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Market-driven product and service design: Bridging the gap between customer needs, quality management, and customer satisfaction

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Abstract

Bridging the gap between a firm's internal quality improvements and external measures of customer needs and satisfaction is an important yet complex translation process. The process has traditionally been studied within two very different domains. An external focus on customers has been the domain of marketers. Manufacturing and engineering-based approaches to quality management and improvement have traditionally taken a more internal, process improvement focus. Both areas have recognized the need to broaden their focus and bridge the gap between internal quality and external customers needs and satisfaction. This paper offers a framework to integrate these two domains. A case study is presented to demonstrate the usefulness of an integrated approach. © 2000 Elsevier Science B.V. All rights reserved.

Keywords: Quality function deployment; Means–end analysis; Conjoint analysis; Product and Service design; Laddering interviews

1. Introduction

The significance of product and service quality as a major competitive success factor is undisputed. There is no alternative to hard-fought buyers' markets made up of critical, demanding customers to consistent quality orientation. Recently, however, the design of product quality has come to be seen not merely as the task of a single functional unit, but as a central challenge for any company. This altered perspective was brought about by the realization that superior products are available in many branches of industry, in terms of both price/cost and quality. This was accompanied by

the recognition that the outstanding performance of Japanese manufacturers in particular cannot be entirely attributed to a higher, culturally founded level of employee commitment combined with a lower level of the quality function deployment concept (QFD) — which embraces all operational functions that is responsible for their market success [1,2].

QFD can be described as an approach to product quality design, which attempts to translate the voice of the customer into the language of the engineer. The customer's wants are often called the "whats", or what QFD is ultimately supposed to improve [3,4]. Furthermore it is necessary to determine the "hows" or the design requirements that will determine how the "whats" are to be fulfilled. The design requirements should be expressed

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in measurable terms (such as the amount of pressure required to close a door system from the outside). The core principle of this concept is a systematic transformation of customer requirements and expectations into measurable product and process parameters. From the methodical point of view, it would appear useful to subdivide a quality planning process derived from customers' expressed wishes into four separate phases [5,6].

The House of Quality, which represents the first phase of the QFD concept, is concerned with translating the purchase-decision-relevant attributes of a product that have been established [7–9], for example, within the framework of a conjoint study into design features (see Fig. 1). It is important to point out that these design requirements are not design solutions, which do not appear until the second house (part deployment). These design features are subsequently transformed into part features during the parts development phase. The aim of the work preparation phase is then to define crucial operating procedures on the basis of the specified part features. The crucial operating procedures in turn serve to determine

the production requirements in greater detail [10].

This approach suggests that the attributes of a product are crucial to a consumer's assessment of its usefulness [11]. However, it is not only the intrinsic (physical, chemical or technical) product attributes that determine the quality judgement [12, in particular pp. 222–232]. On the contrary, the value attached to a product is dependent on extrinsic (immaterial or non-functional) attributes, such as the brand name and aesthetic aspects. Table 1 gives some examples for extrinsic and intrinsic attributes of a car door. Moreover, behavioural science studies have documented that the perception of product attributes by consumers — which is not necessarily identical to objective reality — controls purchasing patterns. The (perceived) attributes thus represent the most suitable determinants for conceiving marketing activities [13].

In addition, it seems reasonable to state that consumers do not consider a product (e.g. a car) as a package of attributes (e.g. quality of tires, miles per gallon, engine size), but rather as a complex of

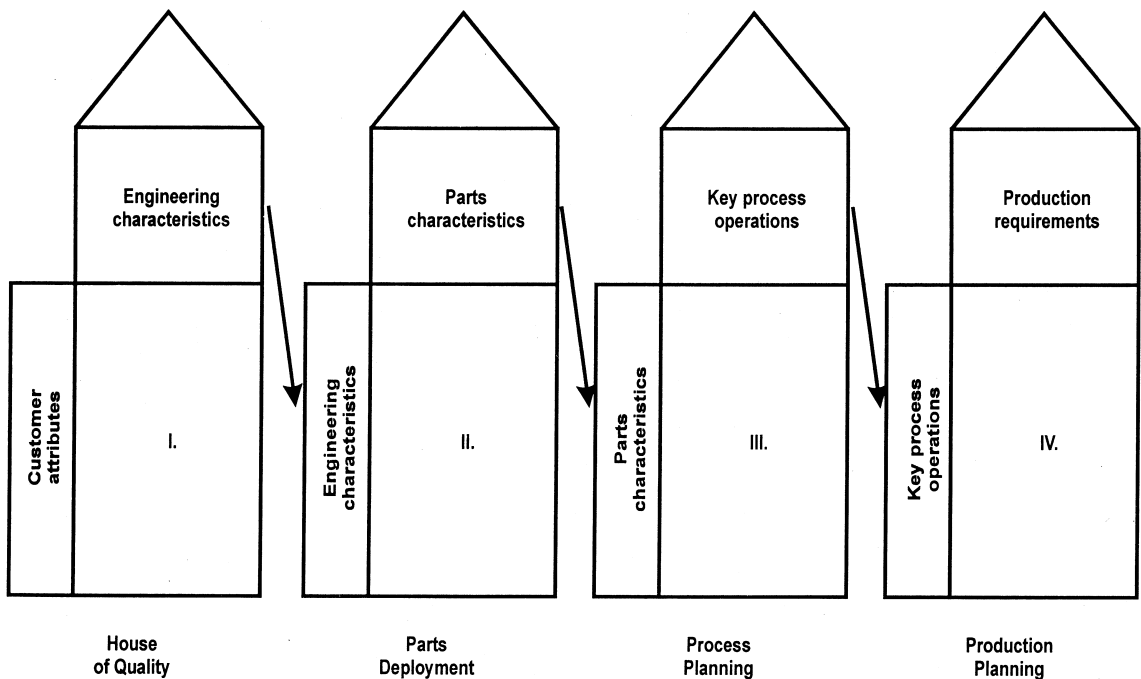


Fig. 1. Linked houses convey the customer's voice through manufacturing.

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