At the chair of Management of Digital Food Businesses, we are looking for an interested and qualified student to conduct a

Master or Bachelor thesis

on the topic of

Technological advancements to improve the food supply chain

Technological advancements are transforming food supply chains into more efficient, transparent, and sustainable systems. The ongoing *digital transformation* of the agri-food sector involves integrating technologies such as the Internet of Things (IoT), blockchain, artificial intelligence (AI), big data analytics, robotics, and digital twins to connect producers, processors, and consumers across the value chain. These technologies enable real-time monitoring of production and logistics, improve food safety and traceability, and optimize resource use. For instance, IoT sensors and AI-driven analytics help reduce food waste and enhance decision-making, while blockchain builds trust through transparent tracking from farm to fork. At the same time, digital platforms and smart automation increase resilience against disruptions and support circular economy practices by recycling and reusing food resources. Overall, digitalization acts not only as a driver of efficiency but also as a catalyst for systemic innovation—laying the groundwork for a more sustainable, data-driven, and connected food supply chain

Your tasks include

The thesis will start by reviewing the relevant literature on the specific topic. Then a more in-depth analysis should be carried out, preferably including an experiment. This can be on the empirical side, for example, conducting interviews with industry practitioners, or on the mathematical side by developing a simulation or optimization model to analyze the impact of technological advancements. Afterwards, the results should be analyzed and interpreted.

Requirements

This thesis is suitable for students of the Management & Technology (BSc/MSc) and Master in Management, who are interested in the food supply chain. And for master students from relevant Life Science studies, such as AgriFood Economics, Policy and Regulation, Brewing & Beverage or Food Technology or sustainable resource management, with an interest in quantitative research methods.

Application

If you are interested, please send an email to Prof. Dr. Marjolein Buisman (marjolein.buisman@tum.de) to express your interest. The following information should be included in the email:

- CV
- Transcript of records
- Preferred starting time
- A short description of the topic (1 to 2 pages, incl. motivation, scope of literature review, research questions, and intended methodology)
- Application form (master students only)

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