

Prerequisites for Value Co-Creation in Business Ecosystems

Emergent Research Forum (ERF)

Christian Betz
University of St. Gallen
christian.betz@bei-sg.ch

Marc Burkhalter
University of St. Gallen
marc.burkhalter@unisg.ch

Reinhard Jung
University of St. Gallen
reinhard.jung@unisg.ch

Abstract

Business ecosystems have recently attracted a growing interest. Scholars are working on various approaches to describe actors, their relationships, and the implications of this dynamic organizational structure. Value co-creation among these interdependent actors, including customers, based on shared technologies, standards, and rules leads to the emergence of ecosystems. Using the design science research (DSR) approach, this paper presents and evaluates propositions for value co-creation leading to the emergence of business ecosystems. They provide structuring guidelines for academic research and build the basis for the design of a model aiming to explain the actors' collaborative activities of value co-creation in ecosystems.

Keywords

Business Ecosystems, Value Co-creation, Orchestration, Service Dominant Logic, Design Science Research

1 Introduction

With the evolution of information and communication technologies (ICT) and innovation in business models, manufacturing and distribution of goods and services is changing in many ways. The attention on complex network structures, organizational forms which promote cross-industry collaboration, with interdependent actors is steadily increasing (Jacobides, Cennamo, & Gawer, 2018). Business ecosystems, hereinafter addressed as ecosystems, can be understood as a dynamic community of actors co-creating value. However, current academic literature only provides a broad description of their emergence and the mechanisms of value co-creation in ecosystems. While successful ecosystems are oftentimes supported by platform-enabled business models (i.e. Alibaba, Apple, SAP), prerequisites for the emergence of and value co-creation in ecosystems are not yet clearly understood. Therefore, this research project attempts to answer the following research question: What are the value co-creation prerequisites for ecosystem structures to emerge? To answer this, several propositions have been developed using design science research (DSR). The results will be used in further iterations to develop a model to conceptualize the activities of value co-creation in ecosystems. Section 2 describes the concept of ecosystems by presenting ideas from academia. Section 3 outlines the research approach. In section 4, 12 propositions are presented, which are further enhanced in section 5. Section 6 summarizes the findings and discusses limitations.

2 Theoretical Context of Value Co-Creation in Business Ecosystems

Academic literature views ecosystems as a network structure consisting of multiple interacting actors who perform interdependent actions and are supported by core technologies to collaboratively provide mutual offerings (Angraeni, Hartigh, & Zegveld, 2004; Iansiti & Levien, 2004). The concept of interdependence of capabilities or knowledge in a network isn't new, and the significant increase in performance per dollar spent for ICT promotes the coordination of the latter (Williamson & De Meyer, 2012). This process is strongly supported by the emergence of modular system designs (Baldwin, 2012). In academic literature,

various roles have been defined from different perspectives. From a behavioral point of view, Iansiti & Levien (2004) distinguish between keystone, niche, dominator, and landlord. Den Hartigh & Van Asseldonk (2004) see the shaper, the adapter, and the opportunist in ecosystems. From a company-centered perspective, Adner & Kapoor (2017) differentiate between focal firms and complementors. Based on service-dominant logic (SDL) (Lusch & Vargo, 2008, Voima et al. 2011), Burkhalter (2019) defines ecosystem role archetypes in relation to the shared goal of its members that is materialized through a service. He differentiates between the user as beneficiary, the provider as supplier to realize the service outcome, the orchestrator as coordinator aligning actors around that service outcome, and contributors as complementing the service through support offerings. One underlying concept is value co-creation, which describes the combination of knowledge, capabilities, and resources from all actors, including the deep integration of the beneficiary as a fundamental mode of value creation (Prahalad & Ramaswamy, 2000; Vargo & Lusch, 2008). This includes emotional customer engagement, a transfer of labor to the customer, a supplier provided experience, customer self-selection, and engagement in co-design (Payne, Storbacka, & Frow, 2008). Autio & Thomas (2018) identified resource enrichment, knowledge spillovers, direct externalities, indirect externalities, and resource generation as a value co-creation mechanism to explain the emergence of ecosystems. The research, in its current stage, still lacks specifications on how to configure ecosystems. In order to fill this gap, this emerging research develops propositions that will be used for the design of a model (research artifact) that is expected to support the understanding of collaborative activities of value co-creation within ecosystems using the SDL lens (Lusch & Nambisan, 2015). Other possible underlying theories i.e. transactions cost theory or principal agent theory could be used as well to describe value co-creation actors in ecosystems.

3 Research Methodology

This research project is embedded in a consortium research project (c.f. Österle, 2010). It consists of researchers and practitioners from Austria, Switzerland, and Germany and follows a DSR approach (Hevner & Chatterjee, 2004). DSR is particularly useful to generate insights for the design of a model that is expected to foster our understanding of value co-creation within ecosystems. DSR targets at extracting knowledge from this design process. To generate resilient insights, contribute to academic discussion, and incorporate feedback from practitioners, the authors followed a three-cycle approach for DSR proposed by Hevner and Chatterjee (2010). In the relevance cycle, initial propositions were developed in working groups of practitioners from the banking and capital markets industry. In the rigor cycle, literature at the intersection between business ecosystem and service-dominant logic theory were evaluated to delimit the research problem and to embed the propositions in the current academic discourse. In the design cycle, results from both the relevance and the rigor cycle were combined and the results were evaluated in focus groups. Practitioners from the financial services domain were surveyed if they agreed with the presented propositions. This was facilitated using a 5-point Likert scale with 1= “fully disagree” to 5= “fully agree”. The participants were also asked to provide qualitative feedback to all propositions in written form on the survey sheet and through a group discussion within three focus groups.

4 Propositions for the Emergence of Business Ecosystems

Table 1 presents the initial propositions that were developed leveraging insights from focus group interviews as well as from conducting literature research. Firstly, fundamental preconditions are defined (P1, P2, P3) that provide a common ground for further arguments. Secondly, actions for value co-creation are described, i.e. individual input of the actors as well as the coordination of this input (P4, P5, P6, P7). Thirdly, needs representing a target for services in the ecosystem are introduced (P8, P9, P10, P11). Finally, P12 states that the match of services and needs represents the overall value of the ecosystem. This list of propositions intends to provide a generic but conclusive picture about value co-creation in ecosystems.

Pro.	Description	Representative Literature
P1	The consumer is a value co-producer and shares information about his individual needs with the actors by participating in the ecosystem	Oliver, Rust, & Varki, 1998; Payne et al. 2008; Vargo & Lusch, 2008; Autio & Thomas, 2018
P2	To model ecosystems, the focus on a concrete service as a reference is necessary	Voima et al. 2011; Storbacka & Nenonen, 2011; Jacobides, Cennamo, & Gawer, 2018;
P3	Each actor has individual resources and capabilities which he could provide to the network	Payne et al. 2008; Williamson & De Meyer, 2012; Vargo & Lusch, 2008

P4	The combination of individual resources and capabilities of one actor results in services	Jacobides, Cennamo, & Gawer, 2018; Autio & Thomas, 2018; Vargo & Lusch, 2008
P5	The combination of resources and capabilities of several actors results in multilateral services	Jacobides, Cennamo, & Gawer, 2018; Autio & Thomas, 2018; Vargo & Lusch, 2008
P6	The coordination of a multilateral service or of (several) independent services and multilateral services requires an orchestrator	Lusch et al., 2007; Baldwin & Hippel, 2011, Maglio & Spohrer, 2013; Pikkarainen et al., 2017
P7	The orchestrator understands the needs of the consumer and coordinates the resources & capabilities in the ecosystem to individual services and multilateral services	Vargo & Lusch, 2008; Ferreira et al., 2013; Story et al., 2016; Pikkarainen et al., 2017
P8	The ecosystem is based on a primary need, which is best satisfied by a basic service	Jacobides (2018); Voima et al. 2011; Korhonen, 2013
P9	The primary need triggers complementary needs that aren't present without this need	Baida et al., 2005; Korhonen, 2013
P10	Sub-needs arise around primary and complementary needs	Baida et al., 2005; Korhonen, 2013
P11	Sub-needs are satisfied by services which subjectively increase the overall experience	Baida et al., 2005; Korhonen, 2013
P12	The more precisely the needs are addressed through combination of individual and multi-lateral services, the greater the created value	Ferreira et al., 2013; Pikkarainen et al., 2017

Table 1. Initial Propositions with representative Literature

5 Intermediate Results

Table 2 indicates the evaluation of the initial propositions. The survey evaluated the propositions on a 5-point Likert scale (1: fully disagree, 5: fully agree) and included space to provide qualitative feedback. 29 survey responses from practitioners from the banking industry were collected and reviewed. Respondents were also asked about previous knowledge about ecosystems on a 5-point Likert scale with an average response of 3.6. The results were not examined regarding statistical significance due to the low number of responses. Currently, the focus is to develop robust propositions by integrating qualitative feedback.

Pro- position	Ø Level of Agreement	Pro- position	Ø Level of Agreement	Pro- position	Ø Level of Agreement
P1	4.2	P5	4.2	P9	3.9
P2	3.8	P6	3.6	P10	4.2
P3	4.4	P7	4.1	P11	4.0
P4	4.0	P8	3.8	P12	4.1

Table 2. Evaluation of Initial Propositions

6 Discussion

In general, the survey participants accepted all the aforementioned propositions. However, the average evaluations of P2, P6, P8 and P9 were between 3.6 and 3.9, indicating a lower acceptance level. The qualitative and the structural feedback provided by the survey respondents was used to enhance the propositions to draw a more precise and mutually exclusive, collectively exhaustive picture. Table 3 outlines these improvements.

New Pro.	Description	Underlying Proposition
P1'	The ecosystem emerges around an implicitly or explicitly stated shared purpose among different social and business actors	P8
P2'	The shared purpose is materialized through a service that represents a common reference point for the value creation of ecosystem actors	P2
P3'	The service can only be materialized through mutual offerings among complementing individual actors, including the beneficiary	P4, P5

P4'	Each actor, including the beneficiary, acts as a value co-creator	P1
P5'	Ecosystem actors have different individual needs & capabilities, which must be orchestrated in relation to their shared purpose	P3, P6, P9, P10
P6'	The better the orchestration matches the individual needs and capabilities of the participants, the more resilient is the ecosystem	P7, P11, P12
P7'	The orchestration can either be performed by one actor or a community of actors seeking either a monetary profit- or a non-profit goal	

Table 3. Propositions after Iteration

P1' is derived from P8 and focuses on a shared purpose as a reference to integrate complementary services. The change addresses the possibility for additional primary needs. The shared purpose combines both the users' individual needs and the services that address these needs. The shared purpose is also compatible with dynamic changes, as requested by the survey respondents. **P2'** connects the shared purpose with a materialized service. This supports practitioners when conceptualizing ecosystem services with a tangible reference. P4 and P5 are combined into **P3'** to ensure exclusivity of the propositions. It combines mutual offerings of all participants and takes complementing or even overlapping resources and capabilities into account. **P4'** is an adapted version of P1 and is moved to a different position on the list for logical purposes. Furthermore, it incorporates feedback, which states that every actor is an active part of the collaboration process, and therefore a value co-creator. Proposition **P5'** combines P3, P6, P9, and P10. It addresses each actor's needs without the distinction between primary and complementary needs. It also considers everyone's individual capabilities. Overlapping sets of capabilities are intentionally omitted. Additionally, for the ecosystem to function, needs and capabilities must be coordinated. **P6'** targets the resilience of the ecosystem. It suggests that a better match of needs and capabilities increases the overall value and therefore increases the ecosystem resilience. It doesn't specify the ability of the orchestrator to understand the needs and capabilities. According to the participants' feedback, other actors may also possess this knowledge. Therefore, the success depends on all actors' abilities to provide and understand information on the needs and capabilities of the ecosystem actors. The focus lies in the provision of optimal conditions for all participants to evolve. **P7'** has been added to address participants' feedback that an ecosystem could also be orchestrated by multiple parties instead of one. The economic motivation also remains intentionally broad. The orchestrator could be a profit maximizing actor (i.e. Apple, Alibaba), however, new organizational forms can be considered as well. This could be the case when distributed ledger technology is used, where the role of the orchestrator is performed by a decentralized autonomous organization that acts upon a collective motive.

7 Conclusion

Value co-creation in ecosystems is complex as it involves various parties that need to be aligned to an overall shared purpose to effectively function. This paper attempts to outline prerequisites for an ecosystem to emerge and evolve. Twelve initial propositions were developed together with practitioners and further enhanced into seven final propositions. The propositions are the foundation for a model that will be developed later to support the conceptualization of collaborative activities of value co-creation in ecosystems. Scholars and practitioners can leverage the presented propositions as guidelines when trying to understand the mechanisms of value co-creation within ecosystems. They offer mental guidelines and provide a common frame for further discussions and academic research. However, this research project is still in an early stage. The propositions are subject to further validation by a broader audience of cross-industry practitioners. Additionally, the propositions only provide the foundation to further discuss the mechanisms of value co-creation in ecosystems. At a later stage of this research project, the authors will develop the mentioned model. The authors expect this artifact to provide further insights on the mechanisms of the orchestration of value co-creation within ecosystems.

8 References

- Adner, R. 2017. "Ecosystem as Structure: An Actionable Construct for Strategy," *Journal of Management* (43:1), pp. 39-58 (<https://doi.org/10.1177/0149206316678451>).
- Anggraeni, E., Hartigh, E., and Zegveld, M. 2004. "Business Ecosystem as a Perspective for Studying the Relations Between Firms and Their Business Networks," *ECCON 2004 Annual Meeting* (<https://doi.org/10.1108/IMDS-09-2016-0408>).

- Autio, E., and Thomas, L. D. 2018. "Ecosystem Value Co-Creation," *Academy of Management Annual Meeting Proceedings* (2018:1), Boston, MA, USA (<https://doi.org/10.5465/AMBPP.2018.15913abstract>).
- Baida, Z. & Gordijn, J. & Saele, H. & Akkermans, H. & Morch, A. 2005. "An Ontological Approach for Eliciting and Understanding Needs in e-Services," *Lecture Notes in Computer Science*. (3520). pp. 400-414. Heidelberg, Springer.
- Baldwin, C. Y. 2012. "Organization Design for Business Ecosystems," *Journal of Organization Design* (1:1), pp. 20-23 (<https://doi.org/10.7146/jod.6334>).
- Baldwin, C. Y., and Hippel, E. 2011. "Modeling a Paradigm Shift: From Producer Innovation to User and Open Collaborative Innovation," *Organization Science* (22:6), pp. 1399-1417 (<http://dx.doi.org/10.2139/ssrn.1502864>).
- Burkhalter, M. 2019. *Allocentric Business Models - An Allocentric Business Model Ontology for the Orchestration of Value Co-Creation Using the Example of Financial Service Ecosystems*, St. Gallen, Switzerland: Unpublished Dissertation, University of St. Gallen.
- Den Hartigh, E., and van Asseldonk, T. 2004. „Business Ecosystems: A Research Framework for Investigating the Relation Between Network Structure, Firm Strategy, and the Pattern of Innovation Diffusion," *ECCON 2004 Annual Meeting Proceedings*, San Diego, CA, USA (<https://doi.org/10.6106/KJCEM.2015.16.3.132>).
- Eisenmann, T., Parker, G., and Alstyne, M. W. 2006. „Strategies for Two-Sided Markets," *Harvard Business Review* (84:10), pp. 92-101.
- Ferreira, F., Proença, J., Spencer, R., & Cova, B. 2013. "The transition from products to solutions: External business model fit and dynamics," *Industrial Marketing Management* (42:7), pp. 1093-1101.
- Hevner, A., Chatterjee, S. 2010. "Design Research in Information Systems: Theory and Practice," New York, NY, Springer.
- Iansiti, M., and Levien, R. 2004. "Strategy as Ecology," *Harvard Business Review* (82:3), pp. 1-11.
- Jacobides, M. G., Cennamo, C., and Gawer, A. 2018. "Towards a Theory of Ecosystems," *Strategic Management Journal* (39:8), pp. 2255-2276 (<https://doi.org/10.1002/smj.2904>).
- Korhonen, H. 2013. "Organizational needs: A co-creation and human systems perspective," *Journal of Business Market Management* (6:4), pp. 214-227.
- Lusch, R.F., Vargo, S.L., O'Brien, M. 2007. Competing through service: Insights from service-dominant logic. *Journal of Retailing*. (83:1), pp. 5–18 (<https://doi.org/10.1016/j.jretai.2006.10.002>).
- Maglio, P.P., Spohrer, J. 2013. "A service science perspective on business model innovation," *Industrial Marketing Management* 42, pp. 665–670 (<https://doi.org/10.1016/j.indmarman.2013.05.007>).
- Nambisan, S., and Sawhney, M. 2011. "Orchestration Processes in Network-Centric: Evidence From the Field," *Academy of Management Perspectives* (25:3), pp. 40-57 (<https://doi.org/10.5465/AMP.2011.63886529>).
- Oliver, R., Rust, R., and Varki, S. 1998. "Real-Time Marketing," *Marketing Management* (7), pp. 28-37.
- Österle, H. and Otto, B. 2010. "Consortium Research," *Business & Information Systems Engineering* (2:5), pp. 283-293 (<https://doi.org/10.1007/s12599-010-0119-3>).
- Payne, A. F., Storbacka, K., and Frow, P. 2008. "Managing the Co-Creation of Value," *Journal of the Academy of Marketing Science* (36:1), pp. 83-96 (<https://doi.org/10.1007/s11747-007-0070-0>).
- Pikkarainen, M., Ervasti, M., Hurmelinna-Laukkanen, P., & Nätti, S. 2017. "Orchestration Roles to Facilitate Networked Innovation in a Healthcare Ecosystem," *Technology Innovation Management Review* (7:9), pp. 54-68 (<https://doi.org/10.1016/j.indmarman.2016.04.015>).
- Prahalad, C., and Ramaswamy, V. 2000. "Co-Opting Customer Competence," *Harvard Business Review* (78) pp. 79-90.
- Story, V. M., Raddats, C., Burton, J., Zolkiewski, J., & Baines, T. 2017. "Capabilities for advanced services: A multi-actor perspective," *Industrial Marketing Management* (60), pp. 54-68 (<https://doi.org/10.1016/j.indmarman.2016.04.015>).
- Vargo, S. L., and Lusch, R. F. 2008. "Service-Dominant Logic: Continuing the Evolution," *Journal of the Academy of Marketing Science* (36:1), pp. 1-10 (<https://doi.org/10.1007/s11747-007-0069-6>).
- Voima, P., Heinonen, K., Strandvik, T., Mickelsson, K.-J., and Arantola-Hattab, L. J. 2011. "A Customer Ecosystem Perspective on Service," *QUIS 12: Advances in Service Quality, Innovation and Excellence*, pp. 1015-1024.
- Williamson, P. J., and De Meyer, A. 2012. "Ecosystem Advantage: How to Successfully Harness the Power of Partners," *California Management Review* (55:1), pp. 24-46 (<http://doi.org/10.1525/cm.2012.55.1.24>).