

Customer-focus Across the Lifecycle

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Abstract:

An approach integrating customer-focus and product lifecycle considerations relevant to sustainability is implemented through identifying environmental attributes important to the parties across a value chain. The approach draws on product system participants as credible voices of the environment, and can help identify pathways of greening that will be favorably received.

Extension of the concepts of quality and customer-focus suggest that sustainability can be addressed through satisfying the sequential needs of parties, customers in a broad sense, impacted by material and energy flows throughout a product system. Many people in the customer chain can speak for the environment, regardless of whether they see themselves as advocates. These include persons who are or could be involved in key transformations throughout the value chain, reclaiming of materials for example. "Bystanders", and experts could also be "voices of the environment" who can assess how well material and energy flows meet the needs of the "next process" and the capacity of the environment to supply and assimilate flows. By understanding the voices of the environment, an organization can uncover opportunities to create value for more parties in a customer chain.

A project underway to explore this approach applied to lawn care is briefly discussed.

Customer-focus and Quality

Enhancing customer value is an important means of gaining organizational benefits. Four kinds of evidence are typically cited in support this view: success stories, Profit Impact of Marketing Strategy (PIMS) data that show quality to be a driver of market share and profitability, studies finding positive relationships between market orientation and performance, and analyses of cost data that

show that customer retention is less costly than acquisition. (Woodruff 1997)

Customer value can be considered from the organization's perspective, that is the value of particular customers in monetary terms as well as the value of the organization as a result of successful delivery of customer value. Value can also be considered from the customer's point of view.

"Customer value is a customer's perceived preference for and evaluation of those product attributes, attribute performances, and consequences arising from use that facilitate (or block) achieving the customer's goals and purposes in use situations." (Woodruff 1997)

The literature on quality also stresses the importance of satisfying customers, and similarly explains quality as a multidimensional concept and means of achieving customer satisfaction.

Quality is defined from customers' points of view (Finster 1996; Joiner et al. 1994), with the intention to provide some benefit. "A product or a service possesses quality if it helps somebody and enjoys a good and sustainable market." (Deming 1993 p.2)

Difficult questions arise in determining how to deliver customer value: what do customers value; what are the priorities for achieving advantage; how well do we deliver desired value; how will customers value change? (Woodruff 1997)

What customers value, that is, quality, comprises many dimensions. "Quality to the production worker means that his performance satisfies him, provides him pride of workmanship." (Deming 1986 p.1) The dimensions of quality comprise quality in the narrow sense of product quality characteristics, and considerations of cost, delivery, and service. The service dimension includes safety and environmental characteristics. (Ishikawa 1991) Garvin identified five approaches to defining quality from academic literature covering philosophy, economics, marketing, and operations management. The approaches are: transcendent, product-based, user-based, manufacturing based, and value-based. (Garvin 1988) A brief description of each view and its limitations is given.

The transcendent view is that quality is innate excellence. It is timeless, absolute and universally recognized. It is marked by intensive effort and honesty of purpose. Garvin sees this approach as elusive.

The product-based definition views quality as comprised of measurable differences in the quantities of product attributes. Higher quality comes at higher cost associated with more quantity. Quality does not depend on perception. This approach misses differences in qualities not associated with different quantities, and fails to account for differences in tastes.

The user-based view is that quality is determined by how well a good satisfies wants and needs of individual consumers. It is highly subjective. This approach makes it difficult to aggregate individual preferences for marketing decisions. It equates better with popular.

The manufacturing-based view holds that quality is meeting specifications. Internally and primarily cost focused to the extent that customer views are not embodied in specifications.

A value-based definition sees quality in reference to price and costs. The appropriate blend of performance and price remains elusive.

Because of the many definitions of quality, and the value and limitations of each perspective, Garvin asserts: "Reliance on a single definition of quality is a frequent source of problems." (1988, p. 47)

Kano after reviewing many common customer uses of the concept of quality recommends evaluating quality from the many points of view defined by the intersection of the context of use, timing of use, and characteristics of usefulness. Typical timing would be during specification making, when ready to ship a product, and during use. Usefulness is further divided into function, performance (aspects affecting function), efficiency, durability, operability (ease of use), and psychological characteristics (sensory, emotional and spiritual). In other words quality requires understanding what is needed, when, and in which situations. (Kano 1987)

Design activities, management, and improvement efforts entail integrating activities across a value chain. Numerous parties must be satisfied to achieve quality. The purchaser, the user, support people, all might be customers of a product. (Deming 1986) A useful understanding of quality would suggest how to uncover opportunities and resolve conflicts across the value chain.

Deming stressed the importance of external, paying customers. "The customer is the most important part of the production line. Without someone to purchase our product, we might as well shut down the whole plant." (Deming 1986 p.174) Quality should be aimed at the needs of the consumer, present and future." (Deming 1986 p.5) Garvin likewise discussed a strategic approach to quality that defines quality from the external customer's point of view. (Garvin 1988)

Literature on customer value tends to use customer to refer to external customers. Woodruff (Woodruff 1997 footnote) wrote: "The term customer is used in a general sense to mean end use consumers, industrial customers, and intermediary customers in a channel of distribution." Literature on quality contains another sense of customer according to the linking of processes within as well as outside of the organization. "Whenever processes take place within a company, each process is the previous process's consumer or customer, while the previous process is the producer. If the people responsible for each process consider the next process as their customer, listen carefully to its requirements, and are prepared to discuss them sincerely, then problems such as sectionalism will disappear from the company." (Ishikawa 1991 p.20) However, Joiner cautions that the concept of internal customer can cause employees to lose sight of external customers, who are the most important judges of quality. Joiner's view is that what is done for internal customers needs to connect to external customer needs. (Joiner et al. 1994)

Finster (1996) defines quality generally as "The goodness of our results as perceived by our customers." Since results can be multidimensional, the definition allows for the many and varied concerns of customers. It also allows for multiple customer groups, especially considering that Finster (1996) also defines customer as "Anyone impacted by our results." Addressing internal customers allows different perspectives within the organization to be

integrated around the common aim of serving external customers, and in return realizing some gain. This view also points to the possibility that people not conventionally considered customers are impacted by our results.

Quality & Customer Concept Applied to the Environment

Quality includes environmental considerations important to customers. For example, Ishikawa (1991) as mentioned above, includes environmental characteristics under the service dimension. Large companies like IBM, Merck, and 3M have championed ISO 14000 as a set of standards governing environmental management systems. (Begley 1996) The standard mirrors ISO 9000, developed to help companies improve quality, except that ISO 14000 requires initial identification of environmental aspects and significant impacts, and regulatory compliance. (Von Zharen 1996) Respondents from about 30 Fortune 200 non-service companies surveyed about environmental performance, indicated potential for productivity and innovation through the cross fertilization of pollution prevention and TQM. (Lent and Wells 1994) Blake has applied Deming's 14 points for management to call for commitment and plans for everyone in an organization to apply environmental principles. Blake advocates considering pollution costs broadly, not just firm costs, and notes that worker pride can suffer from poor environmental performance. (Blake 1994) The Global Environmental Management Initiative, initiated by Procter & Gamble and about twenty other large corporations represents the combining of quality management and environmental management, referred to as Total Quality Environmental Management. (Shrivastava 1996) "TQEM involves dealing with environmental problems from a total systems perspective." (Shrivastava 1995)

Joiner has expanded the concept of quality, understood as the "elimination of all waste," to cover the whole lifecycle of products and services, "from the beginning of the supply chain through ultimate disposal, recycling or reuse. Include as waste: Any material or energy used that is more than the absolute minimum required; Any undesirable byproduct of any process at any stage of production or use." (Joiner 2000)

Hanna & Newman similarly advocate linking environmental soundness to quality, and also treating the environment as a customer. The environment as customer is further considered here. (Hanna and Newman 1995)

The environment might be unique in being a universal customer, impacted by every process managed in every organization. It is often the next process, as when emissions are released to the air, and might be considered a bystander in such cases. The environment is often the last process in a product's lifecycle, as when it is deposited in a landfill.

Customers use products and services for some purpose. (Woodruff 1993) Deming interchanged the words customer and consumer, as in the heading for this section and in its first sentence: "The consumer, the most important part of the production line. The customer is the most important part of the production line. Without someone to purchase our product, we might as well shut down the whole plant." (Deming 1986 p.174)

What do customers consume? Energy and matter change forms when products are created and used, but they are not used up in the sense of no longer existing. Chaston for example shows a simple generic model of an organization, and states the main activity as "transform inputs." (Chaston 1993) Nothing is really produced. Similarly, what our customers consume is in fact the quality of goods and services, the purity, concentration, and structure that deliver functionality. (Robèrt 1997) It is the functions products provide that customers want and buy. (Akiyama 1991) As purity, concentration and structure are consumed, if human transformations have rendered energy and matter unsuitable for assimilation back into biophysical cycles, environmental quality, and in turn, quality in general is compromised. Since most products can be thought of as eventual waste in the terms just described, we have a non-consumption problem, because nothing can assimilate much of what we "produce". (Hawken 1997)

Woodruff indicates that customer satisfaction depends on perceptions developed during purchase and use. (Woodruff 1993) However, to the extent that customers who purchase and use products care and are informed about environmental considerations, satisfaction also depends on other life cycle considerations such as perceptions developed during

extraction of materials, production, resale, remanufacture, recycling, and degradation. Green products are usually thought of as creating satisfaction in this sense. In addition, other customers impacted throughout the lifecycle, or customer chain (Finster et al. 2002), have their own views of satisfaction. The environment is included in this chain of customers. However, the environment is comprised of many subgroups and functions, many potential customers. Understanding the needs of the environment could be approached through interactions with people in the customer chain who can speak for the environment. These include persons who are or could be involved in key transformations throughout the value chain, reclaiming of materials for example. Bystanders, and experts could also be "voices of the environment" (Finster et al. 2002) who can assess how well material and energy flows meet the needs of the "next process" and how much capacity the environment has to supply and assimilate the flows. By understanding the voice of the environment, an organization might uncover opportunities to create value for more customers in a customer chain. A product designed for a sustainable society then, is one that satisfies the sequential needs, i.e. has value, all along a customer chain.

Implementing such a "design for all customers" or "design for lifecycle value" approach considers all processes over the life cycle - extraction and processing, manufacturing, transport and distribution, use, reuse, maintenance, recycling and final disposal. Customers' needs drive designs. This means designing products so their associated material and energy flows are perpetually useful to some downstream process. Thus, a concern with customer value across a product lifecycle leads to familiar conclusions about waste from one process being input to another. (Frosch and Gallopoulos 1989; McDonough 1998) It is also necessary to understand the bio-capacity used to supply and assimilate energy and materials. (Chambers et al. 2000; Wackernagel and Silverstein 1999) Accordingly, current work with this approach explores integrating customer information with goals for efficiency or natural resource productivity. (Bringezu 1993; Hawken et al. 1999; Schmidt-Bleek 1997) Additionally, this approach might be useful for simultaneously learning how to combine options for greening with market opportunities, supply chain performance, legal and social pressures, communications, and internal

efficiency, because the people who are impacted are consulted.

To understand how to green a product or system, key voices of the environment are needed. A preliminary classification of some typical and potential voices of the environment is presented next.

Sources: (Brezet et al. 1997; Ishii 1999; Nagel et al. 1999)

Suppliers and Partners: insurance companies, chambers of commerce, innovation centers, trade organizations, university outreach, repair and maintenance people

Bystanders: neighbor, community members, public,

Environmental Advocates: NGOs e.g. Greenpeace, government agencies e.g. EPA, subsidy programs, award agencies, certification programs, eco-labeling programs, consumer organizations

Environmental Experts: internal safety health and environment staff, consultants

Intermediaries: storage/warehousing, retailers, distributors, transport, recycling stations

Users: end-user, owners, main user, industrial/business customers, purchaser

Other users: people who do or could share use - same or other function

Next users: secondary market, charity

Transformers: Remanufacturing - collection, sorting, disassembly, inspection/testing integrity of used parts, shredding, remaindering; Recycling - collection, sorting, disassembly, processing; Power Company - incineration and energy recovery; Composting facility; Waste treatment

Waste Keepers: landfill, safe storage, municipal waste handlers

Deciding whose needs one is concerned about is a critical first step in learning about customer needs. This is

particularly true in this case, because the concept of customer is being extended to the environment. Effective voices of the environment are parties who are knowledgeable about some component of the environment, and are worth learning from because they:

- 1) are customers, esp. high volume customers
- 2) are potential customers (include competitors' customers)
- 3) are influential to existing or potential customers
- 4) have needs existing or potential customers consider
- 5) facilitate transactions in the value chain
- 6) could be involved with potential liabilities

and are likely to be knowledgeable because they:

- 7) have much experience with customers in the industry
- 8) have special expertise regarding potential impacts
- 9) represent the range of product options

An Application to Lawn Care

The extended customer-focus approach developed above is being applied to lawn care. The energy and material flows connected with lawn care impact a variety of people along the value chain. Any of the people might be effective voices of the environment, in a direct way or incident to other concerns they might have. Initially, judgements are being made about factors 1-9 above to focus efforts on interviewing people most likely to provide insight. As the project proceeds, information learned about who can provide needed information will be incorporated.

The people being interviewed include homeowners who purchase conventional lawn care, neighbors of lawns conventionally treated, a property manager, renters at an apartment building, homeowners who purchase "green" lawn care, the municipal compost site manager, a neighborhood watershed association member, a provider of environmentally friendly lawn care, the SHE manager for a lawn care company, applicators employed at a conventional lawn care company, and EPA Chemical Review Managers.

Interviews are being done to uncover attributes that can be used to simultaneously drive product and environmental performance improvement. Finster et al (2002), define an environmental product attribute as an attribute having a

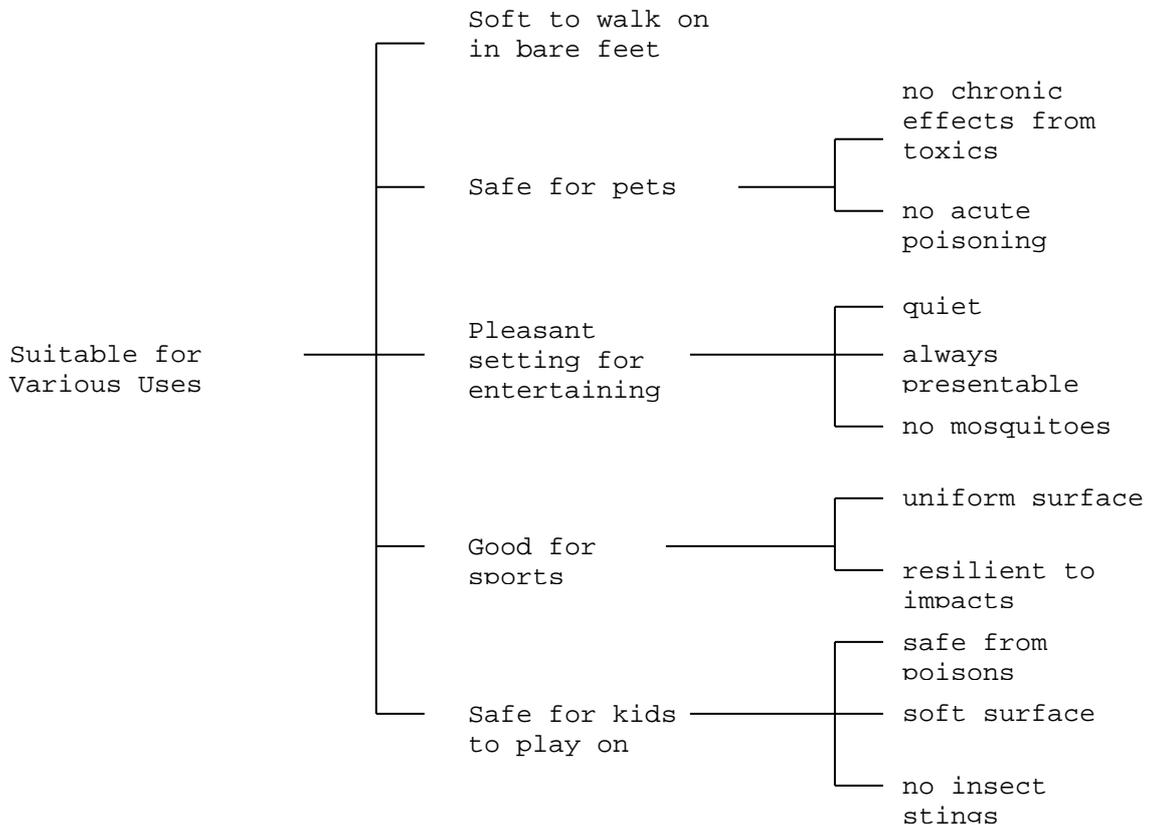
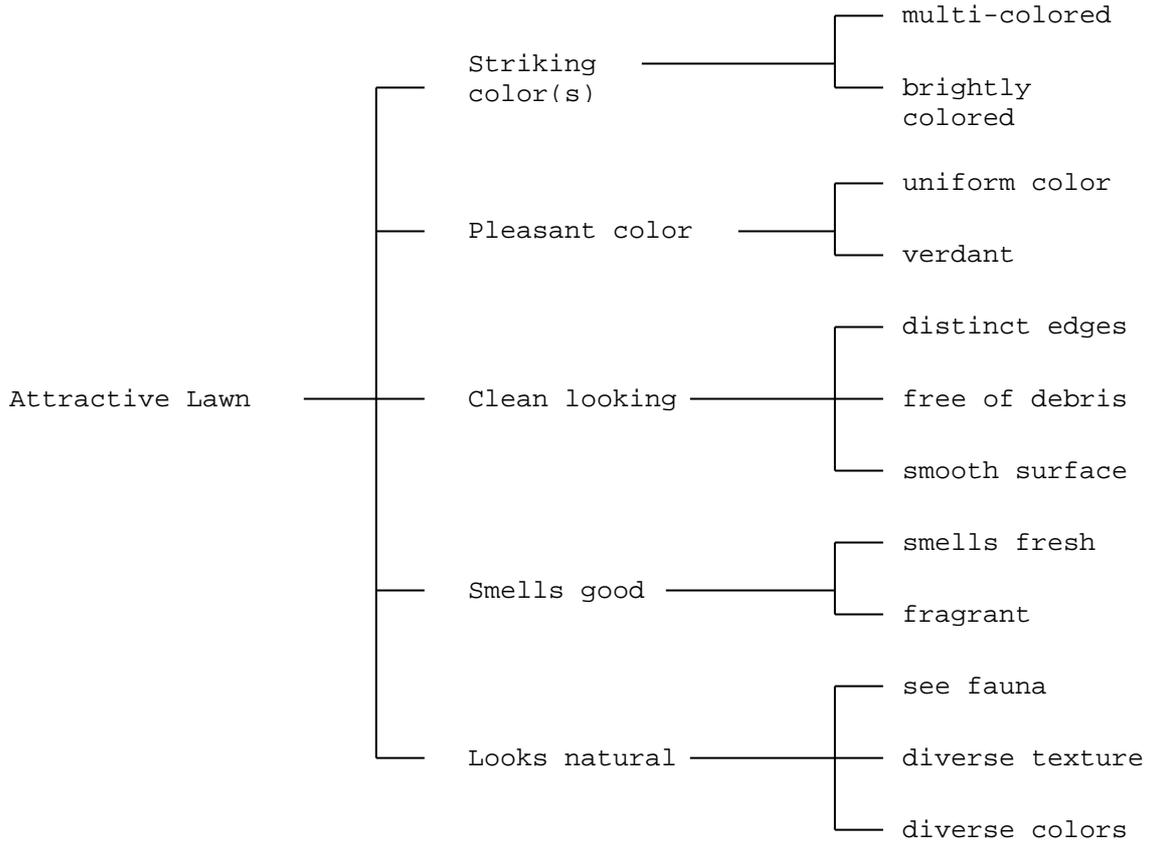
positive or negative effect on the environment during a product's life cycle. The same term is adopted here.

The data collection approach used though not intended to be strictly repeatable, is systematic and commonly used in quality improvement and product development. Verbatim statements are captured reflecting customer views about the likes and dislikes of using a product. Particular emphasis is given to identifying "critical incidents" (Herzberg et al. 1959; Swan and Combs 1976) when difficulty or dissatisfaction or the value of a product is shown. A critical incident for this study might be when someone has planned a Saturday picnic on their lawn, and the guests upon arriving inquire about the signs indicating that the lawn care company had applied herbicide that morning. Another example would be when unexpected windy conditions arise during a pesticide application.

During the preliminary phase of the study, which environmental attributes are important, and why, that is, which needs they are linked to, will be investigated. When seeking to confirm findings, satisfaction with attributes will be assessed. Findings will thus apply more directly to altering a product or product mix.

Organic control of unwanted plants is an example of an environmental attribute linked to the needs for an attractive lawn that is safe for kids to play on. Below are other preliminary data on lawn care needs and attributes.

Some homeowner needs with respect to their lawn



Some lawn care attributes.

Non-toxic lawn care

smells good
targeted use of chemicals
natural pest control
safe for pets
safe for family
safe for environment
sparing use of synthetic chemicals
bio-compatible applications
applications quickly degrade
advance notice of applications
advance arrangement of applications
odorless applications
doesn't trigger chemical sensitivities
minimal synthetic chemical applications
organic weed control
selective use of chemicals

Full range of services

mowing
insect control
fertilization
weed control
weed treatment
weed killer
soil building
ph adjustment
pest control
aeration
thatch control

Customized/site-specific service

consider exposure to sunlight
target specific unwanted plants
care appropriate for soil conditions
care appropriate for soil type
proper grass/plant mix
mowing appropriate for grass variety
address specific problems

Expert Lawn care

proper mowing height
optimal mowing frequency
well timed watering
clear advice
response to grass diseases
treat problems
properly timed applications
effective treatments
lawn owner education
thorough lawn assessment
knowledgeable personnel

Conclusion

Extension of the concepts of quality and customer-focus suggest that sustainability can be addressed through satisfying the sequential needs of parties impacted all along a customer chain. Work in progress with lawn care is exploring environmental attributes across a value chain as they relate to sustainability and the potential of a product to contribute to business goals.

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