

## CASE STUDY | BlueCross Blue Shield - Reducing Printing Costs at a Health Care Insurance Company

*An insurance company reduced its printing costs by reducing the ratio of employees to printers*

### The Challenge

In business, as in life, oversimplifying a problem can be unwise. Our assumptions may not tell the real story. If we don't know the real story, it's likely we won't understand what is actually causing the problem. Six Sigma allows us to systematically reduce the variables to a manageable level and more importantly, to solve the real problem so it doesn't come back.

BMG-trained Black Belt Gene Rutherford knew this when his company, Blue Cross and Blue Shield of Florida, Inc. (BCBSF), realized that the ratio of employees to printers was excessively low compared with a peer group study. According to a Gartner Group report, similar organizations had about 6.3 users per printer. BCBSF's ratio was 1.7 employees per printer, mostly because the company had too many desktop printers versus shared network printers.

Rutherford says one initial thought was just to pull 3,000 of the 5,400 desktop printers out of service. "There was discussion of taking action without much of an analysis," he says. But then he and his colleagues realized that a bigger opportunity was presenting itself.

They decided that a DMAIC project could help them understand the business need driving so much printing capacity, and how they could lower the total cost of printing.

### The Process

After completing a manual data collection process, one of the first Six Sigma tools the project team used was a Pareto chart to list the input variables related to printing.

The Pareto showed that 83 percent of the company's printing costs were driven by

five factors: toner, paper, parts and labor, network printer depreciation and desktop printer costs. However, upon plugging these five variables into a fishbone diagram, the team decided that these Xs were actually Ys. So, the team completed a separate fishbone diagram for each Y. This resulted in the identification of some 50 possible Xs contributing to these various outcomes.

Rutherford and his team used a cause-and-effect matrix to narrow the variables to the critical Xs. The first key variable the team pursued was toner cartridges. It turned out that costs could be significantly reduced by using remanufactured cartridges instead of new ones. "We immediately cut our toner purchase price by over 60 percent," Rutherford says.

Before making the switch, however, the team conducted tests and a pilot to make sure the remanufactured cartridges did not introduce quality or serviceability issues. The cartridges performed within spec limits, and the team made a bonus discovery. "When we did the toner yield study on the new and remanufactured cartridges," Rutherford recalls, "we actually found that the remanufactured cartridges had a higher yield than the new cartridges. We did a 2-Sample T-Test to determine whether or not the numbers were statistically significant, and they were."

The project team also investigated the possibility of reducing toner consumption by changing network printer configuration settings. Using a DOE (Design of Experiments), the team tested over 50 combinations of settings, including text type, toner density level (TDL), dots per inch (DPI) and document category (i.e. light text, heavy text, light graphics, heavy graphics).



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### Summary

#### Organization

- ▶ Blue Cross and Blue Shield of Florida, Inc.

#### Industry

- ▶ Health Care

#### Business Problem

- ▶ Improve printer efficiency without sacrificing quality and service.

#### Methodology

- ▶ DMAIC

#### Solution

- ▶ Redesigned printer footprint, reduced toner consumption and employee education.

#### Benefits/Results

- ▶ Over \$1.4MM in annual savings

Approximately 60 trained employees reviewed the test printouts for quality. Lowering the toner density level from a factory pre-setting of eight to four produced acceptable quality for most print jobs and reduced toner consumption by 50 percent.

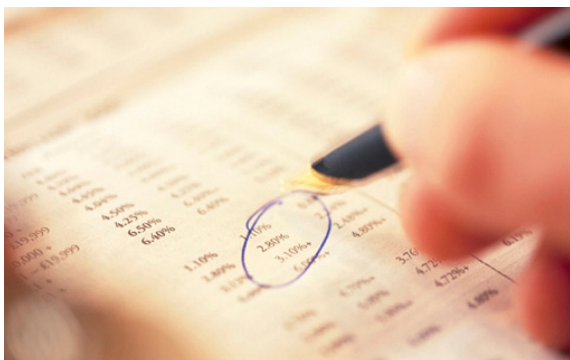
Although significant savings would result from the improvements suggested thus far, the project team forged onward and revisited the initial idea of reducing the number of desktop printers. However, instead of assuming this reduction was necessary, the team looked for corroboration by interviewing employees to understand their printing habits. The

discussions were eyeopening. For example, some employees admitted to printing for convenience, and not because a printed copy was essential. Overall, the project team sensed a lack of knowledge, and a lack of concern for the cost of printing.

Rutherford says these observations led to a "Print Behaviors Communications and Training" program to raise awareness about best practices. "The program is aimed at educating people on how much it costs to print in color versus black and white, and the opportunity they have to duplex rather than print one side only," he explains.

Although many of the BCBSF employees seemed open to change, Rutherford had heard of difficulties faced by other organizations that had tried to take away desktop printers. The project team knew that making a good case for the change would increase acceptance of the idea. The team conducted usability studies that found the majority of desktop printers, and many of the network printers, were greatly underutilized when compared with an industry target utilization rate of at least 30 percent. "That told us we had immense capacity to transfer the prints from desktop printers to network printers," says Rutherford.

The team also talked to printing industry experts about the ideal placement of shared network printers. Reviewing floor plans and conducting a walk-time study showed that the company's existing network printers could be repositioned to meet the recommended average of 15 seconds, or 40-45 feet, from a person's desk. In some cases, the number of network printers in a given area could even be reduced.



Armed with this information, the team held focus groups to discuss the idea of moving from desktop to network printers. "We shared the background and the cost information, and some of the potential savings with the groups," Rutherford says. "One of the things we tried to explain was here's an area where we can lower our costs without having to eliminate positions. I think people appreciated that."

### The Results

When the recommended improvements are fully implemented, the BCBSF printer project will allow the company to eliminate nearly all desktop printers, and many network printers. The benefits will vary between workgroups. For example, in the Information Technology area, the new ratio of employees to printers will improve from 7:1 to at least 16:1. The cost per printed page in this area will also be reduced from nearly \$.03 to \$.01.

In addition, the project identified a host of other savings opportunities including the retirement of older, inefficient printers; a centralized toner ordering and storage process; a chargeback policy for color printing; duplex printing to reduce paper costs; and a better system for tracking printers covered by warranty to eliminate unnecessary service charges

As a result, BCBSF expects to lower its annual distributed printing costs by more than \$1.4 MM, while maintaining acceptable levels of print quality and service. Additional speculative savings of \$470,000 for 2006 may also be realized. Rutherford sums it up in one of his key learnings from the project: "Had we focused only on eliminating desktop printers, we may simply have transferred costs to the network printers with minimal savings."

## Key Tools Used

### Define

- ▶ Macro-level Process Map
- ▶ Stakeholder Analysis
- ▶ Affinity Diagram
- ▶ Fishbone Diagram

### Measure

- ▶ Pareto Chart
- ▶ Fishbone Diagrams
- ▶ C&E Matrix
- ▶ Confidence Intervals

### Analyze

- ▶ FMEA
- ▶ DOE
- ▶ Interviews
- ▶ 2-Sample T-Test
- ▶ Utilization Study
- ▶ Walk-time Study
- ▶ Quality Acceptance Tests
- ▶ Yield Tests

### Improve

- ▶ Pugh Matrix
- ▶ Focus Groups
- ▶ Updated FMEA

### Control

- ▶ Control Plan
- ▶ Transition Action Plan
- ▶ I-MR Chart
- ▶ Updated Capability Analysis

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