Software & Digital Business
Wirtschaftsinformatik

Call for Theses
(Bachelor, Master)

TECHNISCHE UNIVERSITÄT DARMSTADT

Management of Digital Transformation

Digitalization is transforming vast areas of our live and new technologies are fundamentally changing the way companies work. From processes to business models and management styles. In the current era of heightened uncertainty and the need for change, digital transformation has become a major concern for leaders and researchers in the Information Systems field (Bughin et al. 2019; Chanias et al. 2019; Hess et al. 2016; Matt et al. 2015; Vial, 2019). The focus on digital transformation is driven by the need to use technology to improve business processes, engage customers more effectively, and create new organizational structures that provide digital-based services. Digital transformation is seen as a strategic shift that leverages technology to extend an organization's business model and drive changes in products, processes, and customer engagement (Hess et al. 2016; Matt et al. 2015; Müller et al. 2016; Sebastian et al. 2017).

Institutional arrangements enabled by digital technology, such as new organizational forms, are changing the norms and rules of many industries. Examples of this include platforms like TripAdvisor that have altered evaluation systems in the tourism industry by moving from a professional-based model to a crowd-based model that continuously aggregates customer evaluations (Orlikowski & Scott, 2014). Despite facing opposition from regulators, companies like Uber and Airbnb have gained popularity for disrupting and reconfiguring the delivery of taxi and accommodation services (Bauer & Gegenhuber, 2015; Mair & Reischauer, 2017; Cusumano et al., 2019).

Leaders around the world have placed a high priority on digital transformation (Berman 2012; Vial, 2019), hoping to use it to help ensure the success and survival of their businesses (Wiesböck and Hess, 2020). However, despite a growing interest in digital transformations, there is limited research and understanding of how these changes become implemented, integrated, and evaluated in practice (Vial 2019). We aim to think about the interplay of novel digital technologies and institutional processes, including processes of institutional emergence, change, institutionalization and de-institutionalization. We see this as encompassing new, platform-based organizations that disrupt existing institutional processes (e.g., Uber, Spotify, TripAdvisor); organizations that are well established in digital innovation and thus are part of ongoing institutional processes (e.g., Amazon, Google; Microsoft); and organizations within established fields that are subject to digital innovation and are dealing with changing institutional processes (e.g., banks, telecommunications, retail) (Davis, 2017; Hinings et al., 2018). We therefore call for empirical (qualitative, quantitative, mixed-methods) or conceptual theses addressing 'digital transformation and institutional theorising', encouraging different levels of analysis and inviting papers that make integrative and innovative contributions to a range of topics and themes.

I. What We Seek for our Theses:

Our objective is to evaluate the necessary changes and updates to our understanding of Information Systems (IS) management to effectively handle the difficulties and opportunities presented by disruptive innovations. We are searching for theses that utilize and add to the existing knowledge on digital transformation, but with a complete understanding of the disruptive impact of technological advancements.

In sum, potential topics for bachelor theses, student research projects (i.e., “Studienarbeiten”), or master theses on “Management of Digital Transformation” include, but are not limited to:

- **Data-driven Decision Making**: How can companies and organizations make decisions based on actual data rather than intuition? We apply big data analytics, machine learning and optimization to support decision making in health care, finance, marketing, and supply chain management. We refine

the methods for specific applications and develop new algorithms and methods which can deal with the uncertainty usually present in data.

- **Digital Platforms**: What are the advantages for businesses using digital platforms? Our research focuses on digital business models while considering factors such as competition. We design techniques and frameworks to increase user, supplier, and consumer adoption of a platform, and examine the necessary actions required to establish a successful presence in the market.
- **Impact of Digital Technologies on Business:** What impact do digital technologies have on business? We create strategies and rewards programs that encourage a platform's growth among users, suppliers, and consumers, and research the steps required for establishing a successful presence in the market.
- **Institutionalization mechanisms and processes:** Creating new institutional arrangements enabled by digital technologies, which consist of a combination of accepted practices, values, and actors integrated with digital technologies. This leads to the question: How do these novel digital institutional arrangements, such as those based on social media, artificial intelligence, or algorithms, reconfigure institutionalization mechanisms and processes? For example, how does the use of social media impact the legitimacy of a new venture? How does the interaction between these "new" arrangements (e.g. social media) and "old" institutional arrangements (e.g. traditional media) influence these processes?
- **Emergence of novel actors and agency:** Human learning plays a critical role in driving innovation and routines within organizations. With the ability of ML-based systems to learn independently and contribute their own knowledge, humans are no longer the sole source of organizational knowledge. This raises several questions, based on theories of machine, human, and organizational learning, such as: How can organizations utilize ML's knowledge? What role can ML play in organizational learning processes and how does it change the role of human learners? How can organizations manage the relationship between machine and human learning? How does ML impact the development of organizational routines and innovations? (Argote and Miron-Spektor 2011; Ransbotham et al. 2020)

II. Possible Methodologies

Theses should cover one or more methodologies, such as:

- *Structured literature reviews*
- *Quantitative online surveys*
- *Implementations of AI solutions*
- *Qualitative interviews*
- *Experiments*
- *…*

III. Application Requirements

Important: If you are interested in writing a thesis on AI, please send an email application that includes:

1. a **brief CV,**
2. a current **performance record** (can be downloaded in TUCaN),
3. a 2-page **exposé** including the topics motivation, goal of the research project, approach, structure of the theses, and references, and
4. an **indication** of **one** of the **above presented areas** that **best fits your topic** in your email's subject

to: abschlussarbeiten@is.tu-darmstadt.de