

Chinese consumers' perceptions of food safety cues and maximising the effectiveness of food safety communications

Food safety
cues

261

Miranda Miroso, Yang Liu and Phil Bremer

*Department of Food Science, University of Otago, Dunedin, New Zealand and
New Zealand Food Safety Science Research Centre, Palmerston North, New Zealand*

Received 15 September 2019
Revised 13 February 2020
Accepted 23 June 2020

Abstract

Purpose – Food safety is an issue of key concern for Chinese consumers. This study identifies intrinsic and extrinsic cues on product labels or websites that Chinese consumers use to assess a product's perceived safety.

Design/methodology/approach – Five structured focus groups (total participants $n = 41$) were run in Suzhou China, in Chinese, to gather consumers' perceptions towards food safety cues.

Findings – A total of 18 safety cues were identified during the focus group discussions. Certifications, country of origin, production date and shelf life, ingredients and materials and nutritional information were the five safety cues consumers perceived to be the most important. The risks perceived by consumers differed based on: product category (e.g. meat, dairy, cereal); product form (e.g. fresh, chilled, frozen) and degree of processing. Interestingly, consumers used different food safety cues to assess a packaged product compared to the product shown on a website.

Research limitations/implications – While providing deep qualitative insights into perceptions of food safety cues, further studies which seek to conduct quantitative work within a wider demographic context are encouraged.

Practical implications – This information will help to provide best practice advice for international marketers and government risk communicators on how and where to communicate the safety of food products so that they can maximise the effectiveness of their messaging within the appropriate information channels and thereby ensure that it resonates well with Chinese consumers.

Originality/value – This study contributes to the academic knowledge of consumer perceptions of cues related to food safety.

Keywords Food safety, Focus groups, Chinese consumers, Product cues, Consumer perception, Communications

Paper type Research paper

1. Introduction

Food safety has been a focus for consumers, academics and regulators for many years. Grunert (2005) suggested both narrow and broad definitions of food safety. In the narrow sense, the term food safety is described as the opposite of food risk. While in the broad definition, food safety also encompasses nutritional qualities and for an even broader definition, it includes concerns about the properties of unfamiliar foods. Different supply chain players, from production, processing, distribution, retailers through to consumers, have different understandings of the term "safe food". To most effectively promote the safety of foods it is necessary for food marketers to understand such consumers' perceptions when formulating marketing strategies (Kileba, 2011).

Consumers cannot always accurately assess the associated safety risks of each food decision, and therefore they rely instead on information and signals provided to them by the food industry and its regulators (Siegrist and Cvetkovich, 2000). In the consumer behaviour



British Food Journal
Vol. 123 No. 1, 2021
pp. 261-278

© Emerald Publishing Limited
0007-070X
DOI 10.1108/BFJ-09-2019-0694

This work was supported by the New Zealand-China Food Protection Network under Grant [number 3000030866].

literature such information/signals are called “cues”, and each product is considered to consist of an array of cues, such as brand, price, colour or flavour (Cox, 1967). When consumers are shopping, their expectations of the product are formed based on the available cues provided by the label (or online website) of the product. These cues can be defined as either being extrinsic (i.e. product-related attributes, such as brand, price or packaging) or intrinsic (i.e. part of the physical product like ingredients, pH or sensory attributes) (Olson, 1972).

Food safety is an important consideration for Chinese consumers (Liu *et al.*, 2013), owing to a spate of high-profile food safety scandals. These include the melamine incident of 2008 where toxic melamine was added to milk powder to inflate its protein content (Wu *et al.*, 2012). This fraudulent activity resulted in the death of six infants and an estimated 860 hospitalisations (Zhou and Wang, 2011). Another notable scandal included the contamination of fresh pork with the prohibited additive clenbuterol which has known negative health implications for humans (Zhou *et al.*, 2012).

A number of studies to date have investigated various extrinsic and intrinsic cues that Chinese consumers use to determine a product’s safety. El Benni *et al.* (2019) suggest that all authenticity cues, including price, appear to serve as indicators of food quality and safety, and this finding aligns with those of Ortega *et al.* (2011), who found that consumers were willing to pay a high premium to assure safe food. A food product’s country of origin has been well documented as being an important safety cue with Chinese consumers considering western products to be safer (Walley *et al.*, 2014). Extending on this, specific authenticity labels such as the “protected designation of origin (PDO)” that indicate geographic specificity, or the place of origin of the food, have been shown by El Benni *et al.* (2019) to serve as highly important indicators of quality and safety. As well as using these formal accreditation labelling schemes, manufacturers of imported products may also emphasise their product’s foreign origins by retaining the original packaging/labelling (e.g. that in the case of New Zealand is written in English) or by including imagery that pictorially depicts the product’s origin (e.g. sheep and mountains). Quick response (QR) codes and security packaging have been found to be very important information sources about a product’s authenticity and determinant of safety for Chinese consumers when making purchase choices (El Benni *et al.*, 2019). Safety assurance programs by public or private entities are also important cues for consumers. Several studies have shown that Chinese consumers have a high willingness to pay for government certifications and that non-governmental third-party certification is also positively valued by consumers. (Ortega *et al.*, 2012 and Ortega *et al.*, 2011). The brand of a product, which essentially serves as a guarantee with the manufacture, has been reported to be used by Chinese consumers as a quality-related cue. Xia and Zeng (2006) reported that there was a strong brand loyalty to large-scale, well known producers of milk because they were perceived as providing a high quality safe product. Consumers have been found to use shelf life as a safety cue, with a short shelf-life being considered to be fresh and natural and hence safer (Lee *et al.*, 2014). Finally, celebrity endorsements could be considered a cue for safety. Celebrity endorsements refer to a form of advertising strategy in which a famous person uses his/her social status to draw attention to the marketing communication to increase sales (Erdogan, 1999). According to Prentice and Zhang (2017) celebrity worship in China is particularly prevalent, with sports stars and actors the most common type of endorsers. These authors note however that consumers often react negatively towards actor celebrity endorsements. Other types of endorsers used in China include successful business people, politicians and scientists, though the literature to date has not reported on consumers’ reactions to these types of endorsers. While most food safety studies have focussed on the extrinsic cues of food products, some studies have focussed on intrinsic cues. For example, Lee *et al.* (2014) reported that with the considerable food safety incidents in China, consumers are increasingly interested in products that are nutritious and additive-free.

Changes in the way consumers shop, from using traditional markets, to using supermarkets to more recently the dramatic rise of online shopping, has been reported to have made

significant changes in the cues that Chinese consumers use to make buying decisions for meat and other fresh produce. For example, while previously there was a reliance on intrinsic cues and personal communication with the seller, now consumers have to rely on extrinsic cues such as packaging, and especially the information provided on the pack and in-store/online (Grunert *et al.*, 2015). These changes in shopping practices, combined with the fact that to date very little research has been published about the Chinese consumer in general, means that little is known about which cues Chinese consumers use to infer safety, which ones they place the most importance on and whether this emphasis changes for different products and for different communication channels. Acquiring such knowledge is essential to optimise the value of the information provided to potential consumers about the safety of the products they are considering purchasing.

Therefore, the aim of this research was to understand Chinese consumers' perceptions of food safety cues. Five specific research questions underpinned the study as follows:

- (1) What are the “top of mind” concerns that consumers have towards food safety?
- (2) What safety cues do consumers use when evaluating and forming food safety expectations?
- (3) Which of these safety cues are most commonly used and why?
- (4) Does food safety cue usage differ between product categories and processing type and if so, how?
- (5) Does food safety cue usage differ between “on-label” and “online” and if so, how?

The results obtained from this study add to existing consumer research on consumers' perceptions of safety-related cues by adding new insights in a non-Western context. The outcomes of this study make a strong practical contribution to international food marketers who can apply the recommendations to ensure food safety cues resonate effectively with Chinese consumers' expectations for safe food.

2. Methodology

Focus group are particularly relevant and applicable for exploratory research (Duerlund *et al.*, 2019; Krueger, *et al.*, 2014) and can offer rich details regarding many complex experiences as well as helping to elucidate the reasoning behind an individual's perceptions that may not be feasible using more quantitative tools such as surveys which are better suited to measure predetermined variables. Focus groups allow researchers to gain a large amount of deep information in a limited period and have been used successfully in the past to gather information on Chinese consumers' perceptions and purchase intentions for food and beverage products (Lee *et al.*, 2015; Miroso *et al.*, 2018).

2.1 Participants and recruitment

This study was approved by the University of [blinded for review] Human Ethics Committee (reference number 17/106). A total of 41 Chinese participants took part in five focus group discussions, each including eight or nine participants. Five groups were deemed sufficient for data saturation as other researchers have previously reported that more than 80% of all themes are discoverable within two to three focus groups, and 90% are discoverable within three to six focus groups (Guest *et al.*, 2017). After the planned five focus groups were completed, it was apparent that no new food safety cues, nor new important discussion about these cues, had emerged from the last focus group. Thus the researchers decided that the collection of more data would have no additional interpretive worth (Sandelowski, 2008) and

data collected was deemed complete. So while focus group outcomes obviously rely on much smaller sample sizes compared to those used with other quantitative methods, the results obtained are seen as being valid and comprehensive, albeit, still exploratory.

Participants had to meet the following criteria: Chinese residents; aged over 18 years old; familiar with New Zealand as a country and regular buyers of imported food.

A convenience sampling strategy (Given, 2008) was used to recruit focus group participants from Xi'an Jiaotong Liverpool University, Suzhou, China as this population was easily accessible to the researchers given a relationship with this university. According to IResearch (2017), the main purchasers of imported food in China were young and educated consumers who were on a middle to upper income. Therefore, university staff were a suitable target group for this study of consumers of imported food. An advertising email was sent to University staff, and those who were interested in the study were emailed an online questionnaire including demographic and screening questions. People who filled in the questionnaire and met the above criteria were informed that they had been selected. These participants were allocated to a focus group discussion according to their availability.

2.2 Study design

After the primary research team finalised an English version of the moderator's guide, it was translated into simplified Chinese and reviewed by the second author (a native Chinese speaker). In order to test the flow and duration of the focus group a pilot focus group ($n = 6$) was conducted in New Zealand (where the research team reside) with Chinese participants who had previously lived in China within the last five years.

The research team travelled to China at the end of 2017 to collect the data. Simultaneous translators were provided for the non-Chinese speaking members of the team so that they could observe the discussions and contribute in an additional moderator capacity if required. At the start of the session, the main moderator (second author) asked everyone to write down quickly three "top of mind" words (i.e. within 30 s) relating to food safety. The discussion started with everyone introducing themselves and their three words. Then, the participants' general food safety perceptions were discussed, including their personal definitions of food safety, food safety experiences and their perceived safety of different products. Next, the participants' discussed their perceptions towards different safety cues.

2.2.1 Activity. In order to investigate what participants' opinions could be during a shopping experience, a small activity was designed. Real food products imported from New Zealand and currently available in the Chinese market were selected. Four different categories of food products were selected as follows: dairy, cereal, honey and meat. Two different scenarios, in-store (on product packages) and online shopping (on product websites) were simulated. Participants were asked to imagine they were shopping under one of the two different scenarios and to individually select (circle) the most important safety cues visible to them. For the in-store scenario, two brands per category were selected, and a real food package was available for them to look at as well as a copy of the package, displayed as an A3 sized sheet. The products selected were the top two best sellers (filtered by sales volume) for their category on [Tmall.com](https://www.tmall.com) (based on data in October 2017). [Tmall.com](https://www.tmall.com) is the largest business to consumer online retail website in China, operated by Alibaba Group ("Welcome to [Tmall.com](https://www.tmall.com)", *n.d.*). For the online scenario, one brand per category was selected, and their product information pages from the online official Tmall stores were downloaded and printed on A3 sheets. Upon the completion of the focus group discussion, the moderator thanked the participants for taking part in this study. Assistants distributed the 100RMB Starbucks vouchers to participants.

2.3 Data analysis

Thematic analysis was used to analyse the focus group data as it is flexible, effective and easily understandable. The thematic analysis was carried out according to Braun and Clarke (2006)

guide for conducting thematic analysis. First, the audio files were transcribed into Chinese by the second author and then imported into the qualitative data analysis software NVivo (QSR International Pty Ltd, NVivo, version 11). All files were coded to identify initial ideas based on the structure of the question guide (i.e. 1. “Risk valuation between categories”, including product and processing categories; 2. “Identified cues”, totalling 18 and 3. “Cue usage”, including place of purchase and product type). A set of candidate themes for the cues identified during the structured activity were reviewed by the research team and refined for validity and accuracy. Any missing categories or codes were added, and any elements that did not match the research questions were removed. The decision was made to group all information about one type of cue into one theme (e.g. the appearance cue contained all information relating to appearance including colour, shape and form) as attempting to break down the cues into further subthemes would have stretched the data too thin. Each of the 18 cue themes thus contained information on both positive and negative cue usage as well as both positive and negative attitudes towards these cues. The final coding schema used for analysis is provided in Figure 1. After the themes were defined and named with titles, the final stage was interpreting each theme in the results section.

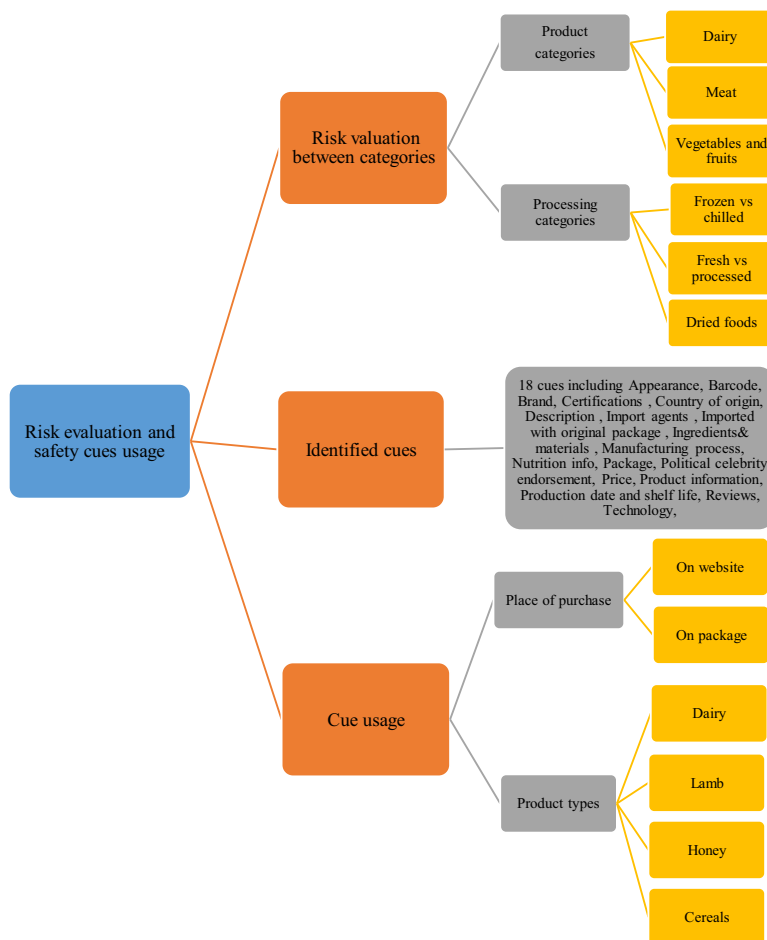


Figure 1.
The final coding schema used for analysis

BFJ
123,1

All quotations from focus group participants in this paper were translated from Chinese to English.

3. Results

3.1 Participants' demographic details

The overview of demographic information for the focus group participants (Table 1) shows that the sample was mainly female (80.5%), young (80.5% were aged 22–34), highly educated (100% equal to or higher than a bachelor's degree) and in full-time employment (95.1%).

266

	Number of participants	Percentage
<i>Gender</i>		
Male	8	19.5%
Female	33	80.5%
<i>Age</i>		
18–24	2	4.9%
25–34	33	80.5%
35–44	3	7.3%
45–54	3	7.3%
<i>Marital status</i>		
Single	16	39.0%
Married, no child	11	26.8%
Married with children	14	34.2%
<i>Monthly income</i>		
Less than 3,000RMB	0	0.0%
3,000–5,999RMB	7	17.1%
6,000–7,999RMB	14	34.2%
8,000–9,999RMB	10	24.4%
10,000–14,999RMB	5	12.2%
15,000–19,999RMB	1	2.4%
20,000–24,999RMB	3	7.3%
25,000–29,999RMB	0	0.0%
More than 30,000RMB	1	2.4%
<i>Highest level of education</i>		
Bachelor's degree	19	46.3%
Master's degree	19	46.3%
PhD	3	7.3%
<i>Occupation</i>		
Full-time employed	39	95.1%
Part-time employed	2	4.9%
<i>Geographic location</i>		
North China	9	19.6%
East China	14	30.4%
South China	18	39.1%
West China	3	6.5%
Central China	2	4.4%
<i>Frequency of purchasing imported food</i>		
Less than once a month	6	14.6%
One to three times a month	28	68.3%
Once a week	3	7.3%
More than once a week	4	9.8%

Table 1. Demographic characteristics of focus group participants ($n = 41$)

Given the place of recruitment (i.e. a university) and the method used (i.e. staff emails), these sample characteristics are unsurprising. It is important, however, that the results of the discussions are interpreted within this context.

3.2 Food safety in China context

3.2.1 Food safety “top of mind” associations. A total of 122 words were collected from the “top of mind” task conducted at the start of the session, and the frequency of associations participants had in food safety is shown in Figure 2. Additives and genetically modified were the top associations for participants when thinking of food safety. Subsequent discussion revealed that many participants believed food with fewer additives was fresher and safer. Participants were suspicious about genetically modified products. The following quote illustrates some of the types of negative comments made about genetically modified food.

“Some food products contain genetically modified ingredients, and there are some arguments in China now about genetically modified ingredients. It is unknown that whether genetically modified is good or bad in the long term. Because from the market point of view, there are many possibilities within ten years, it cannot be seen from the long term. Therefore, ingredients need to be taken into consideration.”

Sanitation, which participants associated with the hygiene condition of the preparation and processing during food production, was also top of the list of most frequently elicited words. Safety cues included brand, country of origin, shelf life, ingredients, package and price, which indicates participants regard these cues as being important to food safety.

When asked “What does “food safety” mean to you?” participants’ understanding of food safety included two aspects, health and nutrition. Safe food reportedly meant not getting either minor inconvenient illnesses such as food poisoning or more serious diseases such as cancer. A smaller group of participants argued that nutrition was another aspect of the term food safety stating that safety means bringing nutrients to their bodies: “I think what safety means is only bringing nutrients to my body. Moreover, for instance, high calories intake will cause obesity.”

3.3 Risk perceptions between product and processing type

Participants were first asked what types of food they thought pose the greatest food safety risk among all types of products, and then perceived risk was discussed in relation to different categories of food, including product type and processing type. Because the questions were open-ended, not all types of foods were discussed. For product type, meat, dairy, vegetables and fruits were discussed. For processing type, fresh food, processed food,



Figure 2. Word cloud from focus group conversation about three “top of mind” words. Larger font means higher frequency of associations. Smallest to largest font indicates one to seven mentions

frozen food, chilled food and dried food were discussed. It was apparent that participants had differing risk perceptions towards different categories of food.

Product type

When participants were asked “what type of foods do you think pose the greatest safety risk?” meat was category the most frequently mentioned. One of the main reasons for its prominence, provided in subsequent discussions, was the numerous meat scandals that had occurred over the preceding years, which meant that participants were very careful when choosing meat products. Participants also expressed concerns about meat getting contaminated during the process of transportation as the following quote illustrates: “Because there is so much negative news about beef.” Other participants also explained that meat was easily spoiled “Because meat is easily spoiled or rotten when the temperature is higher”.

Dairy was also frequently mentioned as a product type which posed a big risk. Participants stated that they pay attention to dairy products’ country of origin and that were finding product from foreign countries with a good reputation (i.e. had not had any safety accidents) was a priority.

Participants had fewer concerns towards vegetables and fruits. Contaminated soil and the overuse of pesticides were the issues that participants worried the most about here. As one participant commented: “Much soil has been damaged by pesticides. Once the soil has been damaged, the vegetables grown on it will be contaminated.” Participants indicated that they pay attention to food’s appearance, such as colour and shape, as potentials indicators of heavy pesticide usage, preferring produce that did not look unnaturally bright or perfect: “I think it’s better and no pesticides used if seeing holes on leaves of vegetables.”

Processing type

Views towards fresh and processed food were diverse. Contamination during transportation was most discussed in relation to fresh food; additives and preservatives were most discussed with respect to processed food.

Views of frozen food and chilled food were also diverse. When talking about frozen foods, a few participants were concerned about the freshness: “Chilled food is better. I always feel like frozen food is not as fresh as chilled food”. Participants were worried about contamination during transportation of frozen food and suspicious about the shelf life and storage conditions claimed on the pack.

In terms of dried foods, participants’ concerns here were mainly focussed on the negative effects caused by the unhealthy ingredients in the products. As one participant commented: “There are no ingredients (in dried food like crackers) that are good for the human bodies, just starch, sugar and oil. Just nothing is beneficial to human health.”

3.4 Cue usage between product and processing type

The most important safety cues were determined by looking at real product examples. The participants were asked to circle the most important safety cues on products when shopping either in-store or online. A total of 18 safety cues were generated from the focus group discussion, and [Table 2](#) presents these as well as summarises how they have been defined. For each cue, a typifying example quote from the focus group discussion is provided. Those cues that were unrelated to safety or that had less than five counts were excluded.

[Table 3](#) shows the percentage of focus group participants that circled as at least one example of each product’s safety cue that they considered to be important for assessing a product’s safety. Note that if a specific safety cue, say an image, was present more than once on a package, it was only counted once regardless of the number of times examples of this specific cue were circled. Among all product categories, certifications, country of origin,

Cues	Definition	Quote
Appearance	Intrinsic cue: Appearance of a food product, e.g. colour	"I think it's better and no pesticides used if seeing holes on leaves of vegetables."
Barcode	Product's barcode on the package or other traceable code such as QR code	"Anyhow I just hope to have something that I can look up if a product's real or fake."
Brand	Brand awareness, history and reputation	"Functional foods from New Zealand or Australia, I personally buy them very often, because their brands have a long history, and also I trust in the big brand."
Certifications	Inspection and quarantine process and other certifications	"Products imported through regulated channels, inspected and examined by customs, theoretically are safe. Other products which are not being inspected and quarantined but meet foreign standards not Chinese standards of food hygiene are not safe."
Country of origin	Country of manufacture, production or growth of an imported food product	"Speaking of dairy products, for example, the farms in Australia and New Zealand are relatively large, so it's reliable."
Description	Product's description in text and picture on package or website	"I will focus on the highlighted information in decision making process. It is actually positive information to me subconsciously."
Import agents Imported with original package	Import agents The product is imported with its original packaging	NA I noticed in supermarket there was Chinese words on the imported milk package, but it said the country of origin is Germany. I would imagine did they just ship the milk in big barrels and sub-package. Is it specially produced for the Chinese market?
Ingredients and materials	Intrinsic cue: raw materials and ingredients list on the product package	"I think it's safer if its ingredients are fewer."
Manufacturing process	The description of the whole manufacturing and transportation process	"The whole process seems very strict, in this way it could guarantee the safety of food."
Nutrition info	Nutrition table and nutritional claim of a product	"Because excessive intake of fat will lead to various illnesses, so it needs to be controlled."
Package	The package condition of a product, such as colour, leakage or materials	"I remember for the honey package, dark colour has better quality and longer shelf life."
Political celebrity endorsement	The product is endorsed by political celebrities, such as prime minister or mayor	"Whom you have taken a photo with does not mean what kind of person you are. Same here I believe, no matter what kind of endorsement it is, it has no direct connection with your product quality."
Price	Retail price of a product	"I noticed that the retail price is the same as it is in NZ domestic market. Does it cost anything to ship it from NZ? Is its level of quality reducing?"
Product information	The product information label required by Chinese custom for imported products	"Here has 'Chinese label, drink carefree'. It makes me free reliable."

(continued)

Table 2. Identified cues and their definitions and example quotes generated from focus group discussion

Cues	Definition	Quote
Production date and shelf life	Production date, shelf life and required storage condition presented on package or website	"I prefer storing in room temperature if I have to buy a product like this, because it's relatively better in the process of transportation."
Reviews	Consumers' feedback who have purchased this product	"I would trust my friends' feedbacks more than customers' reviews."
Technology	Technology which manufacturer used to produce this product	"I think the comparison of safety does not exist here. Only quality is comparable in many aspects. Actually, they are all reliable (in terms of different technologies used in food production)."

Table 2.

production date and shelf life, ingredients and materials and nutritional information were the top five cues selected by participants as being important indicators for the safety of imported food.

3.4.1 Dairy ultra-heat-treated milk. The category ultra-heat-treated milk had the most cues circled, totalling 233. Participants explained that the high count number was because milk was the most consumed food in their daily life: "It is frequently consumed. The most consumed product is milk." and: "We consume it a lot every year. The more you buy, the more you pay attention to it."

A cue that 63.4% of participants considered to be important for ultra-heat-treated milk was the production date and shelf. Participants also indicated that a short shelf life was preferred: "It says on the package 'consume within seven days'. This short length means fresher to me". Participants regarded shelf life as an indicator of freshness. Choices between fresh milk and ultra-heat-treated milk was a hot topic, with many participants (especially those who have spent time in European countries) saying that they would prefer fresh milk rather than ultra-heat-treated milk. This preference could also be related to the processing technology used, more specifically pasteurisation versus ultra-heat treatment, with some participants stating that ultraheat treatment killed not only harmful bacteria, but also beneficial bacteria, which were considered as nutrients in milk.

There were also some statements made by these young (80.5% were aged 22–34) participants about how some Chinese consumers, especially the elder generation, trusted local brands more compared to big national brands. For example: "I buy imported milk products for my parents, but they still only trust locally produced milk, whose shelf life is only three days. They would trust it more."

Another important safety cue for participants was country of origin. Slightly over half (51.2%) of the focus group members indicated that the country of origin was important for ultra-heat-treated milk purchased in store and commented that they would prefer dairy products imported from countries that are known to be key players who produce large quantities for the world market: "Speaking of dairy products, for example, the farms in Australia and New Zealand are relatively large, so it's reliable."

For ultra-heat-treated milk information displayed on websites, the country of origin cue was selected less often (34.1%), with 63.4% of participants indicating that the most important food safety cue was shelf life and production date which curiously was selected almost twice the number of times this cue was selected on the packs in-store. Participants paid attention to those cues that were only available on the websites, such as the manufacturing process, with 78% of the participants rating it as an important safety cue when they buy ultra-heat-treated milk online. One participant described that: "The whole process seems very strict, in this way it could guarantee the safety of food."

	UHT milk		Manuka honey		Cereals		Lamb		Milk powder	
	Package	Website	Package	Website	Package	Website	Package	Website	Package	Website
Certifications	7.3	*	31.7	<i>36.6</i>	*	<i>68.3</i>	<i>68.3</i>	4.9	78	78
Country of origin	<i>57.2</i>	34.1	<i>58.5</i>	34.1	0	19.5	*	46.3	24.4	24.4
Production date and shelf life	34.1	<i>63.4</i>	41.5	24.4	2.4	*	<i>26.8</i>	26.8	12.2	12.2
Ingredients and materials	19.5	24.4	34.1	29.3	*	17.1	2.4	<i>53.7</i>	12.2	12.2
Nutrition info	39	31.7	36.6	4.9	29.3	*	*	*	41.5	41.5
Brand	26.8	26.8	9.8	19.5	2.4	53.7	12.2	9.8	4.9	4.9
Manufacturing process	*	78	*	*	*	24.4	*	34.1	*	*
Description	*	12.2	7.3	9.8	<i>43.9</i>	2.4	4.9	19.5	24.4	24.4
Agents	14.6	*	29.3	7.3	0	4.9	4.9	9.8	14.6	14.6
Barcode	4.9	22	4.9	2.4	*	*	*	14.6	19.5	19.5
Political celebrity endorsement	*	*	*	19.5	*	39	*	*	*	*
Package	4.9	2.4	2.4	<i>36.6</i>	0	*	9.8	*	*	*
Technology	19.5	0	*	31.7	*	*	*	0	*	*
Reviews	*	39	*	*	*	*	*	*	*	*
Appearance	*	*	*	0	*	0	2.4	9.8	12.2	12.2
Imported with original package	*	*	*	2.4	*	14.6	*	*	7.3	7.3
Product information	*	*	0	0	4.9	*	12.2	*	7.3	7.3
Price	9.8	*	0	*	2.4	*	9.8	*	*	*

Note(s): Participants were asked to select the most important safety cues on the product packages and websites (Figures 1 and 2). Numbers are shown in percentages representing what percentage of focus group participants circled these cues for importance in relation to safety. Because real products and websites were used, not all cues were available for each product. *indicates this cue was not presented. Multiple circles for the same product and same cue were only counted once per participant. The highest percentage in the column is in italics. The following provides an illustrative example: 7.3% of participants identified that 'certifications' was an important food safety cue for them when looking at the package of UHT milk pre-purchase

Food safety cues

Table 3.
The percentage of times a food safety cue was identified

271

Participants also valued online product reviews written by customers. Somewhat contradictory, although more than a third of participants (39%) thought that product reviews were an important safety cue to them, many said that they would not 100% trust these reviews.

Pictures of farms were not selected very frequently as a food safety cue by participants. Participants stated that this was because such images were not reliable: "Every milk product has this kind of picture. Both domestic and imported milk are the same." Another participant also argued: "I do not trust it. I can find a better one on Google!"

3.4.2 Adult milk powder. The example of adult milk powder product was only provided as an online website stimuli. Certifications (inspection and quarantine certifications) were important to participants when shopping for milk powders, with 32 out of 41 (78%) participants circling certifications as an important safety cue. Brand was the least important cue of those selected. Participants with children commented that they would pay more attention to adult milk powder: "Products like milk powder, if I have children at home, I will pay attention to these details." There were also some comments about the difficulty of determining the safety of milk powder.

3.4.3 Manuka honey. For honey, the most important safety cues were country of origin, production date and shelf life, certifications and ingredients and materials. One participant commented on country of origin: "There is "100% pure", which means it is 100% New Zealand honey and safer."

When participants circled cues for Manuka honey on their websites, production date and shelf life, nutritional information and agents were selected fewer times compared to cues circled on the product package. However, one participant still mentioned the importance of nutrition: "I will definitely look at nutrition, protein, and carbohydrates."

Although participants did not necessarily always understand the meaning of the quality markers, as was frequently the case for the Unique Manuka Factor (UMF - a quality trademark and grading system identifying natural unadulterated manuka honey), they still thought it made the product look safer, as stated by one participant: "Although I do not know what UMF5+ means, I still think it's a standard."

Although price was discussed in focus group conversations, no one selected price as an important safety cue on the package during the cue identification activity.

3.4.4 Cereals. There were only 35 counts for cues for the cereal packs, a result which appears to show that participants did not pay much attention to safety cues of cereal packs. Participants stated that cereals were not very common in the Chinese daily diet and they did not have many concerns towards cereals. However, when shopping for cereals online, participants paid more attention. One participant said: "I only buy cereals online because it does not have alternatives in China." Safety certifications were circled most frequently when shopping for cereals online, followed by brand. Interestingly, in terms of endorsement type, results showed that participants did not regard entertainer or celebrity endorsements as proof of a product's safety. On the other hand, 39% of participants believed that political celebrity endorsement was important indicator of a product's safety. None of the participants showed a negative attitude towards political celebrity endorsement.

Participants showed positive attitudes towards the information showed on cereal's website about its market share in the New Zealand domestic market. One of the participants said she would double check the consistency of the pack design by looking it up on a New Zealand domestic supermarket's website. This indicated that consistency of product pack design is considered as a sign of proving that the product is not specifically designed and exported to the Chinese market.

3.4.5 Lamb. For lamb, participants' attention to inspection and quarantine certifications with 68.3% of the participants stating it had value for lamb sold in store. When purchasing lamb online, 53.7% of respondents thought the ingredients and materials list on the product

package of lamb were the most important safety cue, with country of origin and manufacturing process also being important. Although appearance was only circled by 2.4% of the participants on the package and 9.8% on the website, it was frequently discussed in the conversation. A transparent package was expected because being able to see the product was considered to be important.

3.5 Cue usage between on website and on package

Table 4 illustrates the percentage of times focus group participants selected each safety cue as important between on product package (in-store) and product website. As illustrated, more safety cues were collected from the website than from the in-store packs. Participants explained that in-store shopping is more impulsive and they could spend more time when online shopping to evaluate a product's safety (e.g. to look at the details of the product description and look for more information from other media such as the product's official website or social media).

In terms of the ranking of the safety cues in Table 4, certification was a key aspect when shopping for food products in the store (35.8 %), or online (47%). For safety cues on the pack, the most important safety cue was the country of origin, with the second most important being certification, followed by the nutritional information. Among all online cues, certifications were the most important, with production and transportation process, and reviews being the second and third most important cues, respectively.

4. Discussion

Consumers' understanding of the term 'food safety' was focussed on two factors, health and nutrition. This finding has also been reported by Grunert (2005) as the two aspects that made

Safety cues	On package in the store (%)	On product website (%)	Total count (times)
Certifications	35.8	47.0	121
Country of origin	54.9	31.7	110
Production date and shelf life	26.2	31.7	95
Ingredients and materials	18.7	27.3	79
Nutrition information	35.0	26.0	75
Brand	12.8	22.4	68
Production and transportation process	*	45.5	56
Description	18.7	13.7	51
Agents	16.3	9.1	35
Barcode	4.9	14.6	28
Political celebrity endorsement	*	29.3	24
Package	5.7	19.5	23
Technology	19.5	31.7	21
Reviews	*	39.0	16
Appearance	2.4	11.0	10
Imported with original package	*	8.1	10
Info label in Chinese	8.5	7.3	10
Price	7.3	*	9
Total (%)	35.7	64.7	100.0

Note(s): Numbers are shown in percentages (except for last column) representing the times that each cue had been circled for importance in relation to safety during shopping. Multiple circles for the same product and same cue were only counted once. Because real products and websites are used, not all cues are available for each product. *indicates this cue was not presented

Table 4. The total number of times and the comparative percentage of times a food safety cue was used on package and on website

up the definition of food safety. Participants also highly (negatively) associated the word genetically modified with food safety. Discussion on the issue of genetically modified food showed participants were suspicious about the technique of genetically modified and its influence on the human body. This result was similar to that reported by [Zhang \(2005\)](#) who found that Chinese consumers had the lower willingness to pay for genetically modified food compared to other types of food (i.e. pollution-free vegetables, green food and organic food), and only highly educated consumers and variety seekers were prepared to buy genetically modified food. According to [Knight and Gao \(2009\)](#), Chinese gatekeepers believed a clear endorsement by the government could dissipate consumers' views towards genetically modified food. The word sanitation was also highly associated with food safety, which is consistent with the results reported by [Schmidt and Rodrick \(2005\)](#) who reported that educated consumers considered food safety as the clean and sanitary handling of food.

Participants used different cues to evaluate the risk of a food product based on the product types and processing categories. 18 safety cues, including two intrinsic and sixteen extrinsic, were obtained from the focus group activity. Certifications, country of origin, production date and shelf life, ingredients and materials and nutrition information were found to be top five important safety cues among all product categories. The importance of certifications is in agreement with studies reported by [Ortega et al. \(2011 and 2012\)](#) in which government certifications were the most important food safety cue for Chinese consumers. The finding that shorter shelf life was considered to represent a safer product also supported previous finding reported by [Ortega et al. \(2012\)](#) where consumers had a negative willingness to pay for longer shelf life ultra-heat-treated milk.

Price was not regularly used or discussed as a means to assess safety. This was surprising as a price cue has previously been reported to impact on perceptions of safety by numerous studies. It is worth noting however that a shortcoming of these studies is that they have not described exactly how this cue is used by consumers in relation to safety specifically. The fact that Chinese consumers did not appear to use price as a cue for safety may be due to the overall high pricing level of imported foods in the Chinese market. Ignoring price is feasible when all product prices are relatively high. Thus, price perhaps is only a weak cue for perceiving the safety of an imported food product.

It was apparent that Chinese consumers used different cues to assess product safety during shopping. Consumers paid greater attention to safety cues for meat and dairy products than for products like cereals and honey. The discussion revealed that participants believed meat posed the greatest food risks. This finding is supported by [Röhr et al. \(2005\)](#) who reported that food manufacturers in the meat industry spend enormous efforts to enhance food safety as consumers are very concerned about meat safety. Dairy was also noted often as a product type which posed a big risk. This is in line with other studies that have reported consumer concern about dairy due to a succession of food safety scandals related to dairy products, such as the melamine scandal ([Wu et al., 2012](#)). Safety incidents during transportation and storage were the main reasons why consumers were concerned about dairy and meat products. For products with fewer safety concerns such as cereals, participants paid more attention to its packaging and online promotion. This result may be explained by the fact that meat and dairy are very common in the Chinese daily diet. Products which are uncommon in the Chinese diet or not consumed daily, such as cereals, have fewer safety concerns. Another possible explanation for this result is that the series of food safety scandals that have occurred in recent years have mainly implicated meat or dairy products.

Both cereal and honey had political endorsement on their websites, with 39% of participants thinking that the New Zealand's prime minister's political endorsement on the cereal website was an important safety cue, with 19.5% of the participants stating that a New Zealand mayor's political endorsement was an important safety cue. Conversely endorsements by entertainers were not believed to be important safety cues. While the

concept of using political celebrities to endorse food may seem strange to many Westerners, research has shown that in countries with high power distance beliefs like China, consumers are more willing to assume the celebrity's expertise, regardless of product-celebrity fit (Winterich *et al.*, 2018). That Chinese people place importance on hierarchies of power and trust people in positions of influence is well documented in the literature on values (Zhang, 2013). Although no one mentioned the nationality of the different endorsers explicitly, it is worth noting that the entertainer endorsers were Chinese while the political endorsers were Western. The impact of nationality on the perceived trustworthiness and hence efficacy of using endorsers as a cue for food safety is an area worthy of further exploration.

The trustworthiness of various cues was an aspect that received much discussion in the sessions. Participants expressed that they did not always trust all of the cues, especially in the case of product reviews. Cues such as product description (including pictures) were also deemed as easily replicable and thus not particularly trustworthy. Overall though, there appeared to be a relatively high level of trust in most of the cues. While many scholars have commented on Chinese consumers' deep lack of trust in the domestic food chain and thus lack of trust for cues such as Chinese certifications (El Benni *et al.*, 2019), it appears that this mistrust does not extend to imported products from New Zealand. It is worth noting that this study was conducted at one point of time, when there were no major scandals involving imported foods from New Zealand. It could be assumed that should such a scandal arise and if trust in the imported foods was broken, the viewpoints of Chinese consumers towards the food safety-related cues would alter. Further research which explores food safety cue attitudes and usage during and following scandals is thus warranted in order to provide useful guidance to food manufacturers and risk communicators.

Consumers' cue usage between on the pack and the website was heterogeneous. Due to time constraints, in-store shopping is reportedly more impulsive, with consumers using fewer cues for assessing the product's safety (obviously especially those not available on the pack, such as endorsement, reviews and description of production and transportation process). It is interesting that only 7.3% of participants selected certification logo on ultra-heat-treated milk's package (Table 3). The certification logo on the ultra-heat-treated milk image was small and difficult to find. When shopping in store, consumers tend to look for the most eye-catching cues because the decision-making process is short and there are many products on the shelf. On the other hand, company websites provide more information than can be presented to consumers on the product pack, and consumers may have more time to select and assess the information.

4.1 Research contributions

This research firstly adds understanding to existing research on consumers' perceptions towards a series of cues related to food safety. To date, it has been difficult for exporters to deliver effective messages about food safety to their target consumers due to asymmetric information (Ortega *et al.*, 2011). Practically, this research provides information to exporters and governmental risk communicators on how to best communicate a products' safety message to Chinese consumers, and this information will help them to decide what marketing strategies to use that best meet Chinese consumers' expectations for safe food.

Safety certifications, production date and shelf life, country of origin, ingredient and materials and nutritional information were found to be important safety cues. In addition, while it is appreciated that origin, shelf life, ingredients and sometimes certification needs to be by law be indicated on a food package, this research suggested this data need to be prominently displayed. The results of this study suggest Chinese consumers use different cues to perceive the safety of different products. The cues used are related to their concerns about safety risks based on different product categories and processing types. Therefore, the prominence of different cues should be adjusted according to the specific product category.

As Chinese consumers highly value safety certifications including logos of certification scheme and inspection and quarantine labels, it is suggested that these should be included on packs and online, especially for meat and dairy products. Chinese consumers check for certifications as they are very concerned about contamination during the production and transportation of meat and fish products. For this reason, manufacturing processes and transportation processes should be described on the product website.

In terms of shelf life, Chinese consumers favour pasteurised milk which had a shorter shelf life, compared to ultra-heat-treated milk, with a long shelf life appearing to be a negative cue for the perception of product safety. For those products that consumers perceived as not being particularly perishable such as milk powder, shelf life seems to be less important.

Nutritional information seemed to be a controversial cue. For consumers who associate nutrition with food safety, nutritional information was highly used. However, other consumers appear to consider it more as an indicator of quality. Nutritional information seems to be more important to consumers with regard to milk and honey compared to other products discussed in this study. This may be due to the fact that many Chinese consumers consider milk and honey to be products which can supplement nutrition.

Country of origin was considered a good indicator of food safety, with countries like New Zealand which have a reputation of having a good environment being recognised as being trusted sources of food. It is therefore recommended to emphasise the description of the country of origin by providing real photos on the pack and online, especially for fresh products like vegetables. This study indicated that consumers were concerned about contamination of soil and water in terms of vegetables and fruits. Therefore, providing an image of a clean environment of origin might help diminish these concerns.

Although traceability techniques were not widely shown on food packaging or in the website stimuli, consumers perceived traceability as being a very important cue of product safety and expect to see this on the product package. This finding was consistent with [Lu *et al.* \(2016\)](#) who also found that Chinese consumers regard certification of traceability system and traceability information to be of great importance and suggested the need of developing food traceability system combined with a certification labelling system. Therefore, there is a need to invest in traceability techniques such as QR code or barcodes to demonstrate information such as safety certifications and company information.

4.2 Limitations and recommendations

While the study certainly adds to an understanding of Chinese consumers' cue usage related to food safety, a couple of limitations must be acknowledged. Firstly, materials (i.e. the examples of product and product websites) used in the focus group activity were generated from the Internet where product cues were presented in different formats for different products, and some of the cues were not presented on every website. Further work could be conducted by using purposefully designed websites to provide participants with the safety cues in the same format, frequency etc. Second, given the qualitative nature of the research a further study could implement the research in a broader demographic and geographic setting. A nationally representative survey, for example, could focus on segmenting the Chinese population according to their information needs to develop cues with high levels of personal relevance to identified specific groups of consumers. Thirdly, this research looked specifically at food safety as a credence attribute. Other product attributes such as sensory and process attributes are not discussed in this study. In real decision-making processes, consumers might trade off food safety for other attributes such as flavour or animal welfare. This would be a fruitful area for further work to examine food safety in relation to more attributes.

Theoretically it would be interesting to conduct a cross-national study to explore any cultural differences between Western and Chinese consumers in terms of cue usage related to

safety perception. Managerially, future work is recommended to pilot the suggested practical strategies to assess their effectiveness in real-life shopping situations.

Food safety
cues

References

- Braun, V. and Clarke, V. (2006), "Using thematic analysis in psychology", *Qualitative Research in Psychology*, Vol. 3, pp. 77-101.
- Cox, D.F. (1967), "The sorting rule model of the consumer product evaluation process", *Risk Taking and Information Handling in Consumer Behavior*, Division of Research, Graduate School of Business Administration, Harvard University, Boston, pp. 324-369.
- Duerlund, M., Andersen, B.V., Gronbeck, M.S. and Byrne, D.V. (2019), "Consumer reflections on post-ingestive sensations. a qualitative approach by means of focus group interviews", *Appetite*, Vol. 142, p. 104350.
- El Benni, N., Stolz, H., Home, R., Kendall, H., Kuznesof, S., Clark, B., Dean, M., Brereton, P., Frewer, L.J., Chan, M.Y. and Zhong, Q. (2019), "Product attributes and consumer attitudes affecting the preferences for infant milk formula in China—a latent class approach", *Food Quality and Preference*, Vol. 71, pp. 25-33.
- Erdogan, B.Z. (1999), "Celebrity endorsement: a literature review", *Journal of Marketing Management*, Vol. 15, pp. 291-314.
- Given, L.M. (Ed.) (2008), *The Sage Encyclopedia of Qualitative Research Methods*, Sage Publications, Los Angeles.
- Grunert, K.G. (2005), "Food quality and safety: consumer perception and demand", *European Review of Agricultural Economics*, Vol. 32, pp. 369-391.
- Grunert, K.G., Loose, S.M., Zhou, Y. and Tinggaard, S. (2015), "Extrinsic and intrinsic quality cues in Chinese consumers' purchase of pork ribs", *Food Quality and Preference*, Vol. 42, pp. 37-47.
- Guest, G., Namey, E. and Mckenna, K. (2017), "How many focus groups are enough? Building an evidence base for nonprobability sample sizes", *Field Methods*, Vol. 29 No. 1, pp. 3-22.
- IRResearch (2017), *2017 White Paper on Analysis of Imported Food Consumption in China*, IRESEARCH, Shanghai, available at: http://report.iresearch.cn/report_pdf.aspx?id=3100.
- Kileba, D.M. (2011), *The Effect of Consumer Perception On Market Ability of New Products: The Case of Kenya Commercial Banks 'Bankika' Account*, MBA Thesis (MBA), University of Nairobi.
- Knight, J.G. and Gao, H. (2009), "Chinese gatekeeper perceptions of genetically modified food", *British Food Journal*, Vol. 111, pp. 56-69.
- Krueger, R.A. and Casey, M.A. (2014), *Focus Groups: A Practical Guide for Applied Research*, Sage Publications, London.
- Lee, P.Y., Lusk, K., Miroso, M. and Oey, I. (2014), "The role of personal values in Chinese consumers' food consumption decisions", *A Case Study of Healthy Drinks*, *Appetite*, Vol. 73, pp. 95-104.
- Lee, P.Y., Lusk, K., Miroso, M. and Oey, I. (2015), "Effect of information on Chinese consumers' perceptions and purchase intention for beverages processed by high pressure processing, pulsed-electric field and heat treatment", *Food Quality and Preference*, Vol. 40, pp. 16-23.
- Liu, R., Pieniak, Z. and Verbeke, W. (2013), "Consumers' attitudes and behaviour towards safe food in China: a review", *Food Control*, Vol. 33 No. 1, pp. 93-104.
- Lu, J., Wu, L., Wang, S. and Xu, L. (2016), "Consumer preference and demand for traceable food attributes", *British Food Journal*, Vol. 118, pp. 2140-2156.
- Miroso, M. and Mangan-Walker, E. (2018), "Young Chinese and functional foods for mobility health: perceptions of importance, trust and willingness to purchase and pay a premium", *Journal of Food Products Marketing*, Vol. 24 No. 2, pp. 216-234.
- Olson, J.C. (1972), *Cue Utilization in the Quality Perception Process: A Cognitive Model and an Empirical Test*, Doctoral dissertation Doctor of Philosophy Purdue University, Purdue e-Pubs, IN.

- Ortega, D.L., Wang, H.H., Wu, L. and Olynk, N.J. (2011), "Modeling heterogeneity in consumer preferences for select food safety attributes in China", *Food Policy*, Vol. 36, pp. 318-324.
- Ortega, D.L., Wang, H.H., Olynk, N.J., Wu, L. and Bai, J. (2012), "Chinese consumers' demand for food safety attributes: a push for government and industry regulations", *American Journal of Agricultural Economics*, Vol. 94, pp. 489-495.
- Prentice, C. and Zhang, L. (2017), "Celebrity endorsement and stock market return", *Marketing Intelligence and Planning*.
- Röhr, A., Lüddecke, K., Drusch, S., Müller, M.J. and Von Alvensleben, R.V. (2005), "Food quality and safety - consumer perception and public health concern", *Food Control*, Vol. 16 No. 8, pp. 649-655.
- Sandelowski, M. (2008), "Theoretical saturation", in Given, L.M. (Ed.), *The Sage Encyclopedia of Qualitative Methods*, Sage, Thousand Oaks, CA, Vol. 1, pp. 875-876.
- Schmidt, R.H. and Rodrick, G.E. (2005), "Definition of food safety", *Food Safety Handbook*, pp. 3-11.
- Siegrist, M. and Cvetkovich, G. (2000), "Perception of hazards: the role of social trust and knowledge", *Risk Analysis*, Vol. 20, pp. 713-720.
- Walley, K., Custance, P., Feng, T., Yang, X., Cheng, L. and Turner, S. (2014), "The influence of country of origin on Chinese food consumers", *Transnational Marketing Journal*, Vol. 2 No. 2, pp. 78-98.
- Winterich, K.P., Gangwar, M. and Grewal, R. (2018), "When celebrities count: power distance beliefs and celebrity endorsements", *Journal of Marketing*, Vol. 82 No. 3, pp. 70-86.
- Xia, W. and Zeng, Y. (2006), "Consumer's attitudes and willingness-to-pay for Green food in Beijing", available at: [SSRN 2281861](https://ssrn.com/abstract=2281861).
- Wu, L., Xu, L., Zhu, D. and Wang, X. (2012), "Factors affecting consumer willingness to pay for certified traceable food in Jiangsu Province of China", *Canadian Journal of Agricultural Economics/Revue canadienne d'agroeconomie*, Vol. 60 No. 3, pp. 317-333.
- Zhang, X. (2005), "Chinese consumers' concerns about food safety", *Journal of International Food and Agribusiness Marketing*, Vol. 17, pp. 57-69.
- Zhang, L. (2013), *China's Traditional Cultural Values and National Identity*, [Online], available at: <https://carnegietsinghua.org/2013/11/21/china-s-traditional-cultural-values-and-national-identity-pub-53613>.
- Zhou, Y. and Wang, E. (2011), "Urban consumers' attitudes towards the safety of milk powder after the melamine scandal in 2008 and the factors influencing the attitudes", *China Agricultural Economic Review*, Vol. 3 No. 1, pp. 101-111.
- Zhou, G., Zhang, W. and Xu, X. (2012), "China's meat industry revolution: challenges and opportunities for the future", *Meat Science*, Vol. 92 No. 3, pp. 188-196.

Corresponding author

Miranda Mirosa can be contacted at: miranda.mirosa@otago.ac.nz