

Extended Abstract

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Paper/Poster Title	Low carbon beef: factors influencing sustainable purchase intentions of British consumers
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Abstract prepared for presentation at the 97th Annual Conference of the Agricultural Economics Society, The University of Warwick, United Kingdom

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Abstract	200 words max
<p>The increasing demand for food, climate change and global warming are worldwide concerns, not least for putting food security at risk. Public policies to reduce the emission of greenhouse gases have been developed in many countries in an attempt to mitigate their harmful effects to nature. This study analyses consumers' awareness and perceptions of the environmental impact of the beef, and their intentions to purchase sustainable products, such as beef produced with a lower carbon footprint. The hypotheses tested are based on a review of the theory of planned behaviour (TPB) literature, forming a model extended through the addition of environmental knowledge and self-identity as exogenous determinants of attitudes. The analysis uses primary survey data collected in June 2020 in The United Kingdom (500 responses) and partial least squares structural equation modelling. The model's goodness of fit indicators validate the hypotheses and conceptual framework and the findings show that the model has strong predictive potential and robustness, attitudes have a significant influence on intentions to purchase low carbon beef, and environmental knowledge and self-identity positively impact consumers' sustainability concerns. The results provide an insight into the effect of information on consumers' pro-environmental behaviour, of relevance to both policy and markets.</p>	
Keywords	beef consumption, low carbon footprint, theory of planned behaviour, structural equation modelling, British consumers
JEL Code	A1 see: www.aeaweb.org/jel/guide/jel.php?class=Q)
Introduction	100 – 250 words
<p><i>The global demand for livestock products is projected to grow by 70% by 2050. Different studies have shown the impact that the beef cattle chain has on the environment due to greenhouse gas (GHGs) emissions. Different scenarios have been presented to mitigate the negative externalities of this chain, from the demand and supply side of this chain. Behavioural change and technological innovations must be implemented in the agriculture sector in order to meet the Sustainable Development Goals. To address this issue, this study aims to provide insight into the factors influencing British consumers' intentions to purchase low-carbon beef (LCB) products. The data was collected in June 2020, with 500 respondents answering a 26-question survey that was designed based on the Theory of Planned Behaviour (TPB), which was extended by adding two variables, environmental knowledge and self-identity that influence consumers' attitudes. Structural equation modelling (SEM) was used to test the conceptual model estimated by partial least square (PLS software). The results</i></p>	

provide guidance to policy makers and the beef industry about demand aspects that may drive market and policy change towards a more resource efficient sector

Methodology

100 – 250 words

To test influences on consumers’ LCB purchasing intentions, we extend the TPB model to consider knowledge and self-identity as predictors of a person’s beliefs towards their attitudes. We built the conceptual model based on 7 hypotheses drawn from a review of recent literature on consumers’ environmentally friendly behaviour and pro-environmental purchasing intentions. To test the conceptual model and research hypotheses, structural equation modelling (SEM) was used, an approach commonly applied in studies focused on the impact of determining factors on consumer behaviour. The model is estimated with partial least square method and statistical package SmartPLS. Model fit was assessed using the relevant range of goodness-of-fit indicators, including Standardized Root Mean Square Residuals (SRMR), Square Euclidean Distance (d-ULS), Geodesic distance (dG), and Normed Fit Index (NFI). Model validity was assessed in a two-step procedure, measurement and structural models. The questionnaire, designed based on a review of the literature and expert opinion, its statements used in this analysis formed ordinal variables measured on a five-point Likert scale ranging from “strongly disagree” (1) to “strongly agree” (5). It was applied in June 2020 with 500 British respondents.

Results

100 – 250 words

The model stabilised after six iterations, following the necessary exclusion of the PBC2 indicator of the Perceived Behaviour Control latent variable due to the factor loading below 0.6 and affecting the average variance extracted ($\lambda = 0.249$). The structural model had acceptable goodness of fit values (SRMR = 0.073, d-ULS = 1.735, d-G = 0.467, NFI = 0.855) with SRMR value below the threshold of 0.08 and NFI value above the recommended value of 0.8. The discriminant validity was measured by two approaches: Fornell-Larcker (1981) and Heterotrait-Monotrait Ratio (HTMT) according to Henseler et al. (2015). Both criteria were met. TPB variables - Attitude, Social Norms and Perceived Behavioural Control - have positive effects in the mediation of Intention. Attitude has a stronger direct effect on Intention than its indirect effect mediated by Behaviour (the latter lower than Social Norms’ effect).

Discussion and Conclusion

100 – 250 words

The non-TPB constructs, declarative knowledge and self-identity, added as predictors of attitudes, have a positive effect on the latter, thus validating hypotheses H1 and H2, namely



that consumers who are aware of the environmental footprint of beef production and identify themselves as someone discerning as regards the multiple aspects of consumption including environmental impact, are more likely to hold pro-nature attitudes. Pro-environmental attitudes have statistically significant positive effects on both LCB purchasing behaviour and intention, thus confirming hypothesis H3 and H4. Social norms have a statistically significant positive effect on LCB purchasing behaviour, thus validating hypothesis H5, which stipulates that one's peers' attitudes towards green consumption may influence one's LCB purchasing behaviour. Hypothesis H6 was also validated, albeit the lowest influence compared with attitude and social norms.

Our findings point towards the conflicting influence of perceived behavioural control, which has the lowest impact on behaviour, although still explaining a share of its variance. This influence refers to both financial constraints and availability of beef products clearly labelled low carbon. Policy and industry should collaborate in designing mechanisms to incentivise an optimal redistribution of the cost low carbon beef along the supply chain from producers to consumers, so that more producers can remain financially sustainable while complying with increased environmental requirements, and more consumers can afford to lower their consumption footprint until/unless ready to shift to alternative sources of protein.