

BUSINESS VALUE-ADDED WITHIN THE CIRCULAR BUSINESS MODEL: A MULTIPLE CASE ANALYSIS

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Abstract: The traditional business model (linear economy) dominating the current industry has caused many environmental problems and depletes natural resources. The Circular Business Model (CBM) is believed to be a potential solution to this problem. Apart from being more environmentally friendly, this approach is also more profitable in a business sense. This present study aims to analyze the business value-added from the CBM. This study was conducted using a qualitative case study approach in four SMEs located in Pekanbaru city. The data collection process was carried out nobly from March-July 2020 through observation, interview, and study document. Observation and interviews were carried out simultaneously with owners, managers, and employees. The final data collection was carried out by analyzing documents obtained directly from the company, website, and press releases. The results showed that business value-added obtained from implementing CBM includes cost reduction (raw materials, operational) and additional revenue from the sale of used materials and production waste.

Keywords: circular economy, business model, value-added, sustainability

Abstrak: Model bisnis tradisional (ekonomi linear) yang mendominasi industri telah banyak menimbulkan permasalahan lingkungan dan pengurusan sumber daya alam. Model bisnis melingkar (CBM) diyakini menjadi solusi potensial terhadap masalah tersebut karena disamping ramah lingkungan, pendekatan ini juga lebih menguntungkan secara bisnis. Penelitian ini bertujuan menganalisis nilai tambah bisnis dari menerapkan CBM. Studi ini dilakukan dengan pendekatan kualitatif studi kasus di empat UMKM di Pekanbaru. Pengumpulan data dilakukan sejak Maret-Juli 2020 melalui observasi, wawancara dan studi dokumen. Kegiatan observasi dan wawancara dilakukan secara bersamaan dengan pemilik, manajer dan karyawan perusahaan, sedangkan metode pengumpulan data terakhir dilakukan dengan menganalisis dokumen yang diperoleh langsung maupun melalui website dan pres rilis yang dilakukan perusahaan. Hasil memperlihatkan beberapa nilai tambah bisnis yang diperoleh dari menerapkan CBM. Nilai tersebut berupa pengurangan biaya (bahan baku, operasional) dan penerimaan tambahan dari material bekas dan limbah produksi.

Kata kunci: bisnis melingkar, model bisnis, nilai tambah, keberlanjutan

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INTRODUCTION

Since the industrial revolution, business practices have been dominated by linear systems in which producers and customers make and consume single-use products leading to a threatened environment (Esposito et al. 2018). In a linear economy, the company applies a production system based on the take-make-dispose paradigm. Companies take raw materials from nature, process them into products (Zaoual and Lecocq, 2018; Esposito et al. 2018). After entering the end of their useful life, they are disposed of in the form of waste (Kraaijenhagen et al. 2016). This approach has recently received criticism because it is impartial and threatens the environment's sustainability as the effect of waste spreading originating from company activities.

Given that companies are encouraged to carry out business transformation from a linear economy model to a circular business model (CBM) which is certainly more sustainable and environmentally friendly. CBM is a business approach in which making, offering, and distributing products is carried out in a closed material loop (Barquet et al. 2016). In this concept, the applied production process adheres to the reduction-reuse-recycle principle (Allwood, 2014). The economic value of a product or component can be extended and reused even though it has entered the end of its life (Alamerew and Brissaud, 2018). In other words, CBM is a business approach aiming to restore the product life cycle by making it reusable (Kirchherr et al. 2017; Kraaijenhagen et al. 2016; Ellen MacArthur Foundation, 2016).

Previous studies concerning CBM were generally conducted by using the sustainability paradigm (Lewandowski, 2016; Lieder and Rashid, 2016; Rizos et al. 2016; Weissbrod and Bocken, 2017) combining environmental, social, and economic aspects (Bocken et al. 2014) as the focus of the investigation. Another study examining this area also emphasizes the circularity of material flow (Ghisellini et al. 2016) aiming to encourage increased recycling activities in companies (Yuichi and Seiji, 2016). However, it has been not easy to find research examining how CBM provides business value-added for companies to implement. This condition urges further research due to the motivation to implement an environmentally friendly business model (CBM) that is considered possible when the concept can offer value-added/clear business opportunities for companies to implement (Lieder and Rashid, 2016).

Bakker et al. (2014) explained that possible opportunities could be obtained from adopting CBM, including reducing production costs, acquiring new income, and avoiding crises due to scarcity of raw materials and price fluctuations in the global market. Cutting operational (production) costs include reducing the cost of raw materials, and also logistics costs (Ranta et al. 2018; Bocken et al. 2014; Clauss, 2016) because the materials used are obtained from the customer (end-user). The additional revenue comes from the emergence of a new market segment, the used product market, becoming extra income for companies and suppliers (customers). Meanwhile, the last CBM value-added business opportunity arises from companies' opportunity to anticipate the scarcity of raw materials (Lee and Lam, 2012) and the risk of global increase (Li and Olorunniwo, 2008).

This study aims to analyze the business value-added that allows companies to obtain from implementing CBM. A qualitative approach is carried out based on case studies in four companies from various industrial sectors, including food and beverage, manufacture, and broadcasting. This research is considered to provide academic contributions in broadening how CBM provides business value-added for companies. On the contrary, from a practical point of view, this study's findings are expected to increase companies' motivation to run environmentally friendly businesses following CBM principles.

This article is organized as follows. Initially, the research method and a description of the case study firms used are described in the following section. The analysis and discussion are presented afterwards, followed by the conclusion and limitations in the last section.

METHODS

CBM as a business approach is believed to offer opportunities to solve environmental problems due to traditional systems' dominance (linear economy). This is applied through the reduce, reuse, and recycle (3R) approach (Allwood, 2014). Reducing is intended to minimize waste when producing and consuming products. Reusing is applied by reusing the used material entirely or partly. Meanwhile, recycling is applied using used materials as raw materials after going through the recovery process. Given that, CBM, with its 3R concept, aims to encourage a change in

traditional business models (*resource-product-waste*) to become circular (*resource-product-waste-3R*) (Yang, Zhou and Xu, 2014).

This study aims to explore how CBM provides business value-added to companies. This study adopts a qualitative approach based on the case study introduced by Yin (2014). The utilization of qualitative case study methods was carried out because it allowed researchers to apply iterative changes during data collection, analysis, and literature review. Case studies are also the most appropriate option used to answer research questions in the format of how and why, where descriptions are needed (Yin, 2016), and researchers have almost no control regarding the observed phenomenon (Yin, 2014; Voss et al. 2015).

The sample selection in research that applies to case studies is different from the theoretical test sample and does not explain the number of standard samples used since the determination of case study subjects is based on theoretical sampling (Yin, 2014). Researchers can select a single example when the case is unique, but applying multiple samples allows researchers to provide a more robust basis for theory development. Multi cases also clarify why there is an unsynchronized between the cases (Eisenhardt, 1991). Therefore, this study uses four SMEs as case studies. The samples' selection was carried out by examining business practices in line with the principles of CBM contributed to the enrichment of this study and the understanding of how CBM provides business value-added to companies. Table 1 describes the case study samples and the data collection process for this study.

This research was conducted from March-July 2020, and the data collection process was carried out through several stages, including observation, semi-structured interviews, and documentary study. The observation approach aims to help researchers describe the actual

conditions in the company. The interviews were conducted in person and video conferences with owners, managers, and employees by asking about its general description, business model, and the benefits they get from implementing CBM. Meanwhile, the final data collection method was carried out by analyzing company documents obtained directly or through websites and press releases, aiming to increase reliability through triangulation (Barratt et al. 2011).

In this study, the data analysis process was carried out in several stages; descriptive analysis, cross-case synthesis, and cross-case analysis (Miles et al. 2014). Descriptive analysis was carried out in the format of a text aiming to explain the research context. The second analysis was carried out to obtain answers to research questions in each case study sample, taken according to the descriptive analysis results. The cross-case analysis was carried out by combining the results of each case, comparing with the theory (Miles et al. 2014; Voss et al. 2015), and providing an explanation of the emergence of patterns in each case (Barratt et al. 2011) before generalizing and drawing conclusions.

RESULTS

This section shows the findings from each case separately. The first case study shows how food and beverage companies get business value-added from selecting raw materials and processing to the presentation. The second case reveals the value-added of CBM in furniture companies from used tires with high selling value. As a broadcasting company, the third case shows how the business value of CBM was built through the fabric of external cooperation, while the latter shows how additional value-added obtained from scrap metal into agricultural tools that successfully penetrate the national market.

Table 1. The company case studies and the scope of data collection

Case Company	Green Smoothie Factory	Siret Pekanbaru	Radio Broadcasting	Rumbio Jasa Steel
Founded	2012	1997	2014	1951
Main products	Food and beverages	Furniture handicrafts	Media advertising	Agricultural equipment
Customers	Individual and corporation			
Data gatherings	Interview, study document, direct observation			
Field visits	3	2	3	4
Total interviews	3	2	3	4

Green Smoothie Factory Case Study

This company is a producer of juices and foods made from vegetables and fruit. Established in 2012, Green Smoothie Factory is owned by a former banker accustomed to implementing a healthy life by consuming fresh processed food and drinks. This habit is thus managed to attract his co-workers' attention, and they began to be interested in consuming it. Initially done with a made-to-order system, customers must pay upfront before production to fulfil orders. An increase in rankings that reached up to 200 bottles per day made Firdaus decide to quit his job and open a healthy food and beverage business made from fresh fruit and vegetables.

Green Smoothie Factory's business is very concerned about environmental factors. This is evidenced by the layout carrying urban farming concept, where every corner is planted with vegetables as decoration and the raw material for making drinks. Ventilation and lighting systems appear to be open so that air and sunlight enter every corner. Likewise, furniture utilizes recycled products from fibre and wood roots.

The company produces about 20-40 kg of fruit and vegetable pulp per day in making food and drinks. These are then processed into pulp and animal feed. The juice packaging uses plastic bottles that can be used repeatedly. The company is also actively educating, inviting customers to exchange bottles of purchase proceeds, and they are given points (loyalty cards) that can be changed for new products. Besides, consumers are also invited to bring their packaging or shopping bags, and those who follow the provisions will get a purchase price discount. In serving its juice products, the company uses straws from reusable stainless, and without procuring tissue boxes to minimize waste, wasteless.

Siret Pekanbaru Case Study

Established in 1997, Siret Pekanbaru is a family-owned company that processes tires into furniture products with high selling prices. The idea of company building came from the concern of Suherman, as the owner, on a volume increase of used tires around his residence. He was compelled to process the waste into furniture products of more value.

In the beginning, raw materials in the form of used tires are obtained free of charge from the surrounding community. As business development progressed, the need for these materials also increased. The company began working with the community and car repair shop entrepreneurs no longer utilizing the waste. The process of sorting used tires to making furniture generally takes one to three days. Some require months of work, depending on the complexity and model of furniture made. According to customer requests, the company receives products with unique motives, and everything is done manually, hand-made.

Some types of products include chairs, tables, bed mattresses, fountain containers, swings, flower pots priced, ranging from hundreds to millions of rupiah. Many consumers are interested in joining in developing the business, including several municipal district governments in Riau Province. They see this business concept aligning with the government's vision to optimize waste utilization into valuable products. Some local entrepreneurs make processed products as gifts for their housing purchases. Increased interest from various groups towards the Pekanbaru Siret products makes the company more optimistic that their products can compete. Moreover, people are now increasingly aware of the importance of using environmentally friendly products. Furniture products produced are also beautiful because they are made of different materials, anti-weathering, and have proven quality.

Radio Broadcasting Case Study

The third case is from a broadcasting company focusing on providing environmental news. Established in 2014, the company is under PT Media Lintas Inti Nusantara's auspices, the Jakarta 68-H Radio News Agency's originator. Its vision and mission are to provide information on environmental issues, especially in the Riau Province area. It is expected that their presence can be an educational reference, suppresses environmental destruction, control law enforcement related to ecological problems, and oversee corporations in conducting business to be pro-environment.

As a news portal concerning information on the environmental issues, the company has responded positively to the government because its efforts are in line with the Pekanbaru development concept that promotes a green city, green economy, green technology,

and a sustainable environment. Some broadcast programs available include Mahogany, Gaharu Kita, Green Community. Mahogany is a 60-minute talk show, held every Monday, Tuesday, Wednesday 15.00-16.00 and this program is the result of collaboration with the Riau Forest Rescue Network (Jikalahari), The Indonesian Forum for Environment (WALHI), Greenpeace Indonesia, and the World Wide Fund for Nature (WWF). The resource persons who filled this program were volunteers who were members of the community. The Gaharu Kita is a talk show raising various ideas to create environmentally friendly spaces, both home and city spaces. The program generally presents resource persons from government agencies and entrepreneurs who have concern for environmental problems. Meanwhile, the Green Community is a talk show that introduces environmental activists' community to tell the program or activity they are running. This is a promotional event inviting the public to take part in environmental preservation through the existing community.

Rumbio Jaya Steel Case Study

The last company is from an agricultural equipment manufacturer located in Kampar Regency, Riau Province, Indonesia. Since the establishment in 1951, Rumbio Jaya Steel has won many awards as a producer of agricultural equipment. This achievement places the company ranked third nationally in the industry. Even though it has been more than a half-century, modernization in the new company began in 2013. The factory layout, which was initially not well organized, began to be arranged. Building capacity was also enlarged. Production equipment that was initially used; traditional equipment, is updated with more modern devices such as automatic cutting machines, grinders, wind blowers, forging machines, and air hummer, all from government grants.

In performing the operations, the company is assisted by 200 employees, and they are paid based on a piece-rate system. Rumbio Jaya Steel utilizes scrap metal as raw material obtained from collectors and workshop owners around Riau province, precisely using car parts to make agricultural equipment products. The production stage begins with selecting raw materials in scrap metal, cutting with a cutting wheel machine, pattern making, plating, and finishing. The company can process monthly between 2-3 tons of scrap metal into

various forms of agricultural tools such as dodos, axes, machetes, hoes, distributed to individual customers, corporations (state-owned), and private plantation companies.

Summary through Cross-Case Analysis

From the descriptive analysis in the previous section, it is found that the CBM economy's business value-added varied according to the characteristics of the companies and industries. CBM value added consists of cost-cutting, revenue generation, and risk reduction. In this study, business value-added of CBM was obtained in the context of cost reduction and revenue generation, see table 2, which will be discussed below.

The first theme of business value-added from CBM is the opportunity to cut costs. In the first case study, straws from reusable stainless are the first point in operational cost savings. The room design model that carries the concept of urban farming also contributes to reducing energy consumption. The utilization of juice and fruit juice pulp into a new product variant makes waste management fewer costs. On the other hand, Siret Pekanbaru obtains operational cost-cutting from a cooperation network developed with the government and the private sector to promote their products through exhibitions facilitated by the agency more easily. The local government has also made Siret Pekanbaru a role model that has successfully processed waste into high-value handicraft products. It is not uncommon for companies to be trusted as government consultants in promoting eco-friendly creative businesses, especially in Riau. Similar findings were confirmed within Radio Broadcasting and Rumbio Jaya Steel. However, the two companies' operational cost reduction emerged from negating the physical building and production machinery since the government directly covered these through grants.

In addition to operational costs, this study also confirms the reduction of production costs in CBM. Green Smoothie Factory accesses this by reusing reusable juice bottles. Consumers are also allowed to bring their packaging when shopping. They have the opportunity to receive points in the form of loyalty cards that function as coupons to get discounts and even exchange for new products. However, the eco-friendly customer policy adopted by the company can reduce production costs through packaging.

Table 2. Summary of the finding across the company case study

Case study	CBM Practice	Economic/Business Value Added Obtained	
		Cost Reduction	Additional Revenue Generation
Green Smoothie Factory	Reduce and reuse	Reusable straws and packaging bottles; Room design with natural lighting and cooling systems; Reduction in the cost of processing fruit/vegetable pulp;	Processing of fruit and vegetable pulp into new product variants;
Siret Pekanbaru	Reuse	The use of waste tire used as raw material for the production process; Elimination of costs for procurement/maintenance of hand-made production machines; Participation of the government and the private sector (NGOs) in promoting and developing recycled products;	Opportunity to become a speaker (role model) for government representatives in training activities and management of creative industries, especially recycling;
Radio Broadcasting	Reduce	Ease of access to news from a network of cooperation with NGOs (Jikalahari, WWF, Walhi, Green Peace);	Government and the private assistance for community empowerment activities and projects;
Rumbio Jaya Steel	Reuse	Elimination of building costs and procurement of production machinery; The use of scrap metal as a raw material; Participation of government agencies in promoting recycled products	Business development funds and employee training by the government, and local NGOs;

On the other hand, Siret Pekanbaru and Rumbio Jaya Steel get a cut in production costs by using used products as raw materials in the production process. The policy of prioritizing employee creativity (hand-made) in the production system at Siret Pekanbaru also allows them to cut costs in procurement and machinery maintenance. Likewise, with the Rumbio Jaya Steel remuneration model which implements a piece-rate system in addition to making working time more flexible, on the other hand, it can reduce labour costs. However, from all the existing case studies, cost-cutting comes in different models. As a media company, Radio Broadcasting's success in building partnerships with the government and private sector (NGOs) enables them to quickly get access to information (as their core business) related to environmental issues in the Riau region in particular.

Finally, additional revenue is the added value of the CBM economy, confirmed by this study. Three case study companies, Siret Pekanbaru, Radio Broadcasting, and Rumbio Jaya Steel, similarly illustrate this. The use of raw materials in the form of tires and scrap metal

in the Siret Pekanbaru and Rumbio Jaya Steel has received a good response from the government because it considered helping reduce the spread of waste improve the community's economy. This condition then allows the company to receive additional business capital funding and attend training and systematic development. On the other hand, radio broadcasting has the advantage of managing educational programs and environmental groups in Riau. Meanwhile, new revenue generation in the Green Smoothie Factory case study company is obtained from processing pulp and fruit into new product variants.

Propositions for Business Value-Added of CBM

Based on the results of the within-case and cross-case analysis conducted above, the two researchers generalized by developing prepositions. This is one of the objectives of a qualitative multiple case study. The prepositions built are obtained from the company's perspective within the three industrial sectors which are food and beverage, manufacture, and broadcasting.

Preposition 1: External party participation in CBM is proven to help increase value-added and competitiveness

Long-term sustainability is a challenging condition for companies currently, and this is considered to be possible to build by involving externals in company activities. From the analysis results of all cases, the value-added creation process is encouraged and much helped by customer involvement in company activities. This involvement does not necessarily mean that they have to be involved in company management, but become significant partners in helping companies gain access to support market expansion and product distribution.

Preposition 2: CBM implementation provides opportunities to gain business value-added through non-core activities

Business operations were carried out by optimizing each resource (input) as it is expected to produce value (output). This value is a source of income for the company and generally comes and is generated through the main activity (core activity). However, the results of this case study analysis underline the acceptance or business value-added through non-core activities inherent in the company, and their position has a substantial role for the company's sustainability (Knecht, 2014).

Managerial Implication

This study indicates that environmentally friendly business practices based on a circular business model provide vast opportunities for companies to obtain added business value. The added value is not only in terms of acceptance but also in building a positive image. The business practices carried out are more pro-environmental and social by reducing waste and expanding cooperation with its external parties.

CONCLUSION AND RECOMMENDATIONS

Conclusion

This research was conducted using SMEs as a case study to analyze how CBM adoption provides

business value-added for the company. Two case study companies came from the manufacturing industry, one from the food and beverage sector, and the last one from the service sector. The results of the exploratory study conducted show that CBM provides added value to companies through several streams. Through an eco-friendly customer policy that invites customers to re-store packaging bottles, the circular business model helps the company internally cut production costs and customers in discounts. The compression of used materials for production at Siret and Rumbio provides ample opportunity to obtain additional funds for business management, and a promotional forum supplied by external parties. As for radio broadcasting, the value network built could offer various facilities to access the news, which supported its core business as a broadcasting media company. Finally, although previous studies have confirmed that the economic value added of CBM is dominated by recycling activities (Ranta et al. 2018), this study demonstrates that both recycling and reusing both have a dominant opportunity in creating value-added business for companies. Hence, this indicates that the value creation of CBM is vast and can occur in both manufacturing and service companies. Therefore, this research is inseparable from a limitation. Although the analysis used in this study quantifies the findings difficult, this research is highly likely to describe the current situation's facts.

Recommendations

In academic studies such as research, it is a commonplace for researchers to provide recommendations based on the investigations' results. Likewise, this study provides academic and practical recommendations. From a theoretical perspective, this study was conducted using an inductive paradigm that aims to develop a theory related to its circular business model. Approaches and analysis results that use inductive detection through case studies make this study's findings quite valid in explaining the phenomena raised. However, on the other hand, it is narrow in generalizing the findings. Therefore, further investigation using a survey approach so that generalizations can be developed. From a practical point of view, this study's findings suggest that managers or business actors seek to transform their business from a traditional approach to a more environmentally friendly and profitable company to build positive impressions to external parties.

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REFERENCES

- Alamerew YA, Brissaud D. 2019. Circular economy assessment tool for end of life product recovery strategies. *Journal of Remanufacturing* 9(3): 169–185. <https://doi.org/10.1007/s13243-018-0064-8>.
- Allwood J. 2014 Squaring the Circular Economy: The Role of Recycling within a Hierarchy of Material Management Strategies, in *Squaring the Circular Economy: The Role of Recycling within a Hierarchy of Material Management Strategies*. Boston: Elsevier. <https://doi.org/10.1016/B978-0-12-396459-5.00030-1>.
- Bakker C et al. 2014. Products that go round: exploring product life extension through design. *Journal of Cleaner Production* 69(2): 42–56. <https://doi.org/10.1016/j.jclepro.2014.01.028>.
- Barquet AP et al. 2016. Sustainability Factors for PSS Business Models. In: *Procedia CIRP*, pp. 436–441. <https://doi.org/10.1016/j.procir.2016.03.021>.
- Barratt M, Choi TY, Li M. 2011. Qualitative case studies in operations management: Trends, research outcomes, and future research implications. *Journal of Operations Management* 29(4): 329–342. <https://doi.org/10.1016/j.jom.2010.06.002>.
- Bocken NMP et al. 2014. A literature and practice review to develop sustainable business model archetypes. *Journal of Cleaner Production* 65(2): 42–56. <https://doi.org/10.1016/j.jclepro.2013.11.039>.
- Clauss T. 2016. Measuring business model innovation: conceptualization, scale development, and proof of performance. *R and D Management* 47(3): 385–403. <https://doi.org/10.1111/radm.12186>.
- Eisenhardt KM. 1991. Better stories and better constructs: The case for rigor and comparative logic. *Academy of Management Review* 16(3): 620–627. <https://doi.org/10.5465/amr.1991.4279496>.
- Ellen MacArthur Foundation. 2016. *Intelligent Assets: Unlocking the circular economy potential*. Available at: <https://www.ellenmacarthurfoundation.org/publications/intelligent-assets>.
- Esposito M, Tse T, Soufani K. 2018. Introducing a circular economy: New thinking with new managerial and policy implications. *California Management Review* 60(3): 1–15. <https://doi.org/10.1177/0008125618764691>.
- 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* 127(2): 11–32. <https://doi.org/10.1016/j.jclepro.2015.09.007>.
- Kirchherr J, Reike D, Hekkert M. 2017. Conceptualizing the circular economy: An analysis of 114 definitions. *Resources, Conservation and Recycling* 127(12): 221–232. <https://doi.org/10.1016/j.resconrec.2017.09.005>.
- Kraaijenhagen C, Oppen C, Bocken N. 2016. *Circular business: Collaborate and circulate*. Circular Collaboration, Amersfoort.
- Lee CKM, Lam JSL. 2012. Managing reverse logistics to enhance sustainability of industrial marketing. *Industrial Marketing Management* 41(4): 589–598. <https://doi.org/10.1016/j.indmarman.2012.04.006>.
- Lewandowski M. 2016. Designing the business models for circular economy-Towards the conceptual framework. *Sustainability* 8(1): 1–28. <https://doi.org/10.3390/su8010043>.
- Li X, Olorunniwo F. 2008. An exploration of reverse logistics practices in three companies. *Supply Chain Management* 13(5): 381–386. <https://doi.org/10.1108/13598540810894979>.
- Lieder M, Rashid A. 2016. Towards circular economy implementation: A comprehensive review in context of manufacturing industry. *Journal of Cleaner Production* 115(3): 36–51. <https://doi.org/10.1016/j.jclepro.2015.12.042>.
- Miles MB, Huberman AM, Johnny S. 2014. *Qualitative Data Analysis: A Methods Sourcebook*. 3rd ed. SAGE Publication.
- Ranta V, Aarikka-Stenroos L, Mäkinen SJ. 2018. Creating Value in the Circular Economy: A Structured Multiple-Case Analysis of Business Models. *Journal of Cleaner Production* 201(11): 988–1000. <https://doi.org/10.1016/j.jclepro.2018.08.072>.
- Rizos V et al. 2016. Implementation of circular economy business models by small and medium-sized enterprises (SMEs): Barriers and

- enablers. *Sustainability* 8(11): 1-18. <https://doi.org/10.3390/su8111212>.
- Voss C, Johnson M, Godsell J. 2015. Revisiting case research in Operations Management, in *EurOMA 2015*. Neuchatel, Switzerland, pp. 1–10.
- Weissbrod I, Bocken NMP. 2017. Developing sustainable business experimentation capability - A case study. *Journal of Cleaner Production* 142(1): 2663–2676. <https://doi.org/10.1016/j.jclepro.2016.11.009>.
- Yang QZ, Zhou J, Xu K. 2014. A 3R Implementation Framework to Enable Circular Consumption in Community. *International Journal of Environmental Science and Development* 5(2): 217–222. <https://doi.org/10.7763/IJESD.2014.V5.481>.
- Yin RK. 2014 *Case Study Research and Applications: Design and Methods*. 5th edn. Thousand Oaks, CA: Sage.
- Yin RK. 2016. *Qualitative research from start to finish*. New York: The Guilford Publication, Inc.
- Yuichi M, Seiji H. 2016. Material Flow Analysis and Waste Management', in *Clift R., Druckman A. (eds) Taking Stock of Industrial Ecology*. Springer, pp. 247–262. https://doi.org/10.1007/978-3-319-20571-7_12.
- Zaoual AR, Lecocq X. 2018. Orchestrating circularity within industrial ecosystems: lessons from iconic cases in three different countries. *California Management Review* 60(3): 1–24. <https://doi.org/10.1177/0008125617752693>.