



Contents lists available at ScienceDirect

Food Policy

journal homepage: www.elsevier.com/locate/foodpol

The roles of human values and generalized trust on stated preferences when food is labeled with environmental footprints: Insights from Germany

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ARTICLE INFO

Article history:

Available online xxxxx

Keywords:

Carbon footprint
Ecological
Rokeach Value Survey
Environmental sustainability
Mixed logit

ABSTRACT

This study explores influences of human values and trust on stated preferences for food labeled with environmental footprints. We apply survey data to assess the impact of these individual-specific characteristics on German consumers' choices of potatoes, through an attribute-based choice experiment in which product alternatives are described by footprint labels and prices. We find that accounting for consumers' value systems, but not generalized trust beliefs, aids in understanding choices and identifying possible markets for footprint-labeled food products.

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Introduction

Consumer choices for environmentally sustainable foods are of interest given links between carbon dioxide and global warming (e.g., IPCC Report, 2007), as well as concerns regarding human intervention in the global hydrological cycle as this relates to the production of agri-food products (Rost et al., 2008). In Germany, where the first "Product Carbon Footprinting (PCF) World Summit" was held in 2009, it is estimated that 40% of climate-relevant emissions can be related to consumption patterns (Schächtele and Hertle, 2007; Klockenhoff, 2009).¹ Consequently, shifting consumption patterns may have important implications for entire supply chains (Edwards-Jones et al., 2009), particularly for agri-food (Weber and Mathews, 2008). However, current knowledge is insufficient to understand whether, how and why consumers might shift to more sustainable consumption patterns (Thøgersen and Ölander, 2002). We consider two basic concepts in analyzing consumer choices for sustainable products. These are human values, since these guide consumers' attitudes and judgments (Rokeach, 1973), and individuals' generalized trust beliefs, which are viewed to reflect innate moral beliefs (Uslaner, 2002).

The objective of this paper is to identify differences in consumers' choices as determined by trust and human values. Varying information content of labels is explored relative to environmentally sustainable choices through attribute-based choice experiments (Louviere et al., 2000), while controlling for trust through measurement of perceptions of the trustworthiness of others (Luhmann, 1979) and consumers' value systems (Rokeach, 1973).

Our emphasis on labeling recognizes that consumers with preferences for environmental attributes can only adjust consumption patterns in line with these preferences if environmentally sustainable products can be identified at point of purchase. Early analysts such as Rees (1992) proposed a "nutrition label for the planet". This ecological concept includes carbon and water footprints which refer, respectively, to the amounts of CO₂ created and water used during food production, processing, storage, packaging and distribution. Several countries and retail chains have established pilot projects to support reduction of carbon emissions by providing information through product labeling, e.g., 'Carbon Counted Canada'.² The world's first footprint labels were commercially introduced in 2007 in the UK (Economist, 2011). Subsequently the food retailer Tesco introduced a carbon footprint label in cooperation with the Carbon Trust during 2009. However, Tesco dropped this in early 2012. Reasons cited for this change were that consumers found the labels to be complicated and difficult to understand; that Tesco had only been able to label 500 instead of 50,000 own-brand

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¹ This figure does not include information on farm-level production and industry level.

² See: www.carboncounted.com.

products due to time requirements for label calculation; and that other retailers were slow to adopt footprint labeling (Financial Times, 2012).³ Introduction of such labels has also been slow in other countries (e.g., Powers, 2011), despite survey results that found 72% of EU citizens supportive of carbon labeling and agreeing that this should be mandatory (Flash Eurobarometer, 2009).

This paper makes contributions to the sparse food-related research on carbon footprint labeling and human values. While we are aware of studies on the influence of trust on food consumption and the importance of values to consumption decisions, we are not aware of previous studies that consider the impact of both features on food choices or environmental sustainability. The following section outlines the conceptual model, discusses relevant literature, and develops hypotheses. Methods and experimental design are introduced in Section 'Methods and experimental design', followed by results in Section 'Results', and further discussion and conclusions in the fifth section.

Literature, hypotheses and conceptual model

In a study of Canadians' choices among unprocessed meat products (ground beef) labeled for environmental footprints, Grebitus et al. (2013a) find that several human values have predictive power. Furthermore, Viscusi et al. (2011) highlight that individuals' environmentally sustainable behavior is potentially influenced by human values regarding environmental quality and economic incentives. However, although human values are increasingly recognized to be important to consumers' choices, the influence of this concept on the possible impact of environmental implications of food choices has received little attention.

This study builds primarily on three concepts and strands of literature: ecological footprints, trust, and human values. Each contributes to our conceptual model (Fig. 1). A brief discussion of some key literature on each concept is followed by hypotheses. The conceptual model depicts the main relationships between the component variables that are expected to influence consumer choices of ecologically footprint labeled products. It is postulated that consumers' socio-demographic characteristics as well as individuals' trusting beliefs (generalized trust) and value systems determine related attitudes and subsequent behavior. Consumers' 'emotional engagement' associated with climate change (Roeser, 2012) is expected to amplify their interpretation of footprint-labeled products, raising their motivation to choose such products. For specific definitions of the terms used in the model and the following sections see Appendix Table A1.

Ecological footprints

It has been argued that the ecological footprint concept provides an intuitive framework for understanding the bottom-line of ecological sustainability (Wackernagel and Rees, 1997). A rapidly expanding literature has focused on the calculation of water and carbon footprints for a range of food products (e.g., Chapagain and Hoekstra, 2007). Information on carbon footprints, typically expressed as a single figure in units of carbon dioxide equivalents, has been generated as part of life cycle analyses (Chapagain and Orr, 2009) and incorporated into labeling studies. Some studies have focused on the relative unfamiliarity with the primary unit of carbon labeling. For example, when compared to nutritional labeling, carbon labeling is not very familiar to consumers because there is a lack of commonplace experiences in which consumers can contextualize carbon equivalents (e.g., Teisl, 2003).

³ Carbon Trust was a private company established by the UK government, with the stated aim of facilitating a low carbon economy.

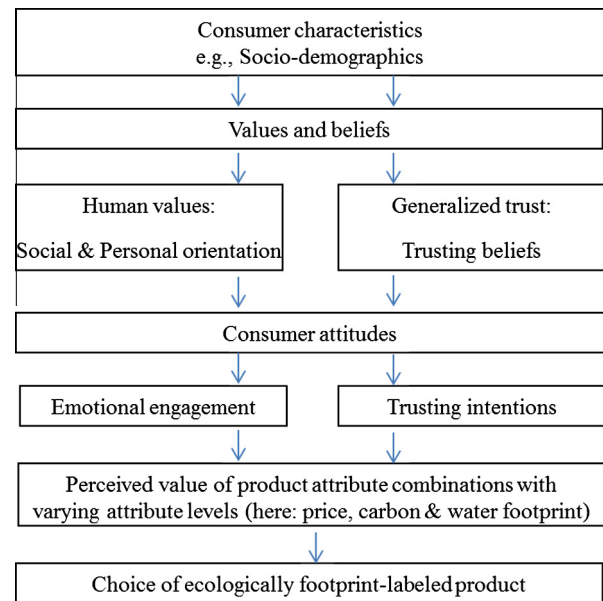


Fig. 1. Conceptual model.

Previous research suggests that some consumer behavior justifies support for policies related to environmentally-friendly products. Kempton (1991) demonstrates that U.S. consumers' desire to preserve the environment for their descendants is a key concern to many. Hersch and Viscusi (2006) consider consumers' risk beliefs regarding climate change, providing evidence from a 1999 Eurobarometer survey that decision-making governed by self-interest, rather than broader social welfare calculations, predominates when consumers are queried on support for gasoline price increases. These authors project that the degree to which consumers benefit directly from climate change policies will decline with age, with younger persons benefiting more as they anticipate longer periods of exposure to problems associated with ongoing climate change. However, the extent of intergenerational differences in support of climate change policies may hinge on sources of consumer preferences: priority on bequest value for future generations will soften age-related differences, counteracting any dominant role of individual-use values (Hersch and Viscusi, 2006). These considerations lead to our first hypothesis:

H1. Younger consumers are more likely to choose products labeled for higher levels of environmental sustainability.

Trust

As we indicate (Fig. 1 and Appendix Table A1), the role of trust has increasingly been recognized in consumer studies (e.g., Allen et al., 2008; Steiner and Yang, 2010; Baddeley et al., 2011; Ding et al., 2012). A study by Gulev (2012) finds positive associations between specific cultural attitudes, including trust, and views of business practices that enable social and environmental sustainability. The role of trust is considered to be of particular importance where information is sparse, hard to assess or complex; in these situations, trust can substitute for full knowledge (Luhmann, 1979). An extensive literature explores varied trust concepts. Individuals' generalized trust beliefs are frequently viewed to reflect a person's innate moral beliefs and world view (Uslaner, 2002, 2008). Consequently, in this study the role of generalized trust is explored in the context of footprint labeling:

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