

## Trust Transfer as Gamechanger to Explain Trustworthy AI?

### Understanding Users' Trust Transfer in Artificial Intelligence-Driven Convergence

#### Background

Artificial Intelligence (AI) is undoubtedly one of the most actively debated technologies, providing promising opportunities to contribute to individuals' well-being, the success and innovativeness of organizations, and societies' prosperity and advancement. We are currently experiencing the phenomenon of AI-driven convergence, whereby AI converges into base products (i.e., technologies, providers, or services) to enhance AI-based converged products. Along with this, users also transfer their control over the base products to the AI. While AI increases automation, this leads to more automated products, and users no longer must perform all the tasks of a base product. For example, the ongoing automation of vehicles leads to the emergence of autonomous vehicles (AVs), which offer many benefits to their users. AVs can increase driving safety such as by minimizing the risk of microsleep while driving on the highway.

However, one major challenge is that users are still hesitant to trust and relinquish control to an AI. For example, in the case of AVs, users perceive conventional vehicles as safer than AVs, which is why most users still have less trust in AVs. Due to the lack of trust, users do not use converged products such as AVs, which undermines the resulting benefits of AI-driven convergence. Prior research on information systems (IS) has already shown the importance of trust as an essential factor for an individual's willingness to accept and use technology by mitigating uncertainties and risks. Thus, we are eager to understand how users establish trust in new converged products, as it gives us an approach to understanding how people also actually use products emerging due to AI-driven convergence.

We think that the trust transfer theory can help us understand how to establish trust in new converged products. Basically, trust transfer theory states that trust between known and familiar trust sources (such as trust in vehicle technology) can be transferred to new unknown trust targets (such as AVs). This interplay between known sources and unknown targets may be an interesting tool to understand how trust can be transferred to new unknown converged products and help identify which trust sources are necessary.

To date, however, we lack knowledge about the actual explanation power of trust transfer theory in AI-driven convergence. Therefore, looking at trust transfer research and the theoretical foundations and arguments for trust transfer is worthwhile. With that, we will gain a deeper understanding of how the fundamental mechanisms of trust transfer theory work and how we can apply them to the context of AI-driven convergence.

The research project takes a two-step approach by first looking at related research on trust transfer and selecting a specific use case of an AI-driven convergence problem where we want to apply the theoretical framework as an explanatory approach to understand trust formation in convergent products. Second, we want to conduct a (quantitative) research approach (e.g., via an experiment or a survey) to investigate whether our theoretical assumptions stand. We plan to publish the research project results together in a research article.

The ideal candidate has basic knowledge of AI and those products that emerge due to the convergence of AI with base products (e.g., AVs). Knowledge of IS research on trust transfer theory and quantitative research approaches is pleasant but not necessary. Students should have high degrees of self-efficacy to manage this research project and openness to learn and apply scientific research methods (e.g., quantitative research approaches). The work allows you to gain deep knowledge and experience in rapidly growing fields, such as AI-based converged products that will change our lives in the future.

### **Possible prospective tasks of the intern**

- Review related research papers in the field of trust transfer
- Derive and discuss potential research cases of trust transfer in AI-driven convergence
- Design and set up a (quantitative) research approach
- Conduct a (quantitative) research approach (e.g., via a survey or an experiment)
- Summarize the results in research articles

### **General information about the workgroup, the university, and the region**

- Julian Lehmann is an Associate Professor at W. P. Carey School of Business at Arizona State University in Phoenix, Arizona. He holds a bachelor's and master's degree in Information Systems and a Ph.D. equivalent, Dr. rer. pol., from the University of Cologne, Germany. Prof. Lehmann's research program focuses on novel management and information systems phenomena such as how firms create strategic value from digital technology, digital innovation, and entrepreneurship. His research has appeared in premier scientific journals and conferences, including MIS Quarterly, Communications of the Association for Information Systems, Business & Information Systems Engineering, Academy of Management Proceedings, and International Conference on Information Systems
- The Arizona State University (ASU) is a public research university with more than 15,000+ full-time, degree-seeking undergraduates and 123,000 full-time, degree-seeking graduates worldwide. At ASU, students can study what they love, collaborate across disciplines, and tackle real-world challenges. ASU prepares tomorrow's business leaders to create positive change on a global scale.

### **Introductory literature**

- Stewart, K. J. (2003). Trust transfer on the world wide web. *Organization Science*, 14(1), 5-17.
- Stewart, K. J. (2006). How hypertext links influence consumer perceptions to build and degrade trust online. *Journal of Management Information Systems*, 23, 183 - 210.
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- Renner, M., Lins, S., Söllner, M., Thiebes, S., & Sunyaev, A. (2021). Achieving Trustworthy Artificial Intelligence: Multi-Source Trust Transfer in Artificial Intelligence-capable Technology 42nd International Conference on Information Systems (ICIS), Austin, TX, USA.