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Article

50 shades of green: Assessing sustainability labeling

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Marketing Review St.Gallen

The Role of Marketing
in the Green Economy



Schwerpunkt

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50 Shades of Green

Assessing Sustainability Labeling

Sustainability labeling is prevalent in personal care, a CHF 2 billion market. The authors develop four product archetypes based on the labeling, pricing, and ingredients of 2666 products: Quiet Premium, Claim Champions, Labeling Peacocks, and Humble Bargains. They derive five actionable suggestions to help managers position their products and optimize labeling strategies.

Dr. Charlotte Wolf, Prof. Dr. Sven Henkel, Prof. Dr. Franziska Krause

When visiting a drugstore and shopping for personal care products, you can easily get the impression that there are plenty of green and sustainable choices. On a body wash shelf, for example, you will find many front-of-package (FOP) claims and labels used to advertise specific product properties: “97% ingredients of natural origin”, “recycled packaging,” or “climate neutral.” Many products even carry labels awarded by third-party organizations that attest to extra environmental friendliness. Sustainability in the context of product claims can refer to, for example, recycling, biodegradability, naturalness, fair trade, and animal welfare (Grappe et al., 2022). Product packaging, especially FOP claims (Fajardo & Townsend, 2016), play an important role in consumers’ in-store buying decisions.

The personal care market in Switzerland has an annual turnover of CHF 2 billion (Schweizer Kosmetik- und Waschmittelverband, 2024). Major global players in the market, such as Procter & Gamble, which is represented in Geneva (L’Oréal, 2024), but also local Swiss manufacturers such as Coop Vitality, Mibelle, Rausch, (Dun & Braadestreet & Handelszeitung, 2022) and Weleda offer wide ranges of care products. Analysis of the authors’ dataset shows that the products of these companies alone carry an average of 3.79 sustainability claims and labels. The same is true for big EU players such as Beiersdorf or L’Oréal. A better labeling strategy is of great interest to these companies for at least two reasons: 1) Labeling that is understood and liked by customers may lead to increased sales, and 2) a simpler and more effective labeling strategy based on a small number of categories has the potential to reduce internal and external complexity and increase the lifecycle of the artwork.

Increasing consumer demand for green products, along with tightening regulations on claims and labels, such as the Green Claims Directive (European Commission, 2023), call for a closer look at how green claims are presented through FOP labeling. Chemical products, such as personal care products, are the most exported products in Switzerland (Bundesamt für Zoll und Grenzsicherheit, 2023b), with the European Union (EU) being among the most important importers (Bundesamt für Zoll und Grenzsicherheit, 2023a). The EU market for personal care products and its regulations are therefore crucial for Swiss manufacturers.

Previous research has examined how sustainability disclosures (Cho et al., 2017), such as labels (Cho & Berry, 2019), positively influence consumer product evaluation and choice. The use of green imagery has been shown to have a positive influence on product evaluation and purchase intention (Spack et al., 2012). This can potentially reduce environmental impact and promote more sustainable overall consumption (Barkemeyer et al., 2023; Potter et al., 2022). Rather than examining sustainability labels individually, the authors set out to examine the different com-



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positions of FOP labels that marketers use to represent greenness. They identified four product archetypes by analyzing a dataset of 2666 personal care products, their prices, ingredients, and FOP labels. As a second research objective, they assessed how consumers rate products of these different archetypes and found significant differences.

Theoretical Background

FOP Labeling

FOP claims and labels are written on the front of the product packaging to inform consumers about the product’s properties (Ton et al., 2023). Previous research has classified and examined several forms of FOP labeling that are apparent when a product is examined in the store. These claims may indicate product attributes such as ingredients (“with herbal essences”) or intended effects (“moisturizing”) (Rybak et al., 2021). Labels can be standardized indicators voluntarily adopted by manufacturers, such as the NutriScore (Werle et al., 2022). Other forms of FOP claims can point to specific forms of product performance (“long-lasting”) (Fowler et al., 2019), animal welfare (Grappe et al., 2021), or environmental benefits (Cousté et al., 2012; Grappe et al., 2022).

FOP labeling was shown to be an effective form of marketing: Consumers find claims more believable when they appear on the packaging of the product than when they are stated in an advertisement. This effect is due to the physical proximity of the product and the claim, which creates the impression of verifiability (Fajardo & Townsend, 2016). This factor is especially important for care products that remain in their packaging throughout the entire period of use, such as a shower gel. FOP labeling has positive effects on purchase intention (Rybak et al., 2021), willingness to pay (WTP) (Kim et al., 2022; Liaukonyte et al., 2013), and product evaluation (Ku & Chen, 2022).

Sustainability Claims

Previous research has shown that sustainability labeling can positively influence consumers' green purchasing behavior (Potter et al., 2022; Stillman et al., 2023). Consumers are more likely to purchase eco-labeled products, potentially reducing environmental impact and promoting overall sustainable consumption (Barkemeyer et al., 2023; Potter et al., 2022). The positive effects of sustainability labels have been particularly observed for healthy products (Cho & Baskin, 2018) and are stronger when the green claims are more specific (Ganz & Grimes, 2018). Interestingly, similar effects have been shown for naturalness claims, such as "100% natural origin" (Simão et al., 2022). Most surprisingly, research has shown that weak sustainability arguments are just as effective as strong ones – the mere presence of a green seal image positively influences purchase intention, regardless of the strength of the argument (Spack et al., 2012).

A plethora of studies has examined the effect of individual claims and labels on the attitudes and choices of consumers. However, so

far, no work has examined real-life data on the status quo of how manufacturers present green attributes at the POS, especially regarding the combination of different forms of labeling and actual product properties. This is essential to enhance our understanding of how the market is constituted and what strategies marketers are using to successfully market their sustainable products.

As a political actor, the German Federal Ministry for the Environment differentiates between three types of ecolabels: *Type I ecolabels* are voluntary, multi-criteria labels awarded by third-party organizations to products that meet predefined environmental standards and are intended to indicate exceptional environmental quality to private and commercial consumers. *Type II ecolabels* are self-declared environmental claims made by manufacturers or retailers without third-party certification, often focusing on a single environmental attribute of a product. *Type III ecolabels*, or environmental product declarations (EPDs), provide quantified environmental data based on life cycle assessments and are independently verified to facilitate data aggregation across the value chain (Federal Ministry for the Environment Nature Conservation and Nuclear Safety, Federation of German Industries, & German Environment Agency, 2019).

Given the managerial and societal importance of green FOP labeling, the authors seek to investigate the different ways in which personal care product manufacturers present greenness at the POS and how consumers respond to them. The methodology and data collection used to contextualize the overall product composition and image at the POS will be detailed in the following section.

Context and Methods

The authors obtained pictures and product data of 2666 products from the categories face (998 products), body (957), and hair (711) offered in one of the largest drugstores in German-speaking European countries. Drugstores are the main channel for the purchase of cosmetics and body care products (IKW, 2023). The data obtained includes the product identification number, the price, the category, the list of ingredients, a product picture, and the consumer rating.

The pictures of the product packages were then examined for their FOP labeling using content analysis (Carlson et al., 1993; Fowler et al., 2019). Content analysis is an exploratory tool that is used to create new theories or test existing ones (Cummins et al., 2014; Kolbe & Burnett, 1991). It is a well-established methodology in the study of packaging claims, especially in relation to sustainability, health, and cosmetic claims (Cummins et al., 2014; Fowler et al., 2019; Simão et al., 2022). The authors follow Fowler et al. (2019) in their approach to content analysis.

Management Summary

When examining the display of greenness and product price at the POS, personal care products can be classified into four archetypes: Quiet Premium, Claim Champions, Labeling Peacocks, and Humble Bargains. Advertising products as sustainable through claims and certifications seems to be common among mid-price products, while premium and budget products mostly avoid displaying greenness via the packaging. The four archetypes perform significantly differently in consumer ratings: Quiet Premium and Claim Champions, the two expensive clusters, perform the best, while Labeling Peacocks, which carry significantly more certification labels, perform the worst.

This consists of developing an initial typology from previous research, as described in Table 1.

All 2666 product pictures are manually coded to identify all instances of the four types of FOP claims and labels. The authors then analyzed the ingredient lists, also known as INCI (International Nomenclature of Cosmetic Ingredients) lists, and compared them to the locally enforced (in the EU) list of legally restricted ingredients (European Parliament & Council of the European Union, 2009). For each product, they determined the number of ingredients that may negatively affect health and the environment.

As a result of their analyses, the authors obtained an extensive and unique data set with information on the price of each product, the product category, the number of restricted ingredients as listed in the INCI list, the number of third-party labels on the FOP, the number of sustainability claims, the number of presence/absence claims, and the number of natural/artificial ingredient claims. Based on the dataset obtained from the previous analysis, the authors identified six variables for the subsequent cluster analysis, starting with the four claim types as defined in Table 1. In addition, the number of restricted ingredients in the INCI list and the product price were identified as relevant variables with regard to sustainable properties and product positioning.

With the goal of exploratively deriving archetypes for presenting greenness from the six focal variables, the authors performed several operations on the existing data to enable the subsequent cluster analysis. Prices were normalized within each category, so that the relative price could indicate whether a product is cheap or expensive compared to other products in the same category – for example, whether a deodorant is one of the most expensive or one of the cheapest. The authors further converted the various absence- and presence-focused ingredient claims into a single index by subtracting them for each product, likewise for artificial and natural claims (André et al., 2019). This was done to obtain a trend for products with numerous ingredient claims.

The authors proceeded with the exploratory cluster analysis using the six standardized variables. First, they utilized the elbow criterion to determine the optimal number of clusters to be derived from the data, which was four. They subsequently performed a k-means cluster analysis, which resulted in four different archetypes with distinct characterizations for the six variables.

Following the cluster analysis, the authors examined how consumer ratings differ for different product archetypes. Based on the four resulting archetypes, they utilized the actual consumer ratings of the products as published in the retailer's online shop as the behavioral dependent variable. Because the data did not meet the normality criterion required for ANOVAs, they performed Kruskal-Wallis tests and Wilcoxon

rank sum tests to determine whether the product archetypes differ in consumer ratings.

Findings and Propositions

The authors identified four product archetypes based on the products' price, ingredients, third-party labels, sustainability and ingredient claims (presence/absence, natural/artificial): **Quiet Premium**, **Claim Champions**, **Labeling Peacocks**, and **Humble Bargains**. An overview of the product archetypes and the mean scores for each variable is provided in Table 2. **Quiet Premium** are expensive products, moderately focused on natural ingredients, and less marketed for sustainable properties. **Claim Champions** are moderately priced products with an emphasis on natural ingredients and marketed as sustainable. Both Quiet Premium and Claim Champions show an average use of restricted ingredients in the INCI list. **Labeling Peacocks** are moderately priced products with third-party labels, sustainability and naturalness claims, but their INCI lists indicate heavy use of restricted ingredients. **Humble Bargains** are budget products with fewer restricted ingredients, less emphasis on natural or sustainable properties, and ingredient claims that focus on the absence of artificial ingredients. Exemplary product archetypes are shown in Figure 1. Notably, each category in the dataset contains products of all four archetypes, indicating that these archetypes exist in all categories of personal care products.

Interestingly, the analyses show that neither Quiet Premium nor Humble Bargains, the most expensive and the cheapest archetypes, rely on heavy use of sustainability claims or labels. Instead, the two mid-priced archetypes, Labeling Peacocks

Table 1: Typology of FOP Labeling

Type	Description
Presence- or absence-focused ingredient claims	Claims suggesting the presence or absence of an ingredient in the product (André et al., 2019)
Natural or artificial ingredient claims	Claims concerning natural or artificial ingredients, which can refer to the presence or absence of the substance (André et al., 2019)
Sustainability claims	Claims referring to sustainability in terms of recycling, biodegradability, naturalness, fair trade, and animal welfare (Grappe et al., 2022)
Third-party labels	Certification awarded by third-party organizations (Cho & Berry, 2019)

Source: Own illustration.

Table 2: Product Archetypes and Cluster Means

Archetype	Products [no.]	Relative price [0, 1]	Restricted ingredients [no.]	Third-party labels [no.]	Sustainability claims [no.]	Absence vs. presence claims [-1, 1]	Artificial vs. natural claims [-1, 1]
Quiet Premium	1232	0.283	2.677	0.153	0.004	0.929 (presence focus)	0.443 (naturalness focus)
Claim Champions	711	0.189	2.590	0.308	1.229	0.644	0.520
Labeling Peacocks	581	0.179	2.872	1.000	0.651	0.523	0.564
Humble Bargains	149	0.098	1.765	0.175	0.208	-0.553 (absence focus)	-0.854 (artificialness focus)

Source: Own illustration.

and Claim Champions, predominantly market their green properties through FOP labeling. This finding leads to the first proposition:

1. Products in the mid-price range carry sustainability labels, while those in the high- and low-price ranges do not.

When marketing new personal care products, practitioners should therefore be aware that adopting green labeling might visually position the product in the mid-price range compared to other products at the POS. Assuming that the product prices displayed on the shelf reflect the market, this positioning could potentially increase consumers' WTP for budget products. When aiming for premium positioning, practitioners might benefit from avoiding an emphasis on sustainable properties on the packaging.

The second proposition is based on the observation that while both are in the mid-price range, Claim Champions, although relatively more expensive, do not rely as much on third-party labels as Labeling Peacocks. Rather, they communicate sustainability through claims:

2. While costly for manufacturers, adopting third-party labels may not lead to higher WTP of consumers.

Following the cluster analysis, the authors examined how consumer ratings differ for different product archetypes. Customer ratings for Labeling Peacocks differ significantly from the customer ratings of all other archetypes, while those for Claim Champions with Quiet Premium and Humble Bargains are not significantly different. Subsequent post-hoc analyses in the form of Wilcoxon rank sum tests and the boxplot diagram in Figure 2 show that Labeling Peacocks perform significantly worse than all other archetypes.

While the rating scores reflect consumers' real-life attitudes toward the product, serving as the actual behavioral dependent variable, the results can be interpreted in two ways. Consumers' satisfaction or dissatisfaction with a product may be based on the product's actual performance and possibly adverse effects, such as skin irritations. However, as research on anchoring effects (Tversky & Kahneman, 1989) and consumer expectations (Burton et al., 2015; Cho & Baskin, 2018) suggests, the evaluation of a product may also depend on expectations. In the case of personal care products, the packaging, as seen POS, remains a part of the product even during its use, for example, when a shampoo bottle is used in the shower. Thus, the poor performance of Labeling Peacocks in consumer ratings may be due to expectations

Figure 1: Exemplary Pictures of the Archetypes in Different Categories

Source: Own illustration.

raised by third-party labels that are not met by the product. Expectations may even be disappointed by adverse effects of the products caused by restricted, irritating ingredients. From this finding, the authors derive the third proposition:

3. Excessive use of third-party labels does not necessarily improve consumers' evaluation of the product.

Quiet Premium (M=4.46, SD=0.65) and Claim Champions (M=4.43, SD=0.72) perform significantly better ($p<0.001$) than the other two archetypes.

Although they are in a similar price range as Labeling Peacocks and are similarly concerned with a sustainable image, Claim Champions rely on claims (Type II eco-labels as defined by the BMU) instead of labels (Type I eco-labels). Since they perform significantly better than Labeling Peacocks in consumer ratings, the authors derive the following fourth proposition:

4. Simple claims of sustainability and environmental friendliness may be more effective than third-party labels.

Humble Bargains show moderate rating scores (M=4.43 SD=0.50), which are significantly higher than those of Labeling Peacocks, but significantly lower than those of Quiet Premium products ($p<0.001$). Humble Bargains do not evoke high expectations, neither with labels, claims or price, and tend to contain few restricted ingredients. The relatively high consumer ratings indicate that consumers may have been pleasantly surprised and experienced no adverse effects.

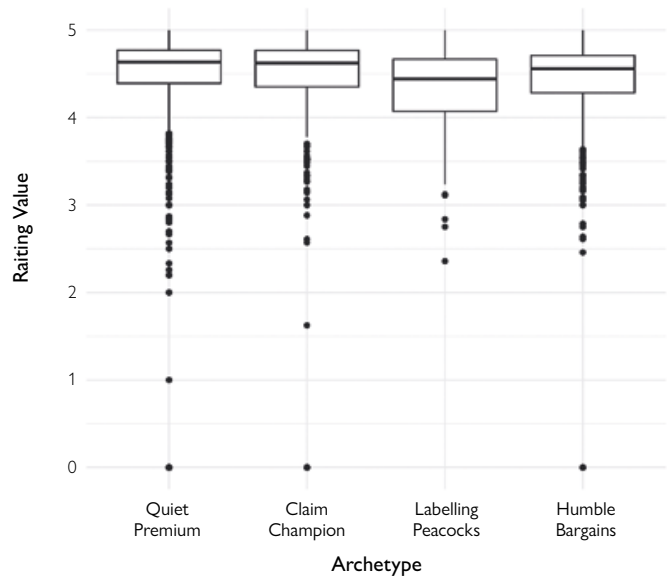
Quiet Premium is the largest cluster, and the boxplot in Figure 2 shows a wide range of values. Quiet Premium is characterized by a limited use of claims and labels but has the highest ratings, along with Claim Champions. Combining this finding with the previous analyses and propositions, especially regarding the use of restricted ingredients as indicated in the INCI list, the authors propose:

5. Investing in higher quality and using fewer restricted ingredients may be better than third-party labels in terms of both pricing strategies and consumer ratings.

General Discussion

Increasing consumer demand for sustainable products requires manufacturers and retailers to communicate these properties effectively. For FMCG such as personal care products, purchase decisions are mostly made at the POS. To investigate how manufacturers communicate green properties at the POS, the authors obtained product data for 2666 products from the webshop of

Figure 2: Boxplot Diagram of Consumer Ratings



Source: Own illustration.

a large drugstore. They inspected the product pictures for FOP labeling signaling greenness, creating a unique and extensive dataset of the variety consumers face. Based on price, ingredient, and labeling data, the authors conducted a cluster analysis that resulted in four product archetypes: Quiet Premium, Claim Champions, Labeling Peacocks, and Humble Bargains. The data further revealed that the four product archetypes differ significantly in terms of consumers' actual product ratings (in the webshop), creating a meaningful behavioral dependent variable.

Practical and Theoretical Implications

Previous research has indicated that green labeling positively influences consumers' buying behavior. The authors' results extend these findings and show that there is more than one way to present greenness through FOP labeling. Rating scores for the four distinct archetypes based on labeling and product data reveal that consumers evaluate these types differently. These findings are a meaningful contribution to the FOP and sustainability labeling literature by contextualizing the overall product composition and image at the POS.

To maximize the positive effects of green labeling, manufacturers should consider the entire composition of the product and the consumers' interaction with it. When consumers enter a store and are faced with a shelf with hundreds of different

products of the same category, the FOP labeling promises certain properties. This research shows that the pricing and green labeling clearly position the product as one of the four archetypes. Interestingly, products in the mid-price range usually carry sustainability labels, while products in the high- or low-price ranges do not. As a result, manufacturers who want to draw more attention to budget or premium qualities may want to avoid sustainability labels, even if the product is en-

vironmentally friendly. An alternative might be to highlight their product's properties through other marketing measures, such as social media marketing or television commercials. This might enable them to position their brand and products as sustainable without the potential for unwanted effects at the POS.

With upcoming legislative changes such as the Green Claims Directive, vague or misleading green claims (potentially Type I or II eco-labels as defined by the BMU) and manufacturers utilizing unsubstantiated green labeling may even risk regulatory penalties, mandatory verification or reputational damage. Hence, understanding the effects of different forms of green labeling on consumers will be even more important in the future. Additional studies performed on this dataset have shown that no green claims and almost none of the labels are significantly associated with the number of restricted ingredients used. While this may not be a sufficient indicator of (un)sustainability, this finding is consistent with the Green Claims Directive. It also suggests that both Type I and Type II eco-labels may not serve as objective, reliable indicators of consumer evaluation.

While previous experimental designs examining individual labels have found that green labeling generally positively influences choice and attitude (e.g., Cho & Berry, 2019), these analyses paint a more nuanced picture. Claim Champions and Labeling Peacocks both rely heavily on signaling greenness through natural ingredient claims, but Claim Champions only make sustainability claims, while Labeling Peacocks rely on certifications. Manufacturers should be aware that this does not necessarily result in greater consumer satisfaction as it may raise expectations that cannot be met. Instead, the results suggest that when opting for a green image through FOP labeling, it may be a wiser business decision to use only claims and invest in higher-quality ingredients than in third-party labels.

Main Propositions

- 1 Products in the mid-price range carry sustainability labels, while those in the high- and low-price ranges do not.
- 2 While costly for manufacturers, adopting third-party labels may not lead to higher WTP of consumers.
- 3 Excessive use of third-party labels does not necessarily improve consumers' evaluation of the product.
- 4 Simple claims of sustainability and environmental friendliness may be more effective than third-party labels.
- 5 Investing in higher quality and using fewer restricted ingredients may be better than third-party labels in terms of both pricing strategies and consumer ratings.

Lessons Learned

- 1 When marketing new personal care products, practitioners should be aware that greens labeling might visually position the product in the mid-price range at the POS.
- 2 Consumers' expectations may influence product evaluation and repurchase intentions, so finding the right balance between claims, ingredients, and positioning is key.
- 3 For care products that will perform well in consumer ratings and be positioned with premium pricing, the focus might be better placed on high-quality ingredients and moderate FOP labeling rather than third-party labels.

Future Research

While this study represents an important step in understanding how manufacturers signal greenness at the point of sale, additional research is needed to address its limitations. Using consumer ratings as the dependent variable means accepting the process between purchase and rating as a "black box". Subsequent analyses of real-life data could utilize semantic analysis of consumer reviews for products of the different archetypes. This could shed more light on the antecedents of consumer ratings, such as exceeding or falling short of expectations. Similarly, future research could explore how different product archetypes might influence the purchase decision, ideally with actual cash register data. Combining behavioral decision outcomes with shopping goals or preferences also constitutes a promising avenue for future research endeavors. ■

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