



TAUBER INSTITUTE
FOR GLOBAL OPERATIONS
UNIVERSITY OF MICHIGAN

25
YEARS

Increasing Supply Chain Responsiveness at 3M AAD Abrasives



Founded in 1902 and based in Maplewood, MN, a St. Paul suburb, the 3M Company, formerly known as the Minnesota Mining and Manufacturing Company, is a global manufacturer of more than 55,000 products across multiple industries. These products are produced by five business groups: Industrial, Healthcare, Electronics and Energy, Consumer, and Safety and Graphics.

With more than \$30 billion in annual sales, 3M employs more than 90,000 people worldwide. The company operates in more than 65 countries, including 29 international companies with manufacturing operations and 35 companies with laboratories.

The Automotive Aftermarket Division (AAD) of 3M's Industrial group manufactures products for each stage of the automotive repair and refinishing process. The AAD's abrasives product portfolio supply chain was often placed under enormous pressure due to episodic demand spikes. The supply chain was not well planned for this erratic demand, leading to increased backorders, production overtime, and superfluous expediting costs.

To address this challenge, 3M brought in a student team from the Tauber Institute for Global Operations at the University of Michigan, consisting of Kimberly Moore and David Timmes, both working on Master of Business Administration (MBA) degrees.

"The team's goal was to grow the profitability of the AAD's abrasive portfolio by increasing the responsiveness of the supply chain," said Debra Levantrosser, the College of Engineering faculty advisor for the project. "This was to be accomplished by aligning business functions within the division and by developing standardized business processes to communicate and track key metrics.

"The abrasives product portfolio is one of the largest revenue generating product portfolios within the AAD, and abrasive sales are driven primarily by both planned and unplanned promotions. Management did not understand which stock keeping units (SKUs) are driving the demand spikes during promotional timeframes and the supply chain was not well suited for this erratic demand."

The Tauber team was tasked with identifying the SKUs that drove this sales volatility. These findings were to be used to help AAD improve its current demand planning process to decrease backorders, overtime, and expediting costs.

"This project required input and buy-in from several functions, and therefore they were stakeholders in the project design," said Levantrosser. "That was a large challenge and driver behind the design. Marketing, sales, demand planning, supply planning and operational planning were the five main functions that interact and hold data pertinent to processes crossing the AAD abrasives value stream.

The fact that this project was so cross-functional made it challenging and satisfying.

Debra Levantrosser



Debra Levantrosser
College of Engineering



Eric Svaan
Ross School of Business



“The solutions included reviewing statistical forecasting, reducing promotion complexity, and improving communication across the value stream.”

The Tauber team performed an analysis of historical sales for 3,000 abrasive SKUs between January 2015 and February 2017, identifying multiple SKUs that consistently drove demand spikes. The team also developed a capacity planning tool and associated training documentation that, along with the key SKUs, were communicated to the production facilities to enable them to adjust production levels to prepare for demand spikes.

The Tauber team designed a new business process to better align sales, marketing, demand planning, and operations to establish proper metrics and information sharing across all functions. This process ensures coordinated procurement, production and logistics operations to support sales efforts.

3M's use of the Tauber team's findings and implementation of the new business process will drastically increase supply chain responsiveness and is expected to lead to an estimated one-time cash savings of \$2 to \$6 million in safety stock reduction for the abrasives portfolio and annual cost savings of \$1 to \$4 million in overtime and expediting fees.

3M Project Team

Students

Kimberly Moore—Master of Business Administration

David Timmes—Master of Business Administration

Project Sponsors

Laurie Altman—Vice President and General Manager | Automotive Aftermarket Division

Robert Silbernagel—Global Manufacturing Operations Manager

Faculty Advisors

Debra Levantrosser—College of Engineering

Eric Svaan—Ross School of Business

About Tauber Team Projects

The 2017 Tauber Team Projects resulted in \$575 million in savings according to sponsoring company calculations, an average of \$18.5 million per project over 3 years.

Each two to three person Tauber Team consists of graduate engineering, MBA, and/or MSCM students. Along with receiving high-level corporate support from the sponsoring company, each team is advised by a College of Engineering and a Ross School of Business faculty member and overseen by a Tauber Institute Co-Director. The projects begin on-site in May and continue for 14 weeks. Students present the results of their projects and compete for over \$40,000 in scholarships at the U-M Tauber Institute's annual *Spotlight!* event, held each September in Ann Arbor, Michigan. *Spotlight!* provides outstanding opportunities for students and corporate partners to establish relationships while exploring innovations in operations and manufacturing.

To learn more about the Tauber Institute for Global Operations, visit tauber.umich.edu or contact us at 734-647-1333.