



# LUND UNIVERSITY

## **Multi-actor business models in the manufacturing industry. Exploring how first-tier suppliers transition towards circularity.**

Forbicini, Martina; Heldt, Lisa

*Published in:*

Proceedings of the 7th International Conference on New Business Models: Sustainable Business Model Challenges: Economic Recovery and Digital Transformation

2022

*Document Version:*

Publisher's PDF, also known as Version of record

[Link to publication](#)

*Citation for published version (APA):*

Forbicini, M., & Heldt, L. (2022). Multi-actor business models in the manufacturing industry. Exploring how first-tier suppliers transition towards circularity. In L. Michelini, A. Minà, & P. Alaimo Di Loro (Eds.), *Proceedings of the 7th International Conference on New Business Models: Sustainable Business Model Challenges: Economic Recovery and Digital Transformation* (pp. 221-225). LUMSA University.

*Total number of authors:*

2

### **General rights**

Unless other specific re-use rights are stated the following general rights apply:

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

Read more about Creative commons licenses: <https://creativecommons.org/licenses/>

### **Take down policy**

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

LUND UNIVERSITY

PO Box 117  
221 00 Lund  
+46 46-222 00 00



*7<sup>th</sup> International Conference  
on New Business Models*

LUMSA  
UNIVERSITÀ

**Sustainable Business Model Challenges:  
Economic Recovery and Digital Transformation**  
Conference Proceedings

## Disclaimer

The editors have taken the utmost care to ensure the reliability and completeness of all the published information. However, inaccuracies cannot be precluded. While the greatest possible care was taken during the preparation of these proceedings, there is always the possibility that certain information of sources referred to become(s) outdated or inaccurate over the course of time. Certain references in these proceedings lead to information sources that are maintained by third parties and over which we have no control. The editors and authors therefore do not bear responsibility for the accuracy or any other aspect of the information from these sources. In no way does the mention of these information sources represent a recommendation by the editors or the authors or an implicit or explicit approval of the information.

The editors and authors are not responsible for the consequences of activities undertaken on the basis of these proceedings. No part of these proceedings may be reproduced by means of print, photocopies, automated databases or in any other way, without the prior written permission of the corresponding authors. The texts in this publication do not aim to be discriminatory in any way on the basis of sex, transgender identity or expression, race, religion, disability, sexual orientation or age. Wherever it says 'he' in the text, 'she' may naturally be read as well and vice versa.

## Cite/reference as:

Michelini L., Minà A and Alaimo Di Loro P. (eds), (2022). Proceedings of the 7th International Conference on New Business Models: Sustainable Business Model Challenges: Economic Recovery and Digital Transformation, LUMSA University. ISBN 979-12-210-1188-3

ISBN 979-12-210-1188-3



# Multi-actor business models in the manufacturing industry. Exploring how first-tier suppliers transition towards circularity.

Martina Forbicini<sup>1</sup>, Lisa Heldt<sup>1,\*</sup>

<sup>1</sup>IIIEE, Lund University

\*lisa.heldt@iiiee.lu.se

## Extended abstract

### Abstract

Adopting circular business models (CBM) represents a key lever for industry to address urgent global challenges. Prior research recognizes the need for systems thinking and collaboration, but existing CBM tools and methods often implicitly assume that the focal firm has direct access to end customers, usage data and end-of-life phases. However, upstream suppliers who lack this access often produce key components of the final product – particularly in manufacturing – and could thus be an impactful actor in driving circular solutions. We therefore aim to explore and explain how non-end-user-facing manufacturers, i.e. first-tier suppliers, drive CBM adoption through their value chain and stakeholder partners, and how existing CBM archetypes need to be extended for these novel constellations. For this purpose, we conduct an action research case study with a Swedish first-tier manufacturer who is starting to develop CBMs for its marine engine product lines which are currently sold in a linear fashion through boat manufacturers and dealers to end users. Expected results include an extended CBM canvas that accounts for CBM archetypes based on more complex value chain and stakeholder collaborations. By exploring how companies further upstream in the value chain initiate and build CBMs, we aim to advance and bridge knowledge on multi-actor CBMs and circular supply chains. We thereby hope to invite more research into how non-traditional actors can drive circular industry transitions.

### Introduction

Adopting circular business models (CBMs), i.e. sustainable business models that focus on “closing, narrowing, slowing, intensifying, and dematerializing [resource] loop” (Geissdoerfer *et al.*, 2018:p.713), is a central lever for industry to help address societal challenges, such as resource scarcity and climate change. This transition away from current linear production and consumption

systems to circular business models can take different shapes (Geissdoerfer *et al.*, 2020), however, entails inherent challenges (Linder & Williander, 2017) and often requires collaboration with multiple actors (Bertassini *et al.*, 2021). In this transformation process, the roles of value chain partners and stakeholders change (Kanda, Geissdoerfer & Hjelm, 2021; Frishammar & Parida, 2019), with researchers calling for a wider perspective on the surrounding ecosystem (Parida *et al.*, 2019; Fehrer & Wieland, 2020; Lieder & Rashid, 2016). While such research is growing (Bertassini *et al.*, 2021; Reim, Sjödin & Parida, 2021), it remains underexplored what happens if other actors in the ecosystem – not the end-user-facing company – initiate and drive CBM design and implementation.

Many existing CBM archetypes, tools and design principles implicitly assume that the focal firm is end-user-facing (i.e. private users in B2C and industrial users in B2B) (Pieroni, McAloone & Pigosso, 2021; Bocken *et al.*, 2014), even in studies focusing on the ecosystem level (Konietzko, Bocken & Hultink, 2020). For instance, CBM canvas tools subsume possible multi-actor constellations under the ‘key partners’ (Nußholz, 2018; Antikainen & Valkokari, 2016) or ‘key partnerships’ (Lewandowski, 2016) element, thus oversimplifying the relations and their implications. While this focus is justifiable and relevant for most CBM adopters, circularity’s inherent need for multi-actor solutions creates a rich potential for and growing interest from non-traditional, non-end-user-facing organizations, such as for instance first-tier suppliers in the manufacturing industry. It remains unclear how such companies initiate and develop CBMs while facing a lack of access to end customers, usage data or end-of-life stage. Since they often produce key components (i.e. key both, concerning the final product’s functionality and economic value as well as concerning environmental impacts in production and use phase), such first-tier suppliers assume a critical role for circularity, yet need to leverage their value chain partners and possibly additional collaborations to implement CBMs and boost innovation.

The research aim is to explore and understand how non-end-user-facing manufacturers, i.e. first-tier suppliers, can drive CBM implementation through their value chain, and thereby contribute to a circular industry transformation. For this purpose, we first explore the particularities faced by first-tier suppliers when initiating CBMs in terms of value chain relations, access to customers and data etc.; second, we compare and contrast this with the CBM literature which implicitly focuses on CBM implementation by customer-facing organizations; and third, we synthesize suitable CBM configurations and necessary organizational changes that first-tier suppliers face for transitioning to CBMs. In doing so, we seek to address the following two research questions: (1) How do CBM archetypes need to be adapted and extended to fit for First-Tier Suppliers in the manufacturing sector (marine industry)? (2) How do organizational structures, value chain relations and collaboration change when first-tier suppliers transition to such multi-actor CBMs?

## Method

The research follows a case study approach (Siggelkow, 2007; Verschuren, 2003) which is particularly relevant for gaining deep and contextual insights into an emerging phenomenon (Flyvbjerg, 2006). The case company is a Sweden-based multinational manufacturer of engines and drivelines for marine and industrial applications that is exploring opportunities connected to CBMs. This particular case focuses on the development of CBMs for their marine leisure segment where engines and drivelines produced by the case company are currently sold in a linear way via boat

manufacturers and dealers to end user. The adoption of CBMs by first-tier suppliers – who have no direct access to customers, usage data and product at end-of-life and, thus, rely on new and different value chain partners and multi-actor business models to circumvent these limitations – is a recently emerging phenomenon. Case selection in exploratory studies serves to identify cases that are novel, extreme or otherwise particular (Verschuren, 2003) and therefore promise rich insights (Flyvbjerg, 2006) into emerging phenomena (Siggelkow, 2007). The case at hand was chosen for its unique, real-world setting that provides valuable insights into the new development.

For data collection, the study builds on semi-structured expert interviews with practitioners in the case company as well as complementary interviews with value chain partners and peers in the industry. Interviews are triangulated with (a) document review to cross-check background information, dates and facts as well as (b) observations during field visits to the company plant and headquarters. We seek to understand the current factual business model and value chain relations, but also the background to how these structures have grown, what inherent challenges are and where possible entry points for new value chain relations emerge.

Data analysis is performed as qualitative content analysis in NVivo and takes an iterative approach, starting with literature-driven coding based on categories for barriers, drivers, CBM archetypes and value chain relations that emerged from the (not-first-tier-focused) literature. Staying close to the case data, we will then gradually refine these codes to the case setting and first-tier context as new aspects emerge inductively from the data.

## Expected results

Data collection for this study is ongoing, thus we present expected results here. Over the coming months, the collected data will be analyzed, transferred into an initial framework and then tested and validated against the reality of the case company, and adjusted where needed. The expected results include (1) identification of particularities faced by first-tier suppliers, e.g. connected to a lack of access to end users or usage data, that hinder or enable adoption of CBMs; (2) insights into the role of supply chain relations and reconfigurations in overcoming or harnessing particularities of first-tier suppliers; (3) synthesis of corresponding CBM configurations suitable to these particularities.

By exploring and demonstrating options for how companies further upstream in the value chain can initiate and build CBMs, we aim to advance and bridge knowledge on multi-actor CBMs and circular supply chains. By investigating how actors other than ‘the usual suspects’ can enter the circularity space, we open up for more future research into these non-traditional agents behind circular business models.

## Keywords

Business model; Circularity; First-tier supplier; Value chain relations; Collaboration

**Acknowledgements:** This research is supported in part by the Mistra REES (Resource Efficient and Effective Solutions) program funded by Mistra (The Swedish Foundation for Strategic Environmental Research) (grant number DIA 2014/16).

## References

- Antikainen, M. & Valkokari, K. (2016) A Framework for Sustainable Circular Business Model Innovation. *Technology Innovation Management Review*. [Online] 6 (7), 5–12. Available from: doi:10.22215/timreview1000.
- Bertassini, A.C., Zanon, L.G., Azarias, J.G., Gerolamo, M.C., et al. (2021) Circular Business Ecosystem Innovation: A guide for mapping stakeholders, capturing values, and finding new opportunities. *Sustainable Production and Consumption*. [Online] 27, 436–448. Available from: doi:10.1016/j.spc.2020.12.004.
- Bocken, N.M.P., Short, S.W., Rana, P. & Evans, S. (2014) A literature and practice review to develop sustainable business model archetypes. *Journal of Cleaner Production*. [Online] 65, 42–56. Available from: doi:10.1016/j.jclepro.2013.11.039.
- Fehrer, J.A. & Wieland, H. (2020) A systemic logic for circular business models. *Journal of Business Research*. [Online] (March 2019), 1–12. Available from: doi:10.1016/j.jbusres.2020.02.010.
- Flyvbjerg, B. (2006) Five misunderstandings about case-study research. *Qualitative Inquiry*. [Online] 12 (2), 219–245. Available from: doi:10.1177/1077800405284363.
- Frishammar, J. & Parida, V. (2019) Circular business model transformation. A roadmap for incumbent firms. *California Management Review*. [Online] 61 (2), 5–29. Available from: doi:10.1177/0008125618811926.
- Geissdoerfer, M., Morioka, S.N., de Carvalho, M.M. & Evans, S. (2018) Business models and supply chains for the circular economy. *Journal of Cleaner Production*. [Online] 190, 712–721. Available from: doi:10.1016/j.jclepro.2018.04.159.
- Geissdoerfer, M., Pieroni, M.P.P., Pigosso, D.C.A. & Soufani, K. (2020) Circular business models. A review. *Journal of Cleaner Production*. [Online] 277, 1–18. Available from: doi:10.1016/j.jclepro.2020.123741.
- Kanda, W., Geissdoerfer, M. & Hjelm, O. (2021) From circular business models to circular business ecosystems. *Business Strategy and the Environment*. [Online] 30 (6), 2814–2829. Available from: doi:10.1002/bse.2895.
- Konietzko, J., Bocken, N. & Hultink, E.J. (2020) Circular ecosystem innovation: An initial set of principles. *Journal of Cleaner Production*. [Online] 253, 119942. Available from: doi:10.1016/j.jclepro.2019.119942.
- Lewandowski, M. (2016) Designing the business models for circular economy-towards the conceptual framework. *Sustainability (Switzerland)*. [Online]. pp.1–28. Available from: doi:10.3390/su8010043.
- Lieder, M. & Rashid, A. (2016) Towards circular economy implementation. A comprehensive review in context of manufacturing industry. *Journal of Cleaner Production*. [Online] 115, 36–51. Available from: doi:10.1016/j.jclepro.2015.12.042.
- Linder, M. & Williander, M. (2017) Circular Business Model Innovation: Inherent Uncertainties. *Business Strategy and the Environment*. [Online] 26 (2), 182–196. Available from: doi:10.1002/bse.1906.
- Nußholz, J.L.K. (2018) A circular business model mapping tool for creating value from prolonged product lifetime and closed material loops. *Journal of Cleaner Production*. [Online] 197, 185–194. Available from: doi:10.1016/j.jclepro.2018.06.112.
- Parida, V., Burström, T., Visnjic, I. & Wincent, J. (2019) Orchestrating industrial ecosystem in circular economy. A two-stage transformation model for large manufacturing companies. *Journal of Business Research*. [Online] 101, 715–725. Available from: doi:10.1016/j.jbusres.2019.01.006.
- Pieroni, M.P.P., McAloone, T.C. & Pigosso, D.C.A. (2021) Developing a process model for circular economy business model innovation within manufacturing companies. *Journal of Cleaner Production*. [Online] 299, 126785. Available from: doi:10.1016/j.jclepro.2021.126785.
- Reim, W., Sjödin, D. & Parida, V. (2021) Circular business model implementation. A capability development case study from the manufacturing industry. *Business Strategy and the Environment*. [Online] 30 (6), 2745–2757. Available from: doi:10.1002/bse.2891.

- Siggelkow, N. (2007) Persuasion With Case Studies. *Academy of Management Journal*. [Online] 50 (1), 20–24.  
Available from: doi:10.5465/amj.2007.24160882.
- Verschuren, P.J.M. (2003) Case study as a research strategy: Some ambiguities and opportunities.  
*International Journal of Social Research Methodology: Theory and Practice*. [Online] 6 (2), 121–139.  
Available from: doi:10.1080/13645570110106154.