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Statistical Analysis of Consumer Perceived Value Deviation

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Abstract

The lack of integration of customer requirements throughout the product development process can lead to over-engineering or performance gaps, which may result in the failure of a product or innovation. From the company's point of view, the lack of integration can lead to instabilities during ramp-up. However, a high level of product maturity in early stages is of very great importance for the ramp-up. Consumers perceive the value of durable goods in the consumption process at two different points of time. The perceived value based on first impressions influences their buying behavior. In the subsequent usage phase consumers form a new value judgment that affects the repurchase behavior. Conversely, the survey methods to represent the pre-purchase and post-purchase value judgment are not sufficiently discussed in the literature. In this sense, a survey instrument was developed that can be used at both time points to asses the deviation of pre-purchase and post-purchase value judgments. This paper represents the results of the statistical analysis, whether the pre-purchase-value differs significantly from the post-purchase-value. Furthermore, it is examined whether a statement about the consumer's willingness to pay can be made on the basis of the perceived value. The knowledge about the deviation of perceived value have implications for the product maturity and thus during ramp-up.

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1. Introduction

Consumers perceive the product value of durable goods at two different points of time in the consumer process. [1–3] First, the consumer forms an opinion about the product value immediately before buying, which determines the choice of a particular product from a set of similar products. [4] In the subsequent usage phase the consumer forms a renewed product value that affects the re-purchase behavior. This formed value is called Consumer Perceived Value (CPV). The CPV is determined as a cognitive, subjective comparison process in which the consumer weighs up the benefits to the costs. [5] Both the expected value before buying, as well as the perceived value during the usage are affected by the perceived quality, which has a significant impact on the CPV. The CPV is not an objectively measurable quantity, rather the perception and attribution of value occurs differently from individual to individual and from situation to situation: "not only does each of us value the same things differently, we individually value different things, and at different times in different ways." [1] Particularly, the deviation between value judgments before and after the purchase of durable goods is relevant, because they unfold their benefits in different usage situations during their lifetime. Therefore, for companies the questions arise: How does the CPV change over the usage phase and which quality features are the drivers for a positive CPV? How can the knowledge of the deviation of the CPV be made available in the ramp-up phase for new products? A high degree of product maturity in the early phases of the product development can lead to an effective ramp-up phase for companies. Therefore, the leading research question of this paper is: Does the post-purchase-CPV deviate significantly from the pre-purchase-CPV?

1.1. Definition of CPV

The CPV is a theoretical construct that is not defined consistently in the literature. In his research, WOODALL found 18 different product value terms with a similar semantic content in 90 different publications. [1] Apart from the

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different terminology, the CPV is defined differently. MONROE defines the CPV as "trade-off between the quality or benefits they perceive in the product relative to the sacrifice they perceive by paying the price." [6] GALE defines this as "market perceived quality adjusted for the relative price of your product." [7] The authors describe the CPV in a similar manner as a ratio between benefits and the cost of a product. WOODRUFF defines the CPV as "a customer's perceived preferences for, and evaluation of, those products attributes, attribute performances, and consequences arising from use that facilitates (or blocks) achieving the customer's goals and purposes in use situations" [8] and extends the trade-off-definition. [9] His definition includes the consideration of different times (pre-purchase and post-purchase-CPV), several cognitive tasks and evaluation criteria. Moreover WOODRUFF detects three common characteristics: [8]

- CPV is connected to the usage of a product.
- CPV is subjectively perceived by customers rather than objectively determined by the manufacturer. [10]
- These perceptions include a trade-off between costs and benefits.

EGGERT and ULAGA developed common definitions: [5]

- CPV consists of several different value components.
- CPV is related to the competition.

HOLBROOK describes the CPV as "interactive, relativistic preference and experience". [11] This relatively abstract definition includes other important features of the CPV:

- CPV is perceived differently by different consumers.
- CPV is context-dependent or conditional.
- CPV is relative. [10]
- CPV is dynamic. [12]

WOODALL describes the CPV as follows: "Value for the customer is any demand-side, personal perception of advantage arising out of a customer's association with an organization's offering, and can occur as reduction in sacrifice; presence of benefit (perceived as either attributes or outcomes); the resultant of any weighted combination of sacrifice and benefit (determined and expressed either rationally or intuitively); or an aggregation, over time, of any or all of these." [1] With this definition WOODALL combines the findings of previous authors and manages to concretize the concept of the CPV. In summary, it is stated that the CPV is determined by a cognitive, subjective comparison process in which the consumer weighs up the benefits to the cost. The result of this process is the value of a product, which can be compared with the value of other products. [4, 5]

1.2. Benefits for product planning and ramp-up

Customers are an important factor influencing the product planning process. The lack of inclusion of customer requirements throughout the product development process can lead to over-engineering or performance gaps, which may result in the failure of a product or innovation. A high failure rate of product developments can be an existential risk for companies. [13] One cause of a non-accepted product may be the wrong product specifications, which emerge from the detected discrepancy of assessed customer requirements and actually required solutions. [14] Furthermore, addressed customer's requirements in the product development may be out of date due to high market dynamics. [15, 16] However, a high level of product maturity in early stages is of very great importance for the ramp-up. Another cause for the failure of products can be a lack of communication when product developers and consumers "speak different languages". [17] KALLWEIT stated, that customers think in requirements and applications, for developer the components, specifications and functions are of high importance. [17] Furthermore, SCHULTE notes that customers claim a total solution for an individual problem while product developers often rate the innovation success based on their own reached technical objectives. [13] GUDEM ET AL. allocate the CPV a subjective, temporal dimension: "Customer Value […] develops over time, and it relates to attributes that go beyond the physical product, being influenced by […] personal experience." [18] WOODRUFF stated: "Purchase means choosing, and that requires customers to distinguish between product […] alternatives and evaluate which is preferred. In contrast, during or after use, customers are more concerned with performance […] in specific use situations." [8] Therefore, the CPV is a dynamic, situational and contextual construct. With regard to the design of the product development process and the ramp-up, this means that manufacturers need to explore or anticipate usage situations [13]: "Product or service providers must realize that Value is often less a "snapshot" than it is a moving picture." [19] MITCHELL [20], REDSTRÖM [21], HOONHOUT [22] und VERGANTI [23] observed, that companies need to develop the product not only as a technical artifact. The design of the product associated with the use of the gained experience is important. [18] According to GUDEM ET AL. the definition of the product development process has to be extended to the aspect of usage situations. The CPV allows the assessment of a product both from the pre-purchase and post-purchase perspective. [18] SWEENEY ET AL. stated: "value perceptions can be generated without the product […] being bought or used, while satisfaction depends on experience of having used the product." [24] The evaluation of the CPV over several time points allows capturing such changes in the consumer preferences over time. It is possible to determine the reasons for the assessment and thus derive recommendations for future product development in order to have a high level of maturity for the ramp-up in the early phases. The CPV is an aggregation of elements. These different perspectives allow a differentiated analysis of the deviation of the CPV over time at various levels of abstraction. [4] Thus it is possible to determine the elements which perception changes during the use phase by comparing the results of pre-purchase and post-purchase-CPV. To make a specific statement about changes in the CPV, a survey instrument is required, which measures the perceived value at different levels of abstraction. Furthermore, companies need to know how occurring changes in the CPV can be acquired, interpreted, and then be used as a source of information in the product development process. [25] After assessing the pre-purchase and post-purchase-CPV by comparing the two points of time it can be identified, whether and in what respect deviations exist. This information can be processed by the product planning in order to be used in the

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