

Are we ready for circular business models?

An investigation of firms and consumers' attitudes towards footwear eco-leasing

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Extended abstract

The apparel and footwear industries generated between 5% and 10% of global pollution impact in 2016, with the footwear sector alone accounting for approximately one-fifth of this impact (Quantis, 2018). The production of footwear causes major concerns in relation to water consumption, carbon emissions, resource depletion and the disposal of an ever-increasing amount of post-consumer (end-of-life) shoe waste (Joy et al., 2012; Lee and Rahimifard, 2012). Although recycling is generally regarded as the most suitable approach to deal with discarded shoes, it is estimated that globally only 5% of the 20 billion pairs of shoes that are thrown away each year are to some extent recycled, while most of the remaining 95% end up in landfill (Staikos and Rahimifard, 2007). The main reason for this is that shoes are often made of multiple materials – such as rubber, leather, polymers and textile – whose separation is technically difficult and financially unappealing due to the relatively low economic value that can be regained through recycling (Lee and Rahimifard, 2012).

New business models that focus on selling a product's usage and performance instead of the product itself – also referred to as product-service systems (PSS) – have been championed as a promising strategy to decouple economic growth and material consumption, thereby paving the way for a circular economy (Laumann

Kjaer et al., 2018; Romero and Rossi, 2017; Yang et al., 2018). In particular, eco-leasing – the long-term rental of a product that, once the end of its useful life is reached, undergoes a combination of remanufacturing and recycling processes to become a source of secondary raw materials for the production of new goods (McDonough and Braungart, 2002) – is a PSS-type of business models that could help close the loop between post-use waste and footwear production. One of the few examples of a subscription-based eco-leasing service for children shoes is ‘Endless’, developed by Belgian product design studio Edmire (Edmire, 2019); whereas Nike has a ‘reuse-a-shoe program’ in place to collect used trainers and recycle them to produce new pairs of athletic shoes (Nike, 2019).

Despite the potential of PSS like eco-leasing to drive the transition to a circular economy, their wider implementation and diffusion remains limited (Vezzoli et al., 2015). While some success stories exist of the application of the product lease concept to valuable items such as cars and electronics, the possibility to apply it to fast-moving consumer goods like shoes has not drawn as much attention yet (Li and Xu, 2015; Tukker, 2015). As a result, it is not known to what extent firms in the footwear industry are familiar with circular business models based on PSS. Moreover, PSS often have low acceptance and adoption rates among both companies and consumers (Camacho-Otero et al., 2018; Catulli, 2012; Cherry and Pidgeon, 2018; Piscicelli et al., 2015). There is, however, a dearth of research on firm and consumer attitudes towards eco-leasing in the context of footwear.

This study aims to fill these knowledge gaps by answering the research question: *“How do manufacturers and consumers from the Italian footwear sector perceive the opportunity to implement circular business models based on eco-leasing?”* We combined qualitative and quantitative methods in a mixed methods study (Creswell and Plano Clark, 2011) to (i) assess firms’ awareness of the concepts of circular economy, PSS and eco-leasing; (ii) uncover the benefits and barriers associated to eco-leasing by firms and prospective customers; and (iii) identify the personal characteristics and key factors that determine a positive attitude towards eco-leasing among end consumers.

First, 13 in-depth interviews were conducted with professionals of the Italian footwear industry working for different shoe manufacturing firms (including micro-enterprises, SMEs and multinational companies). The interviews, which lasted on average 60-75 minutes, were transcribed and analysed using content analysis (Neuendorf, 2017). Second, a survey questionnaire was developed and sent (between August and September 2018) to a convenience sample of

prospective end consumers of footwear eco-leasing. The questionnaire was filled in by 378 respondents and analysed by using graphics analysis and two ordered logistic regressions (Winship and Mare, 1984).

The interview analysis revealed that professionals of the Italian footwear sector are somewhat familiar with the concept of circular economy, while only two interviewees had previously heard of PSS, and none of the 13 professionals interviewed was able to correctly define eco-leasing. The main advantages of implementing eco-leasing mentioned by the interviewees were the opportunity to establish stronger relationships with business partners and suppliers, establish a dynamic organisational culture, and increase customers' loyalty by distinguishing themselves from competitors. The main obstacles identified by the interviewees were the difficulty to build and manage supply chain partnerships, the need to accurately calculate the environmental impacts of eco-leasing, the development of reverse supply chains to manage the return flow of used shoes, the higher manufacturing costs and the lack of financial incentives offered by governments.

From the perspective of the end consumers, the main perceived benefits of eco-leasing were the possibility to wear footwear made of safe and healthy (recycled) materials, make use of the maintenance and repair services offered by shoe manufacturers, avoid the accumulation of old footwear in their households, and the desire to consume more responsibly and protect the environment. On the contrary, respondents raised concerns about paying in instalments and a loss of control. Moreover, they felt eco-leasing was not appropriate for them and questioned its suitability for everyday clothing and footwear.

The ordered logistic regressions also allowed us to identify the factors that influence consumer attitudes towards eco-leasing. The analysis revealed that male and older responders tended to be less interested in eco-leasing; while the explanatory variables that were more strongly related to a positive evaluation of eco-leasing were 'self-concept' (i.e. the wish to take care for the environment and being regarded as an innovative, open-minded individual) and 'emotions' (i.e. the possibility to satisfy a desire for change without feeling guilty about buying a new pair of shoes). 'Self-concept' was also the strongest predicting variable for a negative evaluation of eco-leasing. Finally, respondents who declared to buy more pairs of shoes per year were less likely to be interested in eco-leasing.

The results of this study provide novel insights into the adoption and acceptance of circular business models based on eco-leasing by firms and consumers. While

PSS appear to be in principle applicable to fast-moving consumer goods like footwear, consumers seem to prefer paying for their shoes in a single transaction (rather than instalments) and might not consider eco-leasing as a suitable solution for them. Furthermore, the barriers identified by Italian shoe manufacturers and the little perceived benefits of implementing eco-leasing indicate a still limited appetite of the shoe sector for innovative business models for closed-loop production systems.

These findings extend extant knowledge on PSS-based circular business models. When the interviewees were asked to reflect upon the potential opportunities that Italian shoe manufacturers could seize by implementing eco-leasing, most of the potential drivers that were mentioned had already been identified by previous studies on PSS. One aspect, namely the opportunity for front-runners to create stronger relationships with their key partners, however, has not been highlighted by existing literature. Since developing PSS often requires multiple companies to work together no matter which type of PSS and industry are considered, the opportunity for firms to increase their competitiveness and resilience by relying on a 'community effect' can be regarded as a first contribution of this study to the general knowledge on circular PSS.

In some cases, the insights collected through the interviews on the potential drivers and barriers to eco-leasing from a firm's perspective were in conflict with the findings of previous studies on the implementation of PSS by manufacturing companies. While PSS are generally thought to possess a lower intangible value compared to traditional goods due to their perceived inconvenience (Tukker, 2015), most interviewees regarded the high intrinsic value that many end consumers could associate to eco-leasing (e.g. an innovative and sustainable option) as one of the main opportunities that shoe firms could seize. It is difficult, however, to generalise this finding to other types of PSS and product categories given that not all goods are regarded by people as suitable as shoes to express their identity.

Finally, while scholars have usually looked at the possibility to collect larger volumes of feedback from end consumers as one of the main opportunities that front-runners could achieve by implementing PSS (Baines et al., 2017), most interviewees regarded processing ever-increasing amounts of data more as a hassle than a potential benefit. This finding calls for further research on the organisational capabilities required to reap the benefit of big data and harness the promises of a data-driven circular economy.

Keywords

Product-service systems (PSS), eco-leasing, footwear, circular economy

References

- Baines, T., Ziaee Bigdeli, A., Bustinza, O. F., Shi, V. G., Baldwin, J., & Ridgway, K. (2017) Servitization: revisiting the state-of-the-art and research priorities. *International Journal of Operations & Production Management*, 37(2), 256-278.
- Camacho-Otero, J., Boks, C. & Pettersen, I. N. (2017) Consumption in the Circular Economy: A Literature Review. *Sustainability*, 10(8), 2758.
- Catulli, M. (2012) What uncertainty? Further insight into why consumers might be distrustful of product service systems. *Journal of Manufacturing Technology Management*, 23(6), 780-793.
- Cherry, C. E. & Pidgeon, N. F. (2018) Why Is Ownership an Issue? Exploring Factors That Determine Public Acceptance of Product-Service Systems. *Sustainability*, 10, 2289.
- Creswell, J. W., & Clark, V. L. P. (2017) *Designing and conducting mixed methods research*. London, Sage Publications.
- Edmire (2019) *Endless shoes, a circular model*. Available from: <https://edmire.design/endless> [Accessed 16th May 2019].
- Joy, A., Sherry Jr, J. F., Venkatesh, A., Wang, J., & Chan, R. (2012) Fast fashion, sustainability, and the ethical appeal of luxury brands. *Fashion Theory*, 16(3), 273-295.
- Laumann Kjaer, L., Pigosso, D. C. A., Niero, M., Bech, N. & McAloone, T. C. (2018) Product/Service-Systems for a Circular Economy: The Route to Decoupling Economic Growth from Resource Consumption? *Journal of Industrial Ecology*.
- Lee, M. J., & Rahimifard, S. (2012) An air-based automated material recycling system for postconsumer footwear products. *Resources, Conservation and Recycling*, 69, 90-99.
- Li, K. J., & Xu, S. H. (2015) The comparison between trade-in and leasing of a product with technology innovations. *Omega*, 54, 134-146.
- McDonough, W. & Braungart, M. (2002) *Cradle to cradle: Remaking the way we make things*. New York, North point press.
- Neuendorf, K. A. (2017) *The Content Analysis Guidebook*. London, Sage Publications.
- Nike (2019) *What is Nike's reuse-a-shoe program?* Available from: <https://www.nike.com/help/a/recycle-shoes> [Accessed 16th May 2019].

- Piscicelli, L., Cooper, T., & Fisher, T. (2015) The role of values in collaborative consumption: Insights from a product-service system for lending and borrowing in the UK. *Journal of Cleaner Production*, 97, 21-29.
- Quantis (2018) *Measuring Fashion: Insights from the Environmental Impact of the Global Apparel and Footwear Industries study*. Available from: <https://quantis-intl.com/measuring-fashion-report-2018/> [Accessed 30th January 2019].
- Romero, D. & Rossi, M. (2017) Towards circular lean product-service systems. *Procedia CIRP*, 64, 13-18.
- Staikos, T., & Rahimifard, S. (2007) A decision-making model for waste management in the footwear industry. *International Journal of Production Research*, 45(18-19), 4403-4422.
- Tukker, A. (2015) Product services for a resource-efficient and circular economy – a review. *Journal of Cleaner Production*, 97, 76-91.
- Vezzoli, C., Ceschin, F., Diehl, J. C., & Kohtala, C. (2015) New design challenges to widely implement 'Sustainable Product Service Systems'. *Journal of Cleaner Production*, 97, 1-12.
- Winship, C., & Mare, R. D. (1984) Regression models with ordinal variables. *American Sociological Review*, 49(4), 512-525.
- Yang, M., Smart, P., Kumar, M., Jolly, M. & Evans, S. (2018) Product-service systems business models for circular supply chains. *Production Planning & Control*, 29(6), 498-508.