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Editorial

Sustainable Consumer Behavior and Food Marketing

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The global food system accounts for emissions amounting up to 18 Gt CO_2 equivalent per year, representing 34% of total GHG emissions [1] and the environmental impact of food consumption is one of the largest of all private consumption areas [2]. It is estimated, that about one-third of households' total environmental impact (including water and energy consumption, water and soil pollution, GHG emissions) is caused by food and drink consumption [3]. Therefore, the environmental impact can be considerably reduced if food consumption patterns change [4]. Enhancing more sustainable eating and drinking practices is a topic of increasing importance, across all stages along the food supply chain [5]. Accordingly, the scientific research on sustainability of food supply chains has grown steadily over the past decade, highlighting the important role of food consumption and production. This Special Issue is covering different aspects related to sustainable food consumption and production and presents 12 quantitative and qualitative contributions mainly focusing on the analysis of consumers' food consumption behavior and supplemented by related topics.

Inducing consumers to purchase eco-friendly food is essential to reduce greenhouse gas emissions. In order to change food consumption habits toward a more environmentally friendly eating pattern, the study of Penz and Hofmann [6] analyzed consumers' motivational and emotional aspects that influence their food purchase behavior. The qualitative, motivational part of the study found that ethical concerns and personal health cautiousness are the main drivers. Consumers reported that the positive emotion joy was caused by the variety and quality of fresh products and by producing and preparing one's own food. The main negative emotions were sadness, shame, and guilt. These emotions were influenced by the environmental externalities of the industries and consumer behavior patterns. Finally, the quantitative part showed significant influences of both negative and positive emotions on the intention and subsequent purchase of carbon-friendly food applying the Theory of Planned Behavior (TPB). A comparable study of Nekmahmud and Fekete-Farkas [7] aimed at predicting green purchasing decisions of young educated Bangladeshi consumers (n = 638). They, too, applied TPB by developing and testing an extended TPB model. The empirical findings indicate that, amongst others, consumers' environmental concern, green perceived benefits, and willingness to purchase green products have a strong positive influence on consumers' green purchase decisions. The study concludes that young and educated Bangladeshi consumers are interested in buying environmental products, have faith in and support green or environmental marketing. A further important aspect of green consumption tackles animal welfare which is acknowledged to be an essential element to realize sustainability within the food supply chain [8]. In accordance with the previous study, Yeh and Hartmann [9] tested an extension of the TPB to gain a better understanding of the determinants of consumer choices with regard to animal welfare including consumers' Willingness-To-Pay (WTP). They identified two consumer segments, a highly price sensitive one and one describing consumers for whom animal welfare, product variety, and price are of equal importance. The extended TPB model determines the importance of psychological TPB constructs in explaining respondents' consumer choice of processed meat considering different levels of animal welfare. Another

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study focusing on meat consumption by Del Bosque et al. [10] investigated consumer preferences for chicken meat (or more specific, for meat of dual-purpose breeds (DPBs), regionally produced feedstuff, and specific breeds). In general, consumers are interested in meat from DPBs (breeds that can be used for both laying eggs and producing meat). However, consumers showed that this attribute alone did not influence their purchase decision. Information about the origin of the product and the animal feedstuff were much more important. Therefore, Del Bosque et al. [10] assume that the geographical origin seems to be of crucial importance when marketing DPBs. Altogether, the findings of both meat studies [9,10] support previous findings that in order to make meat production more sustainable, alternative production systems are assumed to provide healthier, tastier, and more environmentally as well as animal friendly products [11].

It is widely acknowledged that not only animal welfare is of utmost importance, but also that meat production is the greatest contributor to climate change within agriculture [12]. Carbon savings from adoption of vegan diet have an average mitigation potential of 0.9 tCO2eq/cap [4]. In this respect, stockfree-organic agriculture is an emerging cultivation method (no animals in any part of the production process). The aim of the study of Jürkenbeck and Spiller [13] was to find out how consumers evaluate this relatively new cultivation technology. In general, animal welfare and environmental considerations were of specific interest to consumers. Jürkenbeck and Spiller [13] used a consumer segmentation approach to analyze the level of consumer acceptance of stockfree-organic agriculture and the related market potential amongst vegetarians and vegans. The latter seems to be considerable, almost all vegetarians and vegans supported stockfree-organic agriculture, whereas heavy meat consumers rather refused this cultivation method. Besides meat production and consumption, another important issue within the food supply chain was addressed by Plasek et al. [14]. They focused on large-scale production and consumption of palm oil, which leads to numerous negative externalities, such as deforestation, water and soil pollution, loss of biodiversity, social tension, to name a few [15]. In their research on palm oil, Plasek et al. [14] explored which health, environmental, or social consequences associated with palm oil influence consumers most in their decision not to consume palm oil. The results from a structural equation model analysis showed that the perceived effects of palm oil on health had the strongest influence on consumption intention, followed by environmental damage caused by palm oil production. The purchase intention is mainly influenced by the health effects associated with palm oil. Environmental and health risks perceived in general had a mediating effect only through information seeking.

Another important issue within the food supply chain is scarcity of water and fertile soil. Innovative food production systems, such as vertical farming, urban agriculture, and aquaponics, have been developed to address these issues. In particular, aquaponics seems to be an interesting sustainable food production system combining fish with plant production in a circulation system. The study of Eichhorn and Meixner [16] determined the factors influencing consumers' WTP for aquaponic products. Based on the results, aquaponic products are likely to be highly accepted by consumers. Regarding the WTP, the study highlights that consumers who were most willing to buy aquaponic products were those with higher environmental awareness. While, in general, consumers are still not very familiar with aquaponics, increased knowledge about these benefits could significantly increase WTP, in particular amongst consumers with high perceived environmental awareness. These results imply that practitioners should emphasize the environmental benefits of aquaponics in their communication policy. Beyond individual food consumption practices at home, which were addressed by the pre-mentioned studies, sustainable meal choices in the out-of-home catering market are essential to attaining green consumption patterns. The conclusions of the experimental choice study of Ohlhausen and Langen [17] reveal that respondents (n = 373 employees) had a clear preference for menu variety and spontaneous choice in company canteens. Both propensities impede the uptake of more sustainable behaviors in the catering sector, while other attributes in connection with ingredients were of less importance.

In addition to the crucial role of consumer behavior, Özkaya et al. [18] investigated how sustainable consumption is perceived by experts. Özkaya et al. [18] evaluated the sustainable consumption of food (SCF) concept and consumers' barriers to changing their consumption behavior towards higher sustainability. Twenty-five experts from various fields were interviewed, confirming the lack of awareness, unplanned shopping, and mistakes in post-consumption behavior are hindering the uptake of more sustainable consumption of food. In addition, absence of knowledge about the consequences of meat production, difficulties in changing lifestyles, and lack of motivation were identified barriers to SCF. Confirming the concept "sustainability" itself, it is of utmost importance to address the unsolved issue of measurement inaccuracy. This issue was addressed by Sosa et al. [19] in the field of tourism. They propose a selection of sustainability indicators that allow a better understanding of the connection between food and community-based tourism. The result is a list of 27 indicators, divided into socio-cultural, environmental, tourism, and economic dimensions. Another hypothetic dimension that might influence consumer behavior towards greener consumption patterns is trust. Rajković et al. [20] focused in their study on new forms of digital communication and investigated how companies could influence the crucial credence attribute "trust" in their social media communication. This is of particular interest as communication within and towards a virtual community via social media and the related trust-building mechanisms in an online environment are influencing purchase decisions (they applied structural equation modeling to investigate the connection between trust and willingness to purchase). Finally, the priority attribute within the food supply chain "price" was investigated by Huffaker et al. [21]. They focus on endogenously unstable markets (on the example of the global-domestic coffee supply chain in Papua New Guinea). Moving from consumer to market behavior and consequently to economic sustainability, the study completes the comprehensive look at the food supply chain of this Special Issue. Huffaker's et al. [21] main argument is that due to systematic frictions in unstable markets, conventional approaches fail to test for price-transmissions if markets do not tend to equilibrate. They further propose a new framework including, amongst others, nonlinear time series analysis, and they conclude that in the case of the investigated coffee supply chain price transmission from the global to the domestic market did not reach the producers (it did for domestic exporters and processors). Nevertheless, based on their analysis, market intervention was not appropriate to protect rural producers but rather non-market related tools (e.g., price supports).

Altogether, the contributions within this Special Issue deliver a comprehensive look at consumer behavior in the food sector, sustainability, and related marketing issues. To achieve the SDGs of the European Union towards higher sustainability, a large number of conceivable actions are connected to green consumer behavior. Therefore, we would like to thank all the authors for their contribution to this Special Issue supporting our understanding and delivering valuable insights into sustainable consumer behavior. We also want to thank the external reviewers for their feedback, comments, and suggestions, which helped to improve the significance of the contributions, and finally, we would like to express our particular thanks to the staff of MDPI for their valuable support.

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