
Acceptance of Animal Husbandry Practices: The Consumer Perspective

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1. Background

Everything consumers do involves making a choice. Looking at these choices, an increasing consumer interest in food products bearing labels identifying non-tangible attributes has been observed over the last years. Consumer concern relates not only to the issue as to what is produced and which product attributes are present in final products, but the growing sentiment relates also to the question of how food is produced in general. Consumers question fairness and justness of production processes with regard to producers (e.g., fair trade labelling) or animals (e.g., animal welfare labelling) and demand support for local supply chains. As a result, certain food production technologies are stigmatized in certain parts of the society. Thereby stigma is defined as “[...] a mark placed on a person, place, technology, or product, associated with a particular attribute that identifies it as different and deviant, flawed, or undesirable.” (Kasperson, Jhaveri & Kasperson, 2001:19).

Human values are thought to be at the root of the stigmatization of certain food production technologies. A systematic analysis of human values was introduced in the seminal book by Milton Rokeach in 1973. He defines values “an enduring belief that a specific mode of conduct or end-state of existence is personally and socially preferable to alternative modes of conduct or end-states of existence.” Values hence transcend situations and time. Later work by Schwartz (1994) has refined the definition of values and developed a value survey instrument that links values to ten different value domains. He arranges these along a two-folded dichotomy of self-enhancement versus self-transgression and openness to change versus conservation. In consequence, some of these values relate to egoistic versus altruistic versus biospheric values. Thereby egoistic values refer to an egocentric orientation, altruistic values refer to a homocentric orientation and biospheric values refer to an ecocentric orientation (De Groot & Steg, 2008).

Besides this general value orientation, research has been undertaken to analyse values specific to making food choices. Independent of the measurement, these analyses show that consumers first and foremost value a low contamination of food products (e.g., naturalness, health, food safety) as well as taste and price. Further, for making a food choice, animal welfare has shown to be an important choice motive. However, it is repeatedly questioned, in how far animal welfare influences the organoleptic characteristics of a product, like taste or tenderness, and in how far this is the reason for higher liking or willingness-to pay for products produced under higher animal welfare standards. Further, Napolitano et al. (2008), besides others, observe that animal welfare

is used as an indicator for private attributes like food safety, food quality and healthiness. In line with this, Lusk, Nilsson and Foster (2007) find that consumers highly value a certification free of antibiotics, while they value a certification for animal well-being slightly less. Thereby, they find an explanation for differences between consumers in consumer's level of altruism.

This paper analyses first personal values and food values and thus the importance of animal welfare in relation to other food values and second the acceptance of agricultural practices and in specific animal husbandry practices from a consumer perspective. Doing so, the role of value orientations and food values as predictors for the acceptance of agricultural practices can be analysed.

2. Data

Data from 935 respondents were collected in a German-wide online survey throughout June 2014. The questionnaire, which is available upon request, included questions on different fields of research, amongst others the importance of different food values, as well as egoistic, altruistic and biospheric values and the acceptance of different agricultural practices, of which half related to animal husbandry practices. Concretely the concepts have been measured as follows.

Value orientations have been measured based on a short version of Schwartz's value scale, conceived by De Groot and Steg (2008). Their selection includes 12 values, of which four respectively measure the egoistic, the altruistic and the biospheric value orientation.

The importance of different food values, including animal welfare, in food choice has been measured using the method by Lusk and Briggeman (2009). Concretely, respondents were asked to evaluate the 12 food values animal welfare, appearance, convenience, environmental impact, fairness, naturalness, novelty, nutrition, origin, price, safety and taste using Best-Worst Scaling. Doing so, respondents had to trade-off the values against each other by repeatedly choosing the most and the least important food value. The data are analysed using a Best-Worst count analysis as well as by use of a random parameters logit model.

Finally, the measurement of acceptance of specific animal husbandry practices was based on Peters, Burraston and Mertz (2004). To get a better view of general risk aversion respondents were thereby not only asked about animal husbandry practices but also about agricultural practices related to food technology, e.g. radiation and nanotechnology. Respondents were asked for how acceptable (-2 very unacceptable, ..., +2 very acceptable) and disgraceful (0 very disgraceful, ..., 4 not at all disgraceful) they regard these practices. Further they were asked whether they can imagine any social or economic situation in which this practice would be acceptable (0 no situation, ..., 3 several situations, 9 already acceptable). Following Peters et al. (2004), a single measure of stigma was calculated by taking the average of responses to these three questions.

Based on these variables, figure 1 shows the main research question of the present article: In how far values predict the acceptance of animal husbandry practices. This model is tested in a linear regression analysis.

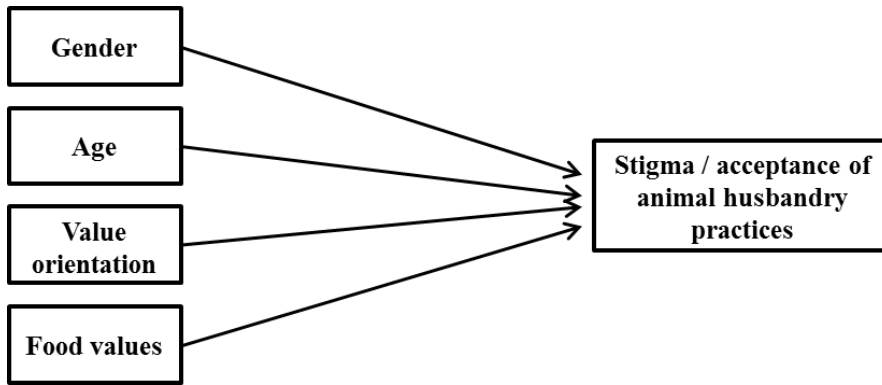


Figure 1. Gender, age and values as predictors for the acceptance of animal husbandry practices

As not only agricultural practices related to animal husbandry practices have been assessed, the role of values as predictors for the acceptance of food technology practices (figure 2) is tested in a second regression analysis.

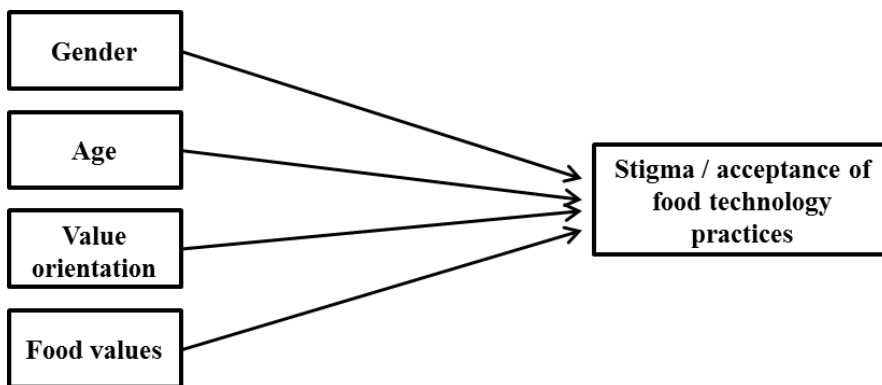


Figure 2. Gender, age and values as predictors for the acceptance of food technology practices

Starting with a sample description the results will be shown in the following.

3. Results

The sample

As the analysis of socio-demographics shows, the gender ratio of the sample was almost equal, with 50.7% of respondents being male, and respectively 49.3% being female. The age ranged between 19 and 87 years, with a mean of 49.35 years (SD 16.99). In terms of education 38.2% of respondents completed 8 years of education, another 32.7% of respondents completed 10 years of education, 13.2% of respondents finished gymnasium and another 15.5% of respondents hold a university degree. Looking at the current occupation, the majority of respondents is full time employed (41.7%), followed by 27.1% of retired respondents and another 11.9% of respondents who are part time employed with an average of 20.18 working hours per week. Looking at the type of household, the majority of respondents live together with a partner without children (42.8%) or with child(ren) (24.1%). Another 20.7% of respondents live in a single household and the remaining respondents split up into single parent and respondents living in shared flats.

Regarding their meat consumption, 7.1% of respondents state to be vegetarian and another 2.9% of respondents indicate to live vegan. The survey was limited to those respondents who were at least partly responsible for food shopping.

Value orientation and food values

The value orientations were analysed using confirmatory principle component analysis. The results, also shown in table 2, reveal the expected three factors: Biospheric value orientation, egoistic value orientation and altruistic value orientation.

Table 1. Factor Loadings for Confirmatory Principal Component Analysis of Value Orientation

Value Item	Biospheric	Egoistic	Altruistic	Cronb Alpha
Preventing pollution: protecting natural resources	.820	.046	.315	.882
Respecting the earth: harmony with other species	.835	.054	.164	
Unity with nature: fitting into the nature	.766	-.001	.390	
Protecting the environment: preserving nature	.783	.031	.348	.860
Social power: control over others, dominance	-.006	.829	.178	
Wealth: material possessions, money	.014	.771	-.089	
Authority: the right to lead or command	.049	.896	-.023	.816
Influential: having an impact on people and events	.053	.860	.046	
Equality: equal opportunity for all	.326	-.038	.750	
A world at peace: free of war and conflict	.418	.016	.663	.816
Social justice: correcting injustice, care for the weak	.309	-.025	.800	
Helpful: working for the welfare of others	.170	.129	.742	

The results of the food values were analysed once by Best-Worst Counting and once in a Random Parameters Logit Model. Both analyses show that consumers consider safety most important, followed by taste, animal welfare and naturalness. This confirms previous findings about animal welfare being of high importance to consumers.

Table 2. Importance of Food Values (using Best-Worst Scaling)

Value	Ranking (B-W Count)	Ranking (RPL Model)
Safety	561	24,2
Taste	423	16,8
Animal Welfare	282	11,3
Naturalness	288	11,0
Price	52	7,5
Fairness	147	7,4
Environmental Impact	37	7,0
Nutrition	107	6,4
Origin	-13	5,5
Appearance	-395	2,0
Convenience	-617	1,1
Novelty	-872	-

Stigmatization of agricultural practices

The high importance of animal welfare has consequences for the public discussion of animal welfare practices. Taking thus a look at the acceptance of animal husbandry practices, the analysis reveals that commonly used practices are regarded as unacceptable by consumers (table 3). To name some examples, 82.4% of consumers regard the usage of hormones in animal husbandry as unacceptable, slightly less, but still 77.7% do so for the usage of antibiotics. Thereby the animal husbandry practices are partly seen even more critical than food production practices like the usage of GMO. The results further show that most consumers cannot imagine any situation in which the practice would become acceptable. These findings show that the social consensus about acceptable animal husbandry seems to be broken. Further these findings go in line with the 2010 Eurobarometer, according to which 66% of the German consumers are worried about farm animal welfare (Eurobarometer 354, 2010, n=1546). The missing social consensus goes in line with several media reports on the topic and new animal welfare initiatives, leading to a public discussion about animal husbandry conditions. Thus, we can confirm a stigmatization of agricultural practices in general and of animal husbandry practices in specific.

As this analysis reveals a distinction between certain agricultural practices an exploratory principal component analysis is done to test for structure in the stigmatization of the agricultural practices. For this step, a single measure of stigma was calculated from the average of responses to Disgraceful, Unacceptable and cannot imagine ever acceptable, following Peters et al. (2004).

Table 3. Acceptance of agricultural practices

	Respondents that regard practice as unacceptable (%)	Respondents that cannot imagine any situation in which this practice would be acceptable (%)
Castration of farrows without anaesthetisation	83,0	65,5
Use of hormones in animal husbandry	82,4	52,7
Killing male one-day old chicks	78,4	61,0
Space currently offered to hens held in cages	78,2	52,0
Short breeding of chicken (Chickens are bred to a weight between 1500g and 1600g in 32 days)	77,7	57,2
Irradiated food	77,7	54,8
Use of antibiotics in animal husbandry	77,7	46,0
Arresting tails of farrows	77,2	62,6
Transporting live animals for more than 6 hours	76,6	50,1
Keeping animals on slatted floor	72,7	53,0
Use of genetic engineering in food production	72,6	53,2
Use of pesticides in agriculture	71,5	45,5
Food that is based on nanotechnology	66,0	52,7
Use of preservatives and artificial colouring in food	48,5	40,0

Table 4. Factor Loadings for Principal Component Analysis of agricultural practices

	Acceptance of animal husbandry practices	Acceptance of food technology practices	Reliability (Cron. α)
Room for chicken	.811	.349	
Fattening of chicken in 32 days (1600g)	.808	.354	
Castration without anaesthetisation	.808	.318	
Arresting tails of piglets	.791	.327	
Culling of 1-day old male chicks	.783	.319	.937
Living transport > 6 hours	.738	.357	
Slatted floor	.711	.328	
Hormones	.624	.592	
Preservatives and art. colouring	.172	.788	
Nanotechnology	.290	.773	
Pesticides	.395	.717	.892
GMOs	.466	.692	
Irradiation	.491	.658	
Antibiotics	.526	.631	

The principal component analysis reveals a distinction into the expected two factors, of which the first relates to animal husbandry practices and the second relates to food technology practices. The results of the principal component analysis are shown in table 4.

Values as predictors for the stigmatization of agricultural practices

To analyse the role of values on the acceptance of agricultural practices, regression analyses were performed. The results, shown in table 5, confirm that the values a person holds predict the acceptance of certain practices. Thereby altruistic values as well as the food values animal welfare and taste play an important role for the acceptance of agricultural practices related to animal husbandry. In difference, biospheric values as well as the food values naturalness and taste play an important role for the acceptance of agricultural practices related to food technologies.

As higher values for the dependent variables represent lower stigmatization and thus higher acceptance, the results can be interpreted as follows. An egoistic value orientation predicts a lower stigmatization of the analysed animal husbandry practices, while biospheric as well as altruistic value orientations predict a higher stigmatization of the practices. Thereby altruistic values have the higher influence. In difference, altruistic values do not have an influence on the stigmatization of food technology practices. Meanwhile, an egoistic value orientation predicts also a lower stigmatization of the food technology practices and a biospheric value orientation predicts again a higher stigmatization of these practices.

Table 5. Predictors of the acceptability/ stigmatization of agricultural practices

Variable	Regression 1	Regression 2
	Dependent variable: acceptability of animal husbandry practices	Dependent variable: acceptability of food technology practices
	Beta	Beta
Constant	0.493***	0.794***
Gender (female=1)	- 0.169***	- 0.044

Age	- 0.005	- 0.218***
Egoistic	0.200***	0.108***
Altruistic	- 0.194***	- 0.068
Biospheric	- 0.106***	- 0.151***
Animal Welfare	- 0.123***	- 0.043
Safety	- 0.068	- 0.001
Taste	- 0.089**	0.107***
Naturalness	- 0.018	- 0.155***
Adjusted R ²	0.152	0.173

Regarding the influence of the food values it can be said that a higher importance of the food values animal welfare and taste lead to a higher stigmatization of the assessed animal husbandry practices. For the stigmatization of the food technology practices in turn the food values taste and naturalness have a significant influence, where a higher importance of taste predicts a lower stigmatization while a higher importance of naturalness predicts a higher stigmatization of these practices. Last but not least, females regard the analysed animal husbandry practices as less acceptable than males and an increase in age leads to a higher stigmatization of the food technology practices.

4. Conclusion

In general, stigma of food technologies is very high. In particular, many aspects of animal production are deemed unacceptable. These findings show that the modern agriculture and consumers mind-sets about agriculture lie far apart and thus confirm that the consensus about agricultural practices is broken.

Thereby, the level of stigmatization is predicted by general value orientations, as well as specific food values. Understanding of this interplay of acceptance and human values can thus help for better understanding problems of stigma.

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