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Master Thesis

CONSUMER REACTIONS TO A SECOND PRICE TAG

AN EFFECTIVE COMMUNICATION TOOL FOR ENVIRONMENTALLY FRIENDLY PURCHASING BEHAVIOR?

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I. Abstract

Consumers are often unable to assess the environmental impact of food while making purchasing decisions. Footprint labels provide consumers with information on the environmental performance in order to differentiate between products and ultimately choose environmentally friendly product alternatives. In this case study, a monetary indicator on the basis of the eco-cost model using life cycle assessment data, called a second price tag, is used to represent the environmental footprint of tomatoes. Two focus group sessions with a total of twelve participants were conducted to gather insights on the acceptance and characteristics of three label alternatives designed for the purpose of the study. The second price tag concept and the design alternatives were assessed with regard to the requirements of understandability, comparability, credibility, consistency, and relevance in decision-making. Propositions for a second price tag can be derived from the results in the following categories: degree of information input, degree of information output, degree of independence and degree of voluntariness. The findings suggest that a low degree of information output using comparative traffic light labeling might be useful, whereas a stand-alone monetary indicator was considered too abstract and ineffective for comparison. Standardization and monitoring were critical factors leading to the proposal of high independence of the label source to ensure high credibility. The second price tag could serve as an effective communication tool for non-processed food but needs to be further investigated with broader samples and more statistical power.

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1. Environmental Impact of Food

Environmental pressures due to the overuse of resources are a major issue that is at the top of the global agenda. In the European Union, agriculture and transport are among the four dominating economic sectors that account for 86 percent of the total environmental pressures caused by EU-wide production (European Environment Agency, 2013, p. 34). Against the background of the increasing climate crisis, consumers are looking for more transparency and sound information in order to assess their purchasing decisions in terms of environmental impact. According to a study by Prognos AG on behalf of the Federation of German Consumer Organizations, 86 percent of the German consumers criticize the lack of transparent information on the impact of food on the climate (Prognos AG, 2010, p. 48). Eco-labels are one way to facilitate decisions and influence consumption to improve the overall environmental impact of food. In the literature, different eco-labeling schemes for food have been discussed, mostly focusing on one impact category such as the carbon footprint (Kortelainen, Raychaudhuri, & Roussillon, 2016; Vanclay et al., 2011). However, consumers are also interested in getting a more holistic picture of the environmental impact of their consumption (Hartikainen, Roininen, Katajajuuri, & Pulkkinen, 2014). The function of such eco-labels is to support consumers in making more informed and eco-friendly purchasing decisions (Schumacher, 2010, p. 2204). This is necessary since consumers tend to use heuristics, such as the ‘buy local’ or ‘organic’ heuristic, when they cannot assess the environmental impact of food resulting in sub-optimal eco-friendly consumption (Tobler, Visschers, & Siegrist, 2011; Payen, Basset-Mens, & Perret, 2015; Page, Ridoutt, & Bellotti, 2012).

The proposition of a so-called second price tag in the national report for sustainable consumption issued by the Federal Ministry for the Environment, Nature Conservation, Construction and Nuclear Safety in 2017 reflects the public relevance of a communication tool which informs consumers about the environmental performance of a food product. A second price tag is intended to fulfil the function of making the purchasing decision easier on the basis of environmental information of products measured as environmental costs. According to the proposition, the second price tag should combine ecological and social impacts of a product to form one monetary indicator. The aim of such an eco-label is to facilitate the comparison of products within the same product category (BMUB, 2017, p. 29) and to encourage consumers to include environmental costs of production, usage or end-of-life in their decision-making process (Umweltbundesamt, 2016, p. 63).

Whether the concept of a second price tag is an effective tool to encourage sustainable consumption patterns has not yet been researched. Within this debate, the author aims to answer the following research question:

Which characteristics could a second price tag have in order to support consumers in environmentally friendly purchasing decisions?

The question is addressed through an exploratory approach in the form of a case study on tomatoes. For this purpose, literature on monetary valuation methods within the context of life cycle assessments on tomatoes and on requirements for eco-labels as well as their effectiveness in terms of consumer behavior was viewed. Building on this research, three different label alternatives were developed based on a single monetary indicator. Subsequently, the proposed concept and label alternatives were discussed in two focus group interviews in order to assess whether they met the pre-defined requirements. The analysis and evaluation of the categorized consumer reactions are presented thereafter. As a result of the qualitative content analysis, propositions are given with regard to the degree of information input, information output, independence, and voluntariness a second price tag could have to best fulfil the requirements of an eco-label. In addition to the discussion about whether a second price tag can influence consumer behavior and which characteristics appear to be the most suitable ones, the relevance of a second price tag is discussed in the existing scientific eco-labeling debate, limitations of this study are pointed out and suggestions for further research are given.

2. Literature Review and Theoretical Framework

The governmental suggestion does not specify which method could be used to develop such an eco-label or how it could be implemented. Hence, the challenge is to explore separately the concepts and methods that may be necessary to design an eco-label with a monetarized value and to illustrate a relevant concept of consumer behavior in the presence of eco-labels.

2.1 Environmental Eco-Labeling with Life Cycle Assessments

At the current stage of research, life cycle assessments (LCA) are the internationally predominantly way to assess the ecological performance of products (Klöpffer & Grahl, 2014, p. XI; Vlaeminck, Jiang, & Vranken, 2014). The LCA data can be used as additional information on products in the form of eco-labels representing environmental impacts as shown

in Tobler et al. (2011). So far, it is more common to use either only one impact category to assess the footprint or to utilize broader footprints such as the nitrogen or water footprint (Leach et al., 2016; Borin, Cerf, & Krishnan, 2011).

A LCA framework comprises the definition of a goal and scope, an inventory analysis as well as an impact assessment and concludes with an interpretation of results (Klöpffer & Grahl, 2014, p. 11). Standardization of the LCA is ensured with the ISO 14040 series, though the choice of impact categories is left to the individual life cycle analyst (Klöpffer & Grahl, 2014, p. 182). It is obligatory to define the technical boundary (e.g. cradle-to-factory gate), the geographical boundary (e.g. product manufactured in one specific location/country), and temporal system boundaries (e.g. a year of reference for data acquisition) as well as the functional unit (e.g. per 1 kg of product) in order to ensure comparability of product systems. In the subsequent impact assessment, the quantitative extent of the environmental pressures is assessed. Whereas midpoint impact assessments estimate cause-effect relations in midpoint impact categories such as climate change, ozone depletion or eutrophication, end-point impact assessments evaluate the impact on specific areas of protection such as resource depletion or impacts on human health (Pizzol, Weidema, Brandão, & Osset, 2015, p. 171). The quantitative terms can then be converted into one unified scale by applying weighting factors as an optional step. In some cases, not every phase of the life cycle is included in the analysis. This depends on the product system and the defined goal of analysis (Klöpffer & Grahl, 2014, p. 53 - 55).

For the application in eco-labeling, the LCA approach is one of the most useful methodologies to conduct a summarized impact analysis along the entire life cycle (Prakash, Stratmann, & Manhart, 2008, p. 3). However, some challenges concerning the calculation are associated with the use of LCA for eco-labeling, e.g. the fact that not every environmental issue can be expressed quantitatively or that these issues cannot be interpreted sufficiently yet (Prakash, Stratmann, & Manhart, 2008, p. 5). In addition, as it became clear during the analysis of LCA methods, it is not possible to include every impact category in every LCA method. However, the focus of this work is not on the investigation of scientific feasibility, but on the acceptance and reactions of consumers regarding LCA information in an eco-label.

2.2 The Use of Monetary Valuation Methods in Life Cycle Assessments

When one comparable unit expressed in a monetary value is used to reflect the results of a LCA, this is referred to as monetary valuation (Prakash et al., 2008). This tool is e.g. used in product

design, cost-benefit analysis or risk assessment (Ahlroth, Nilsson, Finnveden, Hjelm, & Hochschorner, 2011). Existing LCA literature offers numerous assessment methods and comparative studies for the selection of a monetary valuation method in order to transform the LCA values into one single monetary indicator (Weidema, Brandão, & Pizzol, 2013; Weidema, 2015; Ahlroth, 2014; Pizzol et al., 2015). It is not within the scope of this work to give a comprehensive overview of every available monetary valuation method. Thus, only the two prevailing methods in the literature shall be compared: the damage cost method and the prevention cost method. Both follow the approach of presenting environmental impacts economically, but do not yet include the impacts in the economic costs of a product or service (Vogtländer, Bijma, & Brezet, 2002, p. 59). For these methods, a series of weighting sets exists, aiming at an easier calculation with pre-set weights (Ahlroth, 2014, p. 34). Damage cost models use market prices as a value to determine the loss of production caused by environmental damages (Ahlroth, 2014, p. 34), thereby representing negative externalities (Weidema et al., 2013, p. 8) A comparative review study shows that there is no uniformity in the designation of the individual methods or method classes (Weidema et al., 2013, p. 20). Reviews on monetary valuation methods and weights reveal that damage cost models are subject to subjective weighting practices and tend to lack transparency concerning the weighting criteria used (Finnveden, 1999, p. 16; 32).

In order to better calculate environmental threats, the prevention costs method, sometimes also known as the avoidance cost method, was developed. This method estimates what it would cost to limit e.g. emissions to a certain threshold (Antheaume, 2004, p. 449). The model using the marginal prevention costs of material depletion, energy consumption and toxic emissions is called eco-cost model (Vogtländer, Brezet, & Hendriks, 2001, p. 157). Marginal prevention costs are calculated on a virtual basis since the compensation for the environmental burden is not yet ensued to reach a sustainable situation. In comparison to damage costs, eco-costs are easier to calculate and are more transparent (Vogtländer, 2010, p. 18). Furthermore, the challenge of subjective weighting can be overcome leading to more exact results (Wever & Vogtländer, 2013, p. 233).

For the present study, the prevention cost method, i.e. eco-costs, is selected to be tested as a means of communication to consumers. The reason for this is twofold. On the one hand, the eco-cost model is the only model found where comparable secondary LCA data sets on tomatoes are available, which is why it is selected for the analysis. On the other hand, the

existing research by Vogtländer et al. (2002) on the communication of LCA information in the form of a single monetary indicator to different stakeholders can be supplemented by choosing the eco-cost model. Within that study, the effect of an LCA indicator on three different stakeholder groups consisting of customers, business representatives, and governmental representatives was tested. It was ascertained that the eco-cost indicator is more appealing to consumers than a score in points (Vogtländer et al., 2002, p. 66). It should be noted that the decision to use the prevention cost method is taken from the point of view of a marketer and may take a different form from the perspective of an environmental engineer. For instance, whether human toxicity should be included into monetary valuation is discussed in literature as both exposure and effect assessments are subject to uncertainty (Ahlroth & Finnveden, 2011, p. 2001).

2.3 The Functions of Eco-Labels

From a consumer perspective, an effective eco-label fulfills various functions. To understand how eco-labels work, the particularities of low involvement purchases have to be outlined. Purchasing decisions can be made with limited internal and external resources by applying a limited or even a habitual decision-making process. In these situations, consumers either use an evoked set in which alternatives have already been evaluated, or they do not engage in detailed cognitive processing, in particular when buying the same brand repeatedly (Weinberg, 1981, p. 90-119). Since consumers have experience and information about standard food purchases such as vegetables, they are likely to apply these decision-making processes. The fact that environmental criteria may play a subordinate role compared to other criteria such as price and brand in these decision-making processes has already been researched (Grunert, Hieke, & Wills, 2014, p. 185f.). Given these conditions, eco-labels help consumers to differentiate between more and less eco-friendly products and provide valid information since they make environmental criteria visible (Schumacher, 2010, p. 2203). This is particularly relevant when heuristics (rules of thumb) are applied helping consumers to make an adequate purchasing decision with minimum effort (Scheibehenne, Miesler, & Todd, 2007, p. 580). In this context, consumers apply heuristics when they do not have access to all the information they need to assess the environmental impact of the product (Lehner, Mont, & Heiskanen, 2016, p. 168). Moreover, consumers are not always aware of the environmental impact related to their food purchases (Leire & Thidell, 2005, p. 1064). The reasons can be twofold. First, an information asymmetry occurs when consumers are unable to determine the environmental friendliness of a product due to the credence character of environmental attributes situation (Darby & Karni,

1973, p. 68f.). Second, it occurs when producers hide information about environmentally unfriendly characteristics that put the consumer at risk of buying a product with a bad environmental performance (Schumacher, 2010, p. 2204). From a policymaker's perspective, the objective of eco-labels is to reduce information asymmetries and set incentives for innovations in the market (Bratt et al., 2011, p. 1632). Yet, the overall objective may be to reduce the environmental impact of consumption through changing decision-making (Horne, 2009, p. 179; Thøgersen, 2000, p. 287). That is to say, eco-labels can function as a nudge to help consumers choose more sustainable alternatives (Ölander & Thøgersen, 2014). In order to fulfill these functions, an eco-label requires certain characteristics which are explained in the following.

2.4 Requirements for Designing an Eco-Label

In the context of communicating the environmental impact of a product, the design of the eco-label is a decisive factor. To structure the relevant areas of label design for a second price tag, the requirements from the Product Carbon Footprint Pilot Project Germany are applied to investigate the new eco-labeling scheme within this study (Prieß, 2009, p. 21f.). The requirements are underpinned with valuable findings from footprint labeling studies and studies on price perception. Subsequently, these requirements can be used to assess the most effective characteristics of a second price tag.

Understandability

An eco-label has be adapted to the information needs of the target group. This means, the right amount of information and the right way of presenting this information is important (Prieß, 2009, p. 22). Regarding information overload, the literature agrees that too much information can enhance consumer confusion due to consumers' limited cognitive capacity to process every detail on the packaging and other stimuli in the purchasing environment (Schumacher, 2010; Vlaeminck, Jiang, & Vranken, 2014; Verbeke, 2005) Thus, the eco-labels may not fulfill its functions due to excessive information or too complex and text-intensive content, for instance. To interpret the meaning of the large variation of existing logos or symbols on eco-labels might require a high effort impeding understandability (Thøgersen, 2000). Interestingly, Vogtländer et al. (2002, p. 66) found that a detailed understanding was not even necessary for consumers to accept the eco-cost concept. However, it is nevertheless important that consumers understand the negatively coded message of the concept. A second price tag, which in one form or another represents the environmental impact of a product, may also be regarded as a negative eco-label

as it conveys a negative attribute message in the form of costs incurred by hypothetical prevention of environmental damage. This way, it is intended to direct consumers not to buy the most environmentally harmful products. It was found that a negative eco-label on a non-eco-friendly product improved the perception of eco-friendly alternatives over the harmful one (Borin et al., 2011, p. 81). This is grounded on the prospect theory according to which consumers are loss averse and tend to give negative information more weight in their judgements than neutral or positive information (Kahneman & Tversky, 2000, p. 354). This means, a red label would have more influence on the change of the purchasing intention than a green label showing the gain of buying an environmentally friendly product. Or, speaking of comparative labels, options above the reference value are perceived as positive, while products below the reference value are perceived as negative.

Comparability

Comparability is required to help consumers differentiate products within the same product category or for products with different types of use and to give consumers advice about the environmental friendliness of products (Prieß, 2009, p. 22). A ranking can be provided by multi-level eco-labels that are already used for the EU energy label (European Commission, 2019) or for the German animal welfare label (Federal Ministry of Food and Agriculture, 2016). In the food sector, the traffic light label is the most prevailing multi-level label (Weinrich & Spiller, 2016, p. 1139). The main benefit of traffic light label systems is that they label not only the most environmentally friendly products, but also those with lower performance (Thøgersen & Nielsen, 2016, p. 5). However, this benefit is accompanied by a disadvantage. With the traffic light label consumers can only compare the products at the specified level, i.e. absolute comparability is limited (Thøgersen & Nielsen, 2016, p.11). Interestingly, Hartikainen et al. (2014, p. 290) found that the absolute carbon footprint value was equally positively evaluated by consumers. They assume that consumers relate the effort needed for calculating the eco-label with an incentive for the producer to improve the environmental performance in order to lower these efforts, thereby resulting in positive evaluations of the absolute carbon footprint value. In contrast, consumers are more likely to change food purchases if the environmental impacts are put into context (Schmidt, 2009, p. S9). Therefore, designing an eco-label with the product's relative performance based on a reference value might be most helpful.

Perception of Numerical Information

This study uses a monetary indicator as the basis for the eco-label. It is therefore of particular interest how consumers react to numerical information in the form of eco-costs and how this information should be designed. So far, scientific and business experiments on footprint eco-labeling have investigated how consumers perceive numerical information in the form of footprint weights or daily values as a sustainable reference value (Leach et al., 2016) or as a reduction of carbon footprint in percentage (Van Loo, Caputo, Nayga, & Verbeke, 2014), but not in the form of a price. As the name second price tag implies, the eco-label represents an additional price. According to the adaptation-level theory, two determinants influence price perception: the actual price and the consumer's reference price, whereby the price is perceived by the deviation of the internal reference price from the actual price (Monroe, 1973, p. 76; Janiszewski & Lichtenstein, 1999, p. 365). The theory implies that consumers do not evaluate prices indivudually, but rather judge prices in reference to standards that may be objective or subjective (Emery, as cited in Monroe, 1973, p. 76). This leads to the assumption that a single monetary indicator might not help consumers since the concept of eco-costs is new to consumers and reference prices are not yet set. Another important aspect is numeracy. It shows how well consumers are able to understand probabilities, fractions and ratios (Fagerlin et al., 2007, p. 672). It has already been studied in the context of the carbon footprint, where it reflects the degree to which consumers can estimate the carbon footprint of their consumption behavior without complicated calculations. It was concluded that numeracy is the requirement for policy measures such as eco-labeling (Grinstein, Kodra, Chen, Sheldon, & Zik, 2018, p. 11). Also, for the complex concept of eco-costs, numerical understanding of the information is an important requirement. Hence, a monetary eco-label is required to render complex numerical information into a simple scale. Therefore, the perception of numerical information is related to the understandability of the eco-label and is not evaluated as an individual requirement in the empirical research. In terms of comparability, it was found that a product pair with numerical information is easier to compare than a pair with only verbal information or mixed representations on the label, though at the expense of processing depth (Viswanathan & Narayanan, 1994, p. 97f.). This finding should be taken into account when assessing the comparability of eco-labels using numerical information.

Credibility

Credibility refers to the extent to which consumers evaluate the source of information as credible (Hovland & Weiss, 1951). Credibility implies that the information is provided

transparently without greenwashing attempts and can therefore be used in purchasing decisions in competitive markets (Lemke & Luzio, 2014, p. 627). There is a long history of research on source effects that assessed the influence of source credibility on the perception of the eco-label. Research has shown that consumers trust independent certification institutions such as governmental issuers more than self-declared corporate claims (Eden, 1994; Ertz, François, & Durif, 2017; Teisl & Roe, 2005). However, if the source is not properly communicated to consumers, they can be distrustful despite the independent source, as a Norwegian study on the Nordic Swan Eco-label has found (Tufte & Lavik, 1999 in Thøgersen, 2000, p. 289). In sum, it is required to communicate transparently which processes were applied and which parties were involved (Prieß, 2009, p. 21).

Consistency

In order to avoid consumer confusion due to the abundance of numerous and diverse forms of environmental statements, consistency is another requirement for designing an eco-label. It can be divided into consistency of guidelines and consistency of distribution. Consistency of guidelines implies the use of the same guidelines when assessing the eco-costs for all comparable goods whereas consistency of distribution describes the use of the same eco-label when distributing products at various points of sale. A standardized methodology for the calculation of eco-costs for different product types should be used. Additionally, changes in values should visibly highlighted. Moreover, the methodology used has to be documented transparently and must be accessible to the consumer (Prieß, 2009, p. 21). Since the eco-cost method has not been used for communication, no guidelines exist which could be referred to. Nevertheless, the model is based on LCA methodology defined in the ISO 14040 and 14044 to ensure standardization (Vogtländer, 2010, p. 131)

Relevance in decision-making

When considering the aforementioned requirements, it becomes clear that a second price tag may not achieve the defined objective of influencing consumer behavior unless consumers are aware of, believe, understand and are able to use the presented information. In order to understand how an eco-label can influence decision-making, a conceptual model for information processing is presented separately in the next sub-chapter.

2.5 Determinants of Paying Attention to Eco-Labels

In research on consumer behavior, information processing models and advertising effectiveness models can be divided into cognitive, affective, and conative components. Cognitive

components are attention, awareness, comprehension, and learning, whereas the affective components are divided into interest, evaluation, attitude, feeling, and belief. Conative reactions are behavioral intention, behavior and action (L. Ray et al., 1973, p. 149f.). The categorization into cognitive, affective and conative components of a decision-making process can be transferred to the conceptual framework used in this study.

Since the focus of this study is to ascertain which characteristics an effective environmental communication tool could comprise, a new conceptual model (see Figure 1) is derived on the basis of the causal path model by Thøgersen (2000). The causal path model can help to explain psychological factors of a buying decision. For an eco-labeled product to be purchased, a series of steps must be completed. However, it is also possible that some steps may be omitted. Basically, it draws on insights from Petty & Cacioppo (1986) according to which the persuasive effect of advertising depends on *motivation*, *ability* and *opportunity* to process the provided information. With regard to the depth of information processing, it has to be noted that involvement influences how much the consumer engages in information processing (Celsi & Olson, 1988), and that eco-friendly buying behavior described in the sequences of the model refers to low-involvement purchases (Thøgersen, 2000, p. 291f.). It can therefore be concluded that decisions involving an eco-label are likely to be part of a limited or habitual decision-making process which has been explained in subchapter 2.3.

Motivation describes how much consumers engage in searching for and processing information. *Opportunity* to process the eco-label information is related to the amount of exposure in terms of time, amount of information and availability of eco-labels. *Ability* describes how well consumers are able to understand the information and how experienced they are in interpreting eco-labels (Petty & Cacioppo, 1986, p. 61 - 81).

The causal path model emphasizes the importance of consumers' motivation consisting of four components as a prerequisite for paying attention to eco-labels. It is assumed that the more consumers are concerned about environmental issues related to food production, the higher their level of attention paid to eco-labels. *Trust* in the eco-label and its issuing source is the most important motivational factor to be explored in the empirical case study. However, if consumers are to be nudged to buy eco-friendly products, they also need to have a *pro-environmental attitude*, i.e. a certain level of conviction that they can influence the achievement of their objectives to help protect the environment *(perceived consumer effectiveness [PCE])*.

Moreover, consumers have to be convinced of environmentally friendly buying as one way to achieve the goal of protecting the environment (*belief in environment-friendly buying*). Though these three determinants cannot be neglected, they are not of special interest in the present study. The reason for this is that these determinants cannot be assessed to a satisfactory extent with the selected research method due to social desirability in response behavior. *Trust* builds on the two aforementioned factors of *pro-environmental attitude* and *PCE*. Consumers only trust the eco-label if they consider the information to be credible, i.e. they need to trust the issuing institution of the eco-label as well. Availability as one of the two external factors in the causal path model refers to the newly integrated component *opportunity* since consumers can only be exposed to eco-labels if they are available at the point of sale. The external factor of knowledge is integrated in the new component of *ability* since consumers have to know the eco-label and understand its meaning in order to pay attention to it and involve it in their decision-making (Thøgersen, 2000).

Motivation and *ability* influence each other since a higher degree of *motivation* can increase understanding and learning of eco-labels. Conversely, when consumers are able to understand the information on the eco-label, they are more motivated to pay attention to it and make use of it (Grunert et al., 2014, p. 179). One weakness of the causal path model is that eco-label design, product characteristics and additional consumer characteristics are not considered (Teisl, Rubin, & Noblet, 2008, p. 154). With the described adjustments the missing importance of the eco-label design in the model can be compensated.

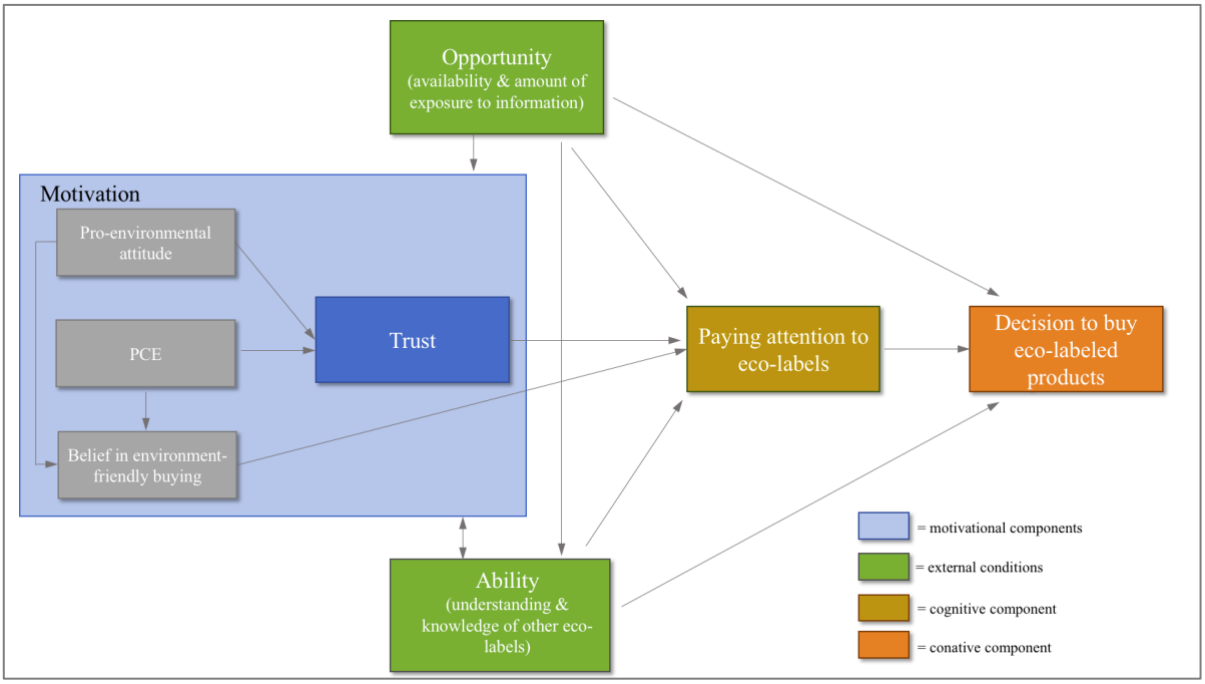

Figure 1: Conceptual model – Adapted causal path model (Source: Own representation based on Thøgersen (2000))

The aforementioned determinants influence *paying attention to* eco-labels. Only if the eco-label is able to catch the consumers' attention, they will finally decide to buy an eco-friendly product (Thøgersen, 2000, p. 307). In this study, the research design, as presented in the following chapter, was designed to examine how the reactions to the second price tag concept are influenced by the components of the adapted causal path model. In particular, the two external factors *ability* and *opportunity*, as well as *motivation* and *trust,* which lead to *attention to* the second price tag and to the decision for the more environmentally friendly product alternative, are evaluated.

3. Research Design

Since the second price tag has not yet been researched as a consumer communication tool, an exploratory approach appears to be necessary to start research on this topic. In contrast to the government proposal, this study focuses only on the environmental impact of food for methodological reasons of simplicity. Tomatoes were chosen as the product for the experiment due to their widespread use in the studied population and due to their environmental properties.

3.1 Calculation of the Second Price Tag

Two different tomatoes of the same type were selected for the use in the empirical case study: one tomato from Europe, grown in the Netherlands, and an export tomato from Morocco with eco-cost data derived from Idematapp data by Delft University of Technology (Vogtländer,

2019). Table 1 gives an overview of the selected tomatoes and the methodological set-up. Apart from the origin, the two tomatoes differ in their cultivation method. While the Dutch tomato is grown under heated greenhouses, in Morocco, non-heated greenhouses are used for tomato production. The authors of the underlying LCA study note that due to the lower energy inputs in southern countries during winter months, exporting Moroccan tomatoes to Northern Europe causes less environmental impact than a locally grown off-season tomato, even after adding the environmental impact of transportation (Payen et al., 2015, p. 144). Therefore, the eco-costs for the Moroccan tomato are lower than the ones for the Dutch tomato (see Table 1). The system boundaries in both cases are from cradle to market gate to ensure comparability.

Table 1: Data comparison for the selected tomato types (Source: Own elaboration based on Payen et al. (2015) and Vogtländer (2019))

	Tomato 1	**Tomato 2**
Origin	Netherlands	Morocco
Functional unit	1 kg of fresh bulk tomatoes	1 kg of fresh bulk tomatoes
Cultivation method	heated greenhouses with light	unheated greenhouses
Eco-costs at farm gate	0.46 euros/kg	0.04 euros/kg
Eco-costs at market gate	0.48 euros/kg	0.15 euros/kg
Temporal system boundaries	December – February	annual crop cycle
Geographical system boundaries	Netherlands	Souss-Massa region
Technical system boundaries	from cradle (cultivation) to market gate (Nuremberg)	from cradle (cultivation) to market gate (Nuremberg)

3.2 Development of Label Alternatives

The following three eco-label alternatives represent the eco-costs in euro per kilogram since the eco-costs are calculated per kilogram, thus a denomination in euro per gram would lead to low figures. There is sufficient evidence that consumers rely primarily on the magnitude of the number and tend to neglect the unit component (Fecher, Robbert, & Roth, 2019). Based on this finding, the eco-costs were not transformed into smaller unit prices to increase the acceptance of the second price tag. The three labels chosen to be assessed within this study are an absolute monetary label, a multi-criteria traffic light label and a comparative label based on the product category average. An overview of the label alternatives that were shown to the participants in the form of a handout can be found in Annex 2.

Label Alternative 1

The first label (see Figure 2) displays the absolute eco-costs supplemented by a short explanatory text on the calculation, the system boundaries and the end-point impact categories. It was printed underneath the normal price tag on the handout (see Annex 2).

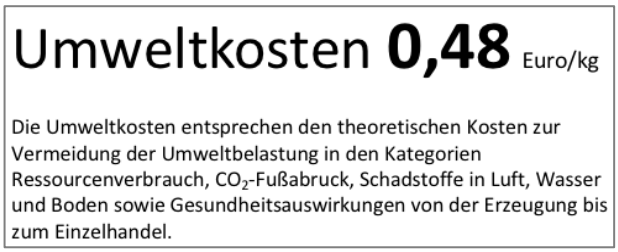

Figure 2: Eco-label alternative 1(Source: Own representation)

Label Alternative 2

The second label alternative (see Figure 3) is a multi-criteria label based on a traffic light rating system which turned out to be the most effective in the aforementioned study by Thøgersen & Nielsen (2016). The design was used in a study by Lukas, Rohn, Lettenmeier, Liedtke, & Wiesen (2016) where it combined environmental and health indicators. It shows the four end-point impact categories of human health, resource depletion, eco-toxicity, and carbon footprint which are divided into three thresholds and allow a more detailed comparison of products. Again, a small explanatory text is depicted underneath the eco-label. The environmental impact categories are chosen in accordance with the end-point impact categories in the eco-cost method. The thresholds are not set in accordance with pre-existing weights. For the purpose of this study, the thresholds were set only by comparing the values between categories. The idea was to test whether adding information about the relative eco-cost performance of the product, in addition to the absolute eco-cost value, makes the eco-label more intuitively understandable for consumers and therefore more effective.

Figure 3: Eco-label alternative 2 (Source: Own representation based on Lukas et al. (2016))

Label Alternative 3

The third label alternative (see Figure 4) is also a comparative eco-label, but provides the relative performance compared with the average eco-costs in the product category as a reference value. The needle indicates product-specific eco-costs of the product compared to the product category. Three color blocks give orientation with regard to the relation to the average value, i.e. whether the eco-costs are average, below average or above average. However, it is currently not possible to calculate an average in the product category, which is why the average was not set according to realistic values, but by comparing the eco-costs of the two chosen tomatoes with each other.

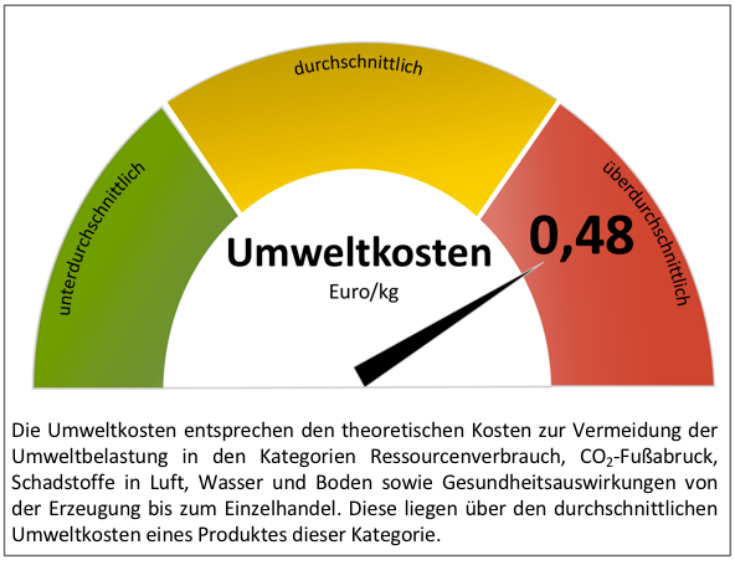

Figure 4: Eco-label alternative 3 (Source: Own representation)

3.3 Research Method

The selected research method are focus groups as they can be used as part of a case study design (Yin, 2014, p. 349). This research can function as a pilot study and ensures that no relevant content or design aspects are overlooked during conceptualization, and also generates theoretical ideas that can be verified in future quantitative research. This procedure is based on the exploratory approach using everyday knowledge to underpin prescientific explanations (Calder, 1977, p. 360).

3.3.1 Focus Group Interviews

Data to understand consumer reactions was collected in two focus group interviews. The focus groups were conducted in two sessions at two different locations in the south of Germany. According to the commonly applied rules of thumb, focus groups include six to ten participants who are selected in accordance with the homogeneous sampling method (Morgan, 1997). Thereafter, six participants were selected for each focus group, resulting in a total of twelve participants (n = 12). Due to restricted time resources, the homogeneous approach was only applied in two forms, in terms of economic status and age group. The homogeneous sampling was chosen to encourage a more open and interactive discussion resulting from group dynamic

effects. For instance, people from similar backgrounds can develop greater attachment and thus greater honesty (Schulz, Mack, & Renn, 2012, p. 13). The sample included not only very environmentally concerned consumers, but all consumers that could potentially be activated. For this reason, it was not recruited according to environmental awareness or concern. Overall, a purposive criteria-based sampling approach was pursued which aimed at gaining a vast amount of knowledge without adhering to shares in the initial population (Schulz et al., 2012, p. 31). Two focus groups were conducted, so that the data was sufficiently varied. It was therefore envisaged to compare the first group consisting of professionals aged 30 and over with the second group of students under 30. The potential bias by mixed gender groups was not considered to be a priority for the issue at hand. To ensure a natural discussion some of the participants did know each other. The participant variables used for sampling can be found in Annex 3. The average age in the first focus group consisting of professionals older than 30 was 54.8. It has to be noted that there was an aberration of one participant who was not between 50 and 65 years old. In the second focus group comprising of students the average age was 24.8 years.

The focus group interviews were relatively structured and standardized for both focus groups to ensure comparability between the two groups. In addition, external recorders were commissioned to document relevant statements and interactions in a protocol to be able to assign contributions to participants afterwards (see Annex 4). Moderator involvement was high, following another rule of thumb suggested by Morgan (1997). The funnel approach was used according to which the discussion begins with a more open question on the topic followed by more specific questions. The open entry into the discussion helps participants to engage with the topic and come up with own ideas relevant from their point of view (Bryman, 2012, p. 247). The interview guide was developed based on the literature research carried out beforehand. An overview of the structure of the interview guide can be seen in the table below (see Table 2). The full interview guide can be found in the annex (see Annex 1). The interviews were audio-taped and in addition, essential speech contributions and non-verbal communication such as facial expressions and gestures were registered in the protocol (see Annex 4).

Table 2: Interview guide summary (Source: Own representation)

Warm up **(attitude towards environmental impact of food, relevance in purchasing decision)**	▪ tomato purchasing criteria ▪ evaluation of environmental impact of tomato life cycle ▪ sources of information of environmental performance ▪ evaluation of environmental friendliness of two tomatoes in comparison ▪ environmental friendliness as a purchasing criterion
Views on the concept	▪ open discussion about strengths and opportunities as well as drawbacks and risks of the second price tag concept
Presentation of the three different label alternatives	▪ cognitive reactions (understandability, comparability) ▪ affective reactions (evaluation, trust) ▪ conative reactions (change in purchasing intention) ▪ preferences for label alternative
Further questions	▪ issuing institution ▪ credibility ▪ need for additional information ▪ relevance in the decision-making (paying attention)

Each focus group session was divided into four parts (see Table 2). After a short introduction, each focus group session started with a warm-up on the participants' own criteria for grocery shopping for tomatoes. To assess the participants' prior eco-perceptions of tomatoes, they were asked to indicate the environmental burden they perceive as the most harmful along the tomato product life cycle. This helped the researcher to get to know the sample and the participants to become familiar with the topic. In order to test whether participants would apply the 'buy local' heuristic concerning the environmental impact, the two tomatoes were shown without the second price tag label. Participants were then asked to assess the environmental friendliness of the tomatoes without any further information apart from variety, price, origin and quality class. The participants received a written handout with the pictures of the two tomatoes (see Annex 2). Since the study applied a winter scenario, but was conducted during the summer months, no retail prices were available. The prices were calculated on the basis of wholesale prices (1.09 euros/kg for round tomatoes from the Netherlands, 1.00 euros/kg for round tomatoes from Morocco) with a retail margin of 20 percent, resulting in a gross price of 1.40 euros/kg for the Dutch tomato and 1.28 euros/kg for the Moroccan tomato (Bundesanstalt für Landwirtschaft und Ernährung, 2018, p. 5). In order to reduce the complexity of the study and to focus on the

research question, a number of important product attributes, such as brand or packaging, were not included. Subsequently to the assessment without any eco-label, the participants were given a written statement about the second price tag concept and were asked to discuss strengths and opportunities as well as drawbacks and risks. The third part of the sessions was centered around the three different label alternatives which were presented sequentially. Each display consisted of the same two tomato products that differed in terms of price, origin, and the label format to present the eco-costs. A discussion on each format was supposed to reveal which label alternative resulted in the most positive evaluation of the requirements understandability and comparability and in other cognitive, affective, and conative reactions. In the last step, further questions about potential issuing institutions of the eco-label (government, non-governmental organization, private company) and their effect on credibility as well as about the need for additional information and the role of the second price tag in the decision-making process closed the focus group sessions.

3.3.2 Limitations of the Research Method

With regard to construct validity, all work steps for preparing and conducting the focus group interviews were described transparently and defined according to common rules in order to ensure intersubjective traceability of the steps (Yin, 2014, p. 178). Since only one coder was available, it was not possible to check for intercoder conformity. As environmental issues are at stake in the open discussions, social desirability effects can occur when participants express an attitude or behavioral intention that they consider socially desirable in the interview situation, but which they do not comply with in the real purchasing situation (Crowne & Marlowe, 1960). When applying the method of focus groups, these effects can hardly be controlled for which leads to the fact that the results of focus groups cannot be generalized (Calder, 1977, p. 361). With regard to the potential subjective influence of the moderator, given the fact that the moderator was involved in the research project, questions were asked as objectively as possible. Yet, the non-fulfillment of moderator requirements such as an open, neutral, and nonjudgmental position in the group was indeed a limiting factor (Schulz et al., 2012, p. 124f.). In addition, reflexivity influencing the moderator's argumentation and the answers provided by participants cannot be overcome to a full extent (Yin, 2014, p. 350).

3.3.3 Data Analysis and Interpretation

For the research question to be answered, a combination of evaluative content analysis and structuring content analysis has been chosen. Both types of qualitative content analysis consist

of the following phases: transcription and initial text work, category formation, coding, simple and complex analysis, and presentation of results (Kuckartz, 2018, p. 125). For data analysis and interpretation, the software MAXQDA was used as the utilization of an analysis software ensures for higher validity when results are verifiable (Kuckartz, 2009, p. 719). First, the gathered data in the form of audio files was transcribed (see Annex 6). A literal transcription was chosen according to Kuckartz (2018, p. 167), thereby adapting dialect into standard language and correcting grammar errors. Prominent non-verbal elements were marked as they can emphasize the discussion character in focus groups. The interviewees were numbered and marked with I1 to I12; additional comments by the author were put in brackets. The patterns of interactions were controlled for but did not influence the results. Therefore, argumentative inter- and intra-group patterns are not included in the analysis. Non-verbal statements were partially taken into account, such as consent by nodding as recorded in the protocol of the conversation.

In the first step, the coding scheme was set up based on the literature review and the interview guide. In the second step, new categories were introduced while scanning the material, thereby using a deductive-inductive approach (Kuckartz, 2018, p. 95), also known as abductive approach (Dubois & Gadde, 2002). An iterative procedure was used to refine results and to counteract subjectivity due to the sole authorship. The table in Annex 5 shows the resulting coding scheme used for the analysis, which forms the basis for presenting the results. The codes are labeled with the information whether they were created inductively or deductively.

4. Results

In the following, the results of the qualitative content analysis are presented, using the coding scheme described above (see Annex 5). If mentioned, the focus group participants are described with I1 to I12 (see Annex 3). Hereafter, the first focus group with professionals is named FG1 and the second one with students as FG2. The chapter starts with a description of certain participant characteristics, such as buying behavior, environmental concern and knowledge related to environmental impact of tomato production, followed by a description of the degree to which each label alternative was able to meet the requirements. Thereafter, the effectiveness of the second price tag label with regard to the influence of determinants of the adapted causal path model is evaluated.

4.1 Consumer Characteristics

Participants were asked to talk about their purchasing behavior regarding tomatoes and their awareness and searching behavior with regard to environmental aspects. Both focus groups regarded purchasing criteria, such as taste, price, country of origin or rather regional origin, appearance, variety, organic production, and packaging as important. When regional origin and price were mentioned together, the latter dominated that of regional origin. In addition to price, taste was the second most frequently mentioned factor. Environmental criteria such as organic production or no packaging were cited less frequently or as a decision-making criterion of minor influence. Both focus groups had ideas for the most environmentally harmful aspect along the tomato life cycle. The group conversation about this topic revealed that it is not a simple question to answer in general since the major environmental impacts depend on the growing season as well as the origin as stated by four students. While the participants of the student group expressed their concerns about the influence of the growing season when speaking about environmental impacts, the professionals did not mention this moderating effect. Seven participants from both focus groups referred to transportation dependent on the origin of the tomatoes as the main impact factor. Besides transport, the aspects referred to, in order of descending frequency, were packaging, pesticides and fertilization as well as water demand and energy demand for artificial maturation and transport. The fact that for all six participants of FG2 the mentioned environmental impact aspect is relevant in decision-making, suggests that it was a more environmentally conscious sample, whereas in FG1 only two participants stated the relevance of this aspect in their purchasing decision (Annex 5, p. 1).

When presenting the two tomatoes without a second price tag, eleven out of twelve participants used the heuristic of a more local production and the shorter transportation distance to assess the environmental friendliness of the tomatoes. This assessment affected also their purchasing intention, as eight participants would definitely choose the Dutch tomato, which was more damaging to the environment according to the eco-costs. After presenting the second price tag with eco-costs, two students and two professionals were surprised that they mistakenly took the Dutch tomato for the more environmentally friendly one. They blamed the lack of information about the environmental impact (e.g. means of transport, cultivation method, artificial irrigation) of tomatoes and the lack of ability and opportunities to assess or research the involved factors for their misjudgments (Annex 5, p. 1).

The question concerning the source of information to inform oneself about the environmental criteria of a food product revealed differences in the searching behavior for eco-friendly products. The most frequently mentioned information sources were online channels such as websites of non-governmental organizations or online magazines (Annex 5, p. 1). However, it was noticed that the sources mentioned are not congruent to the ones that are actually used and that it depends on the product, time and motivation whether some participants carry out an information search (Transcript FG2, p. 7; Transcript FG1, p. 6). The highest motivation to search for environmental information was displayed by I2 as this participant named three information channels in use (Annex 5, p. 1).

4.2 Reactions to the Concept and the Label Alternatives

In the following, the reactions to the three design alternatives are presented according to the requirements by Prieß (2009). Differences in the perception of the alternatives between the two groups are also elaborated. Furthermore, it is presented to which degree each alternative fulfills the requirements of understandability and comparability. Subsequently, the requirements of credibility and consistency as well as the relevance in decision-making are discussed for the concept as a whole. Generally, both focus groups favored the simplification provided by the eco-label and four participants explicitly advocated the introduction of such an eco-label (Annex 5, p. 3). When taking a closer look at each label alternative, differences in the degree of understandability and comparability can be found. Figure 5 shows the understandability and comparability of each label alternative in comparison. The interview contributions were classified into three categories (high, medium and low) and the number of contributions in each category was counted for the two focus groups. Differences between the two groups are stated separately for each label alternative.

4.2.1 Alternative 1

The understandability of the first label alternative can be classified as rather medium or even low as shown in Figure 5. It was evaluated as useful and understandable when denoted as a separate price beneath the official price tag. However, it was mentioned that it is not as intuitive as a comparative label. One student did not evaluate the appearance as positive either (Annex 5, p. 2). Regarding the explanatory text underneath each label alternative, I9 noted that it could be confusing and might not be considered, especially in a time-limited shopping situation (Transcript FG2, p. 17f.). Yet, it became clear that the numerical information alone was not understandable enough.

The comparability was predominantly low. The first alternative did not provide participants of both focus groups with enough information. Yet, in FG2 the issue of transparency was brought up, denoting that an absolute value ensures a more transparent comparison than a traffic light system (Transcript FG2, p. 18). Both groups complained about a missing reference of the absolute eco-cost value, which can be too difficult to interpret on its own (Annex 5, p. 2). In particular, the group of students already considered the advantages of presenting the second price tag in a traffic light format before having seen the respective alternative (Annex 5, p. 3). It was proposed to include a comparative component in the price tag, in particular to use a color scheme to facilitate comparison within the product category (Transcript FG2, p. 15f.). In addition, one participant in the group of professionals referred to another eco-labeling scheme, the EU energy label (Transcript FG1, p. 16).

4.2.2 Alternative 2

Compared to the first label alternative, the second one was judged to be more understandable and more detailed by four students. The professionals were able to understand it as well, but partly found that it took more effort to understand it than the first one (Annex 5, p. 2). Although the professionals were also able to understand the information provided, in particular, four members of FG1 considered the eco-label to be confusing and abstract without the provision of adequate information on the magnitude of the summarized value, referring to the low suitability for daily use for the average consumer (Transcript FG1, p. 23). Thus, there is a relevant difference assessing the level of understandability of the second label alternative between the two groups.

With regard to comparability, it should first of all be noted that the group of professionals did not comment on the comparability of the label alternative two, yet the participants addressed other traffic light labeling systems they knew (Transcript FG1, p. 22). Hence, the evaluation of comparability was based on contributions from the group of students only. The second alternative provided two students with a high level of comparability as it would allow them to concentrate on specific impact categories that they prioritize (Transcript FG2, p. 20). According to I9, this alternative helped to understand why eco-costs between the Moroccan and Dutch tomato differed (Transcript FG2, p. 21). The group of students pointed out that it might be difficult to set appropriate thresholds for every product category. It might provoke confusion when the eco-costs in a highly impacting product category, such as the category of avocados, were high, but for one type of avocado the comparative color scheme would be predominantly

green because the given avocado had a lower impact in the specific category (Transcript FG2, p. 22). In this course, two students mentioned that the denomination of the eco-costs in addition to a color scheme was necessary to assess the absolute impact (Annex 5, p. 2). This absolute impact was not sufficiently obvious with non-transparent thresholds on multi-level eco-labels but is required to avoid using heuristics again when comparing two products in the green range (Transcript FG2, p. 19, 23). The suggestion to use colored numbers on the second price tag instead of a traffic light label was brought up to facilitate comparison (Transcript FG2, p. 23). Yet, it was also questioned whether such a detailed breakdown into the four impact categories in a multi-criteria label is technically feasible and necessary (FG2, p. 15, p. 22).

4.2.3 Alternative 3

The most preferred label alternative among the participants (n = 11) was the third alternative – the comparative label using a tachometer format (Annex 5, p. 2). It was found to be the easiest label alternative to understand at first sight although according to contributions it equals the second alternative in this regard (see Figure 5). The students also considered the perspective of the broad mass of consumers and did not only express their own preferences. That is why they suggested testing alternatives two and three again with different target groups (Transcript FG2, p. 25). The only drawback voiced for this eco-label was that at first glance, it was not obvious to one student how the average was formed as he considered the description text too vague (Transcript FG2, p. 24). Another student did not find the label alternative sufficiently intuitive and was irritated by the verbal explanation of the categories above average, average and below average (Transcript FG2, p. 25). In the group of professionals, the opinion was unanimous and there were no dissenting evaluations regarding understandability (Annex 5, p. 2).

Concerning the requirement of comparability, the third alternative performs best for those participants who missed an average as a reference value on alternatives one and two. The group of professionals equally expressed positive reactions as they rediscovered similarities to the well-known traffic light EU energy label and the German animal welfare label (Transcript FG1, p. p. 23f.), resulting in the highest comparability according to overall contributions (see Figure 5). However, their comments on comparability were not as detailed as in the group of students. I12 named the decisive difference that the overall average of eco-costs is not evident from the more complex label alternative two whereas the third one enables participants to differentiate the tomatoes in an understandable and accessible manner (Transcript FG2, p. 26). For even higher comparability participants thought of combining the information content of alternative

two and three (Annex 5, p. 2). This could enable a large number of consumers to compare the information that is most important to them, whether it be the overall average or the performance in individual categories (Transcript FG2, p. 27). However, four students, doubted that there was a convenient way to calculate the average. They disagreed as to what geographical boundaries would be drawn from it (Transcript FG2, p. 22, p. 24). As a consequence, this uncertainty hindered them from comparing products efficiently, thereby reducing the degree of comparability. In comparison with alternative two, the Dutch tomato is perceived worse in the third label than in the second one, in which some categories are still green (Annex 5, p. 2). The conclusion was drawn that the third label better helped participants to perceive environmentally weak products as such than the second label alternative.

In summary, the single monetary indicator in alternative one was not sufficiently helpful to the participants of both focus groups, whereas alternative three was the most preferred. However, alternative two received good ratings from the students as well, suggesting differences in perception and preference between different target groups.

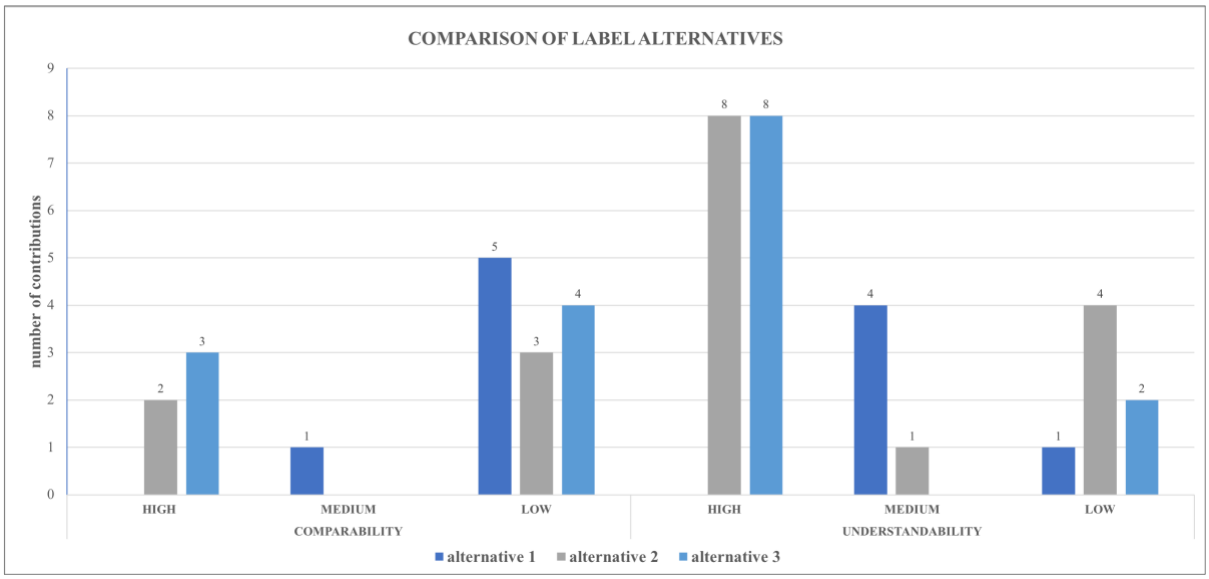

Figure 5: Comparison of label alternatives (Source: Own representation)

4.2.4. Perception of Pricing

A separate section is devoted to the aspect of price perception and pricing strategy, as this was discussed in detail in both focus groups, even though it was not foreseen in the interview guide. One difficulty in interpreting the eco-costs was that one participant was accustomed to using prices as a quality indicator (Annex 5, p. 3). In this concept, however, an effort is needed to make the transfer since a higher eco-cost value cannot be equated with a higher environmental performance. Among the participants of FG1 arose a discussion about an integrated or separate

price presentation. An alternative form to the presentation of a supplementary second price tag on the conventional price tag is the combination of the two prices, the retail price and the eco-costs, in a price tag with the total price next to the conventional price tag. For two participants (I2, I4) this made sense only if eco-costs were invested in improvements of the environmental performance of the respective product (Transcript FG1, p. 20). If this was the case, the eco-cost would no longer be just an additional source of information but would affect product prices. This is due to the fact that producers may pass on the additional costs to consumers (Annex 5, p. 3). As it was discussed among the students, charging only producers to be liable for the additional eco-costs would have little effect on changes in consumption patterns since the compensation is paid no matter which product consumers choose (Transcript FG2, p. 36). Some participants in FG2 argued that prices might be a more compelling way to change purchasing intentions than a mere informative measure (Annex 5, p. 3). Although one participant in the first group expressed his higher willingness to pay for the more eco-friendly product when eco-costs were invested in environmental protection measures (Transcript FG1, p. 19), comments on the general low willingness to pay for food in Germany and the unrepresentative composition of the sample led to the question of whether a surcharge on the investment of the eco-costs is an effective and feasible solution (Annex 5, p. 3).

4.2.5 Credibility

It was found that credibility of the label and the label source has a substantial impact on the perception of the second price tag among participants. At the time the study was carried out, the source of information was not visible on the second price tag, i.e. participants were given room for discussion on how to increase credibility. The overall credibility of the second price tag was measured on a scale from one to ten, ten being the most credible. The credibility rating was 6.1 with a total of eight replies (n = 8). The mean value of credibility was slightly higher for the group of students (6.75, n = 4) than for the group of professionals (5.38, n = 4). In both groups two participants explicitly stated that their response depended on the certifying and issuing institution which is why they did not give a value (Annex 5, p. 2). In the group of professionals, the question arose as to who was involved in the calculation of the eco-costs, and doubts were expressed as to the credibility of this method, which has not been widely used in communication so far (Transcript FG1, p. 18f.).

Both groups exchanged views on the publisher and the certifying institution of the second price tag with regard to source credibility. However, the participants did not explicitly distinguish

between publisher and certifier. The discussion was deepened only in FG2. Three possibilities of governmental implementation, implementation through the retailer or producer and through an independent consumer NGO such as the German consumer protection organization “Stiftung Warentest” or the “Institut Fresenius” were discussed. It can be deduced from the answers that participants referred to the consumer NGOs in relation to the third-party certification and that they do not necessarily have to be the publishers of the second price tag. In FG1 five out of six participants were in favor of an implementation by an independent institution or NGO which would lead to higher credibility results (Annex 5, p. 2). However, two participants voiced concerns regarding such an implementation since NGOs could also lack trustworthiness and impartiality due to financing by sponsors (Transcript FG2, p. 29). I6 addressed the issue of feasibility in terms of data collection, thereby highlighting that it could only be realized by the retailer or producer who might be able to collect the data but at the expense of credibility and data reliability (Transcript FG1, p. 29). One student (I10) highlighted that using the second price tag as a strategic marketing measure to become more transparent could help retailers to gain a competitive advantage (Transcript FG2, p. 13). Opposing votes were raised in both focus groups against an implementation by the retailer due to the risk of fraud and manipulation when retailers and producers are in charge of delivering and calculating data themselves (Annex 5, p. 2). Moreover, credibility depends on the type of supermarket issuing the label, which means that discounters are less credible information providers than organic supermarkets (Transcript FG2, p. 19). In sum, it was not evaluated to be a holistic solution and governmental implementation was favored over retailer implementation at a ratio of five to two when looking at conversational contributions (Annex 5, p. 2).

The highest level of credibility appeared to be reached by a nation-wide or even an EU-wide governmental implementation to avoid product discrimination which would have more far-reaching consequences than just increased credibility. According to the group of students, this would ensure the required standardization and objectivity as well as transparency to create trust in the eco-label. However, a politically induced solution would affect consumer retail prices if certification costs are not covered by the state (Annex 5, p. 2). Participants agreed that the price level for all products would rise if the second price tag then acted as a tax or if retailers were burdened (Transcript FG1, p. 28f.; Transcript FG2, p. 35). In sum, it became clear that participants favored a governmental or highly independent implementation to reach a high level of credibility although concerns were expressed that a mandatory legal introduction would be unrealistic.

4.2.6 Consistency

It has been of specific importance to the students that the calculation of the second price tag is standardized but adapted to each product category. The group of professionals also considered a transparent and standardized description of assumptions important (Annex 5, p. 3). One member of the group of professionals emphasized the significance of a clear definition for the calculation of eco-costs as this information was not apparent on the second price tag (Transcript FG1, p. 16). Strict controls for consistency of guidelines and monitoring of data collection are requirements important to both groups. Regarding the consistency of distribution, the second price tag was not assessed to be as effective if only introduced by a few retailers (Transcript FG2, p. 44). Participants mainly favored a uniform eco-label concept, though suggestions were made to differentiate the eco-label appearance and information content to the point of sale and the respective target group (Transcript FG2, p. 27). Implementation in local farmers markets and small independent retailers would prove difficult (Transcript FG1, p. 32), which could potentially affect the consistency of distribution if these suppliers were excluded from the label program.

4.2.7 Relevance in Decision-Making

It can be helpful to look at psychological determinants using the adapted causal path model to assess the relevance in decision-making for participants. During the group discussion on the new concept, different motivational, cognitive and conative dispositions as well as external conditions could be observed.

Motivational Components

One motivational component that could be studied during the focus group sessions was *trust*. It became evident that *trust* in the eco-label depends on the source credibility as already elucidated. Above that, it was also possible to evaluate the participants' general level of *trust* in eco-labels. Out of twelve participants, eight made statements about their low *trust* in already existing eco-labels. It can be deduced that, given their own experiences, the majority of the participants were skeptical about eco-labels and their credibility in general which reduced *trust* in them. The reasons cited were the flooding of the market with eco-labels leading to information overload and confusion and the lack of transparency and problem of image damages of the labeled products caused by scandals. (Annex 5, p. 1)

Eight participants made statements about motivational influences on *paying attention to* eco-labels. Four described a medium and three a low level of *motivation*. Compared to seven

contributions on *motivation* from FG1, only two students commented on their *motivation* to search for and process environmental product information. Arguments for low *motivation* were the high effort needed to read and compare all the information in the midst of daily routines. These arguments can be seen as barriers to eco-friendly behavior. Only I1 voiced his high *motivation* to process the information on vegetables and fruit in the purchasing situation including eco-labels. A medium level of *motivation* resulted from the influence of habits and the wish to try new products which could limit motivation to engage in sustainable purchasing behavior according to participants (Annex 5, p. 1).

Cognitive Component

The cognitive component of *paying attention to* the second price tag in the purchasing situation could not be assessed directly but was implied in the question "Would the eco-label help you with the purchasing decision?" as it means consumers would pay attention to and make use of the new second price tag. Participants were asked to give an answer on a scale from one to five (5 = "I would absolutely involve the eco-label in my purchasing decision"). The mean value for the group of professionals was 4.5 (n = 6) and 4.4 for the group of students (n = 4 participants) (Annex 5, p. 1). Due to the small difference between the averages of both groups, it can be concluded that all participants who submitted an answer would pay attention to this eco-label alternative to a high degree. This result reflects that these consumers would be more environmentally conscious in the purchasing situation but not whether they would opt for an eco-friendlier alternative as a result of their decision-making process. However, this number is hardly reliable due to social desirability effects and could be different in the purchasing setting at the point of sale. Again, this determinant is influenced by the source of the eco-label. A retailer as the issuing institution would negatively influence attention to eco-labels, as stated by three students (Annex 5, p. 1). This illustrates the link with *trust* in the psychological model.

External Conditions

The characteristics of the participants in terms of the external conditions *opportunity* and *ability* to process information were observed as well. Two components can be considered when describing the participants' *ability* to process information. Participants were familiar with other eco-labels, such as the EU energy label or the German animal welfare eco-label, since the EU energy label was already mentioned before the presentation of the three label alternatives (Annex 5, p. 1). This helped them to acquaint themselves with the different label alternatives as they saw parallels to already familiar eco-labels. However, as described above, the

understanding of the new second price was limited due to the lack of experience with this new type of eco-label. One participant found that the second price tag required a lot of terminological knowledge and raised doubts that the majority of consumers would be able to understand this abstract concept. This could lead to an increased avoidance of the second price tag (Transcript FG1, p. 6). Moreover, the aspect of numeracy was brought up, when it was noted in the group of professionals that the eco-cost indicator would not be understandable for the majority of consumers due to its abstract character (Transcript FG1, p. 14).

Due to the fact that consumers cited scarcity of time as an important factor restricting the *opportunity* to process information, the design of the second price tag is crucial in determining whether the external factor can influence the purchasing decision. Furthermore, the *opportunity* to process can be hampered by an extensive amount of information in the purchasing environment in general and eco-labels in particular, as indicated by three participants (Annex 5, p. 2).

Conative Component

The ultimate goal of the second price tag to influence the participants' purchasing decision could be estimated to a certain extent. The promising results on the utility of the second price tag can still not demonstrate whether consumers would change their purchasing intention towards buying the eco-friendlier tomato. Four participants explicitly stated that they would adapt their purchasing intention to buy the tomato with lower eco-costs (Annex 5, p. 1). The participants in the group of students did not refer to their purchasing intention when discussing the eco-label alternatives as it was not explicitly asked for. The response behavior of the participants showed that barriers to eco-friendly behavior play a role in their decision-making process. These barriers can arise from the absence of one of the three determinants of motivation, ability or opportunity, as noted in the group discussions.

To sum up, the results demonstrate that whether a participant finds the second price tag compelling depends upon the consumer's perception of the eco-label's message, design and source, and on whether the consumer has confirming motivational characteristics. This provides important evidence regarding the choice of characteristics of a second price tag which are explained in more detail in the discussion chapter.

5. Eco-Cost Values as a Consumer Communication Tool

This research sought to explore what characteristics a second price tag could have in order to be an effective communication tool to help consumers make environmentally friendly purchasing decisions. This chapter examines the significance of the study in the field of research, makes design proposals and interprets the most important results in relation to the existing literature. It concludes by a section on limitations and implications for further research and for practical implementation.

5.1 Propositions for Developing a Second Price Tag

It became clear from the focus group interviews that not only the content of a new label is relevant with regard to its effectiveness but that other characteristics regarding the eco-label requirements matter as well. Therefore, further characteristics were addressed and included within the analysis of the case study to extend the initial research of a small scope with regard to the informative content of the second price tag. While this in-depth qualitative study is limited to the specific case of tomatoes, it is possible to allege generalizable theoretical propositions (Yin, 2014, p. 112), as e.g. pursued by Pieniak, Verbeke, Vermeir, Brunsø, & Olsen (2007) in a qualitative exploratory study on fish labeling. Figure 6 illustrates the proposed manifestations of the four categories: degree of information output, degree of information input, degree of independence, and degree of voluntariness. Depending on how many sections of the circle are filled in color, a lower or higher degree is indicated. This clear classification is adopted from Rubik (1995, p. 12f.) who assessed eco-labels within these four categories. Based on the level of fulfillment of the eco-label requirements and the views on the concept, the study suggests propositions using this classification scheme.

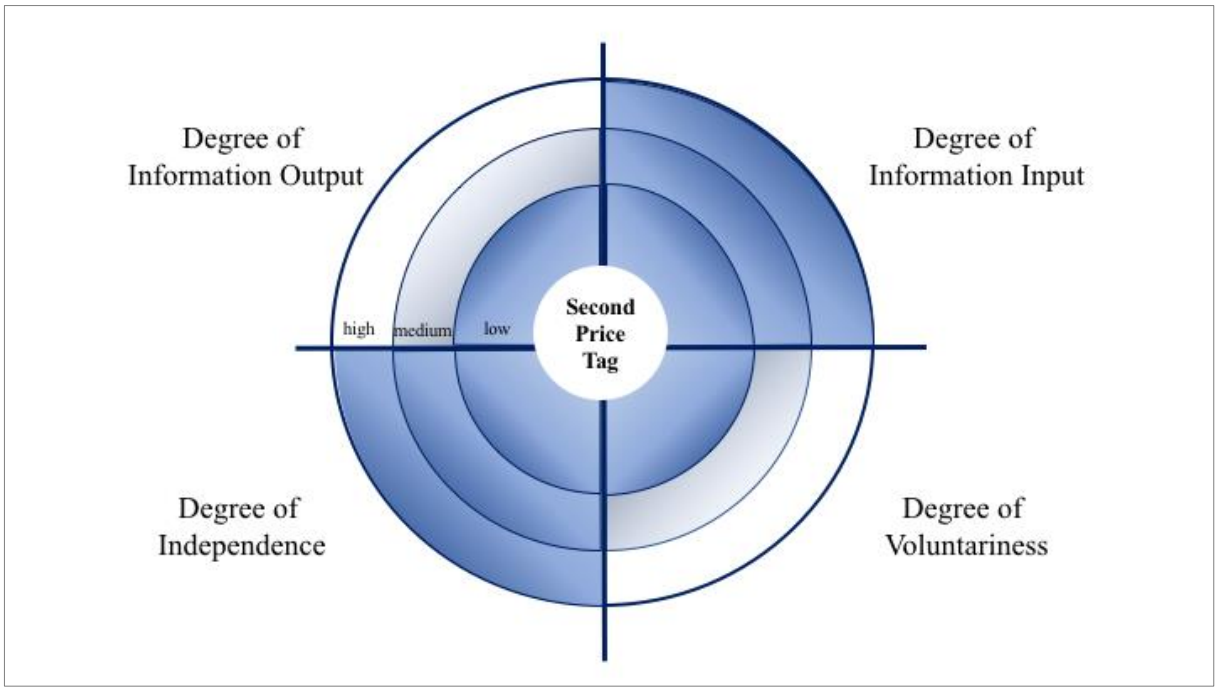

Figure 6: Visualization of the four characteristics and their degrees (Source: Own representation)

5.1.1 Degree of Information Output

The results reveal that a higher degree of information output requires more interpretation skills and knowledge concerning the presented information. To ensure understandability of the second price tag, a low to medium level of information output is suggested, yet not at the expense of comparability. Figure 6 illustrates the low to medium degree since the second ring is only slightly colored. The mixed voices on the necessity of the explanatory text and the description of the categories above average, average and below average on label alternative three suggest to further investigate the acceptance of verbal information on the label. Even though the explanatory text was not helpful for every participant, it might be relevant since a congruent message of the eco-label figure and the explanation leads to better understandability of eco-labels as shown by Teisl, Peavey, Newman, Buono, & Hermann (2002). Additionally, combining verbal and numerical information on the second price tag can surmount the superficial processing of numerical information on its own as found by Viswanathan & Narayanan (1994). For consumers seeking further information, a QR code linking to a website could be added on the second price tag. Since QR codes refer to internet links, this is also consistent with the most frequently cited source of information, the internet. Moreover, additional material at the point of sale might help to adopt the second price tag and increase the ability to process the information since the assumptions for the calculation are not visible on the second price tag. Yet, they are needed to ensure consistency and credibility. It is necessary

for the introductory phase that a concomitant educational program is introduced simultaneously to increase awareness by reaching a large number of consumers and ensuring long-term effectiveness as already stated by Teisl, Rubin, & Noblet (2008, p. 155). When consumers are already experienced in using eco-labels, this process does not require a high effort (Thøgersen et al., 2010, p. 1801) which in turn reinforces the argument to use a design familiar to consumers. Nevertheless, providing easily understandable information about the new eco-label in order to reach also "laymen" unfamiliar with the terminology can help to increase motivation and ability to pay attention to the second price tag.

It became clear that due to the lack of experience with the eco-cost concept and the environmental impact criteria, consumers cannot rely on a reference price for an environmentally sound product and have to be given more assistance in the form of an evaluative eco-label. This might explain why the single monetary indicator is not considered as helpful as the evaluative label alternatives. In addition, consumers may also become confused if they are accustomed to using prices as a quality indicator. However, the use of prices as a quality indicator is hardly relevant for everyday products such as vegetables which are purchased regularly as researched by Gerstner (1985, p. 214). Since the representation as an exclusively numerical eco-label is at the expense of understandability, it is proposed to design a comparative traffic light label. The preference for a comparative label ties in with previous investigations stating that consumers prefer an evaluative eco-label format with regard to greater understandability and use of it (Peters et al., 2009, p. 218). Comparative eco-labels were also evaluated the easiest to understand in studies in the same eco-labeling area with footprints such as carbon, nitrogen and water footprint (Leach et al., 2016, p. 218). Contrasting the results of Thøgersen & Nielsen (2016) who questioned the comparability of a traffic light eco-label, it was found that the integration of an absolute denomination of the eco-costs on the second price tag may overcome this issue of restricted comparability. When looking both at understandability and comparability the comparative label alternative three performed best in both groups. Yet, the acceptance of the label alternatives two and three should first be tested with a quantitative sample comprising several target groups. In any case, a visualization with colors is definitely more appreciated than a mere numeric label because it helps to better interpret the eco-costs.

The strategy of negative labeling applied in the concept of the second price tag might be effective as the Dutch tomato was perceived worse in the third label than in the second, thereby

overlapping with the finding by Borin et al. (2011) that a negative label can help to identify the eco-friendlier product as such. The example of the EU energy label system proves that a negative eco-label which also indicates worst performing products introduced by legislation can be effective. However, this perception of negative environmental claims depends on the importance of the purchasing criterion of environmental impact of the consumer (Grankvist, Dahlstrand, & Biel, 2004, p. 224). As all participants were already familiar with the EU energy label, it is advisable to base the second price tag design on it.

5.1.2 Degree of Information Input

As participants characterized the simplification of a rather complex assessment as an advantage of the concept, the impact criteria applied so far are also proposed for further label development. The eco-cost model already includes a high number of mid-point categories, 33 in number. These categories are summed up in the four end-point categories of human health, resource depletion, eco-toxicity, and carbon footprint. In comparison to other footprint studies, which mostly include only one category, such as the carbon footprint (Kortelainen, Raychaudhuri, & Roussillon, 2016; Vanclay et al., 2011), or sometimes more than one, such as the nitrogen and water footprint (Leach et al., 2016), the proposed high degree of information input was accepted by participants as long as it was presented in an understandable way. Participants expressed doubts about the data acquisition of specific impacts, where to set the system boundaries and raised the question of who would be in charge of gathering data. Also in the scientific debate, a high degree of information input is viewed critically, as Bergman & Taylor (2011, p. 193) see the burden of data collection and the relevance of the product's geographical origin as a weakness of using the LCA method for communication. In order to ensure a high level of credibility and comparability, eco-cost thresholds could be calculated by third-party institutions which take into account standard values compatible with the Earth's natural limits and not just the average of the product category. This can prevent products, as mentioned by the participants, from being embellished in a product category that is completely harmful to the environment, such as avocados. The missing integration of social costs, such as working conditions, was denounced by two participants but should possibly be addressed in a second price tag for food products.

5.1.3 Degree of Independence

In the context of the degree of independence, the question arose as to whether the eco-label should be issued by retailers, by an environmental or industrial association or by the state. A

high degree of independence should be the aim as in the underlying case study an objective, independent issuing institution based on a credible certifier is preferred to increase credibility (see Figure 6). The present political discourse of such an eco-label demonstrates the significance of legal regulation eco-labeling of food (BMUB, 2017, p. 30). Although other researchers agree that the implementation of standardized criteria and methods is a time-consuming and financially costly endeavor (Leach et al., 2016, p. 221), a high degree of independence of the eco-label source is most likely to provide consumers with enough credibility to trust the second price tag. When a high degree of independence is chosen, it might be useful to communicate the eco-label source to consumers. Leire & Thidell (2005, p. 1066) have shown that communicating the issuing institution is important as consumers are more likely to distrust the eco-label when they do not know the source of the label. A second price tag issued by the producer or retailer would reduce credibility as the risk of greenwashing and data uncertainty arises. Objectivity could mainly be reached through legal implementation by the state to ensure the required standardization, credibility and consistency according to the participants disapproving of retailers or producers as the label source.

5.1.4 Degree of Voluntariness

The degree of voluntariness is linked to the degree of independence since a mandatory implementation can only be achieved through a legal governmental introduction that indicates a high degree of independence. The question of which degree of voluntariness a second price tag could have to help consumers make eco-friendly purchasing decisions could not be answered unequivocally. Yet, the higher number of positive reactions to a mandatory governmental introduction paired with the dissenting voices against retailers being in charge of the second price is more supportive of a low to medium degree of voluntariness (see Figure 6). An obligatory introduction could be an effective measure to approach consumers who would then buy eco-friendlier according to price preferences, but not more environmentally consciously according to the environmental performance of a product. As shown in this case study, there are differences in the motivational level of consumers to engage in environmentally friendly consumption. Even if a mandatory implementation is a financial challenge and a slow undertaking (Gréverath, 2012), a major change in consumer behavior could be achieved. However, this might not be accepted by consumers with less environmental concern resulting in a negative economic impact as already stated by the developers of the eco-cost method (Vogtländer, 2010, p. 212). Care should also be taken to avoid protectionism if only national products receive the eco-label, a view which was also confirmed by the suggestions for an

implementation at EU level. The implementation of a national eco-label program could result in trade barriers and the discrimination of foreign products, which is why this issue should be considered, given today's debate on trade power and free competition.

The fact that eco-labels, when declared as nudges, can alter consumer behavior better than economic incentives, given that they are made accessible and familiar to consumers (Sunstein, 2016, p. 29), leaves room for further discussions on the legitimacy of a mandatory introduction. The case study results show that a voluntary implementation would burden consumers and that it is questionable whether the retailer would accept the declaration of negative impacts of their products in a three-colored traffic light scheme. This finding was confirmed in another study on a carbon footprint eco-label (Thøgersen & Nielsen, 2016, p. 2016).

5.2 Need for a Second Price Tag

This study contributes valuable input to the field of eco-labeling research. Notably, to the best of the author's knowledge, it is the first to explore and compare consumer reactions of three different label designs for an eco-label based on eco-costs. Furthermore, it has shown that it is possible to use monetarized LCA data to communicate a product's environmental footprint in an understandable way and found four characteristics which could be considered when developing the new eco-label. Additionally, it has been demonstrated that there is a need for an additional source of information as consumers are not able to assess the environmental impact of a food product and apply the 'buy local' heuristic to their purchasing decision. While the LCA assessment with eco-costs showed that in the underlying case greenhouse production is more harmful than transport, the latter was evaluated by the participants of the focus groups as the most harmful environmental impact. In this context, the study confirms the findings by Tobler et al. (2011, p. 600) according to which the perceived most harmful environmental aspect and its relevance in the LCA differ. According to the participants, environmental criteria do not always receive a great deal of attention in purchasing decisions in comparison to other purchasing criteria (such as price) which has also been reflected in a previous study (Grunert et al., 2014, p. 186). Thus, it could be shown that a tool is required to increase consumers' awareness for these criteria. According to the results, the second price tag is able to help consumers to overcome heuristics and increase awareness for the product's environmental impact. It can therefore be concluded that it fulfils the function of product differentiation and information provision described by Schumacher (2010).

5.3 Paying Attention to the Second Price Tag

Whether the second price tag is relevant for the decision-making process of consumers could only be investigated to a limited extent with the given research method. This is due to the fact that, apart from credibility or *trust* and *motivation* to process, no other motivational components were assessed. Overall, however, the reactions confirm the adapted assumptions of the causal path model by Thøgersen (2000) that consumers need to know the second price tag eco-label and its meaning, and that they need to trust the eco-label in order to pay attention to it and use it. The issuing institution is a highly relevant prerequisite for the use of the label since credibility was considered dependent on the issuing institution. Leire & Thidell (2005, p. 1066) also confirmed that whether consumers trust an eco-label depends on the reliability of the information source. Although it is not possible to interpret the exact motivational level of the sample, the participants' answers reflect that it is difficult to increase awareness for a new eco-label if *motivation* to process the information is low. Barriers to eco-friendly behavior can result from the lack of external conditions, meaning reduced *opportunity* and *ability* to process, or the lack of motivational components. These barriers are likely to play a role for consumers when confronted with the second price tag. However, the design of the second price tag can influence the motivational and external conditions only to a limited extent. It has to be dealt with the fact that depending on the involvement of the consumers in the buying situation, they do not always engage in processing the information in detail (Celsi & Olson, 1988). They may lack internal determinants such as motivation and trust and be subject to unfulfilled external conditions, such as lack of ability and opportunity to process. Therefore, one should consider the limited effects of information in the form of eco-labels as a policy tool (Leire & Thidell, 2005, p. 1066) and try to reduce internal and externals barriers to eco-friendly purchasing behavior, e.g. by educating consumers and by keeping the label simple.

Given the constraints to the development of a second price tag, it is even more important for research to explore the behavioral impacts of a new environmental label before further efforts are made to implement it. This study made such an endeavor. The experimental finding that a traffic light label with a standardized eco-cost value could raise awareness for the new eco-label and might also promote eco-friendly food consumption serves as a scientific evidence for political authorities and retailers to further explore and implement an eco-label based on eco-costs that is easy to understand and interpret.

5.4 Limitations

Three limitations of this study require additional comment. First, it should be mentioned that due to the limited experience with this type of eco-labeling, no scientific consensus about the legitimacy of a single monetary indicator as an adequate communication tool for consumers exists. Owing to the limited environmental knowledge about weighted impact criteria, the application of the suggested calculation approach is methodologically disputable. Calculating prevention costs with the eco-cost model is only one way to assess environmental impact and the suitability of other methods has not been given a great deal of attention in this study. This lack of scientific consensus is grounded in the complexity of assessments of food products. Not alone the given LCA case, but LCAs on agriculture productions systems in general are subject to some methodological challenges concerning the availability of inventory data, the setting of system boundaries and the development of environmental impact categories (Antón et al., 2014). Therefore, an eco-label using LCA data would vary according to country and region. Furthermore, different methods lead to different results (Bengtsson & Steen, 2000, p. 103; Ahlroth, 2014, p. 40) For instance, differences result from different geographical scales or spatial and cultural scopes used for developing the models (Pizzol et al., 2015, p. 176) or traditionally different perceptions of valuating and weighting (Ahlroth et al., 2011, p. 154). For this reason, the availability of data for carrying out such studies and its scientific liability are rather low.

Second, this study could not examine the influence of attitudes and other personal characteristics in the decision-making process. The results cannot reflect the influence of different consumer attitudes on the perception of the label alternatives despite the known influence of a *pro-environmental attitude* on eco-friendly purchasing behavior (Vermeir & Verbeke, 2006; Thøgersen, 1998). Due to the emphasis on the open evaluation and discussion of the concept in the focus groups, it was not feasible to cluster the participants into consumer groups which is easier to operationalize using standardized scales. Other characteristics apart from knowledge, understanding, and motivation and their influence on the existence of barriers to eco-friendly purchasing behavior could not be further assessed within the scope of this study.

Third, the study design included a small sample case study using the case of tomatoes. This means that, considering sample generalizability, the psychological determinants are difficult to generalize to broader populations (Calder, 1977, p. 361), even though the derived propositions can be of a more generalizable character (Yin, 2014, p. 112). While the interviewed consumers

would predominantly avoid ecologically unfriendly food choices, this may not be true for all consumers. This is an exploratory study, and there are many situational factors in the environment of the focus group that differ from a real purchasing environment. For example, consumers may not put as much time and effort into examining the eco-label in the actual purchasing situation as in the focus group setting. The artificial experimental situation of comparing two products in isolation does not reflect realistic purchasing decisions, especially as the interview was intended to activate environmental concerns and motivation to buy environmentally friendly products and included confounding variables such as price.

5.5 Implications for Further Research & Practical Implications

Although the above reservations are known, the results indicate the potential significance of a second price tag as a communication tool. Yet, certain questions remain unanswered at the end of the study. This study investigated the perspective of consumers on a new eco-label. Thus, the feasibility from a retailer's or political point of view cannot be answered within the scope of this work. The composition of the four eco-label characteristics is only based on the consumer assessment. It therefore appears necessary to examine the positions of retailers and producers on the elaborated proposition for the characteristics of a second price tag to determine the importance they attach to each characteristic. In this context, it should be ascertained whether the second price tag can also function as an incentive to reduce environmental impacts of producers' activities and whether consumers are willing to pay more for the labeled product since calculating eco-costs is associated with a large financial outlay. The benefit from eco-labels which imply an improvement in environmental conditions was already stated in literature (Leire & Thidell, 2005, p. 1068). However, this point is of minor relevance for further research projects.

In addition, it might be worthwhile to repeat the study with a different sample regarding the socio-economic and cultural background to ensure for higher contextualization. The small sample using only young German students and professionals of mainly older age limited the validity of results. Another step would be to quantitatively test the acceptance and understanding of the second price tag, also with other food products and a larger sample in order to find the best performing alternative across all target groups for the case of a state-imposed introduction. Furthermore, future research might be able to use settings that are more reflective of real purchasing situations and product comparisons. A conjoint analysis could be

useful to test the importance of the label design in relation to other variables such as issuing institution, price, and product.

Moreover, the formation of the second price tag is another area to broaden research attempts. So far, social impact categories can only be mapped with LCAs to a limited extent and the Social Life Cycle Assessment is still at the beginning of its elaboration (Klöpffer & Grahl, 2014, p. 366). Since these impacts are not addressed in the prevention cost model, it might be necessary to investigate other methods which facilitate the integration of social impacts in prevention cost methods. The second price tag is entirely quantitative, and a major strength of this approach is that the fact that it gives consumers the opportunity to compare products within a category. However, the integration of qualitative approaches such as a sustainability rating that does not rely on LCA calculations may have a broader impact on the consumers' purchasing behavior than merely quantitative criteria (Leach et al., 2016, p. 218). Thus, another approach could be to test whether qualitative criteria can be combined with quantitative criteria in a monetary representation. The question remains whether the used LCA from cradle to market gate sufficiently reflects the environmental burden of a product or whether it is possible to also integrate the use phase and/or post-use phase of a food product.

With regard to practical implications, the developers of such a second price tag eco-label should carefully consider the most effective type of information and method of communication to reach the respective target consumers, an aspect which was only partly taken into account in this study. The development progress of the second price tag in Germany has not been reported on since 2016, yet the "Ökoinstitut" has been entrusted with it (Öko-Institut e.V., 2019). The results of this study can help the responsible authorities to consider the acceptance of and reactions to the concept of the second price tag in the food sector in their research and development. In the report of the Federal Environment Agency, this label is referred to as the second price tag. The findings of this study show that a price alone does not help consumers and should rather be linked to a known label scheme. Thus, the name second price tag can be misleading if the consumer does not pay the price premium at all in the amount of the environmental costs. Renaming the label could be considered given that it is merely an informative communication tool. This way, it can be avoided that false associations arise immediately.

6. Conclusion

Eco-labels on food can be an effective tool for consumer communication, either to inform consumers transparently, to help them distinguish between eco-friendly and harmful products and ultimately to change their consumption behavior. The purpose of this study was to identify the characteristics which an effective eco-label in the form a monetary indicator could have to support consumers to make environmentally friendly purchasing decisions using focus group interviews. Since there is still little scientific knowledge on the usage of monetary LCA indicators for consumer communication, the eco-cost model was selected after comparing the damage cost and prevention cost method. Subsequently, five requirements for designing an eco-label were presented. For the purpose of the study, three label alternatives were designed which differ in their degree of information output. Participants of the two focus groups were asked to evaluate each alternative according to their understandability and comparability and to assess the concept's consistency, credibility and the potential relevance of the second price tag in the purchasing decision. Special attention was paid to the relevance of eco-labels in the decision-making process. Since consumer reactions to a label are always based on psychological factors, the causal path model by Thøgersen (2000) was selected and adapted for the purpose of the study. The reactions of consumers could thus be classified and the relevance of the price tag in the purchasing decision process could be discussed. Based on the responses to the new labeling approach, propositions for the recommended degree of information output, information input, independence and voluntariness were determined as a result of the study. Within the discussion, these findings were critically discussed in reference to the theoretical context and possible implications for future research were worked out.

As a general conclusion, the findings reveal that the second price tag can fulfill the function of product differentiation and bridge the information gap between retailers and consumers leading to more conscious purchasing decisions. It was found that a comparative traffic light label with an integrated absolute eco-cost denomination was most preferred due to its straightforward understandability and its high comparability, whereas a static stand-alone second price tag turned out to be ineffective. However, reactions differed between students and professionals in terms of the requested degree of information output. Regardless of the eco-label selected, a second price tag could be more effective if consumers trust the label source which requires a high degree of independence. Moreover, the high degree of information input was not considered critical for consumers as long as its content is presented in an understandable way. Psychological factors such as motivation and external conditions such as the amount of time

exposed to the label or the knowledge of other eco-labels, should be considered when designing the second price tag, i.e. the relevance in the decision-making process is decisive for its usage. In the light of the few attempts to use LCA information for consumer communication, the development might not be possible anytime soon due to high financial and methodological efforts. A second price tag on non-processed food might function as an effective communication tool to change consumer behavior towards more environmentally friendly. However, due to the limited generalizability of the applied empirical qualitative approach, results are not valid for a broader consumer population consumption beyond the investigated conditions. Further studies are therefore needed, in particular to review the proposals on the characteristics of the second price tag with quantitative studies and to eliminate uncertainties regarding the actual impact in the purchasing situation and the technical feasibility.

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VI. Annex

Annex 1: Interview Guide

1. Begrüßung (5min)

Guten Tag und herzlich willkommen zum heutigen Fokusgruppeninterview. Ich freue mich, dass ihr euch heute Zeit genommen habt, um an dieser wissenschaftlichen Studie im Rahmen meiner Masterarbeit am Lehrstuhl für Nachhaltigkeitsmanagement unter Leitung von Prof. Dr. Beckmann an der Friedrich-Alexander-Universität Erlangen-Nürnberg teilzunehmen. Ich bedanke mich bereits vorab bei euch für eure Teilnahme.

*Zu Beginn möchte ich euch das Prinzip einer Forschungsgruppe und datenschutzrechtliche Hinweise erläutern. In der heutigen Fokusgruppe werdet ihr in der Gruppe durch Informationsinput über das Thema „**Das Zweite Preisschild– ein neues Label auf Lebensmitteln**" zur Diskussion angeregt.*
Jeder Art von Beitrag ist willkommen und keine Meinung wird diskriminiert. Darüber hinaus ist rege Teilnahme an der Diskussion ausdrücklich erwünscht. Ich werde euch durch die Fragen und Diskussion leiten und darauf achten, dass die gleichen Redeanteile für jeden Teilnehmer gewährleistet sind und gleichzeitige Redebeträge vermieden werden.

Die während des Gruppeninterviews gesammelten Daten werden streng vertraulich und nur zu dem Zweck der wissenschaftlichen Auswertung anonymisiert verwendet. Weitere Einzelheiten entnehmt ihr der Datenschutzerklärung (austeilen & unterschreiben lassen).

Anmerkung: *Nach der Hälfte der Zeit eine Pause*

2. Vorstellungsrunde (5min)

Name, Alter und Beruf/Beschäftigung

3. Warm-up

3.1 Kaufkriterien (Purchase Criteria)
Welche Kriterien zieht ihr beim Kauf von Tomaten heran? **(10min)**

3.2 Einschätzung der Umweltfreundlichkeit von Tomaten

Ich bitte jeden von euch, jetzt einen Aspekt aufzuschreiben, der nach eurer Einschätzung die größte Umweltbelastung entlang des gesamten Produktlebenszyklus von Tomaten darstellt.
(**2 min**)

Jetzt liest bitte jeder seine Antwort laut vor.

Back-up: *Welche weiteren nicht genannten Aspekte können ebenso eine Umweltbelastung darstellen?* (**5min**)

3.3 Informationsquellen
Welche Informationsquellen nutzt ihr grundsätzlich, um euch über Umweltaspekte eines Lebensmittelproduktes zu informieren? (Zeit: **10 min**)

(z.B. Angaben direkt auf dem Produkt, Angaben direkt am POS, Konsumenteninfos in Radio, Fernsehen, Zeitschriften & Zeitungen, Internet, Konsumtipp von Umwelt- und Konsumentenorganisationen, Freunde & Bekannte, Werbekampagnen)

3.4 Einschätzung der Umweltfreundlichkeit im Vergleich der Produkte

Stellt euch vor, es ist gerade Winter in Deutschland und ihr möchtet Tomaten kaufen. Ich würde euch bitten, diese zwei Abbildungen von zwei unterschiedlichen Artikeln anzuschauen.

Wie schätzt ihr diese beiden Produkte hinsichtlich ihrer Umweltfreundlichkeit ein?

Welches Produkt würdet ihr kaufen und warum? (**15min**)

Abbildungen zeigen (Winter)!

Back-up: *Glaubt ihr, die Saison spielt eine Rolle hinsichtlich der Umweltfreundlichkeit von Tomaten?* (**5min**)
3.5 Kaufkriterium Umweltfreundlichkeit: *Wenn ihr euch nun die zuvor besprochenen Umweltaspekte ins Gedächtnis ruft, spielt der von euch aufgeschriebene Aspekt beim Kauf von Tomaten eine Rolle?* (**10min**)

4. Reaktionen auf die Konzeptidee

Statement: Viele Verbraucher würden gerne umweltfreundlichere Lebensmittel einkaufen, es fehlt jedoch an Informationen und Transparenz zur Einschätzung der Umweltverträglichkeit der Produkte. Die Lösung könnte ein zweites Preisschild sein, das eine Angabe zur Umweltfreundlichkeit eines Produktes macht. So wird die Umweltbelastung in den Kategorien Schadstoffemissionen, CO_2-Fußabdruck, Ressourcenverbrauch und Gesundheitsauswirkungen während der Erzeugung bis zum Großmarkt kalkuliert. Aus diesen Ergebnissen werden dann Umweltkosten berechnet. Diese geben an, welche Kosten in Präventionsmaßnahmen investiert werden müssten, um die Umweltbelastung wieder auf ein Niveau zu bringen, das mit der Tragfähigkeit der Erde im Einklang steht. Die Umweltkosten werden in Form eines Labels abgebildet. Dieses Label würde nach Berechnungsstandards für die jeweilige Produktkategorie aufgestellt und neben dem eigentlichen Preisschild direkt neben dem Produkt im Supermarkt angebracht.

Welche Chancen & Stärken seht ihr in einem solchen Konzept?

Welche Risiken & Schwächen könnten damit verbunden sein? **(15min)**

5. Präsentation der verschiedenen Labelalternativen

5.1 Variante 1: Absolute Umweltkosten

Bitte schaut euch nun diese beiden Produkte und die angegebenen Informationen dazu an. Ihr könnt anschließend frei darüber in der Gruppe sprechen, was ihr seht und wie ihr diese Informationen bewertet.

Abbildungen zeigen!

Verständnisfragen:
Habt ihr Fragen zum Konzept? Ist etwas unklar?

Fragen zur Lenkung der Diskussion (**10min**)

- *Würde euch das zweite Preisschild bei der Entscheidung für eine Sorte Tomaten helfen? Warum entscheidet ihr euch so? (Kaufentscheidung)*
- *Versteht ihr die Informationen des zweiten Preisschildes? (Eindeutigkeit, Klarheit)*
- *Gefällt euch das Label? (affektive Komponente)*
- *Sind genügend Informationen für einen hinreichenden Vergleich vorhanden? (Informationsgehalt)*

5.2 Variante 2: Multilevel-Label mit absoluten Umweltkosten

Bitte betrachtet auch hier wieder die beiden Produktalternativen und gebt danach eure Einschätzung ab.

Abbildungen zeigen!

Fragen zur Lenkung der Diskussion (**10min**)

- *Würde euch das zweite Preisschild bei der Entscheidung für eine Sorte Tomaten helfen? (Kaufentscheidung)*
- *Versteht ihr die Informationen des zweiten Preisschildes? (Eindeutigkeit, Klarheit)*
- *Gefällt euch das Label? (affektive Komponente)*
- *Sind genügend Informationen für einen hinreichenden Vergleich vorhanden? (Informationsgehalt)*

5.3 Variante 3: Komparatives Label mit Durchschnitt der Produktkategorie

Zuletzt bitte ich euch, euch auch kurz mit der letzten Labeldarstellung auseinanderzusetzen.

Abbildungen zeigen!

Fragen zur Lenkung der Diskussion (**10min**)

- *Würde euch das zweite Preisschild bei der Entscheidung für eine Sorte Tomaten helfen? (Kaufentscheidung)*

- *Versteht ihr die Informationen des zweiten Preisschildes? (Eindeutigkeit, Klarheit)*
- *Gefällt euch das Label? (affektive Komponente)*
- *Sind genügend Informationen für einen hinreichenden Vergleich vorhanden? (Informationsgehalt angemessen?)*

6. Weitere Fragen zum zweiten Preisschild

6.1 Präferenz für Preisschild*: Welche Darstellung hilft euch am meisten die Umweltauswirkungen des Produktes einzuschätzen? Alternative 1,2 oder 3 nennen* **(3min)**

6.2 Glaubwürdigkeit (Credibility)*: Auf einer Skala von 1-10 (10 = höchste Stufe) wie glaubwürdig erscheint euch das zweite Preisschild?* (**3min**)

6.3 Herausgeber des Labels (Issuing Institution): *Von welcher Quelle müsste das zweite Preisschild stammen, damit ihr diesem vertrauen könntet?* (Begründung notwendig!) (**5min**)

(z.B. Konsumentenorganisationen, unabhängige Forscher, Umweltorganisationen wie der WWF, Ministerium, Hersteller, Händler)

Back-up: Vergleichbarkeit: *Wie kann, eurer Meinung nach, die Vergleichbarkeit innerhalb einer Produktkategorie gewährleistet werden?*

6.4 Details*: Welche weiteren Informationen hinsichtlich der Umweltkosten von Tomaten würdet ihr euch wünschen?* (**10min**)

Beispiele:
- QR-Code mit Link zu Website zu weiterführenden Informationen zu den einzelnen Umweltauswirkungskategorien
- relative Darstellung zur anteiligen Belastung entlang des betrachteten Produktlebenszyklus
- Angabe der Berechnungsgrundlage für Umweltkosten, z.B. die beinhalteten 12 Umweltauswirkungskategorien

6.5 Rolle im Kaufentscheidungsprozess: *Angenommen, ihr steht vor dem Tomatenregal im Supermarkt und müsst eine Auswahl zwischen diesen beiden Sorten treffen. Wie wahrscheinlich ist es, dass ihr das zweite Preisschild in eure Kaufentscheidung einbezieht? 5 = sehr wahrscheinlich, 4 = wahrscheinlich, 3 = eventuell, 2 = eher unwahrscheinlich, 1 = überhaupt nicht* (**5min**)

7. Abschluss

Vielen Dank, dass ihr euch Zeit genommen habt. Wenn ihr noch abschließende Bemerkungen habt, könnt ihr diese jetzt gern äußern. Die Verlosung des Amazon-Gutscheins findet nach der zweiten Fokusgruppe statt nach dem 9.07.19. **(3min)**

Zeiteinteilung

Abschnitt/Frage	**Zeit (in min)**
1. Begrüßung	5
2. Vorstellungsrunde	5
3.1 Kaufkriterien	10
3.2 Einschätzung der Umweltfreundlichkeit von Tomaten	7
3.3 Informationsquellen	15
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Back-up: Rolle der Saison	5
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4. Reaktionen auf Konzeptidee	15
5.1 Variante 1: Einfache Preisdarstellung	10
5.2 Variante 2: Multilevel-Label mit absoluten Umweltkosten	10
5.3 Variante 3: Komparatives Label mit Durchschnitt der Produktkategorie	10
6.1 Präferenz für Preisschild	3
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6.3 Herausgeber des Labels	10
6.4 Details	5
6.5 Rolle im Kaufentscheidungsprozess	5
8. Abschluss	3
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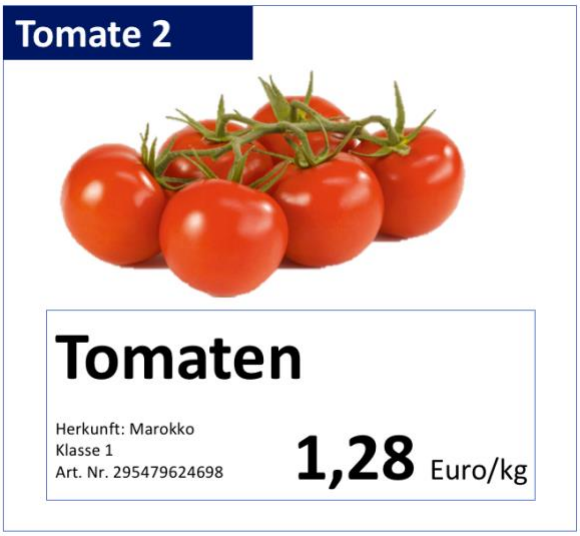
Annex 2: Handout Focus Group

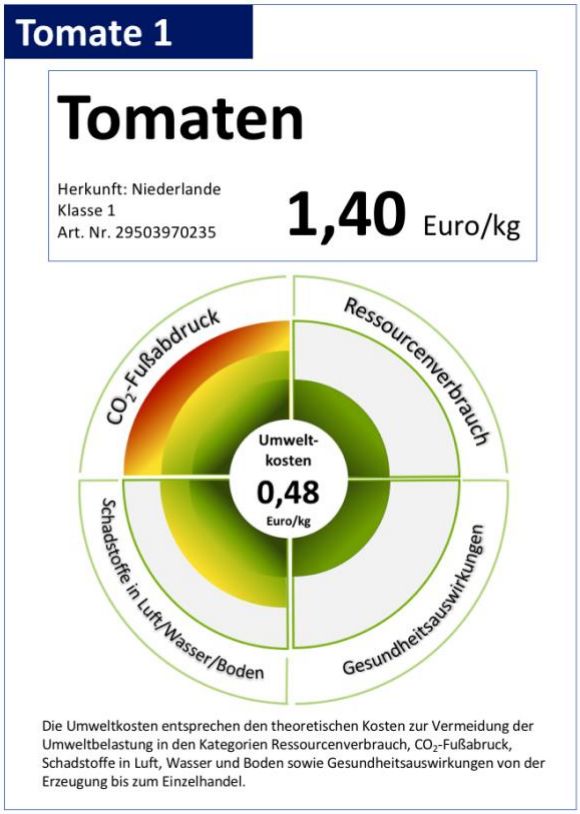
Presentation without eco-costs

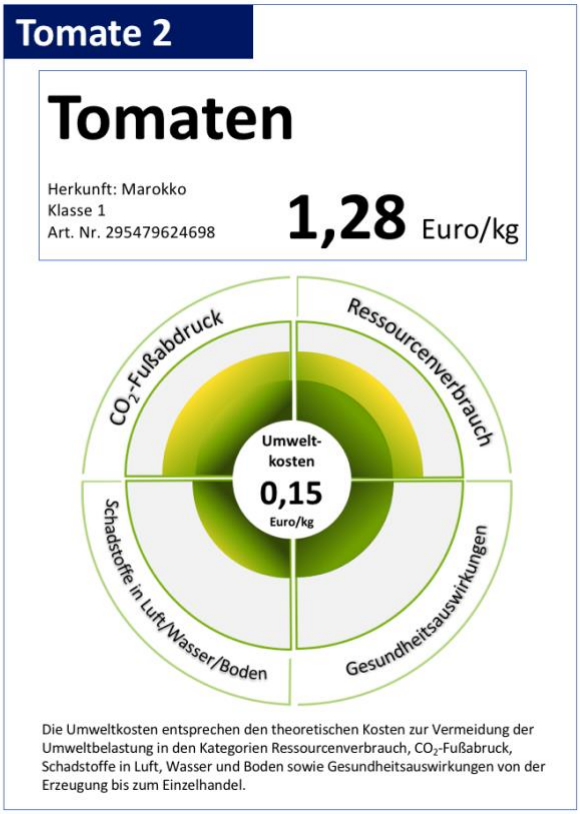


Presentation with eco-costs in different label alternatives

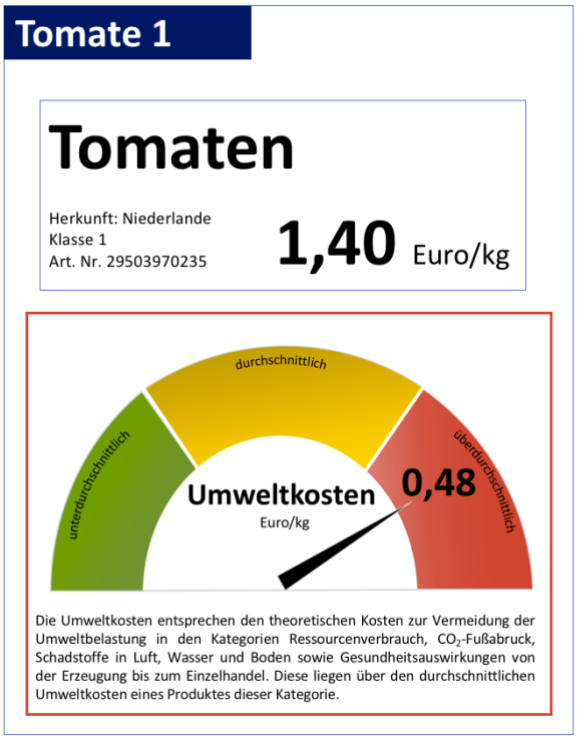
Alternative 1

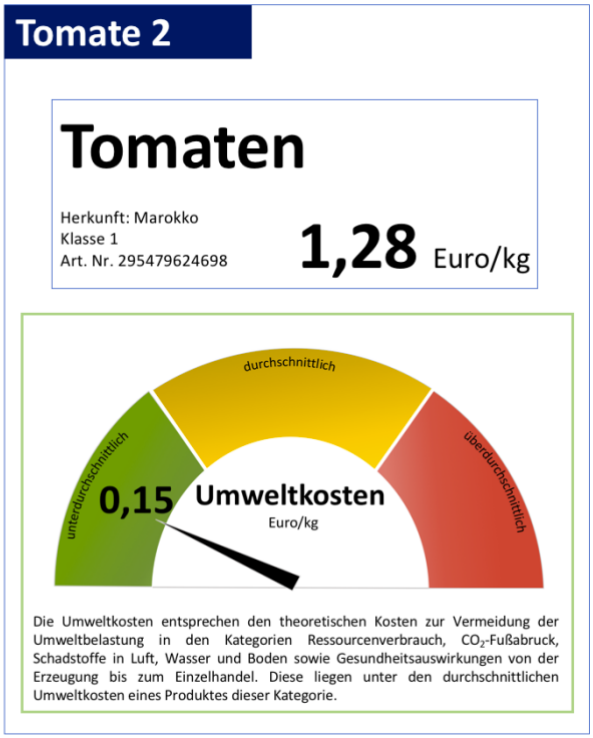
Alternative 2





Alternative 3





Annex 3: Interviewee Variables

Focus Group	Interviewee	Age	Profession/Course of Studies	Interview Location
FG1	I1	52	clerk	Memmelsdorf
	I2	62	self-employed	
	I3	60	estate agent	
	I4	60	clerk	
	I5	65	teacher	
	I6	30	project engineer	
FG2	I7	26	M. Sc. International Business Studies	Nuremberg
	I8	24	B. Sc. International Business Studies	
	I9	24	M. Sc. Marketing	
	I10	24	M. Sc. Marketing	
	I11	25	M. Sc. International Business Studies	
	I12	26	M. Sc. International Business Studies	

Annex 4: Summarized Records

Focus Group 1

Datum: 01.07.19

Protokollführer: Angelique Brink

Teilnehmer (kodiert): I1 – I6

FRAGE	TEILNEHMER	AUSSAGE/VERHALTEN
3.1 Kaufkriterien	I1	Herkunftsland, so nah wie möglich wichtiger als Preis, wobei zu teuer auch nicht
	I2	kauft nur saisonal
	I3	Saisonal, sonst ist eh zu teuer
	I6	Aussehen, Sorte für jeweiliges Rezept, Preis, Herkunft
	I5	Tomaten im Winter zu teuer
	I4	saisonal, was man kochen will, zu teuer
	I2	ökologisch, aber Schwachsinn, wenn von zu weit weg kommt
3.2 Einschätzung der Umweltfreundlichkeit von Tomaten		Zunächst schriftlich
	I2	Problem nur eins aufzuschreiben
	I4	Transport, kann sich aber nicht auf ein beschränken; Verpackung zählt dazu
	I5	künstliche Reifung (Gewächshäuser, Transport)
	I6	Transport
	I3	dasselbe
	I2	Spritzmittel (Dünger, Pestizide)
	I1	Wasser, insbesondere in armen Ländern. Ergänzt, dass Transport nicht so schlimm ist aufgrund der Erfahrungen aus seinem Beruf
3.3 Informationsquellen		Wo informiere ich mich?
	I6	Internet, spezielle Marken recherchieren Produktionsbedingungen, Label sollte eindeutig sein
	I1	sagt Labels sind nicht vertrauenswürdig
	I5	welcher Information kann ich trauen?
	I2	vertraut bestimmten Siegeln und Organisationen, informiert sich gerne, auch bei Kosmetika, etc.; recherchiert vor dem Kauf
	I1	vertraut nur seinen eigenen Augen, geht davon aus das die Tiere gesund sind, weil er sie gesehen hat
	I3	sieht das Problem und vertraut auf Test im Fernsehen, selber Labels zu lesen ist zu viel Aufwand für ihn

	I2	man braucht dafür auch viel Fachwissen
	I1	in der Stadt gibt's gar keine Metzger des Vertrauens mehr
	I4	hat auch Erfahrungen mit kleinem Metzger, weniger Konsum von Fleisch (Hähnchen) auch wenn es schmeckt, weil sie das im Supermarkt nicht kaufen mag, im Alltag zu anstrengend alles nachhaltig zu kaufen, konsumieren
	I2	kennt einige regionale Biomärkte in Bamberg
	I4	stimmt es gibt Angebote, im Alltag zu umständlich zu erreichen
	I6	kauft Obst und Gemüse auf dem Markt, Fleisch auch im Supermarkt, vertraut den Kontrollen der großen Lebensmittelketten
	I2	findet Fleischproduktion in Deutschland ganz schlecht
3.4 Einschätzung der Umweltfreundlichkeit der Produkte im Vergleich		Nach Anschauen der Abb.
	I2	kauft prinzipiell keine Tomaten im Winter
	I1	Niederlande, zumindest aus Europa, Transportweg kürzer
	I3	dasselbe, lieber selber Tomaten anbauen
	I5	auch
	I2	betont, dass sie verpackte Tomaten niemals kaufen würde
	I4	Niederländisches Gemüse kennt man schon, deswegen kann es nicht so schlecht sein
	I6	man kann im Supermarkt nicht alle Faktoren abwägen
	I5	Preis ist für ihn zu günstig (viele Stimmen zu)
3.5 Kaufkriterien der Umweltfreundlichkeit	I4	geht auch viel zum Rewe und kauft, was aus Bamberg kommt
	I5	hat beobachtet wie Tonnen an Dünger an den Feldern in Bamberg benutzt werden
	I2	regional nicht gleich gut, für sie ist regional nicht mehr als 100km
	I5	wer legt fest, was regional bedeutet
	I2	im Ausland (außerhalb EU) andere Gesetzte
4. Reaktionen auf Konzeptidee		Nach lesen des Konzepttextes
	I2	Beim lesen E. erste Verunsicherung ausgedrückt durch Laut
	I1	zu kompliziert für viele Menschen, vor allem wenn man sich nicht für das Thema interessiert, ein Ranking mit Zahlen 1 bis 10 wäre besser

	I2	zu abstrakt, wie ist die Zahl entstanden
	I6	findet es nicht vertrauenswürdig, wie sollen die Konzerne, Hersteller CO2 Wert erfassen, auch kleine Betriebe, Vergleichbarkeit fragwürdig
	I2	braucht Vergleichswert, Richtwert
	I5	wer legt Umweltkosten fest?
	I1	Beispiel Label für Fleisch im Supermarkt (ALDI; LIDL) hat seine Kaufentscheidung erleichtert
	I4	Label macht die Zahlen und Fakten verständlich
	I6	Kosten für Konzerne, um das zu erfassen, schlecht für kleine Betriebe
	I3	stimmt da zu
	I1	schlägt simples Label vor
	I2	Preis draufschlagen, CO2 Kosten subventionieren
	I6	es sollte nur ein Label geben, macht es untereinander vergleichbar
	I5	wie bei Elektrogeräten von A bis E… also einfacher
5.1 Labelvariante 1	I2	immer das wo weniger Umweltbelastung stattfindet
	I6	soziale Faktoren sind auch wichtig
	I5	fragt sich wo die Zahlen herkommen, andere Standards was Müll etc. angeht?
	I3	ist sehr skeptisch den Zahlen gegenüber
	I1	Inhalt verständlich, würde auch die CO2 Kompensation auf den Preis draufschlagen
	I6	lieber getrennt damit ich meine Entscheidung auch nur abhängig von Umweltfaktoren treffen kann
	I1	Markt würde sich dann selbst regulieren
	I5	keine Lust lange zu vergleichen, muss schnell gehen
	I1	würde für ihn Zeit sparen
	I3	Gesamtpreis nicht ersichtlich, wünscht sich Summe aus normalem Preis und Umweltkosten
5.2 Labelvariante 2	I5	zu kompliziert
	I4	anderer war einfacher
	I6	verwirrend
	I2	lieber Balkendiagramm (wie bei Energieeffizienzlabel) nicht-eindeutige Darstellung, muss auf den ersten Blick verstanden werden,
	I4	keine Zeit für lange Labels

	I6	unterschätzt den Verbraucher, lieber mehr Informationen zum Nachlesen, für den der sich wirklich interessiert
5.3 Labelvariante 3	I5	sieht Ähnlichkeit zu Einteilung von Elektrogeräten
	I1	ohne lange zu überlegen
	I2	besser
	I3	bekanntes leichtverständlich
	I6	auf den ersten Blick alles wichtige
6.1 Präferenz für Preisschild		Einstimmig 3
6.2 Glaubwürdigkeit		Label 2.
	I6	Schwer zu vergleichen, unterschiedliche Erfassungsmethoden
	I5	kann sich keine Erfassungsmethode vorstellen
	I2	kommt auf die Quelle an
	I6	muss unabhängige, unangekündigte Test geben, Firma selber kann man nicht vertrauen
	I4	hat das Gefühl in der Lebensmittelindustrie alles zu hinterfragen, vertraut eher großen, traditionellen Herstellern
	I5	alle Firmen wollen Geld machen
	I4	macht keinen Unterschied bei Autos und Tomaten
	I2	war schon immer so, aber heute durch die Medien erfährt man mehr und es ist auch vieles besser geworden, weil es Regeln und Gesetze gibt, die Menschen sind von den vielen Informationsquellen überfordert
	I6	Resignation, das Gefühl, dass man bei dem Berg an Infos gar nicht anfangen braucht
	I2	Politik sollte unterstützen
	I4	Politik sollte unterstützen
	I2	teureren Preis
	I6	die Deutschen geben scheinbar ungerne viel Geld für Lebensmittel aus, sondern lieber für andere Luxusgüter
Back-up: Vertrauen	I1	einem Label, was vom Hersteller kommt wäre nicht vertrauensvoll
	I6	sieht die Schwierigkeit in der Umsetzung
	I2	EU weite Richtlinien

	I6	stimmt da zu
6.3 Details	I2	App für mehr Informationen, mit Alternativen
	I1	Label 4 würde ihm reichen, weil zu viele Informationen
	I6	vor der Einführung Informationen zu System/Methode vor Ort wer muss die Label alles umsetzten? Schwierigkeiten für Markt, Metzger und Kleinbetriebe
6.4 Rolle im Kaufentscheidungsprozess	I4	auf jeden Fall, wenn es so einfach und leicht verständlich ist, wie beim letzten Beispiel
	I5	Geschmack ist auch wichtig
	I6	muss dennoch hinterfragt werden
	I3	genauso wie bei den Elektrogeräten auch hier, solange ich (oder die Umwelt??) etwas einsparen kann
	I2	solange das Vertrauen da ist, voll
	I1	dasselbe. Würde seine Denkweise ändern, wenn das Label das sagt. Fazit: Wenn sie nicht gut schmecken, dann werden sie aber auch nicht gekauft, Allerdings liegt es dann wahrscheinlich an der Jahreszeit, also würden sie eh keine kaufen
Abschließende Bemerkungen	I2	Verbraucher benötigt Unterstützung, nicht jeder ganz ein Spezialist in jedem Thema sein
	I4	macht es leichter kritisch zu sein, im Alltag ist ihr die Umwelt schon wichtig, manchmal mehr als der Genuss
	I5	will es lieber einfach halten
	I6	Es fehlt Aufklärung für jeden verständlich, Label gute Möglichkeit es einfach zu machen

Focus Group 2

Datum: 09.07.19

Protokollführer: Laura Therese Heinl

Teilnehmer (kodiert): I7 – I12)

FRAGE	TEILNEHMER	AUSSAGE/VERHALTEN
3.1 Kaufkriterien	I12	Art, Qualität, Preis
	I8	Regionalität nach Produktionsangabe, je nach Jahreszeit, regionale Tomaten da immer in Gewächshäusern
	I7	Art, kleine Tomaten
	I9	Schön rot, knackig, nicht so viel Plastik
	I10	Kleine, lecker aussehen, regional
	I11	Alle vier von I12 und I8 genannten Aspekte
3.2 Einschätzung der Umweltfreundlichkeit von Tomaten	I7	Verpackung und Transport, aber je nach Herkunftsland anders
	I8	Pestizide
	I9	Transport
	I10	„unnötiger Transport“, da Wasserverbrauch z.B. überall entsteht
	I11	Transport oder Plastik, eher Transport
	I12	Verpackung, Saisonabhängigkeit
Diskussion zu der Saisonabhängigkeit	I12	Im Winter mehr Energieaufwand
	I7 & I8	In Deutschland im Sommer leichter, da kein Treibhaus
	I9	Ist aber immer Treibhaus; Ja saisonabhängig, da Auswahl hier immer gleich und dann im Winter mehr zugekauft.
3.3 Informationsquellen	I10	Internet, Label zählt für sie nicht zu Infos, da das unklar ist. Wenn Internet, dann Wikipedia
	I12	Auf das Label gucken (I12 kennt sich aber schon aus). Oder auch mal Magazine, wenn man Infos sucht. Merkt noch an: Bei geringer Auswahl kann einem mehr Info auch nicht helfen.
	I11	Ja, man weiß nicht, was hinter den Labeln steckt. Informiert sich, wenn ihm neue Sachen besonders auffallen.
	I7	Internet, ja und dort unabhängige Quellen
	I8	Labels, sonst auch beim Hersteller anfragen möglich
	I9	Informiert sich selbst weniger als man möchte. Sie kennt halt ein paar Label, aber informiert sich jetzt

		nicht andauernd im Alltag. Wird von den anderen auch so bejaht! Kopfnicken.
3.4 Einschätzung der Umweltfreundlichkeit der Produkte im Vergleich O-Ton: Zu wenige Informationen! Zweifel an der Möglichkeit Umweltfreundlichkeit klar bestimmen zu können.	I11	Niederlande besser.
	I12	Wegen Transport.
	I10	Findet Flugzeuge fliegen sowieso, daher Marokko besser. Flugzeuge findet sie allgemein nicht so schlimm.
	I7	Niederlande, weil ist näher dran. Normalerweise würde er auch nicht weiter nachdenken.
	I8	Ja, LKW ist weniger umweltschädlich.
	I9	Eher Niederlande.
3.5 Kaufkriterien der Umweltfreundlichkeit	I11	Ja
	I10	Ja, aber nicht ausschlaggebend.
	I8	Ja, aber dann Marokko wegen Pestizide
	I7	Nickt
	I12	Ja
	I9	Nickt
4. Reaktionen auf Konzeptidee	I11	Vereinfachung
	I9	Nickt angeregt, „Augen öffnen im Sinne von andere überzeugen, die es bisher nicht kennen“. Ihr zweiter Wortbeitrag bekommt auch Zustimmung von allen.
	I10	Ablehnende Körperhaltung, hat Zweifel, nutzt „Whataboutism“ (die anderen schauen dabei auf ihr Papier)
	I8	Zweifel an der Prüfbarkeit, wenn es von Unternehmen kommt. Die anderen nicken und stimmen ihm zu.
	I7	Bezweifelt Transparenz, Machbarkeit, bekommt von I11 Zustimmung. Abschließender Beitrag: bekommt von allen Zustimmung außer I10.
	I12	Aktualität der Daten wichtig.
5.1 Labelvariante 1	I7	Nicht so intuitiv, da günstig und nachhaltig nicht zusammengeht. Bekommt Zustimmung von Vivien.
	I10	Die Details findet sie ganz gut, da die Ampel die Details verschleiert.
	I12	Durchschnittswert zum Vergleich. Alle stimmen zu, nicken, positive Körperhaltung.
	I10	„Kombination der Zahlen und Farben, wird angenommen“, aber I12 findet dann sind es „halt wieder viele Daten“.

	Reaktion auf wie das Label „gefällt“	Betretene Gesichter, vorgeschobener Mund, fragende Blicke, bevor geantwortet wird.
	Bei der Kaufentscheidung helfen	Alle ja, I11 mit Kopfschütteln und „Helfen, ja“.
5.2 Labelvariante 2	Äußerungen I12, I11, I7	Alle finden es gut, alle gemeinsam lesen interessiert
	I8	Versteht nicht ganz, was gezeigt wird, findet es undurchsichtig, I9 fragt nach, was genau er komisch findet. Die anderen verstehen es direkt.
	I10	Möchte mehr Relationen, um die Farben einschätzen zu können.
	I12	Spricht den „Catch 22“ an: Sie hätte, weil man viele Infos kriegt, gerne noch mehr Infos z.B. zu sozialen Auswirkungen.
	I7	Hat jetzt Aha-Effekt und findet das angenehm. Alle nicken außer I10.
5.3 Labelvariante 3	I12	Gefällt ihr gut. Alle nicken außer I11.
	I12	Jedes Mal neu überlegen bei der Version, die Farben sind so detalliert, I10 und I9 nicken.
	I10	Kein Vergleich bei Version 2 ist blöd. Aber Version drei ist in der Darstellung nicht so toll. Allgemeine Zustimmung.
	I8	Version 3 hilfreicher für den Zweck, **wirklich alle nicken.**
	I7	Kombinieren von 2 und 3 wäre top, I12 stimmt zu.
	I10	Supermarkt entscheidend, da typischer Einkäufer dort anders informiert sind.
6.1 Präferenz für Preisschild	I12	3
	I9	3
	I8	3
	I10	2, aber 3 sollte eingeführt werden
	I7	3
	I11	3
PAUSE	14 min	19:30 Uhr wird fortgefahren
6.2 Glaubwürdigkeit	I12	6
	I10	Insgesamt sehr skeptisch, braucht Herkunft. Am besten wäre eine NGO, die die Daten erhebt.
	I9	6-7
		Allgemein Zustimmung zu 6-7 bei einer 10er Skala

Back-up: Vertrauen **Frage: Welche Quelle wäre am besten?**	I8	staatlich
	I11	Auch staatlich. EU z.B.
	I10	Glaubt an den freien Markt und an Rewe z.B., weil da Geld da ist für den Aufwand der Einführung
	I7	Missionsgesteuertes Unternehmen, „unparteilicher Player“
	I12	Bio-Supermarkt vielleicht glaubwürdig?
	I10	Findet der Staat müsste das von vornerein machen
Back-up: Vergleichbarkeit Insgesamt sehr schwierige Frage für die Gruppe		Viele Infos wichtig, aber hauptsächlich mit QR-Code. Übereinstimmung, dass niemand die genauen Infos „Ausgezwungen“ bekommen möchte.
6.3 Details: Soll der Hersteller reinvestieren müssen in Umwelt? Pro Kilo etc.?	I12	Schwierig transparent zu gestalten, Idee gut
	I8	Wirkt irgendwie wie eine Steuer, am Ende zahlt der Verbraucher wohl.
	I10	Sinn dahinter: Das Leute umweltbewusster werden. Freiwilligkeit ist wichtig!
	I11	Aber dann wird eh alles kompensiert. Also würde der Verbraucher vielleicht nicht mehr darauf achten, da irgendwer für ihn kompensiert („Moral Bargaining“). Hat Idee noch nicht verstanden...
	I7	Hat die Idee als erster verstanden! Umweltfreundliche Produkte dann billiger, also nimmt man als Konsument das günstigste.
	I10	Sieht den Sinn im Umdenken.
6.4 Rolle im Kaufentscheidungsprozess, Gewillt mehr zu zahlen für Labels?	I8	Mit Label wäre besser.
	I7	Effekt ist wichtig im Sinne von Ergebnis: Wenn billig = nachhaltig, dann erzielt man den Effekt mehr Nachhaltigkeit. I9 stimmt zu.
	I9	Unterstützt I7‘s Idee.
	I11	Findet sie alle sind umweltbewusst, daher muss man die Annahme des Labels in der Realität beachten.
	I9 & I7	Wenn Staat das einführt, dann **kommt keiner drum herum.** Dies wird gutgeheißen. I10 signalisiert Ablehnung.
	I8	Im europäischen Vergleich würden sich die Preise erhöhen können und dann nur angleichen, daher ist ein Preisaufschlag
	I10	Findet Leute sollten informiert und motiviert werden, nicht **bevormundet**. I10 sieht Lebensmitteleinkaufs-Migration auf uns zukommen; nutzt gern „What-

		Aboutism“--> Andere Konsumentengruppe als die anderen, vielleicht zielführend.
	I8 & I10	Sehen da Akzeptanzprobleme europaweit, D sehen sie vorn beim Umweltbewusstsein.
	I7	Sieht es als utopisch an, alle überzeugen zu wollen. Spricht direkt I10 an, die mehr Chancen bei der Unternehmens-Einführung sieht
6.4 Rolle im Kaufentscheidungsprozess,	I12	4
1-5	I9	4-5, „wenn es bezahlbar ist und reinpasst“
	I8	Wenn, ... 4-5, aber sonst 1-2 bei Unternehmensinitiiert
	I7	Muss unabhängig sein, **„Wenn, muss es für alle sein“**
	I10	Hat eine gute Idee; I11, I8, I9, I12 glauben nicht an Unabhängigkeit
Abschließende Bemerkungen	I12	Datenaufwand wäre enorm.

Annex 5: Coding Scheme

For reasons of space and clarity, the coding scheme can be found in the additional document called **Codingscheme.pdf**

Annex 6: Focus Group Transcripts

For reasons of space, the transcripts can be found in the additional documents Transcript FG1 (see separate document **Transcription_FG1.pdf**)

Transcript FG2 (see separate document **Transcription_FG2.pdf**)

VII. Eidesstattliche Erklärung

Ich versichere, dass ich die Arbeit ohne fremde Hilfe und ohne Benutzung anderer als der angegebenen Quellen angefertigt habe und dass die Arbeit in gleicher oder ähnlicher Form noch keiner anderen Prüfungsbehörde vorgelegen hat und von dieser als Teil einer Prüfungsleistung angenommen wurde. Alle Ausführungen, die wörtlich oder sinngemäß übernommen wurden, sind als solche gekennzeichnet.

Nürnberg, den 14.10.2019 ……

Jessica Mazurek