

The disruptive potential of digital technologies is impacting and transforming traditional industries. The logistics industry, in particular, faces barriers to digital transformation due to the difficulty in differentiating its physical services, while new competitors leverage digital business models. At the same time, customers demand more commoditized services, such as track-and-trace functionalities, increasing the pressure to excel in digital transformation. However, the logistics industry encounters several obstacles, such as the complexity of logistics networks and a shortage of skilled IT personnel. The open-source concept presents a promising approach due to its inherent characteristics. For instance, users of open-source communities form heterogeneous networks — similar to logistics networks — where they share resources for the joint development of open-source software. Although companies recognize the potential of open source, they often lack adequate strategies and expertise to capitalize on the opportunities. This thesis addresses this gap by exploring the research question:

“How to support logistics organizations with their open-source strategy?”

The thesis develops several artifacts that assist the strategic planning process, encompassing the strategic goal development, strategic analysis, strategy formulation, strategy evaluation, and strategy implementation. Design science research serves as the overarching research framework guiding the development of these artifacts.

The first study provides an overview of the influencing factors relevant to the formulation of an open-source strategy, helping users in the strategic goal development phase by guiding them in formulating their vision and goals. This study concludes with a SWOT analysis, which addresses the task of strategic analysis. The second study creates a taxonomy and archetypical patterns of open-source business models, aiding users in identifying strategic options during the strategy formulation phase. It concludes by illustrating the application of these artifacts to industrial open-source projects. The third study offers empirical insights into the open-source strategies of logistics organizations through case study research. These case studies yield actionable recommendations for researchers and practitioners to support the strategic implementation of open-source approaches within logistics organizations and the industry as a whole.

The artifacts from the first and second studies codify the knowledge base of open-source research. The results are further enriched by empirical insights, which help organizations analyze the potential and strategic options of open source. The third study ultimately provides both empirical insights and actionable recommendations, transitioning from descriptive to prescriptive knowledge artifacts. In summary, the results of this research offer a flexible toolset to support researchers and practitioners in developing open-source strategies for the logistics sector.