



TAUBER INSTITUTE
FOR GLOBAL OPERATIONS
UNIVERSITY OF MICHIGAN

Removing Warehouse Bottlenecks at PepsiCo



PEPSICO

Before your bottle of Pepsi was loaded onto a grocery store shelf, it was stored, along with thousands of other bottles, in one of the company's numerous warehouses. In spring 2015, when PepsiCo North America needed help refreshing its inefficient warehouse network, it turned to the team of Lavanya Divi (MSCM '15) and Tanu Sharma (MSCM '15) from the Tauber Institute for Global Operations.

In 2010, PepsiCo purchased its two largest bottlers (Pepsi Bottling Group and Pepsi Americas) that manage the production, distribution, and selling of PepsiCo Beverages. This acquisition involved 70 manufacturing plants and more than 400 warehouses in the direct store delivery business. Many of these warehousing assets were decades old and not built to handle the company's current product portfolio and volume. These outdated warehouses precipitated a number of storage-related issues, which led to significant financial inefficiencies.

The team's primary objective while interning for PepsiCo was to build a new infrastructure capacity model for the company's warehouse operations. Before Divi and Sharma arrived, PepsiCo was using an internal information technology system to calculate current warehouse space requirements, but the system was suffering from inaccurate inputs to the model, as well as incomplete and inaccurate planning logic.

"Lavanya and Tanu were both great fits for the project," said project sponsor Erika Lewis, PepsiCo's senior director of supply chain strategy. "Both are Master of Supply Chain Management students with significant industry experience and a track record of dealing with ambiguous problems."

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Before interning for PepsiCo, Divi leveraged big data to develop supply and demand management products for the management consulting firm Mu Sigma Inc., and Sharma led data management projects, inventory management and planning, and replenishment solutions for the IT services company, Infosys. With their combined experience applied to the problem, PepsiCo's warehouse bottlenecks were resolved.

Divi and Sharma's goal was to create a more accurate warehouse space model that enables PepsiCo to better predict its capacity requirements, increase supply chain efficiency, and save money. To build this model, they had to first conduct a thorough assessment of the company's planning system and warehouse network. This involved visiting multiple sites to observe warehouse practices, risks, and opportunities, propose changes to the then-current internal warehouse reporting system, and develop strategic planning capabilities to forecast space requirements.



Left to Right: Alex Baxter, vice president, supply chain planning, PepsiCo; Erika Lewis, senior director, supply chain strategy, PepsiCo; Tanu Sharma, (MSCM '15); Amitabh Sinha, Tauber business co-director; Lavanya Divi, (MSCM '15); and Greg Genser, senior analyst, supply chain, PepsiCo. Photographer: Philip Dattilo



Lavanya Divi, (MSCM '15)

“The scope of this project was huge and complex,” Lewis said. “Each warehouse had a different size and layout. There were hundreds of decentralized stakeholders involved, and many measured success for the project differently. The team needed to manage stakeholder expectations while still focusing on results that would most impact the bottom line.”

Due to the complex nature of the project and the vast, multi-echeloned organization they were required to navigate, the team struggled at first to identify the right people to talk to and provide the data they needed. But as Sharma quickly learned: “As long as one doesn’t hesitate to ask questions and is willing to network with people, he or she will eventually get the required information.”

The problem Divi and Sharma were tasked to solve directly affected PepsiCo’s supply chain, but it also touched other functions within the company, such as finance, planning, and manufacturing. As the team continued to make progress on the infrastructure capacity model, they also were spending more time interfacing with other departments. Working in a cross-functional environment helped the students realize how multi-dimensional a

“Understanding the origin of a problem becomes important to effectively solving it.”

business problem can truly be, and how the best solutions are often holistic ones, encompassing a large number of stakeholders.

“The project has also allowed me to understand how a business problem propagates from top to bottom, becoming amplified at every stage, and finally manifesting as a known issue—visible to all, at the bottom of the business value chain,” Sharma says. “Understanding the origin of a problem becomes important to effectively solving it.”

By the end of their project at PepsiCo, Divi and Sharma had completed their new infrastructure capacity model to rave reviews. The team also suggested improvements to business processes and calculations, and designed a capability to predict infrastructure-related bottlenecks. All their work was well received, and their efforts are slated to save the company up to \$18.4 million in warehouse operation costs. Lavanya and Tanu, enjoy a Pepsi. You earned it!

PepsiCo Project Team

Student Team

Lavanya Divi—Master of Supply Chain Management
 Tanu Sharma—Master of Supply Chain Management

Project Sponsors

Greg Genser—Senior Analyst, Supply Chain
 Erika Lewis—Senior Director, Supply Chain Strategy

Faculty Advisors

Marina A. Epelman—College of Engineering
 Amitabh Sinha—Ross School of Business

About Tauber Team Projects

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.

The 2015 Tauber Team Projects resulted in \$500 million in savings according to sponsoring company calculations, an average of \$14.3 million per project over three years.

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

