Organizing Ecosystems for Digital Innovation

Hilbolling, S.

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Summary

The advent digital technology generates exciting opportunities for new product and service development. At the same time, the distinct properties of digital innovation require organizations to reconsider how they organize their innovation processes. Digital innovation consists of different components (both hardware and software) that interact through standardized interfaces and network technologies. The development and maintenance of these components is no longer under the control of one organization solely; instead organizations find themselves in an ecosystem of actors, ranging in size and structure, and embedded in diverse industries. Thus, the overall integration of digital innovation depends on the interdependence of ecosystem members.

Being a timely phenomenon, there is a need to advance our understanding of organizing for digital innovation. Therefore, this dissertation aims to answer the following overall research question: *How do organizations address the challenges of managing digital innovation in evolving ecosystems consisting of heterogeneous actors?* I broke down this overall research question into three key organizational challenges associated with different stages of ecosystem development: creation, growth and maturity. Following a process research approach, I specifically took into account the role of time in my data collection and analysis. I carried out two in-depth field studies, and collected a mixture of qualitative data (including interviews, observations, and documents) through embedded research.

During early stages of *ecosystem creation*, actors need to align their activities despite a high level of uncertainty and ambiguity. In particular, in nascent ecosystems the central value proposition is still under development while the composition and roles of ecosystem members continue to change. Through a field study on an emerging smart city initiative, we unpack how the different actors perform *temporal coordination* (Chapter 2). In doing so we reveal how actors circumvent differences in

temporal structures (including time frames and time pacing) through three strategies: 1) leveraging moments of temporal concurrence, 2) creating temporal suspension of misaligned actors, and 3) bringing the future to the present. We conclude that both being in- and out-of-sync can be preferred modes of collaboration among ecosystem members.

During *ecosystem growth*, the number of ecosystem participants is increasing. Specifically, in platform-based ecosystems, the focal organization needs to consider how to interact with a variety of complementors, i.e., actors that develop complementary products and services that work with the platform core technologies. Based on a study of the Philips Hue connected light platform, we zoom in on the technical and organizational integrations associated with *managing complementors* (Chapter 3). We find that complementors create increasingly complex connections: from dedicated complements, to complements that bridge multiple platforms, and complements that embed the focal platform in larger ecosystems. We explore how, depending on the type of connections, platform owners rely on both arm's length contracts and more intensive partnerships with their complementors. Furthermore, because complementors create connections, they generate an 'ecology of platforms', and therfefore we argue that platforms should no be seen and studied in isolation.

When ecosystems reach *maturity*, maintaining the quality of the overall system becomes a growing concern for platform owners, in particular because how the system delivers depends on the effort of complementors outside their control. So far, research on platform ecosystems has mainly emphasized attracting sufficient quantity of complements in order to benefit from network effects, however, when the platform evolves over time, some complements may loose their value as they become obsolete or dysfunctional. Therefore, we unpack *complement quality* by studying the Philips Hue platform and its third-party apps. Our findings show that complementors need to engage with four different updating practices: 1) bug fixing, 2) ensuring compatibility, 3) enhancing user experience and 4) adding new features. To inform these updating practices, we learn that the users play an important role by contributing feedback and

ideas, while platform owner have only limited control.

Together, these findings contribute to the literature on digital innovation, platform ecosystems and open innovation by taking a temporal perspective on the coordination and management among innovation ecosystem members, with special attention for technical and organizational interdependencies. Furthermore, this dissertation provides practical insights for managers and methodological recommendations for fellow researchers in the field of digital innovation.