

# Selecting decision-relevant ethical product attributes for grocery shopping

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## Abstract

**Purpose** – Despite the existence of various approaches for promoting ethical consumption, it remains a challenge to determine which ethical product features are actually decision relevant for consumers. Based on the assumption that values influence behavior across a range of situations, this paper explores the utility of product information items that address underlying motivators (i.e., concerns about the environment, animal welfare, other humans, price). Information preferences are also determined for different consumer segments separately, enabling one to target consumer groups with specific decision-relevant information.

**Design/methodology** – A German online survey was conducted with mainly young consumers. The survey used a choice-based conjoint analysis (CBCA) with the relevant product information items chosen based on an analysis of the attributes of dairy products and the guidelines for eco- and fair trade labels. The identified items were assigned to the ethical criteria of animal welfare, environmental protection, and labor and human rights. These criteria, along with price and country of origin, represent the attributes of the CBCA.

**Findings** – Results indicate that information about animal welfare increases consumer choice the most, followed by information about labor and human rights, and environmental protection. Three identified segments differ with respect to their decision-relevant product information: ethically motivated consumers (53.8%), price-oriented consumers (12%) and price-quality-oriented consumers (34.2%).

**Value** – This study contributes to a better understanding of how ethical product information can most effectively be communicated to consumers, particularly for dairy products. The results highlight the need to carefully select ethical product information based on the target consumer segment in order to promote ethical consumption.

**Keywords** – ethical decision-making, ethical consumption, ethical product information, segmentation, price information, country-of-origin information.

**Paper type** – Research paper

## **1. Introduction**

Consumers are becoming increasingly aware of their responsibility and their role to realize a more sustainable future, especially in food retailing. The willingness to leverage their influence through purchase decisions regarding socially and/or environmentally friendly products (Bezençon and Blili, 2010; Schenkel-Nofz and Walther, 2014), also known as ethical consumerism, represents a fast-growing trend worldwide (see Ruiz de Maya et al., 2011; Pino et al., 2012). It requires that consumers are able to easily identify eco-friendly and socially responsible product alternatives. However, the current information asymmetry in retailing is the opposite of that with products' ethical features being difficult to recognize. A reduction of this information asymmetry in regards to ethical features of a product is therefore needed (Sammer and Wüstenhagen, 2006).

From an economic point of view, producers and marketers should be interested in finding out how relevant information can be identified, established, and exchanged. In reality, however, it remains a challenge to communicate ethical information to consumers in a way that makes them consider ethical product features in their purchase decision process. Labels are a commonly used approach to reveal ethical product features in an aggregated way (Loureiro and Lotade, 2005; Testa et al., 2015; Vecchio and Annunziata, 2015). Nevertheless, the wide variety of labels presented in the marketplace has led to reports of consumer confusion about the meaning of a given label and its differentiation from alternative ones (Borin et al., 2011). The Ecolabel Index (2016) records 465 different ecolabels in 199 countries and 25 industry sectors. This status quo inevitably leads to uncertainties among consumers who do not always grasp the particular significance of each label and, for that reason, lose interest in ethical goods (Borin et al., 2011; De Pelsmacker and Janssens, 2007). It is therefore not surprising that studies have been undertaken to examine whether providing consumers with more detailed product information might be a

promising alternative to certification labels (Mitchell et al., 2005; Osburg et al., 2016; Salaün and Flores, 2001).

Recent studies have suggested that the provision of detailed product information helps to overcome purchase barriers of ethical goods (Cho, 2015; Gleim et al., 2013). Such information may increase consumers' knowledge and thereby redirect their decision-making for food choices at the same time (Verbeke, 2008). However, it is not the volume of available information that plays a decisive factor in the purchasing behavior of the consumer but rather the information type (Auger et al., 2010). In fact, an excessive number of product information items may lead to information overload (De Pelsmacker et al., 2005b; Fernqvist and Ekelund, 2014), which can aggravate the decision-making process of potential consumers (Mitchell et al., 2005; Verbeke, 2008). Therefore, it is important to determine which ethical product information items interest consumers the most.

Although several articles examine the role of ethical attributes in the purchase decision-making process, most of them focus on a single aspect of ethical consumption, such as social or environmental characteristics, combined with other product attributes. This makes it difficult to assess the relative importance of all aspects of ethical goods, as in animal welfare, environmental, and fair trade issues. Furthermore, it remains unclear what information is actually decision relevant to consumers (Pieniak et al., 2013; Salaün and Flores, 2001). As information preferences may differ among consumers, it should also be determined whether (and how) the valued information varies among consumer segments (Atkinson, 2013; Salaün and Flores, 2001; Verbeke, 2008). Therefore, this explorative study addresses the following questions:

- What ethical product attributes do consumers value the most?
- What consumer segments can be distinguished in terms of their information preferences?
- How does the preference for ethical information vary among these segments?

In order to investigate these questions, milk is being selected as a reference product that includes the three elements of ethical consumption which are environmental protection, animal welfare, and labor legislation and human rights. While labels on milk packages often reveal ethical product features, such as organic certification or animal welfare labels, a growing number of producers also provide more detailed ethical product information by describing the milk's origin and how the animals have been treated for example. Furthermore, media continuously highlight the ethical implications of dairy products (e.g., Deutsche Wirtschafts Nachrichten, 2015), creating consumer awareness of ethical criteria related to dairy consumption.

The rest of this article is structured as follows: First, the investigated nomological framework is introduced, and literature on disclosing ethical product attributes to consumers is briefly reviewed. Second, the methodology of the empirical study is described in depth. The next section presents the results obtained for the aggregate information preferences and the ethical information items valued by each consumer segment. The article concludes with a discussion of the results and implications regarding the elements that marketing should prioritize, in order to promote ethical grocery shopping.

## **2. Conceptual development**

### *The roots of ethical consumption*

Extensive research has shown that ethical consumption is based on individual characteristics. Consumers' attitudes (Hustvedt and Dickson, 2009; Shaw et al., 2016), norms (Andorfer and Liebe, 2015; Steg et al., 2005), self-identity (Hustvedt and Dickson, 2009; Webb et al., 2014), and values (Aertens et al., 2009; Steg et al., 2005) have all been identified as drivers of ethical consumption. Values are of particular interest because they represent fundamental guiding principles that influence consumer behavior over time and across a range of situations (Steg et al., 2005; Stern, 2000). This is illustrated by the value-

belief-norm theory (VBN; Stern, 2000), which is one of the most established frameworks for explaining environmental behavior. The VBN theory postulates that fundamental value orientations affect an individual's general beliefs about human–environment interactions. These beliefs in turn influence an individual's awareness of consequences, followed by the ascription of responsibility and norm activation, which is the direct determinant of environmental behavior. Accordingly, the VBN theory illustrates the importance of underlying values.

As such, the VBN framework may also be used to explain ethical consumer behavior according to three value orientations: altruistic, biospheric, and egoistic values (Stern, 2000). Altruistic values focus on concerns for other humans, biospheric values include concerns for both nonhuman beings and the environment, and egoistic values reflect motivations to maximize an individual's benefits (Steg et al., 2005). Depending on their value orientation, the VBN theory suggests that individuals may prioritize different ethical criteria. Hence, ethical consumer behavior can result from different underlying values and motivations. While some individuals may buy ethical products out of concern for the environment and animal welfare (biospheric value orientation) as well as other humans (altruistic), others may choose ethical products for purely egoistic reasons (e.g., if an ethical product is less expensive than the conventional alternative). All these motivators of ethical consumption can be addressed through the disclosure of various product information items. This paper therefore explores whether product information items for these four potential motivators of ethical consumption (concerns about the environment, animal welfare, other humans, or price) differently affect ethical consumption.

#### *Provision of ethical product information*

Although consumers value product information, disclosing too many product information items bears the risk of an information overload (Cho, 2015; Fernqvist and Ekelund, 2014),

and results in (search) costs for the consumer (Grunert et al., 2000; Mitchell et al., 2005; Salaün and Flores, 2001). Excessive information can overwhelm consumers and prevent effective processing, resulting in ill-informed decisions (Wansink, 2003).

Accordingly, several consumer studies have scrutinized the influence of detailed product information on purchase decisions (e.g., Auger et al., 2010; De Pelsmacker et al., 2005b). Previous studies have examined consumers' information preferences concerning wood products (Cai and Aguilar, 2013; O'Brien and Teisl, 2004; Osburg et al., 2016); groceries, such as fruits, milk, or meat (Napolitano et al., 2007; Rousseau and Vranken, 2013; Tonsor et al., 2009; Travisi and Nijkamp, 2008; Zander and Hamm, 2010); and nondurable goods, such as shoes, soap, or batteries (Auger et al., 2008; Auger et al., 2010). These studies show that consumers value animal, social and environmental product information, and indicate that consumers are also willing to pay a price premium for revealing these features (e.g., Auger et al., 2008; O'Brien and Teisl, 2004; Rousseau and Vranken, 2013; Travisi and Nijkamp, 2008). However, it is not fully understood which of these attributes are most important. While some studies highlight the influence of social attributes on purchase probability (Auger et al., 2008; Auger et al., 2010), others suggest a high relevance of environmental aspects (O'Brien and Teisl, 2004; Travisi and Nijkamp, 2008). Taking yet another view, Napolitano et al. (2007) demonstrate that the information provided positively affects the consumer's perceptions and find that information about animal welfare may be used to differentiate meat products. Furthermore, other studies reveal an influence of country-of-origin (COO) information on consumer choice (Cai and Aguilar, 2013; Fernqvist and Ekelund, 2014; Moser et al., 2011; Wirth et al., 2011).

Although no product should be considered as purely ethical, the majority of existing research only focuses on selected aspects of ethical goods. Moreover, ethical attributes are often not considered in isolation from other product attributes. There has been no wide discussion of providing consumers with further detailed information nor about which

specific product information consumers prefer in their decision-making processes. Only one study by Zander and Hamm (2010) considers consumers' preferred ethical product information. They examine consumers' information search behavior, rather than identifying which ethical product information is most beneficial to them. It is therefore difficult to conclude whether or not consumers prefer specific aspects of ethical goods, since all product varieties analyzed were produced in an organic manner. Furthermore, the study does not address the importance of segment-specific product information communication. However, the literature indicates that segment-specific information preferences should be determined, given that consumers vary with respect to their information demand (Osburg et al., 2016; Salaün and Flores, 2001).

#### *Relevance of ethical product information for purchase decisions*

In general, ethical consumerism is a complex phenomenon that is based on a broad expression which focuses on fair trade and organic products, and extends to boycotting companies that do not operate for the good of the environment or society (Harrison et al., 2005). Ethical products are meant to minimize – in the best case eliminate – the negative impacts of consumerist society (Auger et al., 2008; Bezençon and Blili, 2010). Organic and fair trade products can be considered as ethical products (De Pelsmacker et al., 2005b; Shaw and Clarke, 1999), which are characterized by three aspects that address central facets of sustainable action: animal welfare, environmental protection, and labor legislation and human rights. While organic products relate to environmental protection and the preservation of animal rights (EG-Öko-Verordnung, 2007; Thøgersen, 2010), the fair trade movement includes fair trade relations and a fair payment of producers (Arnot et al., 2006; De Pelsmacker and Janssens, 2007). However, it must be noted that “no product can be completely, unreservedly ethical” (Crane, 2001, p. 369). Instead, an ethical product can be viewed as a bundle of ethical product attributes (Crane, 2001). These product

characteristics are the source of consumers' utility (Lancaster, 1966); consumers choose the product that maximizes their utility, depending on their preferences with respect to the given product attributes and their budget (Ubilava et al., 2010). In this context, one can distinguish three product attributes: search attributes, experience attributes, and credence attributes (Darby and Karni, 1973; Nelson, 1970, 1974). Search attributes – such as price –, as well as experience attributes – such as taste – can be evaluated by the consumer before, respectively after their purchase. However, the consumer must rely on the correctness of the information provided when being confronted with credence attributes, since (s)he cannot verify them. Although food is characterized by all three product attributes, the credence attribute is becoming increasingly important due to consumers' greater environmental and health awareness (Grunert et al., 2000; Moser et al., 2011).

### **3. Methodology and measurement**

The following presents a study that examines consumers' preferred ethical product information and segment-specific information preferences. The segmentation is beneficial for determining consumer groups that are interested in ethical products and for deriving marketing communications strategies to target them successfully. This approach reduces complexity, as marketing communication can focus on consumer segments instead of individual consumers.

#### *Data collection and sample*

A German online survey was conducted using Sawtooth Web SSI software from February to March 2016. Participants were recruited through social networks and flyers. In order to motivate participation and to increase the predictive accuracy of our data (Wlömert and Eggers, 2016), all participants were entered into a prize draw for four vouchers, each worth



15 euro. The study mainly relies on a sample of young consumers because they seem to be particularly interested in detailed product information (Kanchanapibul et al., 2014). Thus, they represent a suitable target group for examining product information preferences (Osburg et al., 2016). Furthermore, as young consumers become more active in the marketplace, they represent an important generation for marketing research (Noble et al., 2009).

In total, 385 respondents participated, but 136 of them had to be excluded. First, 118 questionnaires were omitted because they were incomplete, meaning that the respondents completed fewer than six tasks of the choice-based conjoint analysis.<sup>1</sup> Furthermore, 18 participants were excluded due to either short response times (fewer than three minutes for the entire questionnaire) or response patterns (e.g., 1, 2, 3, 4, 1, 2, 3, 4). In both cases, it can be assumed that the incentive was the only motivation for participating in the survey (Homburg and Krohmer, 2008). Hence, the data analysis relies on 249 participants.

The respondents' mean age was 26.78 years ( $SD = 8.47$ ), and 65% were female. The majority were students (75.5%), while 18.9% were employees. More than half of the participants reported that they consume ethical products at least once a week.

### *Choice-based conjoint analysis*

A choice-based conjoint analysis (CBC; also known as choice experiment) was conducted to determine consumers' information preferences. This method is most frequently used in market research because of its similarity to real purchase decisions (Green and Srinivasan, 1990; Huber, 2005, Wlömert and Eggers, 2016). A social desirability bias results in a discrepancy between stated preferences and actual preferences (Ding et al., 2005). Previous

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<sup>1</sup> At least six choice tasks are required to achieve good results, and about ten choice tasks or more to establish robust predictions (Sawtooth, 2017), especially for a high number of attributes and levels combined with relatively small sample sizes. In accordance with this, Johnson and Orme (1996) argue that "later tasks are better predictors of results from the total interview" (p. 10).

research has shown that a CBC, combined with incentives, can successfully reduce the occurrence of social desirability bias (De Pelsmacker et al. 2005a; Ding et al. 2005; Hainmueller et al., 2014), as respondents are presented with different variants of a good and are expected to select their most preferred alternative (Desarbo et al., 1995; Louviere and Woodworth, 1983; Wallander, 2009). Thus, they find multiple justifications for a given choice (Hainmueller et al., 2014).

The CBC assumes that consumers derive utility not from the good per se but from its multiple attributes (Tonsor et al., 2009; Wirth et al., 2011). According to Louviere and Woodworth (1983), the CBC is a decompositional method that estimates the structure of consumer preferences in terms of the levels of the attributes of the choice alternative (Desarbo et al., 1995; Rao, 2014). Utility estimates are determined at the aggregate level, but further analysis in terms of latent class or hierarchical Bayes should be used to avoid systematically distorted benefit parameters (Sawtooth, 2013). Preference heterogeneity occurs discretely in latent class analysis (Train, 2009). Rather than estimating average part worth utilities as in logit models for the whole group, latent class analysis detects subgroups with differing preferences and estimates part worths for each segment simultaneously (Orme, 2007). Thus, the heterogeneity in the preferences can be mapped by a limited number of completely homogeneous segments (Desarbo et al., 1992; Desarbo et al., 1995). As this paper aims to identify the information demands of different consumer groups, the estimations are based on latent class analysis.

#### *Choosing relevant product attributes*

Table 1 summarizes the attributes and attribute expressions that form the basis of the CBC. Two steps were implemented to determine potentially relevant ethical product features: First, ethical attributes of 28 dairy products were identified by examining the current presentation of ethical product information. Second, overlapping standards with regard to

the three aspects – animal welfare, environmental protection, and labor legislation and human rights – were chosen after considering the guidelines of the largest German organic associations and fair trade organizations (e.g., Alsfeld, 2014a, b; Bender, 2016; Bioland e.V., 2015; Ecoland e.V., 2011; EC-Regulation, 2008; Gää e.V., 2014, 2015; WFTO, 2009, 2011). A pretest was carried out with 34 respondents (mean age of 30.21 years [ $SD = 10.49$ ], 50% female, 53% students) to examine the comprehensibility of the product information items developed. Participants indicated for each item whether they understood it, and they were asked to comment on each item. After the pretest, misleading ethical product information items were reformulated.

The price levels were determined by analyzing actual milk prices. The average price per liter was 1.22 euros. An interval of +/- 15%, and +/- 30%, was chosen to reflect the actual price range of organic, fair trade, and conventional milk.

A “no-choice” option was not included because it has been shown that this leads to more unstable utility estimates (Backhaus et al., 2013). Furthermore, a “no-choice” option does not adequately reflect reality, because consumers will generally buy milk in real purchase situations even if their favorite milk is unavailable. Nonresponses are also “often used as a way to avoid difficult choices” (Johnson and Orme, 1996, p. 21), which does not reflect how consumers would react in reality.

To avoid the “number of level” effects, an equal number of characteristics is recommended for all attributes (see Wittink et al., 1990). Therefore, each property of ethical goods was described by two attributes, which were then assigned five expressions. Apart from the price attribute, the fifth characteristic of all attributes corresponded to information retention, i.e., a blank expression.

[Insert Table 1 here]

### *Conception of the experimental design*

A partial-profile method was implemented because a full factorial design would include 390625 ( $= 5^8$ ) varieties. The attributes were rotated to ensure a more realistic shopping situation (Orme, 2009; Rao, 2014), with the exception of price as “price tends to carry less weight, relative to other attributes, when estimated under partial-profile CBC rather than full-profile” (Orme, 2009, p. 5).

Each choice set consisted of four product alternatives. Respondents received 20 choice tasks as suggested by Johnson and Orme (1996), two of which were fixed to test the internal validity of the simulation model (Orme, 2009). The balanced overlap method was selected because it results in a limited overlap within a choice set (Sawtooth, 2013). Furthermore, a design test confirmed an optimal estimation of the main effects with the present design.

## **4. Empirical results**

### *Attribute importance*

Table 2 shows the evaluation of the logit estimation, which indicates that the model accurately reflects the respondents’ information preferences.

[Insert Table 2 here]

Table 3 summarizes the relative attribute importance for each aspect included in the current study. The aspect of animal welfare provides the greatest benefit for the respondents, with the largest (cumulative) relative importance (30.25%). Within the aspect of animal welfare, species-appropriate husbandry is of greatest significance for consumer choices (19.77%). Labor legislation and human rights exhibit the second-largest (cumulative) relative importance (19.50%), while the payment of dairy farmers is of greater relevance (10.95%) than the social responsibility attribute (8.55%). Ranked last, the aspect of environmental

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protection has a (cumulative) relative importance of 15%. Interestingly, COO (18.36%) and price (16.81%) show a higher relative importance than the ethical aspect of environmental protection.

[Insert Table 3 here]

Table 4 reveals which specific ethical product information items respondents value the most. First, the provision of no product information always results in a negative utility. Second, most ethical product items positively affect consumer choices. Respondents particularly value the items “no use of chemical synthetic pesticides” and “ecologically produced seed and seedlings” (environmental protection), “cows are frequently and regularly out on the pasture” and “organic feed out of own cultivation” (animal welfare), as well as “dairy farmers receive prices to generate profit (min. 0.45€/liter)” and “local processing to maintain value added in the region” (labor legislation and human rights). These items indicate that respondents have a good understanding of ethical consumption, as they are more likely to choose products that not only cover production costs but also generate profit for dairy farmers. Third, not all ethical product information items increase consumer choices, such as “animals are not fixed to their place” or “no food from overseas (soya, maize, etc.)”. This finding underlines that ethical product information must be carefully chosen in order to actually increase ethical consumption.

In addition to ethical product information, COO also influences consumer choices. Interestingly, however, only regional and national origins have a positive utility, whereas supranational and international origins have an even stronger negative effect on consumer preference, compared with nondisclosed COO information. Finally, prices up to 1.22 euros per liter have a positive value, with lower milk prices being preferred.

[Insert Table 4 here]

*Consumer segments and their information preferences*

A latent class analysis was performed to identify segments differing in their preference structures. The consistent Akaike information criterion (CAIC) was chosen as a criterion to determine the segment number, leading to a three-segment solution (Table 5).

[Insert Table 5 here]

Figure 1 provides the results obtained from the latent class segmentation, including the relative importance each segment places on each attribute. The *ethically motivated segment* ( $n = 134$ ) particularly values animal welfare aspects (cumulative relative importance of 35.05%), followed by COO (23.24%), labor legislation and human rights (19.04%), and environmental protection (17.85%). Hence, this segment seems to be particularly interested in ethical information and perceives price to be less crucial. This is a promising result, especially as it represents the largest segment. The *price-oriented segment* ( $n = 30$ ) predominantly focuses on price (76.60%), whereas ethical attributes are negligible, except for animal welfare (cumulative relative importance of 9.06%). Hence, ethical product information seems to be ineffective for this segment, and alternative strategies are needed (e.g., ethically related criteria with an individual benefit, such as health impact). The *price–quality–oriented segment* ( $n = 85$ ) takes an intermediate position. It exhibits a strong preference for price (27.88%), followed by ethical product information related to animal welfare (24.39%), and labor legislation and human rights (20.38%). Consequently, two out of three segments – 87.95% of the respondents – benefit from a disclosure of detailed information about ethical product features.

[Insert Figure 1 here]

Table 6 presents the rescaled part worth utilities for the ethical product information items separately for each segment. In total, 11 ethical product items were of high relevance for at

least one segment, and 7 ethical product information items were of high relevance for at least two segments. The only information favored by all segments is “no use of growth hormones or preventive drugs (e.g., antibiotics)”. Respondents might have been particularly interested in this item, as it allows one to draw conclusions about the product’s health impact. While the price-oriented segment only valued one additional information item, the ethically motivated and the price–quality–oriented segment asked for more and even similar ethical product information items. The core difference between these segments is that ethically motivated consumers show stronger preferences for ethical items and favor even more information items than price–quality–oriented consumers, while being less interested in product price. Hence, both segments can be addressed with the disclosure of similar ethical product information items. However, the role of price must be discussed further. The generated value of price for the price–quality–oriented segment decreases as price increases, whereby a price of 1.22 euros per liter still generates a positive value. Against all odds, the lowest price shows a negative utility for the ethically motivated segment; an average price of 1.22 euros per liter is most beneficial for these consumers. Hence, this segment is characterized by reasonable price assumptions, suggesting that ethically motivated consumers have a realistic understanding of fair prices and are willing to pay a surcharge for high-quality products.

[Insert Table 6 here]

Finally, the two biggest segments differ significantly in terms of their self-reported ethical consumption ( $t = 2.558, p = 0.011$ ). The ethically motivated segment claimed to consume ethical goods at least once a week, whereas the price–quality–oriented segment stated to consume ethically two to three times a month. Furthermore, the segments differ with respect to consumer characteristics: the price-quality-oriented segment has a higher income compared with the price-oriented segment ( $t = 2.135, p = 0.035$ ), while there are no

significant differences between the two biggest segments. The ethically motivated segment is older ( $t = 1.745$ ,  $p = 0.083$ ), more educated ( $t = 1.908$ ,  $p = 0.058$ ), and has a higher income ( $t = 2.330$ ,  $p = 0.021$ ) compared with the price-oriented segment. These findings are in line with the different utilities these segments derive from ethical product information.

## 5. Discussion

This study examines which specific ethical product information increases consumer selection of ethical products. Based on the example of dairy products, the results reveal that consumers value the disclosure of animal welfare aspects the most. Interestingly, both COO declaration and price generate slightly higher utilities than the environmental aspect but still less than labor legislation and human rights. The results are therefore in line with the findings of Zander and Hamm (2010), although their study is based on a different approach. Furthermore, the present study extends previous findings by determining not only which general attributes are important (e.g., animal welfare) but also which specific information items are valued by consumers (e.g., “cows are frequently and regularly out on the pasture”).

The results also confirm the assumptions of Bond et al. (2008), who postulate that the support of local farmers might be a stronger purchase driver than environmental concerns. The relatively low importance of environmental aspects could also be ascribed to the high importance of the COO declaration. Moreover, current media reports about inadequate animal welfare standards and dubious payments of dairy farmers within the EU may have increased consumer awareness. The constant media confrontation would thus reflect consumers' preferences for different ethical product features. Consistent with previous research, this study also points to an effect of COO declaration as a credence attribute (Fernqvist and Ekelund, 2014). The findings confirm the *theory of domestic*



*country bias*, according to which domestic products are preferred over imports (Auger et al., 2010).

With respect to specific ethical product information items, this study identifies 11 items as relevant for the average consumer, supporting the idea that consumers are relatively limited in their information search and processing (Crane, 2001). It is noteworthy to mention that two ethical product information items even generate a negative utility, i.e., “animals are not fixed to their place” and “no food from overseas (soja, maize, etc.)”. This could be attributed to either a lack of knowledge or understanding (Auger et al., 2003; Pieniak et al., 2013).

Furthermore, the present study identifies three consumer segments that differ in their information preferences. The *price-oriented segment* mainly focuses on price. However, the results must be interpreted with caution. Although the results reveal that prices up to 1.40 euros per liter of milk are of positive utility for this segment, these consumers will probably always choose the cheapest alternative. Correspondingly, the two product information items valued by this segment refer to hedonistic rather than ethical aspects. The *price–quality–oriented* and the *ethically motivated segments* prefer almost the same ethical product information items. As their preferred ethical product information is related, these segments can be targeted in a similar way. Segment-specific differences mainly refer to the price attribute. The price–quality–oriented segment focuses more on price than the ethically motivated segment does. While an average price of 1.22 euros per liter is most beneficial for ethically motivated consumers, the price benefits decrease with increasing prices for the other segment. Hence, ethically motivated consumers seem to be aware of the costs required for the production of ethical products and are more driven by a desire to consume ethically (Arnot et al., 2006). However, if a higher price can be justified through ethical or quality-related product attributes, the price–quality–oriented segment would still benefit from a price up to 1.22 euros per liter. This segment therefore needs a

balance between ethical product attributes and price. Moreover, the results identify price as a barrier for ethical purchase (Andorfer and Liebe, 2014; Gleim et al. 2013), as consumers with a restricted budget choose the product which maximizes their utility (Ubilava et al., 2010).

### *Policy implications*

A planned, systematic education and marketing initiative can convince consumers to consider ethical problems arising from current consumption patterns (Davies et al., 2010). The societal discourse on social and ecological questions can be further intensified by providing ethical product information (Schenkel-Nofz and Walther, 2014). This study enriches current debates about revealing specific product information to consumers (e.g., nutrition disclosure) and suggests that a more detailed presentation of ethical product information can contribute to a more responsible future. If ethical products become socially acceptable and more transparent through information disclosure, sustainable consumer patterns can be strengthened (Pino et al., 2012).

### *Managerial implications*

Social and environmental information is difficult to communicate for tangible goods, as these products are mostly characterized by credence attributes. It is therefore important to address these concerns directly through marketing instruments, for instance by increasing the availability of ethical product information. If this information is presented in an understandable manner, it will positively affect consumers' product evaluations (Borin et al., 2011). Accordingly, some producers (e.g., Alnatura, Arla) already disclose some ethical information items in part, which generate a high value. It is noteworthy to mention that these brands have a higher average price for ethical products and charge more than conventional alternatives do. However, the current findings indicate that all producers can

benefit from a detailed presentation of ethical product information because it allows them to better target two out of the three consumer segments identified. As the present study underlines the importance of presenting a variety of ethical product information, practitioners should aim to disclose the full range of ethical criteria (i.e., environmental protection, animal welfare, labor legislation and human rights), instead of focusing on selected elements. Furthermore, practitioners should carefully determine what ethical product information is truly relevant and use the items identified in segment-specific product communication.

In addition, digitization opens up further opportunities to provide accurate information (Berry and McEachern, 2005). Using QR codes could help strengthen consumer trust by providing detailed and context-specific information to consumers when needed (Atkinson, 2013; Osburg et al., 2016). The most important product information items could be placed on product packages, while QR codes could direct consumers to more detailed ethical product information. Presenting labels on packages in combination with ethical product attributes may also increase the effectiveness and strengthen the credibility of the information provided (Wansink, 2003).

#### *Limitations and future research*

The following limitations of this study must be considered, which also provide directions for future research. First, information preferences regarding environmental protection and animal welfare should be interpreted with caution because they might be influenced by an individual's health concerns. As self-enhancement effects could also have appeared, future studies should focus on investigating ethical product attributes in combination with consumers' general values. Second, although a CBC was chosen to simulate real purchase decisions, online surveys do not fully reflect reality. Despite employing an incentive-aligned CBC and not revealing the study's goals to participants, the results may still be

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affected by social desirability bias. Given that the majority of participants fell into the ethically motivated segment, some socially desirable responses could have occurred. It would therefore be beneficial to rely on market data for future research. Third, the relevance of ethical product aspects can be dependent on product category and further product characteristics (e.g., brand). Future studies should investigate whether the results can be generalized to other product categories and if they apply to the same extent when taking other product aspects into account. Finally, as the present study relies on a sample of primarily young, German consumers, future research should determine whether the information preferences also apply for a more diverse sample.

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**Table 1:** Attributes and Levels of the CBCA

<b>Aspect</b>	<b>Attribute</b>	<b>Level</b>	<b>Description</b>
<b>Environmental protection</b>	Preservation of biodiversity	Crop rotation (mixed cultivation) instead of monocultures to preserve biodiversity and to reduce soil erosion	E1.1
		Less manipulation of landscape	E1.2
		No clearing of national and international virgin forests	E1.3
		Ecologically produced seed and seedlings	E1.4
		[no information shown]	E1.5
<b>Environmental protection</b>	Protection of valuable resources	No use of chemical synthetic pesticides	E2.1
		No use of nitrogen and animal meal fertilizer (e.g., fish meal, bone meal)	E2.2
		Limited extent of permitted ecological fertilizer (e.g., manure, compost) to avoid salinization of soil and water	E2.3
		Economical use of energy and raw materials in dairy production	E2.4
		[no information shown]	E2.5
<b>Animal welfare</b>	Species-appropriate husbandry	Cows are frequently and regularly out on the pasture	A1.1
		Sufficient space and comfort in the stable	A1.2
		Animals are not fixed to their place	A1.3
		No use of growth hormones or preventive drugs (e.g., antibiotics)	A1.4
		[no information shown]	A1.5
<b>Animal welfare</b>	Food	Meadow/hay/grass/clover as a feed	A2.1
		Organic feed out of own cultivation	A2.2
		Feed without genetic engineering	A2.3
		No food from overseas (soya, maize, etc.)	A2.4
		[no information shown]	A2.5
<b>Labor legislation and human rights</b>	Payment of dairy farmers	Dairy farmers receive prices to cover production costs (min. 0.40€/liter)	S1.1
		Dairy farmers receive prices to generate profit (min. 0.45€/liter)	S1.2
		Reliable and long-term contracts for farmers	S1.3
		Guarantee for the purchase of milk products from the farmer	S1.4
		[no information shown]	S1.5
<b>Labor legislation and human rights</b>	Social responsibility	Financing projects / promotion of farmers	S2.1
		High safety and health standards for workers on the farm	S2.2



<b>Aspect</b>	<b>Attribute</b>	<b>Level</b>	<b>Description</b>
		Local processing to maintain value added in the region	S2.3
		Strengthening social development in rural areas (accessibility of schools, doctors, associations etc.), especially for dairy farmers	S2.4
		[no information shown]	S2.5
<b>Miscellaneous</b>	Country of origin	Of regional/local origin	C1
		Of national origin	C2
		Of supra-national (EU) origin	C3
		Of international origin	C4
		[no information shown]	C5
<b>Willingness to pay</b>	Price	0.86€/liter	P1
		1.04€/liter	P2
		1.22€/liter	P3
		1.40€/liter	P4
		1.58€/liter	P5

**Table 2:** Evaluation of Logit Estimation

<b>Results of the Multinomial Logit Model</b>	
Log-Likelihood for this model	-5786.94
Log-Likelihood for null model	-6903.75
Difference	1116.81
Chi Square	2233.62
Relative Chi Square	69.80
Degrees of Freedom	32
Alpha	< 0.0001

**Table 3:** Relative Attribute Importances

<b>Relative Attribute Importances</b>			
<i>Attribute</i>	<i>Importance</i>	<i>Cumulated importance</i>	<i>Ranking</i>
Preservation of biodiversity	6.86		
Protection of valuable resources	8.21	15.07	5
Species-appropriate husbandry	19.77		
Food	10.48	30.25	1
Payment of dairy farmers	10.95		
Social responsibility	8.55	19.50	2
Country of origin	18.36	18.36	3
Price	16.81	16.81	4

**Table 4:** Rescaled Part Worth Utilities for Average Consumers

<b>Attribute</b>	<b>Rescaled Part Worth Utilities</b>	<b>t-ratio</b>
E1.1	6.60	1.47
E1.2	<b>9.85*</b>	2.22
E1.3	8.88	1.98
E1.4	<b>14.79**</b>	3.33
E1.5	<b>-40.12***</b>	-8.05
E2.1	<b>24.29***</b>	5.55
E2.2	<b>11.08*</b>	2.47
E2.3	5.00	1.12
E2.4	1.04	0.23
E2.5	<b>-41.41***</b>	-8.33
A1.1	<b>77.92**</b>	18.81
A1.2	4.43	0.97
A1.3	<b>-22.38**</b>	-4.61
A1.4	20.27	4.57
A1.5	<b>-80.23***</b>	-14.08
A2.1	<b>20.90***</b>	4.75
A2.2	<b>39.68***</b>	9.28
A2.3	3.14	0.70
A2.4	<b>-19.55**</b>	-4.11
A2.5	<b>-44.18***</b>	-8.74
S1.1	8.51	1.89
S1.2	<b>39.23***</b>	9.17
S1.3	2.23	0.49
S1.4	-1.63	-0.36
S1.5	<b>-48.34***</b>	-9.47
S2.1	3.90	0.86
S2.2	2.80	0.62
S2.3	<b>28.22***</b>	6.53
S2.4	5.27	1.18
S2.5	<b>-40.18***</b>	-8.07
C1	<b>83.39***</b>	20.36
C2	<b>32.09***</b>	7.37
C3	<b>-33.44***</b>	-6.71
C4	<b>-63.51***</b>	-11.71
C5	<b>-18.53***</b>	-3.85
P1	<b>60.91***</b>	19.32
P2	<b>38.01***</b>	11.75
P3	<b>9.15**</b>	2.69
P4	<b>-34.48***</b>	-9.13
P5	<b>-73.59***</b>	-17.48

\*  $\alpha < 0.1$

\*\*  $\alpha < 0.05$

\*\*\*  $\alpha < 0.01$

**Table 5:** Results of Latent Class Estimation

<b>Number of Segments</b>	<b>CAIC</b>	<b>Chi Square</b>	<b>AvgMaxMP</b>
1	11878.29	2233.62	-
2	11215.82	3210.03	0.9830
3	<b><i>11200.10</i></b>	3559.68	0.9657
4	11254.26	3799.46	0.9490
5	11391.76	3975.89	0.9523
6	11590.39	4091.20	0.9528

**Table 6:** Rescaled Part Worth Utilities for each Segment

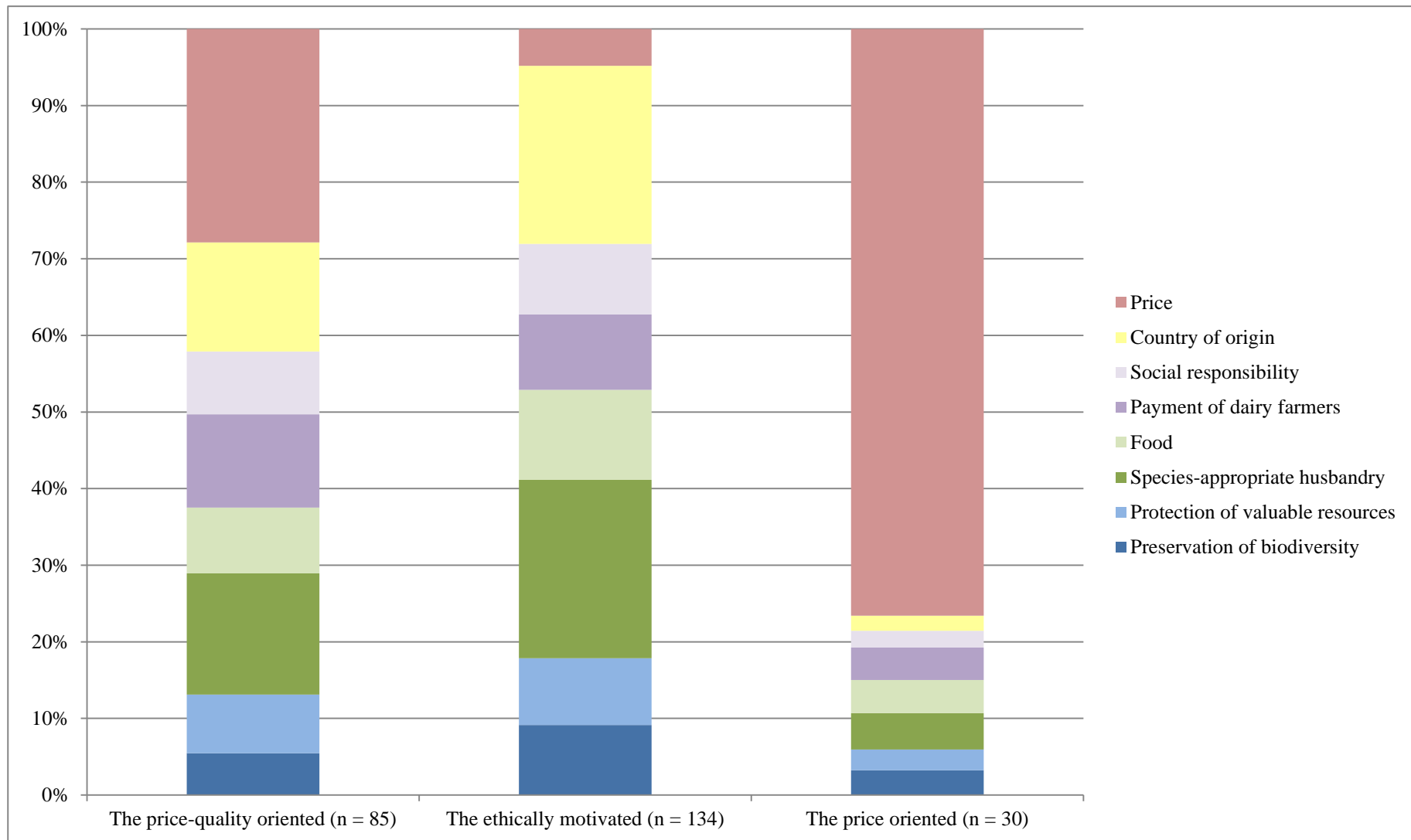
	<b>Consumer Segments</b>		
	<b>The price-quality oriented</b>	<b>The ethically motivated</b>	<b>The price oriented</b>
E1.1	10.12	11.04	-3.76
E1.2	7.19	10.87	-12.20
E1.3	8.66	5.35	13.75*
E1.4	7.55218	<b>22.94**</b>	-0.12
E1.5	-33.52***	-50.19**	2.33
E2.1	<b>31.13***</b>	<b>21.19**</b>	12.79
E2.2	2.95	<b>16.92**</b>	-8.89
E2.3	-7.21	11.83	-2.27
E2.4	3.37	-1.43	3.80
E2.5	-30.25***	-48.52***	-5.43
A1.1	<b>49.17***</b>	<b>101.64***</b>	0.30
A1.2	<b>17.63**</b>	-5.33	5.26
A1.3	-4.38	<b>-31.81***</b>	-8.90
A1.4	<b>14.86*</b>	<b>20.25**</b>	<b>20.66**</b>
A1.5	-77.29***	-84.74***	-17.31**
A2.1	-1.03	<b>35.05***</b>	<b>15.35*</b>
A2.2	<b>33.41***</b>	<b>41.77***</b>	8.65
A2.3	8.67	-3.90	4.04
A2.4	-5.83	-20.67	-8.80
A2.5	-35.23***	-52.25***	-19.24**
S1.1	12.16	1.63	0.44
S1.2	<b>41.82***</b>	<b>38.15***</b>	3.29
S1.3	-0.03	4.20	4.78
S1.4	1.69	-3.44	12.67
S1.5	-55.63***	-40.54***	-21.18**
S2.1	7.43	2.20	-3.48
S2.2	7.20	0.48	4.06
S2.3	<b>22.61**</b>	<b>33.28***</b>	6.63
S2.4	5.71	4.37	3.70
S2.5	-42.95***	-40.34***	-10.91
C1	<b>65.33***</b>	<b>102.49***</b>	4.82
C2	<b>33.37***</b>	<b>36.19***</b>	7.60
C3	<b>-15.42**</b>	<b>-45.10***</b>	-8.14
C4	<b>-48.52***</b>	<b>-83.46***</b>	-3.48
C5	-34.75***	-10.12	-0.80
P1	<b>80.47***</b>	<b>-12.11*</b>	202.07
P2	<b>76.07***</b>	1.62	131.38
P3	<b>29.19***</b>	<b>22.92***</b>	63.14
P4	<b>-43.17***</b>	3.15	14.02
P5	-142.56***	-15.57**	-410.61

\*  $\alpha < 0.1$

\*\*  $\alpha < 0.05$

\*\*\*  $\alpha < 0.01$

**Figure 1:** Identified Segments with Attribute Importances



## Appendix

**Table AI:** An Exemplary Choice Card Used in the Study (Adapted and Translated from the German Version).

Milch 1	Milch 2	Milch 3	Milch 4
<ul style="list-style-type: none"><li>- Sufficient space and comfort in the stable</li><li>- Of national origin</li><li>- Meadow/hay/grass/ clover as feed</li><li>- Less manipulation of landscape</li><li>- Guarantee for the purchase of milk products from the farmer</li></ul>	<ul style="list-style-type: none"><li>- Of supra-national (EU) origin</li><li>- Feed without genetic engineering</li><li>- Financing projects / promotion of farmers</li></ul>	<ul style="list-style-type: none"><li>- Cows are frequently and regularly out on the pasture</li><li>- Of local origin</li><li>- Organic feed of own cultivation</li><li>- Limited extent of permitted ecological fertilizer (e.g., manure, compost) to avoid salinization of soil and water</li><li>- Ecologically produced seed and seedlings</li><li>- Dairy farmers receive prices to generate profit (min. 0.45€/liter)</li><li>- Local processing to maintain value added in the region</li></ul>	<ul style="list-style-type: none"><li>- Cows are frequently and regularly out on the pasture</li><li>- Feed without genetic engineering</li><li>- No use of chemical synthetic pesticides</li><li>- Ecologically produced seed and seedlings</li><li>- Guarantee for the purchase of milk products from the farmer</li><li>- High safety and health standards for workers on the farm</li></ul>
1.04€/liter	0.86€/liter	1.58€/liter	1.22€/liter
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>