

Frugal Innovation Beyond its Surface

The relevance of context for understanding the concept and its relation to sustainability

Abstract

Taking a deeper dive into the exploration of frugal innovation than what is found in current discourse, this article-based PhD thesis contributes to existing literature by emphasizing and operationalizing the relevance of contextual considerations for the study of frugal innovation, thereby advancing previous research that has noted the influence of context in the understanding of frugality in innovation. The work proposes two analytical frameworks that make this relevance operational by explicitly including the context as a criterion for the identification of frugal innovation and for the assessment of its relation to sustainability. This PhD thesis also makes a methodological contribution by exploring various techniques for qualitative inquiry and using them to gather and analyze primary and secondary data. In particular, the use of mind maps for qualitative data analysis in multiple-case study research makes a genuine contribution to knowledge by proposing a distinct way for accessing and analyzing qualitative data.

Innovation has tended to be viewed as inherently positive. However, its double-edged potential to either address or (also) induce or worsen societal challenges is being increasingly recognized. There is a growing interest in academia, policymaking, and practice in alternative types of innovation that are environmentally and socially sound. Given its core aim of providing affordable, simple, and good performing solutions for un(der)served users in resource-constrained environments, frugal innovation has been proposed as one of these new types of innovation and has garnered increasing attention over the past two decades.

While frugal products, services, processes, and business models do have the potential to contribute to sustainable development, as demonstrated by an increasing amount of empirical evidence, this PhD research is positioned within the growing set of literature that indicates that frugal innovations are not inherently sustainable. Frugal innovations may have both a positive and a negative influence on the social, environmental, and economic dimensions, and may inadequately address, or even (unintendedly) worsen, the root causes of socio-developmental challenges faced by communities in resource-scarce settings. Thus, this PhD thesis argues that an adequate consideration of local contextual conditions is essential in assessing frugal innovation to make it more responsive and appropriate for its intended users and their lived reality. The knowledge generated in this thesis is relevant because, while frugal innovation literature has experienced an upsurge in the past few years, the existing frugal innovation scholarship is predominantly focused on technological and innovation aspects of products, paying very little attention to contextual issues.

Chapter 2 unpacks the relative and contextual character of frugal innovation and proposes a framework to operationalize the qualitative identification of frugal innovation cases. Its point of departure is the recognition that extant case-based research in frugal innovation often lacks a detailed account of how the main features that characterize frugal innovation are being used in practice to claim that an innovation is frugal. It also shows that frugal innovation has a relative character that has

thus far remained largely implicit, with researchers often tacitly using the features of an incumbent product or service as the yardstick against which they appraise the attributes that make an innovation frugal. The framework proposed in this thesis incorporates a local mainstream benchmark in the context the innovation is meant for, making the relativeness of frugal innovation explicit and operational, and recognizing that the way in which a certain case resembles frugal innovation features will be a matter of degrees instead of an absolute.

Chapter 3 provides a more nuanced understanding of the various characteristics that typify a frugal innovation by conducting an in-depth study of five social enterprises in Colombia that have an innovation exhibiting frugal characteristics. The findings demonstrate that the affordability and cost minimization of a frugal innovation are not only related to extremely low prices, as was implied in the early literature. Similarly, the exploration of social enterprises reveals that a deep understanding of user needs, and the incorporation of user feedback are important elements of the frugal innovation process, reaffirming the contrast with the prevailing logic in conventional innovation theory. This work calls for the addition of a user-oriented and socio-cultural perspective in frugal innovation research and practice. It shows that the relevance of context needs to go beyond the technical and economic fit of the innovation with the local conditions, and should incorporate an appropriate sensitivity for the life experiences and lived realities of the intended users. Given its focus of analysis, this chapter makes an empirical contribution to both frugal innovation and social enterprise discourse by introducing new cases from Latin America, a region which is comparatively underrepresented in both of these sets of academic literature.

The next two chapters of this thesis investigate the complex relation between frugal innovation and sustainability in order to understand the ways in which said relation can be identified and assessed. The findings confirm that an improved understanding of the connections between sustainability and frugal innovation requires considering the entire innovation cycle, as earlier works have suggested. After reviewing the propositions and limitations of existing literature, this PhD work uncovers a prevailing limitation in current frugal innovation discourse: authors are loosely mixing short-term evidence with longer-term effects and moving into conclusions about positive outcomes and impacts of frugal innovation on sustainability without a careful consideration of all the complexities underlying the achievement of sustainability in the short, medium, and long term. Implementing an abductive reasoning approach that builds on the empirical evidence provided by the social enterprise cases, this PhD thesis proposes a framework for studying the sustainability of frugal innovation along the entire innovation cycle, at the levels of mindset, output, outcome, and impact. It suggests that the sustainability of a frugal innovation can be better assessed by the adapted and context-specific generation of indicators, given the features of frugal innovation and the variety of participating actors. Finally, chapter 6 concludes by presenting a synthesis of the content and implications of this PhD research.

The thesis is a compilation of single-authored and co-authored articles at various stages of publication. Chapter 2 is a single-authored work that has been published in the *International Journal of Innovation Science* (IJIS). Chapter 3 is also a single-authored work which is currently (i.e., May 2025) under minor revisions for a special issue of *Technological Forecasting and Social Change* (TFSC). Chapter 4 is a co-authored paper published in the *European Journal of Innovation Management* (EJIM). Chapter 5 is also a co-authored work that will be submitted for journal consideration.