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Article

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Consumer preferences for country of origin of foreign fruit: does consumer animosity matter?

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ABSTRACT

Previous research suggests the existence of variables that can moderate the influence of country of origin (COO) on consumer preferences for food products. However, there is a scarcity of studies investigating the moderating effect of consumer animosity on the connection between COO attributes and consumer preferences. This study represented an initial attempt to examine consumer preferences for imported fruit from countries involved in disputes with a target country, compared to countries with fewer or no disputes. A choice-based experiment was conducted with 180 respondents in Vietnam's Mekong River Delta region, using Random Utility Theory (RUT) and the Generalized Multinomial Logit model. The results show significant heterogeneity in consumer preferences for attributes such as COO, traceability label, organic label, and price. However, there is homogeneity in preference for fruit size. Consumer animosity towards a specific country plays a crucial role in shaping choice behavior, as higher animosity leads consumers to prefer the same product from other countries. This study effectively addresses domestic bias by isolating the effects of consumer ethnocentrism, making it a valuable contribution to the field. It also provides practical implications for fruit importers, domestic producers, and retailers in Vietnam by highlighting the importance of different attributes of foreign fruit.

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1. Introduction

Based on a systematic review conducted by Thøgersen (2023) that examined research studies between 2010 and 2023, it has been documented that the COO of food products plays a significant role in consumers' food choices. The importance of origin information is highlighted by the fact that European Union (EU) countries implement policies to identify the origin of food products (Stojanovic, 2021). Customers are concerned about the origin of their food (Aboah & Lees, 2020; Maesano et al., 2020) as the absence of COO indication can lead to potential consumer deception. For example, German consumers tend to prefer fish produced in Germany over those from Bangladesh or Vietnam (Hinkes & Schulze-Ehlers, 2018). Consequently, origin labeling has become mandatory in EU countries. Thøgersen (2023) also emphasizes the necessity for further research to address gaps in consumer knowledge, gain a deeper understanding of the significance of origin information, and identify the reasons why COO is important to consumers.

Another literature review conducted by Moser et al. (2011) focused on consumer preferences for fruit and documented that various attributes, including organic certification, origin, price, and visual appearance, influence customers' willingness to purchase. In addition to assessing product quality, consumers also seek information about the origin of a product. Both Moser et al. (2011) and Thøgersen (2023) found that consumers tend to perceive domestic food as superior to foreign products.

Based on the insights gained from previous research, the following research questions arise: How do consumers compare a product from different foreign countries when there is no domestic alternative

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available? Does consumers' animosity towards a particular country influence their willingness to purchase products from other foreign countries? Previous studies have explored consumers' willingness to purchase products from domestic versus foreign countries, and a few have examined the comparison between domestic and multiple foreign products. However, the inclusion of such a domestic option in the alternative set of consumers may lead to a strong domestic bias (i.e. ethnocentric bias). Thøgersen (2023) calls for research that separates the impact of consumer ethnocentrism from other reasons why one is interested in COO. Therefore, the objective of this study is to investigate the impact of COO and other product attributes such as organic certification, traceability, price, and visual appearance, as well as the interaction role of consumers' animosity, on their willingness to purchase apples from various foreign countries. Specifically, the study aims to explore the role of COO and the effect of animosity towards a specific country, such as China, on consumer preferences and willingness to purchase the same product from other foreign countries.

This study adopts the lens of Random Utility Theory (RUT), which assumes that individuals or decision makers 'seek to maximize their self-interest' and their choice behavior is driven by the 'maximization of utility' (McFadden, 1986, 2001). Utility is composed of both systematic and random components. The systematic components are typically observed through the attributes of a product or service, while the random components may involve unmeasured or unobserved factors. Furthermore, attitudes such as animosity can play a moderating role, and socio-economic characteristics have the potential to modify utility.

To achieve this objective, this study leverages recent developments in econometric modeling to analyze data from choice experiments, specifically utilizing the Generalized Multinomial Logit (GMNL) model. The GMNL model represents an improvement over previous models by removing restrictive and unnecessary assumptions. It allows for the measurement of both the heterogeneity in preferences among individuals and the random nature of customer selection behavior, often referred to as scale heterogeneity.

This study is anticipated to contribute to theory in several ways. Firstly, it reinforces the robustness of the GMNL model and underscores the importance of considering both preference heterogeneity and the random nature of consumer choice behavior. The study focuses specifically on COO and customer preferences for imported fruit. Secondly, the study introduces a new moderator, i.e. customer's animosity, to provide empirical evidence on consumer priorities regarding imported products, thereby expanding the theoretical framework of Random Utility Theory (RUT). It examines how individual utility in purchasing products, particularly the effect of COO, can be influenced by consumer animosity.

The subsequent section of this paper introduces the theoretical framework, which presents the research model that delineates the connections between customer's animosity, COO and other product attributes in relation to consumers' willingness to buy. The methodology section follows, encompassing a description of the research design, methods employed for data collection, sample selection process, and measurement instruments utilized. Furthermore, it outlines the statistical techniques or econometric models employed, specifically the GMNL model. The section of results and discussion will present and interpret the findings derived from the analysis. Finally, the conclusion section will summarize the primary findings of the study, discuss their implications, and highlight any limitations or areas for future research.

2. Research model

Consumer preferences are influenced by various attributes of food, including COO (Appendix Table A1). Existing research in the field of consumer preferences for food has focused on attributes such as COO, traceability, organic labeling, and price (Kabir et al., 2023; Kassas et al., 2023; Wang et al., 2018; Yin et al., 2020). Among these attributes, COO has garnered significant attention from scholars. Previous studies have demonstrated that consumers often exhibit a preference for products labeled with a specific COO, particularly when purchasing fresh food (Kassas et al., 2023). Researchers have argued that COO information serves as a signal of product quality, leading consumers to assign higher value to products originating from countries with strong agricultural sector reputations. It has also been observed that consumers tend to prefer domestic food over foreign alternatives, a phenomenon attributed to consumer ethnocentrism and concerns for the domestic agricultural sector (He & Wang, 2015). Furthermore, consumers in developed economies may perceive food products imported from the developing world as unsafe and of lower quality (Wang et al., 2018).

Table 1. Attributes of foreign apples.

No	Attributes	Attributes' level
1	COO	China France The US New Zealand*
2	Traceability	Yes No*
3	Organic label	Yes No*
4	Size of apple	Big size (5–7 apples/kg) Medium and small size (10–15 apples/kg)*
5	Price per kilogram	VND 39,000 per kg (~USD 1.66) VND 59,000 per kg (~USD 2.51) VND 79,000 per kg (~USD 3.36) VND 99,000 per kg (~USD 4.21) VND 119,000 per kg (~USD 5.06)

*Denotes reference level; USD1.00 ~ VND23,500.

Klein (2002) supports the notion that there is indeed a significant relationship between animosity towards a foreign nation and the choices made between foreign goods. This implies that consumers' negative attitudes towards a particular country can play a role in influencing their decision-making process when selecting products originating from that country. Consequently, these findings provide a basis for examining the impact of consumer animosity on their preferences and choices among products sourced from different foreign countries.

Consumer animosity refers to a negative sentiment or antipathy towards a particular country arising from economic, political, military disputes, or even events like a pandemic (Kim et al., 2022; Nawaz et al., 2023). This negative attitude towards a specific country can significantly influence consumer willingness to purchase products from that country (Nawaz et al., 2023) and may even lead to boycott behaviors (Kim et al., 2022). According to a study by Peng Cui et al. (2014), the effects of COO are more pronounced when consumers hold stronger feelings of animosity towards the foreign country. Based on the RUT, we hypothesize that this type of attitude, namely consumer animosity, may moderate the effect of COO of foreign fruit on consumer willingness to buy those fruit.

The mentioned findings indicate the presence of variables that can moderate the impact of COO on consumer preferences for food products. However, there is limited research on the moderating role of consumer animosity in the relationship between COO attributes and consumer preferences for fresh fruit, particularly apples. Therefore, the objective of this study is to investigate customer preferences for apples by considering various attributes commonly discussed in the literature on food consumption, such as COO, traceability, organic labeling, apple size, and price. Furthermore, the study aims to examine the influence of COO, which is widely acknowledged as a significant attribute in the context of food consumption. Additionally, the research explores the moderating role of customer animosity when comparing customer preferences for apples from different foreign countries.

3. Methodology

3.1 Experiment design and sample

In this research, the authors employ a choice-based experiment to collect data regarding consumer preferences for foreign fruit. Apple has been chosen as a representative for foreign fruit in this experiment because of the following reasons. First of all, the fruit accounts for the largest part of fruit import turnover in Vietnam, reaching USD 257 million in 2022, and it is predicted to increase in the next few years. Next, apple has also been popularly sold on the shelves of many retailers in Vietnam, and it is usually used as gifts beside eating fresh. In addition, the similar domestic alternative (i.e. domestic apple) is not available, therefore, the ethnocentric bias may be eliminated in the assessment.

In the experiment, the respondents will be provided with a range of choice sets. In each choice set, they are proposed to choose an alternative, which maximizes their utility. Each alternative is described via its attributes and attributes' levels. Attributes specified in the experiment are adapted from the extant literature and confirmed after discussing with a group of target consumers in Vietnam.

The first attribute which may affect consumer preferences for foreign apples is COO. Previous literature shows that consumers usually present a preference for the COO label, and they usually look at the information when purchasing fresh food (Kassas et al., 2023). In the experiment, the authors choose apples imported from New Zealand, China, the US, and France for the following reasons. First of all, the first three countries (i.e. New Zealand, China, the US) are the three largest apple exporters into Vietnam in recent years. Second, because the study concerns the role of consumer animosity, the authors choose the countries which had/have been economically and/or politically disputing with Vietnam (i.e. China, France and the US) and countries which had/have not (e.g. New Zealand) for comparison purposes.

The second attribute of a fresh fruit that is concerned by consumers is the traceability system. The system has been increasingly implemented to ensure that the production and distribution of food are safe, and are kept high quality. Recent studies reveal that almost all consumers place great emphasis on the attribute of food products (Kabir et al., 2023), and the provision of traceability information increases consumer preference and willingness to pay for the product (Yin et al., 2020). In the experiment, the traceability attribute is illustrated/displayed through QR code, which is attached to products or product packages. Two levels of the attribute are specified, which is whether the apple has the information or not.

With the increasing concern about production sustainability and food safety, organic labels appear to be another important attribute of food products. Research shows that consumers express higher preference, and they are willing to pay a premium for the attribute of food product (Yin et al., 2020). Similar to traceability information, we specify two levels of organic label attribute, i.e. whether the information is available on the apple label or not.

Apart from the above attributes, we also find through a focus discussion with a group of target consumers that the size of the fruit may be an important attribute that consumers usually consider in their purchasing process. The authors find no previous research concerning the attribute. In the study, two levels of the attribute were chosen, including big size (5–7 apples per kilogram), and medium and small size (10–15 apples per kilogram).

In this study, a single-item approach was used to measure consumer animosity, through the statement ‘I hate XXX country’. Consumer animosity refers to the negative sentiment or antipathy towards a specific country that can arise from various factors such as economic, political, military disputes, or even events like a pandemic (Kim et al., 2022; Nawaz et al., 2023). Although the study did not explore the underlying reasons for negative sentiment or antipathy towards a particular country, the decision to employ a single-item measurement for consumer animosity was justified as it aimed to capture the overall level of animosity (Klein et al., 1998; Riefler & Diamantopoulos, 2007).

Last but not least, price of a product is an important information concerned by consumers when purchasing food. We surveyed the price of apples listed at some physical as well as online retailers in Vietnam. Five levels of the price attribute are set. The base price of VND39,000 per kilogram (~ USD 1.66) is observed as the average price of one kilogram of small-sized apple, which has not any information about the COO, traceability, or organic label. The other four levels of price attribute are established by adding an average value of VND 20,000 (~ USD 0.85) per kilogram. The value is usually observed in the market as the average difference between the price of the same apples but differ only by one of such attributes as COO, traceability, organic label or the size of the fruit. Table 1 is the description of attributes’ levels of foreign apples.

Based on the attribute’s levels specified above, choice sets are established using D-optimal design (Kuhfeld, 2010). Sixteen choice sets are obtained as a result of a fractional factorial design. Because it can be a mental burden to respondents to answer all the sets, the authors divide them into two blocks. Each block includes 8 choice sets, and participants are randomly allocated into one of two blocks. Each choice set consists of 4 alternatives of apple characterized by different attributes aforementioned and one opt-out option. Figure 1 is an example of a choice set.

The questionnaire consists of 3 parts. After explaining about attributes such as product origin, size, traceability code, organic label, and prices, respondents answered 8 scenarios with options arranged randomly for each scenario. In part 2, the respondents were asked about their level of animosity towards certain target countries. The study uses a single-item 5-level Likert-type scale adopted by Peng Cui et al. (2012) to measure general animosity toward the targeted foreign countries, ‘I feel angry toward China/The US/France/New Zealand’ (1 = strongly disagree and 5 = strongly agree). The demographic characteristics of the respondents was asked in part 3.







Descriptions	Option 1	Option 2	Option 3	Option 4	Option 5
Country of origin	China	The US	New Zealand	France	I would choose none of them
Size	 Big (5 - 7 apples/kg)	 Medium and Small (10 - 15 apples/kg)	 Big (5 - 7 apples/kg)	 Medium and Small (10 - 15 apples/kg)	
QR code for Traceability	None	 Yes	None	None	
Organic label	None	 Yes	None	None	
Price per kilogram	VND 79,000/kg (~ USD 3.36/kg)	VND 119,000/kg (~ USD 5.06/kg)	VND 99,000/kg (~ USD 4.21/kg)	VND 39,000/kg (~ USD 1.66/kg)	
Which one would you choose?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Figure 1. An example of a choice set.

Several scholars have proposed guidelines for determining the minimum sample size in studies involving choice data. One such approach, suggested by de Bekker-Grob et al. (2015), takes into account the largest number of levels for any attribute (A), the number of options in each choice set (O), and the number of choice sets (S). According to their formula, the minimum sample size (N) should satisfy the inequality $N > 500A/(S \cdot O)$. In the present study, with $A=5$, $O=4$, and $S=8$, this calculation yields $N > 78$ respondents. Alternatively, Pedersen et al. (2012) suggest that sample sizes over 100 are sufficient for modeling choice data in discrete choice experiments (DCEs). Therefore, following this rule of thumb, we have determined that a minimum sample size of over 100 respondents is appropriate for this study.

Participants were recruited through an online method using a pop-up banner displayed on the website of a multi-channel grocery retailer in Vietnam. This convenient sampling was chosen as the mode of participant selection for this study due to its relative advantages in terms of time and cost compared to other sampling methods (Etikan et al., 2016). The research process followed the principles of ethical and professional conduct. Before taking part, all participants gave informed verbal consent in accordance with the necessary requirements.

The recruitment period spanned from 15 June to 5 July 2023. A total of 205 responses were collected, but 25 participants did not complete the questionnaire in its entirety. Therefore, the final sample consisted of 180 valid consumer observations. For a comprehensive understanding of the demographic and socio-economic characteristics of the participants, please consult Table 2.

3.2. Econometric model

It has been widely accepted that consumer preferences are substantially heterogeneous, and the heterogeneity may be described as taste as well as scale heterogeneity (Fiebig et al., 2010; Gu et al., 2013). While taste heterogeneity implies that some consumers attach higher value to specific attributes of a product than others, scale heterogeneity implies that some consumers' choice behavior is more random than others.

In order to capture both of these, the GMNL model was developed (Fiebig et al., 2010). The model is considered more parsimonious than the Random Parameter Logit model, which only accounts for taste or preference heterogeneity (Gu et al., 2013). Wright et al. (2018) in their recent systematic literature review asserted that estimated parameters and the valuation of attributes may be biased as a result of failing to capture heterogeneity in the scale of the error term.

In the GMNL model, the utility that consumer n obtains from choosing apple j on choice set t is specified:

Table 2. Description of the participants.

Variables	Values	Percentage (%)
Gender	Female	63.89
	Male	36.11
Year of birth	1970–1980	15.00
	1981–1989	24.44
	1990–1996	26.67
	1997–2004	33.89
	Graduate	23.33
Education	Undergraduate	43.33
	Intermediate	17.78
	High school	15.56
Occupation	Full time	47.78
	Part time	14.44
	Housewife	10.56
	Unemployed	27.22
Marriage	Single	35.59
	Married	64.41
Household size	1	3.33
	2	24.44
	3	36.67
	4	23.89
	>=5	11.67
Household income	<VND 10 million/month (~USD 426)	12.23
	VND 10 – 20 million/month (~USD 426–USD 851)	46.11
	VND 21 – 30 million/month (~USD 851–USD 1,277)	29.44
	>VND 30 million/month (~USD 1,277)	12.22

$$U_{njt} = \beta_n A_{njt} + \varepsilon_{njt} \quad (1)$$

where, A_{njt} is a vector of apple j 's attributes, β_n is a vector of parameters of consumer n which is contingent on the scale parameter of the error term σ_n , a random vector η_n , a constant vector β , and γ parameter, with $\gamma \in [0,1]$. Fiebig et al. (2010) specified β_n as follows:

$$\beta_n = \sigma_n \beta + \{\gamma + \sigma_n (1 - \gamma)\} \eta_n \quad (2)$$

We can rewrite (1) by substituting β_n in formula (2) into formula (1) as:

$$U_{njt} = [\sigma_n \beta + \gamma \eta_n + (1 - \gamma) \sigma_n \eta_n] A_{njt} + \varepsilon_{njt} \quad (3)$$

In this paper, the authors use the *gmnl* Stata command developed by Gu et al. (2013) to estimate the parameters in the utility function (3). See Gu et al. (2013) for the detailed description of the maximum simulated likelihood procedure.

4. Results, discussion and implications

4.1. Results

Table 3 indicates a general comparison of consumer animosity toward the four targeted foreign countries whereas Table 4 shows animosity level of different demographic groups. On average, Vietnamese consumers reveal a considerably high animosity toward China, whilst they show a relatively low level of animosity toward the US, France and New Zealand. It also depicts the statistically significant difference between consumer animosity toward China and the other nations. However, the difference in the evaluation among the countries, except China, is only marginal. It is understandable that the high levels of animosity toward China may be attributed to long history and ongoing political-related conflict between Vietnam and China, as well as negative attitude regarding the Covid-19 pandemic. Also, there is a clear pattern that the older and the higher education level of consumers, the lower the

Table 3. Consumer animosity toward China, the US, France and New Zealand.

	Mean	Difference			
		vs. New Zealand	vs. France	vs. The US	vs. China
I hate China	3.96	2.01***	1.80***	1.67***	–
I hate the US	2.28	0.34***	0.13***	–	–
I hate France	2.16	0.21***	–	–	–
I hate New Zealand	1.94	–	–	–	–

***, **, * denote statistically significant level at 1, 5 and 10% respectively.

Table 4. Consumer animosity by age, education, and gender.

		Consumer animosity toward...							
		China		The US		France		New Zealand	
		Mean	Diff	Mean	Diff	Mean	Diff	Mean	Diff
YOB	1970–1980	3.3	–1.6***	1.8	–0.9***	1.6	–0.8***	1.3	–0.8***
	1981–1989	3.3	–1.6***	1.8	–0.9***	1.8	–0.6***	1.4	–0.7***
	1990–1996	3.8	–1.1***	2.5	–0.2***	2.4	0.0	2.4	0.3***
	1997–2004 [#]	4.9		2.7		2.4		2.1	
Education	Post-graduate	3.3	–1.3***	1.9	–0.7***	1.9	–0.6***	1.3	–0.9***
	Graduate	3.8	–0.8***	2.1	–0.5***	2.1	–0.3***	2.0	–0.2***
	Intermediate	4.6	0.0	3.0	0.4***	2.7	0.3***	2.3	0.1**
	High school [#]	4.6		2.6		2.4		2.2	
Gender	Female	3.8	–0.4***	2.4	0.3***	2.2	0.2***	2.1	0.4***
	Male [#]	4.2		2.1		2.0		1.7	

***, **, * denote statistically significant level at 1, 5 and 10%, respectively.

[#]Denote reference level.

animosity level. In contrast, no clear tendency of animosity level exhibits between different genders. While male consumers express a higher negative attitude toward China, they show a marginally lower level of antipathy to other countries than that of their female counterparts.

In this study, the GMNL model is employed to estimate the impact on consumer preferences of foreign apple's attributes. We assume that the estimated coefficients for the attributes have normal distribution because some consumers may be interested in such attributes while others may not. In addition, previous studies usually assume a lognormal distribution for the price coefficient to ensure the sign of the value estimated. We argue that a significant proportion of consumers in developing countries (e.g. Vietnam) usually use the price of imported products as informational cue for quality, and they, hence, may exhibit a positive preference for the higher priced imported products whereas others may express the reverse tendency. In this study, we therefore specify the price coefficient to have normal distribution, too.

Table 5 shows the results of the estimation models. The first model estimates the main effect of the fruit's attributes on consumer preferences whilst the second is the model with the interaction term (i.e. consumer animosity toward China).

In general, the two estimated models show that the mean and standard deviation of all attributes' coefficients are statistically significant, which implies that the concerned attributes of foreign fruit have an impact on consumer preferences, and that consumer preferences are considerably heterogeneous. In addition, the statistical significance of the tau parameter reveals that the scale of the idiosyncratic error term is not homogeneous. This implies the randomness of consumer choice of foreign fruit. In brief, the above finding demonstrates the simultaneous existence of both scale and taste heterogeneity in consumer choice process in the context of foreign fruit purchases.

Regarding the impact of COO information on consumer choice of foreign fruit, it is shown that the most preferred alternative is apples imported from New Zealand, followed by those from the US and France, respectively. China apples is the least preferred option among alternatives. In addition, the model with interaction term shows that the consumer animosity toward China does not modify consumer preferences for apples imported from China. It may be that fresh fruit from China is perceived as low quality and unsafe (Wang et al., 2018), and the COO information may, therefore, overshadow consumer animosity toward China products. In contrast, consumer animosity seems to matter: we identify a significant positive impact for the interaction term between consumer animosity toward China and apples imported from the US and France, which implies that consumers who have high level of animosity toward China

Table 5. Estimation models.

Independent variables	Model 1		Model 2	
	Coef	St. Err	Coef	St. Err
Mean				
COO ^a				
China	−5.819***	1.967	−2.734***	0.797
The US	−0.041	0.260	−0.339	0.260
France	−1.195**	0.440	−1.002***	0.335
China * I hate China			0.005	0.137
The US * I hate China			0.126**	0.066
France * I hate China			0.142**	0.061
Traceability with QR code	3.673***	1.220	1.724***	0.464
Organic label	2.823***	0.956	1.266***	0.322
Big-sized apples	1.210***	0.421	0.309**	0.131
Price	−0.112*	0.055	−0.239***	0.073
Standard deviation				
COO				
China	3.259***	1.163		
The US	1.047***	0.378		
France	1.005***	0.344		
Traceability with QR code	2.064***	0.707	1.318***	0.371
Organic label	1.021***	0.364	0.238*	0.130
Big-sized apples	0.481***	0.188	0.018	0.075
Price	1.315***	0.443	0.393***	0.104
Scale heterogeneity				
/Tau	3.631***	0.428	3.032***	0.364
Goodness of fit measures				
Number of respondents	180		180	
Number of observations	5,760		5,760	
Log likelihood	−1,820		−1,834	
AIC	3,670		3,696	
BIC	3,770		3,796	

***, **, * denote statistically significant level at 1, 5 and 10%, respectively.

^aNew Zealand is the reference level.

are likely to prefer or choose apples from the US and France. This means that there is a complementary effect between consumer animosity and COO information.

The results from Table 5 also indicate that consumers express positive preferences for imported apples that have a traceability system and/or organic label. They also prefer big-sized apples to medium and small-sized ones. Vice versa, the negative coefficient of the ‘price’ variable exhibiting price sensitivity of Vietnamese consumers for foreign apples.

Because consumers show preference heterogeneity for foreign apples’ attributes, therefore, the proportion of consumers with positive preferences for different attributes was calculated. Consumers’ marginal willingness to pay for such attributes was also computed. The results are depicted in Table 6.

It is revealed that although consumers generally have a negative utility for China and France apples, 3.7 and 11.7% respondents prefer China and France apples to New Zealand alternatives, respectively. Moreover, an average consumer may be willing to buy a China or France apple if its retail price is USD 2.20 or USD 0.45 lower than that of New Zealand apples, respectively. In contrast, the proportion of consumers who prefer the US apples is just marginally lower than that of New Zealand apples, and there is no difference in consumer willingness to pay for the two COO apples.

Another interesting result is that, although consumers show preference heterogeneity for such attributes as traceability, organic label and the size of apples, the heterogeneity is considerably low. It is shown that almost all consumers exhibit positive utility for traceability systems, organic labels and big-sized apples, and they are willing to pay a premium price (USD1.39; USD1.07, and USD0.46, respectively) for the aforementioned attributes.

4.2. Discussion

This study confirms the role of COO in consumer preferences concerning foreign fruit. Since Thøgersen (2023) highlights the importance of conducting additional research to bridge the existing gaps in consumer knowledge, this study ascertains the significance of COO for consumers. The results of this study

Table 6. Positive preferences and marginal willingness to pay for attributes.

Attributes	Proportion of respondents with positive preference (%)	Marginal WTP	
		VND (Unit: 1,000)	USD
COO ^a			
China	3.7	−51.781	−2.20***
The US	48.4	−0.363	−0.02
France	11.7	−10.637	−0.45**
Traceability with QR code	96.2	32.681	1.39***
Organic label	99.7	25.117	1.07***
Big-sized apples	99.4	10.767	0.46***
Price	46.6	–	–

Source: Computation from Model 1.

***, **, * denote statistically significant level at 1, 5 and 10%, respectively.

^aNew Zealand is the reference level.

are in line with a recent studies by Yang et al. (2018) and Kassas et al. (2023), which pointed out that there is a considerable difference in preferences between customers who observed the COO and those who overlooked it.

In addition, previous research found that consumers tend to prefer domestic food to foreign products, and the result can be attributed to an ethnocentric/domestic bias because of the inclusion of such a domestic option in the alternative set of consumers (Thøgersen, 2023). This study provides a novel understanding of the reasons why consumers are interested in the COO by separating the impact of consumer ethnocentrism. To this end, we, indeed, choose the product (i.e. apples) that there is no similar domestic alternative in our experiment. Consequently, the effect of domestic bias can be eliminated.

This study also extends consumer animosity model of Klein et al. (1998) by offering valuable insights into consumer preferences concerning products originating from countries with varying degrees of animosity. It introduces a novel moderator to examine consumer choices in the context of foreign fruit and presents empirical evidence highlighting the significance of various attributes of foreign fruit. This finding aligns with the impact of consumer animosity towards willingness to buy. A recent study conducted by Mishra et al. (2023) did not find evidence supporting the moderating role of consumer animosity on the relationship between ethnocentrism and purchase intention, as well as patriotism and purchase intention. However, this study elucidate the moderating influence of consumer animosity on the association between COO and willingness to purchase. This finding is also supported by recent findings that indicate the influence of consumer animosity on consumer behavior in the case of COO misclassification (Cakici & Shukla, 2017).

4.3. Implications

Importers and retailers involved in the Vietnamese market for Chinese apples face important implications related to the COO. They need to carefully assess market demand, taking into account the negative perceptions associated with COO and consumer animosity. Although COO perceptions can pose challenges, the lower price of Chinese apples compared to imports from countries like New Zealand or the US presents an opportunity. To address concerns and highlight value propositions, traders should analyze the advantages and disadvantages, differentiate their offerings, and develop targeted marketing strategies. Collaborating and forming partnerships with Chinese apple producers can also help ensure consistent quality and establish consumer trust. By effectively navigating these implications, importers and retailers can address consumer animosity while taking advantage of the competitive pricing of Chinese apples.

Importers and retailers dealing with apples from the US and New Zealand face implications that stem from consumers' perception of superiority associated with products from these countries. Consumers tend to view apples from developed nations as superior due to their advanced agricultural sectors and higher food safety standards. To capitalize on this perception, importers and retailers should emphasize the COO, as it carries a positive connotation. They should choose suitable retail channels, such as supermarkets or grocery store chains, where COO labeling is often mandatory. Point-of-sale materials and effective communication strategies can be utilized to highlight the premium quality and safety of US and New Zealand apples, attracting consumers. Additionally, investing in traceability systems and organic labels can meet consumer demand and command higher prices. By leveraging the

perceived superiority, emphasizing COO, and capitalizing on traceability and organic attributes, importers and retailers can maximize the appeal and profitability of US and New Zealand apples in the market.

Aside from COO, traceability systems and organic labels are attributes that generate positive utility for almost all consumers. Importers and retailers of apples should emphasize these attributes to cater to consumer preferences. Clear labeling and certifications can be used to highlight the traceability systems and organic labels, appealing to consumers who value product quality, safety, and sustainability. Importers and retailers can capitalize on consumers' willingness to pay a premium price for apples with these attributes. Investing in organic production or sourcing from organic-certified orchards and effectively communicating the benefits of traceability systems and organic labels can differentiate importers and retailers, creating a competitive advantage. These actions align with consumer preferences, foster trust, and enhance market position in the apple industry.

5. Conclusions and limitations

The study findings indicate that consumer preferences for attributes of foreign fruit, such as COO, traceability label, organic label, and price, display substantial diversity. However, there is a consensus among consumers when it comes to their preference for fruit size, indicating a homogeneous preference. Additionally, the study underscores the considerable impact of consumer animosity on shaping consumer choice behavior. Notably, as consumer animosity towards a specific country intensifies, consumers tend to exhibit a preference for the same product from alternative countries.

This study employed a single-item measurement scale to assess animosity, revealing that Vietnamese customers exhibit the highest level of animosity towards China, followed by the US, France, and New Zealand. Interestingly, the findings suggest that Vietnamese customers also possess affinity for New Zealand. Nevertheless, these results highlight the need for additional research concerning Vietnamese animosity and affinity towards other countries. Such studies would provide valuable insights for businesses in terms of trading and investment opportunities. While consumer animosity encompasses various dimensions influenced by factors like political or economic conflicts, historical events, pandemic, or cultural differences (Kim et al., 2022; Nawaz et al., 2023), it is recommended that future studies delve into exploring the complete range of dimensions related to consumer animosity.

Furthermore, recent research has highlighted that the consequences of consumer animosity can be influenced by various behavioral factors, including consumers' purchase frequency (Yang et al., 2022). In light of this, it is recommended that future studies investigate the impact of these behavioral factors on the relationship between consumer animosity and consumer behaviors.

While the study makes valuable contributions, it is important to note additional limitations. Firstly, the data collection for this study relied solely on online responses gathered through a pop-up banner on a Vietnamese multi-channel grocery retailer's website. Future research should consider employing alternative data collection techniques to obtain a more comprehensive understanding of Vietnamese customers' animosity. Secondly, as previously mentioned, there is a need for further investigation into Vietnamese customers' animosity, including exploring different dimensions of customer animosity within the Vietnamese context. Thirdly, future research could also examine Vietnamese customers' animosity in other consumption contexts, such as tourism, encompassing a broader range of products and services. Despite the aforementioned limitations, the results of this study provide important insights into the imported fruit selection behavior of Vietnamese customers; consequently, practical implications are proposed for relevant stakeholder.

Ethical approval

We confirm that the principles of ethical and professional conduct were followed throughout the research process. Prior to participating, all participants were provided with informed consent as required.

Author contributions

Both authors, Vu Hung Dang and Thang Vinh Doan, take full responsibility for all aspects of this study. We both contributed to the conception and design, as well as the analysis and interpretation of the data. Additionally, we were involved in drafting the paper, critically revising it for intellectual content, and providing final approval for the published version.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Data availability statement

The data that support the findings of this study are available from the corresponding author, Dang, V.H., upon reasonable request.

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Appendix A

Table A1. Literature review on COO and animosity.

Study	Product	Data/methods	Independent variable	Dependent variables/Outcome
Thøgersen (2023)	N/A	Review 189 peer-reviewed papers	COO	<ul style="list-style-type: none"> Strong evidence that COO has a substantial impact on food choices. Consumers generally prefer domestic to imported and local to other domestic origins because of ethnocentrism; cue for food safety and quality; patriotism; support and protect domestic economy Lower preference for domestic is generally found in developing countries. Origin effect also appears to differ between food products, but without a clear pattern. Consumers perceive certain origins as superior to others for product quality. COO importance differs among consumers in different countries COO becomes less significant when other extrinsic qualities are labeled (e.g. organic, carbon footprint, environmentally friendly, quality assurance labels)
Kassas et al. (2023)	Fresh tomato	Florida (US) to Mexico Choice experiment 348 responses/ T-test Ordered Logit regression for choice	Domestic COO label (+) Male Age Education Income Household size Food spending	<ul style="list-style-type: none"> Despite demonstrating a preference for COO and a tendency to look at COO when shopping, a notable proportion of customers overlooked COO; Difference in preferences between customers who observed the COO and those who overlooked it.
Kabir et al. (2023)	Vegetables (tomatoes and brinjal)	Latent class analysis Bangladesh to the world 220 Consumers Choice experiment CVM method	Traceability (+) Income (+) Quality perception (+)	Preference
Kim et al. (2022)		Between South Korea and Japan 571 Korean 500 Japanese	Animosity (–) Affinity (+)	Boycott campaigns/Purchase intention Affinity mitigates the effects of animosity in the context of boycott campaign
Hoang, Ho, Tran, and Le (2022)	General No specific brands or product types	Vietnam to US and China Convenience sampling 485 Consumers SEM	Animosity (A) Ethnocentrism (E) Cosmopolitanism (C) Moderator: COO Mediator/Dependent variable Product Judgement (PJ) Willingness to buy (WTB)	<p>A (–) → PJ E (n.s) → PJ C (+) → PJ A (–) → WTB E (–) → WTB C (n.s) → WTB PJ (+) → WTB</p>
Fong et al. (2022)	Famous brands (Nike, Zara,)	China to North America and EU Study 1 514 + 525 Responses Study 2: 520 Responses SEM	Animosity Western product superiority Normative influence	Purchase avoidance/Boycott
Yin et al. (2020)	White shrimp	China to the world 996 CONSUMERS Choice experiment GMNL model	EU organic (+) China organic Treatment group: + Control group: (n.s) Traceability (+) Price	Preferences
Wang et al. (2018)	Fresh fruit (citrus; grapefruit; pomelo)	France to China 533 observations Order logit model Latent class model	COO (–) Brand (+) Perceived risk Perceived quality Intrinsic attributes (freshness; flavor;) Extrinsic attributes (price; package; brand; COO)	<p>Preferences to China fruit Fresh fruit in China is perceived as low quality and unsafe</p>

(Continued)

Table A1. Continued.

Study	Product	Data/methods	Independent variable	Dependent variables/Outcome
Hinkes and Schulze-Ehlers (2018)	Fish (Frozen Pangasius; Tilapia fillets)	Germany to Bangladesh and Vietnam Choice experiment 325 responses/ Mixed logit model	Domestic COO (+) Fish species +; Sustainability certification (+); Fairtrade certification (+); Price (-); Brand (n.s) Opt-out (-) Animosity (-) Ethnocentrism (n.s) Social status (n.s) Self-esteem (+)	Attitude; preferences German consumers are price-sensitive and prefer fish produced in Germany over fish farmed in either Bangladesh or Vietnam Older respondents as well as those concerned about sustainability sustainability and the COO are relevant factors influencing purchase decisions Purchase intention of foreign product Ethnocentrism (n.s) animosity
Narang (2016)	Apparels, Torch Battery Mobile phones	India to China Stratified sampling 287 responses CFA	Animosity (-) Ethnocentrism (n.s) Social status (n.s) Self-esteem (+)	A (n.s) product judgement E (n.s) product judgement WTP foreign and hybrid product Animosity overshadow Ethnocentrism
Cheah et al. (2016)	General	China to Japan 435 Responses (50% students and 50% their parents)	Animosity (-) Ethnocentrism (n.s) Product judgement	A (n.s) product judgement E (n.s) product judgement WTP foreign and hybrid product Animosity overshadow Ethnocentrism
Balcombe et al. (2016)	Fresh meat Produced meat (bacon; pizza; ready meals)	UK to EU and outside EU Discrete choice experiment Online: 2951 responses Bayesian mixed logit Model estimated in WTP space	COO (domestics or local (+) Food quality (+) Organic production System (+) Farm assurance (+) Cultural identity (+) Ethnocentrism (n.s) Cultural identity (n.s) Ethnocentrism (-) Moderator Brand equity	Preference COO less important than food attribute; Domestic bias against identical products from other countries.
He and Wang (2015)	Shampoo Athletic shoes Cell phones Bottled water	China to the world 912 Responses	Cultural identity (+) Ethnocentrism (n.s) Cultural identity (n.s) Ethnocentrism (-) Moderator Brand equity	Preference/Purchase domestics Preference for foreign
Peng Cui et al. (2014)	Fresh milk	Between China and US Experiment Online survey Convenience Chinese native 144 CN living in US 96 American native 153 American living in CN 114	Organic (+) Local (+)	Attitude; perceived quality; perceived risk COO effects were stronger when consumers: + Felt greater animosity toward the foreign country, + Were more ethnocentric + And were less acculturated
Denver and Jensen (2014)	Apples	Local Danish to Danish, other EU countries, outside EU 637 Consumers Choice experiment PCA Random parameter error Component model	Organic (+) Local (+)	Preference for locally domestic apples

(-) negative impact; (+) positive impact; n.s: not supported.

A: animosity; E: ethnocentrism; C: country of origin; WTB: willingness to buy.