

SEMINAR SERIES  
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## **The Optimal Disposition Decision for Product Returns**

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We model the optimal disposition decision for product returns. The manager decides which product returns to accept for processing at the remanufacturing facility, and which ones to sell immediately as is at a salvage value. High congestion levels in the remanufacturing facility delay the sale of the remanufactured product at the secondary market, decreasing the value at which it can be sold; this may imply a more attractive salvaging option. This is particularly important for high-tech products with short life cycles, such as computers and printers. We propose a two-step policy. In the first step, the returned product's random processing time is observed, and a disposition decision is made: if the processing time is larger than a threshold  $k^*$  the product is salvaged; otherwise the product is remanufactured at a second stage. We first show that such a policy is optimal, based on a modification of Harrison's (1975) model that allows for the salvaging option. We then provide an approximate procedure to compute  $k^*$  in industrial settings. Our numerical study demonstrates the superiority of our policy over the current industrial practice ignoring the time value of money. The paper is available electronically at <http://ssrn.com/abstract=923641>.

Gilvan "Gil" Souza is an Associate Professor of Operations Management at the Robert H. Smith School of Business, University of Maryland. He received his Ph.D. in operations management from the University of North Carolina at Chapel Hill in 2000, and his MBA from Clemson University in 1995. Gil also graduated on the top of his aeronautical engineering class from Brazil's top engineering school, ITA, in 1990. He worked at Volkswagen of Brazil as a product development engineer specialized in chassis design and noise reduction, and subsequently as a product planner. His primary research areas are in technology management, and supply chain management, including production planning, remanufacturing, reverse logistics, and closed-loop supply chain design. His research has been published in such journals as the California Management Review, the European Journal of Operational Research, Management Science, and Production and Operations Management. He has made presentations at a variety of national and international conferences. He regularly works with such companies as Cisco, HP, Pitney Bowes, and Toshiba, primarily in supply chain design. He is a popular teacher in the MBA program at the Smith School—he won the Krowe Teaching Award for teaching excellence in the MBA program in 2004—where he teaches the core MBA course in supply chain management, and an elective, Operations Management. He is a member of the Institute for Operations Research and Management Sciences (INFORMS), and the Production and Operations Management Society (POMS), and he is an editorial review board member for Production and Operations Management. He won the Wickham Skinner Early-Career Research Accomplishments award from POMS in 2004.

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