



PhD Course

Introduction to Research in Closed-Loop Supply Chains

block course: June 16th 2017

09:00 - 13:00 h

Room tbd

Course Instructor: Prof. Gilvan Souza (Kelley School of Business, Indiana University)

Course Value: 1 LP

Course Overview: This course will provide an overview of research and tools used in closed-loop supply chain management research in operations management. A closed-loop supply chain is a supply chain with flows of products post-consumer use from consumers to retailers, manufacturers, and/or suppliers. Examples include consumer returns, and post-lease products. Emphasis will be given to strategic decision-making, such as product line extension, choice of product quality, and take-back legislation.

Course Contents:

- An overview to closed-loop supply chains (CLSCs): types of product returns, and types of disposition decisions.
- Examples of strategic, tactical and operational decisions in CLSCs
- Strategic decision 1: Should an Original Equipment Manufacturer (OEM) offer a remanufactured product in its product line?
 - o Monopoly pricing for a single product, and for a vertically differentiated product line under linear demand curves and constant marginal costs
 - o The fundamental trade-off: Market expansion vs. cannibalization
 - o Extension: non-linear demand curves
 - o Competition between an OEM and a third-party remanufacturer
- Strategic decision II: What is the optimal product quality when there is product recovery in the form of remanufacturing and/or recycling?
 - o Introduction to classical quality choice models without product recovery (Mussa and Rosen, 1978)
 - o Quality choice with product recovery: monopoly (Atasu and Souza 2013)
 - o Quality choice with product recovery: competition between an OEM and a third-party remanufacturer (Orsdemir et al. 2014)

- Strategic decision III: Design of optimal take-back legislation from a policy maker's perspective, and an OEM's response to it
 - o The concept of welfare and its components: firms' profits plus consumer surplus minus environmental impact
 - o The model by Atasu and Van Wassenhove (2009)
- Incentives and coordination in CLSCs
 - o Reducing consumer returns through retailer effort (Ferguson, Guide, and Souza, 2006)
- Overview of tactical decision making in CLSCs
 - o Production planning for remanufactured products: product acquisition, grading, and disposition decisions
 - o Hybrid inventory systems

Prerequisites: Background in Operations and Supply Chain Management is preferred but not absolutely necessary.

Assessment: Participation in discussion.

Registration: Please register via email to stefanie.nonnsen@uni-hamburg.de