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The Voice of the Customer: How Can You Be Sure You Know What Customers Really Want?

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Abstract

It seems obvious and even overstated that listening to customers is vital to a business's success. So why is it so difficult? Old habits die hard, there's too much data out there already, it's hard to listen and more importantly, to be objective. The critical first step for any Quality initiative is understanding "The Voice of the Customer". Many companies begin projects by generating "Voices" internally - using existing market research data, brainstorming with engineers, etc. However, customers define quality differently than companies. In order to understand truly what drives their satisfaction with a product or service you need know what words like "convenient" or "easy to use" really mean to customers. This paper outlines a set of techniques developed to gather, structure and prioritize the voice of the customer. This information can then be used in a variety of formal quality processes, such as QFD (Quality Function Deployment), as well as in other initiatives designed to make companies more "customer driven."

Key Words: Voice of the Customer, Quality, Product and Service Design, Quality Function Deployment (QFD)

Why Listen to Customers?

The "voice of the customer" is increasingly recognized as the key to success in capturing and retaining customers. Widely utilized quality techniques such as QFD and TQM work at deploying customer data into product, and more recently, service development. Hauser and Clausing (1988) state that "the foundation of the house of quality should be designed to reflect customers' desires and tastes." Computerworld Magazine (September 1994) listed "delighting the customer as employees' top goal" to be one of the likely survivors on a laundry list of current business trends. Businesses succeed by offering products and services that meet customer requirements profitably. Businesses retain their customers by continuing to please them.

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Why It's Hard to Hear Customers

So why are there so many companies in trouble? Why does it take so long for companies to change in response to the messages of the quality movement? Many of the causes lie in issues having to do with the structure and design of business itself, but it also has to do with the ways in which companies attempt to "hear" their customers. Many quality techniques describe a process whereby a team charged with new product or service development comes together around the "Voice." While focusing on the customer they work cross-functionally and surmount internal barriers. But where does that customer's voice come from? How does the team know they are really hearing their customers? Being told to "collect customer data" gives little guidance as to how that should be done or what the data should look like.

There are many customers and constituencies to be satisfied and customers speak different languages from one another, and most especially, from a company. Greising (1994) gives some telling examples of what companies face as they pay homage to quality as a concept without understanding what it takes to be truly customer driven:

- When Florida Power & Light became the first U.S. company to win the Deming Prize they ended up focusing so narrowly on quality that they lost track of their basic business and profitability fell 8% against a 13% rise in revenue.
- While United Parcel Service (UPS) was putting their energy into extensive time management studies that sought to increase speediness and delivery time they didn't realize that an important customer need was interaction with the drivers.
- A major computer manufacturer spent years using mean time between failures (MTBF) as their measure of reliability. However, along with their industry leading MTBF went a customer reputation for unreliable systems. It turned out that to customers reliability had to do with availability - how much of the time did they have access to their equipment. The manufacturer needed to include diagnostic time as well as technician travel time, etc. to really understand how they were doing.

Customers have different concerns and speak a different language than companies and it is that language and thought process that must be understood. Commonly used "quality-oriented" words like "reliable", "convenient" or "easy to use" will likely have very specific meaning to individuals on a project team, as in the MTBF example. However, they may have very different meanings for customers. Those differences, and similarities, must be understood before a company can determine how best to translate those needs into actions. Customers will not be able to tell you the solution to their problems, but they will be able to articulate how they interact with a product or service and the problems they encounter - for example wanting to get laser output that is "crisp and clear with no little jaggy lines." By focusing too early on a solution - say 600 dots per inch - you lose sight of other potential solutions.

Another problem companies face is trying to aggregate data too soon, to look for the one number, the one answer. A rating of "85% satisfaction" tells you very little about the cause and effect of what the company is doing. Scoring on typical market research survey attributes doesn't give

engineers and designers the level of detail they need to design. Plus, this type of data tells you after the fact, it measures results based on history. To be useful in planning and design, the voice of the customer must be pro-active; it must enable you to predict the results of your actions.

How to Listen to Customers

A focused and rigorous process for gathering, structuring and prioritizing the Voice of the Customer will ensure that you have the customers' true voice and that the data is in a form that will be useable for a variety of quality, and other, initiatives. The process described in the remainder of this paper has been in continuing development since the early 1980's. Beginning with one-on-one interviews to gather the customer's voice and using more quantitative customer input to structure and prioritize the data this methodology enables the customer's own words to drive the development process forward. It maintains the purity of the customer data while allowing the developers to focus on the company voice. As Clausing and Hauser (1988) state:

CAs (customer attributes) are generally reproduced in the customers' own words. Experienced users of the house of quality try to preserve customers' phrases and even clichés - knowing that they will be translated simultaneously by product planners, design engineers, manufacturing engineers, and salespeople. Of course, this raises the problem of interpretation: what does a customer really mean by "quiet" or "easy"?

The issue of interpretation is addressed by asking customers themselves to define these words.

Identifying Customers The critical first step in the process is understanding which customer groups should be represented. There is likely more than one buyer for a product or service: for example, medical instruments (medical technicians, purchasing agents, doctors) or office furniture systems (facilities managers, architects, designers, MIS professionals, end users). A university must consider students, faculty and industry recruiters. Utilities deal with everything from residential to industrial to agricultural - and in literally millions of locations.

There are also internal customers who may feel very differently from external ones. Employees are also customers and may well have significant impact on how external customers evaluate the service they receive.

Gathering the Voice Tape recording and transcribing interviews with real customers gives you the information verbatim - keeping the customer's essence (true voice) for as long as possible. You will also be able to capture not only the needs, but also other valuable data. The key is to capture everything and use it appropriately:

- Needs *I know I will get my delivery when I need it.*
- Target Values *Delivered the same day I call.*
- Solutions *Why don't they just give me one rep so I know who to call?*
- Opinions *I think the utilities are like the government - big bureaucracy with a mahogany row.*

What type of interview? Interviews that are one-on-one will yield useful data more efficiently than focus groups (Griffin and Hauser 1993). For example, one hour of transcript from a focus group (with 6-8 respondents) yields roughly the same information on customer needs as one hour of interview transcript. There are potential bias and group dynamic issues when using a focus group whereas one-on-one interviews enable deeper probing to obtain more detail for use in the house of quality.

How many interviews? Twenty to thirty interviews from a relatively homogeneous group of customers will ensure that the 90% or more of the needs have been identified (Griffin and Hauser 1993). However, the topic and type of customer being interviewed should also be considered - more complex topics may require more interviews.

Who should conduct the interviews? Team members can gain significant insight into customers by listening to them discuss their issues and concerns. At the very least the team should attend or watch videos. However, this does not mean that team members should do the interviews. We have seen cases where an engineer spent an hour interviewing a customer: started out by being defensive, then trying to solve their problem and ended up learning nothing about customer needs. The keys are training and objectivity which outside interviewers are more likely to have. However, with the right focus and training company personnel **have** found it very useful to conduct interviews themselves.

What should you talk about? The guide for the interviews should be organized carefully to ensure a good flow (less personal to more personal) and to cover topics that you know will be of interest. Customers tend to talk in solutions - "I want a liquid detergent." The goal of the interview is to understand the needs behind those solutions - "I want a detergent that dissolves easily" - by asking "WHY." The key is to question everything - "why is that important"; "Why is A better (worse) than B". The conversation should flow freely enabling the customer to discuss the areas with which they are familiar. The kind of anecdotes and stories (good and bad) that people tell can be used very effectively as a way to communicate and put those not able to observe "face-to-face" with customers.

Then what? Multiple analysts read and highlight transcripts of interviews to pull out customer needs. It is interesting to note that frequency of mention is not a measure of the importance of an idea (Griffin and Hauser 1993). Instead each articulated thought has a chance to be included (which helps to make the interviews more productive). The refined set of needs, roughly 100 to 200, is transferred to a card deck, one need per card. The next phase of research allows customers to continue the work of defining how they view the world.

Structuring The Voice The next step in the process is to categorize these 100-200 or so needs into groups that provide a "secondary" and, possibly, "tertiary", level of detail. A group of customers goes through an exercise that enables us to categorize the identified needs.

The customers in the sample each receive a deck of cards, one need to a card, and are instructed to spread them out on a table and sort them according to similarity of meaning. That is, to group the cards such that the cards in a pile are more like the others in that pile than to any other. The

respondents' sorts are then collected and analyzed via cluster analysis of the "hits" matrix which reflects a (weighted) measure of how often each card is sorted with each other card. The result produces a hierarchical model of customer needs for the entire group.

It is important that customers are allowed to sort the cards. Just as the language that customers use is different from a company's so is the way in which they aggregate ideas. Members of a company team often sort ideas based on functional areas (things that are marketing's role or part of the information services department). Companies think about how they deliver or make a product. Customers think about a product based on how they use it or interact with it. The set of ideas labeled "convenience" (for example) may contain very different detail. For example,

- In a project for a financial institution the team assumed that there would be a secondary need called "cost" which would consist of "low fees", "competitive rates", etc. However, customers sorted "fees" in a different category than they did "rates" - one category had to do with their image of the institution, the other category with how easy customers found doing business with the institution.
- A large insurance company put a number of ideas together a category labeled "Administrative Services" because that was the department that handled those issues. Customers sorted those cards in a number of different piles, based on their interactions with the company.
- Griffin and Hauser (1993) describe showing two hierarchies - team consensus and customer based - to a number of professionals (including the Team!) and finding that the "customer-based sort provided a clearer, more believable, easier-to-work-with representation of customer perceptions than the (team) consensus charts."

In addition, by gathering card sort data from a relatively large sample of customers you can be more objective in reporting results. It's not just the engineers sitting around a table, or the consultant making his or her own interpretation.

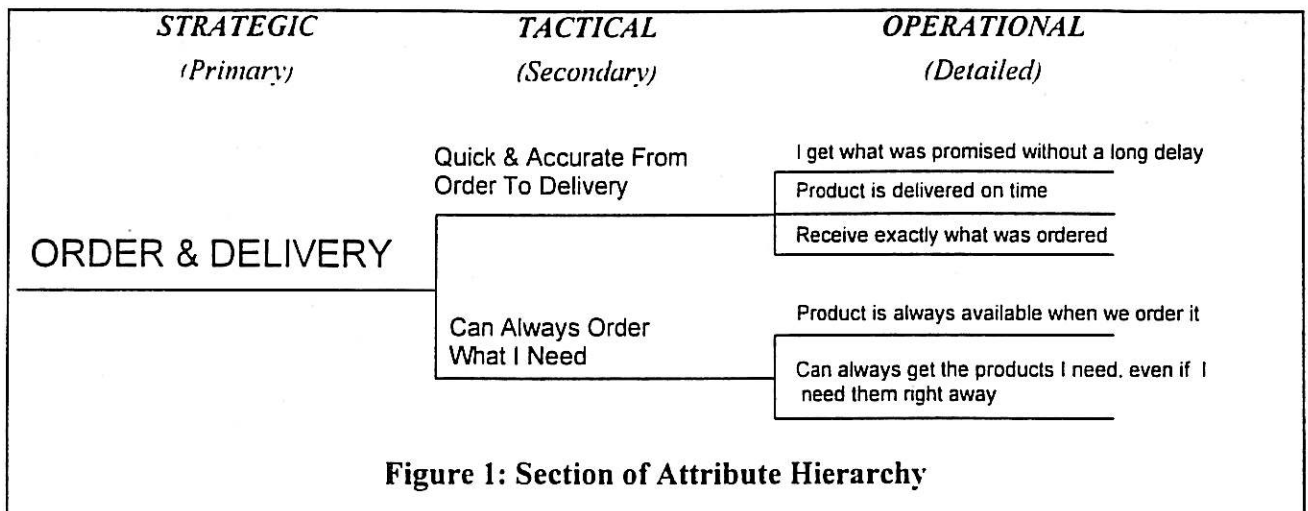
Let the company speak too. At the same time, members of the company team can share their voice as part of the process - internal structure vs. external - how are they organized, what's different, what's the same. When people within a company sort by department or by product line it's valuable information for a team.

Once the groups of needs are identified it's important to name them carefully. These labels will serve as the "secondary and/or primary needs" which become the focus of most subsequent product planning and analysis. It's important to get the context right and to use phrasing that will capture accurately the customer's insights. Using words that have a very specific or charged meaning internally can obscure the customer-meaning. On the other hand, a powerful idea captured in verbiage that already resonates can be powerful indeed.

This process allows you to capture different levels of detail for different purposes - strategic decisions (car performance vs. car comfort) and operational (placement of cruise control).

Although three levels is common, you can have much deeper levels of detail if appropriate. An example of the different level of detail is given in Figure 1.

- Level 3: The actual card deck phrases. Detail that will drive decisions/processes at the **operational** level for day to day decisions, the 'story-telling' aspects of the language that make it real.
- Level 2: Secondary level attributes work at the **tactical** level - definitions that drive QFD and other measurement generating techniques forward. These are most similar to the "typical" market research type statement.
- Level 1: At the primary, or **strategic**, level are the underlying themes that drive customers to make decisions about products and vendors.



Prioritizing The Voice So now you have 20-25 secondary customer attributes - what are you going to do with them? Which ones should be addressed immediately? Which are critical to future development and planning? While every customer need is to some degree "important" - some needs are more important than others. Before undertaking a QFD or similar exercise, you want to know how important each need is relative to the others. Which are critical, which less so?

The customer needs must be prioritized by customers. As customers do the card sort to determine the needs hierarchy, they can also tell you which needs are the most important by scoring their piles from 100 (vitally important) to 0 (not at all important). At this stage customers can also let you know how well they think you are doing in meeting their needs by giving a letter grade rating (or other appropriate scale) on each group of needs.

A simple perceptual map of "Importance" versus "Performance" can show quickly where there are gaps. Areas for immediate "fixes" are those that are highly important with poor grades. Important needs that receive excellent grades may be put on the "back burner".

After You Have The Voice

As companies make decisions about where to allocate resources for programs and development they should be focused on the things that are important to customers, but also play to their own strengths and core competencies. In *The House of Quality*, Hauser and Clausing (1988) said "strategic quality management means more than avoiding repairs. It means that companies learn from customer experience and reconcile what they want with what engineers can reasonably build."

A planning tool, like QFD, enables a team to use the voice of the customer and link it to product design characteristics or performance measurements that the company can control. As the links to customer needs are identified it is possible to prioritize internally - which product characteristics or measures have the biggest impact on customers? Now the impact on customer satisfaction can be measured at the source instead of 6 months later in a survey!

Before any customer-driven solution has a chance the company must be willing to make a commitment to act on the results. If the data is not used to drive the process forward then it will languish as another stunt by the "management trick-of-the-month-club." Although useful for building awareness and generating enthusiasm the real power of the customer's voice comes from taking action. You need to use the insight gained from the customer's voice to effect real change within the organization.

The Future Some recent developments in applying this voice of the customer (VOC) process include:

- A major university applied VOC techniques to redesign their core curriculum and become the #2 school in their category.
- A large insurance company used information from their customers to energize employees around a shift in business strategy from their sales agents to the end-customer
- A large utility deploying various VOC efforts throughout company to give common process and focus and using the customer's voice to evaluate opportunities in the face of deregulation and competition.

References

Greising, David: "Quality: How To Make It Pay" in *Business Week*, August 8, 1994, pp. 54-59.

Griffin, Abbie and John R. Hauser: "The Voice of The Customer" in *Marketing Science*, Vol. 12, No. 1, Winter 1993, pp. 1-27.

Hauser, John R. and Don Clausing: "The House of Quality" in *Harvard Business Review*, Vol. 66, No. 3, May-June 1988, pp. 63-73.