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Consumer segmentation in the German meat market: purchasing habits

RESEARCH ARTICLE

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Abstract

Only considering consumers' store format choice seldom provides sufficient information on their choice of the actual point of purchase for meat: self-service counter or service counter. For retailers, however, it is of crucial importance to know how meat shoppers differ in their store format choice, preferred type of meat packaging and how these differences can be explained. This paper investigates how attitudes and sociodemographics influence consumer segmentation regarding store format choice and preferred meat packaging type in the German meat market. 667 consumers were segmented based on their purchasing frequency, store format choice, and preferred type of meat packaging using cluster analysis. Then, an exploratory factor analysis examined attitudinal factors. Finally, the factors and respondents' sociodemographics were regressed onto the consumer clusters using multinomial logistic regression. The application of appropriately adapted marketing strategies can help increase patronage in the segments.

Keywords: consumer segmentation, store format choice, meat packaging, consumer attitudes, multinomial logistic regression

JEL code: Q13

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1. Introduction

In recent decades, the German retail food trade has been characterized by structural change reflected in a strong process of concentration and a high level of intensification with regard to ever fewer retailers operating in Germany. (Carpenter and Moore, 2006; Herrmann *et al.*, 2009; The Nielsen Company, 2017a; Warich, 2011). While store formats such as discounters and supermarkets are spreading, the importance of medium-sized department stores and small family-owned specialty shops is diminishing (Sandhop, 2012). These noticeable shifts in the retail industry result from changes in consumers' nutrition and consumption patterns as well as new social trends and demographic changes (Müller-Hagedorn and Natter, 2011; Special Eurobarometer, 2019; Warich, 2011).

Of particular importance in the intensive price and quality competition among retailers are fresh and processed meat products, as expenditure in this category is higher than all other food categories in Germany (Statistisches Bundesamt, 2016a,b). How meat is presented and sold differs among the various store formats. While discounters only offer self-service counters with pre-packed meat, specialized butcher shops generally sell unpackaged meat. Other store formats commonly offer their customers both pre-packaged and unpackaged meats since they have both self-service counters and service counters (Weinrich *et al.*, 2015). Therefore, only considering consumers' store format choice seldom provides sufficient information on their choice of actual point of purchase for meats: self-service counter or service counter. For retailers, however, it is of crucial importance to know how meat shoppers differ in their store format choice, preferred type of meat packaging and how these differences can be explained. Only then can they differentiate themselves from competitors and develop marketing strategies that match their customers' profile (Carpenter and Moore, 2006; Deloitte, 2016). Important factors that affect the attractiveness of store formats and thus customer loyalty are price range, product quality, assortment, location and service (Zhao and Huddleston, 2012). However, consumer attitudes concerning meat consumption are also considered important determinants influencing consumer behaviour regarding store format choice (Spiller and Schulze, 2008; Staus, 2011) as are sociodemographics (Carpenter und Moore, 2006; Staus, 2011; Müller-Hagedorn and Natter, 2011; Nilsson *et al.*, 2014; Schulze and Spiller, 2008a,b). Since processing quality in terms of sustainable food production has become more important for consumers in recent years (The Nielsen Company, 2017b), it is assumed that sustainable meat products provide retailers an opportunity for differentiation in the meat market. In Germany, the sustainable meat categories 'organic', 'local origin' and 'animal welfare' are of particular interest to consumers (Roosen *et al.*, 2012; Schulze and Spiller, 2008a; Van Loo *et al.*, 2014; Zander and Hamm, 2010). To the best of our knowledge, there has been no study analysing consumer attitudes towards organic and local meat, service counter meat, need for information, cooking habits, health issues and animal welfare as well as consumers' meat shopping behaviour and their store format choice. This study aims to fill that research gap.

The appropriate approach to fill the research gap is in three steps. First, carry out consumer segmentation of store format choice regarding purchasing frequency and share of self-service meat consumption. We thereby get a better understanding of existing types of consumers and their meat shopping behaviour. Second, reduce into a manageable number of factors by means of an explorative factor analysis, statements about consumer attitudes towards organic and local meat, service counter meat, need for information, cooking habits, health issues and animal welfare. In the third step, conduct a multinomial logistic regression analysis to analyse how consumer preferences concerning store format and packaging type are influenced by the factors examined as well as sociodemographic variables (e.g. Kohijoki and Marjanen, 2013). The final aim of the study is to enable retailers facing the changing retail industry (Stanton, 2018) to align their marketing strategies even more precisely to the demands of their target group.

2. Theoretical background

2.1 Store formats and meat packaging

The German retail food trade is Europe's largest in terms of total sales, with fresh and processed meats accounting for the largest share of all food expenditures (Statistisches Bundesamt, 2016a,b). Retailers offer fresh and processed meats in a range of different packaging types. Fresh meat may be sold 'unpackaged', 'pre-packaged' or 'frozen', whereas processed meat may be 'unpackaged', 'pre-packaged' or 'tinned' (AMI, 2016). There are some differences in the current importance of these packaging types in the German retail food trade, as illustrated in Figure 1. As market shares of frozen and tinned meat are marginal, this study focuses only on unpackaged and pre-packaged meat products. The distinction between the packaging types of fresh and processed meat products is almost identical with the distinction between their points of sale; while unpackaged meat is available only at service counters, pre-packaged meat is usually offered at self-service counters.

There are several store formats in Germany where meat can be purchased. However, according to Arend-Fuchs (1995), there is no consistent definition of the different store formats in the food market. Most commonly, food retailers are classified as follows: discounters, supermarkets, small and large hypermarkets and specialised shops. The distinction is made primarily by means of store size, service, assortment and price policy (Sandhop, 2012; Staus, 2011). Hypermarkets and supermarkets are generally very similar regarding their meat offerings since they are both characterized by a broad food assortment, the use of promotional pricing with high and low prices every day (HILO) and the presence of self-service counters as well as butcher counters. Discounters generally employ everyday low pricing (EDLP) as their major price strategy. Furthermore, they only offer a manageable range of self-service meat (Hsieh and Stiegert, 2011; Sandhop, 2012). With regard to specialized stores for meat, butcher shops are of particular importance. Traditionally, they sell only unpackaged meat at the counter and focus on customer service, assortment and quality with a pricing between hybrid and high (Hsieh and Stiegert, 2011; Sandhop, 2012). Alternatively, meat can be purchased at farmers' markets and farm shops, whose strategies are similar to those of butcher shops. Figure 2 provides an overview of the market shares of fresh and processed meats in the respective store formats in Germany.

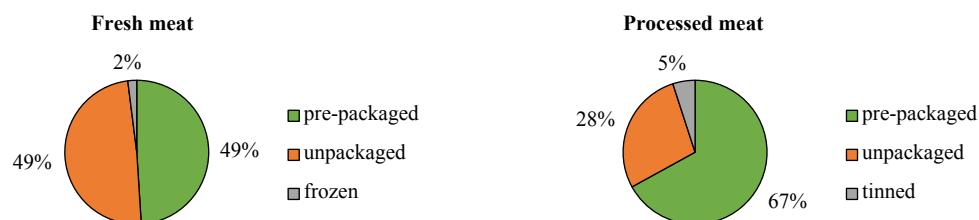


Figure 1. Market shares of the different packaging types of fresh and processed meat in Germany (AMI, 2016).

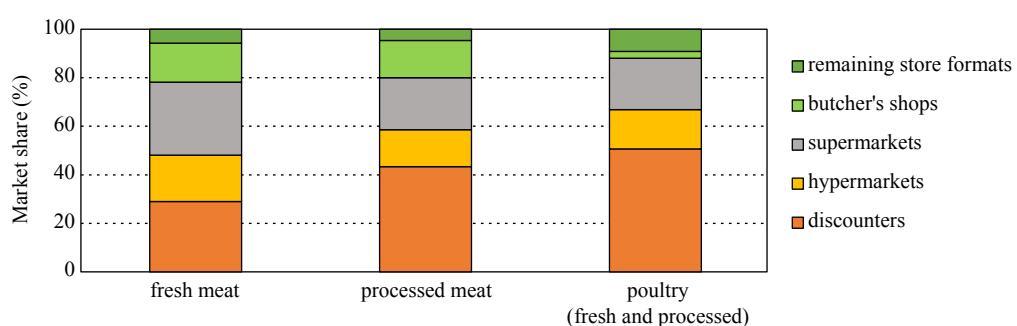


Figure 2. Market shares of fresh and processed meat in the respective store formats in Germany (AMI, 2016).

2.2 Determinants of store format choice and preferred type of meat packaging

A detailed consideration of consumer behaviour with regard to purchase decisions reveals several partial decisions. Consumers must decide on product type, price, amount, brand, store format and the particular store they will visit. In addition, when purchasing meat, they must choose a specific packaging type. The choice of a store format and particular store must be differentiated, since these decisions are partly influenced by different factors. Usually consumers decide on a specific store format category first and then choose a particular store within this category (Staus, 2011). While store format choice tends to be influenced by personal factors related to the individual consumer, the choice of a particular store depends more on the store's attractiveness and accessibility attributes (Nilsson *et al.*, 2015). According to Müller-Hagedorn and Natter (2011), the diversity of store formats is due to the heterogeneity of consumer demands. For a store format to succeed, it is crucial for retailers to identify both their target group and the possible competitive advantages they can achieve in the market. Therefore, it is important to ascertain how consumers are influenced in their store format choice. Furthermore, for store formats offering both service counters and self-service counters, it is important to determine the factors influencing consumers' preferences for a particular type of meat packaging.

However, scientific research on store format choice as well as on particular store choice has been neglected in the field of consumer research (Aygün, 2005). Nevertheless, some studies have focused on consumers' store choice behaviour (Carpenter and Moore, 2006; Huddleston *et al.*, 2009; Nilsson *et al.*, 2015; Schulze and Spiller, 2008a,b; Staus, 2011). According to Müller-Hagedorn and Natter (2011), sociodemographics, attitudes, preferences and emotions are of particular importance in consumers' store format choice. Based on the results of their literature review of developments in meat consumption, Spiller and Schulze (2008a) concluded that attitudes explain about one third of consumer behaviour. For Foscht and Swoboda (2011), attitudes are also a key variable in explaining consumer behaviour. According to Grunert (2006), most consumers have attitudes towards meat consumption, but in general those attitudes do not influence their purchasing behaviour. Still, Grunert (2006) points out that there is potential to activate these attitudes at the point of sale; thus, they may become relevant to shopping actions in that particular situation. According to Meffert *et al.* (2012), considering only one determinant of consumer behaviour is not sufficient but is a prerequisite for a comprehensive understanding of consumers' decision-making in purchasing situations. Initially therefore, it seems appropriate to examine only the impact of consumer attitudes and sociodemographics on consumer segmentation in the meat market.

The main findings of selected studies on meat consumption, store format choice, and preferred type of meat packaging are shown in Table 1.

3. Research objective

The main objective of this study was to examine how consumers differ regarding purchasing frequency, store format choice, the actual point of purchase in the store and preferred packaging type when shopping for meat. This resulted in the following research questions:

- Which consumer segments can be derived from differences in purchasing behaviour?
- Which attitudinal factors underlie purchasing decisions with regard to meat?
- How do consumer attitudes determine consumer segmentation in the meat market?
- How do sociodemographics affect consumer segmentation?

In particular, the results are intended to provide important information to meat marketers and retailers so they can develop more targeted strategies for product placement and marketing.

Table 1. Relevant studies on determinants influencing purchasing behaviour for meat.

Reference	Objective/research question	Main findings and analysed attitudinal factors
Weinrich <i>et al.</i> (2015)	Where is it better to place animal welfare meat - at the service counter or the self-service counter?	The target group for animal welfare meat prefers meat from the service counter. Factors: animal welfare, perceived farm animal welfare situation, knowledge of and influence on livestock farming, pro service counter, pro self-service counter
Nilsson <i>et al.</i> (2015)	Importance rating of grocery store attributes in relation to store format choice	Sociodemographics and purchasing behaviour influence the importance rating of grocery store attributes.
Staus (2011)	Which household attitudes determine choice of store type when purchasing meat?	There are significant relations between household attitudes and choice of store type which allow the derivation of a respective image ranking of the store types. Factors: advertising impact, genetically modified food, organic food, environment, freshness orientation, pricing, quality orientation
Huddleston <i>et al.</i> (2009)	Investigations into the influence of store attributes on customer satisfaction in conventional grocery stores and speciality stores	Customer satisfaction is higher among specialty store customers compared to conventional grocery store customers. Factors: price, product assortment, quality, service
Schulze and Spiller (2008a)	Analysis of factors influencing the purchase of self-service counter meat	The target group for service counter meat tends to have a high income. Price advantages are the most important reason for the purchase of self-service counter meat.
Schulze and Spiller (2008b)	What differences exist between customers of different store formats regarding sociodemographics and purchasing behaviour?	Customers of the store formats considered show differences in age, income and purchasing behaviour; service counter are generally considered more trustworthy.
Spiller and Schulze (2008)	Literature review on meat consumption	Health consciousness, nutritional awareness, price consciousness, brand awareness, convenience, preference for local origin, environmental awareness and store format preferences are important attitudinal factors influencing meat consumption and purchasing behaviour.
Carpenter and Moore (2006)	Investigations into the influence of sociodemographics and store attributes on store format choice for purchasing meat	The consumer segments that frequent the same store formats are demographically similar; price competitiveness, product selection, and atmosphere are important store attributes influencing store format choice
Inderhees <i>et al.</i> (2004)	Analysis of determinants influencing customer satisfaction in butcher shops	Product presentation and product quality are of special relevance; butcher shops have a high share of regular customers; the target group for butchers is aging
Zenner <i>et al.</i> (2004)	Analysis of the impact of attitudes on purchasing behaviour regarding farm shops	Consumers' price consciousness has the highest influence on their choice of farmers' markets. Factors: trust in product quality, price consciousness, socio-political motivation, trust in conventional foods, convenience, health consciousness

4. Materials and methods

In June 2015, 667 consumers in Germany participated in a standardized online survey. The participants were recruited by a fee-based online panel. In order to obtain a maximum representative sample of the German population, quotas were set for sex, age and regional distribution. Respondents whose respondent time took less than one third of the average time were deleted. Furthermore, a quality check in the questionnaire ensured data quality.

The first part of the survey ascertained the respondents' sociodemographics and level of responsibility for grocery shopping. Respondents without grocery shopping responsibility were screened out. The second part of the questionnaire was developed based on intensive research of the existing literature. The items used for determining shopping behaviour, consumption, cooking and eating habits plus attitudes towards sustainable aspects of meat production were mainly taken from studies by Schulze and Spiller (2008a, b), Spiller *et al.* (2004) and Weinrich *et al.* (2015). To measure responses to the chosen items, five-point Likert and Likert-like scales from -2 to +2 were used.

Data analysis was carried out with IBM SPSS Statistics for Windows, Version 23.0, using uni-, bi-, and multivariate methods. First, cluster analysis was applied to segment respondents depending on their purchasing frequency (measured as average days of grocery shopping per month), their store format choice for meat (measured by purchasing frequency in the respective store format) and their preferred type of meat packaging (measured as the share of self-service meat purchased relative to their entire meat purchase). Since consumers are unlikely to distinguish among the store formats of small hypermarkets, large hypermarkets, small supermarkets and large supermarkets accurately and consistently, we grouped these formats together under the format option 'supermarket'. Next, an exploratory factor analysis was conducted to reduce the large number of individual items to a few factors. Finally, the resulting attitudinal factors and the respondents' sociodemographics were regressed onto the consumer segments using multinomial logistic regression. This yielded an impression of how consumer preferences concerning store format and packaging type are influenced by their attitudes and sociodemographics.

5. Results

5.1 Sample description

To make sure that only respondents who regular shop for meat were included in the analyses, respondents who stated they were not responsible for grocery shopping or did not buy meat products at all were screened out from the start. This reduced the original number of 667 participants by 47, leaving 620 data sets for evaluation. The main characteristics of this sample, which is the closest representative of the German population, are shown in Table 2.

5.2 Cluster and factor analyses

The results of the cluster analysis clearly indicate the existence of statistically and descriptively definable consumer segments with unique profiles regarding store format choice, purchasing frequency and share of self-service meat purchase. These results are shown in Table 3. A total of four clusters were found and are described in detail below.

■ Cluster A – 'Combiners'

The first cluster contains 23.3% of the respondents and is characterized by the highest grocery shopping frequency of all clusters (approximately 11.6 days per month). Respondents in this group show a slight preference for service counter meat since their share of self-service meat accounts for 45.1% of their entire meat purchase. However, a preference for a specific store format is not apparent as the respondents

Table 2. Sample (n=620) characteristics as compared to data from the German Federal Statistical Office.

Variable	Level	Frequency sample	Frequency Germany ¹
Gender	female	50.8%	52.2%
	male	49.2%	47.8%
Age	18-34 years	26.5%	26.6%
	35-54 years	38.6%	39.1%
	55 years and older	35.0%	34.3%
Regional distribution	north	16.6%	16.2%
	south	28.7%	28.6%
	east	19.8%	20.5%
	west	34.8%	35.3%
Net household income	low (less than €1,500/month)	25.5%	
	medium (€1,500-€3,500/month)	53.7%	
	high (more than €3,500/month)	20.8%	
Education level	low	13.4%	
	medium	58.5%	
	high	28.1%	
Household with infants	children younger than 6 years	28.1%	
	children 6 years and older or no children	71.9%	
Shopping responsibility	mainly responsible	68.5%	
	co-responsible	31.5%	
Residential area	rural (less than 5,000 inhabitants)	18.5%	
	urban (more than 5,000 inhabitants)	81.5%	

¹ Obtained from Statistisches Bundesamt, 2014.

visit all store formats frequently to do their meat shopping. Particularly striking is the regular purchase of meat at farm shops (mean=3.08) and farmers' markets (mean=3.23). This cluster is therefore described as 'combiners'.

■ *Cluster B – 'Butcher buyers'*

The second cluster is the smallest; it contains only 15.9% of the respondents. This cluster shows the lowest shopping frequency – approximately 8.9 days per month. Their consumption of self-service meat is by far the lowest of all clusters (21.8%). Accordingly, these respondents buy meat only rarely at the self-service counters at discounters (mean=1.56) and supermarkets (mean=1.68). Instead, they clearly prefer to buy meat at butcher shops (mean=3.8). They also visit supermarket service counters regularly to purchase meat (mean=2.74). This cluster is called 'butcher buyers'.

■ *Cluster C – 'Discounter buyers'*

The third cluster contains 29.3% of the respondents. They shop for groceries on average 10.1 days per month. With a share of 88.8% of self-service meat consumption, these respondents buy pre-packaged meat almost exclusively. Correspondingly, they buy their meat mainly at the self-service counters of discounters (mean=3.92) and supermarkets (mean=3.29). The other store formats are of marginal importance for this cluster. Therefore, this cluster is called 'discounter buyers'.

Table 3. Results of cluster analysis for meat shopping attributes (n=617).^{1,2}

	Cluster A 'combiners'	Cluster B 'butcher buyers'	Cluster C 'discounter buyers'	Cluster D 'supermarket buyers'
Cluster size n (in %)	144 (23.3%)	98 (15.9%)	181 (29.3%)	194 (31.4%)
	Mean	Mean	Mean	Mean
	(Std. dev.)	(Std. dev.)	(Std. dev.)	(Std. dev.)
Days of grocery shopping per month ^{3,4}	11.6 ^{bd} (5.52)	8.9 ^a (4.75)	10.1 (5.51)	9.4 ^a (5.04)
Share of self-service meat (in %) ^{3,5}	45.1 ^{bc} (17.97)	21.8 ^{acd} (21.03)	88.8 ^{abd} (11.25)	49.6 ^{bc} (21.76)
Purchasing frequency self-service counter/discounter ^{3,6}	3.21 ^{bc} (1.044)	1.56 ^{acd} (0.643)	3.92 ^{abd} (1.082)	2.82 ^{bc} (1.063)
Purchasing frequency self-service counter/supermarket ^{3,6}	3.44 ^b (0.817)	1.68 ^{acd} (0.667)	3.29 ^b (1.149)	3.49 ^b (0.729)
Purchasing frequency service counter/supermarket ^{3,6}	3.68 ^{bc} (0.781)	2.74 ^{acd} (1.187)	2.00 ^{abd} (0.856)	3.69 ^{bc} (0.703)
Purchasing frequency butcher shop ^{3,6}	3.58 ^{cd} (0.849)	3.8 ^{cd} (1.074)	1.64 ^{abd} (0.782)	2.47 ^{abc} (1.003)
Purchasing frequency farmers' market ^{3,6}	3.23 ^{bcd} (0.825)	1.94 ^{acd} (1.034)	1.32 ^{ab} (0.575)	1.51 ^{ab} (0.604)
Purchasing frequency farm shop ^{3,6}	3.08 ^{bcd} (0.947)	2.26 ^{acd} (1.221)	1.15 ^{ab} (0.445)	1.40 ^{ab} (0.621)

¹ Std. dev.: standard deviation.² Superscript letters a, b, c and d indicate significant differences between groups (Bonferroni's post hoc test or Tamhane's post hoc test T2 at significance level 0.001): the letters represent the clusters, e.g. when superscript letter 'b' is mentioned it means that there is a significant difference with cluster B.³ ANOVA significance level: $P \leq 0.001$.⁴ Question asked: How often do you buy groceries? Please specify the average number of days per month.⁵ Question asked: How do you divide your meat shopping between self-service counter and butcher's counter products? Scale: 0% to 100%.⁶ Question asked: How often do you use the following store formats for the purchase of meat and meat products? Scale from 1 (never) to 5 (almost exclusively).

■ Cluster D – 'Supermarket buyers'

The last cluster is the largest, containing 31.4% of the respondents. Their average grocery shopping frequency is 9.4 days per month. This cluster shows no preference for a particular type of meat packaging since self-service meat accounts for 49.6% of their meat purchases. However, these respondents show a clear preference for supermarkets, where they use self-service counters (mean=3.49) and service counters (mean=3.69) equally. Occasionally, they also buy meat at discounters (mean=2.82) as well as at butcher shops (mean=2.47) but they visit the remaining store formats only very rarely. Accordingly, this cluster is called 'supermarket buyers'.

Next, an exploratory factor analysis was conducted to reduce the 51 individual statements about consumer attitudes into a manageable number of factors. We used principal component analysis with the orthogonal rotation method 'Varimax', where factors with eigenvalues greater than one were extracted. Müller and Hamm (2014) excluded items with a factor loading less than 0.5, and we replicated their procedure. The final results contained a model with 38 variables that yielded eight factors. The feasibility of conducting a principal component analysis was confirmed by a Kaiser-Meyer-Olkin measure of 0.884, a highly significant

Bartlett's test of sphericity ($P<0.001$), reliability analyses and content-related considerations. The explained total variance of the model is 62.1%. As shown in Table 4, the resulting factors reflect attitudes towards meat shopping behaviour and consumption, cooking and eating habits as well as attitudes towards sustainable aspects of meat production. Factor 1 comprises six items and is termed 'preferences for organic meat'. Likewise, six items load on Factor 2, 'local origin meat'. Factor 3 consists of five items and is referred to as 'self-service counter meat'. Factor 4 is composed of five items relating to 'need for information'. Four items load on Factor 5, 'cooking habits'. Factor 6 comprises six items related to attitudes towards 'service counter meat'. Factor 7 reflects 'health issues and rejection of meat' and Factor 8 relates to 'animal welfare meat'; each consists of three items.

Table 4. Results of factor analysis for shopping habits.¹

Factors and corresponding items	Factor loading
Factor 1: preferences for organic meat (Cronbach's alpha: 0.896; explained variance: 11.01%)	
Organic farming is better for animals. ²	0.819
Organic meat products are healthier. ²	0.806
I buy mostly organic meat because the animals are kept better. ²	0.771
Compared to conventional meat products, organic products are less affected by food scandals. ²	0.763
I am willing to pay a price premium for organic meat and meat products. ²	0.686
How important is it to you that your meat and sausages are organic? ³	0.646
Factor 2: local origin meat (Cronbach's alpha: 0.854; explained variance: 9.44%)	
I buy local products to support regional farmers. ²	0.799
How important is it to you that your meat was produced in your region? ³	0.699
I find it important to know the origin of the food I buy. ²	0.616
I associate local origin with transparency in production and processing. ²	0.589
I am willing to pay a price premium for local origin meat and meat products. ²	0.585
Before buying meat, I find out what region it comes from. ²	0.570
Factor 3: self-service counter meat (Cronbach's alpha: 0.793; explained variance: 8.20%)	
I prefer pre-packaged meat from the self-service counter as it keeps longer. ²	0.761
Meat from the service counter is simply too expensive for me. ²	0.749
When buying meat, I look for a low price. ²	0.731
When buying meat, I trust discounters like Aldi and Lidl the most. ²	0.727
The packaging of meat from the self-service counter provides more information than I get at the service counter. ²	0.543
Factor 4: need for information (Cronbach's alpha: 0.805; explained variance: 8.03%)	
Need for information: advertisement ⁴	0.735
Need for information: quality labels ⁴	0.691
Need for information: flyer ⁴	0.689
Need for information: internet ⁴	0.700
When buying food, I look for products with certain quality labels. ²	0.549
Factor 5: cooking habits (Cronbach's alpha: 0.831; explained variance: 7.58%)	
Cooking is not only fun; it's my passion. ²	0.846
I prefer to prepare meat myself. ²	0.798
I like to try demanding recipes. ²	0.770
I am very well versed in meat preparation. ²	0.761

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Table 4. Continued.

Factors and corresponding items	Factor loading
Factor 6: service counter meat (Cronbach's alpha: 0.763; explained variance: 7.35%)	
Fresh meat from the service counter tastes better than pre-packed meat from the self-service counter. ²	0.719
There are many specialties at the service counters which are not available at the self-service counters. ²	0.685
I can fully trust the information provided by the professional staff at the service counter. ²	0.641
For special occasions, I buy the meat at the service counter. ²	0.640
Expert advice at the service counter is especially important to me when buying meat. ²	0.570
The quality of pre-packaged meat from the self-service counter is worse than the quality of meat from the service counter. ²	0.559
Factor 7: health issues and rejection of meat (Cronbach's alpha: 0.636; explained variance: 5.30%)	
For the sake of my health, I try to eat as little meat as possible. ²	0.718
I eat very healthy, low calorie foods. ²	0.692
Meat is simply one part of a good meal. ^{2,5}	0.620
Factor 8: animal welfare meat (Cronbach's alpha: 0.696; explained variance: 5.14%)	
The animal welfare requirements for livestock farming are not sufficient. ²	0.759
Many farmers do not take good care for their animals. ²	0.719
When buying meat, I look for more information on the how the animal was kept. ²	0.578

¹ Principal components analysis with varimax rotation, n=620; explained total variance: 62.10%; KMO (Kayser-Meyer-Olkin) =0.884; Bartlett test of sphericity: $P \leq 0.000$.

² Scale from -2 (I totally disagree) to +2 (I totally agree)

³ Scale from -2 (not important at all) to +2 (very important)

⁴ Question asked: How often do you use the following sources of information to inform about meat and meat products? Scale from -2 (never) to +2 (exclusively)

⁵ Item was recoded.

5.3 Multinomial logistic regression analysis

Since membership in the clusters we identified was exclusive and unordered, multinomial logistic regression (MNL) was the most appropriate method for analyzing the impact of consumer attitudes and sociodemographics on consumer segmentation (Allison, 2001). The core idea of MNL is to calculate the probability that a respondent belongs to a particular consumer segment compared to another consumer segment, the reference group. Accordingly, we developed a model which took membership in one of the four consumer segments as the dependent variable. In addition to the eight attitudinal factors and the metric variables 'age' and 'household size', we included the categorical variables 'gender' (female/male), 'education level' (low/medium/high), 'residential area' (rural/urban), 'household income' (low/medium/high), 'shopping responsibility' (mainly responsible/co-responsible) and 'small children' (yes/no).

As shown in Table 5, the multinomial logistic regression yielded a model that fits significantly better than the null model ($P \leq 0.000$), with a Chi square of 461.58 and 54 degrees of freedom. The results of the likelihood ratio test reveal significant relationships between store format choice and the six factors 'local origin meat', 'self-service counter meat', 'need for information', 'cooking habits', 'service counter meat' and 'health issues and abandonment of meat' as well as the variables 'age' and 'residential area'. Overall, the factors 'organic meat' and 'animal welfare meat' and the sociodemographic variables 'household size', 'gender', 'education level', and 'household income' were not significant.

Table 5. Results of the likelihood ratio test for the impact of consumer attitudes and sociodemographics on consumer segmentation.^{1,2,3,4,5}

Effect	-2 ll	χ^2	df	P-value
Intercept ⁶	991.700	0.000	0	
Factor 1: Preferences for organic meat	998.783	7.083	3	0.069
Factor 2: Local origin meat	1,016.238	24.538***	3	0.000
Factor 3: Self-service counter meat	1,111.553	119.853***	3	0.000
Factor 4: Need for information	1,070.615	78.915***	3	0.000
Factor 5: Cooking habits	1,024.066	32.366***	3	0.000
Factor 6: Service counter meat	1,026.209	34.509***	3	0.000
Factor 7: Health issues and rejection of meat	1,012.968	21.269***	3	0.000
Factor 8: Animal welfare meat	994.813	3.114	3	0.374
Age	1,005.910	14.210**	3	0.003
Household size	993.612	1.912	3	0.591
Gender	993.592	1.892	3	0.595
Education level	1,004.134	12.434	6	0.053
Residential area	1,010.100	18.400***	3	0.000
Household income	998.354	6.655	6	0.354
Shopping responsibility	994.516	2.816	3	0.421
Small children	998.711	7.011	3	0.072

¹ Multinomial logistic regression, n=535.² -2ll = -2 log-likelihood for reduced model.³ χ^2 = chi-square.⁴ df = degrees of freedom.⁵ Significance levels at $P \leq 0.001***$ and $P \leq 0.01**$.⁶ This reduced model is equivalent to the final model (-2 ll=991.170, $\chi^2=461.576$, df=54, $P \leq 0.001$) because omitting this effect does not increase the degrees of freedom.

To derive appropriate recommendations for meat marketers and retailers, more detailed information is needed on the reasons for membership in a certain group. MNL compares all consumer segments through a combination of six binary logistic regressions since the dependent variable consists of four groups. Thus, it is possible to identify the impact of the attitudinal factors and sociodemographics on respondents' membership in a comparison group relative to the reference group (Backhaus *et al.*, 2015). The parameter estimates of MNL are presented in Table 6.

A significant positive regression coefficient (B) indicates that the respective predictor variable increases the probability of membership in the comparison group relative to membership in the reference group. On the other hand, a significant negative regression coefficient reduces the probability of group membership in the comparison group relative to the reference group. In addition to these tendency statements, statements about the extent of the influence of the predictor variables on the probability of group membership in the comparison group are possible by referencing the value of the odds ratios. If the predictor variable increases by one unit, the odds ratio of group membership in the comparison group relative to group membership in the reference group changes by the factor $\text{Exp}(B)$ (Backhaus *et al.*, 2015).

In the first set of comparisons, with the supermarket buyers as the reference group, local origin meat and cooking habits are significantly more important for the combiners and the butcher buyers than they are for the supermarket buyers. In addition, the combiners show a significantly higher need for information compared to the supermarket buyers. Likewise, organic meat and health issues are significantly more important for the butcher buyers than for the supermarket buyers, whereas self-service meat is less important. Besides that, older consumers are more likely to be assigned to the butcher buyers than to the supermarket buyers.

Table 6. Results of parameter estimates of multinomial logistic regression for the impact of the attitudinal factors and sociodemographics on respondents' membership of a group.^{1,2,3}

Independent variables	B	SE	P	Exp(B)	CI (95%)		B	SE	P	Exp(B)	CI (95%)	
					lower	upper					lower	upper
<i>Comparison group vs. reference group</i>	'Combiners' vs. 'Supermarket buyers'						'Butcher buyers' vs. 'Supermarket buyers'					
Intercept	-0.27	0.883	0.755				-4.30	1.156	0.000			
Factor 1: Preferences for organic meat	0.10	0.139	0.489	1.10	0.84	1.45	0.41*	0.160	0.011	1.50	1.10	2.06
Factor 2: Local origin meat	0.44**	0.155	0.005	1.55	1.14	2.10	0.38*	0.186	0.041	1.46	1.02	2.11
Factor 3: Self-service counter meat	-0.02	0.166	0.909	0.98	0.71	1.36	-1.45***	0.224	0.000	0.24	0.15	0.37
Factor 4: Need for information	0.96***	0.166	0.000	2.62	1.90	3.63	0.24	0.201	0.236	1.27	0.86	1.88
Factor 5: Cooking habits	0.59***	0.155	0.000	1.81	1.34	2.45	0.64***	0.178	0.000	1.89	1.33	2.68
Factor 6: Service counter meat	0.04	0.147	0.790	1.04	0.78	1.39	0.31	0.179	0.087	1.36	0.96	1.93
Factor 7: Health issues	0.25	0.150	0.099	1.28	0.95	1.72	0.78***	0.184	0.000	2.18	1.52	3.12
Factor 8: Animal welfare meat	0.12	0.142	0.399	1.13	0.85	1.49	0.03	0.168	0.861	1.03	0.74	1.43
Age	0.01	0.010	0.311	1.01	0.99	1.03	0.04**	0.014	0.003	1.04	1.01	1.07
Household size	0.07	0.160	0.675	1.07	0.78	1.46	0.18	0.191	0.358	1.19	0.82	1.73
Gender (male) ⁴	0.31	0.291	0.282	1.37	0.77	2.42	-0.05	0.371	0.886	0.95	0.46	1.96
Education level (low) ⁴	-0.10	0.480	0.829	0.90	0.35	2.31	-0.55	0.633	0.388	0.58	0.17	2.00
Education level (medium) ⁴	-0.28	0.316	0.372	0.75	0.41	1.40	-0.06	0.383	0.872	0.94	0.44	1.99
Residential area (rural) ⁴	-0.01	0.331	0.976	0.99	0.52	1.89	0.66	0.375	0.078	1.94	0.93	4.05
Household income (low) ⁴	-0.63	0.459	0.173	0.54	0.22	1.31	-0.02	0.556	0.971	0.98	0.33	2.91
Household income (medium) ⁴	-0.36	0.339	0.294	0.70	0.36	1.36	0.01	0.415	0.987	1.01	0.45	2.27
Shopping responsibility (co-responsible) ⁴	-0.03	0.301	0.912	0.97	0.54	1.75	0.43	0.372	0.251	1.53	0.74	3.18
Small children (no) ⁴	-0.82	0.401	0.041	0.44	0.20	0.97	0.01	0.548	0.983	1.01	0.35	2.96

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Table 6. Continued.

Independent variables	B	SE	P	Exp(B)	CI (95%)		B	SE	P	Exp(B)	CI (95%)	
					lower	upper					lower	upper
<i>Comparison group vs. reference group</i>	'Discounter buyers' vs. 'Supermarket buyers'						'Combiners' vs. 'Discounter buyers'					
Intercept	-0.70	1.020	0.491				0.43	1.134	0.706			
Factor 1: Preferences for organic meat	0.14	0.144	0.323	1.15	0.87	1.53	-0.05	0.170	0.786	0.95	0.68	1.33
Factor 2: Local origin meat	-0.35*	0.137	0.012	0.71	0.54	0.93	0.78***	0.177	0.000	2.19	1.55	3.10
Factor 3: Self-service counter meat	0.97***	0.183	0.000	2.64	1.85	3.78	-0.99***	0.210	0.000	0.37	0.25	0.56
Factor 4: Need for information	-0.53***	0.151	0.000	0.59	0.44	0.79	1.49***	0.194	0.000	4.45	3.05	6.51
Factor 5: Cooking habits	-0.22	0.142	0.117	0.80	0.61	1.06	0.82***	0.181	0.000	2.26	1.59	3.22
Factor 6: Service counter meat	-0.73***	0.154	0.000	0.48	0.36	0.65	0.77***	0.178	0.000	2.15	1.52	3.05
Factor 7: Health issues	0.00	0.145	0.997	1.00	0.75	1.33	0.25	0.177	0.163	1.28	0.91	1.81
Factor 8: Animal welfare meat	0.23	0.135	0.090	1.26	0.96	1.64	-0.11	0.163	0.507	0.90	0.65	1.23
Age	-0.01	0.010	0.168	0.99	0.97	1.01	0.02*	0.012	0.045	1.03	1.00	1.05
Household size	-0.14	0.177	0.445	0.87	0.62	1.24	0.20	0.200	0.312	1.22	0.83	1.81
Gender (male) ⁴	-0.11	0.307	0.723	0.90	0.49	1.64	0.42	0.350	0.230	1.52	0.77	3.03
Education level (low) ⁴	1.35**	0.486	0.006	3.84	1.48	9.96	-1.45**	0.556	0.009	0.23	0.08	0.70
Education level (medium) ⁴	0.60	0.340	0.078	1.82	0.94	3.55	-0.88**	0.393	0.025	0.41	0.19	0.89
Residential area (rural) ⁴	-1.37***	0.414	0.001	0.26	0.11	0.58	1.36**	0.467	0.004	3.88	1.55	9.68
Household income (low) ⁴	0.76	0.478	0.111	2.14	0.84	5.48	-1.39*	0.562	0.013	0.25	0.08	0.75
Household income (medium) ⁴	0.57	0.405	0.159	1.77	0.80	3.92	-0.93*	0.452	0.040	0.40	0.16	0.96
Shopping responsibility (co-responsible) ⁴	-0.30	0.326	0.352	0.74	0.39	1.40	0.27	0.373	0.469	1.31	0.63	2.72
Small children (no) ⁴	0.37	0.496	0.449	1.45	0.55	3.84	-1.19*	0.529	0.024	0.30	0.11	0.86

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Table 6. Continued.

Independent variables	B	SE	P	Exp(B)	CI (95%)		B	SE	P	Exp(B)	CI (95%)	
					lower	upper					lower	upper
<i>Comparison group vs. reference group</i>	'Butcher buyers' vs. 'Discounter buyers'						'Combiners' vs. 'Butcher buyers'					
Intercept	-3.60	1.397	0.010				4.03	1.194	0.001			
Factor 1: Preferences for organic meat	0.27	0.192	0.167	1.30	0.89	1.90	-0.31	0.170	0.066	0.73	0.52	1.02
Factor 2: Local origin meat	0.73***	0.210	0.001	2.07	1.37	3.12	0.06	0.205	0.780	1.06	0.71	1.58
Factor 3: Self-service counter meat	-2.47***	0.268	0.000	0.09	0.05	0.15	1.43***	0.227	0.000	4.17	2.67	6.50
Factor 4: Need for information	0.77***	0.228	0.001	2.15	1.38	3.36	0.73***	0.214	0.001	2.07	1.36	3.15
Factor 5: Cooking habits	0.86***	0.207	0.000	2.36	1.57	3.54	-0.04	0.196	0.830	0.96	0.65	1.41
Factor 6: Service counter meat	1.03***	0.211	0.000	2.81	1.86	4.25	-0.27	0.185	0.148	0.77	0.53	1.10
Factor 7: Health issues	0.78***	0.211	0.000	2.18	1.44	3.29	-0.53**	0.194	0.006	0.59	0.40	0.86
Factor 8: Animal welfare meat	-0.20	0.191	0.299	0.82	0.56	1.19	0.09	0.183	0.622	1.09	0.76	1.57
Age	0.06***	0.016	0.000	1.06	1.03	1.09	-0.03*	0.014	0.034	0.97	0.94	1.00
Household size	0.31	0.234	0.184	1.36	0.86	2.16	-0.11	0.200	0.588	0.90	0.61	1.33
Gender (male) ⁴	0.06	0.431	0.898	1.06	0.45	2.46	0.37	0.389	0.348	1.44	0.67	3.09
Education level (low) ⁴	-1.89**	0.706	0.007	0.15	0.04	0.60	0.44	0.650	0.495	1.56	0.44	5.56
Education level (medium) ⁴	-0.66	0.460	0.150	0.52	0.21	1.27	-0.22	0.403	0.585	0.80	0.36	1.77
Residential area (rural) ⁴	2.03***	0.513	0.000	7.60	2.78	20.77	-0.67	0.402	0.094	0.51	0.23	1.12
Household income (low) ⁴	-0.78	0.660	0.235	0.46	0.13	1.67	-0.60	0.596	0.310	0.55	0.17	1.76
Household income (medium) ⁴	-0.56	0.524	0.281	0.57	0.20	1.59	-0.36	0.429	0.398	0.70	0.30	1.61
Shopping responsibility (co-responsible) ⁴	0.73	0.442	0.098	2.08	0.87	4.94	-0.46	0.388	0.235	0.63	0.30	1.35
Small children (no) ⁴	-0.36	0.665	0.584	0.70	0.19	2.56	-0.83	0.540	0.124	0.44	0.15	1.26

¹ B:bregression coefficient; SE: standard error; P: significance level; Exp(B): odds ratio; CI: confidence interval.

² Model fitting information: $\chi^2=461.576$, df=54, $P\leq 0.001$; Pseudo R²: Cox and Snell =0.578, Nagelkerke =0.619; VIF values: 1.028-1.972; percentage of accurately classified cases =60.9%.

³ Significance levels at $P\leq 0.05^*$, $P\leq 0.01^{**}$ and $P\leq 0.001^{***}$.

⁴ Categorical variable: the parameter estimates belong to a specific category (expressed in parentheses).

In contrast, local origin meat, need for information and service counter meat are significantly less important whereas self-service counter meat is significantly more important for the discounter buyers in comparison to the supermarket buyers. Furthermore, consumers with a low education level are more likely to be discounter buyers than supermarket buyers, whereas consumers living in a rural area reduces the probability that they will be assigned to the discounter buyers in comparison to the supermarket buyers.

In the second set of comparisons with the discounter buyers as the reference group, local origin meat, need for information, cooking habits and service counter meat are significantly more important for the combiners and the butcher buyers compared to the discounter buyers. Health issues are significantly more important for butcher buyers compared to discounter buyers. In contrast, self-service meat is significantly less important for both comparison groups than for the reference group. Older consumers are significantly more likely to be assigned to the combiners or the butcher buyers than to the discounter buyers. Additionally, consumers with a low or medium education level are more likely to be combiners than discounter buyers, whereas a low or medium household income decreases the probability of being a combiner relative to being a discounter buyer. The absence of small children in the household also reduces the probability of being assigned to the combiners.

In the last set, the combiners were compared to the butcher buyers (the reference group). We found that the greater the consumer's need for information and the more positively they evaluate self-service meat, the more likely they are to be combiners instead of butcher buyers. In contrast, the more importance consumers allocate to health as an issue, the less likely they are to be combiners instead of butcher buyers. Older consumers are also significantly less likely to be combiners.

6. Discussion

The cluster analysis identified four very clearly interpretable consumer segments: combiners, butcher buyers, discounter buyers and supermarket buyers. Butcher buyers and discounter buyers differ significantly in the share of their meat purchase comprising self-service meat. While butcher buyers almost exclusively buy their meat from the service counter, they relatively rarely buy meat from the self-service counter at a discounter and supermarket. Those consumers might therefore be more sceptical in terms of food security and hence attach more importance to personal advice (Deloitte, 2016). Discounter buyers, on the other hand, buy almost exclusively self-service counter meat, which is why store formats with a service counter are relatively unimportant for this consumer segment. These consumers pay less attention to quality as their focus is most probably on price. No significant differences in the share of self-service meat purchased were found between the combiners and the supermarket buyers. Supermarket buyers purchase their meat predominantly in supermarkets, buying from the service counter and the self-service counter in equal measure. The lower importance of the remaining store formats indicates a preference among supermarket buyers for one-stop shopping.

An exploratory factor analysis yielded a total of eight attitudinal factors that have an impact on consumer behaviour when purchasing meat. Most of these factors have already been described and proven to influence consumer behaviour by other authors. For example, Weinrich *et al.* (2015) describe in their investigations the factors 'pro self-service counter meat', 'pro service counter' and 'animal welfare', which consist of very similar items. The factor 'local origin meat' found in this study was similarly identified by Schulze and Spiller (2008a) and by Spiller *et al.* (2004). Spiller *et al.* (2004) and Staus (2011) also indicated the importance of attitudes towards organic food with respect to consumers' purchasing decisions. Our analysis also identified the factors 'organic meat', 'cooking habits' and 'health issues and rejection of meat'. These factors had been previously described in the study by Spiller *et al.* (2004) on consumers' purchasing behaviour concerning organic meat. The factor 'advertising' described by Staus (2011) also has clear similarities with the 'need for information' factor found in this study. The factor 'price consciousness' examined in the studies by Schulze and Spiller (2008a) and Staus (2011) was not extracted in this study; however, the items concerning consumers' price awareness loaded on the factor 'self-service meat', so the importance of low prices was

taken into account. The same applies to the importance of meat quality. Items related to consumers' quality consciousness were loaded on the factor 'service counter meat' and therefore did not form their own construct. These results are perceived to be plausible since self-service meat appears to consumers to be particularly low in price, while service counters profit from a perceived quality advantage (Schulze and Spiller, 2008b; Weinrich *et al.*, 2015).

The impact of consumer attitudes and sociodemographics on consumer segmentation was examined by means of MNL. There is a significant influence of the factors 'local origin meat', 'need for information', and 'cooking habits'. The more highly respondents value 'local origin meat' and 'cooking habits', the more likely they are to be butcher buyers or combiners. Other studies have also confirmed that butcher buyers are more likely willing to purchase local origin meat (Paustian *et al.*, 2016). However, for the combiners, the most important factor is 'need for information', which is an important piece of information for meat marketers in order to customize their service to their clients' needs, e.g. by labelling or personal advice. The fact that 'organic meat' and 'animal welfare' do not have any significant influence on consumer segmentation appears plausible when considering the marginal market shares of these meat categories in Germany. There is still only low availability of those products in retail markets (Weinrich *et al.*, 2015). However, numerous consumer studies have demonstrated a considerable market potential (Lagerkvist und Hess, 2011; Schulze *et al.*, 2008; Van Loo *et al.*, 2014) for meat from animal friendly production. Nevertheless, there are still different target groups considering purchasing intention of animal welfare products as Heise and Theuvsen (2017) figured out. According to Grunert (2006), it is possible to activate weak attitudes through appropriate marketing at the point of purchase. Thus, consumer attitudes towards organic and animal friendly meat production might still offer potential for differentiation.

Overall, sociodemographics have no significant influence on consumer segmentation except for the variables 'age' and 'residential area'. Discounter buyers comprise the youngest consumers, whereas the probability a person will buy meat at butcher shops increases with increasing age. This result is similar to the findings of Inderhees *et al.* (2004) and Schulze and Spiller (2008b), who point out that the target group for butchers is ageing. This is an important result for marketing managers and butcher shops. Unsurprisingly price is more important for younger consumers and they therefore prefer shopping at lower prices at discounters. However, with increasing age (and hence higher income) butcher shops become more attractive. It is relevant for butcher shops as well as service counters in general to adapt their marketing strategies to also attract the next generation and not only the older generation. Middle aged consumers are often very interested in animal welfare in general and especially how animals were raised. However, they are often not aware of the fact that local butchers offer local meat produced in a more animal-friendly way. There is a great potential to reach these target groups, e.g. by flyers. The significant influence of the variable 'residential area' indicates that consumers living in rural areas are less likely to buy meat at discounters which might be due to the fact that in rural areas personal advice and communication is more important than in urban residential areas.

With regard to the store formats under review, it must be taken into account that no distinction was made between small and large supermarkets or between small and large hypermarkets. Thus, no specific recommendations for these store formats can be derived from this study. Further research is needed on this point.

7. Conclusions and further research

This contribution is one of a few analyzing the impact of consumer attitudes and sociodemographic variables on store format choice in the meat market. The results are intended to enable retailers and other meat marketers to differentiate themselves from competitors and develop marketing strategies tailored to their customers' profiles. Of particular interest is the significant influence of the attitudinal factors 'local origin meat', 'need for information', 'cooking habits', and 'health issues and rejection of meat' on store format choice and preferred type of meat packaging. Recently, consumers have become more interested in information about production methods referring to health as well as to safety issues (Special Eurobarometer, 2019; Deloitte, 2016). A solution for marketers is to use labelling tools at self-service counters that show different meat

production methods such as those the private sector in Germany introduced in 2019. A public label system is planned to be released soon, which might regain more trust in the (German) meat sector (BMEL, 2019; Special Eurobarometer, 2019). Furthermore, the consumer segment 'combiners' is particularly interesting for retailers since these consumers buy meat in all store formats and therefore do not need to be acquired as new customers. Instead, retailers and meat marketers can tie this consumer segment even more closely to their store format comparatively simply by incorporating the needs and interests of this target group into their marketing strategies. Methods could include putting more emphasis on the advantage of personal advice at the service counter as well as highlighting special offers for price sensitive customers at the service counter. According to our findings, relevant points include an interest in cooking, a desire for thorough information and a strong preference for buying local origin meat. Another group of interest is the discounter buyers, who are significantly younger than consumers in the other segments. If discounters succeed in attracting these young customers over the long term, e.g. by communicating special offers, which are very important marketing tools in the German meat sector, there is a risk that the customer base for the remaining store formats will be reduced. Whether the insignificant influence of the attitudinal factor 'animal welfare' is due to the lack of available animal welfare products should be examined in further studies. This range of products is still very small, seldom easy to find and certainly not yet offered in every supermarket. If this presumption can be confirmed, it may be possible for quality-orientated retailers and meat marketers to differentiate themselves by emphasizing animal welfare meat in their product line as they already appeal to consumers with a higher willingness to pay for added value.

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