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The Influence of Eating Habit on Preferences towards Innovative Food Products

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Abstract
Food industry is considered to be a sector with comparably low research and development efforts. Many companies belong to the small and medium sized enterprises and are limited in resources. Subsequently many new food products fail on the market. Integrating consumer research into product development enhances their success rates. Consumer segmentation is a suitable approach for effective target group identification. The aim of the project was to develop and test a survey tool which determines consumers' food consumption style in a simple and efficient way. According to life style and imagery research, visual stimuli of different food products and meals were elaborated. In a consumer survey 330 persons assessed these stimuli and also rated different product cards of two innovative food products. Cluster analysis resulted in ten different consumer segments which can be well sourced with socio-demographic characteristics. Analysis of the segmentation tool bore good discriminatory power. Additionally, consumers' preferences towards the food product features were examined with conjoint analysis. Differences in preferences can be observed for diverse food consumption style clusters and are basis for target group specific food product design.

Keywords
New Product Development, Consumer Segmentation, Food consumption style, Preferences

Introduction
Food industry in Germany and Europe is considered to be a sector with comparably low research and development (R&D) efforts. On the input side of German food industry, expenditures for R&D in 2003 made a share of 0.25% to 0.3% of the total turnover. Taken as a whole, the processing industry spends about 4% of the total turnover for R&D which more than ten times higher. In the entire processing industry 7% of the employees in 2003 worked in R&D, while the analogue figure reaches only 0.5% in the food industry (Stifterverband fuer die Deutsche Wissenschaft 2004, Federal Ministry of Food, Agriculture and Consumer Protection 2004).
Concerning the output side of food innovations there is also significant room for improvement. Three of four new food products fail on the German food and retail market in a time period of one year after launching the products. Either they are listed out or they generate insufficient sales (Menrad 2004, Rosada 2005).
One reason for this status can be found in the food sector's structure. In 2003 about 76% of all German food processing companies had less than 100 employees. Only 2.5% of the companies have more than 500 employees (Federal Ministry of Food, Agriculture and Consumer Protection 2004). Thus the majority of enterprises in the food sector belong to the small and medium sized enterprises (SMEs). Long-lasting research and substantiated new food product development seem to be too expensive and labour-intensive for these companies.

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According to Grunert et al. (1996) a strong market orientation is crucial for successful new product development. Schmalen (2005) identified target group market research as one of few key factors for successful innovation policy in the food industry. Prior active consumer research including analysis of customers' desires, trends and niches in the market boosts the likelihood of new food products to be successful.
Earle et al. (2001) mention different stages of the product development process on which consumer research should be integrated. At the beginning there are small consumer focus groups evaluating prototypes, whereas sizeable consumer surveys including product acceptance tests are conducted immediately before a commercial product launch. Linnemann et al. (1999) propose an integral model of food product innovation which includes steps like analysis of market development, categorisation of consumers regarding their preferences and perceptions and development of adequate product assortments for several consumer segments. Thus consumer segmentation seems to be a suitable approach for successful target group identification during new product development processes.
Socio-demographic attributes of consumers are often used for segmentation because they fulfil many segmentation criterion requirements such as simple ascertainability and measurability. But a major disadvantage is their limited relevance for prognosis of consumer behaviour (Meffert 2000). Loudon and Della Bitta (1993) point out that socio-demographic characteristics are less and less suitable determinants for consumer behaviour whereas lifestyle and psychological oriented approaches offer promising opportunities regarding segmentation.
The segmentation procedure of the SINUS market research institute (Flaig et al. 1993) gained importance and wide implementation in marketing in Germany and other European countries. It divides a population into lifestyle milieus based on people's statements towards different aspects of life, like e.g. preferred products or leisure time activities. Brunsoe et al. (1996) conducted consumer segmentation in the four European countries of Denmark, France, Germany and the United Kingdom concerning a food related lifestyle. Furthermore, Stiess and Hayn (2005) worked out a representative classification of the nutrition styles of the German population.
The aim of our project was to develop a survey tool which undertakes consumer segmentation in consideration of their eating habit or food consumption style respectively and thus enables an identification of those consumer target groups which bear high acceptance towards new food products. The tool should be easy to handle with regard to possible application by SMEs of the food industry.

Methodology

Consumer segmentation with regard to eating habit

Development of main features of the segmentation tool was geared to results of Brunsoe et al. (1996) and Stiess and Hayn (2005). Brunsoe et al. (1996) concentrated on cognitive components of human behaviour and combined them with several dimensions of nutrition when developing their instrument of a food-related lifestyle. Ways of shopping, cooking methods, quality aspects, consumption situations and buying motives had been converted into statements in a standardised questionnaire for oral interviews. Five clusters were obtained in Germany: the "uninvolved" (21% of all persons), the "careless" (11%), the "rational" (26%), the "conservative" (18%) and the "adventurous" (24%) food consumers.
Stiess and Hayn (2005) used people's purchasing and quality orientation, cooking orientation, overall nutrition orientation and socio-demographic information for their segmentation. Seven nutrition style clusters were gained: "Uninterested Fast-Fooder" (12%), "Cheap- and Meat-Eaters" (13%), "Joyless Habitual-Cooks" (17%), "Ambitious Fitness-Oriented" (9%),

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"Stressed-out Daily Life-Managers" (16%), "Sophisticated Nutrition-Conscious" (13%) and "Conventional Health-Oriented" (20%).

The own attention – keeping in mind the tool's usability for consumer research of SMEs - was turned to consumers' affinity towards food itself but not to their whole positioning in the context of nutrition. Dimensions like how to prepare a meal or purchasing behaviour loose importance compared to consumers' direct attitudes towards certain food products. For the actors on the supply side like food industry or catering services all the above mentioned dimensions finally concretise in consumers' or users' acceptance or rejection of offered products at the point of sale or at the point of consumption respectively.

The segments investigated by Brunsoe et al. (1996) and Stiess and Hayn (2005) contain the demand side in its entirety, and also the SINUS-milieus (Flaig et al. 1993) with their attitude indications in the field of food do so. These persons are the demanders of all offered food products and meals on the market. Thus, the spectrum of food-related lifestyles can be regarded to be congruent with the spectrum of possible consumption situations and consumed products.

Our approach to segment consumers may be entitled as a "food consumption style". Operationalisation of this food consumption style was not carried out by abstract statements about eating habit but by concrete food products in order to diminish the survey efforts. Choice of these food products was guided by characteristics of the above mentioned consumer segments of food-related lifestyle. By means of group discussion and creative techniques typical food products and meals were compiled for all of those segments. They should not just contain a "basic product", but also symbolise potential consumption situations and represent trends in nutrition like ethno-food, convenience, organic production, functional food or regional food specialities. Finally, thirteen food products and meals were chosen to set the instrument which should investigate consumers' food consumption style (table 3).

Methods of imagery research were used to design the survey tool. Imagery is regarded as quasi-sensory experiences of which a person is consciously aware and which can exist even in the absence of those stimulus conditions that produce the genuine sensory. Images are some kind of tools of thought which provide a temporary representation of memories and thus can be used in a functional way (Childers et al. 1983). Imagery may be presented and processed verbally or nonverbally. The latter can be divided into visual, auditory, gustatory, olfactory or tactile imagery of which visual imagery is most important in marketing applications.

When considering how to find out consumers' food consumption style in a simple, effective and valid way at the same time, a well-founded communication approach is essential. Holbrook (1983) explains an imagery communication model. A sender transmits a message through a channel to a receiver and activates an effect. Reduced to the aspects which are interesting for developing a food consumption lifestyle tool, the approach can be described as follows: the researcher presents an object to the consumer using imagery techniques and annotates the caused reaction. The object is a food product or meal which effects both a cognitive and affective preoccupation and a following judgement.

Food is a product that contains utilitarian as well as emotional components. Nutritional value or requirements for preparation or consumption may be considered in a cognitive way, whereas taste, pleasure and certain food products as a status symbol pertain to the affective aspects.

Presenting an object in a visual manner offers diverse advantages. Childers et al. (1983) cite the greater variability in the appearance of pictures compared to the appearance of words. Holbrook (1982) states that one might investigate symbolic, hedonic, emotional and aesthetic components better with nonverbal imagery methods. Finally, Childers et al. (1983) emphasise the possibility to improve the effectiveness of marketing communications using imagery.

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An advantage with respect to practical procedure in marketing research is that images can be understood easier by respondents who have inferior ability in exposure to verbal presentations, e.g. children or foreigners. Additionally, there exist differences within domestic adult consumers when they are instructed to imagine an object by a verbal description (Rossiter 1982).
Operationalisation of food products and meals into visual imagery stimuli was conducted in accordance to Rossiter (1982) who gives advices for application of imagery techniques in marketing. Pictures should contain objects as concrete as possible and with high imagery content. Colour enhances the suitability to effect emotional reaction. Pictures were taken from data bases with efforts to illustrate all thirteen different food products and meals exactly, attractively and in an equal way. Pictures were presented in a mixed order to the respondents who were asked to assess the attractiveness of the illustrated meals and food products towards them on a rating scale.

Preference testing of innovative food products
When dealing with food products which are still in the development process and not yet launched on the market, consumer's reaction cannot be measured using consecutive purchase behaviour of people. For such fast moving consumer goods which are not available in the marketplace so far, preferences are regarded as an important factor for the decision-making process of consumers (Kotler et al. 2003). To make consumers prefer one product alternative against another, this specific alternative has to offer some benefits to the consumer which cannot be offered in the same way by the competing product. In this sense, consumer preferences reveal benefits or utilities. Utility is a crucial criterion for every rational decision-making processes of consumers (Krelle 1968). Taking into account the financial restrictions and their individual necessity structure, consumers try to maximise their benefit when purchasing a product. Thus, investigating and analysing the consumers' preferences and the extent products avail to them, is a suitable way for the explanation of consumer behaviour for products in the development phase.
Two different products were taken to analyse consumer preferences and to combine them with consumers' food consumption style, of which one was a dried fruit snack and the other one an assortment of chocolates. Tests of both products were in co-operation with SMEs located in Southern Germany.
The novelty character of the dried fruit snack refers to its drying process with the fruit being dried by an innovative microwave technique. This technology results in fruit pieces of crispy consistency and thus enables a new snack experience while there are no deviations regarding the original fruit taste (Heindl 2003). Further on, this kind of snack serves the market mega trend of health and wellbeing (Heimig 2005).
Sales of confectionery and in particular chocolate products increase in Germany. Especially children – an important consumer group – are attired in new confectionery products. Within this development there is a trend towards high quality chocolate bars and assortments (Dürr 2004).
Conjoint analysis was used to obtain consumers' preferences towards these products. It has been introduced to marketing in the early 1970s (Green and Srinavasan 1978) and is considered as a suitable method for assessment of product concepts regarding the needs of a consumer target segment (Backhaus et al. 2003). In conjoint analysis it is assumed that the product being assessed can be defined in terms of few important characteristics. Furthermore, it is assumed that the consumer decision related to such a product is based on tradeoffs among these product characteristics. The purpose of conjoint analysis is to estimate utility scores, called part-worths, for these characteristics. Utility scores are measures of the importance of each single characteristic to the interviewee's overall preference of a product. The product

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characteristics of a product are explained in terms of its factors and factor levels. The factors are the general attribute categories of a product, the factor levels are the specific values of the factors (SPSS 1997).
Table 1 gives a set-up overlook of the conjoint design of the two products "dried fruit snack" and "chocolate assortment". The first product consisted of the factors "basic product" which stands for the used drying technology, "fruit growing" which differs in conventional and organic production type, "consumption suggestion", "final product" and "price". As the term "microwave dried" might sound negatively towards consumers, the "reference to the drying process" was established as another factor to evaluate potential impacts. Next to the core factor, namely the basic product with its factor levels naturally and microwave dried fruit the factors consumption suggestion and final product should bear further indices for product design.
Factors and factor levels of the chocolate assortment tried to reflect current market trends in Germany. Fillings like fruit and yogurt are relatively new in this market, and also modern and convenient kinds of packaging found their way into the confectionery segment.

Table 1: Set-up of the conjoint study on dried fruit snack and chocolate assortment

Dried fruit snack		**Chocolate assortment**	
Factor	**Factor levels**	**Factor**	**Factor levels**
Basic product	Naturally dried fruit	**Chocolate type**	Dark chocolate
	Microwave dried fruit		Whole milk chocolate
			White chocolate
Reference to drying processing	No	**Calorie content**	400 kcal ("light")
	Yes		600 kcal (normal)
Production type of Fruit growing	Conventional	**Filling**	Yogurt
	Organic		Nougat
			Fruit
			Alcohol
Consumption suggestion	Sports snack	**Packaging**	Single packaging
	Healthy alternative snack		Blister packaging
	Exotic treat		
Final product	Pure	**Packaging design**	Precious
	Chocolate coated		Simple
	With nut mix		Trendy
Price	0.79 € (low)	**Price**	1.19 € (low)
	1.99€ (medium)		2.99 € (medium)
	3.19 € (high)		4.79 € (high)

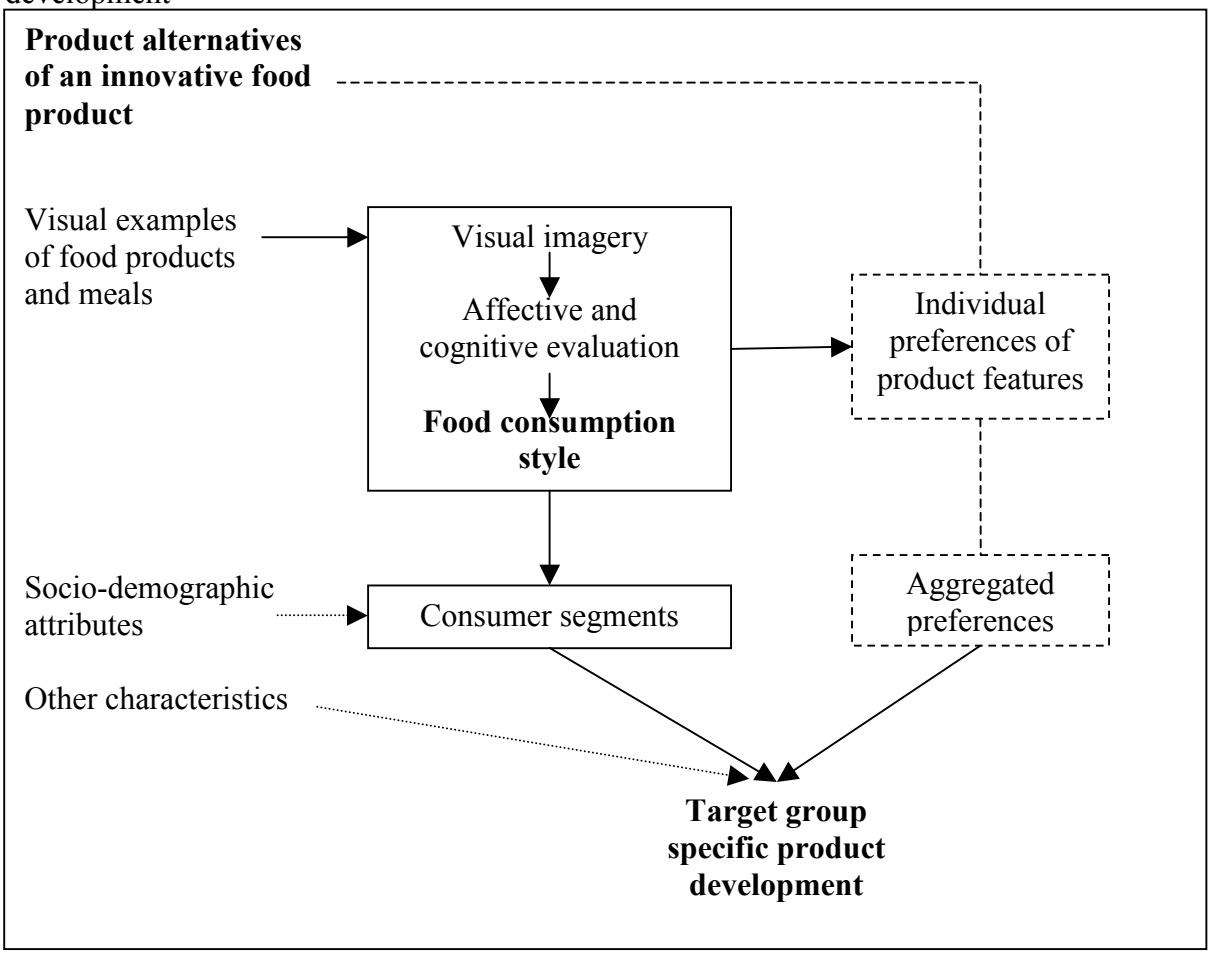
Source: Own inquiry

With six factors and about two to four factor levels each the product design is composed of 216 different possible products for the dried fruit snack and 432 different options for the chocolate assortment. By means of the statistical programme SPSS (SPSS 1997) these numbers have been reduced to 18 products each which were illustrated as product cards and presented to the consumers. They had to make up a rating of the product cards according to their personal preferences.

Overall framework and empirical procedure
Combination of visual imagery stimuli, consumers' affective and cognitive reactions and their preferences towards newly developed food products results in the framework which is shown in figure 1. The single consumer judges the different pictures of food products and meals and

thus bears his individual food consumption style. Consumer segments can be drawn from this investigation and combined with socio-demographic and other characteristics.
A further stimulus is a set of product alternatives of a dried fruit snack or chocolate assortment respectively product. Their evaluation results in individual preferences which can be aggregated to preferences of a certain consumer segment and give insight to a target group specific new product development and marketing.

Figure 1: Framework of the Innovative Food related consumer segmentation for new product development



Source: Own inquiry

In spring 2005 a consumer survey was carried out in several hypermarkets and supermarkets in Southern Germany. The tasks of the survey were, as mentioned above, to investigate consumers' food consumption style, their preferences with respect to the presented innovative food products dried fruit snack and chocolate assortment, their previous purchasing pattern referring to these product groups, and their information behaviour with respect to new food products placed on the market. Additionally, some socio-demographic information was collected from the interviewees. Consumers evaluated 13 pictures of food products and meals, rated 18 product cards of an innovative food product and answered orally to further standardised questions. Altogether, 327 persons were asked about their food consumption style. Of these 170 persons rated the chocolate assortment and 155 respondents assessed the dried fruit snack. The latter additionally tasted some naturally and microwave dried apple bits to get a gustatory impression of the diverse basic products.

Results and discussion

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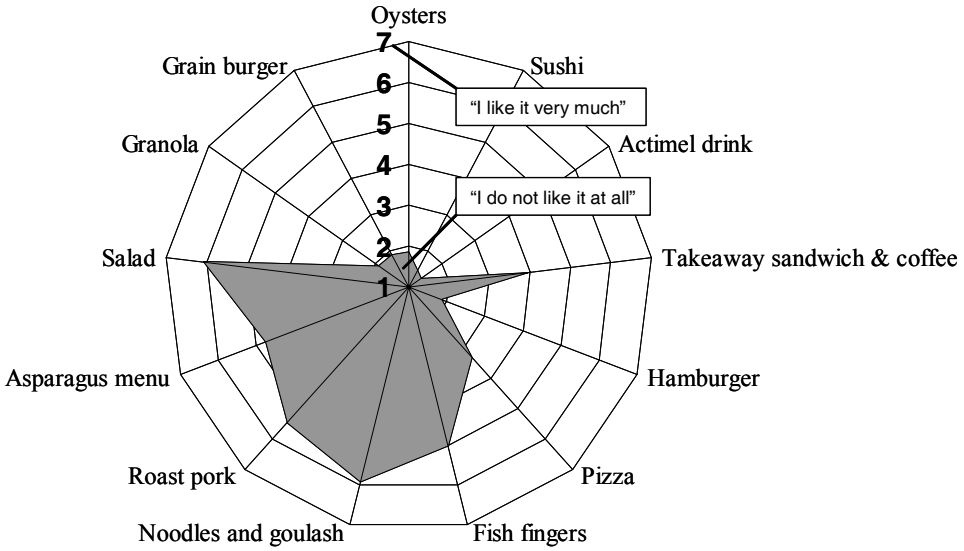
Food consumption style

Assessments of the thirteen food products and meals of all 327 respondents were basis for the execution of a cluster analysis. This procedure resulted in a ten cluster solution. For this number of segments the dendrogram of the clustering process showed a still low index of heterogeneity. Additionally, this quantity is in the dimension of cluster solutions of Brunsoe et al. (1996) as well as Stiess and Hayn (2005) and seemed to be manageable for preference analysis and target group specific product design. Entitling of clusters was based only upon evaluations of food products and meals. Cobweb-diagrams were chosen to display a cluster's food consumption style. Figure 2 shows the orientation within the thirteen different modules for one of the ten clusters. This group exhibits a high affinity towards traditional and in some extent simple food and refuses exotic and modern type food. Therefore this segment was entitled "Simple fare eater".

Figure 2: Food consumption style of "Simple fare eater".



Source: Own inquiry

Table 2 summarises the ten food consumption style clusters. The clustering process records display vicinity and distance between certain clusters. The segments of "Fusion food eater", "Junk food eater" and "Canteen eater" were more stable than others during the procedure, while the groups of "Home-style eater" and "Exotic food eater" are very close and join to one cluster if the number of clusters would be reduced to nine. Both groups show similar likings towards healthy, traditional and high quality food, but the "Exotic food eater" also evaluate sushi as an example of newly introduced foreign food positively. The clusters "Wholesome and conscious connoisseurs" and "Convenient connoisseurs" would be aggregated in the step from nine to eight segments. Both of them like the spectrum from traditional food over fresh and healthy towards delicatessen but the "Convenient connoisseurs" also favour food that needs low efforts to prepare and can be consumed quickly.

Table 2: Summary of the ten food consumption styles

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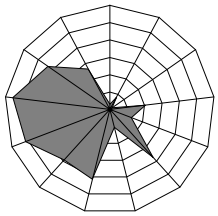
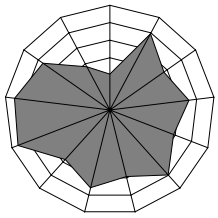
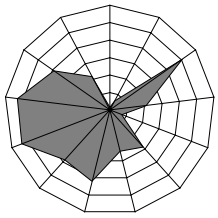
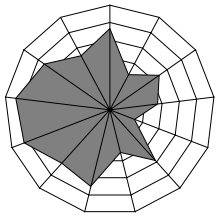
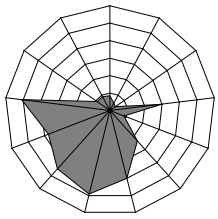
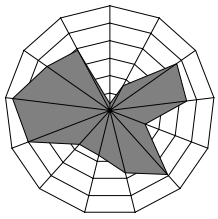
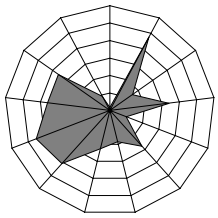
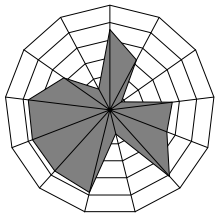
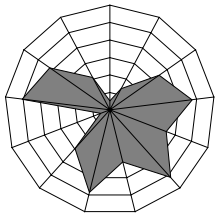
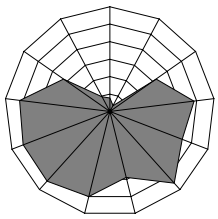
Name (and relevance) of the cluster	**Orientation within the food consumption style cobweb**	**Socio-demographic characteristics (in tendencies)**
Home-style eater (15.5%)		• Persons older than 50 years • Increased professional training and university certificates • Medium and higher incomes • Two-person households
Fusion food eater (13.1%)		• Persons younger than 30 years increased • University entrance certifications and completed studies • Single- and two-person households, also families with children
Wannabe wholesome eater (16.6%)		• Elderly persons • Increased professional training and university certificates, few graduated • Medium incomes • Above average share of families with children
Wholesome and conscious connoisseurs (14.3%)		• Persons aged 30 to 60 years • Increased proportion of graduated persons • Above average share of single-person households and families with two children
Simple fare eater (6.1%)		• Persons older than 70 years • Above average share of common school certificates • Low and medium incomes • Single- and two-person households
Wholesome and convenient eater (9.6%)		• Young and middle-aged persons • Increased share of school certificates yet without further education • Enlarged share of low incomes • Households with one or two children
Exotic food eater (3.5%)		• Age from 30 to 50 years, few elderly persons • Increased share of university entrance certifications and completed studies • Households with one or two children

Convenient connoiseurs (5.8%)		• Age from 30 to 70 years • Increased share of university entrance certifications and completed studies • Higher incomes • Single persons and families with one child
Junk food eater (7.9%)		• Persons younger than 30 years • Above average share of common school and professional training certificates • Lower incomes • Households with to up to four persons
Canteen eater (7.6%)		• Persons younger than 30 years • University entrance certifications and completed studies • Low and very high incomes • Households with several persons

Annotation: The arrangement of food variables in the cobwebs is identical to that in figure 2
Source: Own inquiry

However, next to the results of the cluster analysis and the establishment of ten consumer segments, the suitability of the developed instrument has to be reviewed and discussed. An evaluation of the survey tool to determine a consumer's food consumption style was conducted by discriminant analysis. This statistical procedure is used to determine which variables discriminate between two or more groups and thus enables to choose the best suitable variables. Food consumption style clusters were formed using the thirteen food product stimuli and the consumers' likings towards them. These stimuli can be taken as variables of a discriminant function which is calculated to reflect the structure between groups as good as possible, i.e. to achieve an optimal separation between the segments (Backhaus et al. 2003).

Table 3: Mean discriminant coefficients of food variables

Food product and meal variable	**Mean discriminant coefficient**
Oysters	0.388
Actimel drink	0.375
Sushi	0.311
Asparagus menu	0.309
Takeaway sandwich & coffee	0.218
Hamburger	0.214
Grain burger	0.178
Fish fingers	0.165
Pizza	0.162
Noodles and goulash	0.155
Roast pork	0.146
Granola	0.122
Salad	0.084

Source: Own inquiry

Nine discriminant functions were incorporated to describe the inter-segment structure of the thirteen variables of which the first eight functions are significant ($p<0.001$). When assigning

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the individual respondent to a food consumption style cluster by means of the nine discriminant functions 87.5% of all persons are assigned in the way they were grouped by cluster analysis. A randomised procedure would result in 11.8% correct assignments. The mean discriminant coefficient of a variable describes how this variable discriminates between the groups considering all discriminant functions. Table 3 lists the values of the mean discriminant coefficient of the thirteen food product and meal variables sorted by its discriminant value.

"Oysters" is the variable with the greatest importance for discrimination, followed by "Actimel drink", "Sushi" and "Asparagus menu". The variable "Salad" separates worst between the consumer segments. Also the variable "Granola" has comparably little importance in this respect. The cobwebs shown in table 2 confirm these results. Many food consumption style clusters bear likings towards salad and granola, thus those variables do not make the real difference between the groups. Further on, the variable "Roast pork" has widespread acceptance. This might be due to the fact that the survey was conducted in Southern Germany where this type of food is very traditional and typical. Even young people and persons without affinity for cooking who would not prepare roast pork as it is a time-consuming dish, like it and consume it at their parents home or in restaurants. However, in this case regional food is not really suitable to discriminate consumer groups.

When improving the survey tool one should think about exchanging or revising some variables. A variable that symbolises food consumption in a person's work context might be useful. Many people have lunch in companies' or university canteens. Further on, the integration of snacks like e.g. sweets, ice cream or fruit might be considered. Nevertheless it can be concluded that in general the survey tool is a suitable way to examine people's food consumption style in a rather simple and efficient way.

When looking at the socio-demographic background of the diverse consumption style clusters, differences become obvious. A Chi^2-test regarding age, gender, education, income and the fact whether a person has children or not, reveals significant differences between single food consumption style clusters. Significant differences significant can be observed concerning gender and existence of children ($p<0.05$). Differences regarding respondents' education and age ($p<0.001$) and their income ($p<0.1$) are also significant, but the share of cross table cells with an expected frequency below 5 exceeds the defined limit of 20%. Descriptions of all clusters regarding their socio-demographic characteristics can be found in table 2.

As listed in table 2, cluster size varies clearly. The smallest segment, "Exotic food eater", shares only 3.5% of the sample whereas the largest one, "Wannabe wholesome eater", accounts for 16.6%. Small clusters may be regarded as unsuitable because a product development and marketing strategy for a small consumer group might be only of little effectiveness. But on the other hand such "niche clusters" do exist among the consumers. Furthermore, the two smallest groups of "Exotic food eaters" and "Convenient connoisseurs" are close to other segments like "Home-style eater" or "Wholesome and conscious connoisseurs" respectively and thus could be commonly targeted if required. Further on, in particular the small clusters seem to be interesting for target group specific product development as their food consumption styles show likings towards high quality food and their socio-demographic background indicates high purchasing power.

Due to time and budgetary restrictions, the sample was not drawn representatively concerning several socio-demographic criterions. The main aim was to interrogate consumers but a balanced composition of the sample regarding the characteristics age and gender was attended during the survey. Samples ex-post examination generated an overall good fit with the publications of the official regional population's statistic.

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Sample size was kept small with regard to the fact that the food consumption style tool should be applicable for SMEs. Calculations of optimal sample sizes (Bortz 2005) which were conducted after the survey and considered findings of the subsequent chapter brought the results that single food consumption style clusters may even consist of just less than ten individuals without loosing statistical relevance.
However, the sample size of 327 interviewees was too small to generate significant results of cross table analysis for socio-demographic characteristics. Therefore a kind of sample of adequate size could be surveyed to obtain basic findings about food consumption style clusters. Testing of innovative food products could be conducted with smaller samples, and then discriminant analysis is suitable to classify respondents of these surveys into the basic food consumption styles.

Preferences for innovative food products
Respondents' individual rankings of 18 cards of product alternatives of the dried fruit snack or the chocolate assortment respectively were the data basis for conjoint analysis. SPSS statistical software was used to calculate the importance of each factor and the part-worth utility values for the factor levels (Backhaus et al. 2003). The sum of importance of all factors is 100 %. For the factor price negative linearity was implied, because reasonably a product with a higher price level leads to a lower benefit to the consumer. Table 4 lists the importance of the used factors and part-worth utilities of the factor levels for the whole sample.

Table 4: Preferences and part-worth utilities of the tested product concepts

Dried fruit snack				**Chocolate assortment**			
Factor	**Impor-tance (%)**	**Factor levels**	**Part-worth-utility**	**Factor**	**Impor-tance (%)**	**Factor levels**	**Part-worth-utility**
Basic product	15.26	Naturally dried fruit	0.4806	Chocolate type	21.95	Dark chocolate	-0.0880
		Microwave dried fruit	-0.4806			Whole milk chocolate	0.5609
						White chocolate	-0.4728
Reference to drying processing	11.14	No	0.3121	Calorie content	6.61	400 kcal ("light")	0.0744
		Yes	-0.3121			600 kcal (normal)	0.1489
Fruit growing	9.19	Con-ventional	-0.2873	Filling	36.41	Yogurt	0.6110
		Organic	0.2873			Nougat	1.3848
						Fruit	-0.8357
						Alcohol	-1.1601
Consump-tion suggestion	13.45	Sports snack	0.0197	Packaging	7.89	Single packaging	0.1320
		Healthy alternative snack	-0.1752			Blister packaging	-0.1320
		Exotic treat	0.1555				
Final product	28.73	Pure	-0.1832	Packaging design	16.85	Precious	0.2107
		Chocolate coated	-0.3315			Simple	-0.0990
		With nut mix	0.5148			Trendy	-0.1117

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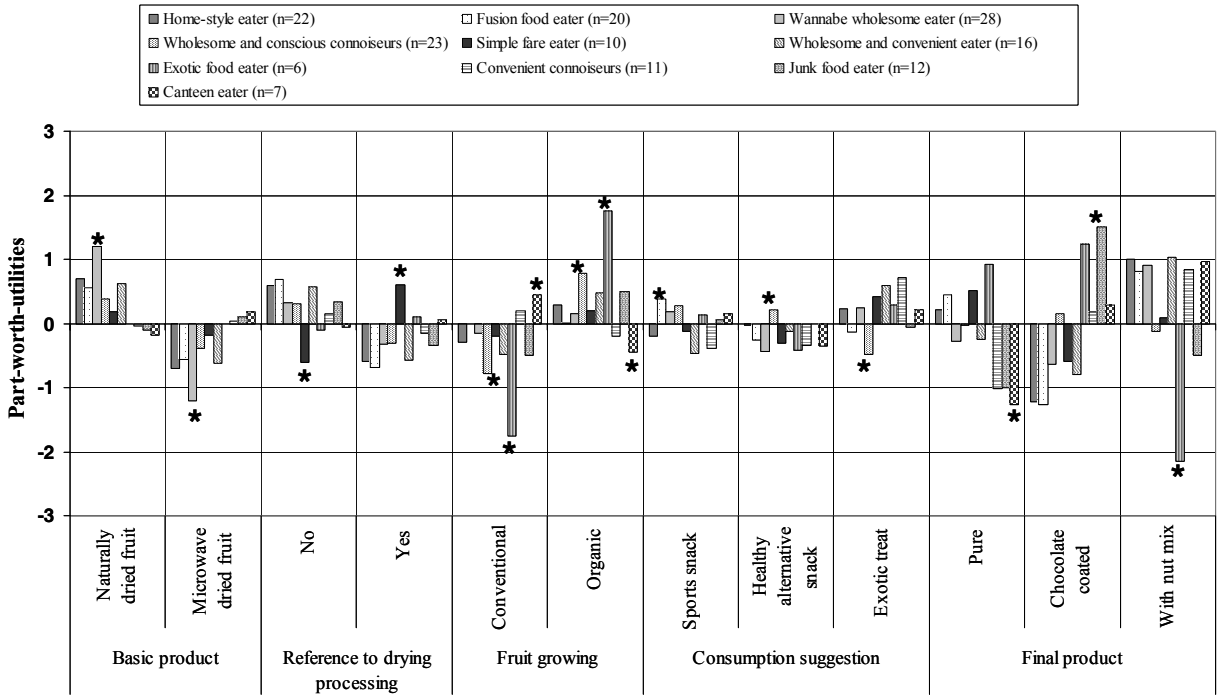
Price	22.23	0.79 € (low)	-1.4568	Price	10.29	1.19 € (low)	-0.0373
		1.99€ (medium)	-2.9136			2.99 € (medium)	-0.0746
		3.19 € (high)	-4.3704			4.79 € (high)	-0.1118

Source: Own inquiry

Regarding the dried fruit snack, the character of the final product gains the highest importance, followed by price, basic product and consumption suggestion. References to drying processing technology and fruit growing are less important. Part-worth utilities were also aggregated for the ten food consumption style consumer segments. The results of the analysis for dried fruit are shown in figure 3. The factor price is not included as it bears no differences for different clusters.

Figure 3: Dried fruit snack part-worth utilities of the ten food consumption styles



Annotation: *indicates a significant deviation from sample mean ($p<0.1$)
Source: Own inquiry

The groups of “Wholesome and conscious connoisseurs”, “Exotic food eater” and “Canteen eater” each have three significant deviations from sample’s mean ($p<0.1$). The “Wholesome and conscious connoisseurs” prefer organically grown fruit and the consumption suggestion “Healthy alternative snack”. Design of the final product is less important for them, while this factor is the most important taken together all respondents. The “Exotic food eater” favour organically grown fruit as well and they like it either pure or chocolate coated. On the other hand, both groups do not have a previous high purchase frequency of dried fruit snacks. According to the answers of these groups on questions related to purchasing behaviour regarding snacks within the survey, both groups bought dried fruit snacks less than once a month. However, they might be attracted with a snack concept based on organic fruit. Further on, those two groups show comparably little price sensibility. If they were regarded as one

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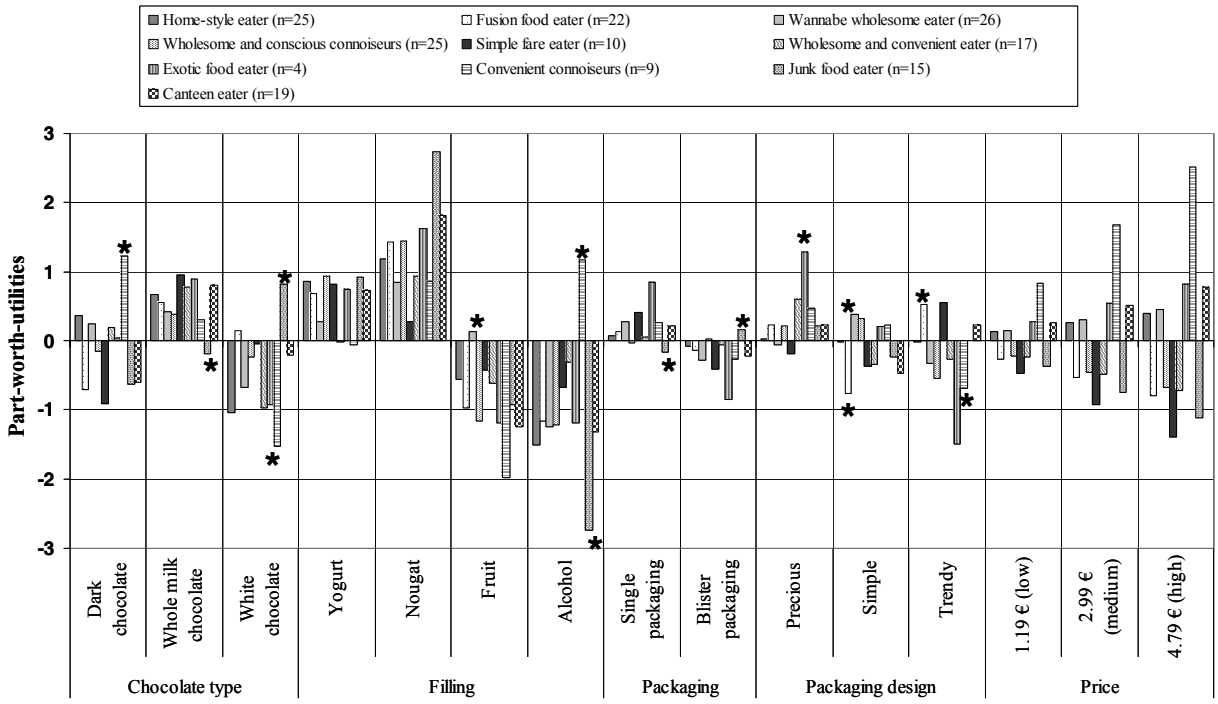
group of consumers, they would amount for about 18% of all consumers which might be sufficient for a target group specific product development and marketing.
The "Wannabe wholesome eater" and the "Wholesome and convenient eater" are the groups with the highest previous purchase frequency. They bought dried fruit products around once in a month. But these clusters give only few hints about their preferences. It seems that these core groups of dried fruit consumption do not have a a strong wish for new product ideas in the field of dried fruit snacks.
The majority of consumers prefer the naturally dried fruit. This means that the new microwave drying technology might have only little prospect of success. Additionally, consumers do not like to have a reference about the drying processing as it may scare them. At a glance, a broadly accepted dried fruit snack is based on organically grown and naturally dried fruit. It should be mixed with nuts and advertised as an exotic treat.
Taking into account the evaluations of all sample interviewees, filling is the most important factor of the chocolate assortment, followed by chocolate type and packaging design (table 4). Figure 4 shows the aggregated part-worth-utility values for each of the ten consumption style clusters. The factor calorie content is not included. When elaborating the product design it was assumed that a kind of less rich candy might generate a certain acceptance, but it turned out that this factor was not important and did not produce significant deviations or other tendencies.

Figure 4: Chocolate assortment part-worth utilities of the ten food consumption styles



Annotation: *indicates a significant deviation from sample mean ($p<0.1$)
Source: Own inquiry

The food consumption style cluster of "Convenient connoisseurs" obtained three significant deviations from sample's mean: they prefer dark chocolate, alcohol filling which makes them unique among all segments and precious packaging design as they significantly dislike the trendy packaging. Additionally, they show the comparably highest positive preference towards price. The group of "Junk food eater" is nearly the only segment that prefers white chocolate and blister packaging and they significantly dislike alcohol and prefer nougat as

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filling. Price part-worth utilities are negative for this cluster. The “Exotic food eater” show only significant preference for the precious design but have many high preferences, e.g. for single packaging, whole milk chocolate and nougat filling. They also evaluate price positively.
The products which could be designed from these preferences seem to be in line with the clusters’ general food consumption style. For instance, the “Junk food eater” pay no attention to packaging design but to cheap prices, costly single packaging is not necessary for them but sweet white chocolate and nougat filling. In contrast, the “Exotic food eater” prefer the valuable single packaging and a precious design.
Target group specific product design seems to be possible for those three groups and would result in specific chocolate assortments with market potential or niche potential respectively as those clusters have only little shares of all consumers.
Having a look at the consumer segments’ previous chocolate-related purchase pattern, the ”Home-style eater” are the group that purchases chocolate assortments most often. This cluster does not show specific and significant preferences but bears positive preferences towards price.
Comparing the interviewees' evaluations of dried fruit snack and chocolate assortment it is striking that the factor price is clearly less negatively assessed for the chocolate assortment. Main purposes of use of chocolates are as a gift and for consumption at some kind of social happenings such as parties or visits. Thus a high quality and precious image of the product is appreciated, and higher prices seem to be regarded as a parameter of quality.
In an overall view taking into account the analysed products, the application of food consumption style as a segmentation criterion and the preferences towards product features one can state that some of the observed deviations cannot be explained with the food consumption styles which means that there must be further explaining factors of consumers’ preferences. Conjoint analysis is a widely accepted and applied instrument in consumer research and its results can be taken as valuable notes for product design. Further surveys and product testing should be conducted in which the product concepts to be tested should have a "significant" innovation level. This aspect was fulfilled for the dried fruit snack with the microwave drying technology which could not gain positive consumer reaction. However, the chocolate assortment concept included interesting and trendy features, like e.g. the yogurt and fruit filling, but the overall level of innovativeness was limited in this tested product category.
A food company’s strategy for consumer integration in product development using the food consumption style approach could be structured like this: in a first step the potential target groups are detected out of all food consumption style clusters looking at their previous purchase frequency and at their general attitude related to the product group to which the innovative product concept belongs. In a following step their preferences towards specific product features of the innovative product concept are analysed and significant results or clear tendencies can be taken as evidences for final product design.
Another potential approach starts with preference analysis. Firstly those clusters have to be detected which bear many significances or obvious tendencies. Afterwards these evidences regarding product features are tested for consistence with the clusters’ general food consumption styles. If product preferences of a certain cluster seem conclusive and the cluster has a sufficient share of all consumers the subsequent product development and marketing process can be based on these findings.
The food consumption style tool can be applied to obtain consumer segment related preferences towards product features thus representing a good starting point for product development. But furthermore, success of product development activities and market introduction of newly developed products is additionally depending on appropriate marketing strategies including consumer communication.

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