budget constraints. Budget constraints are made in order to keep the price to be competitive [3]. This has made the company need to analyze whether the output of QFD is also cost-effective using value analysis. Therefore, the company

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uses QFDVA in order to find what function really matters and how to distribute budget limit so the company could maintain its competitiveness.

Figure 1. Suspension and motorcycle

1.1 Research problems

Based on the above background, there are several research problems described as follows:

1. What function of suspension demanded by customers in priority order?
2. How to allocate the limited budget to design all related components in manufacturing suspension to maintain cost effectiveness?

1.2 Objectives

These research problems have led the company to set its objective of the improvement initiative as follows:

1. To identify the function of suspension demanded by customers in priority order.
2. To allocate the limited budget in order to design all related components in forming suspension so that the company could maintain its cost effectiveness.

2. Research Methodology

2.1 Problem Identification

The suspension is a motorcycle spare part which main function is isolating road noise, bumps and vibrations. This part is formed from many components and the company needs to see whether these components have been effectively matched with consumer needs. The part needs to be cost effective as well. Therefore, the company has 2 problem set here such as the priority order of the functions and whether the components are cost effective nor not.

2.2 Setting Objectives

After having the problem identified, the company has set its objectives based on using the QFDVA method. The objectives are about determining the priority order of function based on customer needs and the effective cost allocation for each component in forming the suspension.

2.3 Data Collection

An in-depth interview was made among two selected groups. The first group was formed from the mechanical engineers from Product Research and Development (R&D) division of the company and the other was from Market Research Division to see whether the concept had marketability or not.

2.4 Data Processing

2.4.1 FAST Diagram

In forming a FAST Diagram, an observation was conducted in order to learn more about the function of the suspension of a motorcycle through in-depth reviews based on the engineering manual book. In this