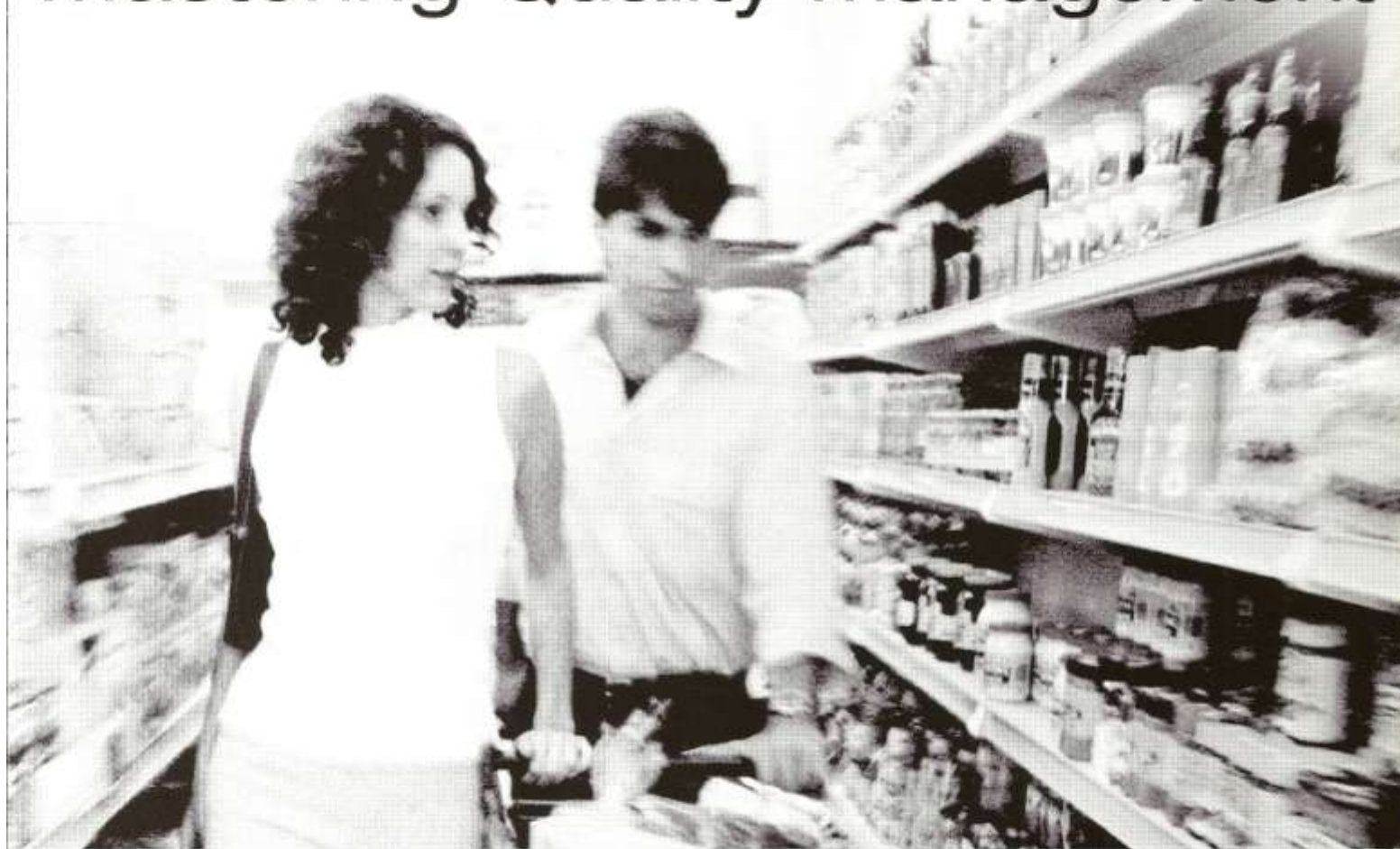


R&D's role in quality • Shelf life success • IQF processes

# FOOD PROCESSING

foodprocessing.com

## Mastering Quality Management



Food Processing's \_\_\_\_\_  
**Innovation Awards**

Teamwork and convenience rule the year.



PutmanMedia

# Mastering QUALITY MANAGEMENT

by Paula Manoski and Scott Gantwerker, Contributing Editors

As the developer of products, processes and packages, R&D is in a strong position to play a leadership role in product quality assurance.

In high-performing companies, R&D leads and supports activities to ensure the development of superior products; the translation of critical design information to the supply chain; and the ongoing collection of performance feedback to guarantee quality throughout the product's life cycle.

To effectively lead portions of the quality management effort, R&D must be proficient in three "quality" categories: compliance, process and design.

## Compliance quality

Competence in this category, which essentially is comprised of "the basics," is the necessary "ante" required to participate in the food and beverage industry. Compliance quality typically refers to issues such as the following:

- Food safety.
- GMPs and sanitation.
- Labeling, weights and fills.
- Other legal and regulatory requirements.

Effectiveness in Compliance Quality is based upon familiarity, understanding, application and adherence to these practices, laws and regulations. They are essential to earn the right to participate in the food and beverage industry.

To build competency in these areas, it's important for R&D to practice them in their development work — in the lab, pilot plant, testing sites and so forth. Because safety and regulatory compliance skills are broadly assumed to be in place, they generally don't serve to differentiate companies. As such, these skills are not a source of competitive advantage.

## Process quality: the foundation

Once compliance quality practices are in place, process quality provides the foundation or launch point for building a competitive advantage. Process quality is all about adherence to design intent and product consistency, and typically encompasses:

- Translation of product design parameters to specifications and procedures.
- Conformance to design.
- Minimization of variability, waste and rework.

- Elimination of complaints
- Capability: Specification reconciliation.

R&D's capabilities in this area come from a thorough understanding of key product attributes and product interactions (with ingredients, processes, packages and the distribution environment), along with a working knowledge of supply chain capabilities and realities. The ability to deliver the product as intended, without customer or consumer dissatisfaction, does not ensure proposition success, but it does supply the foundation on which a competitive advantage can be built.

## Design quality: source of competitive advantage

With compliance quality and process quality in place, the company is in a position to develop a competitive advantage through superior product/proposition designs, which typically require:

- Knowledge of consumer/customer needs.
- Understanding the key drivers of preference and satisfaction.
- Insight into enhancement of product attributes.
- Delivery of product value.

The competitive advantage created by superior skills in Product Design is enabled by the ability to leverage technical knowledge of what is possible, Consumer-based knowledge of what is desired and deep knowledge of the competitive environment to draw insights about the Consumer and the product category.

## Commercialization

During commercialization, the R&D team transitions product, process and package technology to the supply

chain. Using appropriate data and statistical tools, R&D translates its knowledge of product regulatory requirements, consumer/customer needs, and process capabilities to the supply chain via quantified, performance-based specifications and procedures.

The competitive environment places great value on the ability to bring new products to market in a minimal amount of time. Improving the commercialization process will directly improve business performance and earnings through the timely introduction of new and innovative products that are profitable from the outset.

During commercialization, product, process and package information (beyond that gathered during development) is generated, analyzed and documented. This includes information about ingredients, package materials, process conditions, product parameters and measurement methods. Using appropriate statistical tools, manufacturing procedures, targets, ranges and means to control product, process and the package attributes are devised and specified. Product commercialization should not be considered complete until specifications and manufacturing capabilities have been reconciled among R&D, marketing and manufacturing management.

#### Classic commercialization caveats

The following are commercialization shortfalls most commonly encountered in the food and beverage industry:

*What you don't know will hurt you* — Project plans are often made without sufficient recognition of the work required to completely commercialize a new product. This often limits the amount of information gathered about the product, its ingredients, process conditions, sources of variability and the means to achieve manufacturing consistency. Not all sources of variability will be identified during development. It takes time once production has started to identify sources of variation and develop appropriate action plans.

*The invitation was lost in the mail* — Supply chain participation at an appropriate level in the new product process should start early and continue through the

Tight specifications can be achieved, but you need to determine if they truly drive higher product acceptability, and if you are willing to pay the price.

commercialization phase. Often R&D proceeds well down the development path without significant consultation with supply chain members. Other times, supply chain avoids involvement until startup/launch is a certainty. Even the most manufacturing-savvy R&D organization can benefit from the engagement of supply chain representatives.

*Crunch time* — As product introduction time draws near, there is pressure to fit remaining product development activities into whatever time remains. Without recognition of commercialization's importance among the project's key players, the success potential for the product proposition may be compromised.

*Head 'em Up; Move 'em Out!* — Commercialization is not nearly as sexy as Product Development. In the desire to put a project behind them and move on to the next project, R&D can prematurely conclude Commercialization. After all, commercialization is often perceived as merely "dotting the i's and crossing the t's", and as such, of low value. Besides, the opportunity for innovation and discovery is so much more with a new project. Considering the investment that has been made to bring a product to the point of launch, there is tremendous value in getting the Commercialization done right and tremendous potential for waste in shortchanging these activities.

*What are they smoking?* — "We want the highest quality product. We have very tight specifications." These are great goals, but they need to be tempered with the reality of equipment, ingredients and analytical variability. Tight specifications can be achieved, but you need to determine if they truly drive higher product acceptability — and if you are willing to pay the price in increased ingredient costs or capital expenditures for improved capabilities.

*The chicken or the egg* — Plants will often ask for final specifications prior to the start-up, though anyone who does this truly doesn't understand the commercialization process. Preliminary product specifications are required to get started, and are used to establish equipment capability and determine whether the process is in statistical control. But ingredient and equipment variability is deter-

mined over time. Reconciliation must take place over the course of ongoing production, and may require six months to a year. Without an understanding of true equipment variability, ingredient variability and seasonal variability, there is a risk of developing specifications that turn out to be meaningless and therefore ignored by the plants.


*Later, dude* — In many companies, tentative specifications are developed ahead of start-up, but are not reconciled with capabilities. This leaves a potential gap between design and capability, and may result in the manufacture of a substandard or highly variable product that creates ill will among company business partners.

*Just a mirage* — Specifications are set using some type of instrumentation, device, analytical technique or measurement tool. Know what you are measuring, and the limitations of the method or instrument. Rapid measurement tools are an important part of plant quality systems, but need to be correlated to more precise measurement techniques, otherwise they produce meaningless numbers. The accuracy of the test, or the test variability should be accounted for in establishing the specifications range. R&D needs to pay particular attention to the tests selected to measure specifications in product design and development and take care to assure that testing is correctly translated during commercialization.

*R-E-S-P-E-C-T* — Once specifications have been set and capabilities demonstrated, it's important to meet specifications and deliver the intended product rather than attempt to reduce cost by looking for specification "loopholes."

*Your Partner or your problem* — The quality of any product depends on the quality of the ingredients and materials going into it. While ingredient and material specifications can set the stage for supplier performance, they must be supported by adequate supplier capabilities and sound quality management practices.

#### Summary

R&D organizations demonstrate excellence in the Quality management aspects of Commercialization through practices that capture Consumer and Customer needs and communicate them effectively to the Supply Chain, leading to the establishment of Supply Chain capabilities that are reconciled with proposition specifications. Commercialization activities done well create the foundation for the effective, problem-free transfer of products from R&D to the Supply Chain and help to insure a successful product launch, from production reliability, cost and product quality points-of view. Done poorly, they jeopardize the success of your business propositions. 



*Scott Gantwerker and Paula Manoski are principals of Quality R&D Partners (QRDP). They hold advanced degrees in food science, engineering and business and possess over 50 years' combined experience as R&D leaders and R&D clients at Quaker Oats and Pepsi-Cola. QRDP works with technical and business leaders in the food & beverage industry to raise the effectiveness of their R&D teams through assessment, planning, training, and hands-on coaching. They also assist suppliers in understanding the needs and business processes of their customers. They can be contacted at [www.QRDP.com](http://www.QRDP.com).*