

DISTRICT MANAGER PUZZLES OVER THE NASH EQUILIBRIUM

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Tom Bouterse waved the offer letter from Stanford University in his hand. His wife Marleen had tears in her eyes; years of hard work and sacrifice by her husband as a PhD student had finally paid off. It was just September 11 and most other PhD students were still interviewing, but Tom already had a job offer in hand. Stanford was eager to accept a Hispanic applicant from one of the finest PhD programs in the country, and made him a job offer the day after his campus visit. Tom and Marleen got down on their knees and prayed. The Boutersees were devout Catholics from Ecuador, a country in South America that is bordered by Brazil to its south and Colombia to the north. Tom came to the US on an F-1 student visa and his wife followed shortly after on the F-2 dependent visa. Their daughter Sara was born in the US a few months later. Tom's starting salary as an Assistant Professor at Stanford would be \$142,000, plus summer support and moving expenses. Finally their little daughter would be able to wear clothes that didn't have holes in them.

"No more eating Ramen noodles!" remarked Tom excitedly.

"Why don't you go down to GalvinMart and buy those rollerblades that Sara wanted. They've been on sale for two months, but they're always out of stock," said his wife to him.

"Honey, we are still broke. I start my job only after a year."

"No worries," replied Marleen, *"They are on sale for just \$30 and I have a raincheck from the store."*

Sara's birthday was also coming up, so Tom grabbed his worn-out jacket and walked down to GalvinMart. The Boutersees couldn't afford a car but that wasn't much of a problem because GalvinMart was just three blocks away. GalvinMart is a chain of retail food stores in the Midwest, with each store about twice the size of your typical CVS or Walgreen's. In addition to food and grocery items, the store also sold items like coffee machines, microwaves, table lamps, toys and other smaller consumer durables purchased by your typical household. GalvinMart had operations in five states; each state had between 10 to 12 stores. When Tom walked into the store, he noticed that the advertised rollerblades were still out of stock. He picked up a different brand of rollerblades that was very prominently featured in the store for \$59.99, pulled out the raincheck, and walked up to the cashier.

Amy Moore and Michael Taylor prepared this case primarily to discuss and reinforce concepts like customer utility, utility functions, profit functions, welfare computations and the Nash equilibrium. The instructor discusses the concept of a Nash equilibrium and shows students how the Nash equilibrium is computed for the situation described in the case. The authors may have disguised names, situations and other identifying information for privacy and confidentiality reasons. Cases do not intend to illustrate either effective or ineffective handling of a managerial situation. Cases are also not intended to serve as endorsements or sources of primary data.

“Excuse me, your advertised product for \$29.99 has been out of stock for over two months now. But I have a raincheck and I was wondering if you'd be kind enough to give me this brand for the \$29.99 price that it says on this raincheck?”

“Not today. I don't want to help someone like you. Especially today.”

“What do you mean, Sir?”

“Today is the anniversary of September 11 and I don't want to help someone of your kind today – not after what your people did to the Twin Towers.”

“Wait. You think I am from Saudi Arabia? You are so wrong that....”

“I don't care if you are from Saudi Arabia or Iran or Iraq or Afghanistan or wherever the hell your people are from. You either pay the full price or get out of this store right now!”

“Sir, do you even realize what I think you are suggesting is illegal? Do you realize that advertising a product on sale and never having it in stock is also wrong?...”

“I need you to leave the store right now or we will call the cops!! Right now!!!!”

The agitated cashier jumped over the counter and shoved Tom in the chest, pushing him toward the exit door. That was when the store manager Martin Lambert walked toward the cashier and asked what the problem was. The cashier had a brief private conversation with Mr Lambert where he accused the customer of getting into an argument with him and bullying him to get a higher-priced product at half the price. After his conversation with the cashier, Mr Lambert walked up to Tom Bouterse and said,

“I am sorry Sir, but I have to ask you to leave the store immediately. We don't want any trouble makers here. Please don't come back to the store. If we see you back here, we will call the police.”

Tom Bouterse's lengthy and impassioned letter reached GalvinMart's District Manager Dave Murphy the next week. Tom explained that he was not a vindictive person and that he certainly didn't believe in lawsuits. In his seven-page letter, he talked about customer service issues and described his humiliating treatment at the store. However, what surprised Dave Murphy was that Tom had used specialized retail terms like “leader pricing” and “featuring,” and that five of the seven pages of Tom's letter were full of mathematical equations that talked about what he called the store's bait-and-switch policy coupled with deliberate stockouts. Tom accused GalvinMart of advertising very low prices below cost to lure customers into the store, deliberately understocking these advertised products, and then baiting customers to buy products with more profitable markups. Tom wrote that he has shown mathematically that GalvinMart's bait-and-switch policy is harmful to consumers. Dave Murphy scratched his head as

he tried to figure out the mathematical equation Tom had used in his letter to describe what he called a “Nash equilibrium¹.”
