



Sigma Breakthrough Technologies, Inc.[®]

Six Sigma Case Study: Using Marketing For Six Sigma to Capture an Electronic Application

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Case Study
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Introduction

This case study presents a Six Sigma project conducted in the Electronics Division of a \$16 billion company. The goal of the project was to capture a new market opportunity by applying existing flexible circuit technology to a new application in the hard disk drive head gimbal assembly market. By applying Marketing For Six Sigma and eventually using a CDOC Design For Six Sigma (DFSS) roadmap the project team was able to determine the customer requirements and design a winning product to take advantage of a shift in interconnect technology. As a result, the business achieved \$900,000 revenue in the first year and nearly \$9 million in the second year after product introduction.

Project Background

This project applied the Marketing For Six Sigma (MFSS) methodologies to understand a new business opportunity and identify customer needs. These requirements were then cascading through the product and process development using SBTI's Concept Design Optimize Control DFSS roadmap. The goal of the project was to enter a new market using an existing technology platform. Classroom training and project consultation were provided by SBTI.

Background

To meet the continuing demand for more storage, Hard Disk Drive (HDD) makers to develop new technologies such as like MR heads. While this technology enables the greater aerial density needed it also requires a change in the Head Gimbal Assembly (HGA) for factor. This change is manifested in a need for four read/write interconnections as opposed to the previous two. As a result, the HGA designers also needed a new solution for electrically connecting the MR head to the rest of the HDD electronics.



Figure 1: Head Gimbal Assembly Photo

To intercept this market trend, the project team set out to determine if their existing flexible circuit technology, called Flex-On-Suspension (FOS), could be applied to solve the HGA interconnect problem. As their hypothesis, the team believed that flexible circuits provided the correct balance of, electrical performance, mechanical stiffness, interconnect bondability, and total applied cost to meet the need in the market.

Market Opportunity Analysis

The team first mapped the industry supply chain: from the component suppliers, to the HGA makers, to the HDD manufacturers and inevitably the OEMs. Porter Five Forces and a SWOT Analysis revealed the industry opportunity as well as the challenges from both direct flex and replacement competition. Then Price/Value Analysis (Figure 2) revealed the potential market positioning for the FOS solution.

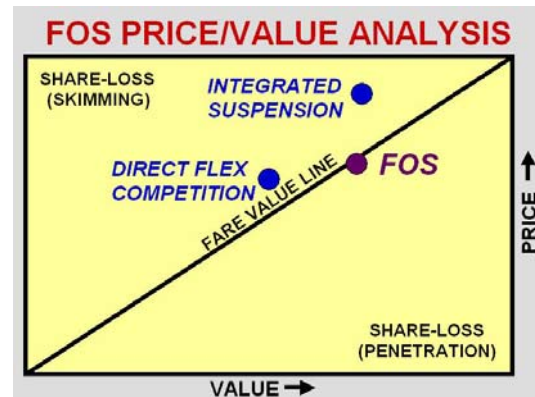


Figure 2: FOS Price/Value Analysis

While integrated suspensions delivered some added value, the added cost was prohibitive in the very cost conscious HDD market. As well, while the direct flex

competition had comparable pricing, FOS was found to command much greater value. Provided that the team could design the right product, the business stood to capture a large share of the available market. Furthermore, an RWW analysis determined that the market was Real, the FOS solution could Win in the marketplace, and the opportunity was Worth the investment and the risk.

Voice of the Customer

Customer interviews were then conducted across functions (engineering & purchasing) to capture the product and supplier specifications. KJ Analysis was used to understand articulated/unarticulated needs and Analytical Hierarchy Process was used to quantify the requirements. (Figure 3)

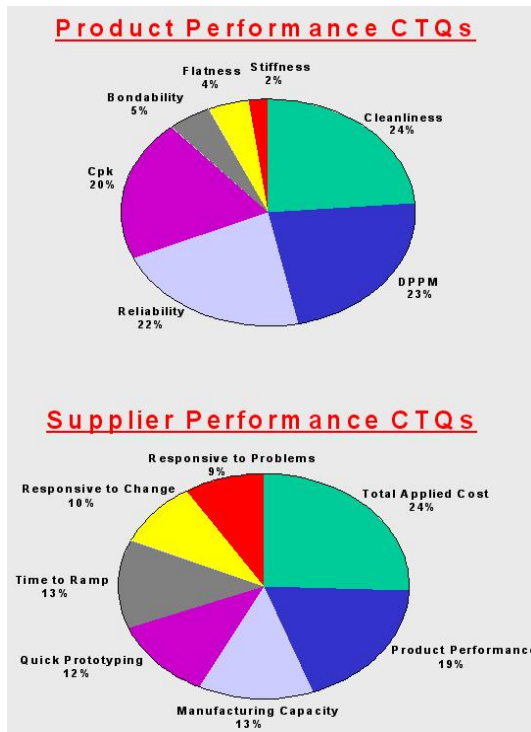


Figure 3: Supplier & Product CTQs

Quality Function Deployment

The product performance CTQs were fed into the Quality Function Deployment (QFD) Houses of Quality. These CTQs were cascaded through to ensure a consistent voice of the customer throughout the product development and process design. At each house, the voice of the customer was converted into technical requirements (such as gold purity and copper thickness) and measurable targets to provide focus areas for the team to control the parameters critical to the quality of the final product.

The supplier performance CTQs were used to design the communications and support required upon product launch. This ensured that the customer received not only a quality product but also a complete value proposition throughout the total supply chain including, product performance, service performance, and delivery performance.

General Results and Conclusions

Using the discipline and analytical thinking of Marketing For Six Sigma and Design For Six Sigma, the team obtained a complete understanding of the voice of the market and the voice of the customer and was able to match the voice of the process for maximum market impact. As a result, the new product was able to achieve \$900,000 of first year sales and nearly \$9 million in second year sales.

A strict adherence to these methodologies and tools will not only enable more successful product launches but can also help identify less attractive opportunities and allow the organization to focus its resources on the most promising businesses.