



# How do human values influence the beef preferences of consumer segments regarding animal welfare and environmentally friendly production?



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## ABSTRACT

Animal welfare and environmental impacts have been emphasized in the sustainable production of livestock. Labels are useful tools for clearly providing such attribute information to consumers. The aim of this study was to evaluate how human values influence consumer segments for beef with information on animal welfare and environmentally friendly production. Using a choice experiment, we examined whether animal welfare and environmentally friendly labels, country of origin and price impact consumer choice. As results, five heterogeneous consumer classes were identified using a latent class model: *label conscious*, *domestic beef preferring*, *price conscious*, *animal welfare preferring* and *not interested in production method*. Almost 90% of consumers were interested in and willing to pay for beef with animal welfare or environmentally friendly label. The classes with significant preferences for such labeled beef were affected by “*openness to change*”, “*self-enhancement*” and “*security*”. Improving consumer attitudes and strengthening consumer perception towards labeled beef by marketers and policy makers will be required.

## 1. Introduction

Consumers are increasingly concerned with how food is produced and delivered to markets (Briggeman & Lusk, 2010; Kjærnes, Harvey, & Warde, 2007; Nestle, 2013; Vermeir & Verbeke, 2006). In developed countries in particular, food and agribusiness companies are facing rapid changes regarding the growing concerns of consumers about production processes of agricultural products (Miranda-De La Lama et al., 2017; Pouta, Heikkilä, Forsman-Hugg, Isoniemi, & Mäkelä, 2010). With respect to animal food products, there have also been international debates about animal welfare (Bracke, 2009) and reduction of environmental impacts (Thornton & Herrero, 2010) in sustainable animal production processes. In this global context, it is also expected that in Japan, consumer concern about animal production processes with regards to animal welfare and environmental protection will increase in the near future. In particular, the 2020 Tokyo Olympic Games is increasing public awareness of the sustainability of food production in Japan. Aiming for a nationwide event, the Japanese government has required farmers who want to supply agricultural food for the 2020 Games to meet the standards for the Global Good Agriculture Practice (Global GAP) certification, an internationally recognized private sector standard for agricultural products, or the Japan GAP (JGAP) certification, the Japanese version of Global GAP established to apply GAP to

Japanese production situations. The Global GAP and JGAP standards include criteria for enhanced animal welfare and reduced environmental impacts by improving feeding and management practices (e.g., handling excrement with consideration for the surrounding environment and local residents, and using checklists based on the international covenants by International Organization for Animal Health (OIE) regarding animal welfare) in animal production (Tokyo 2020 Games, 2017). Although there have been other standards such as the “Organic Japanese Agricultural Standards (Organic JAS) system” in Japan, the Japanese Government expects the Global GAP and JGAP standards to be the main factors motivating Japanese animal farmers to implement animal welfare and environmentally friendly practices.

Attribute information on animal welfare and the reduction of environmental impact in the animal production process are credence goods (Darby & Karni, 1973). If such attribute information on production methods were provided to consumers using labels on agricultural products (foods), such labels (or certifications) would become useful informational tools and would guarantee the desired qualities of these agricultural products for consumers (Dimara & Skuras, 2005; Sans & Sanjuán-López, 2015). To assess the benefits of labeling, the preferences and willingness to pay (WTP) for labels of animal production methods have been widely investigated (Gracia, Loureiro, & Nayga Jr, 2011; Kehlbacher, Bennett, & Balcombe, 2012; Pouta et al., 2010; Sans

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& Sanjuán-López, 2015; Van Loo, Caputo, Nayga, & Verbeke, 2014). In particular, choice experiments have been extensively used to measure consumer preferences for food product attributes (Bitzios, Fraser, & Haddock-Fraser, 2011) and consumer WTP values derived from choice experiments have become a prevalent way of assessing consumer demand and preferences for various practices used to raise livestock animals (Widmar & Ortega, 2014).

At present, however, there is no national certification system for animal welfare and environmentally friendly products in Japan, even though the standards for animal welfare and environmental impacts have been outlined. Consequently, animal welfare and environmentally friendly labels are not well known to Japanese consumers due to the lack of opportunity for these consumers to purchase beef with these labels in daily life (Japan Livestock Technology Association, 2011; Tokyo 2020 Games, 2017). Under such circumstances, the revealed preferences based on the actual market price cannot be applied due to lack of real markets and a hypothetical choice experiment is the widely used method in valuing consumer demand for attributes of products that are yet to be available in real markets (Bello & Abdulai, 2016). As with the initial perception of most consumers, the preferences and WTP for these labels evaluated by such as the hypothetical choice experiment will be important information for policy makers and/or marketers to prepare and implement such certification systems and spread its wide use. Such information is helpful for all stakeholders in the supply chain in designing production processes with developing marketing strategies based on such production attributes and in developing appropriate market communication tools (Grunert, Sonntag, Glanz-Chanos, & Forum, 2018).

A consumer's choice behavior is related to many factors, including personal and product characteristics. While sociodemographic variables are frequently used as indicators for classifying consumers, human values can be basic motivators for determining choice behavior behind explicit sociodemographic differences. Therefore, several researchers have regarded human values as important predictors for food consumption (Aertsens, Verbeke, Mondelaers, & Van Huylenbroeck, 2009; Worsley & Lea, 2008). In this context, human values can be used to clarify the structure of consumer preferences, and marketers should adapt their marketing plans to different value segments and focus on consumers whose value priorities fit the food (Zhou, Thøgersen, Ruan, & Huang, 2013). Grebitus, Steiner, & Veeman (2015) adopted human values as the explanatory factors for consumer preferences and choice behaviors for potatoes and mentioned that valuing social orientation, such as “freedom” and “a world at peace”, leads to a stated preference for potatoes with lower carbon emissions. However, although the connection between human values and some attitudes has been studied theoretically or empirically (e.g., Grunert, 1995; Schwartz, 1992) after proclaiming the value concept as “the value should be able to unify the diverse interests of all the sciences concerned with human behavior” by Rokeach (1973), the relationship between human values and behaviors related to the consumption of livestock products has been less investigated.

Human values are defined as desirable, transsituational goals varying in importance that serve as guiding principles in people's lives (Schwartz, 2006). Several measurement scales have been suggested to quantify human values (Beatty, Kahle, Homer, & Misra, 1985; Becker & Connor, 1981; Lusk & Briggeman, 2009; Rokeach, 1973; Vinson & Munson, 1976). One of the most influential scales is Schwartz's Portrait Values, which was proposed in the beginning of the 1990s by Schwartz (1992). Schwartz (1992, 2006) defined human values as enduring beliefs and represented these values in a circular structure using the following four dimensions: *self-enhancement*, *self-transcendence*, *openness to change* and *conservation*. The Schwartz value theory is very often used to study the link between human values and consumer behavior (Aertsens et al., 2009). Human values are generally understood as extremely stable constructs and may shape behavior in a value-congruent direction a far as they are activated during the pre-decisional process (De

Boer, Hoogland, & Boersema, 2007). Human values can therefore serve as good predictors of behavior over extended periods of time (Krystallis, Vassallo, Chrysosoidis, & Perrea, 2008). The indirect impacts of human values can operate via specific combinations of involvement and attitudes, and this applies in particular to food choices where very strong habits and preferences may create favored combinations of use situations, meals, products and ingredients (De Boer et al., 2007). In fact, some authors have used the human values approach to gain better insight into the consumption of food produced by sustainable farming systems (Chrysosoidis & Krystallis, 2005; De Boer et al., 2007; Grunert, Hieke, & Wills, 2014; Krystallis et al., 2008). De Boer et al. (2007) reported that most values of Dutch consumers tend to be somewhat related to the direction of the food choice motives. Grunert et al. (2014) investigated how motivation, understanding and use are related to consumers' pattern of human value and found that the patterns are largely consistent with the Schwartz theory of values.

The aims of this study were to evaluate the impacts of animal welfare and environmentally friendly labels on beef purchasing decisions in Japan and to examine how human values influence consumer segments for beef with information on animal welfare and environmentally friendly production based on a choice experiment. Our study may provide a deeper understanding of consumers' choice behavior for beef through analyzing how human values affect consumer segments and may contribute to an understanding of whether the animal welfare and environmental impact certification labels are beneficial for Japan. There are few studies on Japanese consumers' preferences for animal welfare and environmentally friendly production in food, and to the best of our knowledge, the present study is the first to evaluate Japanese consumers' preferences for animal welfare and environmentally friendly labels in beef.

## 2. Material and methods

In the present study, a self-administered internet survey was adopted to investigate consumer characteristics, including human values and preferences for beef attributes. The participant pool consisted of members of the general public who had registered as survey panelists with Macromill, Inc., one of the largest survey firms in Japan. This private company provides reliable panels because it prevents irregular monitoring registration in several ways ([https://www.macromill.com/advantage/monitor\\_policy.html](https://www.macromill.com/advantage/monitor_policy.html) (in Japanese)). When applicants register as panelists, they must provide the following information: their address, date of birth, sex and age (and their bank account if they want to receive monetary incentives for their participation in the surveys). The company crosschecks the registration with the above information, and even though one could have multiple e-mail addresses, it would not be possible for the panelists to register multiple times. The company's panel administrators check the registered information of all registered panel members once a month. Any overlapping information is considered fraudulent, and the corresponding panel membership is suspended. The company excludes the responses to the online survey if they include inconsistent or frivolous answers. The survey was administered for one day in December 2016 after a preliminary survey to determine target respondents. The survey targeted respondents who purchased beef at least once a month in two large urban regions (“Kanto” with Tokyo, Kanagawa, Chiba and Saitama prefectures and “Kansai” with Osaka, Kyoto, and Hyogo prefectures) in Japan. We obtained 1032 responses, but only 846 were analyzed because 186 responses were incomplete due to a lack of information on their personal incomes. The sociodemographic characteristics of the consumer dataset ( $N = 846$ ) are summarized in Table 1. Although the survey was administered to respondents who lived in major cities in Japan, the annual income and population of living city were slightly biased in lower categories than expected. The questionnaire had two sections: (1) the Portrait Value Questionnaire (PVQ) and (2) choice experiment questions. In the present online survey, all participants could understand Japanese.

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