

Parc Mediterrani de la Tecnologia
Edifici ESAB
Avinguda del Canal Olímpic 15
08860 Castelldefels

FACING NEW EU POLICIES TOWARDS ANIMAL WELFARE IMPROVEMENT: THE RELATIVE IMPORTANCE OF PIG CASTRATION

**KALLAS, Z.¹; GIL, J.M.¹; PANELLA-RIERA, N.²; BLANCH, M.²; TACKEN, G.³;
CHEVILLON, P.⁴; DE ROEST, K.⁵ & OLIVER, M.A.²**

¹ Center for Agro-food Economy and Development (CREDA-UPC-IRTA), Spain.

² Food Technology Institute, meat quality Department (IRTA), Spain.

³ Agricultural Economics Research Institute (AERI), The Netherlands.

⁴ Institut du Porc (IFIP), France.

⁵ Centro Ricerche Produzioni Animali (CRPA), Italy.

The 62nd Annual Meeting of the European Association of Animal Science . The importance of animal production for food supply, food quality and environment, 29 August-2 September, Stavanger – Norway

Outline

1. INTRODUCTION

2. OBJECTIVE

3. METHODOLOGY

4. EMPIRICAL APLICATION

5. RESULTS

6. CONCLUSIONS

1. INTRODUCTION

- ❑ **Surgical castration of entire males' pigs is carried out:**
 - *To encourage the deposit of fat*
 - *To prevent aggressive behaviour problems.*
 - *To avoid the risk of obtaining meat with sexual smell (Boar Taint)*
- ❑ **Consumers react differently to this smell and therefore it can affect consumers' acceptability of pork**

1. INTRODUCTION

- ❑ **Social concern for animal welfare has increased → Castration carried out without anaesthesia could have a negative impact.**
- ❑ **The EU is considering banning castration without anaesthesia by 2018 and promoting the raising of entire males.**

TRADE OFF BETWEEN ANIMAL WELFARE AND MEAT QUALITY

2. OBJECTIVE

- **The objective of this research is:**
 - **To analyze the relative importance of animal welfare (pig castration) attribute versus hedonic quality cues of the fresh pork meat related to boar taint.**
 - **To compare results between six EU countries (United Kingdom, France, Italy, The Netherlands, Germany and Spain).**

3. METHODOLOGY:

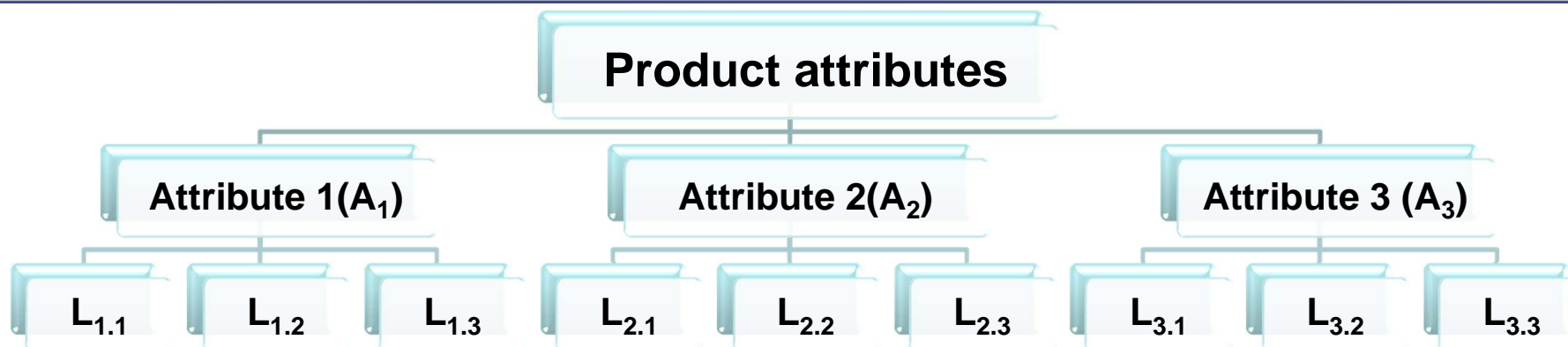
3.1. The Analytical Hierarchy Process- AHP

- Within the range of methods that analyze individuals' preference for “complex goods and services”, several alternative are available.**
- The Analytical Hierarchy Process (AHP) has been used as a suitable method to asses individuals' preferences for the attributes of the “complex goods and services” .**

3. METHODOLOGY:

3.1. The Analytical Hierarchy Process- AHP

- The AHP is a multi-criteria decision-supporting method that aims to decompose a complex decision problem in a hierarchy of smaller constituent sub-problems



- The relative importance (weights, w) of attributes (A_n) and levels ($L_{n,p}$), where; $n (1, \dots, N)$ is the number of attributes and $p (=1, \dots, P)$ is the number of levels, are obtained from a pair-wise comparisons:

3. METHODOLOGY:

3.2. The pairwise comparisons concept

- Individuals are asked to make two types of pairwise comparisons: a) a pairwise comparison of the levels within each attribute; and b) a pairwise comparison of the attributes.**
- First, the respondent has to indicate which of the two elements the respondent prefers. Then a nine-point scale is used to measure the strength of this preference by means of verbal judgments:**

3. METHODOLOGY:

3.3. The pairwise comparisons Scale

<i>Degree of importance rating</i>	<i>Definition of the scale</i>
1	Two characteristics are equally important
2	Between 1 and 3
3	The preferred characteristics are slightly more important
4	Between 3 and 5
5	The preferred characteristics are moderately more important
6	Between 5 and 7
7	The preferred characteristics are strongly more important
8	Between 7 and 9
9	The preferred characteristics are absolutely more important

Attributes / levels								Attributes / levels								
9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9

3. METHODOLOGY:

3.4. How weights are obtained?

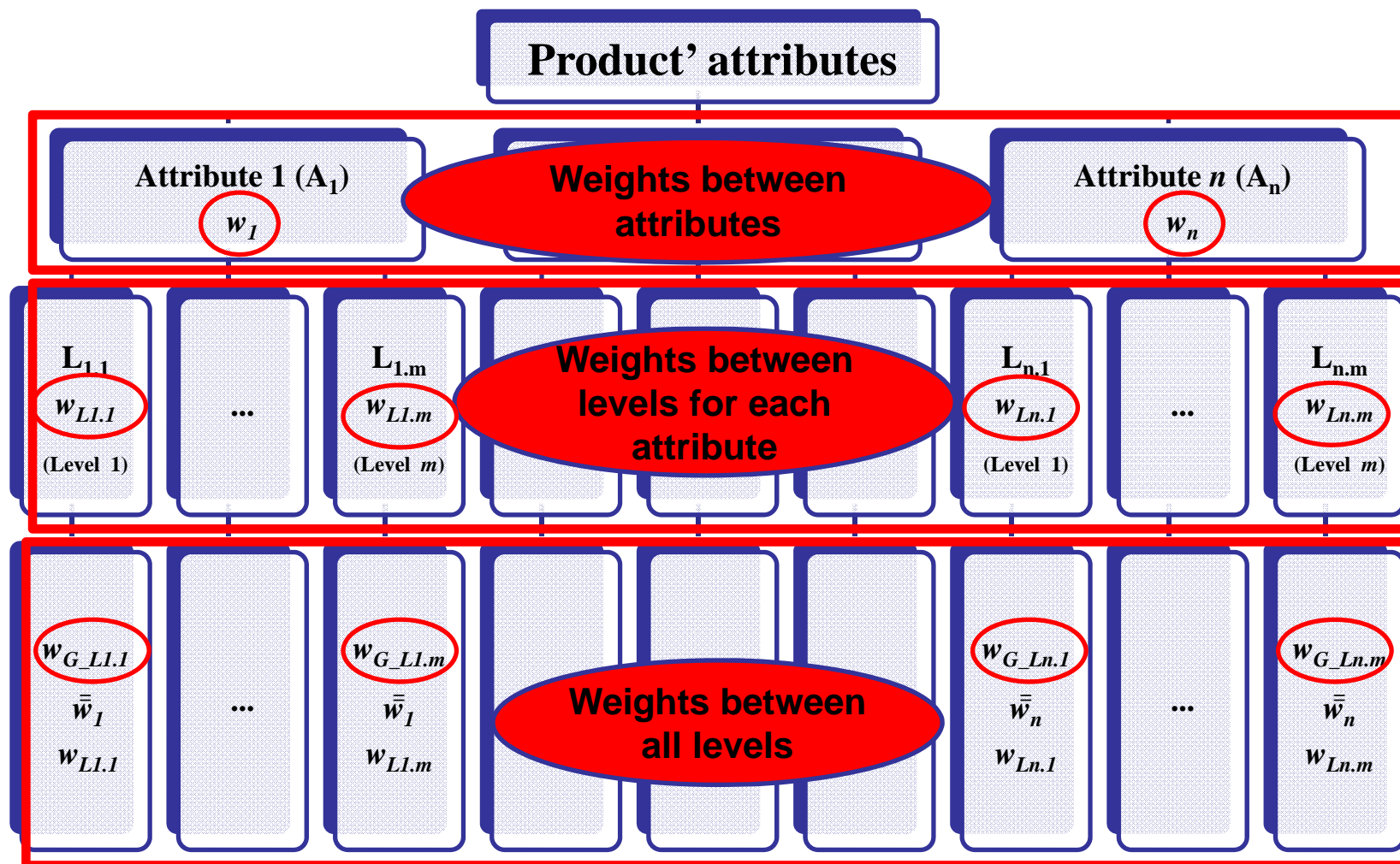
- a_{ij} are judgments obtained from the pairwise comparisons → *A Matrix*

$$A_k = \begin{bmatrix} a_{11k} & a_{12k} & \dots & a_{1nk} \\ a_{21k} & a_{22k} & \dots & a_{2nk} \\ \dots & \dots & a_{ijk} & \dots \\ a_{n1k} & a_{n2k} & \dots & a_{nnk} \end{bmatrix}$$

- Weights (w) assigned by subject to each attribute and levels are obtained using the following expression.

$$w_{ik} = \sqrt[N,P]{\prod_{i=1}^{i=N,P} a_{ijk}}$$

3. METHODOLOGY: 3.5. Hierarchy structure of weights



4. EMPIRICAL APPLICATION

4.1. Sampling

- The data used in this analysis was obtained from self-completed questionnaires in controlled environment with consumers carried out during 2009 in six EU countries.
- The questionnaire solicits extensive information on the socio-economic characteristics of consumers, attitudes, preferences and opinions toward animal welfare.
- The Quota sampling procedure was used. The sample was stratified by age and gender

4. EMPIRICAL APPLICATION

4.2. Samples

Countries analyzed	Sample
France	144
Germany	132
Italy	140
Netherland	124
Spain	138
United Kingdom	147
Total	825

4. EMPIRICAL APPLICATION:

4.3. Attributes and levels

Attributes	Attributes' symbols	Levels	Levels' symbol
Gender of the Pig	(A ₁)	Female	L _{1.1}
		Entire male (Non-castrated)	L _{1.2}
		Castrated male with anaesthesia	L _{1.3}
		Castrated male without anaesthesia	L _{1.4}
Taste and odor	(A ₂)	Could be Unpleasant	L _{2.1}
		Normal	L _{2.2}
Pig origin	(A ₃)	Imported	L _{3.1}
		National	L _{3.2}
Price	(A ₄)	6.00 €/Kg	L _{4.1}
		7.00 €/Kg	L _{4.2}
		8.00 €/Kg	L _{4.3}
		9.00 €/Kg	L _{4.4}

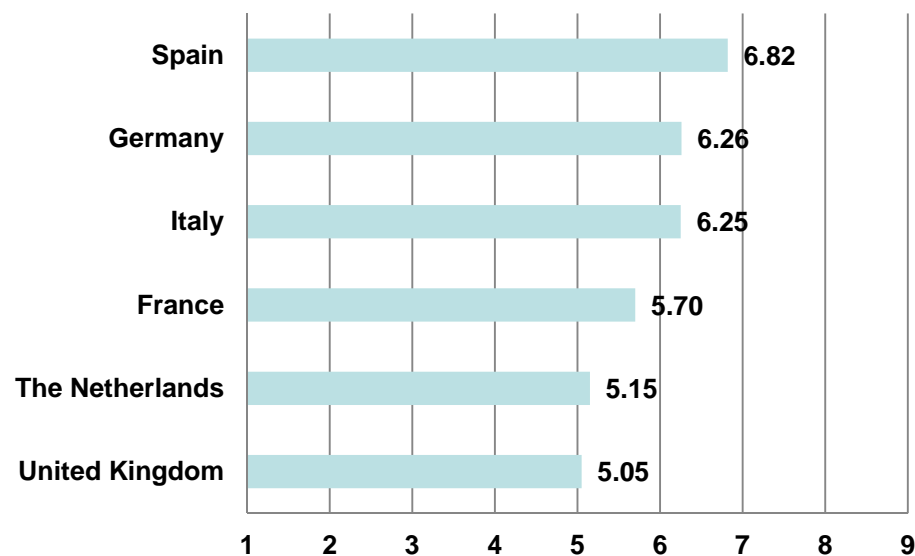
4. EMPIRICAL APPLICATION: 4.4. AHP application

Female									Entire male (Non-castrated)							
9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9
Imported									National							
9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9
Pig origin									Gender of the Pig							
9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9
...									...							
9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9

5. RESULTS

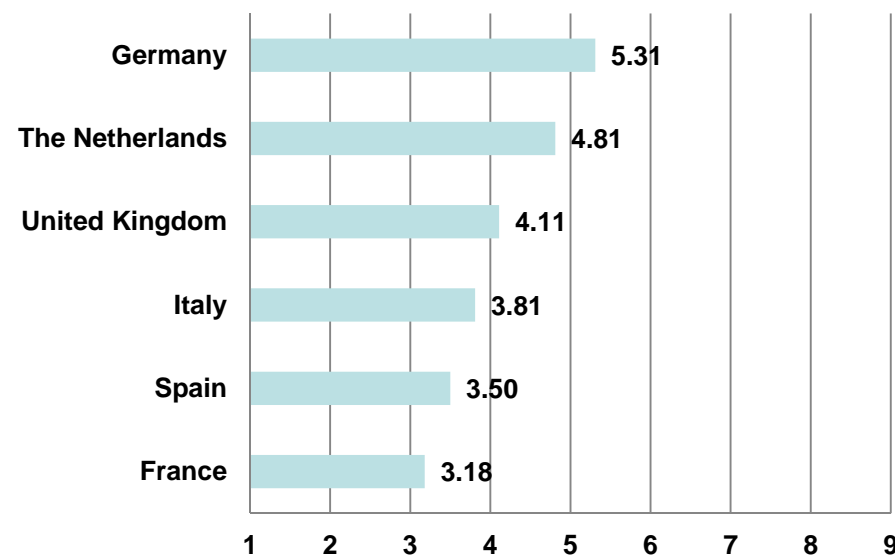
5.1. Knowledge and importance of animal welfare claims

Animal welfare claims

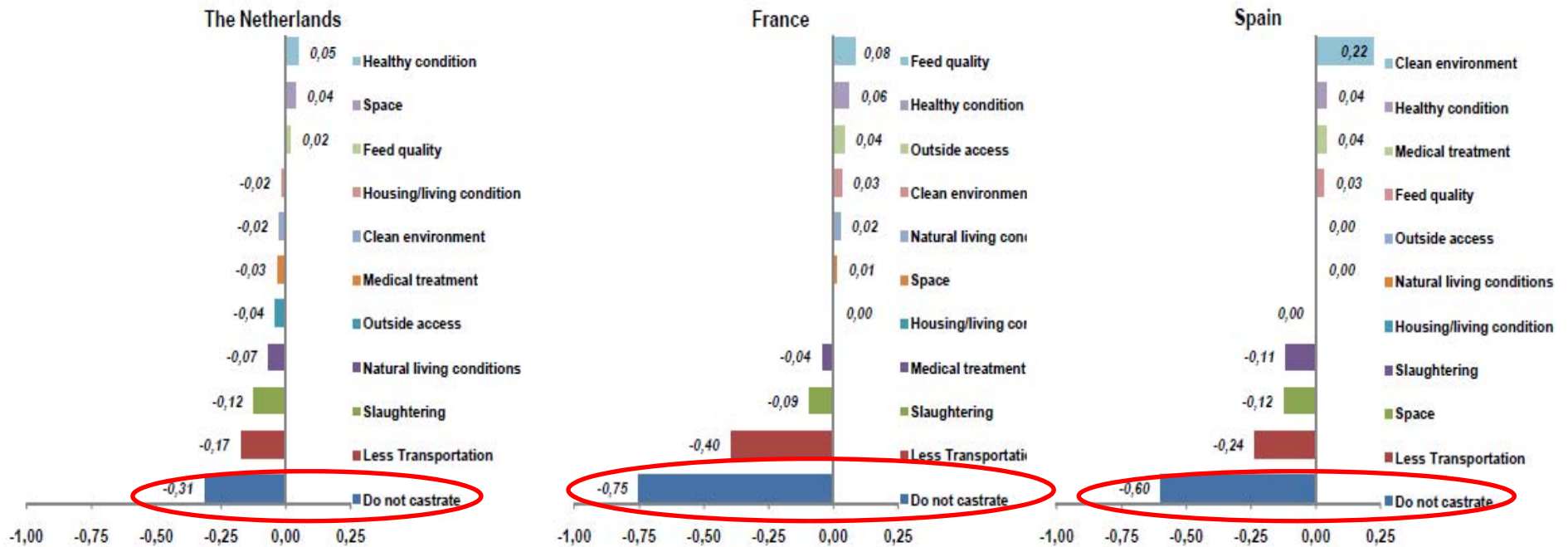


1: Not important, 9: Very important

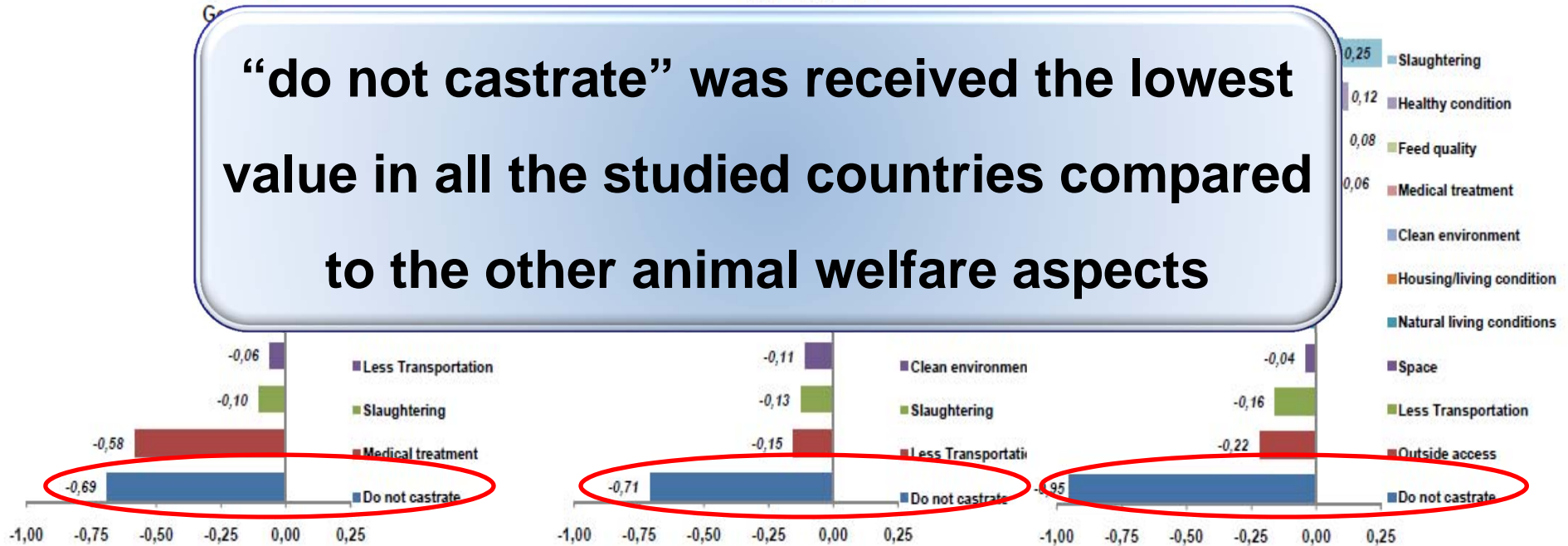
How informed about pig welfare



1: Not Informed, 9: Very Informed

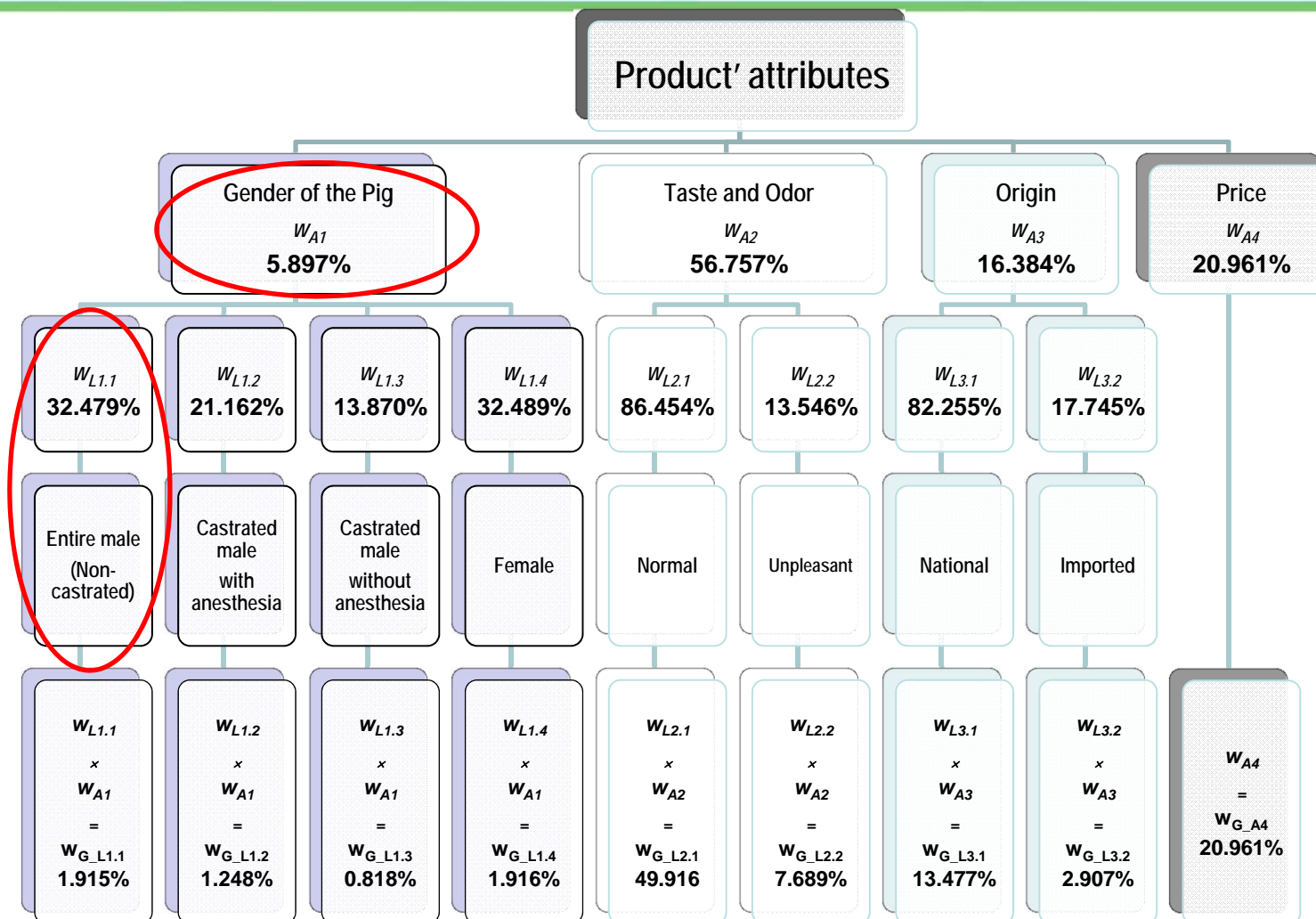


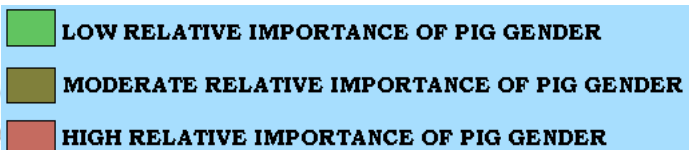
“do not castrate” was received the lowest value in all the studied countries compared to the other animal welfare aspects



5. RESULTS

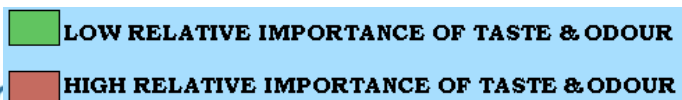
5.3. AHP Results



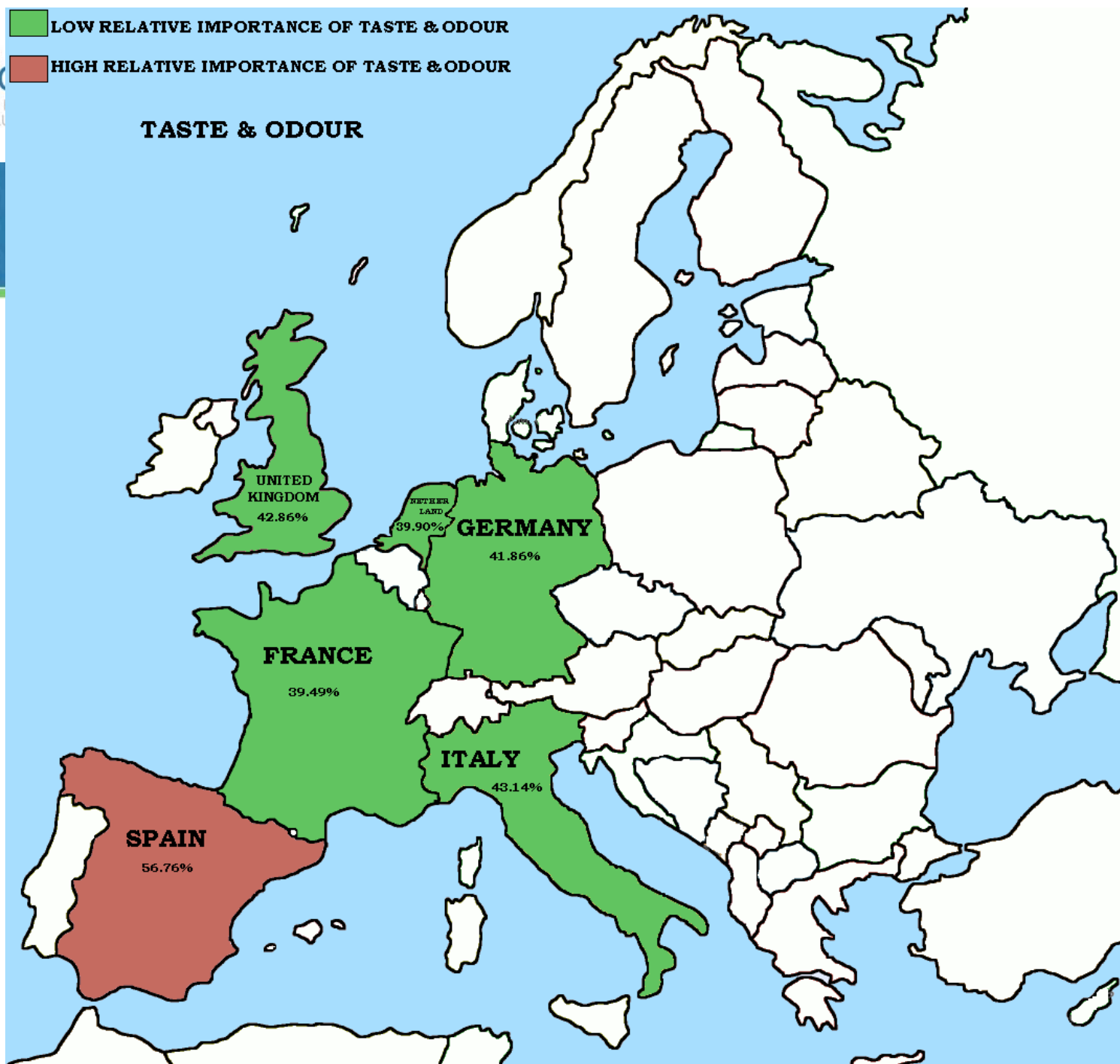


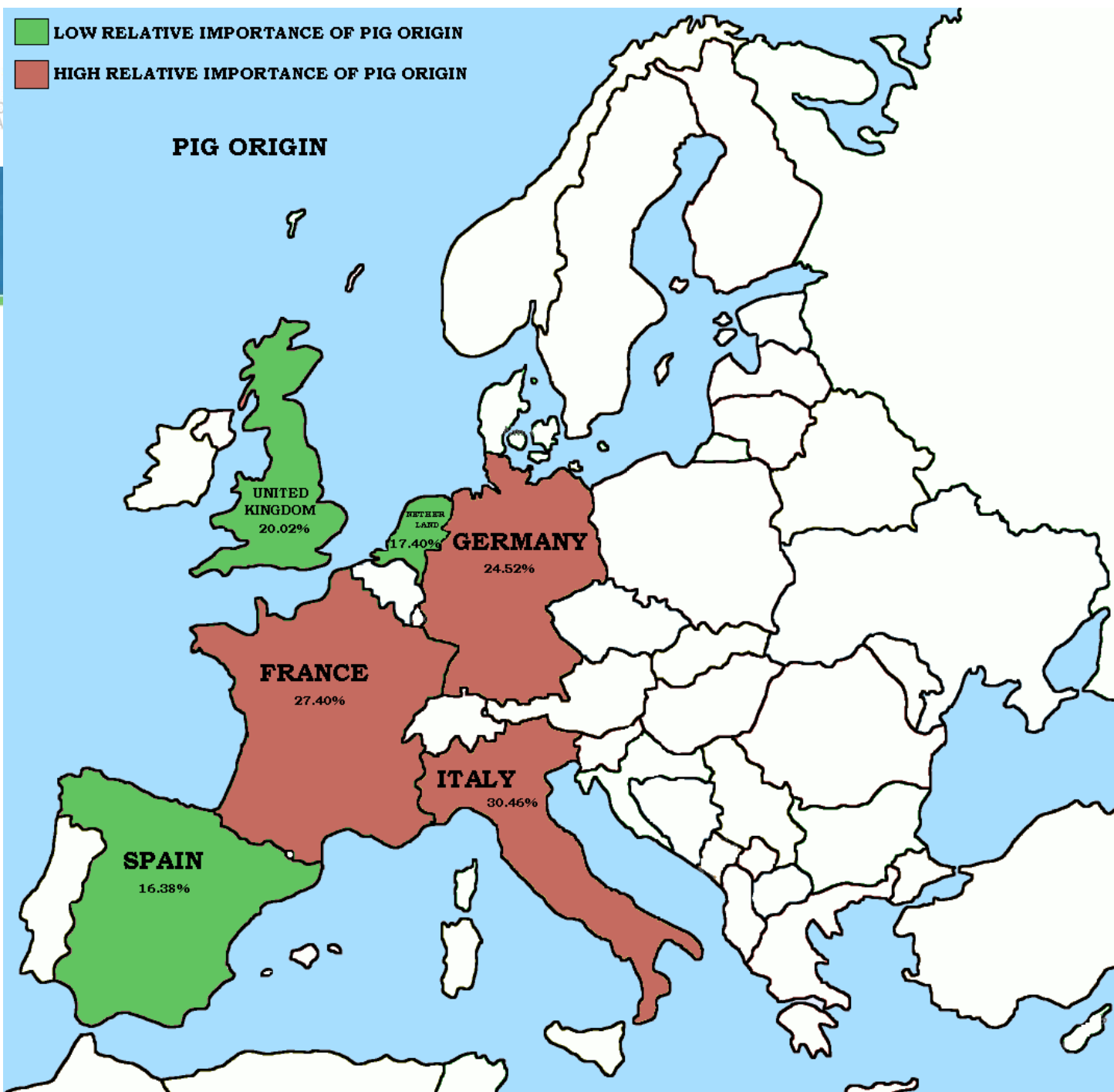
PIG GENDER

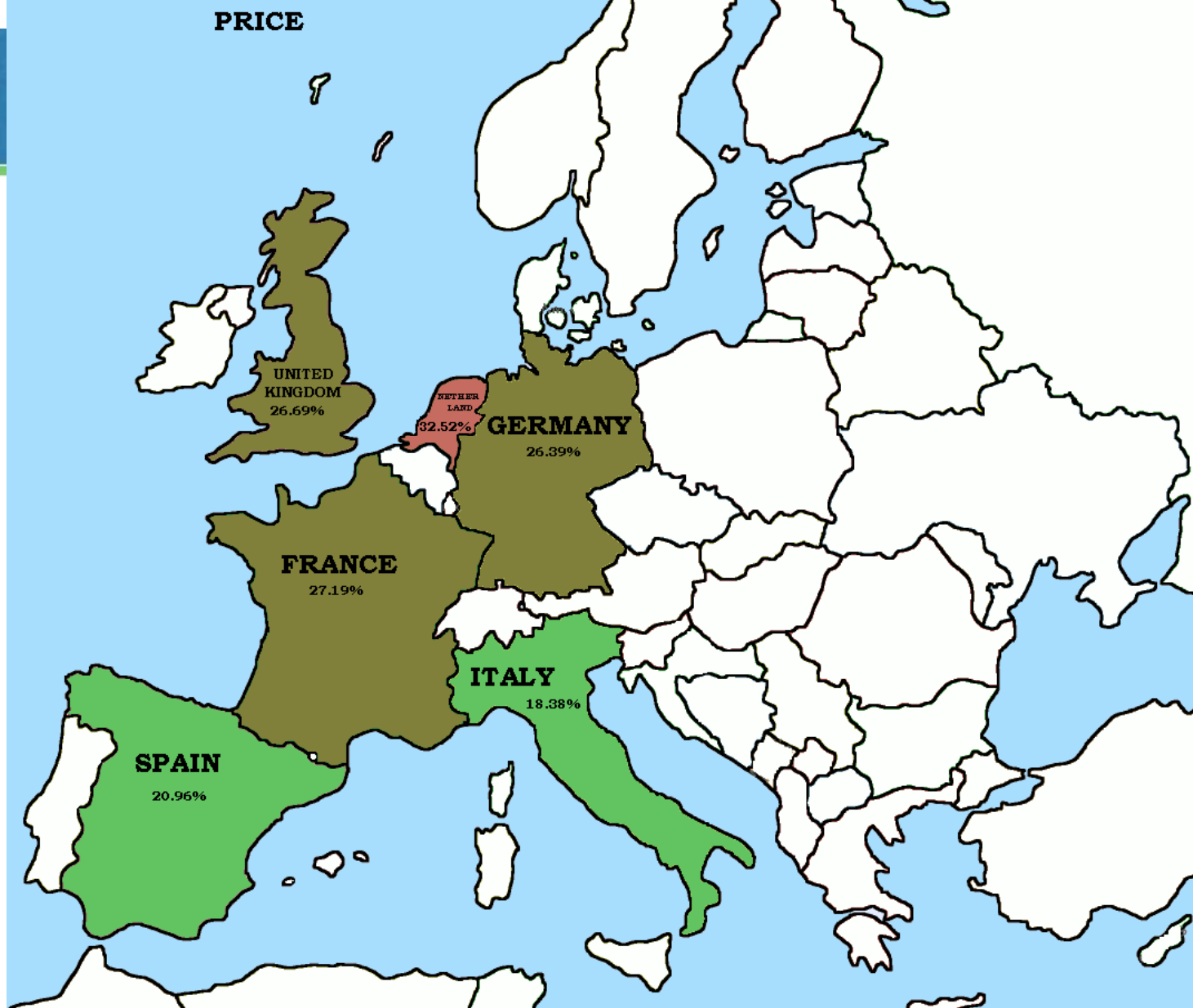
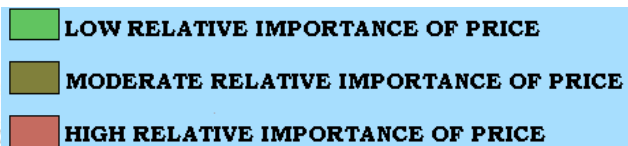




TASTE & ODOUR







6. CONCLUSIONS

- ❑ **lack of information about “gender of the animal” and as a consequence, about pig castration.**
- ❑ **Across all countries, the relative importance of this attribute was only ranked from 5.90% to 10.42%.**
- ❑ **Information campaign are needed where consumers should be informed about what type of meat they eat.**

6. CONCLUSIONS

- ❑ **Consumers' preferences towards pig castration and boar taint are heterogeneous across the studied countries.**
- ❑ **Three basic groups were identified on the basis of their relative importance of animal gender attribute:**
 - **United Kingdom and The Netherlands are the countries where this attribute is relatively more important.**
 - **Italy and Germany show a middle position with a moderate weight.**
 - **In Spain and France this attribute was relatively less important**