

Consumer Preferences and Willingness to Pay for Certified Dried Fruits and Nuts in Central Asia

Emil Begimkulov¹, Dietrich Darr²

¹Ph.D. candidate, Rhein-Waal University of Applied Sciences, Marie-Curie-Str. 1, 47533 Kleve, Germany, Promotionskolleg NRW, Konrad-Zuse-Straße 10, 44801 Bochum, Germany

²Professor of sustainable and resilient farm and food systems, Faculty of Agriculture, Food and Nutrition, Hochschule Weihenstephan-Triesdorf, Markgrafenstraße 16, 91746, Weidenbach, Germany

1. Introduction and Problem Statement

- Dried fruits and nuts are vital for nutrition and incomes in rural Central Asia (CA)¹:
 - Collected from wild forests and cultivated in intensive orchards;
 - Rarely in sustainable agroforestry systems (AFS)².
- However, AFS expansion in CA is hindered by limited knowledge, undeveloped processing¹, and the absence of environmental and social standards (ESS)³.
- It is unclear if consumers in CA prioritize health, environmental, and social attributes as Western consumers do⁴.
- The knowledge of the marketing of dried fruits and nuts is limited and sparse.
- The high costs of adopting ESS make SMEs in CA uncertain about the potential benefits of adopting ESS⁵.

2. Research Objectives

- To develop a conceptual model of factors influencing consumer preferences and willingness to pay (WTP) for certified food.
- To empirically assess the market potential in CA.

3. Literature Review

3.1. Concept of food attributes⁶:

- Search attributes⁶** – evaluated before the purchase:
 - Visual characteristics, content, price.
- Experience attributes⁶** – can be evaluated after the purchase:
 - Taste, freshness, convenience.
- Credence attributes⁷** – cannot be evaluated during consumption:
 - Reported on label.

3.2. Credence attributes⁷:

General Attributes:

- Health and Food safety;
- Environment;
- Social Responsibility;
- Country of Origin;

Product-Specific Attributes:

- Organoleptic;
- Package;
- Brand;
- Price.

4. Conceptual Framework of Research

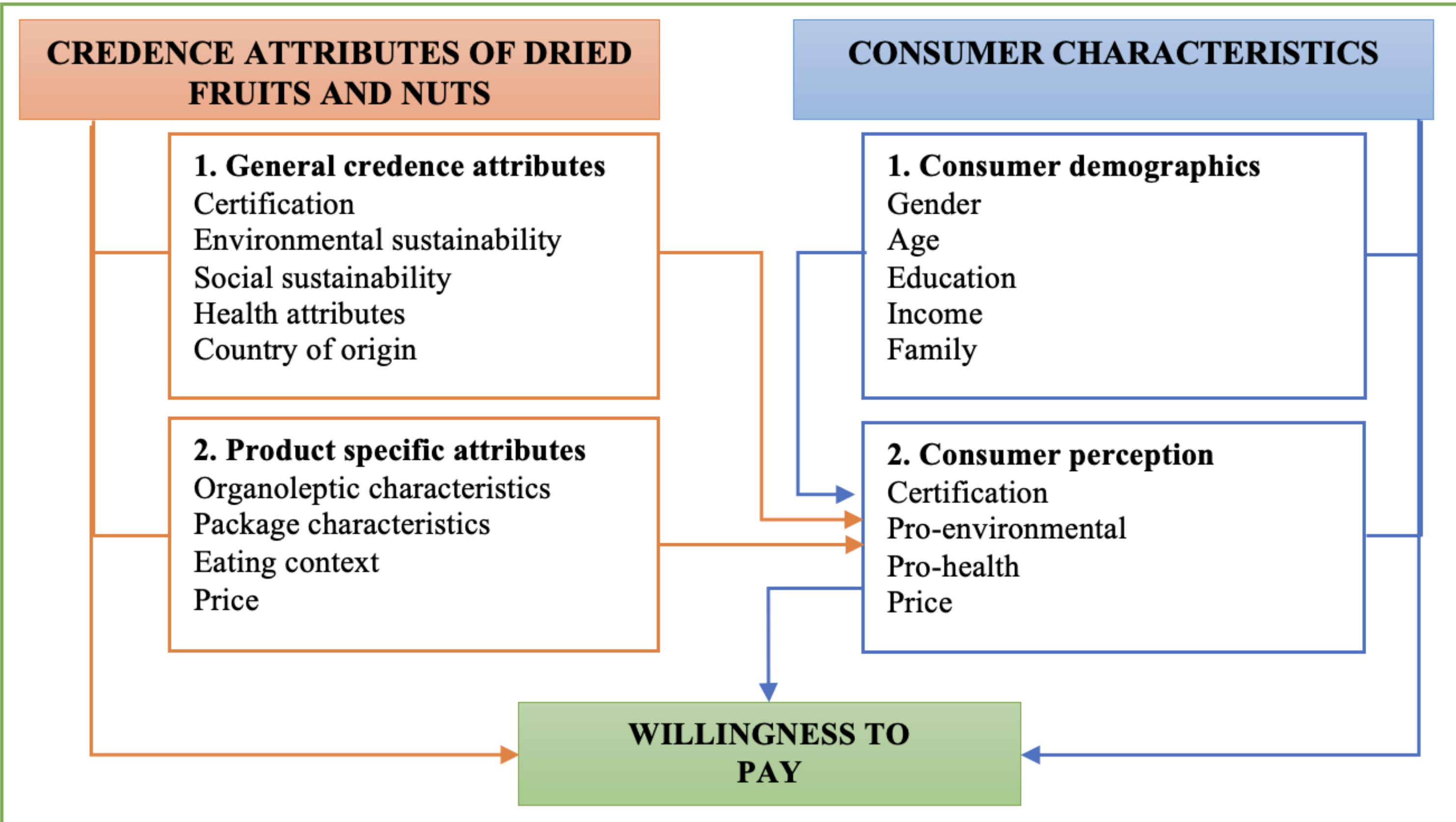


Figure 1. Conceptual Framework. Source: own construct based on literature review

5. Methodology

- Consumer survey
- Discrete Choice Experiments
- Bayesian D-efficient design
- Conditional logit model

Sample:

- Kyrgyzstan and Kazakhstan;
- 800 respondents:
 - 600 households;
 - 200 shop buyers.

Variable	Description	Levels
Food safety	Produced following food safety standards	
Environment	Produced following soil, water and other environmental standarts	Unclear, Local, International
Social	Contribute to the fair distribution of benefits, wages, and work safety	
Region	Region of production	Unclear, Local, Imported
Price	Price per 500 gr.	1.69, 2.64, 3.59, 4.54, 5.50

Table 1. Description and Levels of Variables Used in the Study. Source: own construct based on literature review

Contact:
Emil Begimkulov
Ph.D. Candidate,
Faculty of Life Sciences,
Hochschule Rhein-Waal,
Marie-Curie-Str. 1, D-47533 Kleve, Germany,
e-mail: emil.begimkulov@hochschule-rhein-waal.de



7. Results

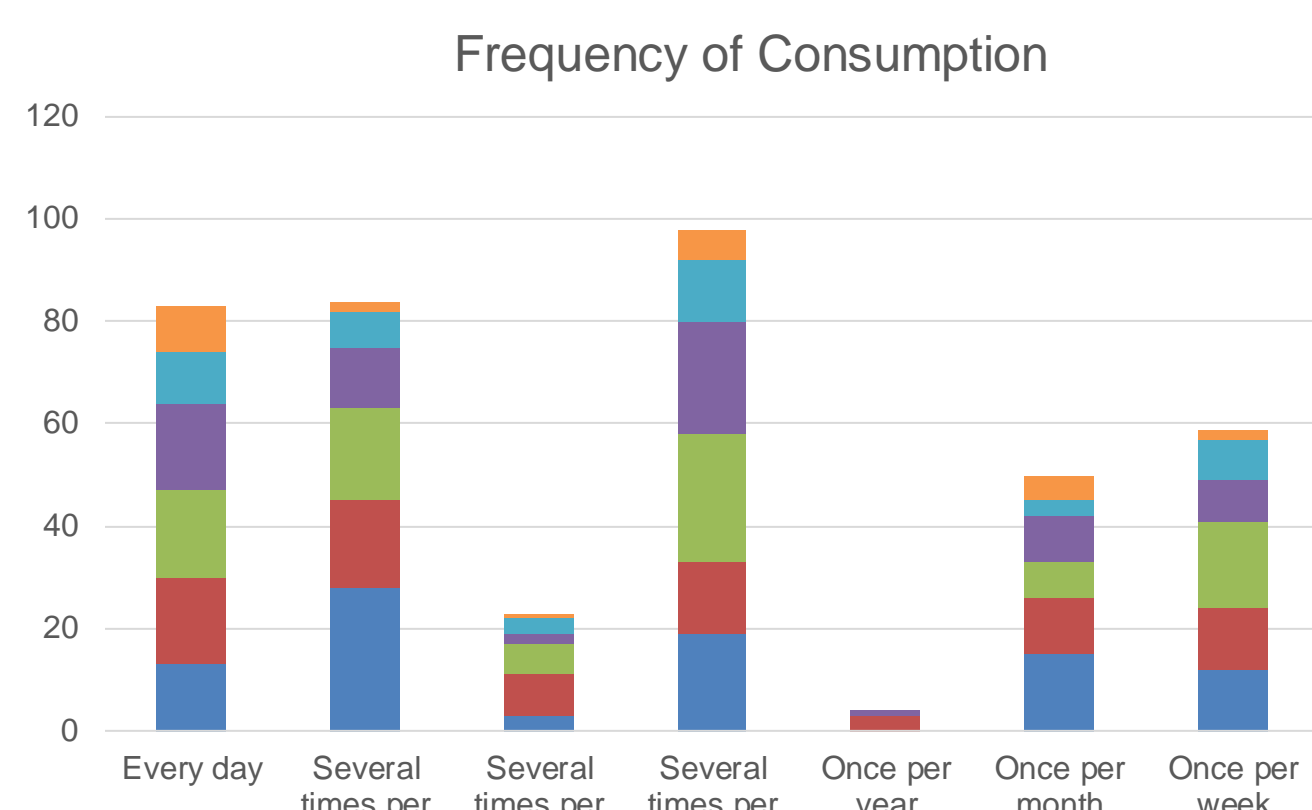


Figure 2. Frequency of Consumption by Age Distribution

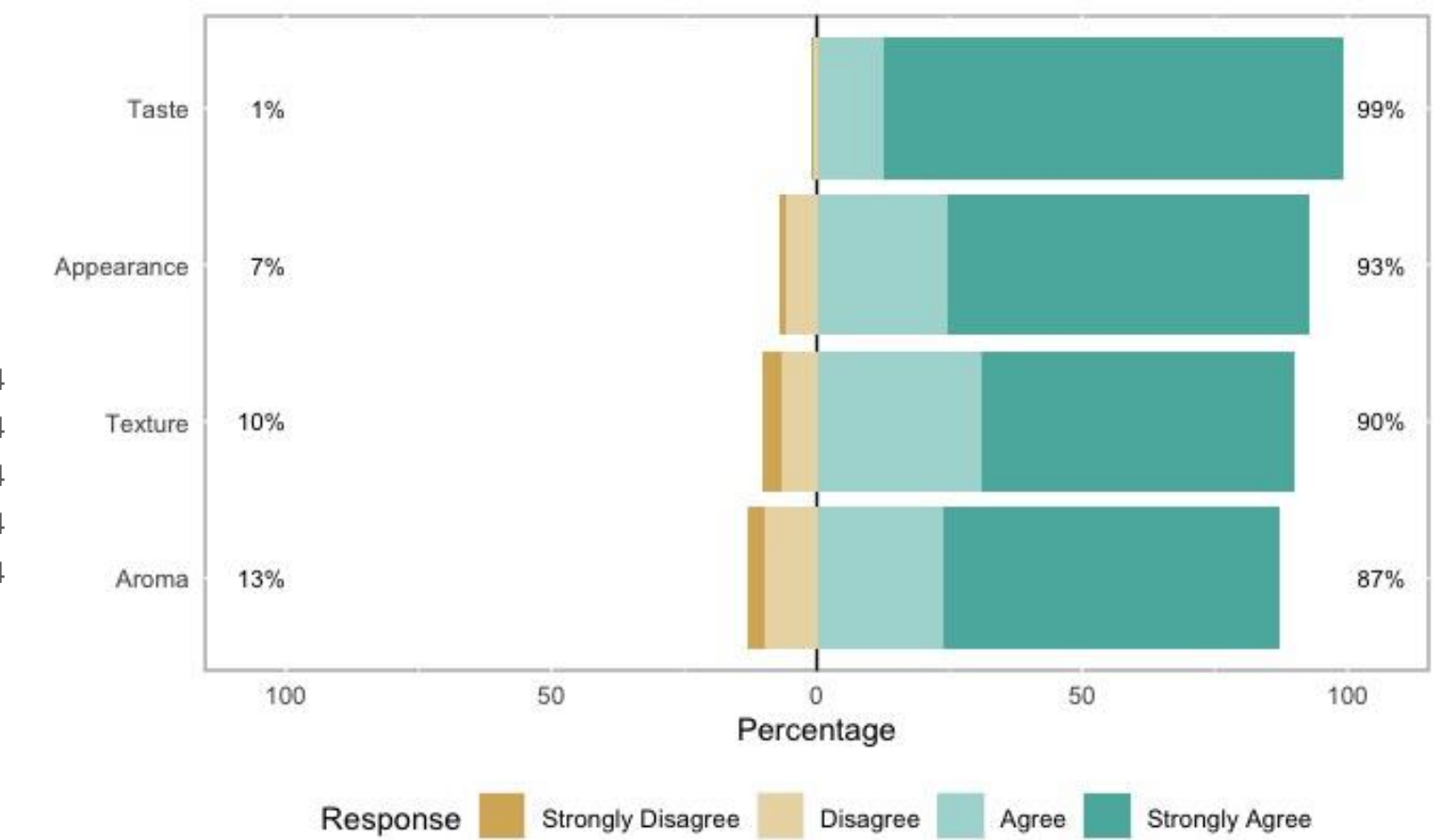


Figure 3. Importance of Organoleptic Characteristics

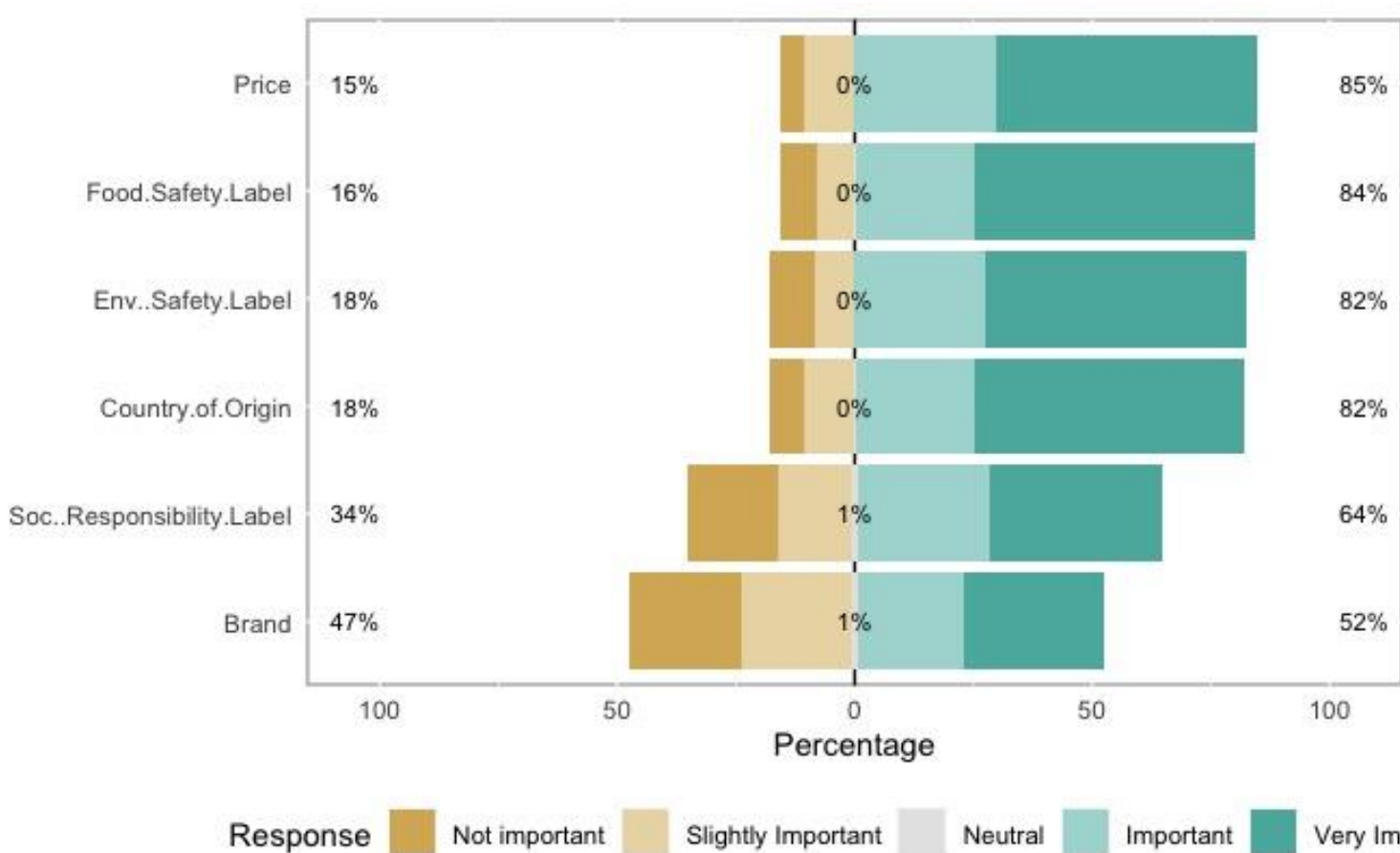


Figure 4. Importance of Credence Attributes

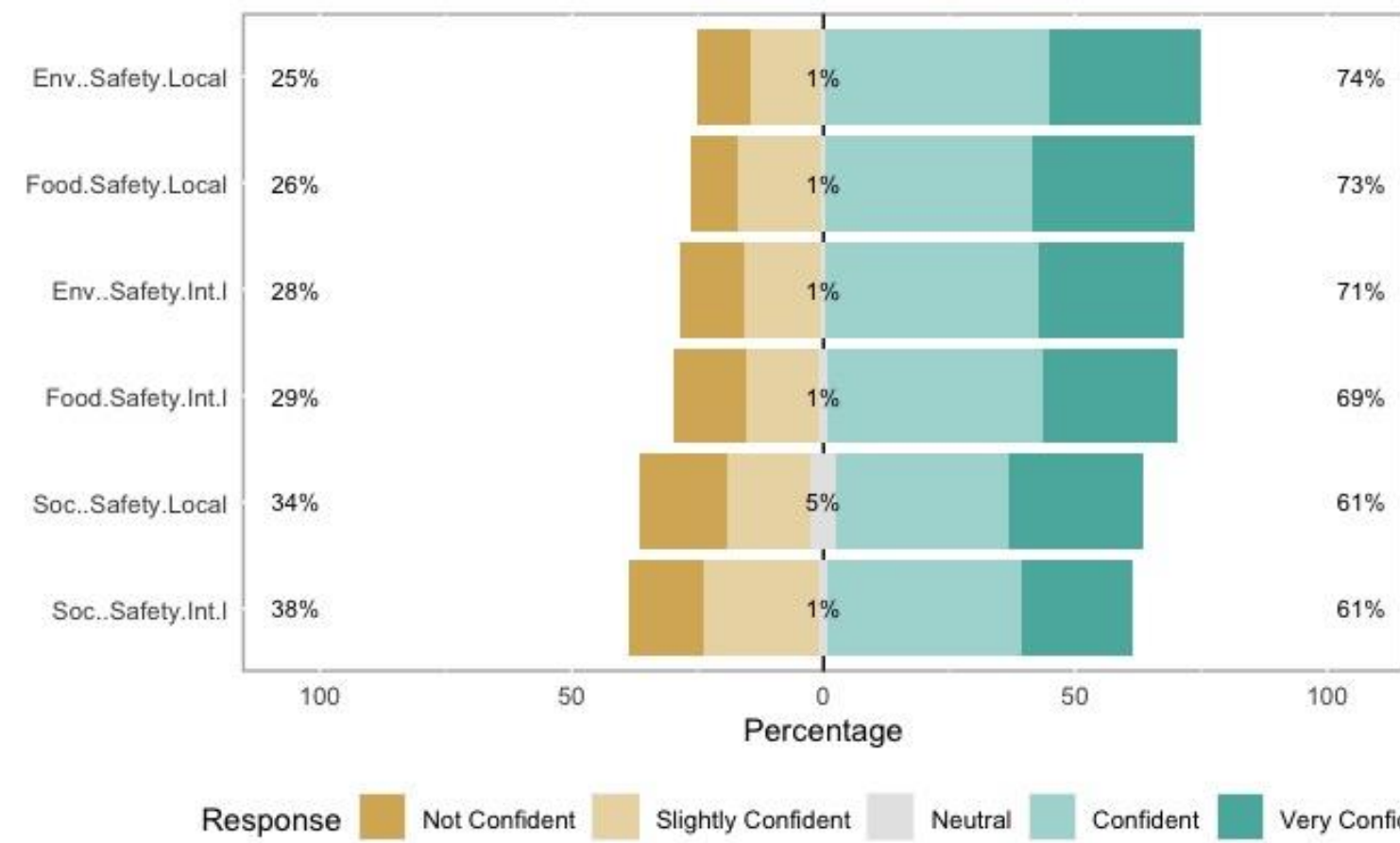


Figure 5. Trust in Local vs. International Safety Requirements

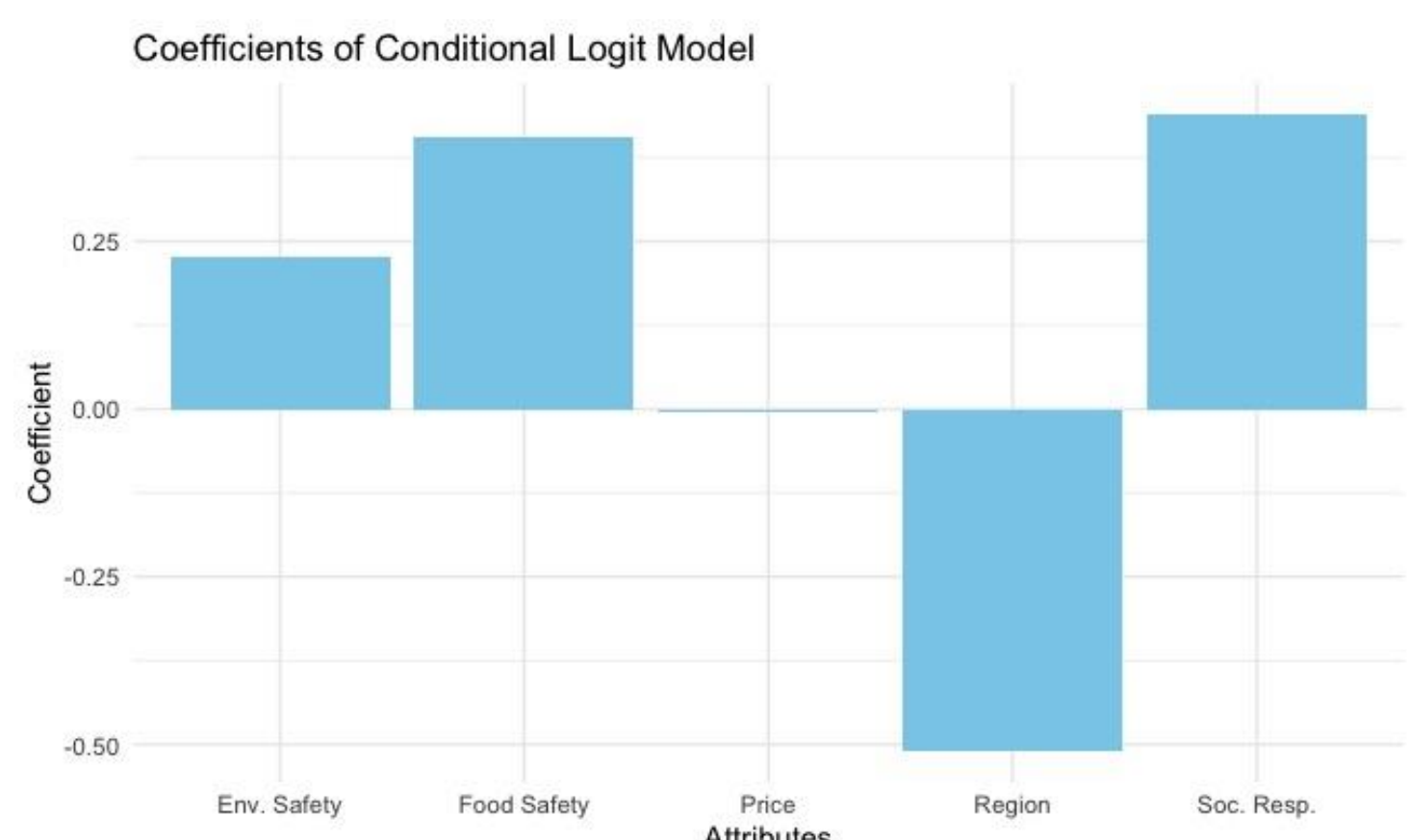


Figure 6. Coefficients of Conditional Logit Model

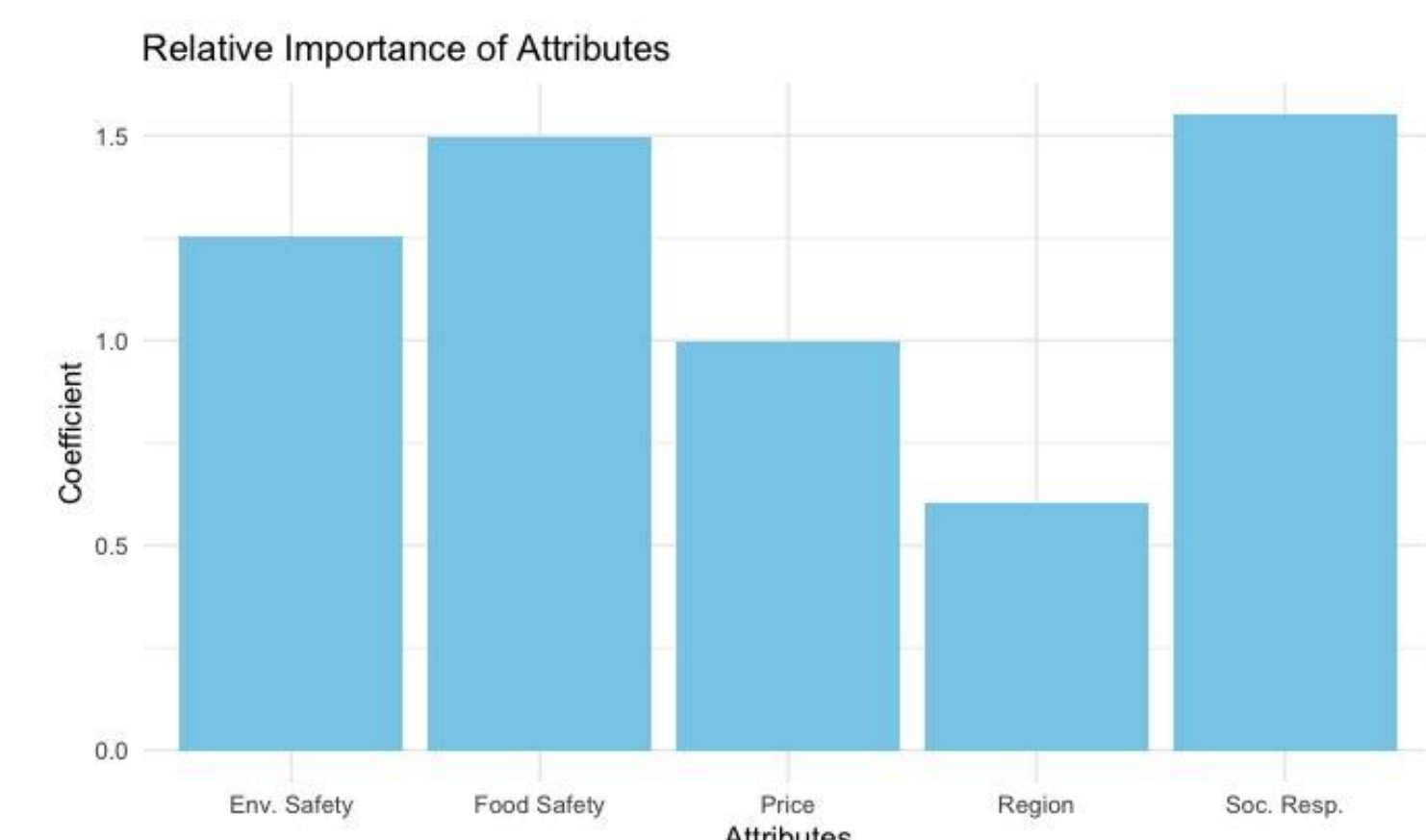


Figure 7. Relative importance of Attributes

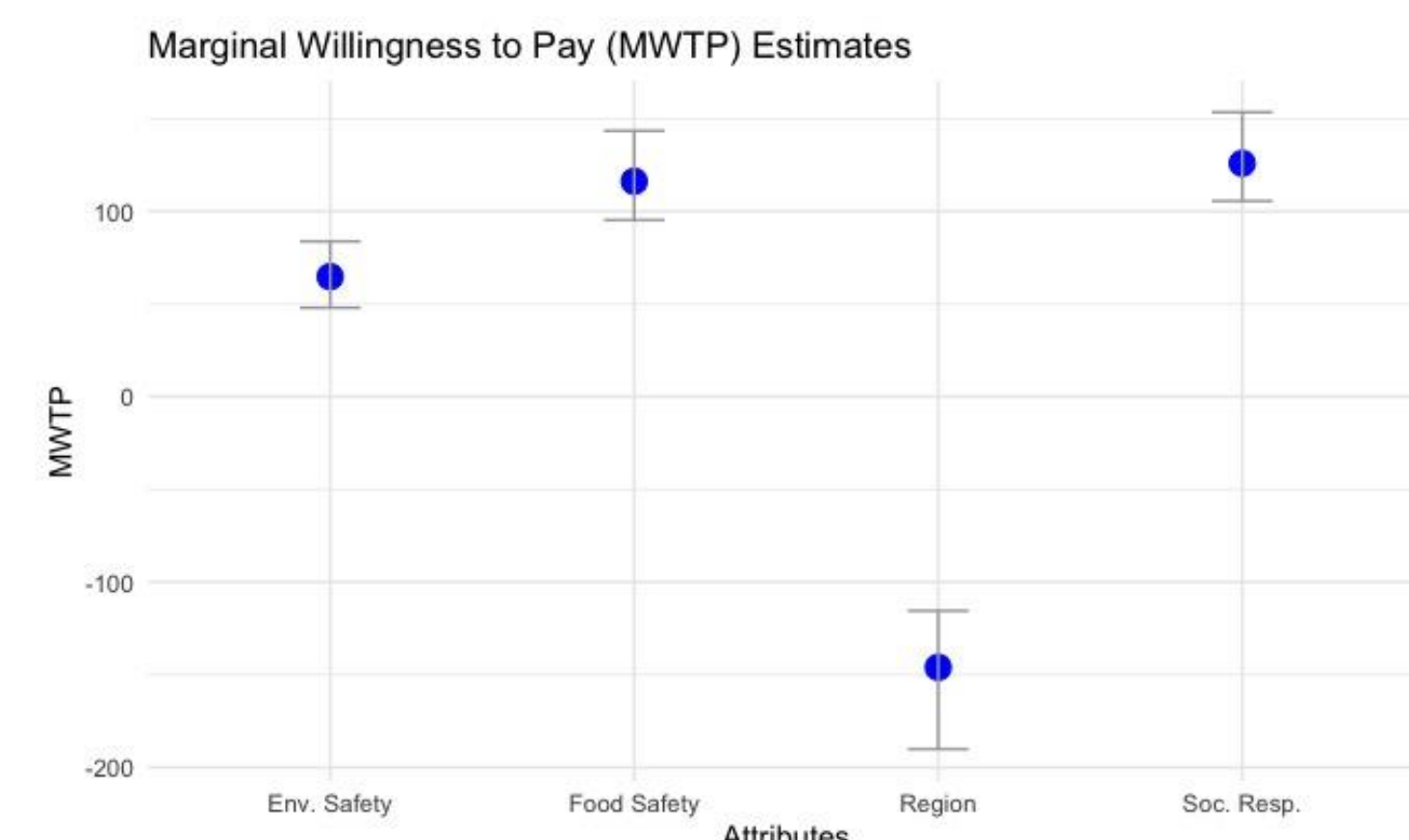


Figure 8. Marginal Willingness to Pay

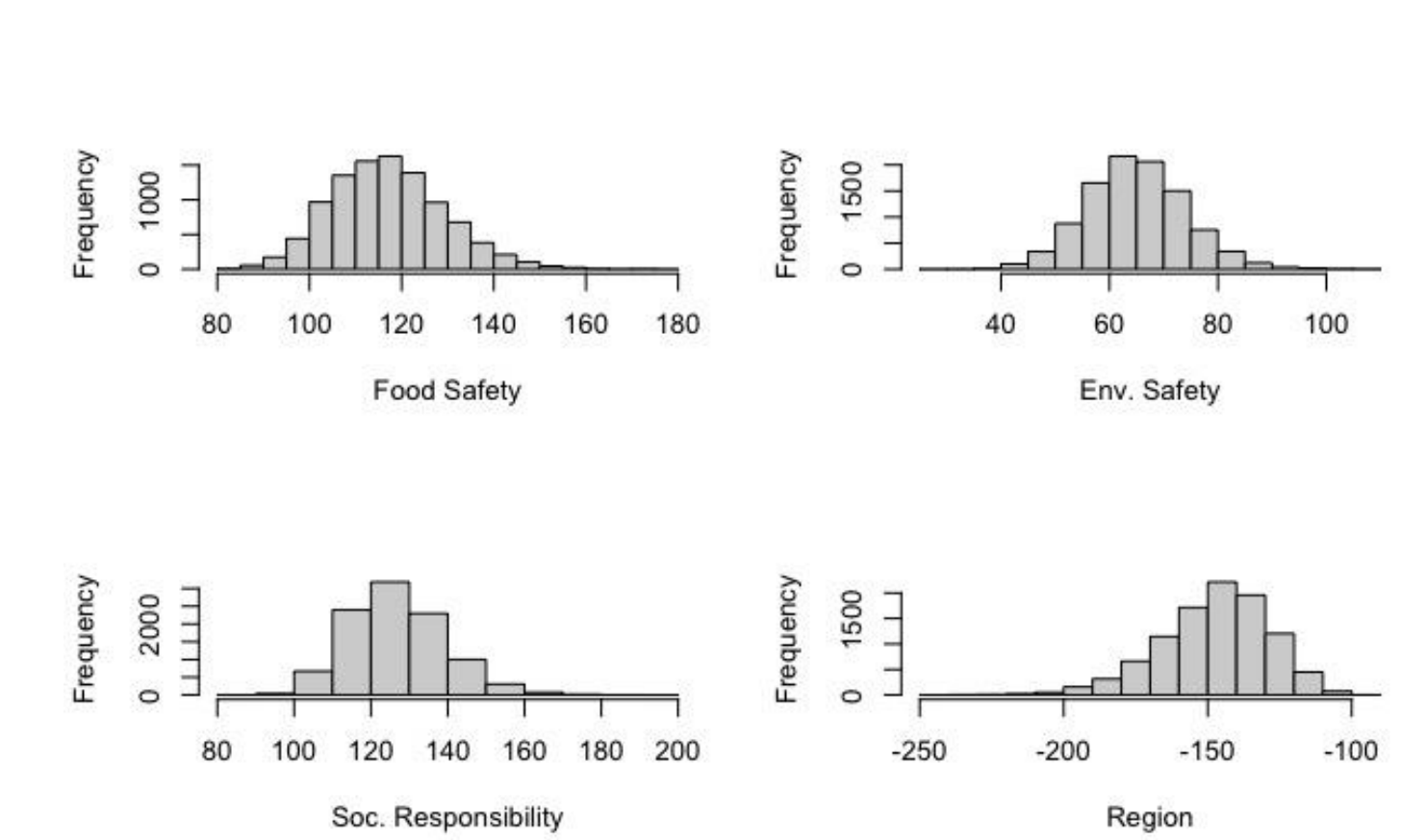


Figure 11. Marginal Willingness to Pay Histograms

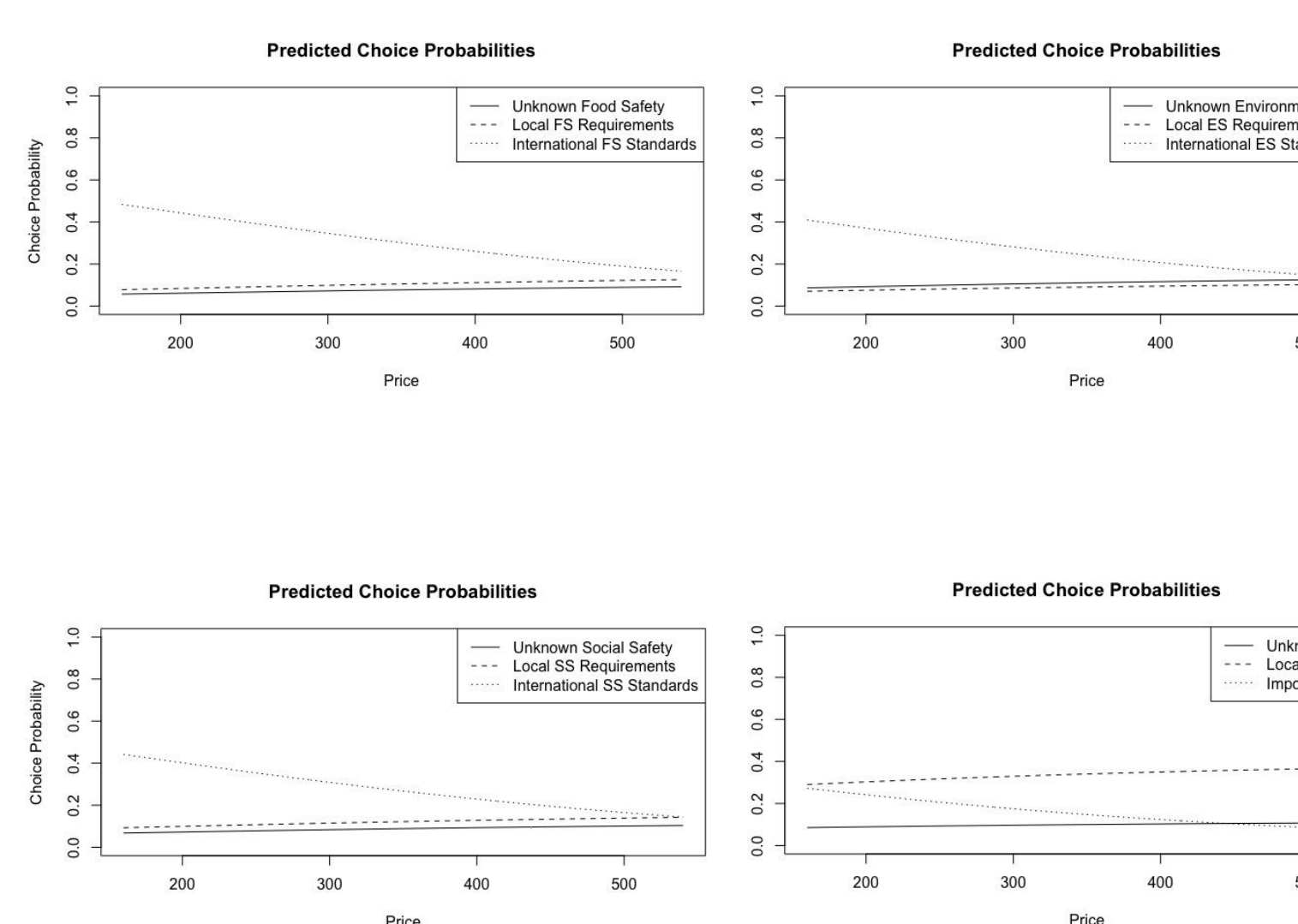


Figure 12. Predicted Choice Probabilities for each Attribute

Alt	Exp	prob	Alt	Exp	prob	Alt	Exp	prob
30	1.3332797	0.6804954	19	1.7399357	0.0362438	12	1.6323260	0.03477910
Food safety								
Environment								
Social								
Region								

Table 2. Alternatives with the Highest Probability of Choice

Alt	Exp	prob	Alt	Exp	prob	Alt	Exp	prob
45	0.8118247	0.0129545	25	0.5933265	0.0126472	13	0.3626413	0.01213844
Food safety								
Environment								
Social								
Region								

Table 3. Alternatives with the Lowest Probability of Choice

8. Conclusion

Dried fruits and nuts

- produced following **fair distribution of benefits** among farmers and other value chain participants have the highest preference among consumers of CA.
 - Marginal WTP (MWTP) is 1.31 EUR.
- that adhere to all legal **food safety** requirements and, in addition, meet the rigorous safety standards set by the EU are **moderately less preferred**.
 - MWTP is 1.22 EUR.
- that significantly contribute to soil and water conservation and other **environmental aspects** demonstrate the **lowest preference**.
 - MWTP is 0.68 EUR.
- Region of production** influences consumer choice, with **imported dried fruits and nuts less favored than locally produced options**.
- Price** has the least significant impact on consumer preference. Although its effect is negative, it is less influential compared to other attributes.

8. References

- Bourne, W. (2012). Analysis of the Walnut Value Chain in the Kyrgyz Republic. May.
- Djanibekov, U., Villamor, G., Dzhakypbekova, K., Chamberlain, J., & Xu, J. (2016). Adoption of Sustainable Land Uses in Post-Soviet Central Asia: The Case for Agroforestry. Sustainability, 8(10), 1030. <https://doi.org/10.3390/su8101030>.
- Shigaeva, J., & Darr, D. (2020). On the socio-economic importance of natural and planted walnut (Juglans regia L.) forests in the Silk Road countries: A systematic review. Forest Policy and Economics, 118(June), 102233.
- Reardon, T., & Timmer, C. P. (2012). The economics of the food system revolution. Annual Review of Resource Economics, 4(1), 225–264.
- Sommer, C. (2017). Drivers and Constraints for Adopting Sustainability Standards in Small and Medium-sized Enterprises (SMEs). German Development Institute, 73.
- Caswell, J. A., & Padberg, D. I. (1992). Toward a more comprehensive theory of food labels. American Journal of Agricultural Economics, 74(2), 460–468.
- Fernqvist, F., & Ekelund, L. (2014). Credence and the effect on consumer liking of food – A review. Food Quality and Preference, 32, 340–353.