Boletim do Tempo Presente - ISSN 1981-3384

Consumer Willingness To Pay For Animals Welfare Products

Gabriel Oliveira Gonçalves[I]
Ricardo Chaves Lima[II]

Abstract: The number of companies and products that use ethical labels to communicate transparency in the production chain and promote "friendly behavior" consumption towards sustainability has been growing. It is particularly true in the Brazilian food and beverages segment, where, in 2016, 46% of all food and drinks sold had at least one ethical label. Therefore, this study examines the influence of demographic characteristics and income on consumers' willingness to pay for animal welfare products in the food market. The survey drew a sample of 200 questionnaires from social networks of home management groups asking questions on food consumer behavior, family characteristics, and individual's economic profile. The response measurement for the dependent variable was on a 0 to 5 Likert scale, representing the family's willingness to pay for animal welfare products. The empirical strategy used a multinomial-ordered logit to estimate the consumer behavior model. Results suggested that the willingness to pay for animal welfare food products decreases with income for lower income levels but increases for higher income groups. Furthermore, as age and education increase, people are more likely to pay an extra price for animal welfare food products. Finally, the study showed that an individual's gender exerts no statical influence on the dependent variable.

Keywords: Animal welfare, food consumption, consumer income, ordered logit

1.INTRODUCTION

The number of companies and products that use ethical labels to communicate transparency in the production chain and promote "friendly behavior" consumption towards sustainability has been growing. It is particularly true in the Brazilian food and beverages segment, where, in 2016, 46% of all food and drinks sold had at least one ethical label.[III] Moreover, along with the number of ethically labeled products, the very notion of sustainability itself is expanding over time. Birgit et al. (2016) explain that sustainability comprises three dimensions: economic, social, and ecological, following the WCED definition. However, nowadays, the concept considers ethical and health aspects as well. Furthermore, with the evolution of this term, there is more room for products to explore different sides of sustainability. According to the Eco Label Index catalog, more than 450 labeling schemes are available in 199 countries.[IV]

Likewise, it is crucial to take into account that one label can have more than one “ethical driven characteristic” take the Direct Trade label; for instance, Hindsley et al. (2020) explain that a product with this label has three key attributes that separate them from standard products: (i) price premiums are paid directly to the producers; (ii) harvesting practices are sustainable; and (iii) the quality of the product is enhanced (Hindsley et al., 2020). With that in mind, it is clear that the same label can guarantee both social benefits, the first two, and private ones, the last. However, even with a diverse list of labels and meanings, most ethical consumption literature

is focused only on organic products, and other environmental and social aspects do not get much attention. Not only that, but usually, when analyzing consumer attitudes, most studies focus on specific products, and the results are very hard to generalize (Grunert *et al*., 2014).

Similarly, other dimensions of ethical consumption, like animal well-being and veganism, are essential in a country like Brazil, where the agribusiness sector corresponds to almost 27.6% of the GDP, according to the CEPEA methodology (CEPEA, 2022). Also, when one looks at the three most significant sectors of the Brazilian economy, it is clear that the agricultural sector is the one that grows the most.[V] According to USDA (2022), in July 2022, the Brazilian inventory had 14.6% of the global chicken meat production and 26.2% of the world cattle stock[VI]. Considering that, this first study will analyze consumers' understanding and willingness to buy products that respect animal welfare.

2.PROBLEM DISCUSSION

When a company guarantees that a product was made following the standards of the animal's welfare, what they are communicating is basically that the animals that were used in the production chain of their product are healthy, comfortable, well-nourished, safe, able to express innate behavior, and that they are not suffering from unpleasant states such as pain, fear, and distress during all the process (AVMA, n.d.). To be more precise, animal well-being takes into account the five freedoms proposed by the Farm Animal Welfare Committee (You X., 2014):

A company guarantees that production follows the standards of the animal's welfare when the farm animals are healthy, comfortable, well-nourished, safe, able to express innate behavior, and are not suffering from unpleasant states such as pain, fear, and distress during all the process (AVMA, n.d.). To be more precise, animal well-being takes into account the five freedoms proposed by the Farm Animal Welfare Committee (You X., 2014):

1. Freedom from thirst, hunger, or malnutrition by ready access to fresh water and a diet to maintain total health and vigor.
2. Freedom from discomfort by providing a suitable environment, including shelter and a comfortable resting area.
3. Freedom from pain, injury, and disease by prevention or rapid diagnosis and treatment.
4. Freedom to express normal behavior by providing sufficient space, proper facilities, and the company of the animal’s own kind.
5. Freedom from fear and distress by ensuring conditions and treatment which avoid mental suffering.

Nevertheless, it is essential to consider that not only the animals benefit from that “style” of production but also the consumers. As Liang Y. (2022) shows, a food product that follows animal welfare standards is healthier, has more quality, and minimizes food safety risks and other related issues in the livestock industry. Examples of animal welfare practices are broiler chickens from the free-range poultry system, natural grain-fed fattening pigs, and milk products without exogenous agents such as antibiotics.

Secondly, it is crucial to consider that consumers of ethical products can be less responsive to price changes, as Arnot et al. (2006) find in their research on fair trade coffee. According to Iweala et al. (2019), this is possibly related to the "warm glow effect," an increase in consumers' utility when doing an altruistic act. They have found that products with a sturdier public good effect generate a "warm glow" than ethical products that provide personal benefits. In contrast, a study analyzing consumers' behavior toward apples produced in poverty-stricken

areas suggests that quality perception of personal attributes significantly affects the consumer's willingness to pay (Wang et al., 2021). According to Liang (2022), usually, consumers are willing to pay more for products that take into account the well-being of animals, and when they get the information that this kind of product enhances the quality of the product, their disposition to pay more increases even further. Additionally, Chen et al. (2018) show that even though people are willing to pay more premiums for goods that positively affect society, different ethical claims affect the extra amount a consumer may be willing to spend. In other words, not all ethical claims have the same perceived value to people.

Furthermore, as Grunert *et al.* (2014) attested, while considering ethical consumption as a matter of general interest with products widespread in the population's daily lives as foods and drinks, other critical factors like price, quality, and healthfulness are significant in the consumer's buying decision. In the same publication, the authors suggest that when asked about the level of concern with sustainability in food production, there is generally a moderately high level of concern. However, this level of concern does not generate a corresponding increase in the actual consumption level precisely because of these other vital factors. Nevertheless, both the knowledge of an ethical label meaning and the inclusion of details about animal welfare standards can increase the consumption of products that use this labeling scheme (McEachern & Warnaby, 2008; Hoogland *et al.*, 2007). Moreover, besides the knowledge of the label itself, individuals with a higher degree of education tend to be willing to pay more for products that guarantee ethical characteristics, as Clark *et al.* (2017) show in their study.

It is essential to highlight that, in Brazil, almost 36% of the population had no condition to afford food for themselves or their families in 2021, making Brazil a country with a starvation level above the world average (Neri, 2022). With that said, problems regarding the animal's well-being or the environment's preservation may not be so primordial for the average Brazilian customer when he has to choose which product to purchase. When asked to elucidate which barriers stand between ethical consumption, the perceived high price is one of the most frequent answers of the respondents (Röös & Tjärnemo, 2011; Grunert, 2011). In understanding how Brazilians see products with ethical labels, it is essential to analyze whether consumers who buy and prepare food at home consider ethics in production an issue and if they are willing to pay a premium for those products. Finally, social and cultural differences can substantially affect consumers' decisions to purchase ethical goods (Hindsley P. et al., 2020; Grunert et al., 2014). In a country like Brazil, with high levels of inequality and so culturally diverse, it is fundamental to get an idea of the socioeconomic profile of the person who may (or may not) be willing to purchase goods that respect animals' well-being or organic products.

3.METHODOLOGY

3.1.Survey Design and Data

The data collection used an online questionnaire developed to be answered by people responsible for purchasing and preparing food at home. The main focus of the research was to examine the impact of demographic characteristics of home food consumers on their willingness to pay for animal welfare products. The survey consisted of 200 questionnaires, most of them drawn from women, collected from September de first to October the thirtieth.

3.2.The Variables

Table 01 shows the definition of dependent and independent variables for **Model 01** and **Model 02.** For the dependent variables *KNOW* and *PAY* the response was based on a Likert scale from one to five.

Table 01 – Variables for Models 01 e 02

Dependent variables	**Definition**
KNOW (Model 01)	How was your knowledge about the PRODUCTION OF FOOD ACCORDING TO ANIMAL WELFARE? 1-none, 2-few, 3-regular, 4-good, 5-excelent
PAY (Model 02)	Would you pay an extra price for food produced according to animal welfare? 1-no, 2-do not know, 3-may be, 4-possibely yes, 5-sure
Independent variables	**Definition**
INCOME	Gross family monthly income (R$)
DINCOME	Dummy variables equal to 0 when family income is less than median income (R$ 4.500,00) and 1 otherwise
AGE	Respondent´s age
EDU	Respondent´s years of formal education
GENDER	0 = male; 1 = female

3.4. Empirical Model

The ordered logit model assumes a latent dependent variable (y^*), representing the dependent variable in each model, estimated as a function of a vector of explaining variables (x') as follows (Debdulal, 2009):

Where β is a vector of parameters and ε an error term. As y^* is unobserved, what we observe is: ´

and j = 1, 2, 3, 4, 5 are the ordered responses, and μ's are (j – 1) unknown parameters representing cut points or threshold parameters such as:

$$0 < \mu_1 < \mu_2 < \mu_3 < \mu_4$$

Assuming ε ~ $N(0,1)$, the probability for the *j-th* outcome is given by:

$$Prob(y = j) = \Phi(\mu_j - x'\beta) - \Phi(\mu_{j-1} - x'\beta)$$

where Φ is the cumulative logistic (standard normal) distribution, which is continuous and twice differentiable

4.RESULTS

Table 02 shows descriptive statistics of the sample collected.

Table 02 - Socio-demographic characteristics of the sample

Family Income	***Number***	**(%)**
Above average Below average	112 88	56% 44%
Age	***Number***	**(%)**
18–24 25–34 35–44 45–54 55+	29 62 48 32 29	14,5% 31% 24% 16% 14,5%
Education[VII]	***Number***	**(%)**
Low Medium High	7 73 120	3,5% 36,5% 60%
Gender	***Number***	**(%)**
Female Male	149 51	74,5% 25,5%

Approximately 75% of the respondents in the sample was women, and 44% had monthly gross family income lower than the group median, R$ 4.500. Most participants had aged more than 25 years old and less than 44. Finally, the vast majority of people in our sample had at least 11 years of formal education.

The empirical strategy used two multinomial logistic regression models: Model 1 with variable *KNOW* (previous knowledge about animal welfare products) as the dependent variable, and Model 2 with variable *PAY* (wiliness to pay for animal welfare products) as the dependent variable. **Table 03** shows coefficient estimates and respective P-values or the variables in both models. The Akaike Information Criterion (AIC) performed the model selection, and the condition number (Cond.H) examined the empirical identifiability of the model. Smaller AIC suggests a better fit since it is directly related to the model´s residual sum of squares (Enders, 2015). The condition number of the Hessian is the ratio of the largest to the smallest eigenvalues and is a degree of empirical identifiability of the model. Cond.H lower than 10^6 indicates that the model reached a well-defined optimum. (Christensen, 2021).

Table 03 – Results for Estimated Models 01 and 02

	MODEL 1 (KNOW)			**MODEL 2 (PAY)**	
VARIABLES	**ESTIMATES**	**P-VALUE**		**ESTIMATES**	**P-VALUE**
INCOME	0.041	0.019 *		-0.057	0.006 **
DINCOME	-	-		0.587	0.077 .
AGE	0.026	0.009 **		0.026	0.008 **
EDU	0.084	0.072 .		-	-

GENDER	0.100	0.733		0.325	0.268
AIC	593.22			611.12	
Cond.H	2.9e+05			1.0e+05	

Signif. codes: p <0.1% [***], 0.1% ≤ p < 1% [**], 1% ≤ p < 5% [*], 5% ≤ p < 10% [.] and p ≥ 10% [ ]

Model 01 showed a positive and statistically significant coefficient for variable INCOME, meaning that higher-income respondents are more likely to be aware of animal welfare. The same is true for variables AGE and EDU, which means that more educated and aged individuals are expected to have previous knowledge about animal welfare in food production. In Model 02, the wiliness to pay a premium for animal welfare food production decreases as income increases, which we observe on the negative and statistically significant coefficient of variable INCOME. However, the coefficient of the dummy variable DINCOME - which is equal to 0 for family income less than the average (R$ 4500,00) and 1 otherwise – is positive and statistically significant at a level lower than 10%. These results suggest that the willingness to pay a premium for animal welfare food products decreases with income for lower income levels but increases for higher income groups. The results also showed that people are more likely to pay an extra price for animal welfare food products as response age increases. In both models, the variable GENDER showed statistically nonsignificant coefficients.

5. FINAL COMMENTS

Agriculture has always been a fundamental economic sector for the development of humanity throughout history. In recent decades much has been discussed about how agricultural production affects the sustainability of the environment, and it is essential to emphasize that sustainability is a multidimensional concept. Moreover, these diverse dimensions are essential in a country like Brazil, with robust farming systems. At the same time, there are high levels of social inequality, and many people are food insecure. This study tried to clarify how people react to ethical agricultural products in different demographic situations.

Specifically, it has investigated how other socio-economic characteristics of consumers connect with knowledge and willingness to buy products that respect animal welfare, one of the dimensions of ethical consumption. Our results show that for our sample, gender was not a statistically significant variable and that the willingness to pay a premium for animal welfare food products decreases with income for lower income levels but increases for higher income groups. In future analyses, it will be interesting to investigate other forms of ethical consumption, such as veganism and organic products, and relate this to the food security status of the respondents.

Notas

[I] Federal University of Pernambuco – UFPE, economics student (gabriel.oliveirag@ufpe.br)
[II] Federal University of Pernambuco – UFPE, full professor (ricardo.clima@ufpe.br)
[III] Ethical Labels Snapshot: Brazil 2015 - Euromonitor.com, 2016
[IV] www.ecolabelindex.com
[V] World Development Indicators | DataBank, n.d
[VI] Approximately 14.7 million metric tons of chicken meat and 264 million heads of cattle.

[VII] **Low** education=Less than seven years of studies, **Medium**=at least seven and less than sixteen years of studies and **High=** sixteen years or more of studies.

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