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The Story of Product Quality and its Present Day Meaning

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Abstract: An increase in the uptake of longer lasting products will be more likely if consumers associate longevity with quality, but this relationship has rarely been addressed by academics. To increase understanding in this area, this study explores how companies interpret and implement the concept of product quality. A literature review is used to provide a conceptual analysis of product quality and its evolution in management thinking. To explain the current notion of the concept, the paper discusses initial findings from interviews with informants in companies producing durable consumer goods. An argument is proposed that ideas of product quality have expanded to include aspects such as branding and marketing, and consequently there may be a need to revisit the concept in the light of these new developments. Furthermore, the paper's purpose is to distinguish the concept of product quality from the quality of processes that build up a product's quality, and to review the dimensions of product quality. Discussion on quality has evolved from a focus on production processes and employee training to customer satisfaction and delivering value. The paper also captures the influential role of marketing in incorporating the quality of products offered by companies and proposes a definition of product quality that forms a stance through which the concept can be studied further.

Introduction

Product longevity is proposed as a solution to problems arising from planned obsolescence (Packard, 1960; Satyro et al., 2018) and the resultant 'throwaway society' (Hellmann & Luedicke, 2018). It therefore affects the activities of both production and consumption (Cooper, 2010). To transform consumer goods markets such that products are used for their full useful lives and a higher proportion of goods in markets are longer lasting, there is a need to revisit the fundamentals of product quality as it encompasses the concept of longevity (Cooper, 2012).

Many academics (Dahlgaard-Park, 2011; Dooley, 2000; Feigenbaum & Feigenbaum, 1999; Garvin, 1984a; Juran et al., 1999; Montgomery, 2009; Reeves & Bednar, 1994) have discussed the concept of quality or the evolution of the 'quality movement'. They have mostly focussed on production management techniques wherein the evolution of product quality is also integrated. By contrast there is a gap in literature on the concept of 'product quality' since the influential work of Garvin (1984a, 1984b, 1987). This paper initially summarises developments in the evolution of

the 'quality movement' and the extent to which it focussed on 'product quality'.

There has been a fundamental change in how buyers take decisions (Feigenbaum & Feigenbaum, 1999). Consumers no longer see quality primarily in terms of individual functions, dimensions, characteristics or attributes of a product, but by perception of the total value of the product and of the organisation, its delivery and its maintenance network. Marketing and branding can influence consumers' attitudes, which affect their behaviour (De Bruyn & Lilien, 2008; Pickett-Baker & Ozaki, 2008). Since management is the key decision maker in bringing about any desirable transformation of markets, managers' understanding of the concept of 'product quality' is important. Businesses' constructs of product quality are therefore explored in this study.

Methods

This paper presents an exploratory study which aims to examine product quality and develop a comprehensive list of its dimensions. The study is a part of a PhD project that aims to explore the role of business strategies in increasing the uptake of longer lasting products.

A literature review was conducted, the results of which are discussed through a historical review of the concept. Findings from preliminary interviews with key informants in the clothing industry are discussed in building the case for revisiting the concept of product quality.

Results

Story of 'product quality'

During the early stages of the Industrial Revolution, in the late 1700s, the introduction of factories resulted in raised productivity, reduced costs and increased complexity of products. Taylor's 'scientific management' in late 1800s further raised productivity by increasing efficiency in manufacturing. After World War II companies in the US and beyond prioritised delivery times and productivity to meet the huge demand supply gap, and as a result quality suffered (Dooley, 2000). For example, the standard of electrical products in the US Navy in the 1950s was such that only around a third of products worked properly (Garvin, 1987). Reducing failure rates thus became a priority in the US (Juran et al., 1999).

Production-related failure costs were considered quality costs that needed to be reduced to as low as possible (Juran et al., 1999). This 'cost of quality' approach was justified on two premises: what is measured correctly is managed correctly, and twenty per cent of problems are responsible for eighty per cent of costs (the 'Pareto principle'). Reducing quality costs implied incorporating prevention initiatives, such as pre- and post-production inspection by using sampling and sorting, and over time more sophisticated statistical tools were developed.

Independent quality control teams were responsible for quality in products, broadly to determine the conformance of the product to the standard or specific requirements. The 'zero defect' concept promoted by Crosby (1984) was an extreme form of traditional quality control wherein the ultimate goal was to achieve a total absence of failures. Since the tools used by trained quality engineers were highly technical, they could not engage the interest of upper management in other business functions and they became detached from the process of managing for quality (Juran, 1991; Wareham & Stratton, 1991).

Two major trends in product quality can be identified, one that was followed in the US (evolutionary) and other in Japan (revolutionary). In the US the focus was on quality control by engineers. The development of quality concepts in the UK was similar to that in the US, although in the late 1970s the UK's approach characteristically emphasised standards and certification (Juran et al., 1999).

In Japan, planning was seen as critical for product quality, and companies adopted a stronger quality control theory that required the involvement of senior management, while responsibility for product quality lay with the engineers. In Germany too, quality was regarded as added value for customers and a competitive tool, rather than conformity with standards.

Customers' perspectives of quality hinged on reliability and performance, influenced by growing sales of Japanese- and German-made automobiles in US markets. Superior product quality was identified as a 'competitive weapon' to increase market share (Doyle, 1989; Garvin, 1984a; Jacobson & Aaker, 1987; Hellofs & Jacobson, 1999; Jacobson & Aaker, 1987; Shetty, 1987) and its importance was further strengthened through national and international quality awards.

In the late 1980s Total Quality Management (TQM), based on the philosophies of Deming (1981) and Juran (1986), focussed on quality improvement rather than quality control and insisted on the involvement of senior management (Dahlgard-Park, 2011). The British Standard on quality systems, BS 5750, published in 1979, was adopted by many businesses and became the foundation for the ISO 9000 standards published in 1987. Leadership focus on quality improvement meant challenging board room processes, and the focus shifted from process quality and product quality to quality-related training and motivation of employees.

Quality awards, TQM, ISO certification and most quality tools had improved internal processes but were not always linked to customer satisfaction and continuous quality improvement (Han & Chen, 2007; Kanji, 1998). However, companies that adopted TQM and ISO 9000 reportedly achieved business excellence and profitability (Buttle, 1997; Kanji,

1998). One explanation was that companies' use of statistical methods and sophisticated processes may have assured consumers of their commitment to making quality products and, because products were more reliable, customers became loyal to those companies (Dooley, 2000; Juran et al., 1999).

By the 1990s some managers began to conclude that there is a limit to which profits can be increased by focusing on quality through internal processes. Marketing benefits, such as gaining new customers, keeping existing customers, increasing market share, increasing growth in sales and improving customer satisfaction, had not been fully appreciated and treated as secondary to the aims of ISO 9000 certification (Buttle, 1997). Companies, in their pursuit of avenues for sustained competitive advantage, began to ask consumers what else they desired in products (Woodruff, 1997). Butz & Goodstein (1996) suggested creating customer value as a strategic tool for greater customer satisfaction, and the relationship between quality, price and value was increasingly explored (Zeithaml, 1988; Parasuraman, 1997; Sweeney et al., 1999; Rao, 2005).

The present day meaning

When product quality is defined in terms of customer satisfaction the contribution of marketing and related functions becomes self-evident (Juran et al., 1999). In the late 1950s marketing research started to focus on a definition of quality based on customer satisfaction (Reeves & Bednar, 1994), but there continued to be lack of advice from researchers on how to improve quality in order to attain customer satisfaction.

Ever since the 1960s businesses have based marketing strategy upon the 4Ps: price, product, place and promotion (Kotler et al., 2013). Marketing includes the processes for creating, communicating and delivering offerings that have value for customers (AMA, 2019). Price, in particular, cannot be separated from product quality, as a high price conveys a prestigious image and companies are expected to offer a high quality product in return (Indounas, 2006). Studies also show that, beyond a certain point, price increases associated with high quality may not convince the customer, which may limit demand (Rao, 2005). A product's quality, when weighed against what the consumer parts with in

exchange for the product, which could be either monetary pay-off or emotional trade-off is its value (Zeithaml, 1988). Therefore, value has greater subjectivity and encapsulates more variables than product quality. To fulfil customer expectations the concept of value may be more useful than product quality. Instead of product-driven, cost-based pricing, managers endeavour to apply value-based pricing, which takes into account the value customers attach to a product (Dudu & Agwu, 2014; Indounas, 2006).

The role of advertising and branding has expanded from information dissemination about a product to value creation. Marketing communications were designed to inform consumers about a product's origin and quality in order to reduce risk and uncertainty (Juran et al., 1999; Montgomery, 2009), but over time, branding and advertising can create value by promoting characteristics such as brand awareness and brand image (Moore & Reid, 2008) which can influence buying decisions (Brucks et al., 2000; Grewal et al., 1998; Meenaghan, 1995).

Feedback from marketing and branding not only assists companies' design and product decisions but may play an influential role in new product development in the company. This was revealed in two interviews that are discussed below.

Initial interviews with key informants

This paper analysis responses from two industry interviewees:

Respondent A: An academic and business advisor who was previously a designer for high-street clothing brands.

Respondent B: A production manager, working with a 'design-led' luxury fashion brand for clothing for 25 years.

The respondents considered quality in materials: they commented on inspection of material strength, such as the weave of the fabric, colour fastener performance, laundering and stitching tests. All products were graded after testing.

Business functions may understand quality slightly differently because they are looking at different aspects of the product. Asked about variations in the understanding of product quality across business functions, and which teams exert a significant influence in defining

product quality, both respondents stated that their brands were buying-led and therefore the role of sales and marketing teams is especially significant in determining the sort of products that the company would launch.

In response to who decides price points, respondent B said: *“That’s decided by our sales teams, who go out looking at competitors... and they also talk to people who buy our product... and that’s fed back to the design teams... So, our design team, they go to all fabric fairs and choose the materials... mainly chosen for their aesthetic... and also our quality control will take lengths of sampling fabric... for testing... without quality control we cannot go into production.”*

Elaborating on the roles of marketing and retail merchandising, respondent B said they work closely with design teams. Production teams *“don’t know actually what they (marketing and retail merchandising) are telling people... we (production) are just trying to produce a nice product that satisfies design and satisfies quality control”*. Respondent A resonated with this.

Pricing is a complex strategic decision and is critical among the 4Ps of the marketing mix, being directly associated with revenue and profits. Sales or merchandising managers decide the boundaries, in terms of price points, within which design, quality control and production teams work. Respondent A said analysis from sales and marketing teams *“often reflects what the range would look like anyway and how it should be changed to fit that end user.”*

Branding and advertising are effective in influencing buying decisions (Grewal et al., 1998; Meenaghan, 1995) and may also be crucial in determining quality parameters of future offerings of a company. Respondent A said: *“I work with external companies who are now restructuring themselves so that the brand now becomes the most important aspect of all.”* They confirmed that parameters of product quality are presently being *“led by the brand and the marketing teams.”*

Respondent B was convinced that they may gain a competitive edge if they entered into new product segments such as performance clothing (cf. fashion clothing) because the company has a strong brand image. A strong

brand image provides a head start if a company ventures into new products as consumers prefer a trusted brand name. This indicates that companies find it favourable to build brand image and that branding may play a significant role in promoting new products. Brands venturing into new markets, even when they may not have the relevant product expertise, may benefit from customer faith in their brand, regardless of the quality of the product.

In the final section, below, the concept of product quality is explored further and dimensions of product quality are listed.

Dimensions of product quality

Scholars have developed a generalisable typology of quality dimensions for durable products (Brucks et al., 2000; Garvin, 1984b, 1987; Rao et al., 2013; Rao & Monroe, 1989; Zeithaml, 1988). The list of dimensions presented below summarises factors that affect a product’s quality. It builds on earlier work and includes new dimensions in the present context. These factors are grouped into four categories which aim to simplify the usability of the concept of product quality and increase its understanding.

1. Product-related dimensions

This category includes the dimensions of product quality that are related to the physical composition and are a primary responsibility of the design and manufacturing functions. If any of these dimensions change, the resultant product will be different from its present form.

a. *Performance*

The product’s primary operating characteristics.

b. *Reliability*

The probability of a product malfunctioning or failing within a specific time period.

c. *Features*

Technical, operating characteristics affected by objective individual needs of consumers.

d. *Reparability*

The potential of a product to be repaired.

e. *Durability*

The amount of use that a product provides before it physically deteriorates.

2. Company-related dimensions

This category includes dimensions determined by the managers of various business departments in a company. As companies choose the markets in which they operate, these dimensions of product quality may vary for the same product. Under this list are a set of management decisions that impact upon a product's quality.

a. *Conformance*

The degree to which a product's design and operating characteristics match pre-established standards. In manufacturing, quality is conformance to requirements established by production and design managers. There are testing requirements, the passing criteria of which is variable.

b. *Marketing*

The activities, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers (AMA, 2019). Feedback from these can shape the future offerings of a company. Marketing and related functions can influence pricing, branding, advertising and packaging. Market research and feedback from sales and aftersales can influence interpretation of market needs and wants.

3. Consumer related dimensions

When quality is difficult to evaluate consumers use higher level abstractions of intrinsic and extrinsic properties (Zeithaml, 1988). Companies' understanding of these can help them to design products and communication.

a. *Aesthetics*

How a product looks, feels, sounds, tastes or smells to consumers.

b. *Quality perception*

Consumers may evaluate products by their branding and advertising as much as by objective characteristics.

4. Legal environment-related dimensions

Voluntary codes of conduct and laws under which companies operate have a bearing on product quality.

a. *Policies and directives*

Adopted by companies and governments to facilitate or conduct

certain guidance principles or actions, such as product standards.

b. *Laws*

Legislation such as competition law and consumer protection law may influenced the quality of products.

Conclusions

To transform consumer goods markets towards sustainability there is a need to revisit the concept of product quality, as it encompasses product longevity. This exploratory paper is an extension of the earlier work on quality and recognises the increasing importance of marketing and related functions in defining product quality.

In the light of these developments there is a need to revisit the concept. This evolution must not be considered an indication that earlier definitions of quality are redundant. For example, closer conformance to standards has yielded benefits (Crosby, 1984) and must therefore be continued in production, operations and engineering functions.

Further, empirical data is required to test the argument proposed in this paper that ideas of product quality have expanded to include aspects like branding and marketing. More managers from the clothing sector will be interviewed, as well as managers in two other product sectors, white goods and bicycles.

In this paper the dimensions of product quality have been arranged and grouped to simplify the usability of the concept. This represents one of many rational ways in which they can be organised.

The paper has provided a conceptual analysis of the term 'product quality'. This is important to differentiate between product quality and the quality of the processes that underpin a product's quality. Understanding the dimensions of product quality alone is not sufficient when trying to comprehend the full picture. Thus, the following updated definition of product quality is proposed:

'The quality of a product is specific to its use and the intentions of the organisations involved in various capacities in bringing it to the market.'

This definition is simple, perhaps even trivial. However, it forms a stance from which the concept can be studied further. While earlier

definitions of quality suggest that it is a relative concept, this definition sets the stage for quality to be treated as specific to the use and intentions of the organisation. It provides the basis on which the importance of product quality, in delivering sustainability by promoting product longevity, can be explored further.

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