

# Tech Venture Challenge

## Open Innovation and Technology as Catalysts for Transformation in the Construction

### A Study on Enhancing Energy Efficient and Sustainable Buildings



Picture: Igor Starkov / Pexels

#### **Challenge description**

The construction industry, despite its significant economic contribution, is facing considerable challenges in terms of innovation, digitalization, and sustainability. Particularly, in the realm of building renovation, the fragmented nature of the industry and dominance of SMEs slows down the adoption of energy-efficient and sustainable practices. As the industry is struggling with issues such as a shortage of skilled labor and increasing complexity of sustainability requirements, a transformative approach is required.

Open Innovation and the use of (digital) technology present promising pathways to meet these challenges. However, their application in the building renovation sector is yet to be thoroughly explored. Thus, the challenge lies in investigating how Open Innovation principles and (digital) technologies can be effectively harnessed to drive energy-efficient and sustainable renovation practices in the construction industry.

The thesis could focus on how this approach could help small and SMEs within the fragmented construction industry to improve their innovation capabilities and increase the adaptability of sustainable business models.

#### **Thesis Focus**

Within your master thesis project, you will work on scientific research questions depending on your study program and related to:

- the influence of Open Innovation on building renovation practices with an emphasis on energy efficiency.
- the interplay between SMEs, established firms, and start-ups in driving innovation and technology implementation in building renovations.

- Case studies of successful energy-efficient renovation projects influenced by Open Innovation and digital technology.
- Barriers to implementing Open Innovation and digital technologies in building renovations and strategies to overcome them.
- The application and impact of (digital) technology in the renovation process.

#### **Profile and process**

You apply individually with a motivation and a CV (but no project draft) and will write an individual master thesis which is suitable to your study program. At the same time, you will be brought together in a group of 3-5 students. You should have:

- Motivation to innovate and revolutionize construction industry
- Exceptional analytical skills
- Creative problem solver skills
- Willingness to take responsibility and work independently
- A team player attitude

Upon successful application, you will become part of the TUM Entrepreneurial Masterclass with all according benefits, such as real added value for the ecosystem in and around Munich and access to the UnternehmerTUM ecosystem.

#### **TUM Venture Labs Built Environment**

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#### **TUM Entrepreneurial Masterclass**

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