

# **MAPPING BUSINESS CATALYSTS THAT ENABLE CIRCULAR ECONOMY BUSINESS WITHIN INDUSTRIAL NETWORKS**

**Work-in-progress paper  
submitted for IMP2019**

**General track or Special track of Sustainability in the networked economy**

## **INTRODUCTION**

In the industrial marketing, the relevance of sustainability and Circular Economy (CE) has increased and it is becoming a crucial competitive advantage; this shapes how to make business within relationships and networks. (D'Antone et al., 2017; Lacoste, 2013). Research in the field of Industrial Marketing and Purchasing (IMP) has acknowledged that in order to be successful and contribute to value creation, firms introducing innovation to the market need to identify the network conditions of existing business networks (Håkansson and Snehota, 2006) and embed themselves into them (La Rocca and Snehota, 2014). This is particularly relevant when taking sustainable and CE technology business to markets.

CE business within industrial networks include the use of recycled materials, reusing and sharing products, and offering maintenance and leasing services. Thus it introduces fundamental changes to supply chains and furthermore business networks of industrial firms (Spring and Araujo, 2017). In general, CE has recently gained popularity among businesses and policymakers as a method for moving towards an economic system where, rather than overusing natural resources, materials and products are kept valuable longer through activities such as maintenance and recycling (Esposito et al., 2018; Geissdoerfer et al., 2017). The move towards CE necessitates new innovations to existing processes and practices across firms, business networks and value chains (Franco, 2017; Spring and Araujo, 2017), and the offerings of firms in CE are prominently driven by innovations (Prieto-Sandoval et al., 2018).

The sustainability and CE tendency creates not only many opportunities for industrial business but also challenges making business from CE innovations, as it requires a major shift from the current extractive linear economic model to circularity. The CE transition disrupts the dominant linear logic of economic development ("take, make, and dispose" without resource-saving loops), and therefore, disturbs the existing status quo, as well as the collaboration and competition among technology and innovation business actors. The transition to CE and sustainable technologies is a crosscutting socio-technical transition (Geels & Schot, 2007) impacting technology, business, societal, and cultural layers concurrently. Such a transition requires a simultaneous and co-directional change in preferred technologies, in value chains, in the business practices of companies and cities, and in the guidance of regulators and policymakers.

In order to create value within industrial networks with CE technologies, solutions, products and services, new understanding is needed. By this far, the industrial marketing and B2B research has not yet analyzed in detail, what are the key mechanisms that drive and enable CE business within business and industrial networks. The CE business related literature has focused on how individual firms have implemented CE (Ghisellini et al, 2016; Ranta et al., 2018) without paying attention to the surrounding relationships and networks.

To find solutions for how CE technologies and innovation can be turned to business, this study addresses business catalysts that can then be used to accelerate the emergence and development of CE innovation and technology business. By business catalysts, we refer to economic, business and value creation means and mechanisms that shape systemic socio-technological transition (Geels et al., 2017). They may involve the commercialization pathways for CE technologies, profitable business models that can compete with current linear models, and practices that mitigate buyer risk when investing in novel technology. The current literature has identified both barriers and drivers to the CE ecosystem transition (Ranta et al. 2018; Tura et al. 2018). In this study we will intentionally choose a positive catalyst approach over the conventional barrier approach (D'Este et al., 2012), as our goal is to uncover the business mechanisms that can be then used as tools to enact CE transition within industrial networks. Therefore, our research question is “*What are the key business mechanisms that particularly advance CE technology business within industrial networks and therefore can be considered as business catalysts*”.

To reach the research goal, the study relies on industrial network and marketing literature as well circular economy and sustainability literature. With regard to empirical part of the study, we apply qualitative research design with multiple data sourcing as such method enables to exploit methodological diversity in theory development. The study employs multiple data sources and data gathering methods to ensure rich and detailed empirical data. The intended contribution here is to map the business catalysts that enable conducting CE and sustainable business in industrial networks and in B2B settings and thus to extend knowledge in the field of IMP and industrial marketing as well sustainable business.

## **THEORETICAL BACKGROUND**

Considerations relating to sustainability are increasingly relevant for firms operating in industrial markets. In this study, we examine particularly how circular logic embedded in Circular Economy (CE) changes the logic of conducting business within industrial networks. Circular Economy has recently gained traction as concrete ways to implement sustainability into business (Geissdoerfer et al. 2017). A shift from existing linear thinking (Ghisellini et al 2016), implementing CE into business is not a simple exercise of adding a CE element on top of existing business, and often requires a rethinking of the premises of a firm's existing business. Issues related to sustainability and circular economy have garnered global attention of consumers, and of institutional actors such as policymakers, influencing the environment in which industrial firms operate. As a result, firms need to make decisions on their business partners based on sustainability criteria to ensure transparent and sustainable value chains (Kapitan et al. 2019, Lacoste 2016).

The sustainability transition seems to change also the value creation logic in the market: firms implementing CE need to expand their perspective of value and value creation from the traditional economic value centric view to a view including ecological and social value as well (Patala et al., 2016). Circular economy seems to shape value creation logic of industrial networks: the extant studies have highlighted that the actors towards which the firm creates value broadens, as firms need to accommodate their business towards creating shared value towards multiple stakeholders (Keränen, 2017; Porter and Kramer, 2011). Both of these changes affect the core of the value creation logics of firms.

The CE seem to shape also business model landscape of industrial firms, as it requires including resource returning loops into the supply chains (Ranta et al. 2019). The CE has a focus on systemic resource efficiency by mandating that resources are efficiently used not only in production, but also throughout the lifecycle of products including use and end-of-life treatment (Ghisellini et al., 2016). This systemic perspective raises challenges for industrial firms whose touchpoints to the use phase often range from limited to non-existent. To

accommodate for this, industrial firms need to include not only loops but also service elements into their business models: consequently, services has become the core of business models of industrial firms (Tukker, 2015). A shift of focus to services could enable firms to fulfill the needs of more customers with fewer products when providing products through services (Bocken et al., 2016), or lengthen the lifecycle of products through e.g. maintenance (Tukker, 2015). However, even with a focus on services, the lifecycle of products cannot be extended indefinitely (Korhonen et al., 2018).

Finally, CE business seems to require also tight collaboration within industrial networks. CE business is inherently systemic, as shifting to a CE model requires rethinking the current linear system on multiple levels of a value chain. The change of mindset of a single industrial firm is not enough, if the business network in which the firm operates does not support the CE model on other level (cf. Håkansson and Snehota 2006). The value of products and materials, which the CE concept aims to keep as high as possible to improve systemic resource efficiency, is constantly being qualified by different actors in a distributed business network (Spring and Araujo, 2017). Firms with CE offerings need to identify where, how, by whom and on what premises this value is being qualified in order to embed CE into existing business networks (La Rocca and Snehota, 2014). At the same time, new perspectives to the qualification of value emerging in CE also create pressure for reconfiguration of these business networks (Spring and Araujo, 2017).

In sum, in this paper, we start from an assumption that the CE changes value creation logic, business models and collaborations within the industrial networks. Hence, there assumingly are some particular drivers, i.e. catalysts that enable and facilitate conducting business within industrial networks, under the CE transition. The analysis of these catalysts enable us to better understand how businesses in industrial networks will transform as the global trend of sustainability, resource efficiency and CE transition shapes the industrial business landscape. In this paper, we apply the “catalyst” as a metaphor for diverse business mechanisms – including value creation, business models and collaboration (see our a priori framework in Figure 1). This framework is applied when the catalysts are explored via abductive research process, as described in next.



**Figure 1 A priori framework: Catalysts for conducting CE and sustainable business in industrial networks**

## **METHODS: RESEARCH DESIGN, DATA AND ANALYSIS**

To reach the research goal, the study follows qualitative research design with multiple data sourcing as such method enables to exploit methodological diversity in theory development. The study employs multiple data sources and data gathering methods to ensure rich and detailed empirical data. Primary data included 14 interviews and 5 focus group discussions with representatives of CE technology business related key actors, such as companies (large firms and start-ups), municipality and city representatives, industry associations, NGOs, expert organizations, and policy makers (ministry representatives). To complement this primary data, observation and ethnographic follow up (attending workshops and visiting sites); presentation materials; company data and reports; media data; and research reports were used as secondary data for data triangulation and supplementary data. Data has been gathered from Northern Europe in 2017-2019.

The data comes from different CE business contexts and industries (e.g. manufacturing, services) and other settings (public and private business). The data concerned particularly forerunner cases and positive experiences; as such, they provide fruitful bases to uncover positive catalysts that are the major object for our investigations.

In analysis phase, we identified, coded and categorized business catalysts for CE business within industrial networks from data. We also compared and contrasted results to identify catalyst patterns occurring in more than one case, setting, or industry. The inclusion of comparative elements improve the validity and reliability of results. Furthermore, researcher triangulation were applied to improve the quality of results: two researchers analyzed data and compared analyses, and the differences between the interpretations and conceptualizations were discussed. The results of the analysis rounds are discussed in next.

## **RESULTS: BUSINESS CATALYSTS FOR CE IN INDUSTRIAL NETWORKS**

The analysis uncovered business catalysts that were divided into five main groups, namely 1) exchange catalysts, that create and enhance supply and demand, and 2) value creation catalysts, that improve or increase value creation for customers and stakeholders and 3) competence catalysts that e.g. advice in selection and development of a profitable business model that enable value capture, and 4) Business model catalysts and 5) Collaboration catalysts. Next, we give some examples on our findings.

Exchange catalysts include:

- *Purchasing and Public procurement models*, experiences on buying innovative technologies/products and *risk reducing practices and tools* that induce and fortify demand and willingness to buy novelties that would replace existing less-sustainable technologies or products.
- The employment of *pilots* that can be developed into *customer references for CE innovations* trigger and nurture further sales.
- Available *funding instruments and investments* (from risk funding and crowdfunding to public funding) shaping CE start-ups' growth and mature firms' investments or

business-model transitions (e.g. from sales-based technology business to leading based service business).

- *Competition* and competitors' moves as companies with CE offerings may differentiate their technological or service offerings proactively or actively and thus shape or disrupt the conventional way of making business in the industry (e.g. Neste sells it bio diesel in higher price)

Value creation catalysts include

- *Stakeholder and customer involvement* in the innovation process from technology development to commercialization.
- *Branding* seemed to be important particularly in CE business as it signals quality and increases attractiveness of recycled material and reusable elements.
- *Quality harmonization/standardization of recycled materials/reusable elements*

Competence catalysts include

- *Commercialization, business and international business competences* and practices that enable CE firms to understand and articulate economic and environmental *customer values* of technological innovation and thus induce and increase sales. The results also suggest that commercialization competence is critical as it needed commercialization paths of CE technology may dependent on *the type of the CE innovation*, i.e whether it is radical or incremental; or products vs. process innovation and *the status of market*, i.e. whether there are markets to be entered or markets to be developed or even created through customer education.

Business model catalysts include

- *Product-service-systems and servitization* as a way to realign the value capture models of firms towards longer product lifecycles, supporting e.g. maintenance over just product sales. Also includes business models where depending on the lifecycle phase, the focus of value capture shifts from sales of new products to maintenance to then refurbishment and sale of used products.
- *Financing collaborations* to reduce needs for upfront investments from customers. Especially feasible in cases where customer value realizes as cost savings, enabling the impact to be visible to customers immediately.
- *Pricing* that contributes to value capture potential of CE material (e.g. oil price reflects into price of plastics) or for example reused component.
- Logistics optimization that enable capturing more value (e.g. processing the material at the site or replanning the routes to save in transport costs)

Collaboration catalysts include

- Collaboration between small start-ups and large companies (radical innovations by start-ups can enable large companies to change and optimize their resource recycling or reuse processes)
- Coopetition i.e. collaboration between competitors (e.g. closing the loop with joint value networks or shaping the standards jointly)

## **DISCUSSION AND CONCLUSIONS**

**Our study generated theoretical contribution, firstly to B2B and IMP research.** While

our research results on business catalysts within networks were derived from the emerging context of Circular Economy, they provide implications for how B2B companies and public organizations can make sustainable business. Thus, from theoretical perspective, our paper contributes to the foundation of successful B2B and industrial business renewal. Our paper continues recent discussions on how industrial networks can conduct sustainable business (Lacoste, 2016; Spring & Arajo, 2017, D'Antone et al. 2017). Our paper contributes to these studies by exploring and identifying particular drivers and enablers and conceptualizing them into catalyst that are the key mechanisms for CE and sustainable in business-to-business settings. Secondly, our paper builds contribution to sustainability and CE business field (Bocken, 2016; Ghisellini et al. 2016; Patala et al. 2016), as we track the enablers of CE business within business and industrial networks.

**From practice perspective**, the business catalysts identified in this study can be used as instruments that will enable industrial and B2B companies, industry associations, cities and policymakers to accelerate CE technology business in multiple sectors and industries. With the results of this study, innovation and technology developers and managers are able to move from technology development and innovating to feasible CE business within their networks. Furthermore, the policy makers can use the identified catalysts to support and realize the transition to sustainable society and CE business ecosystems.

With regard to limitations, we are aware that our study relies on a selected set of interviews and other qualitative data. Furthermore, the study is conducted in Northern Europe. As cultural and regional factors – aligned to theory of social institution – shape and determine how CE business can be conducted, we understand that examinations in different settings can give some other results. As many of the studied companies conduct international business, we however believe that our results give a good overview on driving mechanisms for CE and sustainable business.

## REFERENCES

- Bocken, N.M.P., de Pauw, I., Bakker, C., van der Grinten, B., 2016. Product design and business model strategies for a circular economy. *Journal of Industrial and Production Engineering*, 33, 308-320.
- D'Antone, S., Canning, L., Franklin-Johnson, E., Spencer, R., 2017. Concerned innovation: The ebb and flow between market and society. *Ind. Mark. Manag.*
- Geels, F. & Schot, J. (2007). Typology of sociotechnical transition pathways. *Research Policy*, 36(3), 399–417.
- Geels, F., Sovacool, B., Schwanen, T. Sorrel S. (2017). The Socio-Technical Dynamics of Low-Carbon Transitions. *Joule*, 1, 463–479.
- Geissdoerfer, M., Savaget, P., Bocken, N.M.P., Hultink, E.J., 2017. The Circular Economy – a new sustainability paradigm? *Journal of Cleaner Production*, 143, 757-768.
- Ghisellini, P., Cialani, C. & Ulgiati, S. (2016). A review on Circular Economy: the expected transition to a balanced interplay of environmental and economic systems. *Journal of Cleaner Production*, 114, 11–32.
- Håkansson, H., Snehota, I., 2006. No business is an island: The network concept of business strategy. *Scand. J. Manag.* 22, 256–270. doi:10.1016/j.scaman.2006.10.005
- Kapitan, S., Kennedy, A., Berth, N., 2019. Sustainably superior versus greenwasher: A scale of measure of B2B sustainability positioning. *Industrial Marketing Management*, 76, 84-97.
- Keränen, J., 2017. Towards a Broader Value Discourse: Understanding Sustainable and Public Value Potential. *Journal of Creating Value*, 3, 193-199.
- Korhonen, J., Honkasalo, A., Seppälä, J., 2018. Circular Economy: The Concept and its Limitations. *Ecological Economics*, 143, 37-46.

- La Rocca, a., Snehota, I., 2014. Relating in business networks: Innovation in practice. *Industrial Marketing Management*, 43, 441-447.
- Lacoste, S. (2016). Sustainable value co-creation in business networks. *Industrial Marketing Management*, 52, 151-162.
- Lüdeke-Freund, F., Gold, S. & Bocken, N. M. P. (2018). A Review and Typology of Circular Economy Business Model Patterns, *Journal of Industrial Ecology*, 1–26.
- MacArthur, E. (2013). Towards the circular economy. *Journal of Industrial Ecology*, 23–44.
- Patala, S., Jalkala, A., Keränen, J., Väisänen, S., Tuominen, V., Soukka, R., 2016. Sustainable value propositions: Framework and implications for technology suppliers. *Industrial Marketing Management*, 59, 144-156.
- Porter, M.E., Kramer, M.R., 2011. Creating shared value. *Harvard Business Review*, 63-67.
- Prieto-Sandoval, V., Jaca, C., & Ormazabal, M. (2018). Towards a consensus on the circular economy. *Journal of Cleaner Production*, 179, 605-615.
- Ranta, V., Aarikka-Stenroos, L. & Mäkinen, S. J. (2018b). Creating Value in the Circular Economy: A Structured Multiple-Case Analysis of Business Models. *Journal of Cleaner Production*, 201, 988-1000.
- Ranta, V., Aarikka-Stenroos, L., Ritala, P. & Mäkinen, S. J. (2018a). Exploring institutional drivers and barriers of the circular economy: a cross-regional comparison of China, the US, and Europe. *Resources, Conservation and Recycling*, 135, 70–82.
- Spring, M., Araujo, L., 2017. Product biographies in servitization and the circular economy. *Ind. Mark. Manag.* 60, 1–33. doi:10.1016/j.indmarman.2016.07.001
- Tukker, A., 2015. Product services for a resource-efficient and circular economy – A review. *Journal of Cleaner Production*, 97, 76-91.
- Tura, N., Keränen, J., & Patala, S. (2018). The darker side of sustainability: Tensions from sustainable business practices in business networks. *Industrial Marketing Management*.
- Weissbrod, I., Bocken, N.M.P., 2016. Developing sustainable business experimentation capability: A case study