The impact of food labels on consumers' choices: the case of Eco-score and Nutri-score

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Abstract

A third of the environmental impact of European households is caused by the production and consumption of food, making it an important sector from an environmental standpoint (Guinée et al., 2006b; European Environment Agency, 2015). Reducing the environmental impacts of diets is therefore one of the key points to be addressed, even if persuading people to change their food choices is considered to be very challenging (Nestle et al., 1998). One of the possible approaches to encourage these changes is the "knowledge-deficit" approach, which assumes that people will be influenced by information that increase their awareness on the products they consider buying (Abrahamse, 2020). A change in the presentation of products, which incorporates information, can therefore influence consumers' choices without decreasing option or changing economic conditions (Sunstein and Thaler, 2008)." (Slapø e Karevold, 2019, p. 2). One possible way to present information in a simplified way is through labels, which are considered a type of nudge by some scholars as they "provide additional information at the point of choice" (Ölander and Thøgersen, 2014).
This study explores how environmental and health information on food products provided as labels (Eco-score and Nutri-score) affects consumer decision-making, with a particular focus on identifying which type of information-nutritional or environmental-holds greater sway over consumer choices. Understanding this distinction can shed light on the kinds of labels that may be most effective in guiding consumers toward healthier or more sustainable choices. Moreover, this study examines participants' willingness to engage with additional information about a product's score, by the means of a button that they can choose to click or not to get this additional information: when given the opportunity to explore further details, do consumers demonstrate a readiness to seek out and interpret this information, even if it requires additional effort? Lastly, the experiment probes whether a comprehensive indicator of the grocery total health or sustainability rating influences consumers to adjust their choices. This question explores if a simplified, overarching score might encourage shifts in behaviour, especially when there's a gap between consumers' perceptions of their choices and the actual score received.

To answer these questions, we ran a Basket Based Experiment in which participants were asked to choose 8 over 30 products they would typically buy and/or consume. The experimental consisted in four treatments: Treatment 1 in which participants only see basic product information (i.e., price per kilogram, quantity, and an image of the product); **Treatment 2** (eco-score treatment) where, besides the basic information, an Eco-score which rates each

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product's environmental impact was added; **Treatment 3** (Nutri-score treatment) is similar to treatment 2 but instead of the Eco-score, a Nutri-score reflecting the product's health impact was provided; **Treatment 4** included both Eco-score and Nutri-score labels allowing participants to evaluate both dimensions simultaneously.

The same set of products, anonymized and stylized, is shown across all treatments to control for brand bias. The product assortment was carefully curated to include equal representation across eco and nutri-score categories (from A to E) and a balanced number of items where either the eco-score or the nutri-score was higher. Products covered six categories- breakfast products, animal products, animal derivatives, sauces, legumes and their derivatives, and pasta and cereals-to cover a diverse range of food types. For each product, a button was available that revealed additional information about the features contributing to the product's score (based on the treatment) and participants were free to press it or not, with no cost involved other than their time and effort. The button aimed to replicate the action of seeking more in-depth information and further examining a simplified score.

In all but Treatment 1, after selecting their products, the average score relative to the products in their basket was shown to the participants . They were asked if they were satisfied, willing to change, and wanted to modify their choices. Those who opted to change could adjust their selections. At the end of each experimental session, participants completed a questionnaire aimed at gaining some relevant information

The experiment was designed to elicit authentic preferences through an incentive mechanism which consists in informing participants that they have a one-in-five chance of having their selected items delivered to their home (purchased from a supermarket's online store). Moreover, each subject received 5€ participation fee.

A Generalized Ordered Logistic Model was employed to examine factors influencing Eco-score and Nutri-score categories, with an incremental model evaluation approach to optimize fit, while an additional Ordered Logit Model ensured robustness; a t-test compared the mean scores, and pairwise correlation analysis explored relationships between information-seeking behaviour and score outcomes.

Our results confirm the efficacy of labels on consumer purchases. Indeed, participants exposed to eco- and nutri-score selected products with better scores compared to the control group, supporting previous research on the effectiveness of simplified labels in guiding consumer behaviour (Lehner et al., 2016; Slapø and Karevold, 2019; Thaler and Sunstein, 2008). The research hypothesis based on the higher weight assigned to nutritional information was partially confirmed by the results: even though both Nutri- and Eco-score significantly impacted purchasing decisions, Eco-score had a a stronger effect in baskets composition. The stronger influence of Eco-score may be attributed to consumers' greater familiarity with nutritional information, making the added value of Nutri-score less pronounced. The questionnaire findings support this, as participants reported regularly checking nutritional labels. In contrast, the environmental impact of food choices is less commonly considered, meaning that Eco-score provided novel and useful information.

Interestingly, participants exposed to Eco-score were more likely to express interest in seeing Nutri-score as well, but the reverse was not observed. This suggests that nutritional information is perceived as essential, while environmental information is viewed as supplementary. While participants acknowledged the link between environmental and personal health, this connection seemed less salient during grocery shopping, where immediate and controllable benefits to personal health are prioritized. The environmental impact of food choices, being more dependent on collective action, may feel less tangible, contributing to an intention-behaviour gap.

A key finding of the study was the role of the feedback mechanisms. Participants received an overall score evaluation for their basket and this feedback demonstrated a greater willingness in reconsidering their choices. In total, 43% of respondents revised their choices after

seeing their overall score. The highest rates of revision occurred in the Eco-score treatment, where 58% changed their choices. This reinforces the idea that consumers are less aware of the environmental impact of food choices and are more open to adjusting their behaviour when provided with relevant information. However, when both Nutri-score and Eco-score were displayed together, participants were less likely to revise their choices, likely due to information overload. Furthermore, when changes were made in Treatment 4, participants primarily improved their Nutri-score, strengthening the importance of nutritional aspects in consumer food purchasing.

Additional information seeking, on average, did not strongly correlate with better choices. The only exception is observed in Treatment 4 where both scores are presented. This suggests that seeking information does not always lead to healthier or more sustainable decisions.
Overall, this study demonstrates that simplified labels, particularly Eco-score, can effectively nudge consumers toward healthier and more sustainable food choices. However, it also highlights the complexity of consumer decision-making, the challenges of integrating environmental considerations into purchasing habits, and the need for further research on strategies to enhance the effectiveness of food labelling systems.

Keywords: food choice, experiment, labels