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Market-oriented Innovation of Plant-based Products: Consumer Motivations and Product Attribute Importance

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ABSTRACT

The plant-based food and beverage market has experienced significant growth across all global consumer markets, and it is projected that sales of plant-based products (PBPs) will continue to increase in the coming years in response to consumer demand. The PBPs market is therefore an important area of research as it presents a significant opportunity for innovation for existing PBP producers and new market entrants. This study examined PBP consumption, motivations, and important product attributes, using an online consumer survey. Responses from PBP consumers (n=353) were statistically analysed (descriptive statistics and Principal Component Analysis), with results finding that the greatest proportion of consumers in the sample identified as omnivores, and that the majority of the sample consumed PBPs regularly. Findings further identified the most popular product categories of meat and dairy alternatives consumed, the key motivations for consumption of these products, and the product attributes most important to consumers when choosing a PBP. The authors conclude by proposing a future framework for research which summarises key conclusions from the study.

Keywords: Plant-based products; meat-alternative; dairy-alternative; consumer motivations; sustainability; market-oriented.

1 Introduction

Plant-based Products (PBPs) present significant competition and disruption to the global meat and dairy sector, as consumer preferences move towards more sustainable and healthy food choices. Sales of PBPs in the US increased by 29% during 2018-2019 to $5bn, with the European meat substitute market forecast to reach €2.4bn by 2025 (Deloitte, 2019; GFI, 2020). The PBP market presents a significant opportunity for innovation for existing PBP producers and new market entrants. Growth in the PBP sector has been driven by the mainstream emergence of 'flexitarians', those who still consume meat and dairy but seek to reduce levels of consumption and increased numbers of vegetarians and vegans, as consumers respond to ethical, environmental and health concerns (de Boer and Aiking, 2018; Peschel *et al*., 2019). A market-oriented approach to developing new PBPs seeks to explore the underlying factors that influence preferences to closely meet consumer needs. This study aims: (i) to investigate PBPs consumption and to what extent PBPs consumers identify with the categories of 'vegan', 'vegetarian' 'flexitarian' and 'omnivore'; (ii) to examine differences in motivations for choosing PBPs for consumers in these categories; and (iii) to identify product attributes which influence PBPs consumption.

2 Methods

An online consumer survey collected data from PBP consumers (n=353) across the UK and Ireland and results were analysed using SPSSv26. The survey contained questions relating to PBP product type consumption and frequency, motivations for consumption, and the importance of various product attributes when choosing PBPs. Respondents were also asked to identify with one of the following dietary categories: omnivore, flexitarian, vegetarian and vegan. Descriptive statistics examined the prevalence of consumers across categories and levels of agreement regarding motivations for consumption and important product attributes. A Principal Component Analysis (PCA) (varimax rotation and Kaiser normalisation) was used to reduce PBP attribute variables (n=15) and extract components that represented the underlying dimensions of PBP attribute importance.

3 Results

The majority of the sample were currently residing in the Republic of Ireland (84.4%), with the remainder in the United Kingdom. Almost three-quarters of the sample (73.7%) were females, and the majority of respondents (87.8%) had attained a university/college level education. Household income varied among the sample, however over half of the sample (67.4%) had an income between €0-80,000/£0-62,000. Respondents in the majority represented an urban population (73.1%), with 39.1% living in an urban city (more than 50,000 people) and 34% living in an urban town (between 1,500 and 49,999 people).

The greatest proportion of PBP consumers identified as omnivores (36.8%), followed by vegetarians (24.4%), flexitarians (21.5%) and vegans (17.3%) (Figure 1).

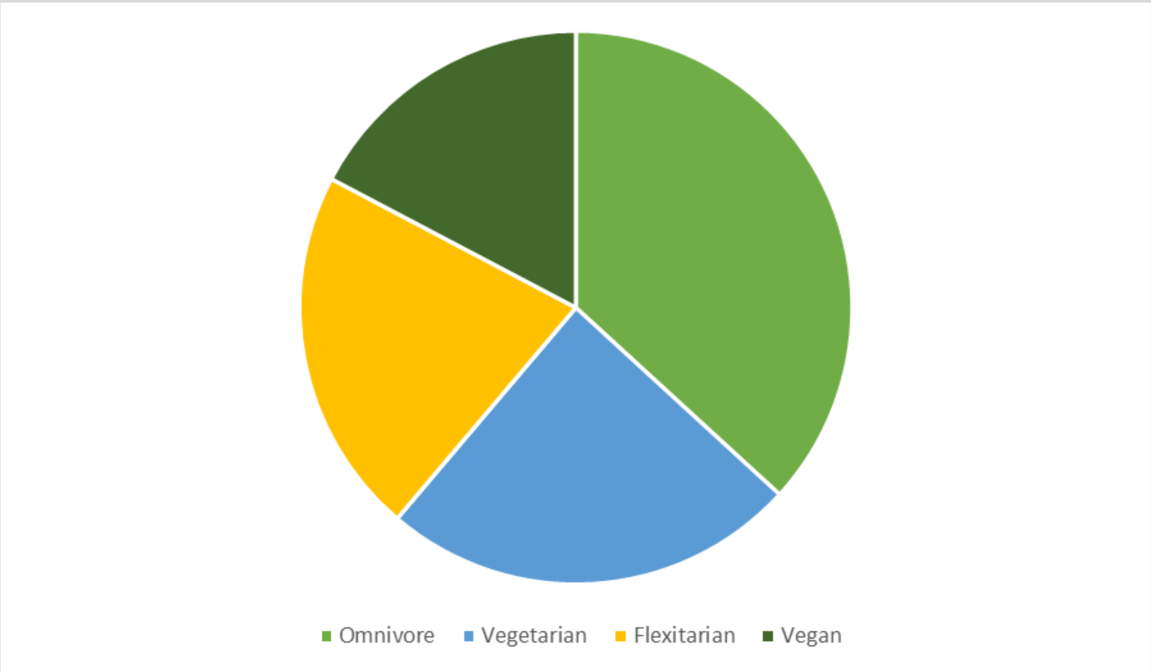

Figure 1. Dietary category identified with by participants

The majority of the sample (72.2%) indicated that they consumed PBPs regularly, while 27.8% of the respondents consumed PBPs infrequently. Almond milk (82.2%) and natural meat substitutes made from mushrooms and lentils (92%) were the most popularly consumed PBP products.

Key motivations for PBP consumption across dietary categories were 'sustainability', 'animal welfare', and 'health reasons'. For vegetarians and vegans, the key motivation was 'animal welfare', and for omnivores 'to add variety to my diet', while for flexitarians, the key motivation was 'health reasons'.

Mean scores indicating level of importance of various PBP attributes (as ranked on a Likert scale) identified 'taste', 'ingredient list', 'product information on the label', 'sustainable packaging' and 'health' to be the most important PBP attributes. The PCA on product attribute scores identified five components with eigenvalues greater than 1.00, which together explained 62.5% of the total variance. Variables loaded strongly on five components, termed as 'product information', 'sustainability credentials', 'sensory properties', 'cost considerations' and 'trustworthiness'.

4 Discussion, Conclusions and Recommendations

This research proposes a future framework for research which summarises key conclusions from this study.

4.1 Opportunities and threats of increasing PBP consumption

This study's finding that the greatest proportion of PBP consumers identified as omnivores, corroborates previous research findings (Allen and Warwick, 2019; Nielsen, 2019), that it is not just those identifying as vegetarians / vegans or flexitarians who are consuming plant-based products. It must be recognised therefore that although these products present market opportunity, they can also be considered a significant threat to the profitability of the agri-food sector. It is important therefore to adopt a wider lens view of sustainability, i.e. how do PBPs affect the sustainability of farms which rely on dairy and meat products for their livelihoods, and what policy action is necessary to make meat and dairy production more sustainable?

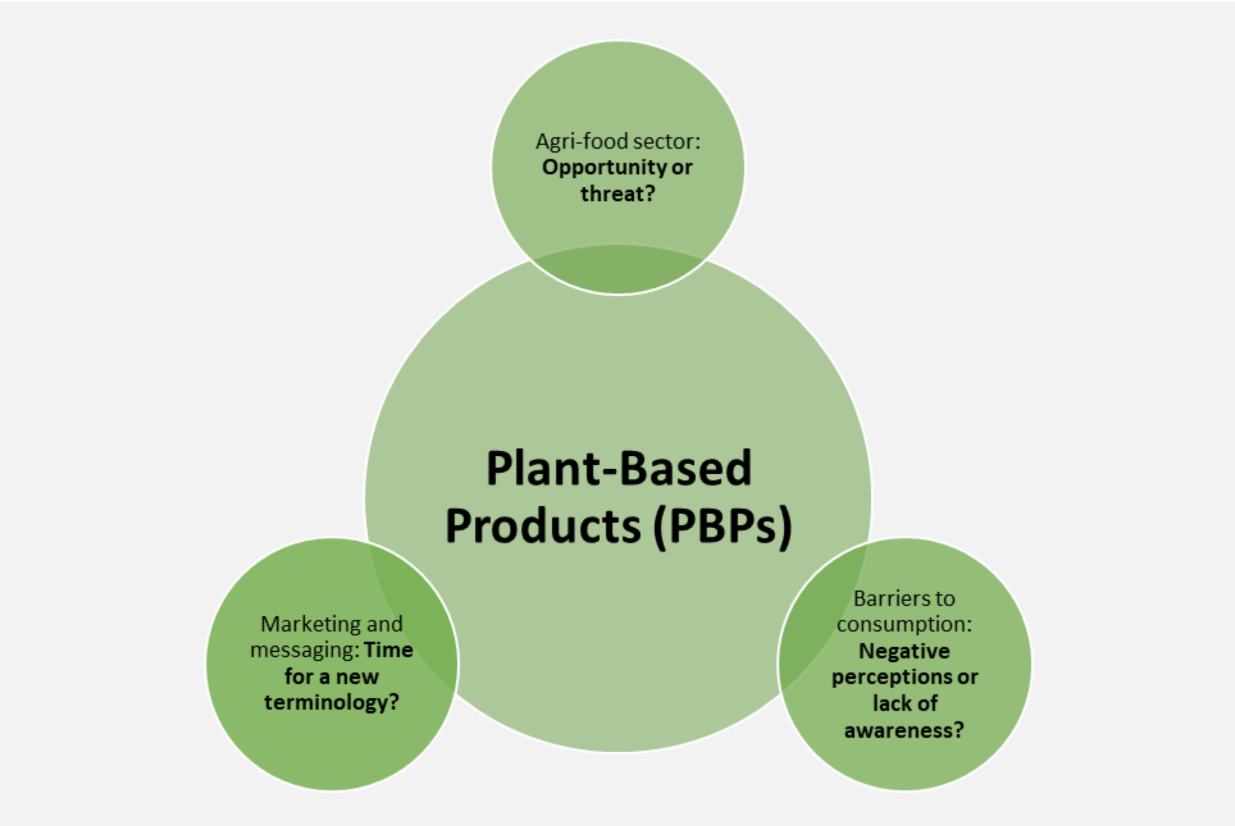

Figure 2. Framework for future research agenda

4.2 Barriers to PBP consumption

This study found that females and more educated consumers were in the majority consuming these products. Previous research has found that females are more likely to adopt a plant-based diet than males (Modlinska *et al.,* 2020), and that higher education correlates with characteristics of consumer segments who were identified as being more likely to choose vegan or sustainable products (Sarti *et al*., 2018). Future research on the topic should therefore examine barriers to PBP consumption for other groups, to thereby inform targeting of PBPs to non or low-usage PBP consumers. Are there perceptions about these products that need to be overcome, or do consumers lack awareness about these products?

4.3 New strategies for marketing plant-based products

The theme of marketing and messaging for PBPs is relevant and currently underexplored. A decision of the European Court of Justice in October 2020 to allow labels such as '*vegan burger*' and '*vegan sausages*' is likely to spur intense controversies in the area of plant-based foods labelling, especially since the same Court in June 2017 banned the use of dairy-style terms like *'milk*', '*butter*' or '*cheese*' for plant-based products (Curia, 2017; Abnett, 2020). Considering the fact that PBPs are becoming more attractive, is there a need for new messaging strategies that would open up this product category to broader consumer segments? Can PBPs be promoted in a different way (not only vegan friendly or plant-based)?

To conclude, overall findings are of interest to PBPs producers as they evidence market demand beyond those identifying as 'vegan' and 'vegetarian' and provide insights on motivations for consumption and product attributes, which can inform market-oriented product development and marketing strategies. To compete in an increasingly dynamic marketplace, PBPs producers should: provide clear product information on labels, consider sustainability, aim to maximise the sensory qualities of products while also considering healthfulness; and use appropriate pricing and promotional strategies to increase visibility and purchases.

References

Abnett, K. (2020). *EU lawmakers vote for 'veggie burgers', take hard line on dairy labels*. Reuters. Available at: https://uk.reuters.com/article/us-eu-food-vegetarian-idUKKBN2781ST [Accessed 10th December 2020].

Allen, R. and Warwick, C. (2019). *A plant-based future?* Kantar Talks. Available at: https://consulting.kantar.com/wp-content/uploads/2019/10/Kantartalks_A-plant-based-future_2019.pdf [Accessed 11th December 2020].

Curia (2017). *Court of Justice of the European Union. Purely plant-based products cannot, in principle, be marketed with designations such as 'milk', 'cream', 'butter', 'cheese' or 'yoghurt', which are reserved by EU law for animal products*. Available at: https://curia.europa.eu/jcms/upload/docs/application/pdf/2017-06/cp170063en.pdf [Accessed 11th December 2020].

de Boer, J. and Aiking, H. (2018) Prospects for pro-environmental protein consumption in Europe: Cultural, culinary, economic and psychological factors, *Appetite* **121**: 29-40. https://doi.org/10.1016/j.appet.2017.10.042.

Deloitte (2019). *Plant-based alternatives: Driving industry M&A*. Available at: https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/consumer-business/deloitte-uk-plant-based-alternatives.pdf [Accessed 10th December 2020].

The Good Food Institute (GFI) (2020) *Plant-Based Market Overview*. Available at: https://www.gfi.org/marketresearch#:~:text=New%20SPINS%20retail%20sales%20data,two%20years%20to%20%245%20billion [Accessed 10th December 2020].

Modlinska, K., Adamczyk, D., Maison, D. and Pisula, W. (2020) Gender differences in attitudes to vegans/vegetarians and their food preferences, and their implications for promoting sustainable dietary patterns–a systematic review, *Sustainability*, 12: 6292-6309. https://doi.org/10.3390/su12166292

Nielsen (2019). *Nielsen Homescan: Meet the new 'meat' eater*. Available at: https://www.nielsen.com/us/en/insights/article/2019/meet-the-new-meat-eater/ [Accessed 11th December 2020].

Peschel, A.O., Kazemi, S., Liebichova, M., Sarraf, S.C.M. and Aschemann-Witzel, J. (2019) Consumers' associative networks of plant-based food product communications, *Food Quality and Preference* **75**: 145–156. https://doi.org/10.1016/j.foodqual.2019.02.015

Sarti, S., Darnall, N. and Testa, F. (2018). Market segmentation of consumers based on their actual sustainability and health-related purchases. *Journal of Cleaner Production* **192**, 270–280. https://doi.org/10.1016/j.jclepro.2018.04.188