Evolution of Exchange and Sharing Mechanism towards Collaborative Ecosystem

Can Cui[1,*] Steve Evans[1]

[1]University of Cambridge

*cc2121@cam.ac.uk

Extended abstract

One of the key industrial development trends is towards sustainability. Sustainable development goals have received attention from both industrial companies and organizations from non-industrial sectors. Sustainability is increasingly regarded as one of the key factors in the formulation of corporate strategic goals. Sustainable development goals have increasingly penetrated into business models, driving innovations and the shifts towards more sustainable business practices (Geissdoerfer et al., 2018; Feil et al., 2019; Hermundsdottir & Aspelund, 2021; Chen et al., 2023). However, due to the complex nature of the task, industrial companies sometimes need to leverage ecosystem-enabled access to external resources or ecosystem-enabled power to better deliver sustainability. Unconventional ways of collaboration are emerging, but current studies focus more on the interaction mechanism and exchange between business and customers, or among customers (Ma et al., 2019; Acquier et al., 2017) (i.e., Ma et al.'s (2019) study on value co-creation for Sustainable Consumption and Production (SCP)). An increasing number of industrial companies prioritized the development of sustainable business models. Prior research developed sustainable business model theories to help companies understand sustainable economic system and incorporate sustainability into their business model (Bocken et al., 2014; Evans et al., 2017; Geissdoerfer et al., 2018) but there is insufficient research focusing on the mechanism for a collaborative way of value exchange in new business models. Besides, although industrial companies have realized the power of collaborative ecosystem to facilitate and even accelerate this transition, they haven't been

able to utilize the ecosystem well, as it is not uncommon for business ecosystem to fail (Ulrich et al., 2020). And the failure can happen at different stages (Ulrich et al., 2020). Recent literature claimed that the involvement of multiple parties and the interactive alignment can help resolve sustainability related challenges (Ma et al., 2019; Hira, 2017; TUPDI, 2017). Aarikka-Stenroos and Ritala (2017) proposed four ecosystem approach categories - competition and evolution, emergence and disruption, stable business exchange and value co-creation. This study aims to further explore how exchange and sharing mechanism evolves and the how it enables value creation; the "value co-creation" we study is not only with customers but we investigate the value co-creation with other novel parties in collaborative ecosystem. Recent studies emphasize the evolution of value proposition towards ecosystem (Baldwin, 2015; Bohnsack et al. 2024), but the evolution of value flow which reveals the evolution path of sharing or exchange has not been clearly defined, when collaborative ecosystems are emerging and are constantly reshaping conventional collaboration patterns, with the ability to help companies co-create value in a more efficient and effective way (e.g., the transition from modular product architecture to layered modular product architecture (Bohnsack et al. 2024)). The study employs a combination of primary and secondary data to facilitate triangulation, aiming to identify the emerging trends as well as future trends of sustainable value co-creation in collaborative ecosystems. First-hand data collected together with secondary data obtained covering various sources including industry interviews, expert interviews and workshops deepens our understanding of how collaborative ecosystem has the potential to change or even innovate conventional mode of business, thereby fostering sustainable transformation or sustainable value creation. With easier sharing and exchange in collaborative ecosystem, connections with various parties including even competitors can be better established, resulting in more efficient design, improved resource efficiency, shared cost, etc., creating additional sustainable value. Moreover, co-innovation would be supported by jointly harnessing resources across different sectors. Hence, the novel value flow mechanism may emerge but there is little research studying the evolution trajectory of value flow towards collaborative ecosystem.

Our study preliminarily reveals the types of sustainable value creation that are more likely to emerge in collaborative ecosystem. In addition, easier exchange and sharing enables industrial companies to jointly drive sustainable practices through co-efforts on a wide range of co-activities such as co-production, co-design in more effective empowerment processes. We found out that the needs of getting help from external parties push companies to plan future transition through the lens of ecosystem, and industrial companies have realized the huge potential of collaborative ecosystem to enable inter-organizational trust and brings the potential to break "zero sum game" to open up new opportunities. While sustainability is not yet prioritized in a collaborative ecosystem, industry practitioners realized that an ecosystem platform or a collaborative ecosystem

community could accelerate sustainable transformation by providing opportunities for ecosystem players to interact and create additional sustainable value, and companies are increasingly concerned about the exchange of knowledge, expertise, data rather than the traditional value exchange. However, there remains challenges such as lack of trust and risk concerns, which are preventing industrial companies from facilitating new value flows in collaborative ecosystem by initiating more sharing and exchange activities.

Our research aims to propose guidance to help industrial companies better tap the potential to create additional sustainable value through the lens of ecosystem and to tackle challenges. The study preliminarily investigates the new types of value flow enabled by ecosystem. A evolution trajectory has been preliminarily identified to help analyse the evolution from traditional business network to newly emerged collaborative ecosystem. Business organizations first need to decide the things needed from external based on the strategy planning and optimization. Value flow formulates with monetary value exchange (i.e., the traditional partnership strategy and value exchange with suppliers, technology providers, etc.) where linear relationship with partners exists and transaction-based interactions help obtain usefulness of something from external. However, more and more industrial companies are starting to build up their “partner ecosystem” by initiating an increasing number of trusted-enabled exchange and sharing with partners. More value flows rather than the traditional purchasing or acquisition happen. In this ecosystem era, stronger interactive activities with more than two parties involved could happen, and sometimes a community or a platform would be established to foster and orchestrate the “one-to-many” value flows. Our research aims to help industry practitioners better understand the evolution of sharing and exchange mechanism towards collaborative ecosystem, so that they can better identify and capture value opportunities with further guidance.

Keywords

Collaborative ecosystem, value co-creation, sustainability, sharing and exchange mechanism, evolution.

References

Feil, A. A., Schreiber, D., Haetinger, C., Strasburg, V. J., & Barkert, C. L. (2019). Sustainability Aarikka-Stenroos, L., Ritala, P. (2017). Network management in the era of ecosystems: systematic review and management framework. Ind. Mark. Manag. 67, 23–36.

Aarikka-Stenroosa, L., & Ritala, P. (2017). Network management in the era of ecosystems: Systematic review and management framework. Industrial Marketing Management, 67, 23–36.

Acquier, A., Daudigeos, T., Pinkse, J. (2017). Promises and paradoxes of the sharing economy: an organizing framework. Technol. Forecast. Soc. Change 125, 1e10

Baldwin, C.Y., 2015. Bottlenecks, Modules and Dynamic Architectural Capabilities. Harvard Business School Finance Working Paper, pp. 15–028.

Bocken, N.M.P., Short, S.W., Rana, P., Evans, S. (2014). A literature and practice review to develop sustainable business model archetypes. J. Clean. Prod. 65, 42e56.

Chen, X., Kurdve, M., Johansson, B., & Despeisse, M. (2023). Enabling the twin transitions: Digital technologies support environmental sustainability through lean principles. Sustainable Production and Consumption, 38, 13-27.

Evans, S., Vladimirova, D., Holgado, M., Van Fossen, K., Yang, M., Silva, E., Barlow, C. (2017). Business model innovation for sustainability: towards a unified perspective for creation of sustainable business models. Bus. Strat. Environ.

Feil, A. A., Schreiber, D., Haetinger, C., Strasburg, V. J., & Barkert, C. L. (2019). Sustainability indicators for industrial organizations: Systematic review of literature. Sustainability, 11(3), 854.

Geissdoerfer, M., Morioka, S.N., de Carvalho, M.M., Evans, S. (2018). Business models and supply chains for the Circular Economy. J. Clean. Prod. 190, 712e721.

Geissdoerfer, M., Vladimirova, D. & Evans, S. (2018) Sustainable business model innovation: A review. Journal of Cleaner Production. 198, 401–416. doi:10.1016/j.jclepro.2018.06.240.

Hermundsdottir, F., & Aspelund, A. (2021). Sustainability innovations and firm competitiveness: A review. Journal of Cleaner Production, 280, 124715.

Hira, A. (2017). Government-driven sharing economy: lessons from the sharing city initiative of the seoul metropolitan government. J. Develop. Soc. 33 (2), 223.

Ma, Y., Rong, K., Luo, Y., Wang, Y., Mangalagiu, D., Thornton, T.F. (2019). Value cocreation for sustainable consumption and production in the sharing economy in China. J. Clean. Prod. 208, 1148–1158.

Tsinghua Urban Planning and Design Institute (TUPDI) (2017). 2017 China Bike Sharing and Urban Development Report. TUPDI, Beijing.

Ulrich P., Martin R., and Maximilian S. (2020) Why do most business ecosystem fail? The Boston Consulting Group.