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Meat Substitutes in Sustainability Context: A Content Analysis of Consumer Attitudes

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ABSTRACT

Food consumption affects the environment because it requires the usage of water, land, and oil resources. In particular, the consumption of red meat is associated with sustainability issues. Replacing meat with plant-based meat substitutes offers a useful way of reducing the burden that meat consumption places on the environment and dealing with issues regarding animal welfare. However, consumer acceptance of such products is low in some countries. The purpose of this paper is to clarify consumer attitudes toward meat substitutes and discuss them from a marketing perspective. The findings of this study, which are based on content analyses of web forums in Turkey, indicate that negative consumer perceptions can be categorized into three main dimensions: unhealthy, unusual, and tasteless. A marketing perceptive is used to discuss the findings.



KEYWORDS

Content analysis; food consumption; marketing; meat substitutes; sustainability

Introduction

The world population is expected to increase to approximately 8.6 billion in 2030 and 9.8 billion in 2050 at an estimated rate of 13 and 29%, respectively (UN, 2017). Currently, approximately 800 million people, a figure which represents 10.5% of today's world population, suffer from hunger (Worldhunger, 2018). Global meat production and consumption of products derived from cattle, poultry, sheep, goats, and pigs have increased dramatically in the last 50 years, leading to an increased burden on the environment and controversies about their impacts on human health and animal welfare (Ritchie & Roser, 2018).

In recent times, controversies about meat production and consumption have been increasingly on the rise because of the detrimental impacts that meat has on economic, environmental, and human health-related issues. The environmental and health-related problems associated with meat production are listed as the relatively higher greenhouse gas emissions

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compared to plant-based food production, intense usage of water and land, increased risk of cardiovascular diseases, colorectal cancer or foodborne infections, and possible antibiotic intake as veterinary medicines and growth promoters that are transferred into the human body (Godfray et al., 2018; Muguerza, Gimeno, Ansorena, & Astiasaran, 2004; Pathak, Jain, Bhatia, Patel, & Aggarwal, 2010; Verain, Dagevos, & Antonides, 2015). The problems associated with animal welfare include ethical issues such as the suffering of animals because of caging and slaughter (Janda & Trocchia, 2001; Kolbe, 2018). In this context, meat consumption is a pressing issue for social and environmental scientists and policymakers.

Despite these issues, meat consumption has increased in recent decades (Reisch, Eberle, & Lorek, 2013). As a response, meat substitutes, which are vegetable-based products that are rich in protein, have been suggested as sustainable alternatives (Elzerman, Van Boekel, & Luning, 2013; Van Mierlo, Rohmer, & Gerdessen, 2017). Meat substitutes can consist of a variety of vegetable-based ingredients such as wheat, rice, mushrooms, soy, and lentils, and they are similar to meat in terms of appearance and nutritional value (Malav, Talukder, Gokulakrishnan, & Chand, 2015). As a consequence of concerns about health, the environment and ethics, vegetarian as well as non-vegetarian consumers purchase meat substitutes, but consumer demand is still very low (Elzerman, Hoek, van Boekel, & Luning, 2011; Kim et al., 2011).

Although meat substitutes have existed for decades, they were primarily studied in the context of marketing communications by McCarney in 1975, and few studies have been carried out about the attitudes of consumers toward meat substitutes (Elzerman et al., 2011, 2013; Janda & Trocchia, 2001). Studying consumer attitudes toward meat substitutes and interpreting the research findings from a marketing perspective would help contribute to our accumulated knowledge regarding this niche field and be beneficial for marketing practitioners and policymakers, as they may be interested in increasing consumer awareness and demand for meat substitutes because they are more sustainable. This study aims to fill that gap in the literature by examining consumer perceptions of meat substitutes and discussing the findings from a marketing perspective.

The economic cost is influential in meat consumption, and value for money is a significant factor affecting meat preferences (Smart, 2004). As an emerging market, Turkey has been selected as the research context of this study. General public opinion in Turkey is that meat is extremely expensive and that the price of red meat, in particular, has been on the rise (Demirtas, 2018). One kilogram of beef is sold for approximately 50 TL (~8 EUR) in average retailers and 47 kilograms of meat can be purchased with the minimum wage in Turkey (TUIK, 2020). On the other hand, approximately 140 and 100 kg of beef can be purchased with the minimum

wages in Germany and Spain, respectively.¹ While red meat prices are relatively higher in Turkey than in European Union countries, the meat market in Turkey has grown 5% in the 5-year period between 2013 and 2018 and beef consumption per capita is expected to rise in upcoming years because of consumer preferences, habits and increasing wealth (Euromonitor International, 2019a; Songül, 2018). Per capita, beef consumption in Turkey was 8.3 and 10.5 kg/capita in 2016 and 2018, respectively. These figures are lower than the OECD total, which was 14.5 kg/capita in 2016 and 14.8 kg/capita in 2018 (OECD, 2019).

Although meat substitutes could be a cheaper alternative and provide the same taste and amount of protein, they are not popular in Turkey. The meat substitute products that can be found at vegan markets tend to be marketed to affluent consumers and they are more expensive than real meat. While people could easily replace meat with meat substitutes if adequate demand triggered an increase in product variety and affordable meatless options, consumer awareness, and demand for meat substitutes are still low. Since meat substitutes are relatively novel products for the majority of Turkish consumers and companies have not engaged in mass communication campaigns, marketers need to be aware of consumer attitudes before implementing marketing communication strategies. Understanding the consumer attitudes toward meat substitutes is mentioned as “*a new research challenge*” because of the increasing debates on the negative impact of meat consumption on the environment, human health, and animal welfare (Godfray et al., 2018). Therefore, the research question of this study has been formulated as, “*What are the underlying reasons for the low level of demand for meat substitutes?*”

Content analysis was selected as the methodology of this study. Consumer comments that have been shared on Turkish websites were coded according to the food-related lifestyle model, which was first introduced in the mid-1990s as a tool for consumer segmentation in the food consumption context (Brunso & Grunert, 1995). This model is composed of interacting dimensions such as perceived quality aspects and purchasing motives and provides a cross-culturally valid factor pattern to understand consumers’ perceptions of food products and consumption (Grunert et al., 2011; Thøgersen, 2017). Based on this model, quality aspects and purchasing motives were identified as pre-determined categories and consumer comments that were representing positive or negative meanings were coded according to these categories. This study has a novel perspective by adopting the food-related lifestyle model in particular to understand consumer comments about meat substitutes. Moreover, the originality of this research lies mainly in its particular focus on marketing, so the research findings are discussed within a marketing context.

The study is organized as follows. In the literature review section, the problems associated with meat consumption and the general qualities of meat substitutes are summarized. After an explanation of the methodology, the research findings are discussed within a marketing context and managerial implications are proposed.

Literature Review

Meat Consumption and Sustainability

The controversies surrounding meat consumption generally stem from two main issues. The first one is the impact of meat consumption on human health (Schösler, de Boer, & Boersema, 2014). The second issue is sustainability, which includes concerns about animal welfare and the environment (Vitterso & Tangeland, 2015). Meat production requires plenty of natural resources including land and fodder, and consequently, it leads to an increase in greenhouse gas emissions (Baker, Thompson, & Palmer-Barnes, 2002; Hoek, Van Boekel, Voordouw, & Luning, 2011).

Meat is associated with health problems because of the complications that can arise from its consumption, such as cancer and cardiovascular diseases, and the specific drugs and hormones that are used in raising livestock, which are transmitted to people in the process of consumption (Baker et al., 2002; Kumar et al., 2017). Meat production can also lead to the spread of diseases among livestock and contamination during transport and storage (Verbeke, 2015).

The second issue that is associated with meat consumption is animal welfare. The moral reasons for not eating meat are various, and they can be based on ideas steeped in religion, spirituality, culture, and ethical issues (Janssen, Busch, Rödiger, & Hamm, 2016; Smart, 2004). The primary concerns include the unethical treatment of animals, methods of slaughter, the caging of animals, and undesirable and unnatural living conditions (Janda & Trocchia, 2001; Kumar et al., 2017).

Some people choose to become vegetarians or vegans because they want to minimize the suffering of animals on farms caused by unethical treatment such as cramped caging and techniques of slaughter (Janda & Trocchia, 2001; Kolbe, 2018; Rothgerber, 2015) and benefit from the health and environmental benefits of a vegetarian diet (Smart, 2004). Vegetarians eat vegetables, seeds, fruit, legumes, and grains but avoid all types of meat including red meat, chicken, and fish (Çiçekoğlu & Tunçay, 2018). On the other hand, vegans refrain from consuming any types of animal products including meat, chicken, fish, eggs, milk, and dairy products (Smart, 2004). People may prefer different consumption patterns for avoiding animal products, so more exact definitions under

vegetarianism concept are also made. These definitions regarding different meat avoidance patterns can be exemplified as lacto-ovo vegetarianism (avoiding all types of meat, consuming dairy products and eggs), lacto vegetarianism (avoiding all types of meat and eggs, consuming dairy products), and pesco-lacto-ovo-vegetarianism (avoiding meat and poultry, consuming fish, dairy products and eggs) (Hoek, Luning, Stafleu, & Graaf, 2004; Smart, 2004; Vinnari, Montonen, Harkanen, & Mannistö, 2009). In addition to vegans and vegetarians, some consumers reduce meat-eating rather than abandon meat-eating, and they are named as flexitarians (Mylan, 2018). Motives for meat reduction or becoming a vegetarian or vegan may vary and stem from many factors including health, moral philosophy, animal rights, sustainability, religion, culture, or taste (Çiçekoğlu & Tunçay, 2018).

The percentage of vegetarians has been found to be 4–7% in the USA, 2–10% in the European Union, 31% in India, and 7% in Italy (Baroni, Goggi, & Battino, 2019; Meat Atlas, 2014). The volume of Turkish and global vegan product markets has been reported as 400 million and 3.1 billion dollars, respectively (Uyanik, 2018). For Turkey, the number of vegetarians and vegans has not been officially reported, but according to the Turkish Vegan Association, the number of vegans in Turkey has increased three-fold and the number of companies requiring vegan product certificates has increased since 2015 (Bal, 2018).

In summary, high levels of meat consumption may lead to health problems, environmental problems, and threats to animal welfare (De Backer & Hudders, 2015). Extensive meat consumption leads to an increased risk of colorectal cancer, cardiovascular diseases, animal-related infections, and antibiotic and growth promoter intake to the human body because of veterinary medicines (Godfray et al., 2018; Vinnari et al., 2009). Besides health concerns, an increasing number of consumers have changed their consumption preferences and reduced their meat intake because they were concerned about animal welfare (Rothgerber, 2015). In addition to the health-related and moral issues, meat production places a major burden on the environment because of the large-scale land, energy, and water usage involved, as well as greenhouse gas emissions and waste (Kumar et al., 2017; Vinnari, Mustonen, & Rasanen, 2010). As a result of increasing concerns, reducing meat consumption is considered as a way of having a sustainable food system (Mylan, 2018). Despite these problems, demand for meat is expected to increase in the upcoming years as a result of the growing population, urbanization and a rise in overall income levels (Elzerman et al., 2011; Kumar et al., 2017). Given that situation, reducing meat consumption can be one means of mitigating climate change and reducing these problems.

Meat Substitutes as Sustainable Foods

Reducing meat consumption can be encouraged by creating viable alternatives such as meat replacers or vegetarian food items that meat avoiders and reducers can use to prepare their meals (McGee, 2004; Sadler, 2004; Van Mierlo et al., 2017). Meat substitutes are also referred to as meat analogs, meat alternatives, and meat replacers, and they are seen as sustainable alternatives to meat (Hoek et al., 2011; Malav et al., 2015). Meat substitutes imitate meat in terms of appearance, taste, and texture but differ in composition (Kumar et al., 2017). Meat substitutes generally consist of plant-based ingredients such as wheat, soy, beans, and rice, and recent developments have made it possible to create a more meat-like taste, appearance and texture (Davies & Lightowler, 1998; Elzerman et al., 2013; Kim et al., 2011). Meat substitutes provide nutritional content including amino acids, iron, zinc, and vitamin B12, and they can be similar to meat in terms of nutritional value while having a less negative environmental impact (Van Mierlo et al., 2017). Soybeans are sources of high-quality protein with low levels of saturated fat and a well-balanced composition of carbohydrates, amino acids, fiber, iron, calcium, zinc, and vitamin B, while cereals such as wheat, rye, and barley can consist of up to 14% protein in the form of dry matter (Malav et al., 2015).

Although meat substitutes can be nutritious and sustainable food options, their market share is still very low relative to meat (Hoek et al., 2011; Kumar et al., 2017; Malav et al., 2015). The global consumption of fresh meat and meat substitutes in 2018 was estimated to be 234 and 6 million tons, respectively (Euromonitor International, 2019b). Meat substitutes have not attained high levels of production and sales in commercial terms, mainly because of low consumer acceptance and the relatively small number of scientists working on them (Kumar et al., 2017). Meat substitutes have a relatively larger market share in the UK, where the number of vegetarian consumers has increased in the last half-century, as well as in some European countries and the USA (Elzerman et al., 2013; Smart, 2004).

Until recent times, vegetarians experienced difficulty obtaining food products that contained only plant-based ingredients (Janda & Trocchia, 2001). Since the consumption of vegetarian food has become more popular, meat substitutes can be more easily obtained by consumers, as indicated by the fact that more than 150 different meat substitutes are sold in Dutch supermarkets (Elzerman et al., 2013; Janda & Trocchia, 2001; Smart, 2004). In the catering industry, food marketers are increasingly offering non-meat products such as veggie burgers and meatless hot dogs (Janda & Trocchia, 2001).

Consumer Attitudes toward Meat Substitutes

There has been an increase in interest in the production of healthy, tasty, meat-free food because some consumers consider meat to be environmentally harmful (Hoek et al., 2011; Kumar et al., 2017). In addition, concern for the welfare of animals has increased the consumption of vegetarian food (Janda & Trocchia, 2001). Advances in food technology have made it possible for vegetarian consumers to get the protein they need in meat substitutes (Mohamed, Terano, Yeoh, & Iliyasu, 2017), which can be appealing not only for vegetarians but also for omnivores as sustainable alternatives (Elzerman et al., 2011). However, except for vegetarians, the majority of consumers do not perceive meat substitutes to be real alternatives to meat (Hoek et al., 2004).

Consumer acceptance is important for the success of food product innovations (Siegrist, 2008). According to consumer attitudes, innovations can prompt either receptive or resistant reactions, so negative attitudes toward food technologies and related risk perceptions may hinder widespread acceptance and lead to the failure of an innovation (Garcia, Bardhi, & Friedrich, 2007; Kleijnen, Lee, & Wetzels, 2009). While studies have shed light on the importance of perceived benefits for the acceptance of new food technologies (Frewer, Howard, Hedderley, & Shepherd, 1997; Frewer, Scholderer, & Lambert, 2003), Lähtenmäki, Lyly, and Urala (2007) have pointed out that even when a product provides additional benefits, perceptions of the technology used to produce the innovation may influence the acceptance of products.

Nonetheless, consumers are becoming more vegetarian-oriented, choosing plant-based options rather than meat-based products, even if they do not consider themselves to be vegetarians (Janda & Trocchia, 2001). As a result, the meat substitute market is expected to grow in the years to come (Kim et al., 2011). Although vegetarians have been familiar with tofu, which is produced from soybeans, as a meat substitute since the 1960s, marketing campaigns that sought to increase public awareness of meat substitutes have largely failed (Elzerman et al., 2013). Demand for meat and meat substitutes depends on many factors, including economic, cultural, and personal issues. So, understanding consumer attitudes toward meat substitutes is extremely important for marketing managers and policymakers both in terms of companies' profitability and public action to improve sustainability.

Methodology

This study is focused on improving our understanding of the reasons underlying consumer attitudes toward meat substitutes and a content

Table 1. Comments and topics.

Web Site	Topics	# of Comments
Eksisozluk.com	Bean burger, vegan, meatless meat, meatless burger, beyond burger, impossible burger	171
Forum.donanimhaber.com	Meat substitutes, soy	39
Hurriyet.com.tr	Meatless meat, veggie burger, meat consumption	14
Mynet.com	Cheap meat, foods in the future	9
Kizlarsoruyor.com	Vegan burger	6
Odatv.com	Meatless burger	4
Dunyahalleri.com	Meatless burger, vegetable burger	3
Onedio.com	Vegetable burger	1
Total		247

analysis approach is applied. As it is known, content analysis is analyzing written, verbal or visual messages to grasp phenomena better (Cole, 1988). Previous research has shown that consumer acceptance of meat substitutes mainly depends on their attitudes and beliefs regarding them (Hoek et al., 2011), so consumer comments on the online platforms that reveal consumer attitudes toward meat substitutes were chosen as the data source for the content analysis. Earlier studies that used content analysis have examined people's comments about a food-related report (Olson, 2017), analyzed what people say when they tweet about different eating situations (Ares, Machín, & Jaeger, 2015), and explored online posts and online consumer reviews (Pan, Liu, & Kreps, 2018; Pan & Zhang, 2011). The methodology followed in this study is explained in the following paragraphs.

First of all, consumer comments were searched on the internet by using various keywords in Turkish such as *meat substitutes*, *meatless burgers*, and *veggie burgers*. This initial search has led authors to web forums, portals, and the website of a national newspaper in Turkey. Then these websites were examined and all of the comments posted by consumers regarding meat substitutes were included in the analysis. Only 247 comments can be indicated here because the issue is novel for the majority of consumers in Turkey. Most of the comments were shared on four online platforms: eksisozluk.com, donanimhaber.com, hurriyet.com, and kizlarsoruyor.com. Since those websites are among the top 40 high-traffic sites in Turkey according to the list noted on www.alexa.com, it is plausible that those users created more content compared to other websites. The distribution of comments according to the websites and topics are illustrated in Table 1.

After a general screening of the data, the content analysis method was further clarified to allow for a pre-determined coding scheme. In general, content analysis can be carried out either by exploring the themes that emerge from the data or by using a pre-determined scheme to categorize the textual content. Since the goal was to base this study on a strong theoretical background and allow for a structured comparison with further studies, the pre-determined coding scheme was selected. Accordingly, the

consumer comments in the observation data set were categorized based on the food-related lifestyle model, which can be used to understand food consumption behavior and is specifically developed as a cross-culturally valid instrument with interacting dimensions that elaborate food preference of individuals (Brunso & Grunert, 1995). These dimensions of the food-related lifestyle model conceptualize food choices as having two cognitive schemas, *purchasing motives* and *quality aspects*, and the model is used here to predict consumer responses to new food products, meat consumption, and preferences regarding a vegetarian diet (Thogersen, 2017). The model is considered as the major tool used for segmenting consumers depending on their interests, opinions, and activities in the food domain (Grunert et al., 2011). The dimensions of the model have been used in various studies in the literature (Brunso, Scholderer, & Grunert, 2004; Hoek et al., 2004; Scholderer, Brunso, Bredahl, & Grunert, 2004; Thogersen, 2017), so it was used to categorize consumer comments based on attitudes toward meat substitutes. In total, 247 comments from the abovementioned websites, which include online newspapers, forums, and portals, were categorized by two independent observers based on the categories determined with the model.

Following the data collection and coding, intercoder reliability was assessed as the third step, and the consumer comments in the data set were transferred to QDA Miner software, which can be used for the analysis of textual data. The comments were associated with the relevant dimensions of the coding scheme and categorized accordingly. Since one consumer comment can include more than one issue, such comments are coded across different dimensions, so the total number of codes were 283 for 247 online consumer comments included in the research. For example, if one comment disclosed a negative attitude associated with both price and health concerns, it was coded as including these two dimensions. Next, the findings were calculated as frequency analyses for further reporting and interpretation.

Findings

The comments about meat substitutes were analyzed according to the food-related lifestyle model (Brunso & Grunert, 1995). In the following sections, the findings are presented in two categories, namely negative and positive comments representing the nature and different dimensions of consumer attitudes toward meat substitutes.

Negative Comments for Meat Substitutes

The two dimensions of the food-related lifestyle model, *quality aspects*, and *purchasing motives*, matched the themes that emerged from the data. These

Table 2. Consumer comments for meat substitutes.

Comment	Dimension	Sub-dimension (code)	Consumer comment example
Negative	Quality Aspects	Unhealthy	God knows how detrimental chemicals they include.
		Expensive	Its price is too high.
Tasteless		Disgusting.	
Unusual		Eat lentil soup or beans instead of these.	
	Purchasing Motives	Negative in general	Why should I eat these if I don't like meat? Or why should I order vegetables inside two slices of bread, if I like hamburger?
Positive	Quality Aspects	Healthy	Soy is very healthy.
		It's necessary	It is a good alternative in countries like ours, where meat is expensive.
		Tastes Good	Very delicious.
	Purchasing Motives	Better for the environment	It contributes to the nature.
		Good for animal welfare	Cruel animal slaughter may be reduced.
	Purchasing Motives	Positive in general	Good news ...
		Secure food	Turkish fast food industry will be its first buyer.

dimensions were adopted from the model as reasons for not preferring meat substitutes or negative attitudes toward them. In the quality aspects dimension, the data were grouped into four sub-dimensions: unhealthy, expensive, tasteless, and unusual. “Unhealthy” refers to comments regarding issues such as chemicals included in meat substitutes, and “expensive” refers to users’ comments about prices. Examples of coding are indicated in Table 2. In the columns of the table, the dimensions of the food-related lifestyle model are listed as perceived quality aspects and purchasing motives (Brunso & Grunert, 1995; Hoek et al., 2004; Thogersen, 2017). Each consumer comment was elaborated and coded across these dimensions. For example, if a consumer has written a perception regarding the high price of meat substitutes, this comment was coded as a negative opinion about the quality aspects of meat substitutes. If a negative comment revealed opinions about the unhealthiness of such products, it was coded accordingly. In terms of purchasing motives, which include security, self-fulfillment, and the social dimensions of food preferences, comments that lacked a clear cause for avoidance but revealed a general negative attitude about meat substitutes were included. If a specific reason or claim was not disclosed in the comment, it was coded into either “positive in general” or “negative in general” categories depending on the direction of the purchasing motive.

In total, 101 comments were coded as negative. These 101 comments were associated with 117 codes, revealing the negative dimensions. The coding frequencies of negative comments ($n = 117$) were listed as unhealthy

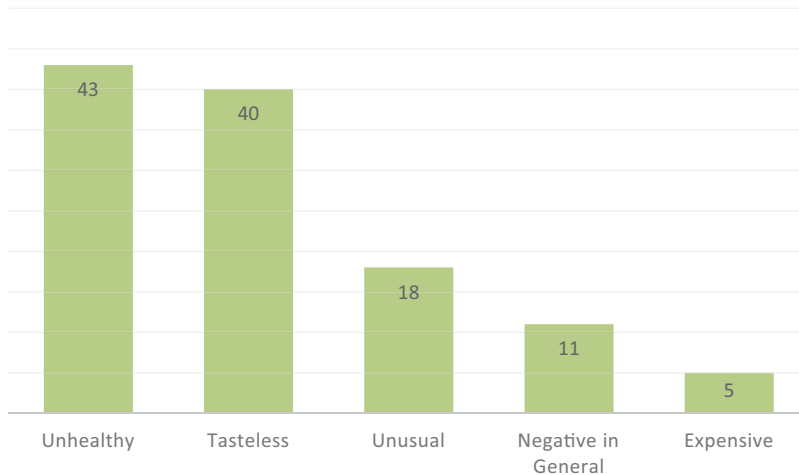


Figure 1. The number of negative comments.

($n = 43$), tasteless ($n = 40$), unusual ($n = 18$), negative in general ($n = 11$), and expensive ($n = 5$). As illustrated in Figure 1, the prominent negative perception regarding meat substitutes was based on the idea that meat substitutes are unhealthy, so 37% of the negative comments were grouped under this dimension. Consumers who think that meat substitutes taste bad constituted the second group of negative comments, with a frequency ratio of 34%. The third-largest group of comments included 15% of the comments and they were grouped under the “unusual” dimension because consumers have stated that conventional foods such as lentils are better than meat substitutes. The comments that could not be associated with a specific reason but hold a negative attitude about meat substitutes were coded into the “general negative attitude” category, which was the fourth largest group including 11 codes that constituted 9% of the negative comments. Finally, 5 negative comments stated that these products were expensive. In total, 117 comments included negative comments regarding meat substitutes. The results are illustrated in Figure 1.

Positive Comments about Meat Substitutes

Since this study sought to reveal consumer attitudes about meat substitutes, comments that included positive attitudes toward meat substitutes were also analyzed. 166 comments included such positive comments. As with the negative comments, the quality aspects and purchasing motive dimensions of the food-related lifestyle model were taken into account. Some comments were as short as one sentence or did not reveal a motive, but rather reflected a general attitude about the product revealing signs of self-fulfillment, so they were coded in the *positive in the general* category. The other

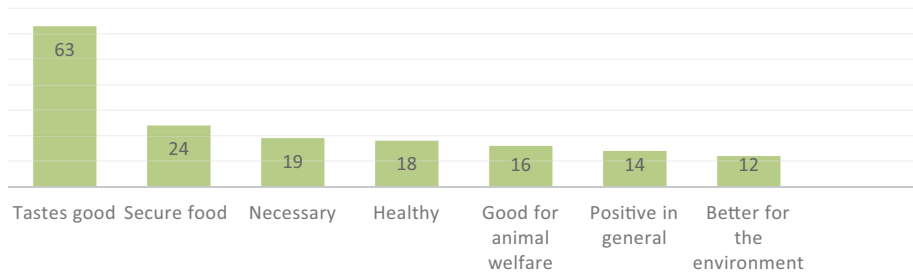


Figure 2. The number of positive comments.

categories emerged as expected, including health, the environment, animal welfare, and taste. Similar to the price-quality relationship in the quality aspects dimension of the food-related lifestyle model, comments that emphasized the necessity of meat substitutes as alternative food choices for vegans and vegetarians or their necessity for the consumption requirements of society were coded in the *necessity* category. The examples of the comments are illustrated in [Table 2](#).

The coding frequencies of the positive comments are illustrated in [Figure 2](#). The prominent dimension was found as the “tastes good” category, constituting 38% of the codes. The second category was secure food category that revealed consumers’ trust as purchasing motives and this category included 24 comments constituting 14% of positive codes. The next category included 19 comments stating that meat substitutes are needed, especially because of the necessity of feeding the growing human population. This category constituted 11% of the codes. 18 comments stated that such products were healthy. Animal welfare (10%) and sustainability (7%) concerns were found to be other reasons for preferring meat substitutes. 14 comments did not reveal any specification regarding the consumers’ positive opinion, so they were coded in the “positive in general” dimension.

The good taste of meat substitutes had a greater share in the positive comments ($n = 63$, 38%), while bad taste had a lower share ($n = 40$, 34%) in the negative comments. Positive comments about the healthiness of meat substitutes constituted 11% of the codes ($n = 18$), including comments indicating that foods like soybeans are healthy. On the other hand, 37% of the negative comments ($n = 43$) include health concerns regarding meat substitutes. When the positive and negative comments are compared, notable variance emerges in terms of perceptions concerning health. While potential hazards to health were a major concern for consumers with a negative attitude toward meat substitutes and constitute 37% of the negative comments, it was not so important for consumers with a positive attitude toward meat substitutes.

Discussion

The findings indicate that people do not consume meat substitutes mainly because they believe they are unhealthy, unusual, and tasteless. Some consumers stated that they preferred conventional protein alternatives, such as lentils. Moreover, consumers could not easily conceptualize of meat substitutes as a food alternative, so they stated, “*Why do we need things like that when we have fresh beef?*” or “*Why should I have a meat substitute if I already don’t like meat?*” Although non-users or light-users of meat substitutes have indicated that such products must be similar to meat (Hoek et al., 2011), some consumers found this confusing because consumer preferences for meat, from a sensory point of view, are influenced by appearance, tenderness, flavor, and juiciness, but those consumers do not like meat or meat-like food (Resurreccion, 2004). This finding can also be explained by the assertions made in the study of Rivera and Shani (2013), who differentiate between “mainstream vegetarians” who are more likely to eat meat substitutes and “sensory vegetarians” who generally reject food that resembles or imitates meat.

Unfamiliarity is an important barrier in food choice and consumers are generally reluctant to try new and unknown food or food that is processed by novel production technologies (Verbeke, 2015). Meat substitutes have not been broadly accepted by consumers because they constitute a new category of food, and the perceived product quality of meat is more distinct than the perceived quality of meat substitutes (Hoek et al., 2011). Consumer resistance to innovations can also be caused by functional and psychological barriers. Functional barriers include usage, value, and risk barriers that can contribute to consumers’ resistance to adopting an innovation. Usage and value perceptions relate directly to the perceived benefits and cost of an innovation, while psychological barriers include consumer resistance based on traditions and perceived images of innovation (Ram, 1989).

Previous research has shown that some consumers perceive meat to be a reward or something they are entitled to have, so it is seen as being more delicious and healthier than meat substitutes (Elzerman et al., 2013; Hoek et al., 2011). Meat, which in Turkey is mainly consumed as lamb, beef, and poultry, is an important component of the Turkish diet. According to a survey conducted in 31 Turkish provinces with 2,713 participants, red meat was identified as the favorite food of Turkish people, but red meat consumption is particularly low among low-income consumers and 62% of the participants stated that they would consume meat if they were not restrained by financial difficulties (Hurriyetdailynews, 2018). Although these findings may seem to point to an opportunity for putting meat substitutes on the market, replacing meat with substitutes requires consumer

acceptance. Consuming red meat may be associated with masculinity, which can reduce the tendency of consumers to switch to alternative food choices such as meat substitutes. Research on young Dutch adults from different ethnic groups has shown that the Turkish group demonstrated the strongest link between meat and masculinity in contrast to native Dutch and Chinese Dutch consumers, and although the participants were selected from second-generation Turks living in the Netherlands, almost none of them had consumed meat substitutes, while members of the other ethnic groups reported usage levels varying from 14% to 33% (Schösler, de Boer, Boersema, & Aiking, 2015). In that context, the findings of this study indicate that although low-income consumers can be targeted as potential consumers of meat substitutes, negative consumer perceptions about these products as being “unusual” and “tasteless” may interact with cultural framings, so they must be considered as barriers to acceptance and addressed in marketing activities. As meat reduction becomes more prevalent, proper marketing actions for meat substitutes would contribute to achieving increased consumer acceptance. For example, emphasizing the environmental and health benefits of meat substitutes in communication strategy may be influential on the consumer decision-making process for reducing meat consumption and preferring meat substitutes (Cheah, Shimul, Liang, & Phau, 2020; Vinnari et al., 2010; Wansink, Sonka, Goldsmith, Chiriboga, & Eren, 2005). Undoubtedly, these benefits need to be accepted as important values for future consumers by the companies and not only communication strategy but also whole marketing strategies need to be developed from a holistic perspective. In addition, the distribution of positive comments showed that healthiness, the environment, and animal welfare had a relatively smaller share among the positive comments. Although the participants were limited to an online community and the results cannot be generalized to the entirety of society, this finding can be interpreted as an indicator that tastiness and necessity can override issues about improving health, the environment, and animal welfare for meat substitutes. Turkish consumers are more likely to place importance on sensory elements and the general benefits of a meat substitute product such as convenience and necessity.

In terms of health concerns, negative attitudes toward meat substitutes may be reduced through informative advertising strategies. McIlveen, Abraham, and Armstrong (1999) argue that negative perceptions of meat replacers exist and that consumers must be educated by marketers if a sustained level of purchasing is going to be achieved. Health concerns regarding meat substitutes suggest that consumers perceive them to be unhealthy and artificial, so experts could be used in advertisements to give statements about how these products are natural and healthy and can also eliminate

the risks involved with meat consumption. It is possible to influence consumers and increase their tendency to reconsider meat substitutes as healthy by adding health-related benefits as salient product attributes (Wansink et al., 2005).

As early as 1975, McCarney proposed the creation of a “*favorable marketing climate*” for meat substitutes by employing an informative and educational advertising scheme that has three themes for the marketing communication of meat substitutes: (1) They are a new, good, innovative product based on science, (2) They have a pleasant taste and sensory aspects, (3) They are a cheaper product that has the taste, appearance and nutritional value of meat. That taxonomy could be adopted while taking into consideration the fact that the market for meat substitutes is highly heterogenous. The meat substitutes market includes not only vegetarians and vegans but also non-vegetarian consumers who are trying to reduce their meat consumption for reasons such as health, weight control, religious beliefs, sustainability or animal welfare (Hoek et al., 2011; Kim et al., 2011; Malav et al., 2015). So, marketing messages can be differentiated according to market segmentation and specialized for different consumer groups. Consumers of meat substitutes are different from vegetarians but similar to meat consumers in terms of health consciousness and ecological product preferences, so in order to promote meat substitutes to non-vegetarians, marketing messages must not be limited to health-related and environmental claims (Hoek et al., 2004).

As these findings suggest, conducting marketing research and creating a proper market segmentation is crucial for developing marketing strategies for meat substitutes. Products must be differentiated for meat-eaters, vegetarians, and vegans. Food labels and separating vegan and vegetarian alternatives are also prominent issues for marketing success (Davies & Lightowler, 1998).

In order to make meat substitutes appealing for both vegetarians and non-vegetarians and achieve market penetration, pricing is also an essential component, as it is influential regarding the demand for food (Revoredo-Giha & Costa-Font, 2018; Wirth, 2015). Although in this study only a small percentage (5%) of negative comments were found to be about pricing because meat substitute products are not common in Turkey, previous research has shown that meat substitutes are perceived as being sustainable and animal-friendly but expensive products that are only desired by vegetarian or vegan consumers (Elzerman et al., 2013; Hoek et al., 2011). However, another study has shown that more than 58% of non-vegetarian consumers have a positive attitude regarding vegetarian diets (Mohamed et al., 2017). So, adjusting the price of meat substitutes may be an important means for marketers to elicit additional demand from non-vegetarian

consumer groups. To give a general idea of prices in Turkey, some selected unit consumer prices of food items listed by the Turkish Statistical Institute are 10.7 Turkish Lira (TL) for sunflower oil, 4.8 TL for pasta and 4.0 TL for apples, whereas beef is 46.7 TL, lamb is 54.1 TL and poultry is 11.6 TL, as of January 2020 (TUIK, 2020). These prices are in alignment with the prices of average household brands displayed on the websites of retailers, as 1 liter of sunflower oil is around 10 TL while 1 kg of beef is 50 TL. With moderate pricing and appropriate marketing programs, marketers could benefit from the positive attitude of non-vegetarian consumers and elevate the position of meat substitutes in the non-vegetarian consumer market.

Pricing and positioning meat substitutes are relevant not only for retail shopping but also for B2B sales such as in the tourism, hospitality, and catering industries. The flexibility of restaurants in offering meatless dishes, providing adequate information about the meals on menus, and using special identifying marks for vegetarian food may contribute to customer satisfaction (Rivera & Shani, 2013). Food suppliers that provide high-quality food for vegan and vegetarian customers will be important business partners for hotels, restaurants, and other businesses. Informing restaurant owners about the importance of vegetarian offerings on their menus, the needs of vegetarian consumers, and efficient ways of preparing tasty and low-cost vegetarian dishes may be effective in increasing sales in B2B contexts, which can also include schools (Rivera & Shani, 2013).

In addition, the findings of this research indicate the varying needs of consumers. While some consumers are willing to consume meat substitutes that resemble meat and replace meat with meat substitutes in their consumption choices, consumers who do not like the taste of meat or do not like the idea of consuming a meat-like food would not prefer meat substitutes. So, marketing for meat substitutes should mainly target the first group, which would be more likely to purchase them. The major challenge for firms is to produce meat substitutes that are very similar to meat in terms of appearance, taste, smell, and texture (Kumar et al., 2017). Such an improvement is key to attaining greater consumer acceptance in terms of them considering meat substitutes to be alternatives to meat (Elzerman et al., 2011; Kumar et al., 2017).

As the aim of supplying meat substitutes to the market is not only to create consumer acceptance but also position such products as actual substitutes, marketers need to answer certain questions in order to position such substitutes properly in consumers' minds (Hoek et al., 2011). Attitudes regarding meat substitutes are shaped not only by purchasing motives but also by quality perceptions regarding health, price, and sustainability. So, first of all, marketers must explain the product very well to consumers within that multi-dimensional framework. In order to generate a

Table 3. Key points to be considered in marketing management of meat substitutes.

Marketing mix element	Key questions
Product	<ul style="list-style-type: none"> • Brand name • Inclusion or exclusion of “meat” in the brand name and label • Appearance and resemblance to meat • The product line: Mince, burgers, meatballs, sauce, etc. • Package size • Products for B2B context such as ready-to-cook meatballs for restaurants
Price	<ul style="list-style-type: none"> • The price level • Price level in alignment with segmentation and positioning • Market penetration or market-skimming pricing • Optimizing expected revenue and profits in alignment with business strategy
Place	<ul style="list-style-type: none"> • Super markets or specialty shops • Organic and environmental product shelves in markets • B2B distribution • Selection of intermediaries • Logistic requirements
Promotion	<ul style="list-style-type: none"> • Inducing first trial • Celebrity usage • Expert opinions and public relations • Co-branding activities with other brands with a high brand equity • Optimizing marketing expenditures • Digital and social marketing • Sponsorships and philanthropic activities

comprehensive definition and achieve a clear positioning, a new meat substitute product can be conceptualized within the marketing mix framework, thereby providing a guide for operationalizing marketing by including sustainability considerations (Cronin & McCarthy, 2012; Pomeroy, 2017). Such a conceptualization can be implemented by proposing questions that need to be answered clearly by marketers before supplying their brand to the market. After making an initial analysis through an evaluation of the different answers to these questions, meat substitute products could be diversified for segmentation and positioned in the market after additional market research and business inquiries. Some key points that emerged from this study can be seen in summary within the marketing mix framework in Table 3.

Meat substitutes can become more popular if there is adequate demand. As a result of increasing demand for vegetarian food, meat substitutes such as veggie burgers, tofu steaks, and vegan pizzas can be found at retail stores and restaurants in some countries (Rivera & Shani, 2013). As a final point, the success or failure of food products is mainly dependent on salient features, commercial viability, and the management of collaboration between related disciplines. Coordinated efforts between various disciplines like marketing, food technology, epidemiology, and natural product chemistry could play an important role in developing and marketing meat substitutes (Hathwar, Rai, Modi, & Narayan, 2012). Reisch et al. (2013) propose policy measures such as publicly questioning meat consumption levels, increasing taxes on meat products, and even reducing the number of meat dishes

served at public sector restaurants. Such supportive action carried out by policymakers would support the marketing activities of meat substitutes.

Conclusion

Animal-based agriculture and the production and consumption of meat are major burdens on society because of the negative environmental impacts involved, such as large-scale usage of land and other resources as well as the production of emissions and waste (Mylan, 2018). In addition to discussions about environmental concerns, meat consumption has been analyzed in the context of ethics and animal welfare (Ritchie & Roser, 2018). In that context, this study has focused on meat substitutes, which are produced with the aim of replacing meat with plant proteins such as those found in tofu, mushrooms, and lentils as sustainable food (Elzerman et al., 2013).

In recent years, plant-based alternatives to meat have increased in popularity among consumers. As a result of this increased consumer demand, meat substitutes have improved in both taste and texture. Although meat substitutes have attracted increasing industry and consumer attention, the market for such products is very small in Turkey. This is probably due to the fact that commercially available meat substitutes do not satisfy consumer demands. Their sensory qualities, in particular, elicit critical responses from consumers. To obtain a larger market share and increase consumer acceptance, marketers must interpret consumer attitudes regarding meat substitutes. That is why this study focused on consumer perspectives concerning meat substitutes, as it attempts to expand on our knowledge about meat substitutes through the findings of the content analysis. The findings, which are based on the theoretical framework of the food-related lifestyle model (Brunso & Grunert, 1995), indicate that negative consumer perceptions regarding meat substitutes can be categorized in three main dimensions: unhealthiness, unusualness, and poor taste. On the other hand, there are also consumer views regarding the positive aspects of meat substitutes. These positive aspects can be categorized as a general positive attitude toward meat substitutes, good taste, and the necessity of such sustainable products.

Limitations and Future Research Directions

This study is limited to the content analysis of consumer comments posted on various websites and web forums, and as a result of the low level of prevalence of meat substitutes in Turkey, only a limited number of comments were identified. The comments reveal attitudes toward all kinds of meat substitutes but they do not differentiate between types of meat

substitutes such as vegetarian burgers or meatless mince. In addition, personal information about the demographics or eating habits of the users sharing comments on the web forums could not be obtained. The findings could be strengthened by conducting further empirical or experimental research, which would lead to more generalizable results.

Future research could also be conducted with the inclusion of other countries so that comparisons could be made between different countries and cultures. In addition, researchers could focus on different customer groups, such as vegans, vegetarians, and meat-eaters, and reveal their personal motivations for purchasing meat substitute products. From a managerial perspective, current marketing data could be used to differentiate between various market segments and also among different customer groups such as vegans, vegetarians, and meat-eaters. Focus group studies could also be conducted to gain insights about product decisions regarding nutritional content and packaging.

Note

1. The average beef prices for Germany and Spain are based on total volume and retail price data posted by Euromonitor and cross-checked with different online resources (Euromonitor International, 2019a; Eurostat, 2020; Numbeo, 2020).

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