

PRODUCT DEVELOPMENT

Quality Assurance from a Different Point of View

Quality assurance programs today usually focus on confirming that the product was made as the product developer intended. Consequently, tests are conducted both during the manufacturing process and on the finished product to confirm that specifications have been met for each key part of the formula, process, and package. Deviations from specification are reviewed and managed. And for many companies, this is where the quality assurance process ends. The manufacturer is assured that the product was manufactured correctly, but does this assure that the consumer of the product sees the intended quality? Does the consumer see the quality of the product that the marketing people saw when they set the price and sales volume expectations?



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To gain a different perspective on quality assurance, let's look at the product from the point of view of the consumer. (My apologies to male grocery shoppers—I have chosen to assume our consumer is female.) The consumer purchases a product from a retail source, paying either the full or a discounted price. When the product is prepared and eaten, the consumer

begins a process that ultimately determines the likelihood that she will repurchase the product. The quality the consumer judges is the quality she sees after she has stored the product, prepared the product in her kitchen, with any deviations in preparation and product from the manufacturing target, and all the changes that have occurred during aging and distribution. The final quality is judged while eating a serving of the product in a real world setting and takes into consideration the price paid for the product.

The next time the consumer shops, she will consider her previous eating experience in deciding whether to repurchase the product. If the product was "wonderful," she may well repurchase at full price. If the product was "good," she might repurchase, but only with a coupon or price reduction. Of course, if the product did not meet her expectations, she will not repurchase at all.

Meanwhile, the marketing team members manage the volume commitments for the product. Sales are not meeting projections, so they begin looking for the cause of the shortfall. They check sales distribution and see that targets have been met. They check the average price paid and see that consumers are paying the expected prices based on their spending on consumer and trade promotion. So they ask for a meeting on the product to review product quality.

The product is pulled from the factory's warehouse and sent to headquarters. QA data for production since start up confirm that the quality specifications have been met. A skilled home economist prepares the product for the review. The product development

team meets, evaluates the product carefully, and determines that quality is where it is expected to be.

The marketing team then schedules a meeting with the market research department to discuss the inability of market research-based volume projections to predict repeat sales accurately. Or, sales and repeat sales are roughly where they should be, but the product has been priced below the target for the first year of its introduction. Now, in year two the price has been moved up to the target retail price and advertising is significantly reduced to pay back the investment made in year one, but sales have dropped precipitously. Again, the marketing team schedules meetings with research and development, production, quality assurance, and sales to find out what is wrong. Then, when no causes are found, they schedule another meeting with market research.

Have any of us seen these sequence of events in our own companies?

How often have you eaten a new product at home and thought "That was okay, but I was expecting it to be better?" As product developers, how often have you eaten a product enthusiastically during development, only to "tire" of it after it is on the market? Did you really tire of the product, or was it subtly "less good" than it had been during development? Remember, during development, you saw product that was fresh, usually perfectly made, and prepared according to the intended consumer directions. You probably also tested manufacturing variations, consumer preparation variations, and shelf life, but were these variations tested one by one or compounded together—as the consumer really sees them!

Dealing with all the variations appears to be an unmanageable task in product development. Consequently, these combined issues are usually managed based on judgment or experience. Certainly, the costs of running experiments to test manufacturing variations across distribution abuses, consumer variations, and age would be monumental. However, there are powerful techniques that are seldom employed by the food industry to develop products that tolerate multiple sources of variation. (These techniques could be the topic of a future column.)

As you can guess from the tone of the paragraphs above, I've been through these scenarios more than once in my career. As an R&D person, I first tended to blame the plant and QA for not making the product correctly. Then, I blamed lack of advertising. From there, I focused on temperature abuse at retail. I also questioned the predictive ability of sensory and market research techniques. Later, I learned that product age at retail is often much older than expected. I now recognize that all of these concerns probably play a role in a significant sales shortfall for a new product, presuming the concept was a good one in the first place.

Evaluating Product Performance in the Marketplace

I'd like to recommend the following as a tool to better understand your product performance in the marketplace and to drive the changes your company needs to enhance the quality of your products as seen by the consumer.

Each company would need to execute this idea in its own way, but basically I propose that you add an "as seen by the consumer" evaluation system to your on-going QA program. This system evaluates a product purchased at retail, prepared using real con-

sumer techniques, and eaten in real settings on a routine basis. The data collected from such a program can determine if the product you are selling has the quality you expect when eaten by the consumer. I'll expand on each component of the program.

First, a review of current QA procedures may uncover enough tests that can be eliminated or reduced in frequency to provide resources for a consumer-focused QA program. The program doesn't have to be huge or elaborate...over time you will accumulate enough data to show you where you stand.

To begin, the grocery-shopping family members of your sales staff can be ideal people to purchase the product at retail. Be sure to include the administrative staff in the sales office in this effort to obtain the broadest range of demographics on purchasers possible. Your marketing and sales department should formulate a questionnaire for purchasers to fill out for each purchase or store. For example,

- What was the price paid?
- Where was the product located in the store?
- What competitive choices were available and how were they priced?
- Do you normally purchase this product for use in your home? If not, why not? Etc.

Approach 1. Have purchasers prepare the product in their homes, answering detailed questions about the preparation techniques used. Then, have purchasers and families consume the product in a real meal setting and answer detailed questions. This technique can easily be done for one product per week, so during one year, 52 evaluations can be provided per person involved.

If this method is employed, it is critical to ensure that the evaluators understand that they are to record exactly what they see...if there is a problem in the field, they are the first line of defense to catch it. Training must be limited however, so the evaluators are as much like regular consumers as possible. Also, the products evaluated should be rotated, so a person does not become more "expert" in evaluating the product than a regular consumer.

The back-of-package recipe developers should have input into the questionnaire, so they can learn how consumers interpret their directions. Measurement tools can be provided to evaluators (one set of tools can rotate among a number of evaluators), so actual practices can be recorded in repeatable terms.

If evaluators are not preparing the product according to the instructions, additional evaluators (or consumers) should be involved to determine the extent of the practice. Meanwhile, until data clearly show that the evaluator's method of preparation is highly uncommon (consult your statistician for guidelines), the evaluator should continue with the same preparation procedures initially used. Remember, the objective is to observe real world product use and quality.

R&D staff should also be consulted when developing the questionnaire. Date codes will paint a picture of average product age. Any faults or dissatisfaction with the product should be recorded. Distribution and retail display issues like thawed product, excessive ice in frozen product, syneresis in thickened product, staling, etc. can be specifically prompted in the questionnaire. Where needed, explanations of faults can be provided in lay person's terms, so the evaluators know what they are looking for.

The product quality evaluation questionnaire should have input from all the departments involved in consumer tests. But because the evaluators are involved in an on-going program, it may be possible to ask for input beyond that normally gained during consumer tests. It is important to emphasize that you are seeking the most "normal consumer" responses possible. It is the tester's evaluation as a normal consumer that is of value in this program. It is possible to turn off technical evaluation skills and just be consumers when eating products in a home setting, so the con-

sumer ratings obtained from a program like this can be very instructive.

Construction of the evaluation form needs to take into account that "like" may not be the right question for evaluators, because the evaluators may not be part of the normal target market for the product. Questions might include

- How was product quality? If you use a competitor's product, how did we rate vs. their product?
- Was the product worth the money paid? If not, what should the price have been and why?
- Did all family members eat the product? Would all eat it again if given the option?

Specific attributes can also be rated using a variety of scale methods.

If you have five regional sales staffs, each with five employees, you would accumulate 1,250 evaluations over the course of the year. If you have more employees, you could reasonably acquire more data. Meanwhile, you would also assure that your evaluators are involved with your products and using them under real world conditions. Although the evaluators may not be the target market for the product, they certainly can determine whether the product looked as it should, handled as it should, and tasted as it should and identify any deviations from the company's expectations.

Approach 2. The second approach uses staff's families to purchase the product but brings preparation and evaluation to a centralized location. Although product measurement and data collection are greatly enhanced by this approach, great care must be taken to prevent the evaluation from becoming a field version of the headquarters cuttings I described at the beginning of the article.

Approach 3. Product pick-up services can be used for a program like this on a one-time or on-going basis. They do a superb job, but it can be costly for an on-going program. You also lose the personal involvement of staff in viewing your products through a consumer's eyes.

All three approaches need to incorporate appropriate data evaluation and summary methods. It is critical that if you collect data, you also analyze and report the results to all involved departments as well as develop action plans. This reinforces the contribution of the evaluators while you disseminate the findings through the company.

Once the program has been successfully started with your field sales staff, it can be expanded to involve more or all company employees. This serves to accumulate data more quickly and also provides a means to let all the employees involved see the impact of their actions and programs on product quality. For example,

If sales distributed extra product because of a retail deal, evaluators may see older product and distribution-related abuse symptoms. Once everyone responsible for or benefiting from the extra distribution is informed of the results, they can be involved in action plans to achieve the same sales objectives using methods that result in less negative impacts on quality.

If your keyline approval processes don't permit input from all departments and you learn that consumers routinely prepare your products without following the instructions precisely, again, all involved can analyze the problem and discuss a resolution.

It is amazing how much easier it is to change procedures, even a culture, when we personally experience the issues resulting from our current practices. It is also amazing how much a consumer-focused program like the one described can help producers "walk a mile in the consumer's shoes."