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Functional food consumption in Germany: A lifestyle segmentation study

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Functional food consumption in Germany:

A lifestyle segmentation study

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If you have questions, want to participate in our research project or have any comments on this paper, we would appreciate hearing from you!

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Table of contents

Table of contents ..... **III**

List of figures ..... **IV**

List of tables ..... **IV**

Abstract **1**

Introduction **1**

Current state of research **2**

Methodology **4**

The Food-related Lifestyle approach 5

Data collection 6

Results **7**

Sample description 7

Results of the factor analysis 9

Cluster analysis and different groups of functional food buyers 10

Cluster description 11

Socio-demographic structure 12

Purchasing behaviour 12

Food consumption and cooking habits 13

Health situation 14

Functional food consumption 14

Conclusions **16**

References **18**

List of figures

Figure 1: A cognitive structure model for Food-related Lifestyle 5

List of tables

Table 1: Sample description 8
Table 2: Factor "Involvement in food" 9
Table 3: Factor "Joy of cooking" 10
Table 4: Factor "Price sensitivity" 10
Table 5: Results of the discriminant analysis 11
Table 6: Socio-demographic differences between the clusters 12
Table 7: Purchasing behaviour 12
Table 8: Food consumption and cooking habits 13
Table 9: Disease prevention 14
Table 10: Functional food consumption 15
Table 11: Reasons of functional food consumption 15

Abstract

Due to increasing health consciousness among consumers, there is an ever-growing demand for food and beverages with health-improving components. Not only 'light' and low fat products are in demand, but increasingly so-called well-being products and food which can prevent certain diseases. The German market for functional food is still growing. But who are the German functional food consumers? In an online-survey referring to the Food-Related Lifestyle by BRUNSØ and GRUNERT (1995) we tried to identify different groups of functional food buyers in Germany and to answer the following questions: If there are different consumer groups, how do they vary in their functional food consumption, their buying motives for functional food and their lifestyles? In conclusion, we have identified two different groups of functional food consumers in Germany: The "Health oriented functional food buyers" and the "Convenient functional food buyers" and give recommendations for marketing strategies.

***Keywords**: functional food, cluster analysis, Food-Related Lifestyle*

Introduction

In recent years, consumers have started to understand that food choice may have consequences for their health. Since then, the demand for health-preserving and health-improving food has been increased worldwide. An end to this development is not yet in sight (MEAT-N-MORE, 2009). Functional food, as one possibility, picks up this issue by offering food that can have positive effects on people's health. In 2005, functional food amounting to 16 billion US $ was sold in the USA, Japan and the five most important European countries. By 2010, researchers estimate a growth up to 25 billion US $ (ibid.). In Europe, Germany is one of the leading markets for functional food besides the United Kingdom, France and Italy (BECH-LARSEN and SCHOLDERER, 2007). From 2002 to 2008, German customers increased their expenditure on functional food by up to 33 % (MEAT-N-MORE, 2009). In Germany, functional food has become popular through a huge promotion campaign by Danone in 1996 when the probiotic yoghurt drink "Actimel" was launched.

Despite the remarkable demand for functional food, a standard definition does not yet exist. Since current scientific publications apply different definitions, it is difficult to compare these articles and gain homogenous statistical data about the functional food market as well as consumer behaviour. DUSTMANN (2006) for example defines functional food as food which

offers extra health-effect components besides a pure nutritional and sensory function. POULSEN (1999), however, presents a broader definition of functional food. He specifies four categories of enrichment in the production of functional food.

- Upgrading: Enrichment by adding a substance which is already present in the product
- Substitution: Substituting a component by a similar, but healthier substance
- Enrichment: Adding a positive substance, which is not present in the basic product
- Elimination: Removing an unhealthy component

Poulsen's definition forms the basis of the following study. In addition, according to DIPLOCK et al. (1999) foods like tablets do not refer to our definition of functional food. The aim of this study is to provide insights into the lifestyle of German consumers and their buying behaviour regarding functional food. This is important in order to establish new marketing concepts, especially advertisement and communication strategies. With an online-survey, we tried to answer the following questions: Are there different groups of functional food buyers in Germany? How do these groups vary in their functional food consumption, their buying motives for functional food and their lifestyles? What are the implications for communication and positioning strategies? The research questions were investigated using an SPSS cluster analysis, which is based on the results of a factor analysis of the lifestyle items conducted before. After a brief overview of current consumer acceptance of functional food in Europe and Germany, the methodological approach and the results of the online-survey are presented. The paper concludes with ideas concerning communication and positioning strategies for the marketing of functional food.

Current state of research

Though consumer acceptance has already been identified as an important factor in the marketing of functional food, few studies have analyzed consumer acceptance in detail. Most of the existing functional food studies include customers' views or give a literature overview, but only cover consumer acceptance fleetingly (e. g. BECH-LARSEN and SCHOLDERER, 2007).

SIRÓ et al. (2008) give a literature overview of the US, Japanese and European markets as the most important ones for functional food. Furthermore they establish differences between US and European customers and mention that health in connection with food choices is becoming increasingly important in Europe (BIACS, 2007). With regard to new products and

technologies, European customers are more critical than American (BECH-LARSEN and GRUNERT, 2003; LUSK et al., 2004; LUSK and ROZAN, 2005). Siró et al. conclude that consumer acceptance in Europe is less unconditional and more sophisticated than in the USA. However, costumers' views of functional food vary between the European countries; e. g. Danish people are rather suspicious with regard to functional food (JONAS and BECKMANN, 1998; BECH-LARSEN and GRUNERT, 2003).

Surveys about consumer segmentation in Europe are rather rare in scientific publications. **DE JONG et al**. (2003) compare Dutch functional food buyers and non-buyers. This comparison is arranged by demographic and lifestyle factors (e. g. alcohol intake, subjective health status). The authors conclude that determinants of functional food consumption depend on the type of base product. De Jong et al. underline that consumer attitudes, norms and knowledge about functional food, their dietary patterns and their demographic lifestyle characteristics deserve further research.

ANNUNZIATA et al. (2009), for example, establish consumer attitudes to functional food in Italy. As important influencing factors on consumers' buying behaviour of functional food they establish: 1) availability of information about functional food, 2) the image of functional food, 3) consumer shopping habits and 4) health consciousness in food choices. By means of a cluster analysis, based on these four factors, Annunziata et al. identified three groups of individuals which show different degrees of interest in functional food:

a) Healthy consumers, which show a good knowledge of functional food,
b) Confused and skeptical consumers,
c) Curious consumers.

All three clusters denote weaknesses in the level of available information about functional food, especially with regard to access and comprehensibility. Further criticism refers to the reliability of the products. This problem is also mentioned by other researchers (ACNIELSEN, 2006; LABRECQUE et al., 2006).

In a European cross-country survey **Horská, Sparke** and **Menrad** (HORSKÁ and SPARKE, 2007; SPARKE and MENRAD, 2009) interviewed 600 consumers from Germany, Poland, Spain and the UK about the relationship between nutrition and health as well as their trust in different actors from the nutrition and health sector (e. g. producers, retailers, medical doctors and nutritional consultants). Respondents were classified into eight different clusters: five groups of functional food buyers and three groups of non-buyers. The results show that in the UK and Germany consumers with a rational accentuation („Reasonable Health oriented") are

overrepresented while consumers in Poland and Spain buy functional food rather for hedonic reasons ("Enthusiastic Beauty" and "Impressed Tester"). Thus, the researchers conclude that marketing strategies for Central European countries could focus more on hedonic consumer groups.

ROGDAKI (2003) established German customers' preferences for functional food using the products margarine and yoghurt. By means of a cluster analysis, buyers of margarine and yoghurt were classified into six different clusters in each case. Concerning functional food, five clusters were identified. There are two groups of margarine buyers which prefer the functional type of margarine ("Functionals" and "Price sensitive functionals"). Among the yoghurt buyers a group of "Functionals" was identified as well. One cluster which clearly opposes functional enrichment exists in each of the two consumer groups (margarine and yoghurt), termed "Functional-averse light lovers" and "Functional-averse pure yoghurt lovers".

Existing segmentation studies in the European literature mostly divide consumers into groups of functional food buyers and non-buyers. But is this still the right approach? In regard to Poulsen's definition of functional food, there is a huge number of products belonging to the category functional food. Thus, we assume that nearly everybody has already consumed functional products at some point, and non-buyers hardly exist anymore. Therefore, contrary to previous European segmentation studies, we will also analyse if non-buyers of functional food still exist or if it is no longer possible to distinguish between buyers and non-buyers. The results from a recent survey of German functional food consumers are used to answer this and the following research questions: Are there different groups of functional food buyers in Germany? How do these groups vary in their functional food consumption, their buying motives for functional food and their lifestyles? What are the implications for communication and positioning strategies?

Methodology

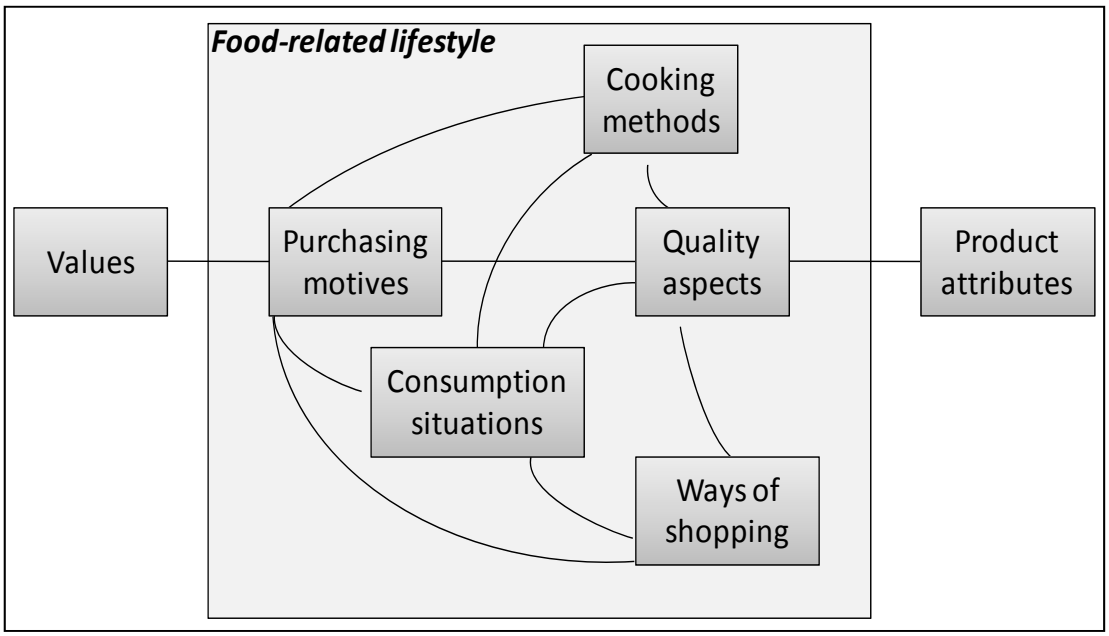
The purpose of this survey is to identify different types of functional food buyers in Germany. Referring to the broad definition of Poulsen (see above) it is assumed that everybody has already consumed functional food at least once. Thus, in contrast to the existing literature (e. g. HORSKÁ und SPARKE, 2007; DE JONG et al., 2003) it is supposed that non-buyers do not exist. As far as different clusters of functional food buyers exist, recommendations for marketing will be given concerning communication and positioning strategies for each clus-

ter. Since the aim of this study is to gather information about consumers' lifestyles and to prove whether any relation exists to their functional food consumption and their motives for buying functional food we chose several items from the Food-Related Lifestyle model (Figure 1) by BRUNSØ and GRUNERT (1995).

The Food-related Lifestyle approach

Common instruments to measure lifestyles are the RISC (Research Institute on Social Change) or the CCA method (Centre de Communication Avancé) (BRUNSØ and GRUNERT, 1995). Both approaches lack in cultural comparability. Therefore Brunsø and Grunert developed the Food-Related Lifestyle (FRL) which reduces this problem (Figure 1).

Figure 1: A cognitive structure model for Food-related Lifestyle



Source: Adapted from BRUNSØ and GRUNERT, 1995

Lifestyle, in the most basic form of the concept, is defined as a "mental construct which explains, but is not identical with, actual behaviour, and defines life style as the system of cognitive categories, scripts, and their associations, which relate a set of products to a set of values" (ibid.). The FRL is a cross-culturally valid instrument to measure food-related lifestyles. Grunert and Brunsø assume that lifestyle is specific to product classes, and have therefore chosen food as the basis for their approach. The following groups of cognitive categories were distinguished:

1. **Purchasing motives***:* What role does food have in people`s lives? Self-fulfillment in food, security or social relationship may influence eating behaviour.
2. **Usage situations***:* How and when do people eat? Is it a social event? Do they prefer snacks or meals?
3. **Cooking methods***:* How do people cook and prepare their meals? Involvement with cooking, convenience or spontaneity may play a role.
4. **Quality aspects***:* Should food be healthy, natural or nutritious? What role is played by novelty, organic food or price?
5. **Ways of shopping***:* Describes how people shop for food. Factors like importance of product information, enjoyment of shopping, price or shopping list may be important.

These five categories relate a set of products to a set of values (BRUNSØ and GRUNERT, 1995). All items were tested in Denmark, Great Britain, France and Germany. Especially "usage situations" and "purchasing motives" are valid over different cultures. The other factors vary more between countries (ibid.).

As the FRL is the basis of our consumer segmentation, we have chosen to consider and to retrieve each described category in our survey. Therefore, the questionnaire contains several statements from the FRL model. However, as the model does not cover functional food aspects, further statements were added to complete the questionnaire.

Data collection

Data was collected through an online-survey of 301 German consumers who were recruited by an online access panel provider in August 2009. The recruitment was restricted by certain screening questions (gender, age, education, monthly household income after tax), because the sample aims to be representative of the German population according to data of the German FEDERAL STATISTICAL OFFICE (2008). Whether the respondent is responsible for purchasing was no selection criterion as it has been in several other surveys (e. g. ANNUNZIATA et al., 2009; BECH-LARSEN and GRUNERT, 2003; WILLIAMS et al., 2008), because functional food includes products like energy drinks or chewing gum for dental care which are bought "in between" as well.

In order to sort the participants who do not fit to the screening criteria, the online survey started with several screening questions. Subsequently, respondents were asked to evaluate statements about their buying behaviour, and the consumption frequency of different functional food products (e. g. energy drinks, probiotic yoghurts) was established. According to

Poulsen`s definition and in order to decide which products to integrate into the questionnaire, the supply of functional food products was analyzed in different German supermarkets prior to the survey. Stores from three of the biggest supermarket chains (LEBENSMITTELZEITUNG, 2009), Rewe (Rewe Zentral AG), Real, (Metro group) and Kaufland (Schwarz group), were chosen. The main part of the survey begins with questions about consumption motives, about cooking and eating habits as well as healthiness. It mainly contains standardized questions with 5-point Likert scales. They range from 5 = "strongly agree" to 1 = "strongly disagree".

In the first step, data analysis was carried out using uni- and bivariate methodologies in SPSS 17.0. Accordingly, a factor analysis was conducted to reduce the number of items before the cluster analysis was carried out to identify the different types of functional food buyers.

Results

Sample description

The sample originally included 301 respondents. One respondent was excluded from the data analysis because he was younger than 18 years and did not match to the screening criterion. Two respondents had never tried any functional food products before. That means that 0.66 % of respondents are non-buyers of functional food. Since it is not possible to build a cluster out of two people, these respondents were excluded from the data analysis as well. This aspect further affirms our hypothesis that a group of non-buyers of functional food no longer really exists, as there are so many different enriched products in the food market. The sample included 148 women (49.7 %) and 150 men (50.3 %), ranging in age from 20 to 65 years (mean 42.42 years, standard deviation 13.2).Table 1 provides the socio-demographic characteristics.

Table 1: Sample description

Criterion	n	%	Screening Value %	Criterion	n	%	Screening Value %
Gender				**Federal state**			
Men	150	50.3	50.5	Baden-Württemberg	21	7.0	13.09
Women	148	49.7	49.6	Bavaria	42	14.1	15.23
				Berlin	18	6.0	4.15
Age				Brandenburg	10	3.4	3.11
18-34	96	32.2	31.3	Bremen	3	1.0	0.81
25-50	121	40.6	40.2	Hamburg	10	3.4	2.14
51-65	81	27.2	28.5	Hesse	29	9.7	7.41
				Mecklenburg-Western Pomerania	3	1.0	2.07
Education				Lower Saxony	33	11.0	9.73
Primary school/ Secondary General School	101	33.8	47,7	North Rhine-Westphalia	60	20.1	21.98
Intermediate Secondary School	90	30.2	24,6	Rhineland-Palatinate	12	4.0	4.94
High school	107	35.9	27,7	Saarland	3	1.0	1.27
				Saxony	24	8.1	5.18
Monthly household income after tax				Saxony-Anhalt	9	3.0	2.98
under 900 €	43	14.6	14.4	Schleswig-Holstein	10	3.4	3.46
900-1.499 €	74	25.2	25.2	Thuringia	11	3.7	2.82
1.500-1.999 €	53	18.0	17.3				
2.000-3.199 €	77	26.2	26.00	**Living situation**			
3.200-4.499 €	32	10.9	14.0	alone	54	18.1	-/-
4.500-5.499 €	8	2.7	2.9	alone, child(ren) moved out	4	1.3	-/-
5.500 € and more	7	2.4	2.9	single parent with child(ren)	20	6.7	-/-
				with partner without child(ren)	69	23.2	-/-
Household dimension				with partner, child (ren) moved out	28	9.4	-/-
1	56	18.8	-/-	with partner and child(ren)	101	33.9	-/-
2	116	38.9	-/-	in a flat-sharing community	10	3.4	-/-
3	80	26.8	-/-	with my parents	11	3.7	-/-
4	33	11.1	-/-	with my child / my children	1	0.3	-/-
more than 4	13	4.4	-/-				

Source: Authors' calculation
Screening values: Federal Statistical Office, 2008

Results of the factor analysis

In order to reduce complexity of the number of lifestyle items, an exploratory factor analysis was conducted to identify factors concerning participants' eating, cooking and consumption habits. The three factors are shown in tables 2 to 4. All Cronbach's alpha values are higher than 0.7 to ensure the factors' reliability (HERRMANN et al., 2008). Table 2 describes the first factor "Involvement in food".

Table 2: Factor "Involvement in food"

Items	Cronbach's alpha	Explained Variance
1. First I compare the different food information on packages and then decide which product to buy. 2. When buying food, I listen to the advice of my friends. 3. I avoid food with additives. 4. When shopping, I pay attention to products with an additional health benefit 5. I force myself to eat certain foods, not because I like them, but because they are healthy. 6. Frequency of organic food purchase. 7. I do not mind paying more for organic products. 8. I prefer cooking with organic food because it tastes better.	0.793	25.381

Scale: "Totally agree" (5) – "Totally disagree" (1)
Source: Authors' calculation

The factor "Involvement in food" is the largest one and contains eight different items. Three subcategories can be identified: the information behaviour concerning food purchase (items 1 and 2), health orientation (items 3 to 5), and attitudes towards organic food (items 6 to 8). All three categories correlated positively with the factor. That means respondents in this group agree to these statements and have a higher involvement in food, food production and ingredients.

The second factor "Joy of cooking" (Table 3) includes items linked to cooking for amusement and hobby, importance of traditional and new recipes as well as hot meals. The item "Cooking is a task that I want to have done as quickly as possible" has a negative correlation with the factor. To make the correlation positive, we recoded the item to "Cooking is a task that I do not want to have done as quickly as possible".

Table 3: Factor "Joy of cooking"

Items	Cronbach's alpha	Explained Variance
1. Cooking is one of my hobbies. 2. I like trying new recipes when cooking. 3. Cooking is a task that I do not want to have done as quickly as possible. 4. It is important for me that old family recipes don't get lost. 5. I eat at least one hot meal a day.	0.727	17.101

Scale: "Totally agree" (5) – "Totally disagree" (1)
Source: Authors' calculation

The third factor "Price sensitivity" includes two price statements. The factor is described in Table 4.

Table 4: Factor "Price sensitivity"

Items	Cronbach's alpha	Explained Variance
1. While shopping I pay attention to the price first. 2. I always check the price, even for the smallest products.	0.766	13.653

Scale: "Totally agree" (5) – "Totally disagree" (1)
Source: Authors' calculation

The above described factors "Involvement in food" and "Joy of cooking" were used as indicators for the identification of distinct groups in the following cluster analysis, as they represent most of the lifestyle items. A cluster solution with the price factor included did not show selective groups.

Cluster analysis and different groups of functional food buyers

The cluster analysis was performed with the software SPSS 17.0. Two factors ("Involvement in food", "Joy of cooking") and the single statement "Information from advertisement is helpful to make buying decisions" (was eliminated in the earlier factor analysis) were chosen as indicators in order to identify different clusters of functional food buyers. As the aim of this study is to identify different consumer groups on the basis of their lifestyles, the two mentioned factors were chosen as segmentation criteria. To give recommendations for marketing it is necessary to know if consumers can be influenced by advertisement. Therefore we chose the single item "Information from advertisement is helpful to make buying decisions" as the third segmentation criterion.

To calculate the number of clusters, the hierarchical cluster analysis by Ward was conducted.[1] To check these results, the means of the three clusters were compared in a mean comparison.

Next, a discriminant analysis was used to test the results of the cluster analysis and define the two clusters as well as possible. The results (Table 5) show that 98.9 % of the participants were allocated correctly by the Ward analysis.

Table 5: Results of the discriminant analysis

		Hierarchical cluster analysis	**Predicted allocation**[a]		
			1	**2**	Total
Original	Number	**1**	158	0	158
		2	3	122	125
	%	1	100.0	0	100.0
		2	2.4	97.6	100.0

Source: Authors' calculation
a: 98.9% of original allocated participants were classified correctly.
Wilks Lambda = 0.361***, Canonical Correlation = 0.799, Standardized Canonical Discriminant Function Coefficients: Joy of cooking = 0.754; Advertisement = 0.743; Involvement in food = 0.586.

As the results show, two different clusters of functional food buyers were established. The first cluster contains 158, and the second cluster 125 respondents. In the following, these clusters of functional food buyers are described in detail.

Cluster description

The preceding cluster analysis showed that the database was divided into two groups. The first group contains 158, and the second group 125 respondents. All respondents have tried at least one functional product before. As the following section describes in detail, "conscious, health oriented" and "convenient" functional food buyers can be identified in the German population. The two clusters were examined by socio-demographic structure, purchasing behaviour, food consumption, cooking habits, disease prevention and functional food consumption (Tables 6 to 11). All presented differences and findings are significant at a level of 0.000.

[1] 18 participants were eliminated because they could not be allocated to the different arrangements in the dendrogram.

Socio-demographic structure

At first glance, there are slight differences between the groups in the socio-demographic structure, e. g. age or income (Table 6), but these results are not significant. Thus, the groups cannot be distinguished by socio-demographic variables. Hence, there must be other aspects that distinguished both.

Table 6: Socio-demographic differences between the clusters

Cluster	Criteria	Gender	Age	Education	Income	Size of household	Purchase responsibility
1	**Mean**	**1.54**	**1966**	**3.95**	**3.24**	**2.47**	**1.37**
	Std.-Dev.	0.50	13.72	0.84	1.42	0.99	0.52
2	**Mean**	**1.45**	**1968**	**4.10**	**2.97**	**2.37**	**1.38**
	Std.-Dev.	0.50	12.74	0.83	1.52	1.08	0.58
Cluster 1 & 2	Sig.	0.108	0.191	0.142	0.127	0.418	0.892

Source: Authors' calculation

Purchasing behaviour

Purchasing habits and motives are an important part of the FRL (Brunsø and Grunert, 1995; 1998). These aspects are more important for cluster 1 than for cluster 2 (Table 7).

Table 7: Purchasing behaviour

	Cluster 1		Cluster 2		
	Mean	Std.-Dev.	Mean	Std.-Dev.	Difference
I compare the different information on food packages and then decide which product to buy.	3.89	0.85	3.05	0.91	0.84
Information from advertisement is helpful to make buying decisions.	3.75	0.81	2.70	0.82	1.05
I pay attention to products with extra supplements that are beneficial to my health.	3.62	0.95	2.89	0.81	0.73
I write a shopping list before I go shopping.	4.08	0.91	3.57	1.03	0.51
When shopping, I like to try new products.	4.04	0.77	3.49	0.82	0.55
I avoid food products with additives.	3.62	0.97	2.82	0.83	0.80
I do not mind paying more for organic products.	3.12	1.11	2.45	1.04	0.67
For food with very good quality I do not pay more.	2.33	0.93	2.82	0.87	-0.49
Butcher*	2.87	1.02	2.20	1.03	0.67
Farm shop*	1.96	1.04	1.46	0.85	0.51
Farmer's market*	2.49	1.05	1.86	0.90	0.64
Organic food shop*	2.04	1.07	1.49	0.85	0.56

Scale: "Totally agree" (5) – "Totally disagree" (1)

* Several times a day (6), Every day (5), Several times in the week (4), Several times a month (3), Several times a year (2), Never (1)

Source: Authors' calculation, significant at a level of 0.000.

The respondents of cluster 1 are more involved in food and more critical when making buying decisions. For example, before going to the supermarket, they write a shopping list. Thus purchasing food is planned more strictly (mean difference 0.84). Further, these respondents prefer to buy food in specialised shops like butchers, farm shops, farmers' markets or organic food shops. Respondents in cluster 1 try to avoid negative additives and prefer positive health-related supplements in food. Product information about ingredients or other background information is more important to them and advertisement helps them making buying decisions. For products with a higher quality, e. g. organic products, they are willing to spend more money.

Contrary to cluster 1, the second cluster is less willing to pay more for food of higher quality. New food products and innovations are less interesting for this cluster and these respondents have a lower involvement in food and food production.

Food consumption and cooking habits

Respondents in the first cluster live more healthily. They eat more fruit and vegetables and buy organic food more often (Table 8). With regard to meat and sweets consumption, no significant differences exist between the clusters.

Table 8: Food consumption and cooking habits

	Cluster 1		Cluster 2		
	Mean	Std.-Dev.	Mean	Std.-Dev.	Difference
Fruit consumption*	4.62	0.89	3.87	1.14	0.75
Vegetable consumption*	4.44	0.74	3.90	0.97	0.55
Organic food consumption*	2.84	1.14	2.22	1.08	0.63
Concerning eating, I am a true connoisseur.	4.05	0.70	3.37	0.88	0.68
I prefer to cook with organic foods because they taste better.	2.77	0.99	1.84	1.07	0.93
I like to eat exclusive food like sushi, lobster or caviar.	2.49	1.20	1.84	1.07	0.65
Eating with friends is an important part of my life.	3.61	0.89	3.00	1.03	0.61
Cooking is one of my hobbies.	3.72	0.92	2.58	1.06	1.14
It is important for me that old family recipes do not get lost.	4.01	0.81	3.22	0.93	0.79
I like to try new recipes.	4.20	0.72	3.14	0.96	1.05

Scale: “Totally agree” (5) – “Totally disagree” (1);
* Several times a day (6), Daily (5), several times a week (4), several times a month (3), several times a year (2), Never (1)
Source: Authors’ calculation, significant at a level of 0.000.

People in cluster 1 prefer to cook with organic foods, because of their better taste. They consider themselves as connoisseurs. The high agreement with the item "I like to eat exclusive food like sushi, lobster or caviar" supports this statement. Eating is a social event for them, because eating with friends is an important part of their lives, in contrast to cluster 2. Furthermore, people of cluster 1 are traditional and modern at the same time. They like to try new recipes and want to keep old family recipes as well. The biggest difference between the two clusters is shown in the statement "Cooking is one of my hobbies" (difference: 1.14).

As Table 8 shows, cluster 2 has a lower involvement and interest in cooking and in eating than cluster 1.

Health situation

The preceding information (Tables 7 to 8) suggests that respondents in cluster 1 are the healthier ones. They avoid food products with additives, they pay more attention to products with extra supplements that are beneficial to their health and they eat more fruit and vegetables than cluster 2. But concerning diet-related diseases (e. g. high blood pressure, cholesterol level, obesity, gastro-intestinal diseases or food allergies), there is surprisingly no significant difference between both groups. According to the question on disease prevention, only two statements showed significant differences (Table 9). Cluster 1 tries not to eat artificial, negative additives whilst Cluster 2 cares less about health discussions and a healthy diet to prevent diseases.

Table 9: Disease prevention

	Cluster 1		Cluster 2		Mean
	Mean	Std.-Dev.	Mean	Std.-Dev.	Difference
I avoid eating food products with additives.	3.45	0.98	2.64	1.03	0.81
I eat what tastes good and do not care about the whole health discussions.	2.91	0.96	3.62	0.94	-0.71

Scale: "Totally agree" (5) – "Totally disagree" (1)
Source: Authors' calculation, significant at a level of 0.000.

Functional food consumption

As cluster 1 likes to buy and eat new products more than cluster 2 (Table 7), it can be assumed that these people eat more functional food. The results of the survey support this hypothesis. Table 10 shows all significant differences for the single products. The consump-

tion of further functional food products, which was asked about in the questionnaire, e. g. energy bars or bread with additional fibre, does not differ significantly between the clusters.

Probiotic yoghurts and drinks show the biggest difference between clusters 1 and 2. The first cluster consumes both of these several times a month, the second cluster only several times a year. The same holds true for fruit juices with supplements as well as spreads with cholesterol-lowering effects. This matches with the healthy-diet oriented lifestyle of cluster 1.

Table 10: Functional food consumption

	Cluster 1		Cluster 2		Mean
	Mean	Std.-Dev.	Mean	Std.-Dev.	Difference
Probiotic yoghurt drinks (e.g. Danone Actimel, Yakult)	2.89	1.42	1.96	1.10	0.93
Probiotic yoghurt (e.g. Danone Actimel, Nestle LC1)	2.88	1.35	2.02	1.10	0.86
Fruit juice with additives (e. g. albi Multi 12, Amecke Saft + Calcium & Magnesium)	2.79	1.41	2.05	1.12	0.74
Spread with cholesterol-lowering effect (e.g. Becel, Deli Reform)	2.89	1.59	2.23	1.51	0.66
Cooking oil with additional vitamins or omega-3 fat acids (e. g. Becel Omega-3 vegetable oil)	3.13	1.39	2.47	1.25	0.66

Scale: Several times a day (6), daily (5), several times a week (4), several times a month (3), several times a year (2), never (1)
Source: Authors' calculation, significant at a level of 0.000.

The reasons to eat functional food are the same for both clusters: to do something good for themselves and to have a balanced nutrition (Table 11). The statement "To reduce the risk of a particular disease (e. g. heart attack, high blood pressure)" shows the highest difference (0.71) between the groups.

Table 11: Reasons of functional food consumption

	Cluster 1		Cluster 2		Mean
	Mean	Std.-Dev.	Mean	Std.-Dev.	Difference
To do something good for myself.	3.82	0.83	3.24	0.96	0.58
Because I want to have balanced nutrition.	3.65	0.88	3.08	1.01	0.57
Because it is a convenient way to eat healthily.	3.59	0.95	3.06	1.01	0.53
I think it's great what is possible in the modern diet.	3.45	0.95	2.88	0.95	0.57
To reduce the risk of a particular disease (e. g. heart attack, high blood pressure)	3.42	1.05	2.70	1.09	0.71

Scale: "Totally agree" (5) – "Totally disagree" (1)
Source: Authors' calculation, significant at a level of 0.000.

Conclusions

Contrary to previous studies in the European literature, this survey identified no groups of non-buyers of functional food as only two respondents assumed that they had never eaten any functional food product. The reason for not identifying a group of non-buyers may be the high variety of functional products offered by the food industry today. Thus, only groups of functional food buyers exist.

Based on the Food-related Lifestyle concept, the study identified two different groups of functional food buyers. The first can be dubbed "Health oriented functional food buyers". Respondents of this group can be characterized as critical, health oriented and well informed. This cluster shows high involvement in food. They compare product information critically and write shopping lists before purchasing food. They do not mind paying extra for high quality food (e. g. organic). Therefore, these respondents buy more often in specialised shops like butchers or organic food shops. Over, they have a healthier way of life than cluster 2. The "Health oriented functional food buyers" show a higher consumption of functional food. They eat functional food because they want to do something good for themselves and to have a balanced diet. Therefore, respondents avoid eating products with additives and instead pay attention to products with extra supplements that are beneficial to their health, as well as having a high fruit and vegetable consumption. Moreover, respondents of cluster 1 like to try new products and include information from advertisement into their buying decisions. They directly look for product information and information from advertisement. To a certain extent the "Health oriented functional food buyers" thus trust in and could be influenced by advertisement. To reach this group of consumers, claims[2] like "reducing the risk of disease" should be used in marketing. Furthermore, scientific and authentic information on packaging should be provided for these attentive and critical customers.

The second cluster is called the "Convenient functional food buyers". These respondents care much less about health discussions and eat what tastes good. Their involvement in food is lower compared to cluster 1. Product information, for example, is not very important to them. These respondents pay less attention to artificial additives or beneficial supplements in food and they are much less willing to pay an extra price for organic products or food of higher quality. Hence, the "Convenient functional food buyers" purchase less in specialised shops like butchers or organic food shops. Concerning functional food, they show lower consumption and do not predominantly buy functional products out of health concerns. Con-

[2] Considering the current EU health claim regulation: Regulation EU Nr. 1924/2006

trary to cluster 1, respondents in cluster 2 use information from advertisement less often and have only an average interest in product information. These respondents are less influenced by advertisement than the "Health oriented functional food buyers". Instead of comprehensive marketing campaigns with TV spots and authentic information, the "Convenient functional food buyers" can become aware of and interested in functional food by product tasting at the point of sale. These customers need to get in direct contact with the product. Additionally, wellness claims or claims like "the convenient way of a healthy diet"[3] are suitable for these respondents.

A cluster analysis by means of the Food-related Lifestyle concept is a good approach to identify groups of consumers. But the results in this study do not show a clear connection between functional food and the lifestyle items. There are no significant differences in the functional food purchasing motives and the kinds of consumed functional food differ little between the groups. The FRL therefore seems not to the best approach to identify functional food consumer groups. A further cluster analysis will be conducted on the basis of the purchasing motives, which may show clearer results concerning functional food.

[3] Considering the current EU health claim regulation: Regulation EU Nr. 1924/2006

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