At the Chair of Logistics and Supply Chain Management of TUM School of Management, we are looking for an interested and qualified student to conduct his/her

Project Study

on the topic

The role of digital tools in enabling industrial symbiosis

In the quest for sustainable business practices, Industrial Symbiosis (IS) emerges as a powerful strategy, which transcends theoretical discussions, offering a tangible approach to transform unused or residual resources—materials, energy, water, assets, logistics, and expertise—from one company into valuable resources for others. The success of IS hinges on effectively identifying and matching cooperative opportunities, a practical challenge that often hinders companies from fully embracing its potential. While companies acknowledge the benefits associated with IS, they may face challenges in finding out how and with whom to carry out potential exchanges or perceive a lack of time and resources to make it effective. Recognized as essential facilitators within the IS process, digital tools play a pivotal role in overcoming these challenges. This study acknowledges the transformative power of information-sharing platforms and other supporting digital tools, positioning them as critical enablers for resource optimization and the application of circular economy principles within the IS framework.

This study sets out to explore and understand the practical impact of existing digital tools utilized in IS practices, focusing on their role in overcoming real-world challenges. Through a thorough examination of their applications, the study aims to evaluate how these tools contribute to promoting the IS process, translating theoretical concepts into actionable strategies that drive sustainability, efficiency, and collaborative resource management.

Key project tasks:

- Literature review on relevant fields of study
- Investigate existing IS cases (Kalundborg, Kwinana Industrial Area, Port of Rotterdam, etc.) and open source databases (IS-Data, MAESTRI, CIRCULATOR, etc.). Conduct a comprehensive exploration of the practical applications of IS, with a focus on the role played by digital tools in facilitating tangible, real-world scenarios
- Combine qualitative and quantitative methods to assess the practical effectiveness and potential of these tools in advancing the IS process
- Analysis of results, managerial and policy implications

Requirements:

The project study is for students at TUM School of Management with a focus on Operations and Supply Chain Management. The ability to structure the research (e.g., exploration, focusing, validation and detailing), to work independently, as well as analytical skills are required. Experience with Python & R is a plus.

Earliest begin: as soon as possible

Supervisor: Chunting Liu

Application: Email with curriculum vitae and transcript of records to logtheses.log@mgt.tum.de