

Circular mindset and capabilities for circular design solutions

The idea and relevance of the study

Our study is related to the ongoing project „Circular Design TOOLS for product integrity“ (ŽIEDIS). Most companies are currently profoundly rooted in a linear approach to growth - make, use, dispose, researchers and entrepreneurs, individual innovators – the generators of new knowledge and innovative product ideas, lack the design and circular capabilities. As a result, they meet serious challenges while developing them into products in line with circular economy principles.

Three main challenges for circular economy (hereinafter – CE) are listed in the literature: *Mental shift* (from linear to circular thinking); *Knowledge exchange* via active dialogue between stakeholders to spark innovation; *Circular design strategies* enabling prototyping and rejuvenating processes (repair, rebuild, recycle).

Business built around long-life products and recovered resources cannot operate without products/services that support the regenerative strategy. For innovators, changes in the business model result in need of product/service design, which contrasts starkly to those for the linear economy throw- away products. While developing innovations and new products/services it is essential to integrate the CE approach at an early stage of the design process, mainly because once the product/service specifications are made i.e., once resources, infrastructures, and activities have been committed to a particular product/service design, only minor changes are possible.

Building on this gap, the project approaches the the mentioned above challenges and proposes to empower the CE supportive environment by developing CIRCULAR DESIGN TOOLS – CD TOOLS tailored for today's innovators from different industry sectors to create products with higher integrity.

The project is implemented by an interdisciplinary team of researchers and practitioners - designers, engineers, economists, social scientists and IT specialists.

The research aim – to explore the efficiency of circular design tools for sustainable products development. These tools seek to enhance circular mindset and increase capabilities for new product (service) development in the circular economy.

Research question: How do circular design tools increase participants' capabilities to develop products/services based on CE principles?

Designed research strategy

The research strategy is based on action research and a mixed-method approach. Action research is a philosophy and methodology of research generally applied in the social sciences. It seeks transformative change through the simultaneous process of taking action and doing research, which are linked together by critical reflection. Mixed-method approach combines quantitative and qualitative data collection through circularity capability test, digital tracking analytics, expert diaries, focus group, semi-structured interview.

During the action research, created circular design tools are tested in real conditions. Entrepreneurs, designers or other engaged actors will participate in a customized (new) product development journey (so-called pre-acceleration program pilot of 4-5 months).

Co-creating with participants of the audience

If you have ideas how to engage participants of the pre-acceleration program pilot or you have experience how to evaluate the impact of the digital learning tools, maybe you will want to share your thoughts with us? We would like to get your feedback on our action research design.