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# LOYAL CUSTOMERS, QUALITY PRODUCTS

SAS® helps HP implement product improvement strategies

## Industry

Manufacturing

## Business Issue

Use manufacturing data and customer usage patterns to improve product development and customer loyalty.

## Solution

SAS® for data mining and quality improvement.

## Benefits

SAS® helps HP develop and implement product improvement strategies.

When Hewlett-Packard's loyal customers purchase printing supplies, they know they're getting products designed to meet their needs. As the world's largest provider of computing systems, HP understands the importance of offering quality products and services that encourage customer satisfaction and loyalty.

One of the four core business groups at HP, the Image and Printing Group (IPG) regularly tests and monitors consumer usage patterns and integrates the resulting customer knowledge into future products. Using SAS to capture and explore this data, information managers within IPG have created a customer intelligence platform that IPG managers can access daily to develop and implement product improvement strategies.

The IPG manufacturing team also uses SAS data mining solutions to model process data and to contain quality issues early in the manufacturing process. According to Michelle Goins, Vice President and CIO of IPG, SAS helps the group achieve one of its key corporate objectives – to understand how customers use HP products and to share that knowledge throughout the company to create better products.

“We think SAS is a great partner for us,” says Goins. “Together, we are developing a solution that not only builds on HP's brand image but further distances us from our competitors in terms of our ability to satisfy our customers.”

## Accurate answers online

HP's new Printing Usage Insight Tool, developed with SAS, automatically pulls data from an Oracle database, analyzes customer usage data from research panels around the world and organizes the data for easy access online. Before developing the SAS application, David Austin, IPG's Usage Marketing Program Manager, delivered monthly paper-based reports that provided a fraction of the information now available through HP's secure intranet.

“Before using SAS, we had a very limited means of accessing information and distributing it internally,” says Austin. “SAS has allowed us to package that information and automate the analytics to get information out to the people who need it.”



Today, nearly 200 marketing and product managers within IPG can use the Printing Usage Insight Tool to explore and query usage data in any way they desire. Product managers for 900-series printers, for example, might use the application to analyze the differences in usage patterns between home customers in North America and those in Europe. Or a regional mar-

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keting manager in Europe could compare product usage rates between Germany and France. Likewise, marketing managers can use the same data to explore seasonal usage patterns and determine the best ways to promote printer supplies throughout the year.

Leslye Louie, IPG's Vice President of Sales and Marketing, says the application has proved invaluable for making high-level marketing decisions. “SAS is a key factor in our success. It allows us to do things we have not been able to do before – such as quickly integrating and analyzing information about our customers so we can cost-effectively deliver higher quality products to the market.”

**Saving time, improving data quality**

Offering advanced analytics in an adaptable and flexible environment, SAS provides more information to more users in a fraction of the time it used to take. In fact, Austin says, he used to spend one week a month creating reports for IPG product managers. With SAS, the whole process is automated.

“SAS has freed up David's time to perform more in-depth analyses and to provide more insight to our internal clients,” explains Carol Peterman, IPG's Usage Program Manager,

“and it's freed up my staff members' time to address ad hoc requests from users. That's just one more way we've been able to increase the knowledge we have within HP and offer important insights into customer behavior.”

In addition to the time savings, Peterman says SAS has helped improve the integrity of the group's data as well. “We've been able to discover previously undetected data quality, aggregation and calculation issues in our existing sources and reports. Resolving these issues has improved information quality dramatically.”

**Data mining improves product quality**

To address quality manufacturing issues, product engineers and statisticians within IPG also have implemented SAS Enterprise Miner™, SAS' award-winning data mining software. A pilot test of the software has yielded impressive results, helping HP engineers address process manufacturing concerns before they affect product quality.

“Before using Enterprise Miner, our engineers and analysts could only look at small subsets of data,” says Howard Hovagimian, IPG Statistician. “The tools weren't there to allow them to look at the big picture. But with the

models in SAS, we now have the capability to look at everything simultaneously.” For example, Hovagimian can now understand the complex interactions between a fabrication process and a product assembly process in the final stages of production.

The initial SAS Enterprise Miner pilot test helped HP engineers identify raw materials that were affecting the quality of silicone computer chips in certain inkjet products. Known within IPG as the cracked-die project, Hovagimian calls the test an incredible feat. “Using the SAS system, we not only found new things that hadn't been observed before, but we also validated every major finding that has occurred within the past couple of years.”

Analysts and managers within IPG are excited about their future with SAS and the benefits that SAS will bring to both HP and its customers.

“I think the biggest benefit for the business as a whole is that we can deal with more complicated and bigger issues that have frustrated us historically,” says Jeff Beauvais, IT Factory Information Manager. “With SAS, we're able to resolve those issues quickly and more effectively.”



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