Novel foods consumption: Chinese consumers' perception, acceptance and influencing factors for purchase intentions

Zhu, Ying ; Begho, T

Print publication: 01/03/2023

Novel foods consumption: Chinese consumers' perception, acceptance and influencing factors for purchase intentions

Ying Zhu[1], Toritseju Begho[2]*,

[1] School of GeoSciences, University of Edinburgh, King's Buildings, West Mains Road, Edinburgh, EH9 3JY, United Kingdom, Edinburgh, Scotland
[2] Rural Economy, Environment & Society, Scotland's Rural College (SRUC), Peter Wilson Building, King's Buildings, W Mains Rd, Edinburgh EH9 3JG United Kingdom.

*Corresponding author
Toritseju Begho,
Email. Toritseju.Begho@sruc.ac.uk ORCID ID: 0000-0003-2137-2826.

Word count: 1197 (excluding reference)

CV

Ying Zhu holds an MSc from the University of Edinburgh UK and is interested in conducting research in sustainable food consumption, consumer behaviour and food security.

Toritseju Begho is a researcher at Scotland's Rural College (SRUC). His research spans agricultural, experimental and behavioural economics, focusing on understanding farmers' and consumers' judgment and decision making.

Novel foods consumption: Chinese consumers' perception, acceptance and influencing factors for purchase intentions

Abstract

The rapid increase in China's meat consumption has produced various environmental, resource, health and animal welfare issues. Novel food such as plant-based meat (PBM) and cultured meat are viewed as meat substitutes to potentially mitigate these issues. PBM specifically is becoming increasingly available in the Chinese market, but little is known about Chinese consumers' attitudes and purchase intentions towards PBM. Hence, this paper investigates the perception and acceptance of PBM, as well as factors influencing purchase intentions. Data from 210 consumers were analysed. The results showed that Chinese consumers have a positive perception of PBM as being more environmentally friendly than animal meat. The majority of respondents neither support nor oppose the consumption of PBM as an alternative to traditional meat. The binary logistic regression results indicate that consumers' judgement of the price value of meat, eating history of PBM, and risk perceptions towards novel and new foods are significant factors influencing their consumption of PBM. Several strategies to promote the consumption of PBMs are also discussed.

Keywords. Novel food, plant-based meat, consumer perception, purchase intention

Background

The world's population is predicted to reach 9 billion by 2050, and the demand for meat is projected to rise if the current trends are maintained (Boland et al., 2013; Anusha et al., 2022). However, animal meat is considered unsustainable due to its threat to the environment and natural resources (Westhoek et al., 2014; Bonnet et al., 2020). Plant-based meat (PBM), cultured meat, and edible insects are promising meat substitutes (Lee et al., 2020; Circus & Robison, 2019). Compared to the other types of meat substitutes, PBM is relatively well-established in the market. PBM is a meat substitute that utilises proteins derived solely from plants to create a meat equivalent with a similar texture and flavour (Bonny et al., 2015). PBM products have some distinct advantages over conventionally produced meat. For example, PBM performs better in minimising environmental pollution, resource consumption, and impact on human health (Rizkalla et al., 2002; Anderson & Major, 2002; Westhoek et al., 2014). Notably, there are controversies around PBM. One concern is whether PBM can provide comparable nutritional value to animal meat (Asgar et al., 2010; Joshi & Kumar, 2015).

Several factors have been found to influence the perception and purchase of new foods in general and PBM specifically. For example, sociodemographic differences influence consumers' attitudes towards PBM (Slade, 2018; Siegrist & Hartmann, 2019). Similarly, consumers' perceptions, attitudes, familiarity with new food, and food product-related attributes are important factors influencing the acceptance of novel foods (Bryant et al., 2019; Sha & Xiong, 2020).

While there is considerable research on consumers' acceptance of meat substitutes, some gaps exist. For example, the literature has focused mostly on Western nations. Therefore, independent research on Chinese consumers is sparse. Further, only a few studies on Chinese consumers emphasised PBM as their focus. Previous literature focused mostly on consumer engagement with cultured meat and edible insects as meat substitutes. Thus, this paper investigates Chinese consumers' perceptions, acceptance, and factors influencing the purchase of PBM.

Materials and methods

An online survey was conducted to collect data in June 2022. The survey consisted of 40 questions. The questionnaire contained three parts, mainly consisting of 5-point Likert-type scales and multiple-choice questions, and took approximately 15-20 minutes. In total, 210 participants completed the questionnaire. Descriptive analysis was used to summarise the sociodemographic information, while binary logistic regression was estimated to identify the factors influencing consumers to purchase PBM.

Result

As expected from an online survey, 90% of the study's participants resided in urban areas. Approximately 57% of the participants were female. A considerably greater number of the individuals were young, with 33% between 18 and 24, and the majority had a monthly income between 5,000 and 8,000 RMB (24 %). 21% of the participants expressed support for the consumption of PBM, while 66% were neither in support nor against it. Regarding purchase intentions, only 25% of the participants expressed their intention to purchase PBM in the next three months. Most consumers perceived animal meat to offer better price value. In terms of health and food safety risks, there was little difference between consumers' perceptions of PBM and animal meat. In contrast, PBM had a better environmental perception.

The binary logistic regression result is displayed in Table 1. Consumer perception of a better price value for meat compared to meat substitutes, negative disposition to novel foods in general, high risk perception and low desire to take risks had a significant and negative effect on consumer willingness to purchase PBM. Being older, previous consumption of PBM and the extent of the desire to reduce meat consumption had a significant and positive effect on consumer willingness to purchase PBM. Consumers who had eaten PBM were 2.6 times more likely to purchase it than those who had not eaten it.

Table 1. Binary logistic regression of the determinants of consumer willingness to purchase PBM

Variables	Coefficient	*p*-value	Odds-ratio
Age	0.476	0.037*	1.610
Gender	0.808	0.071	2.244
Income	-0.208	0.161	0.812
Education level	-0.195	0.745	0.832
Residential area	0.340	0.666	1.405
Lower cost	0.115	0.611	1.122
Available processing information	0.246	0.496	1.278
Familiarity with ingredients	-0.283	0.440	0.753
Longer shelf life	0.327	0.135	1.386
No additives	0.216	0.439	1.241
Convenience	-0.351	0.253	0.704
Healthier	0.272	0.503	1.312
Tastier	0.302	0.352	1.352
Better for the environment	0.605	0.266	1.832
Better price value	-0.794	0.034*	0.452
Better quality of production process	0.635	0.147	1.886
Lower food safety risk	0.229	0.559	1.258
Nutrition perception	0.353	0.111	1.424
Acceptance of new food	-0.529	0.021*	0.589
Risk perception for new food	-0.641	0.019*	0.527
Risk preference	-0.874	0.011*	0.417
Eating history	0.974	0.039*	2.650
Desire to eat less meat	0.386	0.140	1.471
Extent of reducing meat consumption	0.762	0.027*	2.142
Constant	-4.395	0.035	0.012
LR(chi-sq)	85.031	0.001*	

* $p < 0.05$

Discussion and conclusion

The paper shows that Chinese consumers had slightly more positive environmental perceptions of PBM than animal meat and that most Chinese consumers are aware of the environmental issues associated with the production and consumption of animal meat. Conversely, some studies in Western countries such as the USA, Germany and Australia have shown that only a minority (18-28%) of consumers agreed that meat production and consumption have a detrimental impact on the environment (Clonan et al., 2015; Campbell-Arvai, 2015).

Since consumers' perceptions influenced consumer willingness to purchase PBM, we make a similar recommendation to that of Tosun et al. (2021) that multi-format advertisements could be considered in the future to expand consumers' knowledge of various aspects of PBM in order to improve perceptions and increase their likelihood of purchasing.

Currently, the development of PBM in China is in its infancy, and consumers' comprehension of PBM is limited. Initiatives are required to improve consumer knowledge of PBM. Several potential risks, such as nutrition, health and food safety, are key barriers to consumers' willingness to consume PBM. To address these barriers, the government and producers should actively seek solutions to produce PBM with better value on price while minimising consumer risk concerns.

References

Anderson, J. W., & Major, A. W. (2002). Pulses and lipaemia, short-and long-term effect: potential in the prevention of cardiovascular disease. British Journal of Nutrition, 88(S3), 263-271. https ://doi.org/10.1079/BJN2002716

Anusha Siddiqui, S., Bahmid, N. A., Mahmud, C. M., Boukid, F., Lamri, M., & Gagaoua, M. (2022). Consumer acceptability of plant-, seaweed-, and insect-based foods as alternatives to meat: a critical compilation of a decade of research. Critical Reviews in Food Science and Nutrition, 1-22. https://doi.org/10.1080/10408398.2022.2036096

Asgar, M., Fazilah, A., Huda, N., Bhat, R., & Karim, A. A. (2010). Nonmeat protein alternatives as meat extenders and meat analogs. Comprehensive reviews in food science and food safety, 9(5), 513-529. https://doi.org/10.1111/j.1541-4337.2010.00124.x

Boland, M. J., Rae, A. N., Vereijken, J. M., Meuwissen, M. P., Fischer, A. R., van Boekel, M. A., ... & Hendriks, W. H. (2013). The future supply of animal-derived protein for human consumption. Trends in food science & technology, 29(1), 62-73. https://doi.org/10.1016/j.tifs.2012.07.002

Bonnet, C., Bouamra-Mechemache, Z., Réquillart, V., & Treich, N. (2020). Regulating meat consumption to improve health, the environment and animal welfare. Food Policy, 97, 101847. https://doi.org/10.1016/j.foodpol.2020.101847

Bonny, S. P., Gardner, G. E., Pethick, D. W., & Hocquette, J. F. (2015). What is artificial meat and what does it mean for the future of the meat industry?. Journal of Integrative Agriculture, 14(2), 255-263. https://doi.org/10.1016/S2095-3119(14)60888-1

Bryant, C., Szejda, K., Parekh, N., Deshpande, V., & Tse, B. (2019). A survey of consumer perceptions of plant-based and clean meat in the USA, India, and China. Frontiers in Sustainable Food Systems, 3, 11. https://doi.org/10.3389/fsufs.2019.00011

Campbell-Arvai, V. (2015), "Food-related environmental beliefs and behaviours among university undergraduates: A mixed-methods study", International Journal of Sustainability in Higher Education, Vol. 16 No. 3, pp. 279-295. https://doi.org/10.1108/IJSHE-06-2013-0071

Circus, V.E. and Robison, R. (2019), "Exploring perceptions of sustainable proteins and meat attachment", British Food Journal,121(2), 533-545. https://doi.org/10.1108/BFJ-01-2018-0025

Clonan, A., Wilson, P., Swift, J., Leibovici, D., & Holdsworth, M. (2015). Red and processed meat consumption and purchasing behaviours and attitudes: Impacts for human health, animal welfare and environmental sustainability. Public Health Nutrition, 18(13), 2446-2456. doi:10.1017/S1368980015000567

Joshi, V. K., & Kumar, S. (2015). Meat Analogues: Plant based alternatives to meat products-A review. International Journal of Food and Fermentation Technology, 5(2), 107-119.

Lee, H. J., Yong, H. I., Kim, M., Choi, Y. S., & Jo, C. (2020). Status of meat alternatives and their potential role in the future meat market—A review. Asian-Australasian journal of animal sciences, 33(10), 1533.

Rizkalla, S. W., Bellisle, F., & Slama, G. (2002). Health benefits of low glycaemic index foods, such as pulses, in diabetic patients and healthy individuals. British Journal of Nutrition, 88(S3), 255-262. https ://doi.org/10.1079/BJN2002715

Sha, L., & Xiong, Y. L. (2020). Plant protein-based alternatives of reconstructed meat: Science, technology, and challenges. Trends in Food Science & Technology, 102, 51-61. https://doi.org/10.1016/j.tifs.2020.05.022

Siegrist, M., & Hartmann, C. (2019). Impact of sustainability perception on consumption of organic meat and meat substitutes. Appetite, 132, 196-202. https://doi.org/10.1016/j.appet.2018.09.016

Slade, P. (2018). If you build it, will they eat it? Consumer preferences for plant-based and cultured meat burgers. Appetite, 125, 428-437. https://doi.org/10.1016/j.appet.2018.02.030

Tosun, P., Yanar, M., Sezgin, S., & Uray, N. (2021). Meat substitutes in sustainability context: A content analysis of consumer attitudes. Journal of international food & Agribusiness Marketing, 33(5), 541-563. https://doi.org/10.1080/08974438.2020.1840475

Westhoek, H., Lesschen, J. P., Rood, T., Wagner, S., De Marco, A., Murphy-Bokern, D., ... & Oenema, O. (2014). Food choices, health and environment: Effects of cutting Europe's meat

and dairy intake. Global Environmental Change, 26, 196-205.
https://doi.org/10.1016/j.gloenvcha.2014.02.004