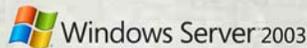


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## Math Whizzes Turbocharge An Online Retailer's Sales

Zara, a Spanish clothing chain, has developed an analytical model to optimize the distribution of inventory across its stores with help from some brains at MIT and UCLA.

By Thomas Claburn, [InformationWeek](#)

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Mathematicians revolutionized Wall Street in the 1970s, and according to MIT Sloan School of Management professor [J r mie Gallien](#), they're now using complex equations to make the retail industry more profitable.

Gallien and his colleagues, UCLA Anderson School of Management professor Felipe Caro, along with Sloan School graduates Juan Correa and Jose Antonio Ramos, have helped [Zara](#), a Spanish clothing chain, develop an analytical model to optimize the distribution of inventory across its stores around the world.

"The project had as its primary goal to test and implement a system based on mathematical models for determining an optimal strategy for the inventory that they receive from the suppliers, which is stocked in their two worldwide warehouses in Spain and is then sent twice a week to every single one of their roughly one-thousand stores," said Gallien.

It's an important problem for Zara, said Gallien, and a difficult one, because Zara sells several thousand distinct items of clothing in any given store, each of which may come in as many as seven or eight sizes.

"It is a hard problem," said Gallien. "The primary data that's relevant to make this sort of decision is supply and demand. Supply is how much inventory you've got in your warehouse to send, and the demand-related data is forecasts of how much demand for every size, for every product in their stores, they're going to have in the next few weeks."

Working with Zara, Gallien and his colleagues developed a forecasting model that looks at seasonal trends from one week to the next -- vacations, holidays, and so on -- and takes into account sales forecasts -- the input from every one of the store managers that they transmit to headquarters -- and combines it all to compute which items should go to what stores.

Based on a controlled field test done in late 2006, Gallien estimates that the mathematical model increased sales by 3% to 4%. Zara CFO Miguel D az acknowledged that the gains related to Gallien's model have been consistent with those numbers.

The mathematical model has also helped Zara reduce the time it takes to move clothing from concept through production and out to stores to as few as six weeks, four times faster than is typical among clothing retailers.

And it has freed up "an army of people" who used to spend most of their time crunching numbers and doing

data entry to come up with sales forecasts and shipping logistics.

Nonetheless, Zara isn't laying people off; instead, it has given them higher-level work.

"Zara is growing at about 20% per year, and they've been doing that for several years," explained Gallien.

"Their goal is not really to reduce costs by slashing the head count ... so they didn't see a need to fire or reduce the size of the team. Now these people, instead of doing manual data entry, they do higher-level analysis."



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