

School/Department:	<i>Rotterdam School of Management – Technology and Operations Management Department (Supply Chain Management Section)</i>
Project Title:	Modelling risk management strategies to address drug shortages
Abstract:	<p>High- and middle-income countries are facing an “epidemic of medicine and vaccine shortages”, which makes ensuring their availability a key societal challenge. Market consolidation, large-scale offshoring of production, and pressure on prices (leading to low inventories and manufacturing quality issues) have made medicine supply chains extremely vulnerable to even small disruptions. In response, countries are developing strategies to safeguard against smaller (e.g. manufacturing or distribution problem) and larger disruptions of supply (e.g. disruption of manufacturing) and/or demand (e.g. pandemics). A big challenge is that evidence on “what works” and “how much it costs” is presently scarce. Should one build “strategic stocks”? Stimulate “Multi-sourcing”? Increase fines for stockouts? Review tendering and pricing policies?</p> <p>The field of supply chain management can and should play an important role in answering such questions. In particular, modelling studies can provide much-needed evidence about costs and effects of strategies without having to implement them first. Extant literature, however, mostly considers optimizing supply chains from a pharma company’s perspective. It has failed to take the government/policy maker’s view, and to conceptualise and model supply chains as systems that must adapt from stable situations to crises and back to stability again. Existing models tend to exclude patients, treat demand as exogenous, and disregard market dynamics (e.g., manufacturers entering and leaving the market).</p> <p>This research project entails evaluating the impact of strategies to reduce shortages by means of supply chain and economical models, in close collaboration with policy makers and medicine supply chain actors. It is part of a large international research project¹ including researchers from INSEAD, BI Oslo, Lancaster University, and the Norwegian institute of public health.</p>

¹ <https://www.bi.edu/about-bi/news/2020/01/how-to-ensure-availability-of-vaccines-and-medicines/>

<p>Requirements of candidate:</p>	<p>Background: <i>Supply Chain Management, Operations Research, (Applied) Economics or Industrial Engineering.</i></p> <p>Required skills: <i>Mathematical programming and modeling, programming (any programming language)</i></p> <p>Master's degree: Yes</p> <p>EUR requirement: See Table Information about English requirements</p> <p>(If the faculty does not have special English requirements, general requirement from Admission Office is applied)</p>
<p>Supervisor information:</p>	<p><i>Prof. dr. Rob Zuidwijk</i> <i>Email address: rzuidwijk@rsm.nl</i> <i>Personal website: https://www.rsm.nl/people/rob-zuidwijk/</i> <i>Selected key publications:</i></p> <ul style="list-style-type: none"> - Arslan, A.M., Agatz, N.A.H., Kroon, L.G., Zuidwijk, R.A. (2019). Crowdsourced Delivery – A Dynamic Pickup and Delivery Problem with Ad-Hoc Drivers. <i>Transportation Science</i> 53(1), 222-235. - Fan, Y., Behdani, B., Bloemhof-Ruwaard, J.M. Zuidwijk, R.A. (2019). Flow consolidation in hinterland container transport: an analysis for perishable and dry cargo. <i>Transportation Research. Part E, The Logistics and Transportation Review</i>, 130, 128-160. - Ypsilantis, P., Zuidwijk, R.A. (2019). Collaborative Fleet Deployment and Routing for Sustainable Transport. <i>Sustainability</i> 11(20):5666. - Kishore Bhoopalam, A., Agatz, N.A.H., Zuidwijk, R.A. (2018). Planning of truck platoons: A literature review and directions for future research. <i>Transportation Research. Part B, Methodological</i>, 107, 212-228. - Zuidwijk, R.A., Caro, F., Tan, T. Corbett C.J. (2013). Double-counting in Supply Chain Carbon Footprinting. <i>Manufacturing and Service Operations Management</i> 15(4), 545-558. <p><i>dr. Harwin De Vries</i> <i>Email address: harwin.devries@rsm.nl</i> <i>Personal website: https://www.rsm.nl/people/harwin-de-vries/</i> <i>Selected recent publications:</i></p> <ul style="list-style-type: none"> - De Vries, H., Jahre, M., Selviaridis, K., van Oorschot, K. E., & Van Wassenhove, L.N. (2021). Short of drugs? Call upon operations and supply chain management. <i>International Journal</i>

	<p><i>of Operations & Production Management</i>, forthcoming.</p> <ul style="list-style-type: none"> - De Vries, H., Van de Klundert, J.J., Wagelmans, A.P.M. (2021). Towards Elimination of Infectious Diseases with Mobile Screening Teams. <i>Production and Operations Management</i>, forthcoming. - Karamshetty, V., De Vries, H., Van Wassenhove, L. N., Dewilde, S., Minnaard, W., Ongarora, D., ... & Yadav, P. (2021). Inventory management practices in private healthcare facilities in Nairobi county. <i>Production and Operations Management</i>, forthcoming. - Alban, A., Blaettchen, P., De Vries, H., & Van Wassenhove, L. N. (2021). Resource Allocation with Sigmoidal Demands: Mobile Healthcare Units and Service Adoption. <i>Manufacturing & Service Operations Management</i>, forthcoming. - De Vries, H., Swinkels, L. E., & Van Wassenhove, L. N. (2021). Site Visit Frequency Policies for Mobile Family Planning Services. <i>Production and Operations Management</i>, forthcoming. <p><i>dr. Stef Lemmens</i> <i>Email address: s.lemmens@rsm.nl</i> <i>Personal website: https://www.rsm.nl/people/stef-lemmens/</i> <i>Recent publication list, preferably last 3-5 years (1-2 pages)</i></p> <ul style="list-style-type: none"> - Calmon, A.P., Graves S.C., Lemmens, S. (2020). Warranty Matching in a Consumer Electronics Closed-loop Supply Chain. <i>Manufacturing and Service and Operations Management</i>. Available online. - Lemmens, S., Decouttere, C., Vandaele, N., De Boeck K., Banzimana, S., Hassane S. (2019). The Integration of Flow Modeling into a Stakeholder-based Framework for Vaccine Supply Chain Design. In Barbosa-Povoa, A.P. Jenzer, H. Miranda, J.L. (Eds.), <i>Pharmaceutical Supply Chains – Medicines Shortages</i> (193-201). Cham: Springer. - Decouttere, C., Vandaele, N., Lemmens, S. Bernuzzi, M. (2016). The Vaccine Supply Chain Multathlon: the Reconciliation of Technology, Economy and Access to medicines. In Zobel, C., Altay, N. Haselkorn, M. (Eds.). <i>Advances in Managing Humanitarian Operations</i> (205-227). Cham: Springer. - Vermuyten, H., Lemmens, S., Marques, I., Beliën, J. (2016). Developing Compact Course Timetables with Optimized Student Flows. <i>European Journal of Operational Research</i>, 251(2), 651-661. - Lemmens, S., Decouttere, C., Vandaele, N., Bernuzzi, M. (2016). A review of Integrated Supply Chain Network Design Models: Key Issues for Vaccines Supply Chains. <i>Chemical Engineering Research & Design</i>, 109, 366-384.
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Erasmus University Rotterdam, the Netherlands
CSC PhD 2022 Project Description
Application to: EuccChinaOffice@eur.nl
Application deadline: Friday Mar 4, 2022



English requirements: Please refer to Erasmus University China Center official website for your information www.eur.nl/eucc

Erasmus University China Center -> CSC Scholarship -> "I am a prospective CSC PhD Candidate" -> Table 1

Please note that each institute requires difference level of English, make sure to find the right institute. 2022 CSC-PhD programme information will be shared and updated soon!