

A systematic literature review and bibliometric analysis about Consumer Reactions to Sustainable Food Packaging

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EXTENDED ABSTRACT

The food industry significantly contributes to global environmental impact (Notarnicola et al., 2017) and packaging waste is a serious side-effect of consumption (Ketelsen et al., 2020). Consequently, food producers and retailers are forced to propose alternatives to conventional packaging (e.g., Steenis et al., 2017) focusing on more sustainable solutions.

The latter should at least satisfy 4 functions of packaging: (1) protection and preservation of food and beverages, (2) handling facilitation from production to final consumption, (3) communication and appeal for consumers’ choice, and (4) re-usability or recyclability in the post-consumption phase (Granato et al., 2022). This definition is aligned with the one provided by the Sustainable Packaging Coalition (SPC, 2011) which has been widely accepted by previous scholars (e.g., Magnier & Criè, 2015; Liem et al., 2022) as it embraces a broad view of the entire packaging life cycle, from production to disposal, allowing to understand various environmental attributes that would be otherwise unclear.

However, the heterogeneity of proposed solutions, usually signalled through visual cues (e.g., Rees et al., 2019), makes it unclear whether such strategies effectively represent suitable substitutes for conventional food packaging from the consumers’

standpoint, making it extremely hard to judge packaging performance (Liem et al., 2022; Granato et al., 2022; Steenis et al., 2017), thus leading to suboptimal choices. Previous literature about sustainable food packaging (e.g., Vila-Lopez and Küster-Boluda, 2020) is fragmented and provides conflicting results about consumers' understanding, knowledge and consequent perceptions. Indeed, while some authors report consumers' preference for food in eco-friendly packaging in terms of higher willingness to pay for it (e.g., Koenig-Lewis et al., 2014) or purchase intention (e.g., Prakash et al., 2017), others report neutral (Steenis et al., 2017) or even negative evaluations (e.g., Rees et al., 2019).

To the authors' knowledge, previous research on consumer evaluations of food in sustainable packaging is limited. Notable exceptions include Ketelsen et al. (2020), who examined consumer responses at different stages of their decision-making journey, and Branca et al. (2024), who reviewed literature on sustainable attributes and eco-friendly cues in packaging. However, no research has specifically explored how consumers evaluate food packaged sustainably to understand the reasons behind their positive or negative reactions. Therefore, this work aims to systematize extant literature conducting a domain-centered systematic review of 79 papers published in peer-reviewed journals from January 2020 to December 2023, adopting the SPAR-4-SLR Protocol complemented with a keyword co-occurrence network of bibliometric analysis. Furthermore, our study is complemented by a bibliometric analysis, which allowed to create a keywords co-occurrence map through the VOSViewer Software (van Eck & Waltman, 2014). This analysis identified four major clusters of research focus: *packaging innovation, packaging materials and circularity, environmental performance, and consumer evaluations*.

The findings reveal that the literature on sustainable packaging is highly fragmented, with conflicting results regarding consumer attitudes and behaviors. While some studies suggest that consumers are willing to pay more for products in eco-friendly packaging and have a higher purchase intention for such products, other studies report neutral or even negative consumer evaluations. This discrepancy highlights the complexity of consumer decision-making processes when it comes to sustainable packaging. Two distinct approaches to studying consumer perceptions of packaging have been identified in the literature: the *holistic* approach and the *analytical* approach. The holistic approach considers the overall impact of packaging on consumer perceptions and generally finds positive consumer reactions to sustainable packaging. However, this approach often lacks depth in understanding the specific factors driving these reactions. On the other hand, the analytical approach breaks down the impact of individual packaging features—such as structural design, graphic elements, verbal claims, and technology-enabled cues—on consumer perceptions. While researchers are already focusing more on the analytical approach to food packaging, we also recommend this approach for future studies as it also allowed to detect and classify drivers of negative consumers' reactions, which are briefly described below:

Skepticism Towards New Solutions: Consumers often express doubt about the effectiveness of sustainable packaging. For instance, despite interest in ecological wine packaging, assurance of quality was necessary for 62% of respondents to

consider purchasing it. Negative reactions also arise from concerns about the protection and preservation capabilities of new packaging.

Mismatch of Sustainability Cues: Consumers' evaluations can suffer when there is inconsistency between claimed sustainability and the actual appearance or performance of packaging. Discrepancies between sustainability claims and the environmental performance of packaging can lead to feelings of deception and impact perceived food quality.

Conflicting Information: Presenting multiple beneficial attributes, like sustainability and healthiness, simultaneously can dilute their positive effects. Studies show that combining eco-friendly and healthy signals can reduce their individual impact on consumer evaluations due to zero-sum biases.

Our analysis suggests that future research should focus on exploring consumers' understanding and perceptions of various sustainable packaging solutions, including circular materials, innovative packaging technologies, and technology-enabled cues. There is also a need for more research on the comparative effectiveness of different sustainable packaging strategies and how they influence consumer perceptions of food quality and safety. From a practical standpoint, the findings offer valuable guidance for food producers and retailers. To enhance consumer acceptance of sustainable packaging, it is important to provide clear and consistent information that helps consumers make informed decisions. Overloading packaging with multiple sustainable cues should be avoided, as it can lead to consumer confusion and negatively impact product evaluations. Policymakers also have a role to play in promoting consumer education on environmental issues related to packaging and the benefits of sustainable alternatives.