

CIRP 25th Design Conference Innovative Product Creation

## Defining perceived quality in the automotive industry: an engineering approach.

Konstantinos Styliadis<sup>a,\*</sup>, Casper Wickman<sup>a,b</sup>, Rikard Söderberg<sup>a</sup>

<sup>a</sup>Chalmers University of Technology, Department of Product and Production Development, 412 96, Göteborg, Sweden

<sup>b</sup>Volvo Car Group, Craftmanship & Ergonomics Centre, 91300 PVÖS35, 405 31, Göteborg, Sweden

\*Corresponding author. Tel.: +460709589411, E-mail address: [styliadis@chalmers.se](mailto:styliadis@chalmers.se)

### Abstract

Perceived quality is one of the most important factors underlying success of car manufacturers today. There is a significant amount of literature regarding perceived quality from a marketing research perspective, applied psychology and consumer research. From an engineering viewpoint, perceived quality is represented in the literature mainly by the work that assesses different aspects of perceived quality in order to evaluate them in the early design stages. As a result of this no theoretical framework has yet been compiled that combines customer view on perceived quality and the engineering prospects of this broad term. Consequently, terms regarding perceived quality components and elements often have multiple meanings or meanings similar to each other. There is a need to standardize the terminology and definitions related to perceived quality more concretely. This paper presents the basis of a theoretical framework in an attempt to build a model, including different aspects of perceived quality regarding automotive industry needs. Based on the literature review and industry examples, the authors propose a common terminology and perceived quality definition in the field of the automotive industry.

© 2015 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license

(<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Peer-review under responsibility of the scientific committee of the CIRP 25th Design Conference Innovative Product Creation

*Keywords:* perceived quality; product quality; manufacturing quality, information and knowledge management in product development

### 1. Introduction

Car manufacturers in the modern global economic system need to develop products that meet their customer expectations. In the premium segment of the automotive industry such a challenge takes on a new scale. In this highly competitive area, delivering “zero defects” quality simply is not enough [1], [2], [3]. The greatest advantage can be reached by understanding the customer’s perception of the quality. In other words, understanding the dimensions of perceived quality. Numerous authors in different areas of research have focused on the customer’s perception. Identification of the influences on the customer during product evaluation is one of the important parts of the research. Measuring and assessing the importance of the product attributes that have an impact on the customer choice is the other. The influences arise from the product features (aesthetic, functional, emotional) that signal quality to the customer [2]. Furthermore, evaluation of the product

attributes remains highly subjective [4]. Since the nature of the research mentioned above is mainly theoretical two major problems have arisen: a) deficiency of a common terminology that explains and defines all aspects of perceived quality; b) implementation of these methods and tools is rather difficult. The difficulties are mainly based on the subjective evaluation of the product properties. Often designers and engineers involved in the evaluation process of the product attributes must rely on previous experience and intuition. Despite this, the decisions they make are crucial to the product success on the market [5]. There is a need to support them with a method regarding objective assessment and quantification of the subjective product attributes regarding different aspects of perceived quality. One of the important steps towards this goal will be the definition of perceived quality elements in the automotive industry. In this paper the authors propose their view on perceived quality as a set of *Value Based Perceived Quality* (VPQ) and *Technical Perceived Quality* (TPQ) attributes. The VPQ embodies the total customer experience

of the product attributes and external factors (e.g. brand heritage) through the senses and cognition. The TPQ represents the engineering approach, based on the level of individual technical aspects of the product, perceived with the purpose to fulfill customer requirements and competitiveness. TPQ is a subset of VPQ.

This paper is disposed as follows: section 2 is a literature review regarding existing definitions of perceived quality and section 3 presents the case of two automotive companies regarding discrepancies in the definition of perceived quality. Consequently, section 4 describes a framework that the authors propose regarding perceived quality in the automotive industry. Section 5 discusses the need of the proposed framework. Section 6 concludes and summarizes the most important findings.

## 2. Perceived quality in the Literature

This part presents a preliminary analysis of existing literature regarding perceived quality in two different dimensions: product quality and consumer perception.

### 2.1 What is quality?

It is recognized by many authors that product quality has a multidimensional structure. In 1984, Garvin introduced five approaches of quality definition: transcendent, product based, user based, manufacturing based and value based [6]. The transcendent approach has a philosophic nature and proposes: “quality cannot be defined precisely”. The product-based approach sees quality as a measurable variable. The user-based approach represents an idiosyncratic and highly subjective view of quality. The manufacturing-based approach represents mainly engineering practices, where quality is identified as “fulfillment of the requirements”. The value-based approach defines quality regarding cost and price. As a framework of product quality elements Garvin proposed eight basic dimensions, as follows:

- Performance (primary product characteristics)
- Features (“bells and whistles” / secondary attributes that improve product performance and quality)
- Reliability (frequency of failure)
- Conformance (match with specifications)
- Durability (product life)
- Serviceability (speed of repair)
- Aesthetics (“fits and finishes”)
- Perceived quality (reputation and intangibles)

Garvin identifies aesthetics and perceived quality as the most subjective dimensions of quality [6]. According to Garvin, advertising has a similar impact on the customer impression as the aesthetics and perceived quality [7]. Mitra and Golder use the term “objective quality” defining it as ‘performance combined with all product attributes’. Objective quality could be measured by mixed methods and expert ratings and exclude subjective attributes like aesthetics and external factors like brand image [8]. Regarding perceived quality, Mitra and Golder interpret this term as the “perception of the customer”, deriving from Zeithaml’s definition of perceived quality. Zeithaml (1988) describes perceived quality as the subjective consumer judgment regarding overall product superiority, different from objective quality [9]. Lieb et al.

presented a rich retrospective review regarding the evolution of the perceived quality definition and influences on purchase behavior. Therefore, Lieb et al. proposed to see perceived quality as “a scalable input factor for company’s product development”[10]. Such an opinion is antagonistic to the common view that perceived quality is not comparable to objective quality or cannot be measured [9]. A marketing oriented view of perceived quality is supported by a number of researchers. Aaker [11] proposes a definition of perceived quality as “the customers perception of the overall quality or superiority of a product or service with respect to its intended purpose, relative to alternatives. Perceived quality is, first, a perception by customers. It thus differs from several related concepts, such as:

- Actual or objective quality: the extent to which the product or service delivers superior service
- Product-based quality: the nature and quantity of ingredients, features, or services included
- Manufacturing quality: conformance to specification, the “zero defect” goal”.

Castleberry and McIntyre [12] discuss aspects of perceived quality as: “...a belief about the degree of excellence of a good or service that is derived by examining consciously and/or unconsciously, relevant cues that are appropriate and available, and made within the context of prior experience, relative alternatives, evaluative criteria and/or expectations”.

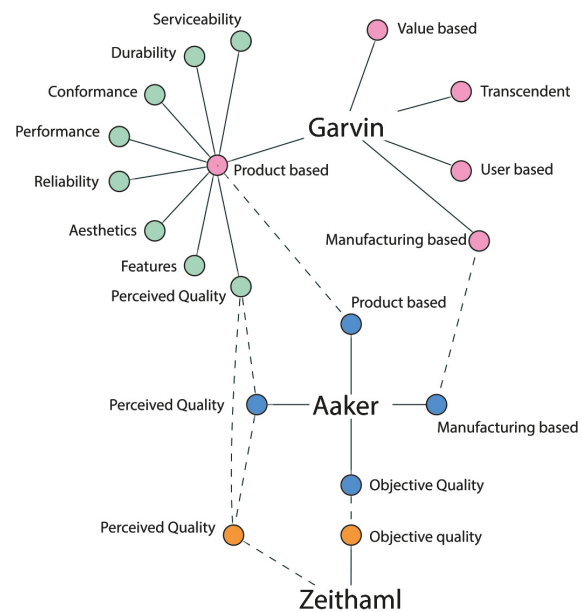


Fig. 1. Schematic illustration of the quality dimensions, approaches and the links within, derived from the Literature.

Through analyzing these views of perceived quality two major classes can be drawn: marketing oriented approach and engineering approach. Marketing point of view focuses on the user-oriented approach, engineers look for lack-of defects quality. According to Garvin [6] these two views are in potential conflict regarding the communication issues.

Download English Version:

<https://daneshyari.com/en/article/1699411>

Download Persian Version:

<https://daneshyari.com/article/1699411>

[Daneshyari.com](https://daneshyari.com)