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Determinants of Consumer Preferences for Regional Food

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Summary

In recent years an increasing consumer preference for regional food can be observed, both in Germany and in other European countries. Regression models investigating this region-of-origin effect are rare and in most cases the region or sample size under consideration is quite small. Different from that, the present study is based on a representative data set for Germany. Our objective is to identify and quantify the determining factors of consumers' preferences for regional food. Therefore, a theoretical construct is proposed and tested empirically by using a binary logit model. The results indicate that cognitive and normative factors are the main determinants on consumer preference for regional food, whereas affective and socio-demographic variables only are taking marginal influence. Especially consumers' perceptions, that regional food has better product attributes and offers a higher food safety, are significant and important determining factors. The same is true for the idea to support the domestic agriculture by purchasing locally grown food. Contrarily, no significant influence could be examined for most of the socio-demographic variables, e.g. level of education, location size, and level of income.

KEYWORDS: Consumer preferences, willingness to pay, region-of-origin effect, regional food, binary logistic regression model

1. Introduction

Regional food is defined as food which is grown in the surrounding region and which is usually unprocessed (Dorandt 2005). In Germany most of the consumers define their home federal state as their home region (ZMP 2003: 9ff.).

In recent years an increasing interest in regional food can be observed both in Germany and in other European countries. Several studies have been carried out on this phenomenon already. However, in most surveys, either the study region is relatively small or the sample size is rather limited, so that results seldom are statistically representative. In addition, only a few researchers have applied explorative methods like regression analyses to investigate the so-called region-of-origin effect (ROOE). Thus, the level of knowledge about the main reasons and the magnitude of preferences for regional food is still quite low.

In Germany as well as in many other European countries regional cooperations have been established to promote the sale of regional food. For those cooperations it is important to understand the determinants of preferences for regional food, because knowing the impact factors can help to promote locally grown products more successfully.

Our study is based on a representative survey for Germany. We used the survey data to examine and quantify the impact factors for the preference for regional food by applying a binary logit model.

The article is structured as follows. Chapter two contains a literature review of studies that have investigated the demand for regional food by means of regression analyses. In chapter three we explain the theoretical construct of our research and in chapter four we characterise the data we used. A summary of our empirical results is given in chapter five and the last chapter contains our conclusions and recommendations for further research.

2. State of research

Many surveys in Germany as well as in other European countries and in the United States have already attempted to identify a consumer segment with preferences for food of their home area (among others Becker 2000; Dorandt 2005; Schröder et al. 2005). However, there are only few studies which applied advanced econometric methods to survey the determinants for preferences for regional food, especially in German speaking countries. Most of them have been conducted in the United States. In nearly all of the studies the focus was either on psychographic or socio-demographic factors.¹

- a) Psychographic factors for preferences towards regional food

Consumers' perceptions of product quality and food safety belong to this group of factors. It seems to be empirically proven that in consumers' perception of regional food is linked with higher food safety as well as with higher quality and, thus, regional food is preferred to other products. Furthermore, the awareness of health and nutrition as well as environmental concerns and the willingness to support the economy of the home region are supposed to take influence on the preference for regional food. In connection with that it is expected that emotions like sympathy for the home region are promoting the demand for regional products. To our knowledge no survey has been conducted so far including all mentioned psychographic factors.

- b) Socio-demographic factors for preferences towards regional food

Age, sex, class of income, education and the number of children in the household are the most surveyed factors in this field. The impact of the time period someone has already lived in a region as well as the size of the home region (urban versus rural areas) are included scarcely. While correlation analyses and non-parametric methods often show significant relations between socio-demographic variables and preferences for the origin of food products, causal analyses seldom show statistically significant impacts. Furthermore, many causal analyses in this context provide contradictory results. While some studies proved a positive influence of the number of children per household on the preference for regional food, other survey results showed a negative influence. Only in terms of sex there is consistency across different studies: women usually have got a higher preference for regional food than men. All in all the results regarding the influence of socio-demographic factors on the preference for regional food are not stable across different studies. Moreover, results indicate that socio-demographic have got only a marginal effect on the preference for regional food.

3. Theoretical Construct

The main point of criticism on all of the published studies we surveyed is, that none of them has considered the full range of possible impact factors in the causal analysis. To give an overview about the plurality of possible factors influencing the preference for regional food the theoretical framework proposed by Obermiller and Spangenberg to explain the effects of country-of-origin labels is presented (Obermiller and Spangenberg 1989, 456ff.). Von Alvensleben applied this concept to the region-of-origin-effect and groups the determinants into cognitive, normative and affective processes (Von Alvensleben 2000a: 6ff.).

a) Cognitive factors

The geographical origin might be used as a quality cue by consumers who are unsure about the quality of a product. This effect may result from two processes. First, the region of origin is a "signal" for the general product quality. Based on this there might be a positive

¹ A review of causal analytical studies considering psychographic and socio-demographic factors is presented in Annex 1 and 2.

bias in the consumer's perception of other attributes that are not necessarily linked to the region-of-origin. Second, regional food is perceived to be fresher, healthier and more environment-friendly (Darby et al. 2006:2ff.).

b) Normative factors

A preference for regional food as a consequence of environmental-friendly consumption aspects (e.g. short ways of transportation, sustainability) can also result from normative processes. Thus, social norms instead of consumers' own beliefs may lead to environmental-friendly behavior. Social norms influence the purchase intention independent of cognitive and affective processes directly. Van Ittersum specifies this theory. He assumes that the preference for regional food is influenced by consumer ethnocentrism (Van Ittersum 1999: 46ff.). Consumer ethnocentrism is defined as the beliefs consumers hold about the moral appropriateness to favor domestic products (Shim and Sharma 1987: 280ff.). Therefore, consumers feel constrained to support the local economy by their selective purchase decision.

c) Affective factors

The impact of ethnocentric and patriotic norms might also be influenced by emotional aspects. Thus, emotions like pride of and sympathy to the own region may be transferred directly to the product. Moreover, Von Alvensleben suggests that sympathy to the region leads to a positive bias in the perception of the product and its attributes (Von Alvensleben 2000a). The contact-affect-phenomenon is discussed as the cause of this positive image transfer from the region to the product (Von Alvensleben 2000b: 401): The pure contact to an object leads to familiarity and finally to sympathy to the object (Kroeber-Riel and Weinberg 2003: 624ff.) <Figure 1>.

The described processes above are not independent from each other; in fact they overlap and interact. In addition, they are affected by individual (availability of other quality indicators, confidence in referent information) and situational (product category heterogeneity, availability of other information) factors (Obermiller and Spangenberg 1989: 455ff.). Furthermore, there is a strong interdependence with demographic factors.

There is no empirical consensus on the effects of socio-demographic factors (see chapter 2b). Thus, in the following paragraph the influences of different socio-demographic factors on the preference towards regional food will be derived theoretically.

The age may have a positive impact on the preference. Older consumers tend to be more closely connected to their home region (Balling 2000:29), they have more time for purchasing and preparing food and they are more concerned about health issues. Furthermore, age is often closely connected with the life time in the home region, which in turn encourages the emotional ties to the region (Wirthgen 2003). On the other hand, older consumers tend to be less flexible in the food items they accept (Schupp and Gillespie 2001:38) and they are often less concerned about the impacts of pesticides on the environment or on food (Loureiro and Hine 2002: 484). These considerations may lead to a negative impact of age on the preference for regional food.

Males are considered to be less interested in nutrition and health issues than females (Patterson et al 1999; Schupp and Gillespie 2001). Thus, it is hypothesized that women tend to prefer food from the own region more strongly.

Consumers with higher incomes tend to desire a larger variety of food in the marketplace. Regional food can be part of such a larger variety (Schupp and Gillespie 2001: 38ff). By contrast, Umberger et al. found a significant negative sign for the income coefficient. They assume that wealthier consumers already believe that their food is safe and therefore they are less concerned about the origin of food (Umberger et al 2003: 111ff.). Another explanation could be that wealthier consumers tend to use the price as an indicator of

quality. More expensive food products are expected to be products of higher quality and therefore the origin is not used as a quality indicator at all.

Consumers with higher levels of education are expected to evaluate products by the price and specific quality attributes rather than by brand names or labels of origin. Thus, a negative coefficient is expected. Opposite to this, the higher level of education could lead to a larger awareness of the external effects of the consumption. In this way a positive sign is also plausible.

The presence of children in a household could have several effects on the preference towards regional food. Parents are concerned about the safety and quality of food for their children and thus they are more interested in nutrition issues (Patterson et al. 1999: 187). At the same time families have to deal with time and budgetary constraints. This could reduce the interest in locally produced food (Schupp and Gillespie 2001: 38).

Further on, the geographical location and the size of residence are expected to explain the preference for regional food to some extent. Consumers living in urban residences may spend less attention to food from the own region, because they are less connected to the local agriculture. Consumers in rural areas appreciate more strongly locally produced food (Jekanowski et al. 2000: 47ff.). It is hypothesized that the size of residence has a negative impact on the preference for regional food. Additionally, we assume that consumers in the southern and eastern states of Germany have got a higher preference for regional food than consumers in other parts of Germany. This assumption bases on two different reasons. First, the agricultural sector in southern Germany is mainly small scaled and thus a closer connection between farmers and non-farmers is expected. Second, in eastern parts of Germany a return to products which were popular in the former German Democratic Republic (GDR) can be observed (Abbe 2005).

4. Data and Methodology

The main objective of our study is to elaborate and to quantify the determining factors of consumers' preferences for regional food. Hence, we tested the theoretical construct described in the previous chapter empirically by applying a binary logit model, which is the appropriate econometric tool to explain the outcome if there are only two response levels (Diaz-Bohne and Kühnemund 2003:1f.).

The data came from a representative German wide telephone survey, which was conducted in 2002². Altogether, 3000 consumers answered the questionnaire. All variables, except the demographic factors, were measured on a Likert Scale where 1 stands for "I totally agree with the statement" and 7 refers to "I do not agree at all".

a) Definition of the dependent variables

Two alternative items were used to define the dependent variable: "If it's possible, I try to buy products from my home region" and "I like to spend more money for products which verifiably come from my home region". The first one expresses the preference (PREF) towards regional food, whereas the second item is an indicator for the willingness to pay a premium (WTPP) for regional food. In the analysis the items were transformed into binary variables. The Top-Two-values of the Likert Scale were coded as 1, meaning that a preference resp. WTPP exists. The others were coded as 0, meaning that no distinct preference resp. WTPP exists.

² The survey was ordered by the CMA, the Central Marketing Organization of German Agricultural Industries (ZMP 2003).

b) Definition of the *independent variables*³

Psychographic factors

Based on cognitive processes consumers may use the products' origin as a quality indicator. Thus, items expressing the perception of product attributes and food safety were included as explanatory variables representing psychographic factors. Further on, affective processes are effecting consumers' product evaluation. Sympathy to the own region is directly transferred to the food product. Items which express the sympathy to the own region and to the regional food supply are defined as affective factors. Finally, normative aspects can influence the preference for regional food. Items which express the environmental friendliness and the support of the local economy by purchasing regional food were used to define normative factors.

Consumption and shopping habits

It is hypothesized that the preference for organic food is correlated positively with the preference for regional food. Consumers who prefer convenience products may not buy regional food, because most regional food is non-processed food and therefore needs more time for preparation. Thus, items which express the shopping habits related to organic and convenience food were taken into account in the analysis. Furthermore, items which express the preference of supermarkets vs. other kinds of shopping places were included. It is hypothesized that consumers who buy in grocery stores because of convenience aspects do not show a strong preference for regional food. Finally, it is expected that consumers who classify taste as a more important product attribute than origin spend less attention to regional food.

Demographic factors

Gender, age, education, income, occupation, geographical location and size of residence are included as demographic factors.

5. Empirical Results

In our case the logit model defines the functional relationship between the elected level of agreement to the statements and the preference resp. willingness to pay a premium for regional food. The logit analysis calculates the probability to belong to a certain category of the dependent variable by using the cumulative logistic distribution for each individual with personal characteristics. The degree of impact of the independent variables is reported by so-called effect-coefficients $\exp(b)$ which indicate the change of the odds⁴ ratio when the independent value increases for one unit. It is defined as the ratio of the odds of an event occurring in one group to the odds of it occurring in another group, or to a sample-based estimate of that ratio (Backhaus 2003: 443f.).

We used the Nagelkerke R^2 to assess the goodness of fit of the model and the Wald test to estimate the significance of the influence of the independents. The data set was subjected to stepwise forward logistic regression analysis using the maximum likelihood function. The model was performed by using SPSS[®] 12.0 for Windows. To allow the model to calculate with discrete independent variables (occupation, home region, shopping habits) these data were also dichotomized.

The following table presents the results. < Table 1 >

The probability to classify people correctly depending on their answer patterns into the two answering groups is upgraded to 74.4% by the model compared to 59.9% by random classification for the WTPP-question. For the preference-statement (PREF) the right classification is about 79.8% by the logit model compared to 74% by random allocation.

³ Detailed definitions of the included statements and variables are given in annex 3.

⁴ $Odds(Y = 1) = \frac{P(Y = 1)}{1 - P(Y = 1)}$

The R-squared values indicate that a remarkable part of the variance in the stated preference and WTPP for regional food can be predicted from the independent variables. Most of the sociodemographic variables like sex, income and number of children per household had no significant impact on the dependent variables and were taken out of the models.

All included explanatory variables show the expected signs and have at least in one of the models a significant impact on the dependents. Hence, the results confirm the theoretical construct of impact factors. There are more independent variables with a significant impact on the preference than on the WTPP. This is not surprising since the grade of agreement was relatively higher for the PREF-statement, which can be probably due to the less binding character of this statement compared to the WTPP.

People from the eastern part of Germany stated significantly higher preferences for regional food, but there is no remarkable regional difference in the stated willingness to pay more for regional food. In our survey elderly people tend to show a higher preference and willingness to pay for regional food than younger people. This can be explained on the one hand by the fact that elderly people are usually more closely-connected to their home region and on the other hand that younger people prefer more often processed food because of convenience aspects. This is consistent with the finding that respondents who agreed to the statement that they prefer shopping in supermarkets, because there they find everything they need, and to the agreement that taste is more important than origin, showed a significant lower preference for regional food. Not surprisingly, there is a positive relationship between the frequency of buying bio-products and the grade of agreement to the WTPP-statement. As expected, an agreement to the statements about the perceived attributes of regional food has in almost every case a positive influence on both of the dependent variables. Only the assessment of higher safety standards for regional grown food has got a statistically significant impact just on the stated WTPP. This is consistent with the observation that a high agreement to all statements with regard to caring about food safety has got a highly significant influence on the WTPP and a significant impact on the preference. Especially the remarkable $\exp(b)$ on the item "*Quality is much more important to me than the price when I buy food*" indicates that quality and safety are important factors for the willingness to pay more for regional food.

Both logit models indicate an obvious impact of the probability to agree strongly to the two statements by normative aspects. The two most important normative aspects are the support of farmers of the home region and environmental considerations. However, a positive influence of the sympathy towards the home region could only be detected for the preference for regional products but not for the willingness to pay more for them.

All in all, the explanatory variables of the model confirm the expected coherence and indicate consistency in the answer patterns of the questioned people.

6. Final remarks

On the basis of the obtained results it can be concluded that cognitive and normative processes are the most important factors determining the preference towards regional food. Socio-demographic factors and affective processes hardly can explain the variance in the preference towards regional food. From consumers' perspective the food origin is an important indicator of quality and safety. Social norms, especially the wish to support the local economy by the purchase decision, also have important influence on the preferences. But with regard to the last point it is important to take the *warm glow* of personal surveys into account. *Warm Glow* specifies the moral satisfaction of a certain action or behaviour. It occurs whenever people get involved with public affairs because of the feeling to be a good citizen rather than due to the matter itself (Henseleit 2006, S.41).

There are still some points in this subject which need to be investigated empirically in more detail. The first is the product specific nature of the effect of products' origin on

consumers' food evaluation (Van Ittersum et al. 2003). Representative studies need to clarify impact differences according to different food products. Second, the appliance of a structural equation model on this subject is recommendable because of the indirect impacts of determinants on consumers' preferences and the latent nature of variables.

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Tables

Table 1: Effect Coefficients of the Binary Logit Models

Variable	PREF	WTPP
	N = 3000 R ² = 0.355 Exp(B)	N = 3000 R ² = 0.391 Exp(B)
Constant	0.237*** (30.184)	0.055*** (113.794)
Germany (ref. East):		
Sociodemographic Variables	North	0.488*** (18.792)
	South	0.436*** (34.476)
	Middle	0.601** (10.834)
	Age (ref. <mean)	1.672*** (23.731)
	Occupied	0.879 (1.487)
Habits	Hab.Shop	0.582*** (28.813)
	Hab.Taste	0.671*** (15.263)
	Hab.Bio (ref. rarely/never)	1.184 (2.748)
Cognitive Perception	Prod.Qualit	1.732*** (22.566)
	Prod.Taste	1.496*** (12.639)
	Prod.Health	1.614*** (17.316)
	Prod.Law	0.993 (0.005)
Cognitive Safety	Safe.Scandal	1.421** (9.331)
	Safe.Qualit	1.460*** (14.086)
	Safe.Farmer	1.354* (6.607)
	Safe.Time	1.570*** (16.548)
Affective	Est.Region	1.509*** (12.483)
	Est.Supp	1.567*** (20.173)
Normative	Norm.Transp	1.537* (6.076)
	Norm.Prod	1.367** (7.848)
	Norm.Farmer	2.582*** (49.936)

Brackets: Wald statistic

*, **, *** denotes statistical significance at the 0.10, 0.05 and 0.01 level, respectively.

Source: Own presentation

Annex 1: Influence of Psychographic Determinants on the Preference towards Regional Food - Review of Empirical Studies

Author (Year)	Cognitive			Normative		Affective	
	Quality In General	Freshness	Food Safety	Health, Nutrition	Environment- Friendliness	Support of Economy	Sympathy, Image
Van Ittersum (1999)							+/+
Wirthgen et al. (1999)						+	+
Jekanowski et al. (2000)	+						
Schupp und Gillespie (2001)	n.s.		+				
Loureiro und Hine (2002)		n.s.		+			
Loureiro und Umberger (2003)			+/n.s.				
Wirthgen (2003)			n.s.	+	+	+	+
Van Ittersum et al. (2003)	+/+						n.s./+
Roosen et al. (2003)			+				
Umberger et al. (2003)		+	+				
Schröder et al. (2005)	n.s.	n.s.	+		n.s.		n.s.
Mabiso et al. (2005) ^{a)}	+		n.s.				
Mabiso et al. (2005) ^{b)}	+		+				
Loureiro und Umberger (2003)			n.s./n.s./+				

Notes: (+; -) positive and negative estimates refer to significance level of at least 0.10; (**n.s.**) if found to be not significant; If nothing is specified this variable was not included in the study. If several results are listed for one study this is due to different products under consideration.

^{a)} probit model; ^{b)} logit model.

Source: Own presentation.

Annex 2: Influence of Socio-Demographic Factors on the Preference towards Regional Food – Review of Empirical Studies

Author (Year)	Age	Lifetime	Women	Inc	Edu	HH	Kid`s	Resid
Patterson et al. (1999)	n.s.	n.s.	n.s.	n.s.	n.s.		+	
Jekanowski et al. (2000)		+	+	+	-	n.s.		n.s.
Schupp/ Gillespie. (2001)	-		+	n.s.	n.s.	- ^{a)}	-	-
Loureiro/ Hine (2002)	n.s.		n.s.				n.s.	
Wirthgen ^{b)} (2003)	+	n.s.		n.s.		n.s.		
Loureiro/ Umberger (2003)			+/+	-	+/n.s.		+/n.s.	
Umberger et al. (2003)	n.s.		n.s.	-	n.s.		n.s.	
Mabiso et al. (2005) ^{c)}	n.s.		n.s.	n.s.	n.s.		n.s.	
Mabiso et al. (2005) ^{d)}	-		n.s.	-	n.s.		n.s.	
Loureiro/ Umberger (2005)	-/n.s./n.s.		+/+/+	+/+/n.s.	-/-/n.s.		n.s./n.s./-	

Notes: Inc=Income, Edu=Education, HH=Household Size; Resid=Residence (+; -) positive and negative estimates refer to significance level of at least 0.10; (n.s.) if found to be not significant.

^{a)} 1 = Single Household Head; 0 = Otherwise. ^{b)} Wirthgen (2003) also estimates product specific models beside the general regression. In some regressions the variable life time instead of age was significant. Both factors are strongly correlated. ^{c)} probit model. ^{d)} tobit model.

Source: Own presentation.

Annex 3: Sample Characteristics

	Variable	Definition	Respondents and Top-values in %, resp.	Code
Dependent Variable		If it's possible, I try to buy products from my home region.	73.0	<i>PREF</i>
		I like to spend more money for products which verifiably come from my home region.	59.3	<i>WTPP</i>
Socio-demographic Variables	Residence in Germany	North	16.2	<i>north</i>
		Middle	35.4	<i>middle</i>
		South	27.0	<i>south</i>
		East	21.3	<i>(reference)</i>
Age	Older than mean	Mean: 46.47 years		<i>age</i>
	Younger than mean			<i>(reference)</i>
Occupation	Yes	57.6	<i>occupied</i>	
	No	42.4	<i>(reference)</i>	
Habits		The taste is more important than the origin of food products.	35.6	<i>Hab.Taste</i>
		I prefer food which is quickly to prepare.	35.8	<i>Hab.quick</i>
		I prefer shopping in supermarkets. because I can buy everything there at once.	46.3	<i>Hab.Shop</i>
	Shopping frequency of organic food	Regular or occasional Seldom or never	54.4 45.6	<i>Hab.Bio</i> <i>(reference)</i>
Cognitive Processes	Product Perception	The food is fresher.	84	<i>Prod.Fresh</i>
		The food is of higher quality.	60	<i>Prod.Qualit</i>
		The food is tastier.	65	<i>Prod.Taste</i>
		The food is healthier.	49.3	<i>Prod.Health</i>
		There are strong legal requirements for food.	57.3	<i>Prod.Law</i>
	Food Safety	Caused by the food scandals in the last years I lost confidence in products from supermarkets.	31.3	<i>Safe.Scandal</i>
		Quality is much more important to me than the price when I buy food.	59.0	<i>Safe.Qualit</i>
		I can be sure: Food which I buy directly from the farmer is free of any pollutants.	35.9	<i>Safe.Farmer</i>
		I spend a lot of time to eat healthy.	43.0	<i>Safe.Time</i>
Affective	Sympathy to the home region	80.8	<i>Est.Region</i>	
	Assessment of food supply of the home region.	63.2	<i>Est.Supply</i>	
Normative	Products from my home region have short transportation ways.	92,9	<i>Norm.Transp</i>	
	Regional products are naturally and eco-friendly produced.	50,4	<i>Norm.Prod</i>	
	I support the domestic agriculture when I buy food from my home region.	87,0	<i>Norm.Farmer</i>	

Source: Own Presentation.

Graphics

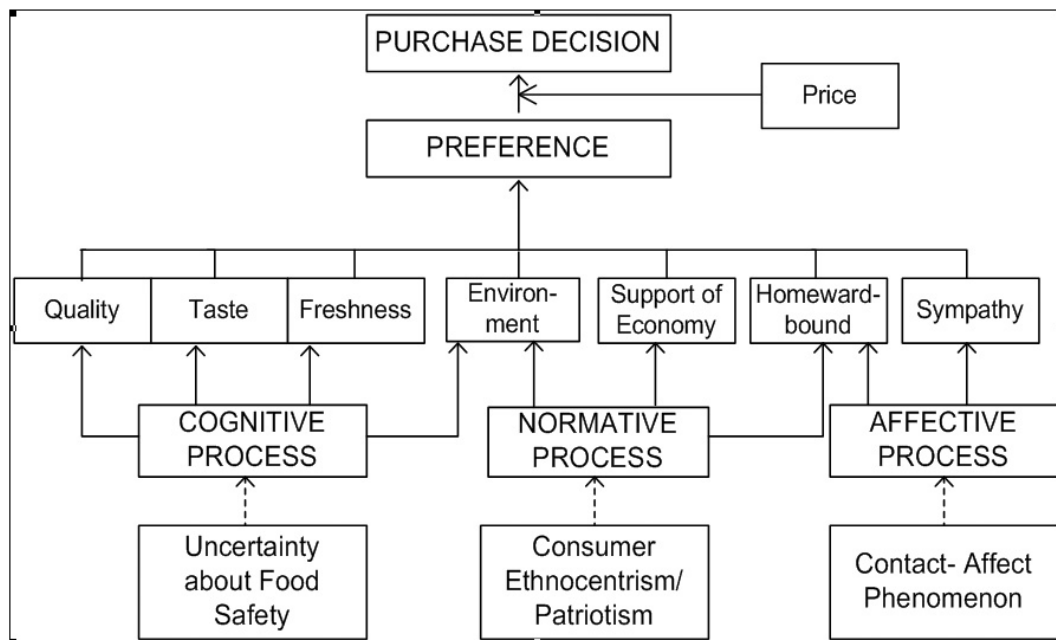


Figure 1: Theoretical Framework of the Psychographic Determinants for the Preference for Regional Food

Source: Own presentation.

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