

# Unveiling the Potential of Frugal and Circular-Oriented Innovation for a Sustainable Future: A New Perspective

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The European Commission (2015) published action plan to foster activities towards a circular economy. The Independent Group of Scientists appointed by the Secretary-General (2023) highlighted that the current status in achieving the SDGs is not as planned and that a shift is needed.

This paper analyses the customer acceptance of frugal innovations vs conventional innovations in industrialised nations, in this case, Germany. Furthermore, it analyses the interplay between ecological sustainability and frugality in innovation. The research is of a quantitative nature and in the form of an experimental study. Participants of the online survey had to rate (randomised experiment) and, in a later part, rank four different stimuli (conjoint analysis). The stimuli had two characteristics:

- Frugality
  - Frugal
  - Conventional
- Ecological Sustainability
  - Ecologically sustainable
  - Not ecologically sustainable

The stimulus was a washing machine. Following Weyrauch and Herstatt (2016), *frugality* is characterised by a lower price, a longer lifetime, and only five washing programs. A conventional stimulus is characterised by a higher price, a shorter lifetime, and 21 washing programs. A higher energy efficiency class and an EU Ecolabel characterise *ecological sustainability*. Innovations with the EU Ecolabel have characteristics of circular-oriented innovations. Brown, Bocken, and Balkenende (2019) define circular-oriented innovation (COI) “[...] as the coordinated activities that integrate CE goals, principles, and recovery strategies into technical and market-based innovations, such that the circular products and services that are brought to market purposively maintain product integrity and value capture potential across the full life-cycle.”

The paper's results show that frugal innovations can be a relevant innovation strategy to address the needs of niches like older and young people. This supports the findings of Tiwari and Kalogerakis; Costa, Teixeira, and Brochado (2021; 2021). Combining the

concepts of frugal and circular-oriented innovations seems to be the best strategy for addressing the whole market in the household sector in industrialised nations like Germany as a frugal, ecologically sustainable innovation.

Among others, the results of this research are taught at the Hamburg University of Technology in the Sustainable Innovation Management course to equip master students with the knowledge needed to drive sustainability projects in their future careers.

## References

Brown, Phil, Nancy Bocken, and Ruud Balkenende. 2019. "Why Do Companies Pursue Collaborative Circular Oriented Innovation?" *Sustainability* 11 (3): 635.

Costa, Leonor, Aurora Teixeira, and Ana Brochado. 2021. "Determinants of Consumers' Frugal Innovation Acceptance in a Developed Country." *Young Consumers* 22 (2): 185-201.

European Commission. 2015. "Closing the Loop - an EU Action Plan for the Circular Economy."

[https://eur-lex.europa.eu/resource.html?uri=cellar:8a8ef5e8-99a0-11e5-b3b7-01aa75ed71a1.0012.02/DOC\\_1&format=PDF](https://eur-lex.europa.eu/resource.html?uri=cellar:8a8ef5e8-99a0-11e5-b3b7-01aa75ed71a1.0012.02/DOC_1&format=PDF). Accessed May 07, 2024.

Independent Group of Scientists appointed by the Secretary-General. 2023. "Global Sustainable Development Report 2023: Times of Crisis, Times of Change: Science for Accelerating Transformations to Sustainable Development."

Tiwari, Rajnish, and Katharina Kalogerakis. 2021. "What Drives Frugal Innovation in an Economically Developed Economy." *Frugal Innovation: A Global Research Companion*.

Weyrauch, Timo, and Cornelius Herstatt. 2016. "What Is Frugal Innovation? Three Defining Criteria." *J Frugal Innov* 2 (1). doi:10.1186/s40669-016-0005-y.