



Ways of operating in business ecosystems to drive circular transitions

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Abstract

The circular economy megatrend demands that manufacturing firms change their business model, implying that great changes must happen in business ecosystems. This short paper is based on observations from research in three ecosystems and identifies avenues firms can take in business ecosystems when orchestrating implementation of circular economy goals.

Keywords

circular economy, business models, business ecosystem, supply chain

INTRODUCTION

One of the main mottos of the circular economy for manufacturing firms is *change your business model*. From a pragmatic and innovation perspective, the business model provides at the very least a snapshot of how a business works; it explains the very logic for how firm creates and captures value (Teece, 2010). This logic is not only embedded in the formal rules including incentives, contracts, and key performance indicators, but also ways of thinking and norms of the system. The supply chain and actors in it, including tacit competences and knowledge, is built based on the same logic (Adner 2012). Hence, changing a business model is easier said than done (Chesbrough 2010).

Heuristics like the business model canvas provide some help to make explicit the critical building blocks of a business (Osterwalder and Pigneur, 2010). Such a view or inventory is invariably a valuable activity for creating awareness for a firm undertaking a transformative change, such as that related to adapting to circular economy principles. However, it remains a firm-level unit of analysis (Foss and Saebi, 2017) and arguably, more



focused on the customers than the dynamics related to the many other actors and relationships that contribute to the value creation and capture. Needless to say, (timely) change to stock-based (circular) business logic from a flow-based (linear) one requires great effort within at least the originating firm and beyond into the supply chain. It demands concerted change to processes and ways of thinking internally to the firm as well as within external actors who may reinforce the current logic. Moreover, firms need to manage the distribution (or redistribution) of new activities required for resource optimization within their established value chains and many times new partnership and orchestrations are needed. With these challenges in mind, the business model as a firm-level construct is arguably not adequate to serve as the primary unit of analysis.

In this paper, we use the construct of *business ecosystem* as complementary to the business model to put emphasis on roles and alignment of the actors involved. The construct suggests a constellation of actors that together create a value proposition that no single firm can achieve in isolation (Lingens et al., 2021; Adner, 2017; Jacobides et al., 2018). As such, descriptions of business (or innovation) ecosystems place increased focus on the system around the firm and its dependency on actors around it with a few principles emphasized including: the shared outcome organized around a focal firm (Autio & Thomas 2014), the symbiotic relationship between a set of actors (Basole & Rouse 2008), or the value flows of products and services, data, payments and intangibles (den Ouden 2010). In times of little change, actors and the system can operate undisturbed without reflecting on their alignment. However, when a change is instigated, the alignment of actors in the ecosystem is disrupted. It is argued that in these situations, the ecosystem logic shows its value (Adner, 2017). In particular, the construct has been noted as a valuable logic for mapping and orchestrating systemic change and circular transitions (Bertassini et al 2020).

In order to provide lessons about the potential ways the construct could be used to understand and orchestrate circular transitions, we pose the question: *How do actors operate in their business ecosystems to implement circular transitions?* We also reflect on experienced benefits of utilizing the ecosystem logic in circular transitions.

METHODOLOGICAL APPROACH

This short paper is based primarily on studying circular transitions from vehicle manufacturer and supplier perspectives in three subsystems related to the broader vehicle business ecosystem: polymer components, manufacturing equipment and lithium-ion batteries. Each study was conducted as action research with the intent to stimulate circular transitions in the organizations and systems of interest (de Guerre 2002). Individually, each study involved at least semi-structured 20 interviews, discussions and working meetings with representatives from two vehicle manufacturers, six firms in the material supply chain, three firms in the production equipment supply chain, four firms in the recycling supply chain, four service focused firms (including insurance and ledger services), and three branch organizations. While representatives from suppliers



were of primarily business development and design functions, representatives from vehicle manufacturing firms, were from corporate strategy, design, vehicle attributes, and purchasing functions.

While each study departed from its own research questions, they all had one activity in common, creating understanding of the business ecosystems. Questions focused from the vehicle manufacturer perspective on how circular transition strategy was translated into ways of working and goals for design and purchasing functions, and on the supplier side, how they aim to fulfill their own goals related to circular transitions both upstream and downstream and how (and if) they experience new demands from vehicle manufacturers. In addition, a specific effort was made to map business ecosystems, defining roles of actors, identifying material, money and information flows. We also focused on understanding how the actors worked in the ecosystem in their ongoing circular transition work. Specifically, we relate observations to two ecosystem perspectives: the actor-focused ecosystem as affiliation in which a community of actors is centered around a focal actor or platform and the activity-focused ecosystem as structure, in which activities are derived and actors are focused on a common value proposition (Adner 2017). We later compiled findings from the three studies and conducted a combined analysis considering both what we learned and reflected on how the ecosystem construct helped us and other actors learn.

KEY INSIGHTS

Two types of insights are presented here: (1) ways in which actors operate in business ecosystems to drive circular transitions, and (2) benefits of using the construct. First, we describe how firms and their representatives operate in the ecosystem to implement circular transition, from arguably more conventional supply chain relationships wherein an ecosystem by affiliation seems most apparent, to those in which an ecosystem by structure wherein shared value propositions drive activities is more apparent. As Adner (2017) notes, any given situation may exhibit aspects of both types.

Focal actor utilizes conventional bilateral supply chain relationships: An action may be initiated when a vehicle manufacturer (designer and/or purchaser) sends request for proposal or solution (with requirements/specifications related to circular economy goals) to primarily incumbent Tier 1 suppliers. Alternatively, the supplier may send a suggestion, possibly a description of a new circular offer or solution, to the vehicle manufacturer. Whether alignment remains depends – for all intents and purposes – on how demanding or radical the new demands are and whether the supplier and its suppliers are able to fulfill them. Regardless, demands from the focal actor imply new rules for the ecosystem to follow. These rules will spread. We observed that suppliers who develop circular offers naturally then offer these same solutions to other customers. Thus, one customer's initiation of circular demand can lead to other customer being offered the same, illustrating how suppliers operate in between ecosystems and can end up being drivers in circular transition.



Focal actor initiates new relationships and roles: As an example, purchasing agents of a vehicle manufacturer may attempt to cultivate future supply chain relationships or partnerships as well as requisitions with not only Tier 1 suppliers but less commonly, Tier 2 suppliers. For example, in order to reach a certain recycled content goal, a formal purchasing action may involve going upstream (and downstream) to secure secondary raw materials. In these cases, the focal actor operates outside of the conventional linked supply chain and starts to coordinate larger parts of the ecosystem in a way not previously done. Benefits to this approach of facilitating circular transition relate to the immense gap between the current state and the presiding circular economy vision. As the owner of the value proposition and new vision and as a larger organization, the vehicle manufacturer may be best positioned and resourced to help other actors in the ecosystem develop new competences.

Activities generated from a group aligned around a shared goal that can become a shared value proposition: As an example, company representatives may work in less formal collaborations to contribute to common circular transition goals. In one case, representatives from vehicle manufacturers, insurance and recycling companies, and trade organizations worked together towards recycling more post-consumer polymer material from vehicles. The group had no focal actor but was aligned in that it essentially shared an ambition to (1) devise a way to create valuable polymer fractions and (2) create a value proposition that would create demand for post-consumer plastics. However, the group had no manufacturer that was interested in the polymer fractions. As such, a company that manufactured products from recycled polymer that usually would not be prompted in cases of normal requisitions was brought in to fill the missing competence and infrastructure. As a result of the collaboration, a new product and value chain was created. In such settings, we observe that firm representatives meeting in these settings may have more in common with each other than they have with their colleagues (of the firm). The success of this example aside, the promise related to these types of outcomes should be viewed with caution. Examples like this one in which alignment is around sustainability goals can deteriorate as actors near more formal agreements (Altmann & Linder, 2019).

Activities generated around an developing or emerging platform or value proposition: In one ongoing innovation project, a small ledger company focused on the value proposition of collecting, storing and potentially, monetizing data related to lithium-ion batteries, attempts to align new actors in the value chain in order to achieve a shared goal of battery second use and better recycling. Here, the data is the potentially new product, but other actors have to be aligned in order to join the ecosystem. Other actors (like vehicle manufacturers) could 'join' this ecosystem, or they can choose to try to create their own ecosystem. Naturally, divergence in both perspectives and interests have been apparent suggesting challenges to achieving this outcome. As another example outside of the studies of focus for this paper this type, a focal actor creates conditions for multi-lateral development of solutions by suppliers. One example of this is seen with Local



Motors, that was founded on principles of co-creation and open collaboration (Local Motors 2021).

These examples represent just a few of the types of change that occur in the business ecosystem. Together, they represent an array of avenues on the span of ecosystem-as-affiliation and ecosystem-as-structure views. Arguably, a firm or change-agent can observe, map and utilize each of these types to drive circular transition in their business ecosystem.

Utilizing business ecosystem as construct in circular transitions: We have experienced that illustrating the business ecosystem helps reveal rigidities and allows for the learning amongst individuals; it specifically supports the unfreezing of existing norms to allow individual learning and system change (Schoen 2010). First, we suggest an approach considering firms as the unit of competence and analysis needs to be complemented with the business ecosystem view which puts emphasis on structures and roles of the different stakeholders. Specifically, entities (and roles) that may remain unseen or marginalized in a business model view become visible when drawing the business ecosystem. Based on our research, entities providing financing and data ledger capabilities are commonly in this category.

Second and perhaps more novel, in order to increase granularity and to avoid the *firm-is-a-box* construct, we took a close-up, breaking down firms into different entities based on their roles and capabilities. This close-up view is based on two main observations: (1) when one takes the view that actors in a business ecosystem create value together, focusing only on boundaries around firms becomes arbitrary (especially when larger corporations are involved); (2) when it comes to facilitating change needed for circular transitions, flows and relationships between individual functions/units in multiple firms become more important.

When considering rules, it can be said that individual functions/units within firms (such as Purchasing, Manufacturing or Aftermarket) have different languages, ways-of-working and priorities (their *rules*). We have observed that units within different firms may have more in common with units in other firms than those in their own firm, at least when it comes to matters of circular transitions. For example, if one looks at strategies of and relationship between manufacturing firm and supplier, one may only see that their goals related to circular transition are aligned. While ambitious circular economy goals may be expressed at the strategic level, those goals may not be communicated by the purchasing unit to the supplier. Moreover, we have seen that big breakthroughs can happen with the right collaborations and these opportunities may not appear when only looking at firm-level boxes and activities.

CONCLUSIONS

The studies revealed a few ways of implementing circular transitions which include operating in existing roles and via existing bilateral links and creating new relationships



and activities and potentially multi-lateral links. In order to achieve timely change towards circular economy, it is arguable that a combination is necessary. On the one hand, a focal actor can utilize the power of existing affiliations to initiate change by sending new requirements and rules into the ecosystem to drive change. Perhaps more disruptively, a focal actor can relinquish some of its power and participate to co-create new value chains outside of official supply chain relationships. Here, non-incumbent entrepreneurs with disruptive solutions fit for circular transitions may have a better chance to participate.

Finally, based on experiences in the three studies, the business ecosystem construct is deemed to be invaluable complement to business model innovation for use in circular transitions. Using the construct allows understanding the current state and current activities as well as for identifying needed activities and actor types to achieve circular economy goals.

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