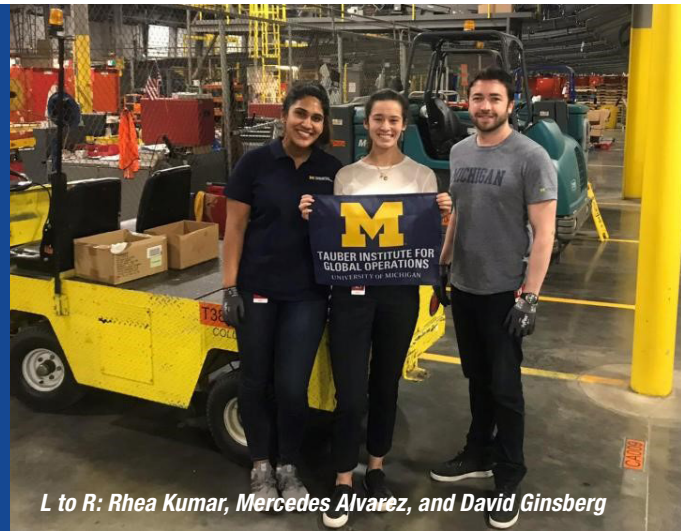




TAUBER INSTITUTE  
FOR GLOBAL OPERATIONS  
UNIVERSITY OF MICHIGAN

## Reducing Pick Cycle Time in Target's Regional Distribution Centers



L to R: Rhea Kumar, Mercedes Alvarez, and David Ginsberg

Based in Minneapolis with roots going back to 1902, Target Corporation is the eighth largest retailer in the United States. Target is an upscale discount retailer which provides high-quality, on-trend merchandise at attractive prices, generating \$75.4 billion in revenue in 2018 through online and in-store sales and ranking 39th on the 2018 Fortune 500 list of the largest U.S. corporations by total revenue.

Target maintains both small-format discount stores and SuperTarget hypermarkets, totaling 1,871 locations across all 50 states and employing over 350,000 people. The company sells a variety of merchandise, including beauty and health products, bedding, clothing and accessories, electronics, food, furniture, jewelry, lawn and garden, pet supplies, shoes, small appliances, toys and games, and towels.

Target operates 41 distribution centers to supply its stores and fulfillment centers (FCs), which deliver ecommerce orders directly to customers. Ship-from regional distribution centers (SfRDCs) are FCs which are physically connected to regional distribution centers (RDCs). As ecommerce sales increase by more than 30% per year, Target's FCs are carrying more unique products to meet customer demand.

In 2019, the average unique product count was expected to increase by approximately 155% in all SfRDCs. This broader assortment of products with fewer average items has led to a 14% increase in pick cycle time for small multi-unit orders. In this analysis, pick cycle time is defined as the time it takes to travel to, find, and place into the cart one item for a small multi-unit order.

Seeking to resolve this issue, Target brought in a student team from the Tauber Institute for Global Operations at the University of Michigan, consisting of **Mercedes Alvarez**, **David Ginsberg** and **Rhea Kumar**, all of whom are working on Master of Business Administration degrees. The Tauber team focused on SfRDCs for the purpose of this project.

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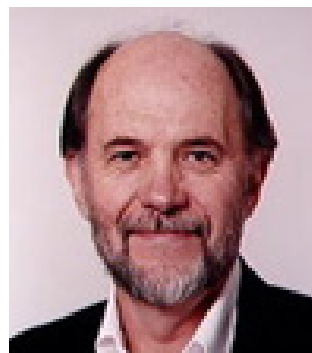
“Time management is crucial, so when we ran into a major roadblock we had to get creative. We were able to create a simulation through the help of a Tauber classmate on another project. It was a great display of how strong our Tauber cohort is.”

— Rhea Kumar

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Further analysis by the Tauber team validated that the most time-consuming activity is the travel time between picking each item. To overcome the increase in cycle time and meet anticipated demand, travel time needed to decrease by 21%.

At the time, single-unit orders were picked separately from small multi-unit orders because single-unit orders could proceed straight to packing whereas the multi-unit orders required an additional sorting step.



**Joe Walls**  
Ross School of Business



**Oleg Gusikhin**  
College of Engineering



L to R: Caption goes here

The Tauber team's proposed solution was to add single-unit orders to small multi-unit order tasks, reducing the wasted motion in retrieving the orders in separate tasks.

Unfortunately, during the team's preparations for pilot testing, Target discovered a much larger problem with the FC's Warehouse Management System (WMS) allocation logic for tasks. The Tauber team recommended further testing and analysis of the task allocation logic as well as strategically relocating inventory within the warehouse to save three seconds of travel time. This small time saving could scale across the entire FC network and translate to \$2.5 million to \$3 million in savings annually.

#### **Dell Technology Team**

##### **Student Team**

Mercedes Alvarez – Master of Business Administration

David Ginsberg – Master of Business Administration

Rhea Kumar – Master of Business Administration

##### **Project Sponsors**

Preston Mosier – SVP of Field Operations

Stephanie Washington – Director of Inventory Control & Quality Assurance

##### **Faculty Advisors**

Oleg Gusikhin – College of Engineering

Joe Walls – Ross School of Business

#### **About Tauber Team Projects**

The 2019 Tauber Team Projects resulted in \$390.3 million in savings according to sponsoring company calculations, an average of \$30 million per project over three years.

Each two to three person Tauber Team consists of graduate engineering and graduate business 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](http://tauber.umich.edu) or contact us at 734-647-1333.