Business School
Chair of Supply Chain Management
Prof. Dr. Moritz Fleischmann

UNIVERSITY OF MANNHEIM
Business School

OPM 701 – Research Seminar Supply Chain Management

FSS 2027

General Information:

1. The goal of this seminar is to introduce the participants to conducting scientific research. It thereby prepares the students for the writing of their MSc thesis. The seminar is geared towards students intending to write their thesis at the Chair of Supply Chain Management.

2. Each participant will explore one of the research papers listed below. The task is to review and critically assess the assigned research paper and to relate it to the corresponding stream of scientific literature. Each participant presents their findings in a written report (about 20 pages) as well as in a presentation (20 min + 20 min discussion).

3. A kick-off meeting for all participants will be held on Tuesday, 1 December 2026, 10:15–11:45 in the room O 131. General guidelines for conducting a scientific literature review will be discussed, and the deliverables of the seminar will be explained in detail.

4. The written reports must be submitted electronically and as a hard copy in two-fold by Wednesday, 5 May 2027.

5. The presentations will be held as a blocked session on 14 May 2027 (subject to change; exact times and room to be announced).

6. The final grade for the seminar is composed of the following components: Written report (60%), presentation (30%), contribution to discussion (10%).

7. As the seminar is usually attended by a class of international students, the report and the presentations should be delivered in English.

8. There is a joint application process for all seminars offered by the chairs of the Area Operations Management. In the FSS 2027, this includes the following seminars:

   - OPM 701: Research Seminar Supply Chain Management (Chair of Supply Chain Management), **labeled with 'L'**
   - OPM 760: Project Seminar Operations Analytics (Chair of Production Management), **labeled with 'P'**
   - OPM 761: Research Seminar Production Management (Chair of Production Management), **labeled with 'P'**
   - OPM 781: Research Seminar Service Operations (Chair of Service Operations Management), **labeled with 'S'**
   - OPM 791: Research Seminar Procurement (Chair of Procurement), **labeled with 'B'**

   Detailed information on the seminar topics is available on the home pages of the respective chairs. In their application, students can indicate three to five preferred topics from all seminars.

9. Applications are open within the period from 9 November to 22 November. Students have to join the ILIAS group Seminar Application Area Operations (link) and complete the application form there.link

10. Additionally, students applying for a topic of OPM 701 must send an e-mail to scm@uni-mannheim.de, titled "Seminar Application Documents", including a current **CV** and a **grades overview** (the one you can print yourself is enough). If you are applying for topics of the other chairs, please check if you must send documents to them as well.

For any questions concerning the seminar, feel free to contact Mohammad Mirbeygi at mirbeygi@uni.mannheim.de.

Seminar topics

Each participant will be assigned one of the **topics listed below**. The task then is to identify the main issues addressed by the paper, explain its methodology, including potential quantitative models, position it in the corresponding stream of scientific literature, and critically assess the paper's contribution to the literature as well as to practice.

Topic L01: Agrawal, V. V., Chakraborty, S., & Yücel, Ş. (2026). Additionality of Carbon Offsets: Project-Specific vs. Standardized Baselines. Manufacturing & Service Operations Management.
Developers generate carbon offsets by investing in emissions-reduction projects and receive two sources of revenue: project revenue (for example, from electricity sold in a renewable-energy project) and offset revenue based on offsets issued by a nonprofit carbon registry. The registry must ensure additionality: each offset should represent one unit of reduction relative to the developer's business-as-usual emissions. Ensuring additionality is challenging because project revenue is the developer's private information. In practice, registries assign baselines either through a project-specific method, in which the developer self-reports business-as-usual emissions that the registry inspects, or through a standardized method, in which a common baseline is assigned to a group of similar projects. It is unclear which method leads to fewer nonadditional offsets and greater emissions reduction.
The study analyzes these economic and environmental implications by developing a sequential game between a registry and project developers. The results show that project-specific baselines may lead to fewer nonadditional offsets but lower emissions reduction, cautioning environmental groups against simply advocating for the method that yields fewer nonadditional offsets. A registry may prefer project-specific baselines even when they result in more nonadditional offsets. Finally, a registry's preference between the two methods is typically consistent with that of a corporate buyer.

Topic L02: Guo, S., Shi, C., Yang, C., & Zacharias, C. (2026). An Online Mirror Descent Learning Algorithm for Multiproduct Inventory Systems. Operations Research.
The study considers a multiproduct, periodic-review, lost-sales inventory system with a warehouse-capacity constraint under demand learning from censored data. Unlike the traditional literature, demand distributions are not assumed to be known a priori. The decision maker only observes sales data, while lost-sales quantities remain unobserved. Existing online learning algorithms have limitations when inventory systems offer a large variety of products.
The study employs and innovates mirror descent with cyclic update techniques to address the challenge of high dimensionality in product menus. It proves that the algorithm's regret bound exhibits a logarithmic dependence on the number of products, a significant improvement over the square-root regret bound established in the existing literature. Using empirical data, the methods are shown to produce inventory policies superior to existing state-of-the-art solutions, especially when managing a large menu of products. The study also provides clear guidelines for practical implementation along with fine-tuning recommendations.

Topic L03: de Oliveira Leite Nascimento, C., Le Pira, M., Fazio, M., Marcucci, E., Gatta, V., & Pluchino, A. (2025). Customers in action: Involving crowdshippers in e-grocery deliveries. Transportation Research Part A, 199, 104582.
Improving last-mile deliveries in cities is fundamental to reconciling economic growth with sustainability, especially given the growing role of e-groceries. The study explores grocery system configurations that account for service efficiency and crowdshippers' accessibility by jointly considering customers' channel choices, customers' willingness to act as crowdshippers, and alternative delivery options. It compares a no-detour case with a with-detour alternative.
The paper proposes an integrated and coordinated modelling approach that combines discrete choice and agent-based modelling to explore alternative e-grocery scenarios, including crowdshipping as a possible delivery option. Key performance indicators include kilometres

driven, shopping time, channel choices, and the number of crowdshippers and receivers. The results indicate that crowdshipping can significantly reduce delivery-vehicle kilometres driven while improving delivery efficiency and accessibility, with the largest gains when customers take detours. Practical implementation requires encouraging participation, ensuring reliability, promoting sustainable practices, and supporting policy integration.

Topic L04: Zhao, Y., Birge, J. R., DeValve, L., & Inman, R. R. (2026). Managing Multitier Inventory Networks with Expediting Under Normal and Disrupted Modes. Manufacturing & Service Operations Management.

The study collaborates with an industrial partner whose supply chain uses multiple tiers, locations, and shipping speeds to serve customers efficiently, while also facing the possibility of upstream disruptions that limit inventory availability. These features are modeled as a multiechelon distribution system (central warehouse and retailers) with expediting and disruptions.

The authors prove a novel stochastic-program lower bound on optimal cost and use this program to develop a heuristic base-stock policy. The analysis demonstrates a pronounced benefit from centralized inventory in distribution systems with expediting and disruptions, because central inventory can clear backlogs through expediting and hedge against future disruptions. In the disrupted mode, the study provides a simple criterion to determine when decentralization is preferred over complete centralization. The policies are validated using data from the partner's nationwide distribution network in the United States and are shown to provide significant cost savings in practice.

Topic L05: Mutha, A., Bansal, S., & Guide, V. D. R. (2021). Managing the Inter-Functional Tension between Accounting- and Financial-Profits in Remanufacturing Multiple-Usecycle Products. Production and Operations Management, 30(9), 2993–3014.

The study investigates the tension between accounting and financial functions of an OEM that manufactures and remanufactures capital-intensive products. The OEM operates a servicizing business model in which it leases a product, remanufactures the product returned at the end of the lease, and re-leases the remanufactured product over multiple usecycles. From an accounting perspective, the OEM should recover the initial manufacturing cost via depreciation according to IRS guidelines, remanufacture only while that cost is not fully recovered, and remove the product from the books once it has fully depreciated. From a financial perspective, the initial manufacturing cost is a sunk cost, and remanufacturing should continue as long as remanufacturing is cheaper than producing a new unit.

Using analytical models, the study shows that the optimal use durations and lease prices that maximize accounting profit differ from those that maximize financial profit. It then discusses two operational approaches to align the accounting and operational perspectives while following IRS guidelines, and develops policy prescriptions to promote remanufacturing of multiple-usecycle products. Overall, the analysis highlights the role of regulatory guidelines and the inter-functional effort required for OEMs to successfully integrate remanufacturing into their business strategy.

Topic L06: Sun, X., Rajapakshe, T., & Oliva, R. (2025). Interplay Between Servicizing and Remanufacturing: Economic and Environmental Implications. Manufacturing & Service Operations Management.

To investigate the interplay between servicizing and remanufacturing—two widely used circular economy strategies—and its impact on firms' economic and environmental performance, the study considers a profit-maximizing manufacturer that explores jointly adopting the two strategies. Optimization models capture the main attributes of servicizing (pay-per-use, demand pooling) and remanufacturing (lower production costs, higher operating costs).

The results show that the presence of remanufacturing always makes servicizing less attractive to adopt, and that servicizing may discourage remanufacturing if the remanufacturing cost-reduction effect is not sufficiently large. Joint adoption is preferred when remanufacturing cost is neither too high nor too low, with the favorable cost range further moderated by the firm's pooling level and the operating cost of remanufactured products. When the firm adopts servicizing in the presence of remanufacturing with relatively high remanufacturing costs, it can reduce the number of remanufactured products in the market and thereby harm the environment, creating a misalignment between economic and environmental goals. The findings caution against one-size-fits-all circular economy strategies across industries.

Topic L07: Tudisco, V., Perotti, S., Yetkin Ekren, B., & Aktas, E. (2025). Sustainable e-grocery home delivery: An optimization model considering on-demand vehicles. Computers & Industrial Engineering, 201, 110874.

The e-grocery sector has grown substantially since the COVID-19 pandemic, increasing pressure on retailers to optimize home delivery. Collaborations with third-party logistics providers have emerged as a promising option that can offer operational flexibility and environmental benefits. The study introduces an optimization model that supports the design of an on-demand delivery fleet jointly with delivery routings and schedules, while considering both cost and environmental impact.

A vehicle routing problem with time windows is extended to incorporate on-demand fleet design and three objective functions representing cost-efficient, environmentally effective, and cost–environmental balanced perspectives. Numerical experiments based on an Italian case study show that prioritizing environmental objectives reduces emissions by over 90%, with only marginal increases in annual costs. On-demand vehicles provide flexibility that facilitates sustainable delivery options without requiring large investments in a dedicated delivery fleet. The findings highlight the impact of environmental considerations on fleet composition and operational efficiency and offer actionable strategies for e-retailers.

Topic L08: Agrawal, V., & Zhang, C. (2026). Sustainable Sourcing of Agricultural Products: Fixed vs. Flexible Premiums. Management Science.

Sustainability certifications for agricultural product sourcing set a premium that firms must pay to farmers for certified crops on top of the market price. A popular approach is a fixed premium, under which farmers receive a fixed premium independent of the market price. This approach has been criticized for not sufficiently protecting farmers when the market price is low. An alternative flexible premium, under which farmers receive a higher premium when the market price is lower, has been promoted by farmer advocacy groups and recently implemented by some certifications.

The study analyzes and compares these premium approaches. Contrary to expectation, a flexible premium can lead to lower expected farmer income than a fixed premium. Even when a flexible premium improves farmer income, it can lead to a lower expected sustainable sourcing quantity and firm profit. Nevertheless, a flexible premium can lead to a win–win–win outcome for farmer income, sustainable sourcing quantity, and firm profit, but only when certified supply is ample relative to demand. Motivated by firms creating their own sustainability labels, the study also shows that self-labeling can lead to a higher sustainable sourcing quantity but lower farmer income compared with NGO labeling.