



HOW CREAMY? HOW CRUNCHY?

Kraft Foods discovers the true measure of SAS®

Industry

Manufacturing

Business Issue

Ensure consistent flavor and appearance of snack foods by regulating production processes and assigning numerical measurements to quantify the flavor, color, aroma and other attributes of each product.

Solution

Two new SAS-powered applications featuring SAS/IntrNet®

Benefits

Evaluate recipe reformulations, product improvements and market trends by measuring and determining the appropriate levels of chewiness, sweetness, crunchiness and creaminess.

Oreo, Ritz, DiGiorno and Kool-Aid.

Kraft makes foods with names that people recognize. In fact, Kraft's superior portfolio contains many of the world's favorite brands. But it's not just in the name; it's in the flavor. To ensure consistent flavor and appearance, Kraft tests its foods throughout the manufacturing process and assigns numerical measurements that quantify the flavor, color, aroma and other attributes of each product.

Two new SAS applications at Kraft allow product developers and sensory technologists to evaluate recipe reformulations, product improvements and consumer preferences with credible assuredness. The first is a sensory analysis application that analyzes input from product taste tests. The second evaluates and compares production processes in order to reduce variation in baking and mixing, and to enable greater planning efficiencies throughout the manufacturing process.

"Our SAS applications encompass the full project life cycle of product and sensory testing," says Beth Knapp, Lead Systems Developer at Kraft. "From ingredient selection to questionnaire development, experimental design and top-line reporting, SAS software cranks through all of the collected data and reports summary results."

Sensory analysis with SAS®

At Kraft, terms such as chewy, sweet, crunchy and creamy are assigned precise definitions and numerical scales so standardized product information can be

entered into SENECA. Short for Sensory and Experimental Collection Application, SENECA helps Kraft get more out of their sensory data than ever before. Originally developed and deployed in Kraft's Nabisco Biscuit Division, the SENECA application has been broadened and enhanced for use throughout the Kraft Foods Corporation.



"SENECA has a database of information that includes everything you might be interested in, in terms of sensory tests," says Knapp. According to Knapp, much of the data in SENECA is collected through any of three diverse testing methods employed by Kraft:

- Discrimination testing compares two or more products, contrasting the flavor, appearance and color of a control product against other products.
- Descriptive testing employs professional sensory panelists to evaluate all aspects of a product from texture to taste. The panelists put definitions to descriptors such as chewy and creamy, providing baseline figures and numerical scores for each category.
- Consumer testing measures the personal responses and opinions of the general public.

With the help of SAS software, Kraft's SENECA application takes the collected data from all of these tests and

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Lead Systems Developer
Kraft

makes it available for analysis and reusability. The system builds models, histories and trends based on consumer testing, and then evaluates product changes based on discrimination and descriptive testing.

Web-enabled application guarantees consistent flavor

Consumers take it for granted that each handful of **Ritz** crackers and each slice of **Tombstone** pizza will taste as good as the last. And that's why process variation reduction (PVR) is important – to ensure consistent flavor and appearance for every Kraft product. Because even small changes in the baking process can result in huge disparities in taste, Kraft employs SAS to ensure a consistent, reliable, great taste for each of its products.

“Reducing variation in production processes is valuable because it leads to greater throughput by reducing scrap and rework,” says Knapp. As a rule, Kraft's PVR application helps the company produce more salable

cookies, crackers and other foods items per hour. “Variation reduction also creates higher average quality,” says Knapp, “which means happier customers and more repeat sales.”

Evaluating every manufacturing procedure, from recipe instructions to cookie dough shapes and sizes, the PVR application identifies steps in the production process that create excess variation and helps executives create process improvement measures for those areas. And now, Kraft employees near and far can use the new Web-enabled PVR application over the intranet.

In the past, members of Kraft's applied statistics group traveled to plants throughout North and South America to conduct production tests and to collect data for PVR analysis. Today, regional plants can perform their own analyses online. Thanks to SAS/IntrNet® software, the PVR models and analyses can be conducted through the company intranet.

“Using SAS/IntrNet software has allowed us to leverage SAS to a larger audience,” says Knapp. According to Knapp, the SAS-powered PVR process will help Kraft increase revenues and reduce costs. “Process variation reduction has the potential to generate significant cost savings for each facility implementing these procedures,” she says.

Ultimately, the new SAS applications will help ensure consistent, high-quality products for Kraft customers. “To make the ideal cookie, it has to have good shelf life and an excellent flavor,” says Keith Eberhardt, a statistician at Kraft, “And if you keep it closer to the ideal, then the product that reaches customers will be even better.” Using SAS for quality control and data analysis, the billions of Kraft products that reach consumers annually will continue to taste great with every bite.



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