Motives and Information-based Clustering of German Plant-based Meat Consumers

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***Abstract* - The aim of this study is to segment consumers of plant-based meat products into heterogeneous groups based on their motives and their information behaviour. The four resulting clusters are more heterogeneous in their characteristics than a segmentation based on dietary styles. They can be better addressed by tailored information content and communication channels.**

INTRODUCTION

The number of people who classify themselves as vegetarians or meat avoiders is rising. However, in 2020 the number of vegetarians (5%) and vegans (2%) keep smaller than the new group of flexitarians (27%) (veganz, 2021). According to the ENSA definition (2014: 44), plant-based foods are consumed at the same times and in the same ways as meat and dairy products. Therefore, flexitarians who actively reduce animal-derived food products are considered to have a high growth potential and economic value in the booming market of vegan products – also known as "plant-based (PB) foods" (Gebhardt & Hadwiger, 2021). But who are these flexitarians? It is crucial to characterize target groups as precisely as possible for companies aiming to withstand competition in the saturated German food market and to respond to current developments in consumer behaviour (Nitzko & Spiller, 2014). Regarding the consumption or the abandonment of meat, segmentations of consumers are often based on their dietary style (e.g. Dagevos, 2021). While vegetarian and omnivore dietary styles are clearly defined and distinguished from each other by consistent characteristics, flexitarianism is not (Peuker, 2016). The flexitarian group includes individuals whose consumption is similar to that of the omnivores, but animal products are actively reduced or whose diet is similar to that of vegetarians. Furthermore, there are different forms of flexitarianism, e.g. conscious flexitarians, unconscious flexitarians or extravert flexitarians (Dagevos & Voordouw, 2013).

This paper addresses the question of how consumers of PB meat products can be better segmented and how they can be best addressed according to their motives and information behaviour.

METHODOLOGY

To answer the research question, the analyses were based on a data set of the two-staged empirical European study "The V-Place – Enabling consumer choice in Vegan or Vegetarian Food Products". The study was carried out 2020 in France, Italy, Spain, Denmark, Poland, and Germany. Ultimately online responses of German consumers (in total n=448) were chosen for the analyses using SPSS 27. In the first step, motives for consuming PB meat products were grouped into five dimensions using categorical principal component analysis (CATPCA) (see Table 1). In the second step, the object values resulting from the CATPCA were clustered using the k-means method, resulting in two clusters. These two clusters, in combination with the dummy variables of the information interest, were analysed by applying the two-step cluster analysis.

Table 1. Framework of plant-based food consumption motives.

Product orientation	Attitude orientation	Health orientation	Sustainability orientation	Openness orientation
Taste/flavour experience	Family/friends/ peers diet	Health benefits	Environmental consciousness	Add variety to my diet
Texture/mouthfeel	Food related intolerances	Health concerns	Social consciousness	Like to try out new products
Convenience in usage	Religious reasons	Beneficial for well-being	Animal welfare	
Price	Trend/lifestyle/ popularity	Naturalness		
Availability market/shops/ restaurants				

Source: Own estimation results.

RESULTS

The result of the analysis are four segments of consumers of PB meat products (see Table 2). The smallest segment A "Low interested economists" (10.4%) comprises exclusively disinterested consumers, who are never searching for information about PB diets and food products. The share of self-proclaimed omnivores is highest and the replacement frequency of conventional with PB meat (25.6%) as well as the share of organic foods in the diet is lowest compared to the other clusters. This group is most strongly reflected in the product orientation dimension. To encourage this group to purchase PB food products, the availability and taste of the products should be more communicated above all. This consumer group prefers product tests, followed by documentaries as formats when seeking information about food. The formats should be accessible online and provided best by public or governmental organizations.

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Table 2. Characteristics and informational needs of the new segments of plant-based meat consumers.

		A	B	C	D
n (%)		46 (10.4%)	127 (28.6%)	188 (42.1%)	83 (18.7%)
Plant-based dietary style	Omnivorous	76.1%	45.7%	55.9%	38.6%
	Flexitarian	19.6%	41.7%	28.2%	41%
	Pescetarian	2.2%	4.7%	5.9%	13.3%
	Vegetarian	2.2%	7.1%	8.5%	3.6%
	Vegan	0%	0.8%	1.6%	3.6%
Share of organic [a]	0 %	15.2%	1.6%	2.1%	0%
	Up to 25%	60.9%	42.5%	45.2%	34.9%
	26 to 50%	15.2%	43.3%	39.4%	37.3%
	51 to 75%	8.7%	12.6%	12.2%	21.7%
	76 to 100%	0%	0%	1.1%	6.0%
Meat substitution frequency [b]	Ø	25.6%	57.1%	45.2%	67.5%
Information behaviour [c]		Disinterested	Medium interested	Medium interested	Highly interested
Information content need	TOP 1	Market availability			
	TOP 2	Taste	Health, Sustainability	Sustainability, Taste	Sustainability, Ingredients
Information formats [d]	TOP 1	Product tests			
	TOP 2	Documentaries		Labels / Nutrient info an packaging	
Procurement channel [e]	TOP 1	Online, e.g. internet; websites			
	TOP 2	Personal conversations			TV
Trustworthy sources [f]	TOP 1	Public / Governmental organizations	Independent consumer organizations	Scientists / research centres	Nutritional professionals (Dietitians); Vegan/ vegetarian organizations

[a] What is the share of organic food products in your diet?
[b] To what extent are you using/choosing plant-based alternatives over conventional meat products, e.g. plant-protein burger patties over beef burger patties; plant-protein nuggets over chicken nuggets? (Slider 0 – 100%) 0% = I am always using/ choosing conventional meat products, 100% = I am always using/ choosing plant-based alternative products
[c] Are you searching for information about plant-based diets and products? Often (=highly interested consumers), sometimes (=medium interested consumers), never (=disinterested consumers)
[d] When it comes to acquiring food related information, what are the most attractive formats for you? Please select max 5 answers.
[e] When it comes to acquiring food related information, where are you most likely to search for it? Please select max 3 answers.
[f] Which of the following information sources, do you consider the most trustworthy ones, when acquiring food related information? Please select max 5 answers.

Source: Own estimation results.

In segment B "Medium interested well-bees" (28.6%) the top motives for consuming PB meat products are well-being and expected health benefits. The cluster comprises medium interested consumers – who are sometimes searching for information about PB diets and food products. It is dominated by self-proclaimed omnivores and flexitarians. The replacement frequency of conventional with PB meat is about 57 percent. The target group communication should include information about availability, health value and sustainability of the products. Just like the previously described segment, segment B prefers product tests, followed by documentaries as formats when searching for information about food. The formats should be available online and be delivered by independent consumer organizations.

The largest segment C "Medium interested naturists" (42.1%) likewise exclusively comprises medium interested consumers. However, the replacement frequency is lower (45.2%) than for the "Medium interested well-bees" and the motives also differ – in this segment, naturalness and animal welfare are the most important ones. The share of self-proclaimed vegetarians is highest in this segment. In addition to the offer, the target group approach should also include sustainability and taste. Segment C prefers product tests, followed by labels or nutritional information on the packaging as information formats about food. The formats should be accessible online and provided by scientists or research centres.

The "Highly interested sustainablists" (segment D) comprising interested consumers – who are often searching for information about PB diets and products – shows the highest replacement frequency (67.5%) and the highest share of pescetarians and vegans. This segment is reflected above all in the sustainability orientation dimension. The shares of organic food were the highest compared to the other clusters. The target group approach should focus on the offer, sustainability and ingredients of PB meat products. Segment D as well prefers product tests, followed by labels or nutritional information on the packaging as information formats. The formats should be available online and best delivered by nutritionists (dietitians) and vegan or vegetarian organizations.

Conclusion

The clustering designed in this paper provides four heterogeneous consumer segments, which enables target group-specific communication schemes with respect to PB meat products and considering the aspirations of the target groups (Nitzko & Spiller, 2014). More details on sustainability issues of PB meat products seemed to be the relevant topic in communication across the board for all target groups (Gebhardt & Hadwiger, 2021), but different focal points are necessary. It is evident across all new segments that scientists, governmental organizations and independent consumer organizations in particular are assessed as trustworthy, despite of differences in the perceived trustworthiness of various sources of information. Companies can adapt the provision and type of information to the target groups in order to address them in the best possible way. Although the segmentation concept in this chapter relates to Germany, it can be adapted to other countries. Additional, further research on non-consumers of PB foods is recommended.

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