



**Agribusiness
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Consumer Attitudes to New Zealand Food Product Attributes and Technology Use in Key International Markets

**Caroline Saunders
Meike Guenther
Tim Driver
Peter Tait
Paul Dalziel
Paul Rutherford**

**Research Report No. 333
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**Agribusiness and Economics Research Unit
P O Box 85084
Lincoln University
Lincoln 7647
Christchurch
New Zealand**

**Ph: (64) (3) 423 0372
www.lincoln.ac.nz/AERU**

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Chapter 1

Introduction

New Zealand relies on the exports of its primary industries, in particular, agriculture and forestry. This sector accounted for 62.4 per cent of total value of exports in 2014 (StatsNZ 2015). Being key industries, it is important for New Zealand agricultural and forestry producers to understand and cater to changing consumer preferences for food product attributes in order to maximise value. These attributes are not only related to basic properties, such as taste and freshness, but also to those qualities that cannot be immediately seen or experienced at the point of purchase (credence attributes). Examples of such credence attributes include food safety, environmental protection, animal welfare, country of origin, functional and/or health food and organic production.

In addition, methods for the communication of product information to consumers are changing rapidly. With increases in internet connectivity, as well as an uptake of a wide range of personal technologies, access to food information at the consumer level of the supply chain is easier and faster than ever before. As this trend is expected to continue in the future, it is important to consider how consumers are accessing information, the effect that this has on purchase behaviour, as well as how the qualities of New Zealand's primary industry exports could be communicated to consumers in market.

Particular consideration should be given to New Zealand's current and potential key markets. As consumer preferences vary between countries, each international market must be evaluated separately to determine the most appropriate message and methods to promote New Zealand's food products and their attributes within these markets. Previous research by Saunders et al. (2013) assessed consumer preferences and willingness to pay (WTP) for different attributes in New Zealand food products in the UK, India and China. This showed that consumers in the UK, China and India have similar preferences for basic attributes of food products from New Zealand (quality, taste, freshness), while differences were noted in relation to credence attributes. Food safety certification was rated as more important by consumers in China and India than their UK counterparts, whereas the least important attribute for all involved countries was the product's brand. In most cases, participants from the developing countries of India and China valued environmental and ethical attributes of food products more highly than participants from the UK. This is a surprising finding as it is usually assumed that consumers in developed countries (such as the UK) are more likely to purchase goods with associated credence attributes than those of developing countries.

The study described in this paper builds on the research above. It is a pilot survey of 100 consumers each in the United Kingdom (UK), India, China, Indonesia, Japan and Korea. The survey gathers information on attitudes and preferences of consumers for attributes in food products in these countries. The first part of the survey assessed the importance of key attributes in food products in these markets. These attributes were selected based on prior research examining international consumer trends (Saunders et al. 2010, Driver et al. 2011, Saunders et al. 2013, Miller et al. 2014). This study expanded previous research by including more countries, by increasing the number of attributes considered, and by assessing important factors underpinning these key attributes in food products. The survey then explores how consumers in these markets were using new personal technologies in relation to food information and purchase intentions. The results from this study

are aimed to better inform New Zealand's export industries, allowing for enhanced value garnered throughout the value chain. A full survey will take place in 2015.

This study is also part of a wider research programme "Maximising Export Returns (MER)", a Ministry of Business, Innovation and Enterprise (MBIE) funded three-year project undertaken by the Agribusiness and Economics Research Unit (AERU) at Lincoln University. This project aims to explore how export firms can capture price premiums by including and communicating credence attributes in products for overseas markets.

Chapter 2 Methodology

2.1 Sampling method

The overall aim of the project was to explore consumer preferences toward selected key credence attributes in food, beverage, and other products in China, India, Indonesia, Japan, Korea and the UK. The targeted consumer groups were the middle and upper class consumers who are expected to be more likely to be willing to pay a premium for these attributes, thus informing New Zealand industries of possible opportunities for maximising their export returns. Therefore, the focus was on sampling the population of interest, and not a non-probabilistic sampling in order to provide a representative sample of the whole population.

In surveys, different methods can be used to obtain a sample of consumers. In probabilistic sampling, theoretically, each person of the target population would be included in the sampling frame. Statistical methods enable testing of the sample representation, if data relating to the sample population and the total population characteristics exists – hence sampling error can be estimated (Dillman et al. 2009). Common methods to obtain random samples include telephone and/or mail surveys (Dillman et al. 2009). In recent years, internet surveys have become increasingly popular.

However, obtaining a probabilistic sample in internet surveys can be more challenging compared to more traditional methods. In internet surveys, online panels are commonly used (Callegaro et al. 2014a). These are considered as non-probabilistic/non-random sampling methods as, by definition, not all members of the population have access to the internet while these panels are also likely to include people who are more frequent and experienced internet users (Callegaro et al. 2014b; Callegaro and Krosnick 2014). A disadvantage of non-probabilistic sampling methods is that they do not satisfy the classic conditions of probability sampling where one can make statistical inferences of representativeness of the general population (Callegaro et al. 2014a). One solution is to include some auxiliary variables in the survey for which information on the population distribution is available (Callegaro et al. 2014a). These auxiliary variables can be used to adjust the sample (e.g. using post-stratification, raking/rim-weighting or propensity scoring) if this is not representative of the population (Baker and Göritz 2014; Tourangeau et al. 2013), or setting up sample quotas.

However, the challenge is to retrieve data for these variables. While there is sufficient population (census) data available for the UK, this is not often the case in many Asian countries which are of interest in this research project. Across these countries (China, India, Indonesia, Japan, Korea and the UK), census data availability for particular categories varied. Gender distribution data was available for all countries, with age distribution data available for all countries except Korea. In addition, educational attainment data was only available for Indonesia and Korea. However, no census data was available for income distribution ranges for any of the countries.

The latest census data for each market was available for 2010 for most markets, with 2011 census data used for India. In contrast, statistics housed within the 2010 Population Census of the People's Republic of China was only available on a data disc (to be ordered from the *China Statistics Press*), not digitally, and thus was excluded.

Another concern in online panels are the “professional” or more experienced survey respondents and associated concerns about data quality (Hillygus et al. 2014) as these respondents may have different attitudes, opinions and/or beliefs compared to the less-experienced survey respondents, rush through the survey focusing on receiving the incentive rather than being serious about the topic, thus introducing measurement error in the data, and answer strategically in order to avoid possible follow-up questions.

On the other hand, experienced respondents may be more consistent in their responses and can be more likely to answer sensitive questions (e.g., on income or race) and therefore improving validity of the results (Hillygus et al. 2014). Thus, the level of concern including professional respondents is unclear as the evidence of impact on is inconclusive and it can also be difficult to identify these respondents. One way to check validity is to exclude “too quick” answers (i.e., incentive seekers). Also, constantly selecting “don’t know” options, “straight line” or gibberish in the open-ended questions answers can be an indication of measurement errors (Baker et al. 2010, as cited in Hillygus et al. 2014).

2.2 Survey method

This study used an internet survey. Primary data was collected using Qualtrics™, a web-based survey system. A non-random/non-probabilistic survey panel of consumers in China, India, Indonesia, Japan, Korea and the United Kingdom was purchased from an international market research company as a probabilistic sample from these countries would be very difficult. Respondents were recruited by email. The email included a short description of the study, a link to start the online survey and instructions to run the survey. Participation was voluntary and each participant was asked to provide an electronic consent.

As mentioned above, the online panel for each country was provided by a market research company. The company has offices in different countries worldwide which allowed us an access to survey consumers in these specific countries of interest. These panels were profiled, broadly recruited and frequently refreshed. The respondents for each survey were recruited by online marketing, and if required, the company holds a participation history of every member of the panel. Each respondent who completes the survey is compensated with a form of retail voucher.

In order to target the sub-population of interest in each country, two screening questions were used. The screening was enforced at the beginning of the questionnaire rather than in the sampling process (Callegaro et al. 2014a) thus allowing researchers to be in control of the screening process. The screening questions included the frequency of grocery shopping (respondents were screened out if they do not go grocery shopping at least once per month) and awareness of New Zealand (respondents were screened out if they were not aware of New Zealand).

Quota sampling was used to target the middle and upper class in each country. This is a common method to ensure a maximum number of respondents from key sub-populations is received (Callegaro et al. 2014a). These questions included household income and the main occupation of the chief income earner of the household. In data analysis, the income and occupational information can be used as an auxiliary weighting variable, if there is difference between the population of interest and the sample (subject to data availability), to adjust the sample to be representative of the population of interest.

In addition, the validity of the responses was verified. Respondents were excluded from the final sample for analysis if they completed the survey in a time that is considered insufficient to allow

for adequate consideration of the questions (i.e., respondents just clicked through the survey). This protocol attempts to maintain data quality by removing respondents who may complete surveys solely on the basis of receiving the compensation. The time below which respondents were excluded was determined on a survey-by-survey basis, including an evaluation of the distribution of completion times by other respondents, and the judgement of the researchers.

In summary, this survey used a specialty panel of sub-population (population of interest) defined by screening questions and quotas used in this survey. Credibility of results was provided by using a high-quality international market research company that provides the online panel, non-probabilistic sampling with screening questions to get a sample of the population of interest, quotas to refine the distribution of population (to target the middle and upper class consumers), and data quality checks by excluding the pure incentive seekers of the sample. This method provided quality-checked data from the population of interest in these specific markets.

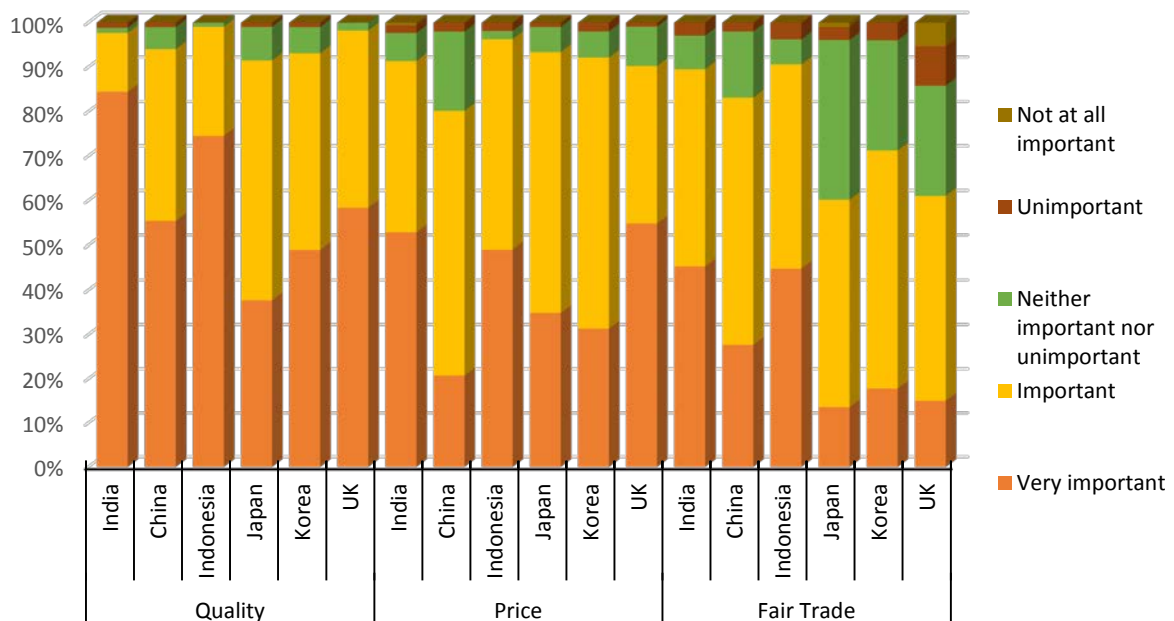
Chapter 3

Importance of Attributes

3.1 Importance of base attributes

This research is aimed at examining consumer preferences for attributes in food products in key international markets. It supports earlier work which showed that developing countries (India, China, Indonesia) found key attributes in food to be more important than their developed country counterparts (UK, Japan, Korea). These key attributes were freshness, taste, quality, price, brand, country of origin, recyclability, animal welfare certification, environmental quality certification, traceability, organic and GM-free. For this study, the key attributes explored were quality, price, fair trade, animal welfare, environmental quality, health food and food safety.

Figure 3.1: Importance of quality, price and fair trade attributes when shopping



The survey initially asked participants to evaluate the importance of seven key attributes – quality, price, fair trade, animal welfare, environmental quality, health food and food safety. These results, as presented in Figure 3.1 and 3.2, illustrates the importance of these attributes to consumers in the countries of interest. In response, most participants across all markets indicated that quality and price were either *very important* or *important*. In relation to *quality*, Indian participants rated this the most important (84 per cent *very important*, 13 per cent *important*), followed by Indonesian (75 per cent *very important*, 24 per cent *important*) and UK participants (58 per cent *very important*, 40 per cent *important*). Japanese participants rated *quality* the lowest of all countries, with only 38 per cent stating this to be *very important*.

In relation to *price*, UK participants rated this most highly (55 per cent *very important*, 35 per cent *important*), closely followed by Indian (53 per cent *very important*, 39 per cent *important*) and Indonesian (48 per cent *very important*, 46 per cent *important*) respondents. Interestingly, price was rated the lowest by Chinese participants, with only 21 per cent claiming *price* to be *very important*.

Figure 3.2: Importance of animal welfare, environmental quality, health food and food safety attributes when shopping

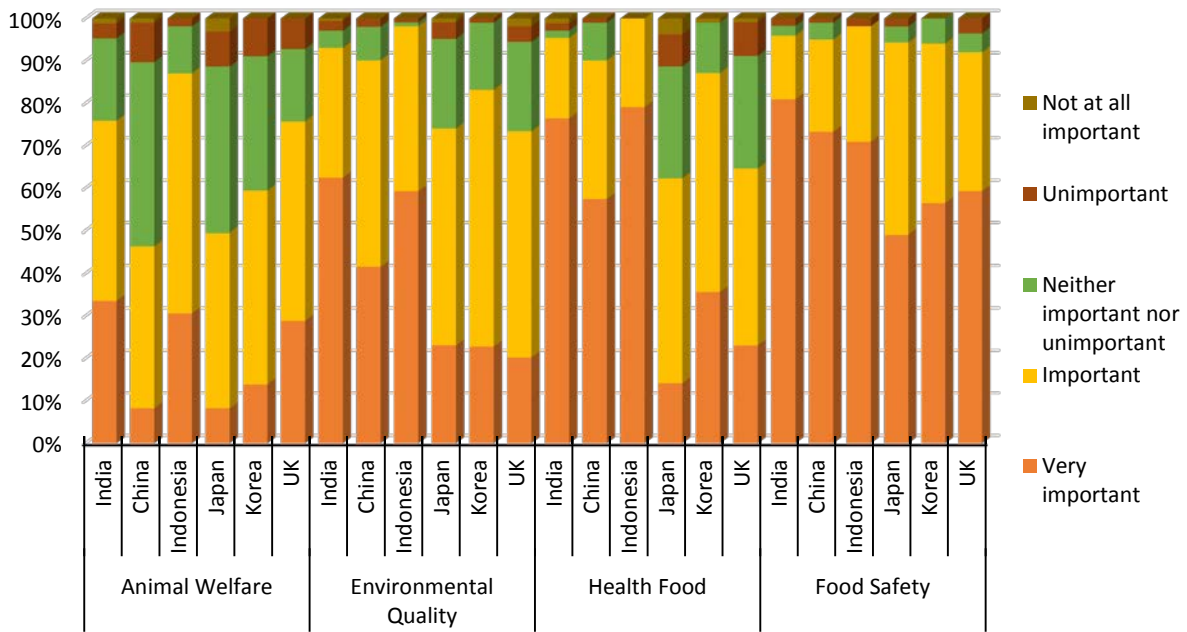


Figure 3.2 shows how participants rated the importance of the other key attributes, including animal welfare, environmental quality, health food and food safety. With regards to *animal welfare*, Indonesian participants indicated the highest level of importance (30 per cent *very important*, 55 per cent *important*), followed by Indian (33 per cent *very important*, 42 per cent *important*) and Korean participants. (14 per cent *very important*, 45 per cent *important*). Japanese participants rated *animal welfare* the lowest of all markets.

Environmental quality was rated highest amongst Indian participants (62 per cent *very important*, 30 per cent *important*), closely followed by Indonesian participants (59 per cent *very important*, 39 per cent *important*). Relatively low ratings for environmental quality were shown by Japanese (22 per cent *very important*, 50 per cent *important*), Korean (23 per cent *very important*, 60 per cent *important*) and UK participants (20 per cent *very important*, 52 per cent *important*).

The importance of *health food* was emphasised by Indonesia participants, with respondents indicating that this attribute is either *very important* (79 per cent) or *important* (21 per cent) and no participants stating that this attribute is *neither important nor unimportant*, *unimportant* or *not at all important*. This was similarly high amongst Indian participants, with a large proportion indicating that this attribute is *very important* (76 per cent) or *important* (19 per cent). *Health food* was rated the lowest amongst Japanese participants, with 14 per cent stating this as *very important*, and 48 per cent stating that this attribute is *important* when shopping.

Finally, *food safety* was rated highly across all countries, with Indian participants indicating the highest importance (81 per cent *very important*, 15 per cent *important*), closely followed by Chinese (73 per cent *very important*, 22 per cent *important*) and Indonesian participants (71 per cent *very important*, 27 per cent *important*).

Chapter 4

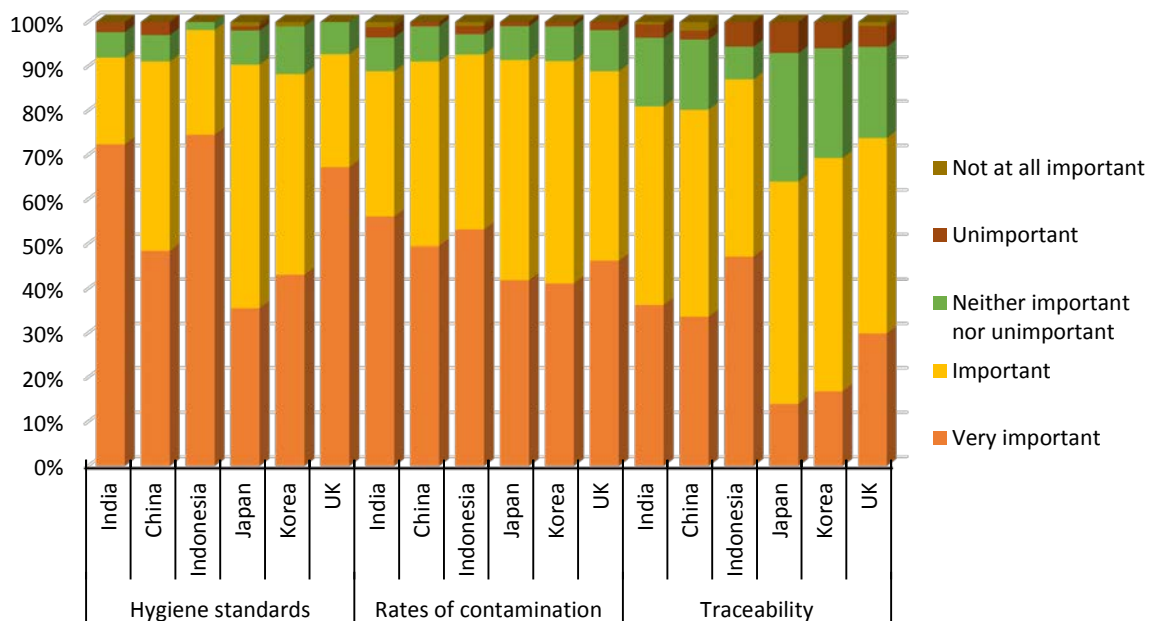
Importance of Factors in Relation to Food Safety, Environmental Quality, Animal Welfare and Health Food

The pilot survey then examined four of the seven key attributes in more detail and asked how important other factors were in relation to each of these. These four key attributes were food safety, environmental quality, animal welfare and health food. Participants were asked to rate the importance of a range of factors related to each of the four key attributes in order to determine which factors were most important, with a different set of factors examined for each key attribute.

4.1 Food safety

Firstly, the survey asked participants to consider the importance of factors relating to food safety. These factors included hygiene standards, rates of contamination, traceability, private and government certification, labelling of “use by date”, barn-raised animals, type of feed, animal welfare, reduced use of pesticides, organic production, GM-free, number of additives, environmental quality, low input agriculture, freshness, brand and country of origin. As consistently displayed throughout the survey results, participants in developing countries tended to rate factors attributed to food safety higher than participants within developed countries. The most important factors within all countries were freshness, labelling of “use by date”, hygiene standards and rates of contamination, particularly within developing countries.

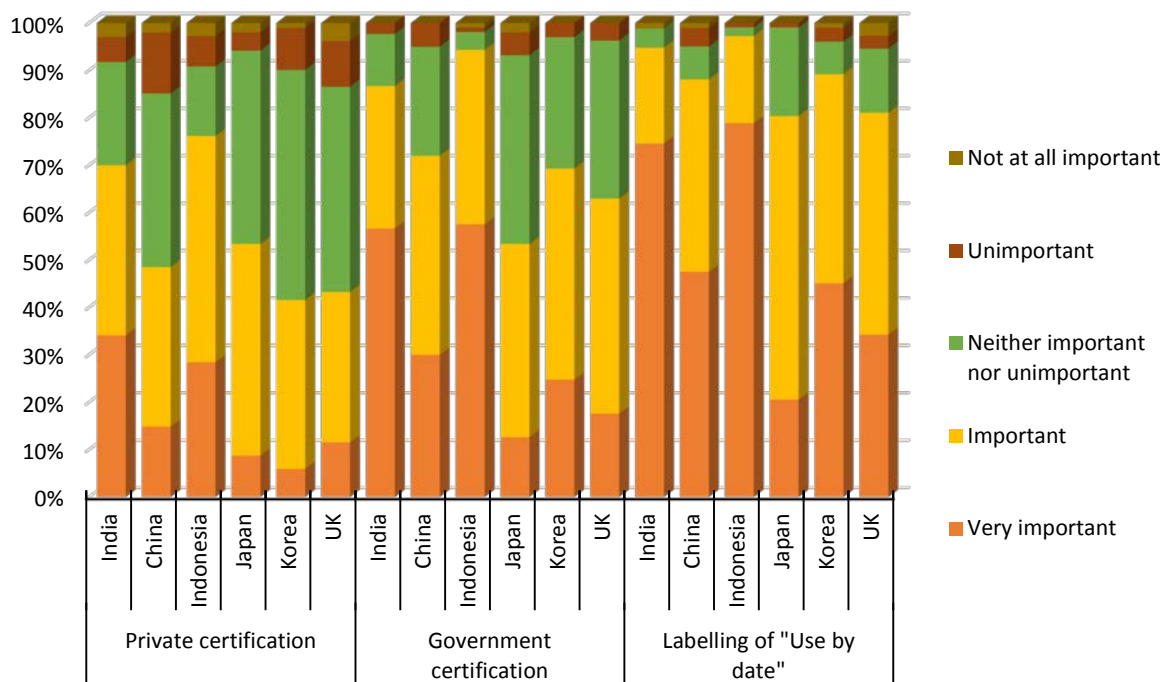
Figure 4.1: Importance of hygiene standards, rates of contamination and traceability in relation to food safety



With reference to *hygiene standards*, as shown in Figure 4.1, participants in all countries rated this factor as highly important, particularly in Indonesia (75 per cent *very important*, 24 per cent *important*), followed by India (72 per cent *very important*, 20 per cent *important*) and the UK (66

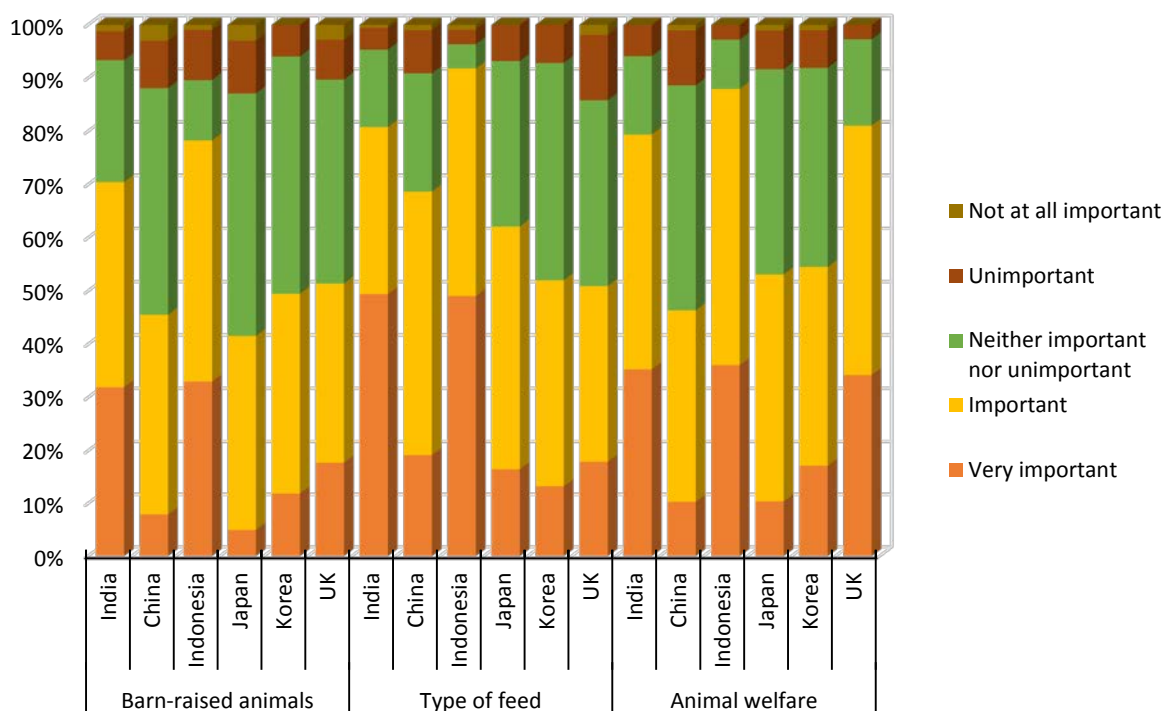
per cent *very important*, 25 per cent *important*). A similar response pattern was shown by all countries in relation to *rates of contamination*. Indian participants showed the highest importance (55 per cent *very important*, 32 per cent *important*), followed by Indonesia (53 per cent *very important*, 39 per cent *important*) and the UK (44 per cent *very important*, 41 per cent *important*). Finally, *traceability* was rated the highest in relation to food safety amongst developing countries, with the highest importance indicated by Indonesian participants (47 per cent *very important*, 40 per cent *important*), followed by Indian (35 per cent *very important*, 43 per cent *important*) and Chinese participants (34 per cent *very important*, 47 per cent *important*). Within developed countries, this attribute was rated the lowest, particularly by Japanese participants. This may be due to the existence of effective traceability systems within the supply chains of these markets.

Figure 4.2: Importance of private certification, government certification and labelling of “use by date” in relation to food safety



Participants were also asked to rate the importance of certification types and the use of a “use-by date” label in relation to food safety, as shown in Figure 4.2. *Private certification* was rated as one of the least important factors across all countries, with the highest importance placed on this type of certification in developing countries, such as Indonesia (28 per cent *very important*, 47 per cent *important*) and India (34 per cent *very important*, 35 per cent *important*). *Government certification* was more important than private certification in all countries and most valued in the developing countries of Indonesia (56 per cent *very important*, 36 per cent *important*), India (56 per cent *very important*, 30 per cent *important*) and China (30 per cent *very important*, 42 per cent *important*). Interestingly, Japan was the only country to indicate a similar indication of importance to both private (8 per cent *very important*, 43 per cent *important*) and government (12 per cent *very important*, 40 per cent *important*) certification types. In relation to the display of a “use by date” label on a food product, most participants in all countries indicated that this was at least *important*. This was particularly true in the developing countries, especially Indonesia (78 per cent *very important*), closely followed by India (75 per cent *very important*), China (48 per cent *very important*, 41 per cent *important*) and Korea (45 per cent *very important*, 44 per cent *important*).

Figure 4.3: Importance of barn-raised animals, type of feed and animal welfare in relation to food safety

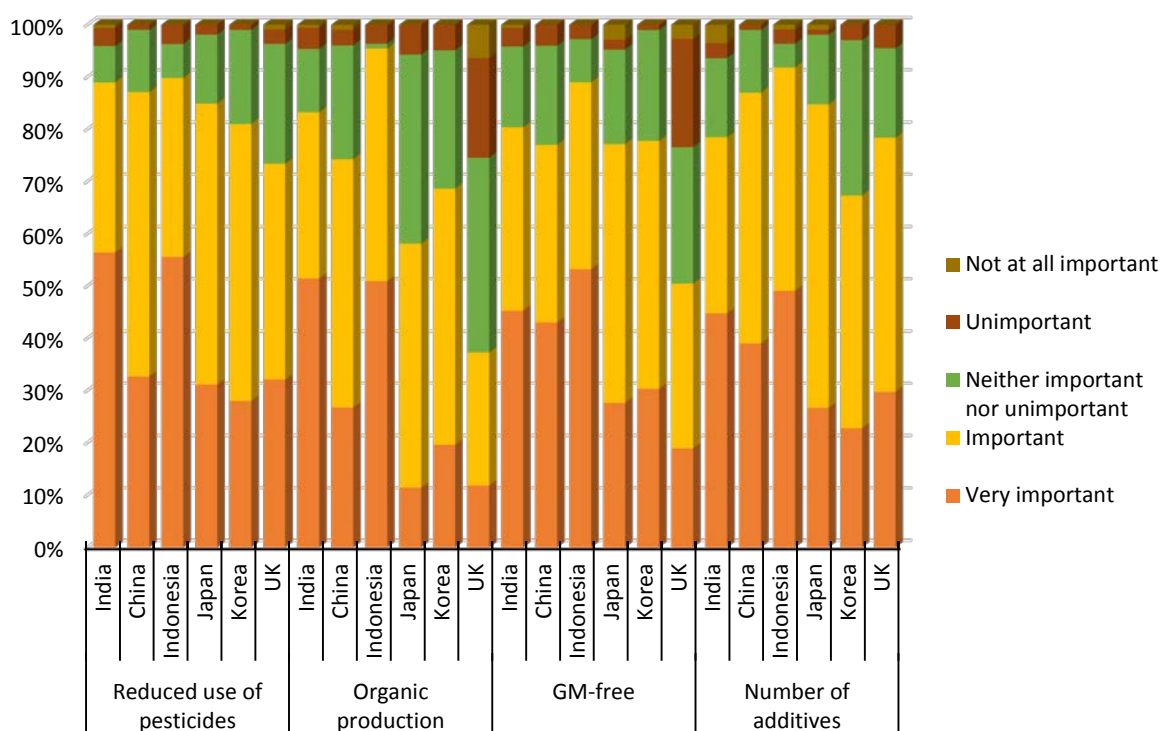


Participants were also asked to rate the importance of barn-raised animals, type of feed and animal welfare in relation to food safety, as shown by Figure 4.3. The factor of *barn-raised animals* in relation to food safety was among the lowest rated of all factors, particularly in Japan (43 per cent *neither important nor unimportant*) and China (43 per cent *neither important nor unimportant*). Indonesian participants indicated the highest importance of all countries for barn-raised animals (32 per cent *very important*, 44 per cent *important*), followed by India (31 per cent *very important*, 37 per cent *important*).

With reference to type of feed as a factor of food safety, mixed responses were shown for all countries. This was rated the highest in the developing countries of Indonesia (49 per cent *very important*, 43 per cent *important*), India (49 per cent *very important*, 31 per cent *important*) and China (19 per cent *very important*, 49 per cent *important*).

Animal welfare as a factor of food safety was conversely rated low in importance by participants in China (41 per cent *neither important nor unimportant*, 10 per cent *unimportant*), Japan (35 per cent *neither important nor unimportant*, 7 per cent *unimportant*) and Korea (37 per cent *neither important nor unimportant*, 7 per cent *unimportant*). It was high in importance in Indonesia (35 per cent *very important*, 51 per cent *important*), UK (34 per cent *very important*, 46 per cent *important*) and India (35 per cent *very important*, 43 per cent *important*).

Figure 4.4: Importance of reduced use of pesticides, organic production, GM-free and number of additives in relation to food safety



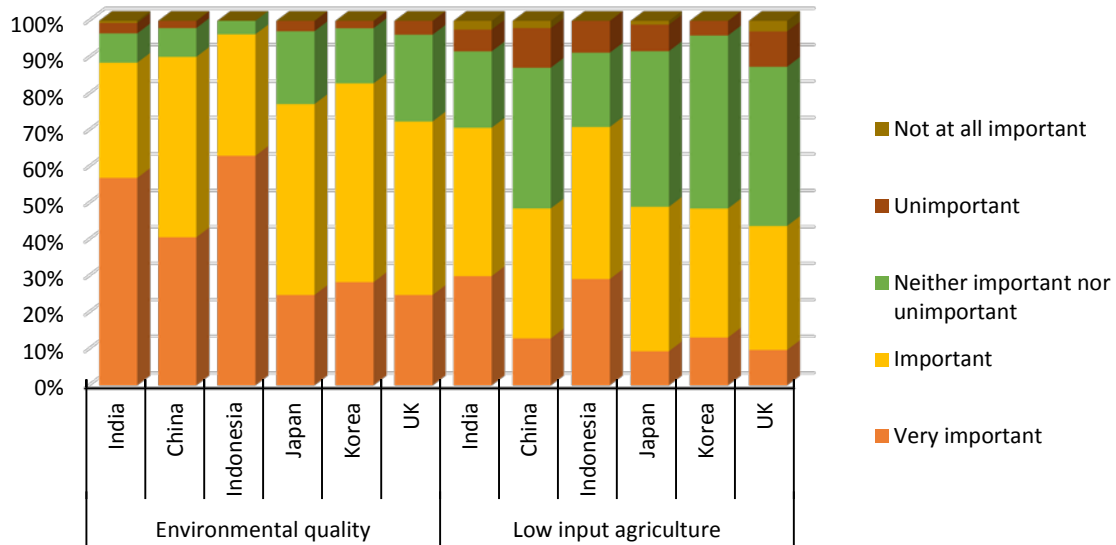
Participants also rated the importance of reduced use of pesticides, organic production, GM-free and number of additives in relation to food safety, as shown by Figure 4.4. In relation to reduced use of pesticides as a factor in food safety, all countries stated that this was of high importance, with the highest rating indicated by participants in developing countries. In particular, reduced use of pesticides was most important in India (56 per cent *very important*, 33 per cent *important*) and Indonesia (55 per cent *very important*, 34 per cent *important*). In contrast, the lowest overall rating indicated by UK participants (22 per cent *neither important nor unimportant*).

Organic production in relation to food safety received mixed responses, with the highest importance placed on organic production by the developing countries Indonesia (51 per cent *very important*, 45 per cent *important*), India (51 per cent *very important*, 32 per cent *important*) and China (27 per cent *very important*, 48 per cent *important*). Conversely, low importance was placed on organic production for food safety amongst UK participants, with 19 per cent stating that this was *unimportant* and 37 per cent stating that this was *neither important nor unimportant*.

GM-free as a factor affecting food safety was relatively high in importance across most countries other than the UK (26 per cent *neither important nor unimportant*, 20 per cent *unimportant*). This factor was rated higher in importance amongst developing countries, particularly Indonesia (53 per cent *very important*, 35 per cent *important*) and India (44 per cent *very important*, 34 per cent *important*).

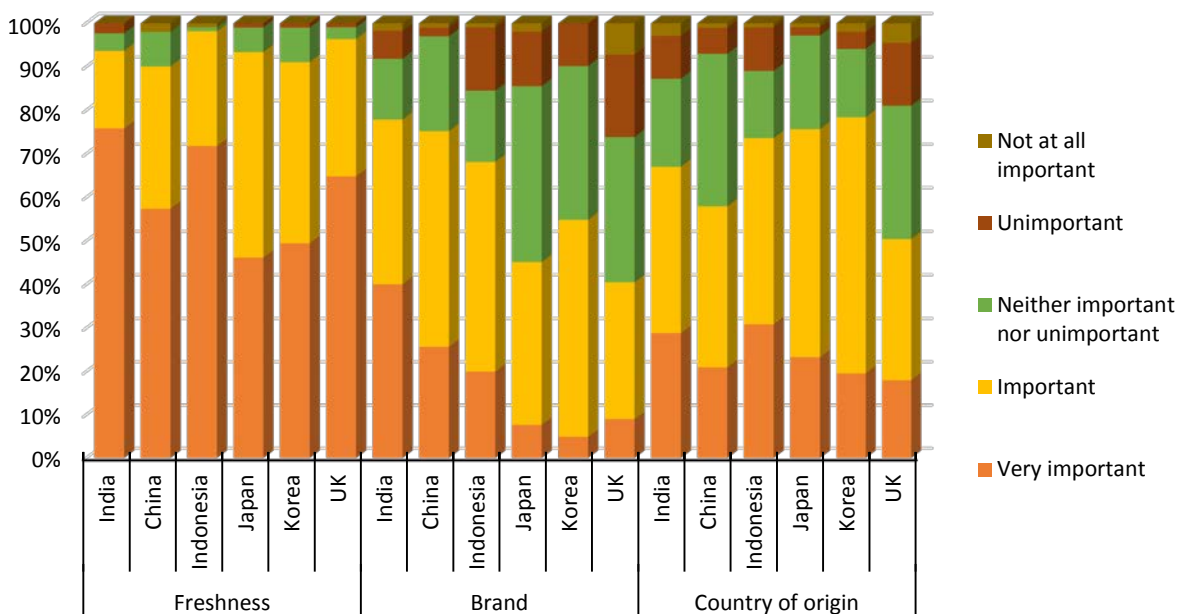
The number of additives in a product as a factor of food safety varied in importance across markets, but remained relatively high in overall importance, particularly in developing countries. Indonesia placed the highest importance on the number of additives in a product (48 per cent *very important*, 44 per cent *important*), followed by China (39 per cent *very important*, 48 per cent *important*) and Japan (26 per cent *very important*, 57 per cent *important*). Korean participants gave the lowest importance regarding number of additives (30 per cent *neither important nor unimportant*).

Figure 4.5: Importance of environmental quality and low input agriculture in relation to food safety



Participants were also asked to rate the importance of environmental quality and low input agriculture in relation to food safety, as shown by Figure 4.5. For environmental quality, the highest importance was indicated by developing countries, particularly Indonesia (62 per cent *very important*, 33 per cent *important*), followed by China (41 per cent *very important*, 50 per cent *important*) and India (57 per cent *very important*, 32 per cent *important*). This indicates that environmental quality is important, not only of itself, but also as a factor of food safety. Similarly, with reference to low input agriculture, the highest importance was shown by Indian (29 per cent *very important*, 39 per cent *important*) and Indonesian participants (27 per cent *very important*, 39 per cent *very important*).

Figure 4.6: Importance of freshness, brand and country of origin in relation to food safety



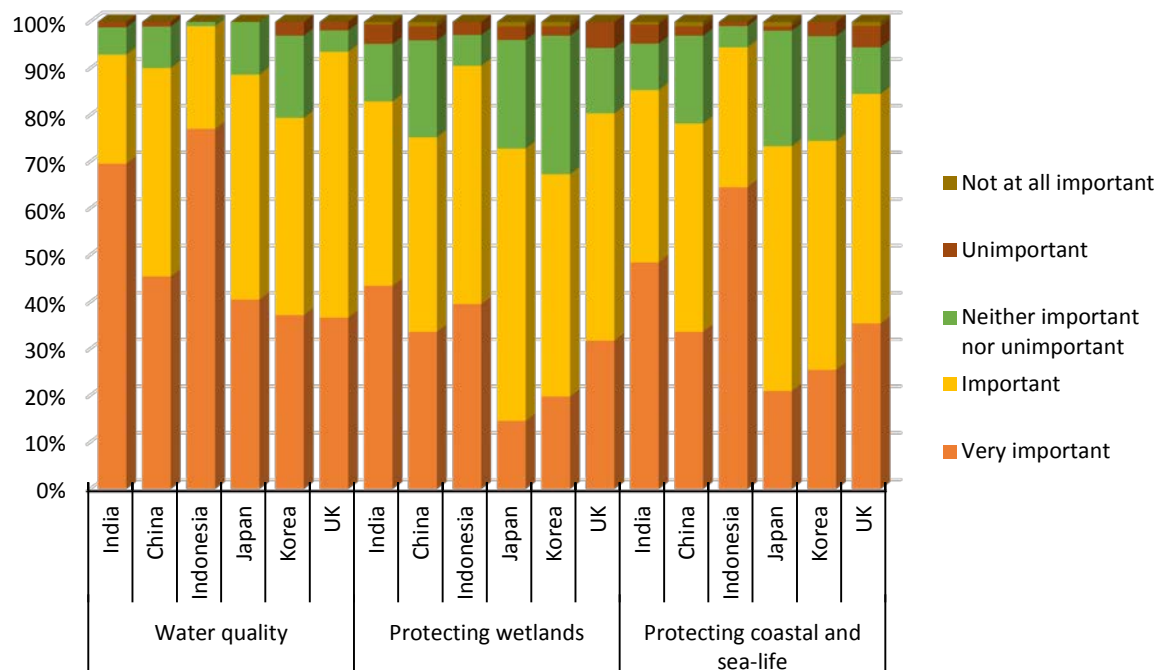
Participants were also asked to rate the importance of freshness and brand in relation to food safety, as shown by Figure 4.6. Freshness was rated highly amongst all countries, being highest in importance in developing countries, particularly in India (76 per cent *very important*) and Indonesia (72 per cent *very important*). In contrast, brand was seen to be among the lowest rated factors affecting food safety overall, especially within Japan (40 per cent *neither important nor unimportant*) and the UK (33 per cent *neither important nor unimportant*). Brand was rated the highest by Indian participants (40 per cent *very important*), yet still low in comparison to other factors. Country of origin as a factor affecting food safety received mixed response from all countries, with the importance of this factor rated the highest amongst Korean participants (20 per cent *very important*, 59 per cent *important*), followed by Japanese (23 per cent *very important*, 52 per cent *important*) and Indonesian participants (31 per cent *very important*, 43 per cent *important*).

In summary, participants from all surveyed countries rated the factors of freshness, hygiene standards, rates of contamination and labelling of “use by date” as the most important in relation to food safety. Furthermore, environmental quality as a factor of food safety was rated highly amongst participants from developing countries. The least important factors of food safety as indicated by all countries were low input agriculture, barn-raised animals, brand, animal welfare and private certification.

4.2 Environmental quality

The survey also asked participants to consider the importance of factors affecting environmental quality. These factors included water quality, the protection of species and environments (such as wetlands, coastal and sea-life, endangered plants and animals, and native and non-native biodiversity), air quality, greenhouse gas emissions, organic production, low input agriculture, recycling, open spaces and wilderness. Almost consistently, the developing countries considered all factors to be more important to environmental quality than developed countries.

Figure 4.7: Importance of water quality, protection of wetlands and protection of coastal and sea-life in relation to environmental quality

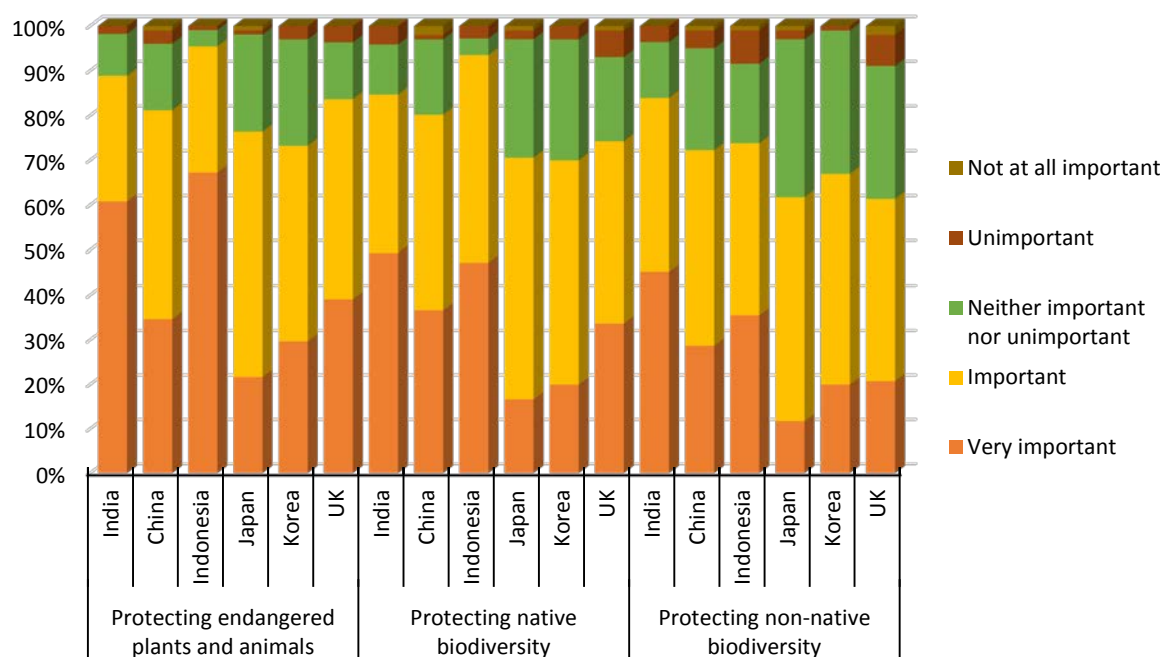


Participants were asked to rate the importance of water quality, protection of wetlands and protection of coastal and sea-life in relation to environmental quality. Overall, *water quality* as a factor reflecting environmental quality was rated highest by participants in developing countries, with UK participants also rating this factor highly, as shown in Figure 4.7. Indonesia indicated the highest level of importance for this factor (77 per cent *very important*), followed by the UK (35 per cent *very important*, 55 per cent *important*) and India (69 per cent *very important*).

With reference to the *protection of wetlands* as a factor affecting environmental quality, responses were mixed. Similarly to water quality, the protection of wetlands was rated highest in importance by participants in Indonesia (39 per cent *very important*, 50 per cent *important*), followed by India (43 per cent *very important*, 39 per cent *important*) and the UK (30 per cent *very important*, 46 per cent *important*). The lowest importance was placed on wetland protection as a factor of environmental quality by Korean participants.

The *protection of coastal and sea-life* as a factor of environmental quality was considered important by participants in all countries. This factor was stated to be most important to Indonesian participants (65 per cent *very important*, 30 per cent *important*), followed by Indian (48 per cent *very important*, 37 per cent *important*) then UK participants (35 per cent *very important*, 48 per cent *important*). This factor was rated the lowest by Japanese participants, with 24 per cent stating that the protection of coastal and sea-life in relation to environmental quality was *neither important nor unimportant*.

Figure 4.8: Importance of protection of endangered plants and animals, native biodiversity and non-native biodiversity in relation to environmental quality

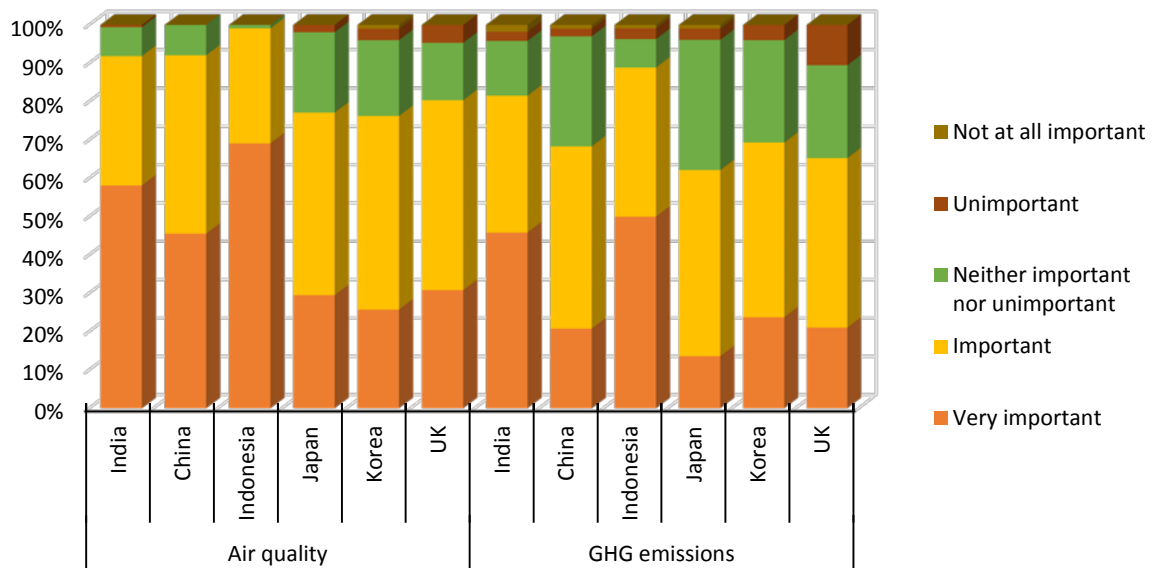


Participants also rated the importance of other types of environmental protection in relation to environmental quality, including the protection of endangered plants and animals, native and non-native biodiversity, as shown in Figure 4.8. The *protection of endangered plants and animals* was shown to be the most important by all participants. With reference to the protection of endangered plants and animals, the highest importance was placed on this factor by Indonesian participants (67 per cent *very important*, 28 per cent *important*), followed by participants from India (61 per cent *very important*, 28 per cent *important*) and the UK (38 per cent *very important*, 43 per cent *important*).

Following this, participants were asked to indicate the level of importance of the *protection of native biodiversity* as a factor of environmental quality. This factor was considered most important by participants in developing countries, particularly India (49 per cent *very important*, 46 per cent *important*), followed by Indonesia (47 per cent *very important*, 46 per cent) and China (37 per cent *very important*, 44 per cent *important*). Korean participants rated this factor the lowest of all countries, but overall the majority of participants indicated that this was at least *important* in relation to environmental quality.

In comparison, the *protection of non-native biodiversity* received lower ratings of importance amongst all participants. UK participants indicated the lowest importance for the protection of non-native biodiversity. However, most participants in all countries indicated that this factor was at least *important*, with participants in developing countries showing the highest importance regarding the protection of non-native biodiversity. Indian participants placed the highest importance on this factor (44 per cent *very important*, 38 per cent *important*), followed by Indonesia (35 per cent *very important*, 37 per cent *important*) and China (29 per cent *very important*, 44 per cent *important*). The difference between protection of native and non-native biodiversity is particularly pronounced amongst Indonesian participants, followed by the UK and then China.

Figure 4.9: Importance of air quality and greenhouse gas (GHG) emissions in relation to environmental quality

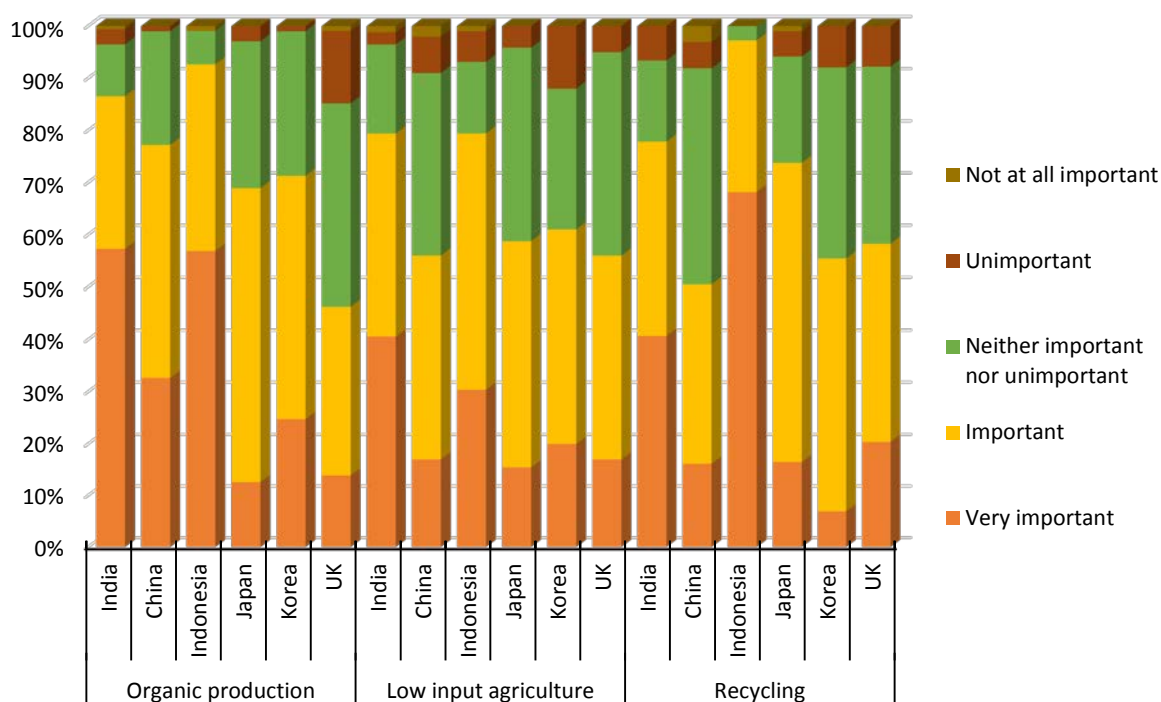


Participants were also asked to rate the importance of air quality and greenhouse gas (GHG) emissions in relation to environmental quality, as shown in Figure 4.9. Overall, participants in developing countries placed the highest importance on these factors. In particular, air quality was one of the highest rated factors, particularly those of Indonesia and India. While developed countries indicated the lowest importance overall, participants in all countries rated these factors to be at least *important*.

Air quality as a factor of environmental quality was rated the highest by developing countries. Indonesian participants rated this factor's importance highest (69 per cent *very important*, 30 per cent *important*), followed by India (58 per cent *very important*, 34 per cent *important*) and China (46 per cent *very important*, 47 per cent *important*). Japan, Korea and the UK indicated similar ratings of air quality's importance in relation to environmental quality, which was overall rated the lowest by Korean participants.

In contrast, results varied in response to the importance of *greenhouse gas (GHG) emissions* as a factor of environmental quality. Indonesian participants placed the highest degree of importance on this factor (50 per cent *very important*, 39 per cent *important*), followed by Indian participants (45 per cent *very important*, 35 per cent *important*). Chinese participants had one of the lowest ratings of the importance of greenhouse gas (GHG) emissions in relation to environmental quality.

Figure 4.10: Importance of organic production, low input agriculture and recycling in relation to environmental quality

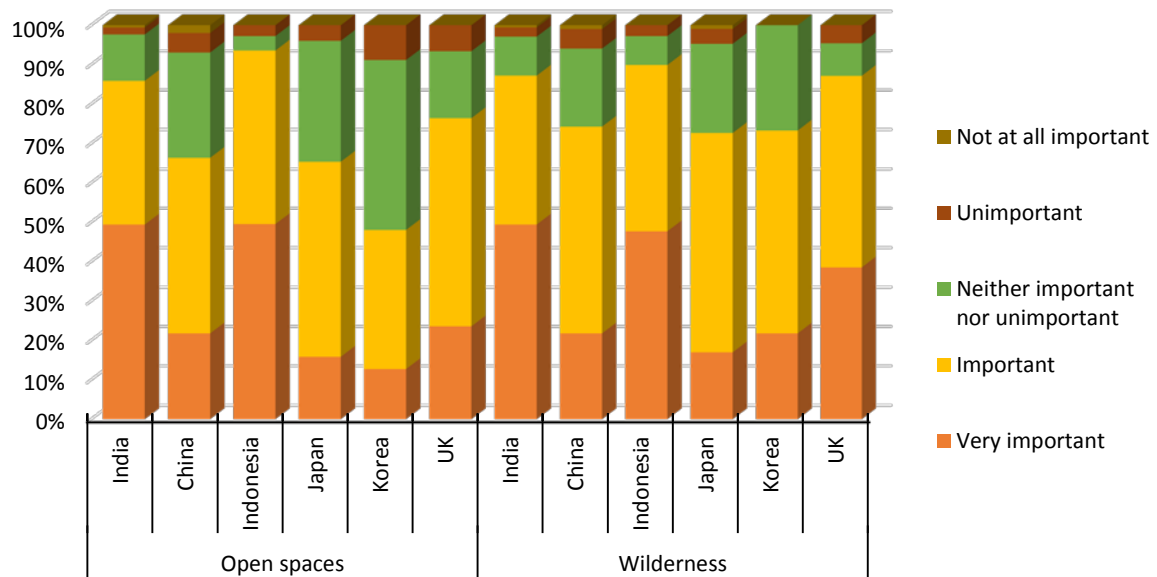


Participants were also asked to rate the importance of organic production, low input agriculture and recycling in relation to environmental quality, as shown in Figure 4.10. *Organic production* as a factor affecting environmental quality was considered particularly important to participants in developing countries. Indonesian participants indicated a high rating of the importance of this factor, with 56 per cent of participants considering this to be *very important* and a further 35 per cent stating that this was *important*. Following this were responses from Indian (57 per cent *very important*, 29 per cent *important*) and Chinese respondents (33 per cent *very important*, 48 per cent *important*). Interestingly, the UK showed the lowest overall rating of all countries, with only 13 per cent stating that this was *very important* and 9 per cent stating that this was *unimportant*.

Low input agriculture as a factor affecting environmental quality was considered to be relatively low in importance across most countries. India and Indonesia rated this the highest, with 40 per cent and 28 per cent *very important*, respectively.

The importance of *recycling* as an indicator of environmental quality presented differences between countries. Indonesian participants rated this factor higher than any other country, with 68 per cent of participants rating this as *very important* and a further 29 per cent rating this as *important*. By contrast, Chinese participants rated this factor the lowest of all countries, with 3 per cent stating that this was *not at all important* and another 5 per cent stating that this was *unimportant*.

Figure 4.11: Importance of open spaces and wilderness in relation to environmental quality



Participants were also asked to rate the importance of *open spaces* and *wilderness* in relation to environmental quality, as shown in Figure 4.11. It can be seen that results varied across countries. Indonesian participants indicated the highest level of importance for *open spaces* as a factor affecting environmental quality (47 per cent *very important*, 42 per cent *important*), followed by Indian (49 per cent *very important*, 36 per cent *important*) and UK participants (22 per cent *very important*, 50 per cent *important*). Koreans indicated the lowest overall importance, with 43 per cent of participants stating that this factor was *neither important nor unimportant* in considering environmental quality.

Finally, participants were asked to indicate the importance of *wilderness* as a factor of environmental quality. Indonesian (47 per cent *very important*, 42 per cent *important*) and Indian (49 per cent *very important*, 38 per cent *important*) participants showed the highest level of importance in relation to this factor, followed by UK participants (37 per cent *very important*, 47 per cent *important*). Chinese, Japanese and Korean participants indicated similar responses, and overall all countries showed that this factor was at least *important*.

To summarise, all countries surveyed rated the factors of water quality, air quality, protection of endangered animals and plants, as well as coastal and sea-life, as the most important in relation to environmental quality. The least important factors affecting environmental quality as indicated by most countries were recycling, low input agriculture, GHG emissions, open spaces and the protection of non-native biodiversity.

4.3 Animal welfare

In the next question, participants were asked about the importance of factors affecting animal welfare. These factors included good quality of life, good shelter and living conditions, certification, adequate diets, type of feed, no cruelty, humane slaughter, free range, natural conditions and barn-raised animals.

Figure 4.12: Importance of good quality of life, good shelter and living conditions and certification in relation to animal welfare

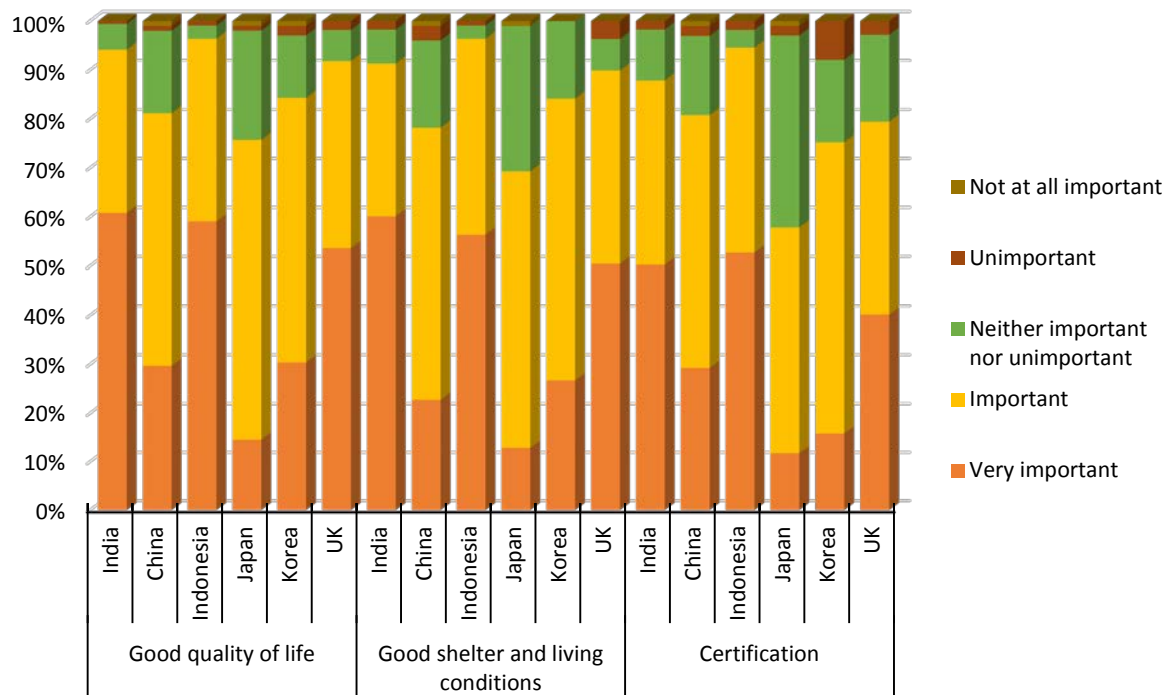


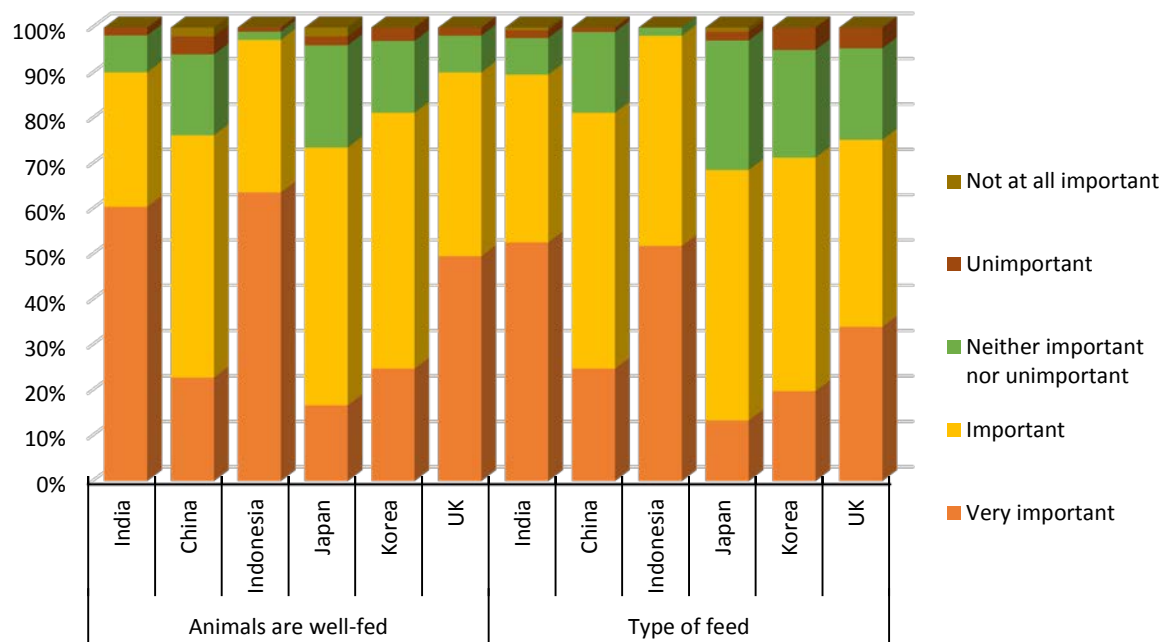
Figure 4.12 shows how participants rated the importance of good quality of life, good shelter/living conditions and certification in relation to animal welfare. The developing countries and the UK stated that these factors were important, with Japanese participants showing the lowest importance.

Indonesian participants considered the factor of *good quality of life* in relation to animal welfare the most important across all countries (59 per cent *very important*, 37 per cent *important*), followed by India (60 per cent *very important*, 33 per cent *important*) and the UK (50 per cent *very important*, 37 per cent *important*). The lowest level of importance was indicated by Japanese participants, although this was still at least *important* to them.

With reference to *good shelter and living conditions* as a factor of animal welfare, similar results were shown, with Indonesia reporting the highest level of importance (56 per cent *very important*, 40 per cent *important*), followed by India (60 per cent *very important*, 31 per cent *important*) and then the UK (50 per cent *very important*, 39 per cent *important*). Similarly, Japanese participants indicated the lowest importance in relation to this factor (29 per cent *neither important nor unimportant*).

The importance of *certification* in relation to animal welfare was mixed across countries. As with the previous factors, Indonesian participants indicated the highest level of importance regarding certification for animal welfare (53 per cent *very important*, 42 per cent *important*), followed by Indian (50 per cent *very important*, 38 per cent *important*) and Chinese participants (29 per cent *very important*, 51 per cent *important*). Japanese participants indicated the lowest overall positive indication of importance regarding certification for animal welfare (38 per cent *neither important nor unimportant*). In contrast, Korean participants showed the highest negative rating of importance (8 per cent *unimportant*, 17 per cent *neither important nor unimportant*).

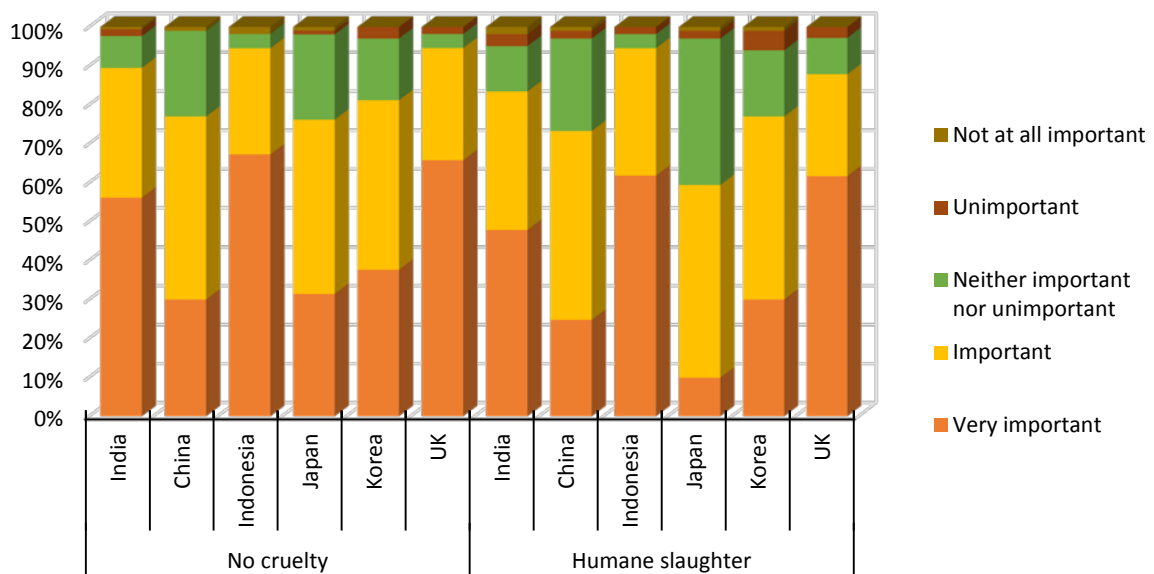
Figure 4.13: Importance of well-fed animals and type of feed in relation to animal welfare



Participants were also asked to rate the importance of animals being well-fed and type of feed in relation to animal welfare, as shown in Figure 4.13. *Well-fed animals* as a factor of animal welfare was considered to be particularly important to Indonesian participants, with 64 per cent indicating that this was *very important*, with an additional 34 per cent stating this to be *important*. Similar responses were received by participants in India (60 per cent *very important*, 30 per cent *important*) and the UK (49 per cent *very important*, 40 per cent *important*). Japanese participants showed the lowest rating of this factor in relation to animal welfare.

The *type of feed* in relation to animal welfare was considered to be most important amongst participants in developing countries, particularly in Indonesia (52 per cent *very important*, 46 per cent *important*), followed by India (53 per cent *very important*, 37 per cent *important*) and China (25 per cent *very important*, 56 per cent *important*). As with previous factors, Japanese participants gave the lowest positive indication of importance in relation to this factor (28 per cent *neither important nor unimportant*).

Figure 4.14: Importance of no cruelty and humane slaughter in relation to animal welfare

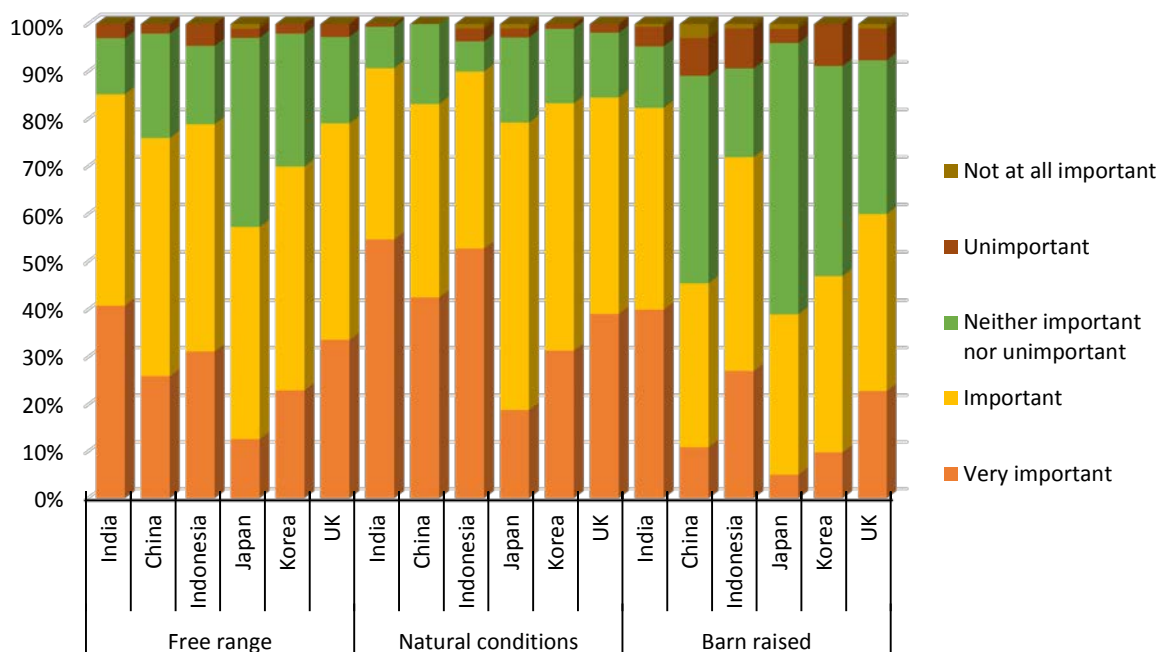


Participants were also asked to rate the importance of no cruelty and humane slaughter in relation to animal welfare, as shown in Figure 4.14. Indonesian and UK participants ranked these factors the highest of all countries, with Japan and Korea indicating the lowest overall ratings of importance.

With regards to *no cruelty* affecting animal welfare, the highest importance was reported by Indonesian participants (67 per cent *very important*, 27 per cent *important*), closely followed by UK (65 per cent *very important*, 29 per cent *important*) and Indian participants (56 per cent *very important*, 33 per cent *important*). While Japanese participants indicated the lowest overall positive rating of the importance of this factor (31 per cent *very important*), participants from all countries stated that this factor was at least *important*.

Across the surveyed countries, responses in relation to *humane slaughter* as a factor affecting animal welfare were mixed. Once again, Indonesian participants placed the highest importance on this factor (62 per cent *very important*, 33 per cent *important*), followed by participants from the UK (59 per cent *very important*, 25 per cent *important*) and India (46 per cent *very important*, 34 per cent *important*). Japanese participants showed the lowest rating of importance in relation to this factor (36 per cent *neither important nor unimportant*).

Figure 4.15: Importance of free range, natural conditions and barn-raised in relation to animal welfare



Participants were also asked to rate the importance of free range, natural conditions and barn-raised animals in relation to animal welfare, as shown in Figure 4.15. For most of these factors, and in line with previous factors affecting key attributes in food, participants in developing countries indicated a higher level of importance for each, with the exception of *barn raised*, which was highly rated being of importance to participants from developed countries.

For the factor of *free range* in relation to animal welfare, participants in developing countries, as well as those in the UK, indicated the highest levels of importance. Indian participants indicated the highest importance for this factor, with 40 per cent rating this as *very important* and an additional 44 per cent rating this as *important*. This was followed by Indonesian (31 per cent *very important*, 47 per cent *important*), UK (33 per cent *very important*, 45 per cent *important*) and Chinese participants (26 per cent *very important*, 50 per cent *important*). While Japanese participants indicated the lowest importance, all countries rated this factor at least *important*.

The establishment of *natural conditions* as a factor affecting animal welfare was also assessed, with highly positive ratings recorded for all countries. Indian participants indicated the highest rating of importance (54 per cent *very important*, 36 per cent *important*), closely followed by Indonesian (53 per cent *very important*, 37 per cent *important*) and UK participants (38 per cent *very important*, 45 per cent *important*). Overall, as shown in Figure 4.15, the majority of participants in all countries rated natural conditions as either *very important* or *important* in relation to animal welfare.

Conversely, *barn raised* as a factor of animal welfare showed mixed results amongst all countries. Indian participants indicated the highest importance for this factor (39 per cent *very important*, 42 per cent *important*), followed by Indonesian and UK participants. Interestingly, Chinese participants indicated one of the lowest positive rating of importance regarding this factor, as well as the highest negative rating of importance (6 per cent *unimportant*). Japanese participants showed the lowest positive rating of importance regarding this factor (54 per cent *neither*

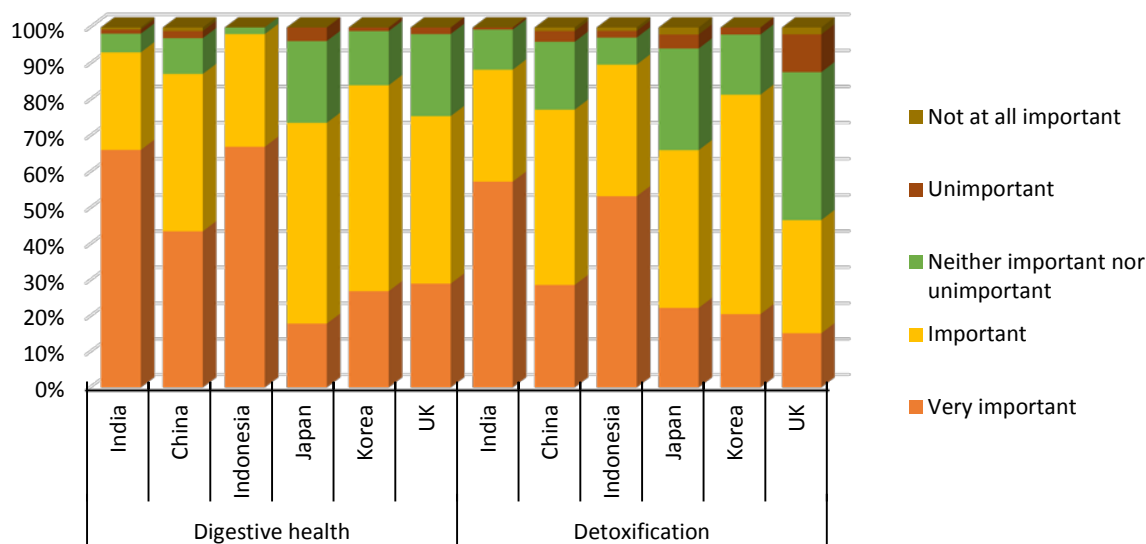
important nor unimportant, 3 per cent unimportant), with highly mixed results across countries shown.

In summary, all countries surveyed rated the factors of good quality of life, good shelter and living conditions, natural conditions, well-fed animals, type of feed and no cruelty as the most important in relation to animal welfare. The least important factors of animal welfare as indicated by most countries were barn raised, humane slaughter and free range.

4.4 Health foods

The survey then asked participants to consider the importance of factors relating to health foods. These factors included digestive health, detoxification, beauty and skin benefits, heart, blood and bone/joint health, pregnancy, child/baby health, energy and endurance, weight management, cholesterol, memory, immune system, country of origin and brand.

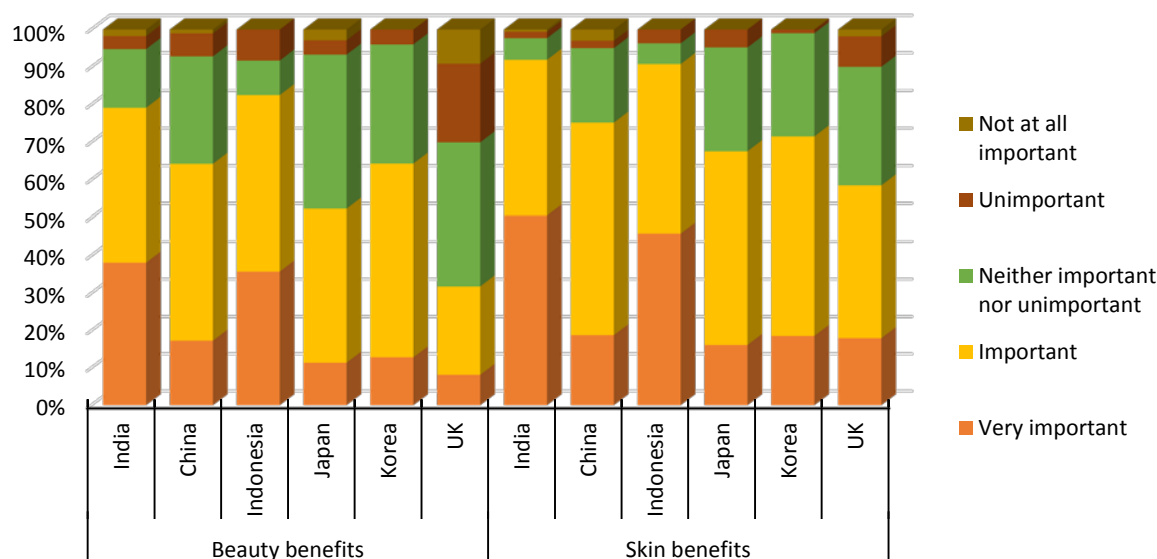
Figure 4.16: Importance of digestive health and detoxification in relation to health foods



Participants were asked to rate the importance of *digestive health* and *detoxification* in relation to health food. Results are shown in Figure 4.16. With reference to *digestive health* as a factor of health food, participants in developing countries rated this factor more highly than those in developed countries. Indonesian participants indicated the highest level of importance (67 per cent *very important*, 31 per cent *important*), closely followed by India (66 per cent *very important*, 27 per cent *important*) and China (44 per cent *very important*, 44 per cent *important*). Japanese participants showed the lowest rating of importance. However, overall, responses were positive amongst all countries, with participants in all countries rating digestive health as a factor of health food as at least *important*.

Similarly, participants in developing countries also rated *detoxification* as an important factor of health food, particularly within India and Indonesia. Most Indian participants rated this factor as either *very important* (57 per cent) or *important* (31 per cent), as did Indonesian participants (52 per cent *very important*, 36 per cent *important*). The UK showed both the lowest importance rating (14 per cent *very important*) and highest *unimportant* rating (10 per cent *unimportant*) for the importance of *detoxification* as a factor of health food.

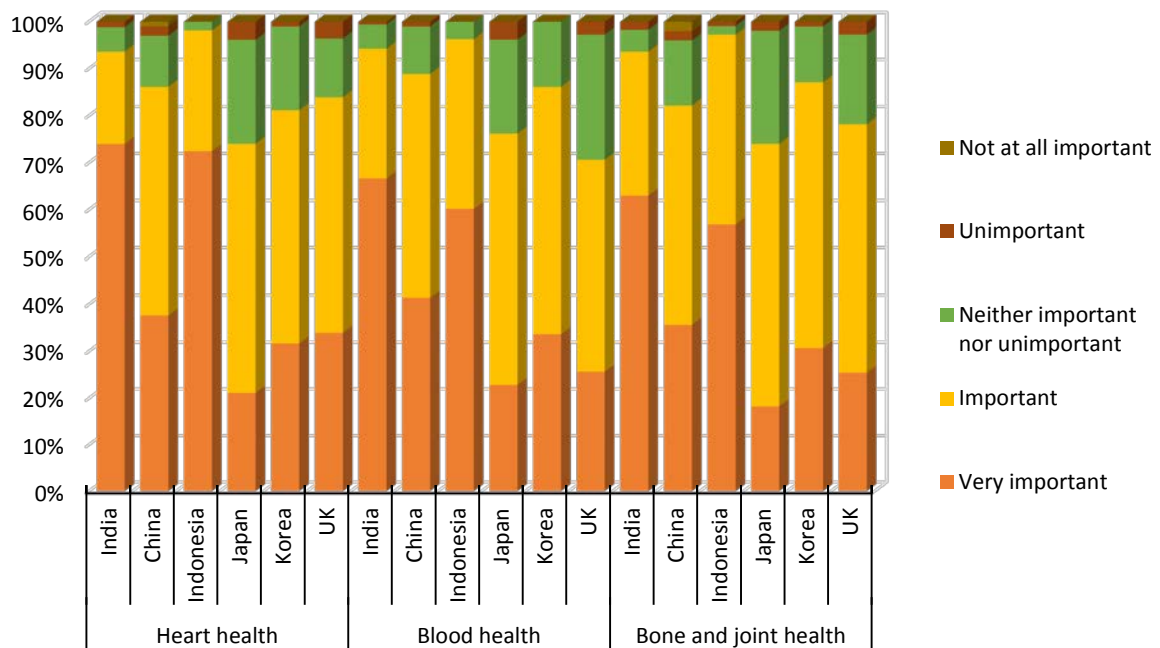
Figure 4.17: Importance of beauty and skin benefits in relation to health foods



Participants were also asked to rate the importance of *beauty and skin benefits* in relation to health food, as shown in Figure 4.17. Indian and Indonesian participants rated these factors as the most important of all countries. In particular, Indonesian participants rated beauty benefits the highest of all countries (36 per cent *very important*, 47 per cent *important*), followed by Indian participants (38 per cent *very important*, 41 per cent *important*). Participants from the UK showed both the lowest positive rating (14 per cent *very important*) and the highest negative rating (10 per cent *unimportant*, 2 per cent *not at all important*) for beauty benefits as a factor of health food.

In the case of *skin benefits* in relation to health food, Indian participants reported the highest importance of this factor (51 per cent *very important*, 41 per cent *important*), closely followed by Indonesia (46 per cent *very important*, 45 per cent *important*). In contrast, UK participants showed both the lowest positive rating (18 per cent *very important*) and the highest negative rating (8 per cent *unimportant*, 2 per cent *not at all important*) for skin benefits as a factor of health foods.

Figure 4.18: Importance of heart health, blood health and bone and joint health in relation to health foods



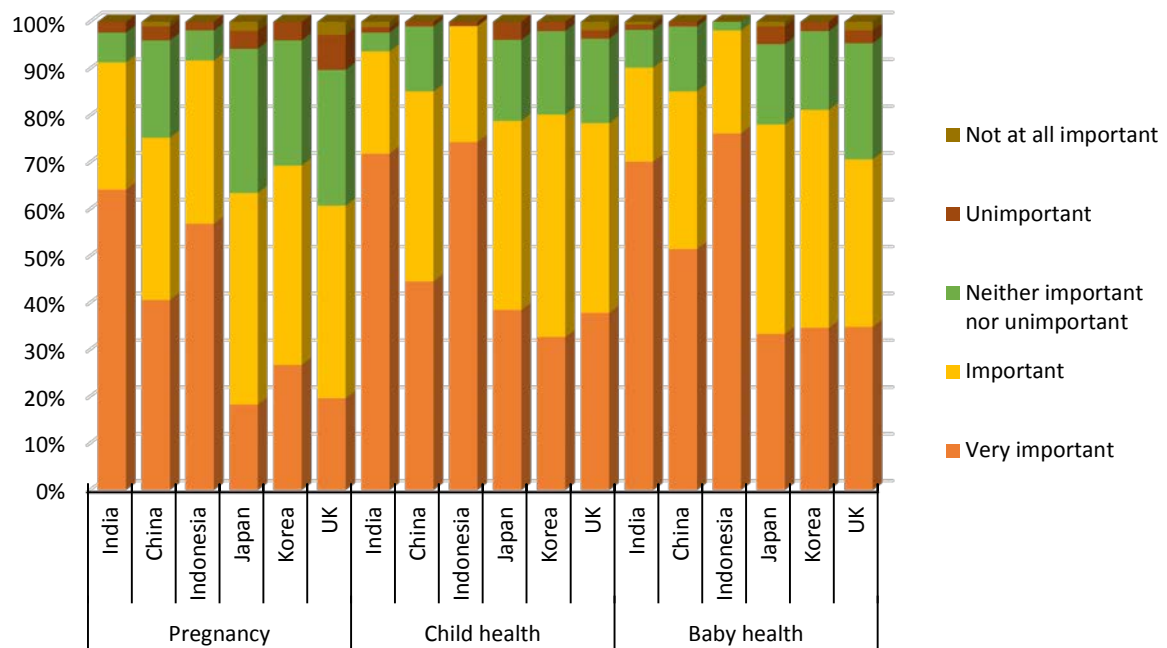
Participants were also asked to rate the importance of heart health, blood health and bone/joint health in relation to health food, as illustrated in Figure 4.18. Similar results were received for all of the above factors, with the importance of these factors generally considered higher in developing countries, especially India and Indonesia.

For *heart health* as a factor of health food, Indonesian participants rated this the most important of all countries (72 per cent *very important*, 26 per cent *important*), closely followed by India (74 per cent *very important*, 20 per cent *important*). While participants in Japan showed the lowest positive rating of importance, all countries rated heart health as at least *important* in relation to health food.

Similarly, for *blood health* as a factor of health food, Indonesian participants indicated the highest importance (60 per cent *very important*, 31 per cent *important*), followed by India (67 per cent *very important*, 28 per cent *important*) and China (41 per cent *very important*, 47 per cent *important*). UK participants showed the lowest positive rating of importance. All countries rated blood health as at least *important* in relation to health food.

In the case of *bone and joint health* as a factor of health food, Indonesian participants rated this the most important of all countries (57 per cent *very important*, 40 per cent *important*), closely followed by India (63 per cent *very important*, 31 per cent *important*) then Korea (30 per cent *very important*, 56 per cent *important*). While participants in Japan showed the lowest positive rating of importance, all countries rated bone and joint health at least *important* as a factor in relation to health food.

Figure 4.19: Importance of pregnancy, child health and baby health in relation to health foods



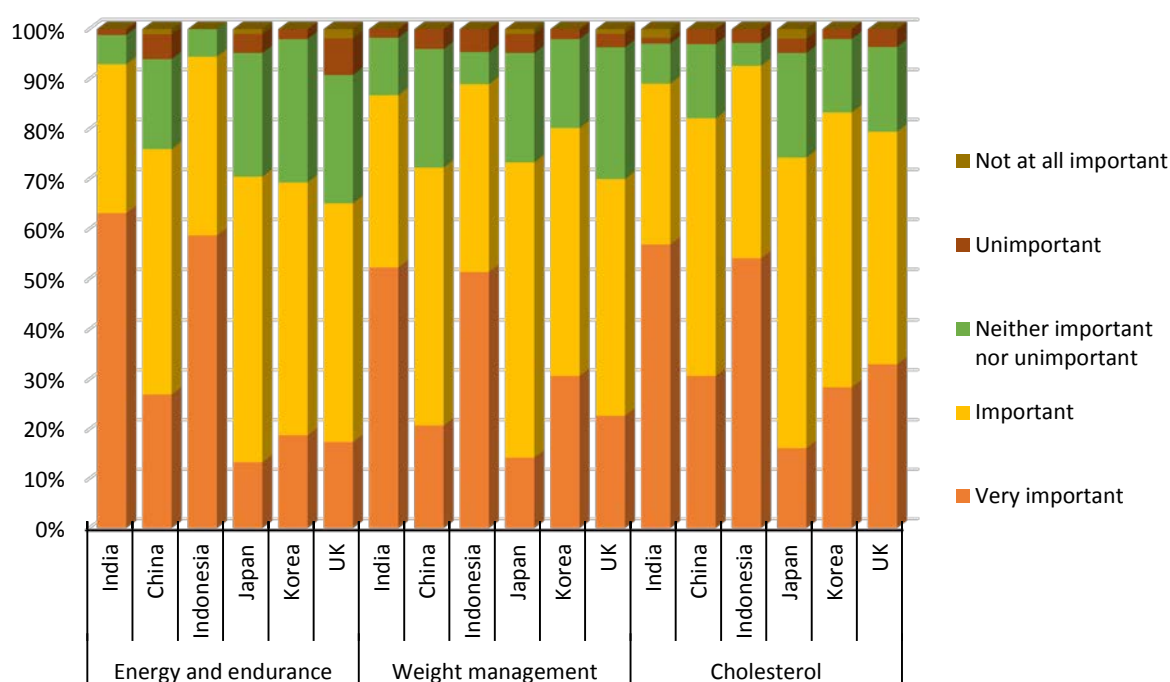
Participants were also asked to rate the importance of pregnancy, child health and baby health in relation to health food, as shown in Figure 4.19. Clear distinctions can be seen between ratings of importance indicated by developing compared to developed countries. While all countries rated all of the above factors as at least *important*, participants in developing countries rated these factors generally much more important.

In relation to *pregnancy* as a factor of health food, Indian participants indicated the highest importance (64 per cent *very important*, 27 per cent *important*), followed by Indonesia (57 per cent *very important*, 35 per cent *important*). All countries rated this factor at least *important* in relation to health food, with UK participants showing the lowest rating (7 per cent *unimportant*, 3 per cent *not at all important*) of the importance of this factor.

For *child health*, participants in developing countries indicated the highest importance, particularly those in Indonesia (74 per cent *very important*, 25 per cent *important*), followed by India (72 per cent *very important*, 22 per cent *important*) and China (45 per cent *very important*, 41 per cent *important*). The developed countries (Japan, Korea and the UK) showed similar overall ratings of the importance of this factor, with participants from all countries rating this factor to be at least *important* in relation to health food.

Participants were also asked to rate the importance of health foods that enhance *baby health*. Participants from developing countries indicated the highest importance, particularly those from Indonesia (74 per cent *very important*, 25 per cent *important*), India (72 per cent *very important*, 22 per cent *important*) and China (51 per cent *very important*, 34 per cent *important*). As with previous factors, the developed countries indicated the lowest ratings of importance, with the UK showing the lowest overall. However, all participants across all countries rated this factor to be at least *important*.

Figure 4.20: Importance of energy and endurance, weight management and cholesterol in relation to health foods



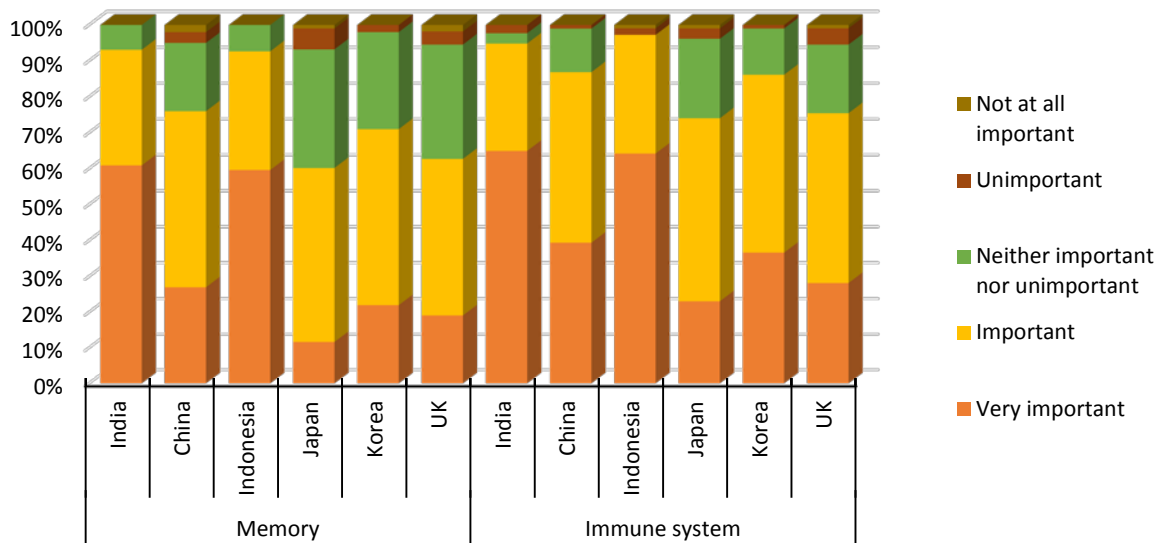
Participants were also asked to rate the importance of enhancing energy and endurance, weight management and reducing cholesterol in relation to health food, as shown in Figure 4.20. For all of the above, Indonesian and Indian participants in particular rated these factors the highest, with developed countries showing the overall lowest rating of importance for the above factors.

In relation to *energy and endurance* as a factor of health food, Indonesian participants indicated the highest importance (59 per cent *very important*, 36 per cent *important*), closely followed by India (62 per cent *very important*, 29 per cent *important*). All other countries rated this factor at least *important*, with UK participants indicating both the lowest rating of importance (7 per cent *unimportant*, 2 per cent *not at all important*) for this factor.

For *weight management*, participants in Indonesia showed the highest importance (51 per cent *very important*, 38 per cent *important*), followed by India (52 per cent *very important*, 34 per cent *important*) and Korea (30 per cent *very important*, 49 per cent *important*). While participants in the UK showed the lowest positive rating of importance in relation to this factor, all participants across all countries rated this factor to be at least *important* in relation to health food.

Similar results were shown for *cholesterol* as a factor of health food, with the highest importance indicated by Indonesia (54 per cent *very important*, 39 per cent *important*), closely followed by India (57 per cent *very important*, 32 per cent *important*). All countries showed similarly high ratings of the importance of cholesterol as a factor of health food.

Figure 4.21: Importance of memory and immune system in relation to health foods

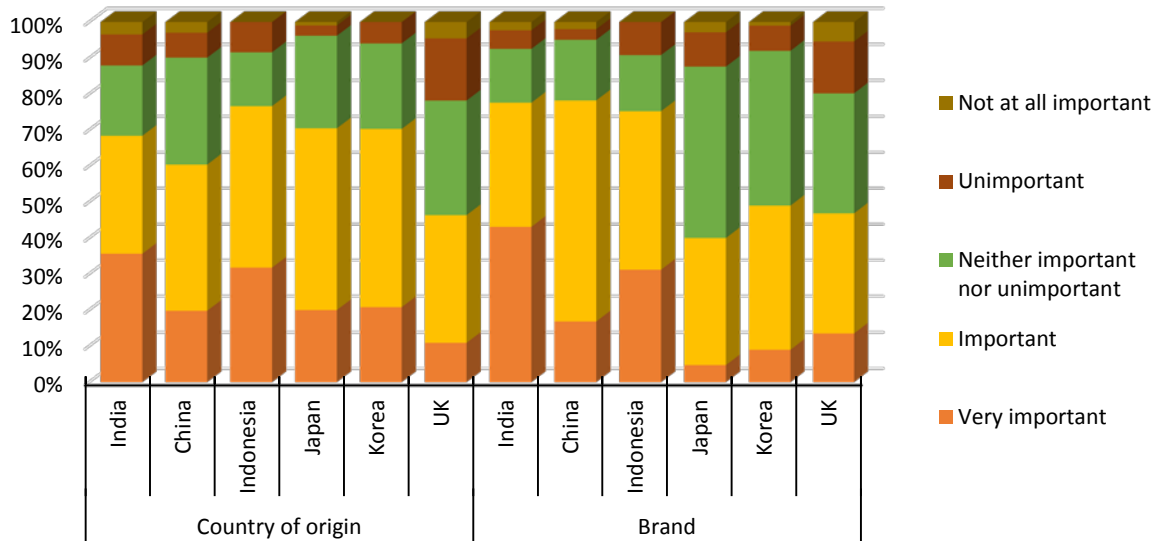


Participants were also asked to rate the importance of health food to aid memory and the immune system, as shown in Figure 4.21 above. Similarities can be seen in the importance placed on the above factors, with developing countries indicating an overall higher importance on food which aids both memory and the immune system than developed countries.

Memory enhancement as a factor of health food was rated as highly important by developed countries, particularly Indonesia (60 per cent *very important*, 33 per cent *important*) and India (61 per cent *very important*, 32 per cent *important*). Japanese participants showed the lowest rating in relation to the importance of this factor. However, all participants across all countries rated this factor to be at least *important*.

Similarly, in relation to health foods that enhance the *immune system*, high ratings of importance were indicated by both Indonesian (64 per cent *very important*, 33 per cent *important*) and Indian participants (65 per cent *very important*, 30 per cent *important*). In addition, similarly high ratings were indicated by Chinese (39 per cent *very important*, 47 per cent *important*) and Korean participants (37 per cent *very important*, 50 per cent *important*). Japanese participants indicated the lowest rating of this factor, but again, participants from all countries rated this factor to be at least *important* in relation to health food.

Figure 4.22: Importance of country of origin and brand in relation to health foods



Participants were also asked to rate the importance of country of origin and brand in relation to health food, as shown in Figure 4.22 above. The above factors showed mixed results, with the importance of each factor varying between countries.

In relation to *country of origin* as a factor of health food, Indonesian participants rated this the highest of all countries (31 per cent *very important*, 44 per cent *important*). Interestingly, this was followed by Korea (21 per cent *very important*, 50 per cent *important*) and Japan (20 per cent *very important*, 50 per cent *important*). Participants in the UK indicated both the lowest rating of importance in relation to this factor (4 per cent *not at all important*, 17 per cent *unimportant*).

Finally, with reference to *brand* as a factor of health food, developing countries indicated the highest rating of importance, especially India (43 per cent *very important*, 34 per cent *important*), followed by China (17 per cent *very important*, 61 per cent *important*) and Indonesia (31 per cent *very important*, 44 per cent *important*).

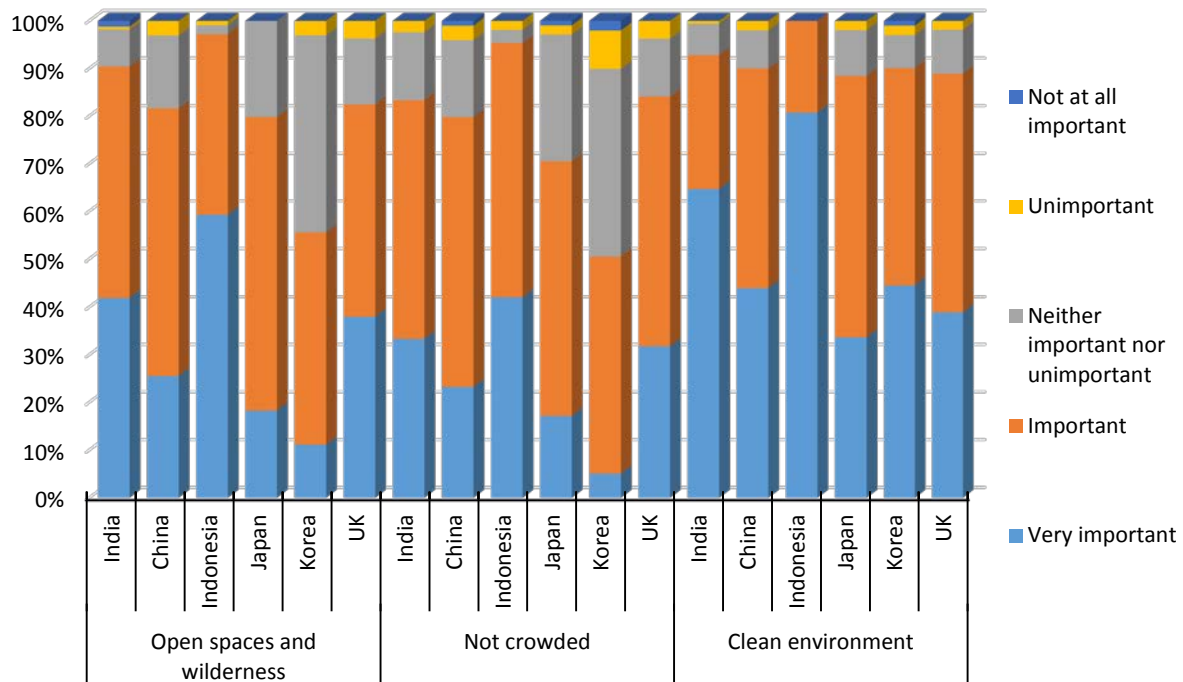
In summary, this study found mixed results for the importance of factors in relation to health foods. Some common factors considered important in relation to health foods by most countries included child health, baby health, blood health, bone and joint health, immune system, digestive health and cholesterol. The least important factors of health foods as indicated by most countries were country of origin, brand, beauty benefits and detoxification. Overall, the highest importance for each factor was indicated by participants in developing countries, particularly Indonesia and India.

4.5 Perceptions of New Zealand

In this study, consumers across all markets were asked to rate the importance of factors, including open spaces and wilderness, not crowded, clean environment, integrity, innovativeness, friendliness and safety in relation to New Zealand. As shown in Figure 4.23, all factors were generally rated more important by participants from developing countries, particularly from India and Indonesia, while more mixed results on importance were received from participants in developed countries. The factors of a clean environment and being safe were rated as the most important by all countries. In contrast, New Zealand's innovativeness was rated as the least

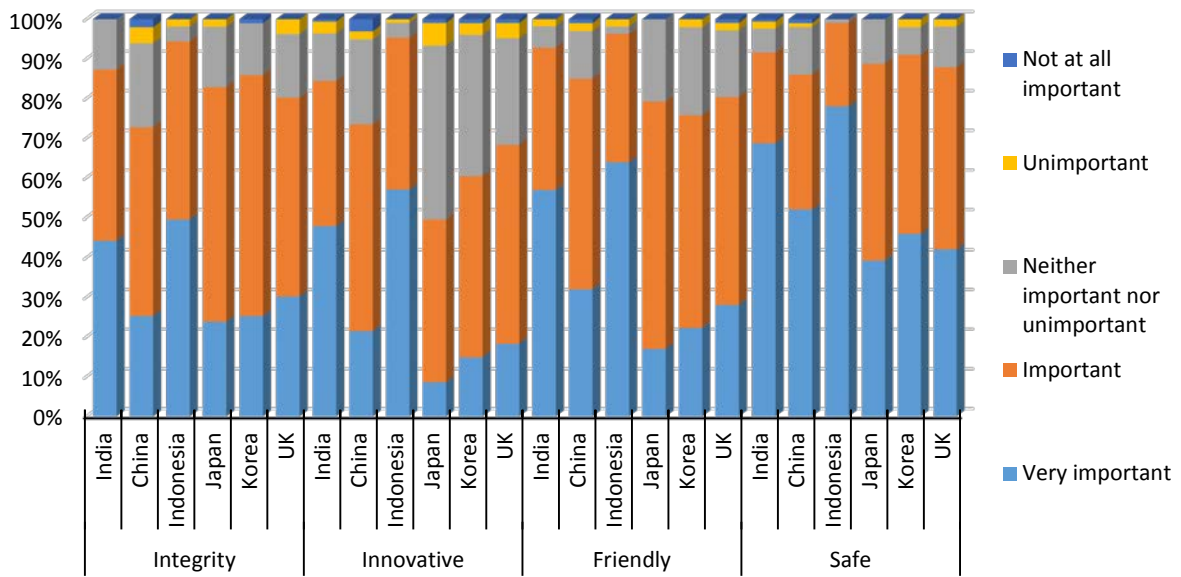
important by participants from all countries. However, participants generally showed positive responses, with most countries rating each factor as at least *important*.

Figure 4.23: Importance of open spaces and wilderness, not crowded and clean environment in relation to New Zealand



With reference to *open spaces and wilderness*, responses were positive, particularly amongst participants in Indonesia (58 per cent *very important*, 37 per cent *important*) and Indonesia (40 per cent *very important*, 47 per cent *important*). For the factor *open spaces and wilderness*, a similar high importance was indicated by participants in the UK (36 per cent *very important*, 42 per cent *important*), China (25 per cent *very important*, 54 per cent *important*) and Japan (18 per cent *very important*, 60 per cent *important*). For the factor of *not crowded*, Indonesian participants indicated the highest rating of importance (41 per cent *very important*, 52 per cent *important*), followed by India (32 per cent *very important*, 48 per cent *important*), UK (30 per cent *very important*, 50 per cent *important*) and China (23 per cent *very important*, 55 per cent *important*). *Clean environment* in relation to New Zealand was rated as the most important amongst all countries, particularly Indonesia (80 per cent *very important*, 19 per cent *important*), with similar responses indicated by participants in all other countries.

Figure 4.24: Importance of integrity, innovativeness, friendliness and safety in relation to New Zealand



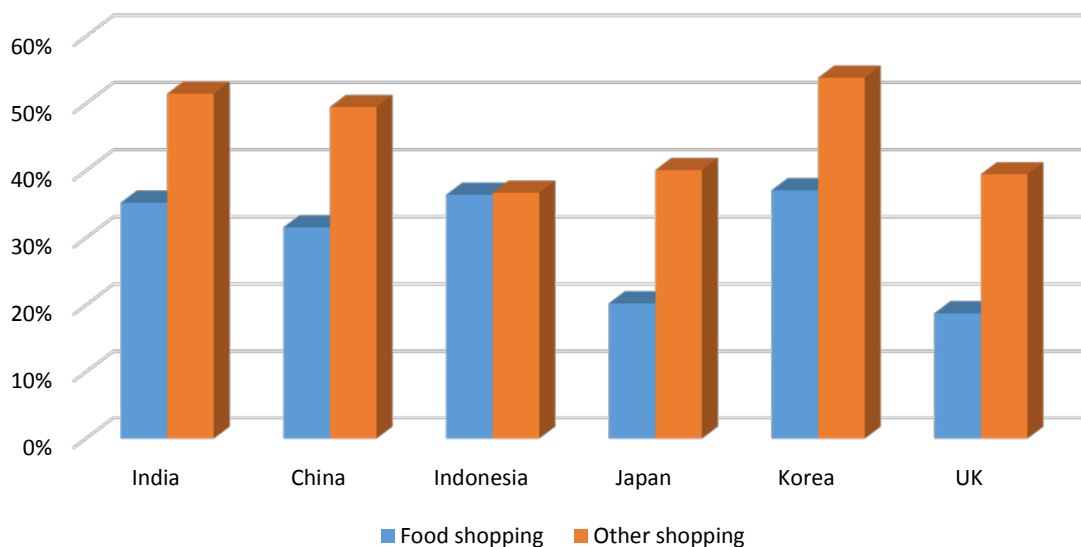
In addition, participants were asked to rate the importance of integrity, innovativeness, friendliness and safety in relation to New Zealand, as shown in Figure 4.24. For the factor of *integrity*, the highest rating of importance was indicated by Indonesian (48 per cent *very important*, 44 per cent *important*) and Indian participants (42 per cent *very important*, 41 per cent *important*). Respondents in other countries placed high importance on the factor of integrity, although Chinese participants gave the lowest overall rating of this factor. With regards to the factor of being *innovative*, marked differences were recorded between developing and developed countries. While developing countries indicated the highest rating of importance of this factor (particularly Indonesia), participants in developed countries indicated a low rating (particularly Japan). Similarly, participants in developing countries indicated a higher rating of importance for the factor of *friendliness* in relation to New Zealand, particularly amongst Indonesian (63 per cent *very important*, 32 per cent *important*) and Indian participants (55 per cent *very important*, 34 per cent *important*). Finally, in relation to the factor of *safety*, all countries indicated a high rating of importance. As with previous factors, participants in developing countries rated this factor particularly high, especially Indonesia (77 per cent *very important*, 21 per cent *important*).

Chapter 5

Online Shopping, Social Media, Mobile and Other Technology Use

This study also examined methods by which product information may be communicated within these markets. This specifically referred to digital media and smart technology that are currently used internationally for communication or information sharing purposes. The questionnaire included several questions on consumers' use of these technologies both for obtaining information and conducting purchase of food products within the six markets.

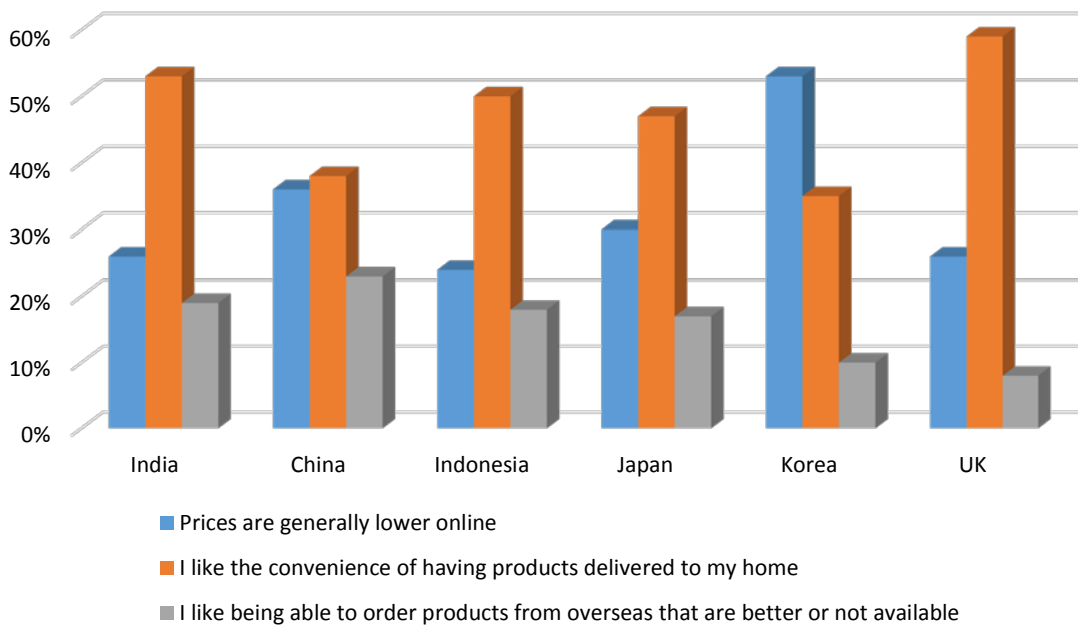
Figure 5.1: Percentage of shopping done online (by type)



When asked what percentage of food shopping and what percentage of other shopping took place online, participants in most countries indicated that they shop for other products online more frequently than for food products (see Figure 5.1). The highest overall percentage of online shopping for both types of products was in Korea, with an average of 37 per cent of shopping for food products carried out online and 54 per cent of shopping for other products carried out online. Developing countries also indicated high rates of use of online shopping, particularly India (35 per cent food shopping, 51 per cent other shopping) and China (32 per cent food shopping, 49 per cent other shopping).

The lowest percentage of food shopping carried out online was indicated by participants in the UK, with an average of 19 per cent of food shopping done online. The lowest overall percentage of online shopping for products other than food was reported by Indonesian consumers, with 37 per cent of online shopping for other products. However, the percentage of food shopping carried out online as indicated by Indonesian participants was on par with that of other shopping (36 per cent food shopping, 37 per cent other shopping). This is also interesting considering that overall rates of internet shopping (or “e-commerce”) are expected to increase in Indonesia with a slight decrease in the percentage of food shopping carried out online in Indonesia (Canadean 2013).

Figure 5.2: Reasons for shopping online



In the next question, participants were asked to consider their main reasons for shopping online. Reasons included that prices are generally lower online, the convenience of having products delivered to participants' homes and the ability to order products from overseas that are better or not commonly available within domestic markets. As shown in Figure 5.2, the majority of participants in each country (excluding Korea) specified that they liked the convenience of having products delivered to their homes, particularly in the UK (59 per cent). Similar preferences were indicated by Indian (53 per cent), Indonesian (50 per cent) and Japanese participants (47 per cent). The majority of Korean participants indicated that their main reason for shopping online was to find lower prices for products online (53 per cent). Chinese participants indicated the highest preference in relation to the ability to order products of a higher quality or those not commonly found in the domestic market (23 per cent).

While internet shopping has a historical basis as a form of e-commerce, this study was mainly concerned with the examination of modern technology-based means of communication. This also included social media, particularly the most popular forms of social media internationally as identified by Miller et al. (2014), across the six key international markets of India, China, Indonesia, Japan, Korea and the UK. In general, Facebook was the most popular across all countries surveyed, closely followed by YouTube. The full results relating to social media use in the above markets is detailed in Appendix 1.

For participants in India, Facebook was the most popular social media site, with 60 per cent of participants stating that this site was used *all of the time* (see Figure A1-1). Similarly high usage was noted for YouTube (44 per cent *all of the time*, 31 per cent *often*) and Google+ (29 per cent *all of the time*, 23 per cent *often*) amongst Indian participants. Mixed responses were recorded for other social media platforms such as Twitter and LinkedIn, with similarly low rates of use recorded for social media sites Pinterest (52 per cent *no, I don't have an account*), Instagram (48 per cent *no, I don't have an account*) and MySpace (53 per cent *no, I don't have an account*).

Similarly, within Indonesia, Facebook was the most popular site, with 39 per cent of participants stating that they used this site *all of the time* and an additional 45 per cent stating to use Facebook *often* (see Figure A1-3). High user rates were also indicated for the online video site YouTube (12 per cent *all of the time*, 50 per cent *often*). Interestingly, in relation to Twitter, mixed responses were recorded, with 6 per cent claiming to use this site *all of the time*. This is surprising, as previous work examining social media use in Indonesia has shown high rates of use of Twitter within this market (Miller et al 2014). In general, mixed responses were given by respondents in relation to most sites listed. The least used sites as indicated by Indonesian participants were Pinterest (64 per cent *no, I don't have an account*), Instagram (51 per cent *no, I don't have an account*) and MySpace (64 per cent *no, I don't have an account*). This is similar to social media use rates shown by Indian participants within this study.

Within Japan, low rates of use were indicated by participants for all sites in comparison with other markets within this study. The most used site as shown by Japanese participants was YouTube (17 per cent *all of the time*) (see Figure A1-4), followed by Facebook (16 per cent *all of the time*) and Line (20 per cent *all of the time*). Low user rates of use were recorded for most other sites, especially LinkedIn (87 per cent *no, I don't have an account*), Pinterest (89 per cent *no, I don't have an account*), Instagram (83 per cent *no, I don't have an account*) and MySpace (86 per cent *no, I don't have an account*).

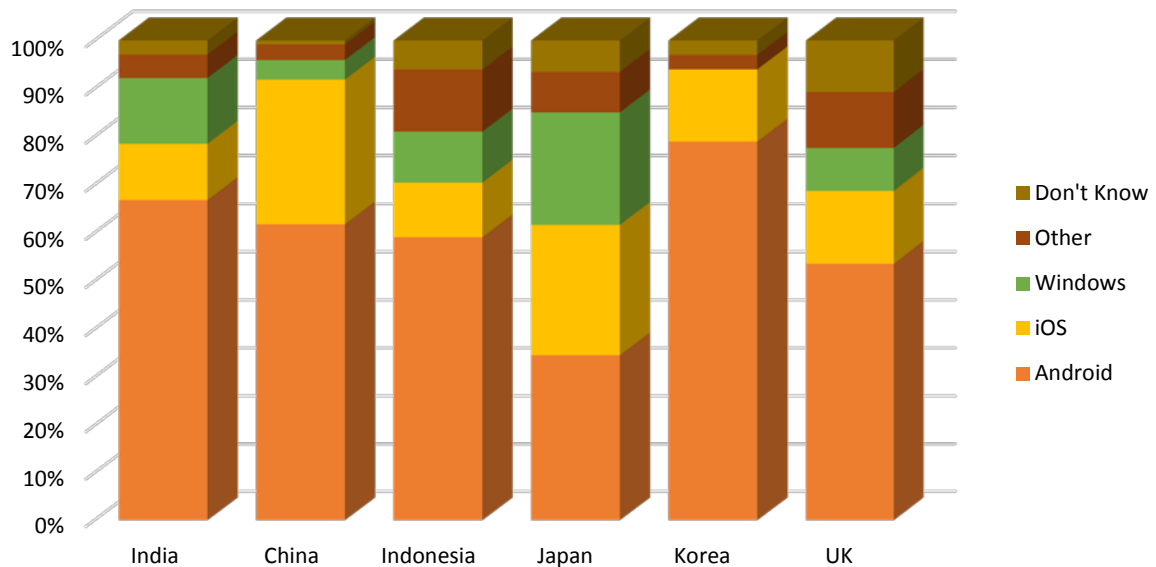
Similar patterns in relation to social media and similar site preferences were recorded in Korea (see Figure A1-5). Facebook was indicated as the most popular site amongst Korean participants (25 per cent *all of the time*, 35 per cent *often*), closely followed by YouTube (14 per cent *all of the time*, 35 per cent *often*). Mixed responses were recorded for a number of social media sites, including Twitter, Google+ and Cyworld. In line with the Japanese results for social media use, low rates of use were indicated by Korean participants in relation to LinkedIn (65 per cent *no, I don't have an account*), Pinterest (66 per cent *no, I don't have an account*), Instagram (64 per cent *no, I don't have an account*) and MySpace (70 per cent *no, I don't have an account*).

For UK participants, overall low rates of use for all sites were recorded (see Figure A1-6). The most popular site as indicated by UK participants was Facebook (26 per cent *all of the time*, 20 per cent *often*), followed by YouTube (9 per cent *all of the time*, 22 per cent *often*). The sites with the lowest indicated use within the UK were Pinterest (89 per cent *no, I don't have an account*) and MySpace (89 per cent *no, I don't have an account*), followed by Instagram (84 per cent *no, I don't have an account*), LinkedIn (71 per cent *no, I don't have an account*), Twitter (66 per cent *no, I don't have an account*) and Google+ (62 per cent *no, I don't have an account*).

Within China, access to particular western social media sites (such as Facebook and Twitter) is restricted by the Chinese government. However, equivalent social media sites now exist (Miller et al 2014). The most popular social media sites as indicated by Chinese participants were QQ (51 per cent *all of the time*, 35 per cent *often*) and Weixin QQ (49 per cent *all of the time*, 32 per cent *often*), followed by Qzone (28 per cent *all of the time*, 33 per cent *often*) and e-commerce site Alibaba (15 per cent *all of the time*, 39 per cent *often*) (see Figure A1-2). Mixed responses were shown for a range of other sites, including Tencent, RenRen, Kaixin and Jingdong. The lowest usage was shown for the professional social networking site Dajie, with 63 per cent of participants indicating that they did not have an account.

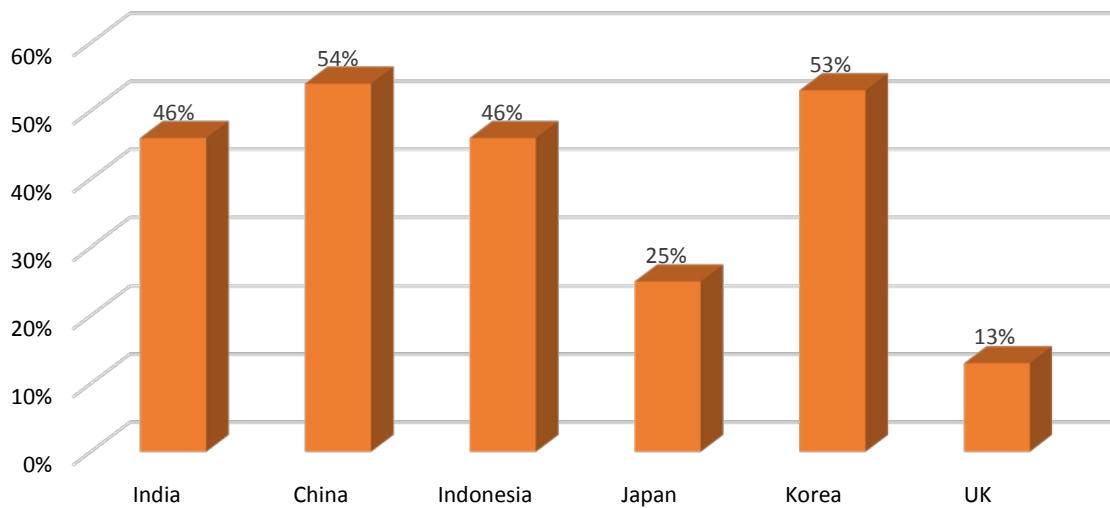
The majority of survey respondents owned a mobile device. However, interestingly, 14 per cent of Japanese participants indicated that they did not own a mobile device, with smaller percentages indicated for Korea (7 per cent *no*), UK (5 per cent *no*), India (1 per cent *no*) and China (1 per cent *no*).

Figure 5.3: Type of mobile device owned



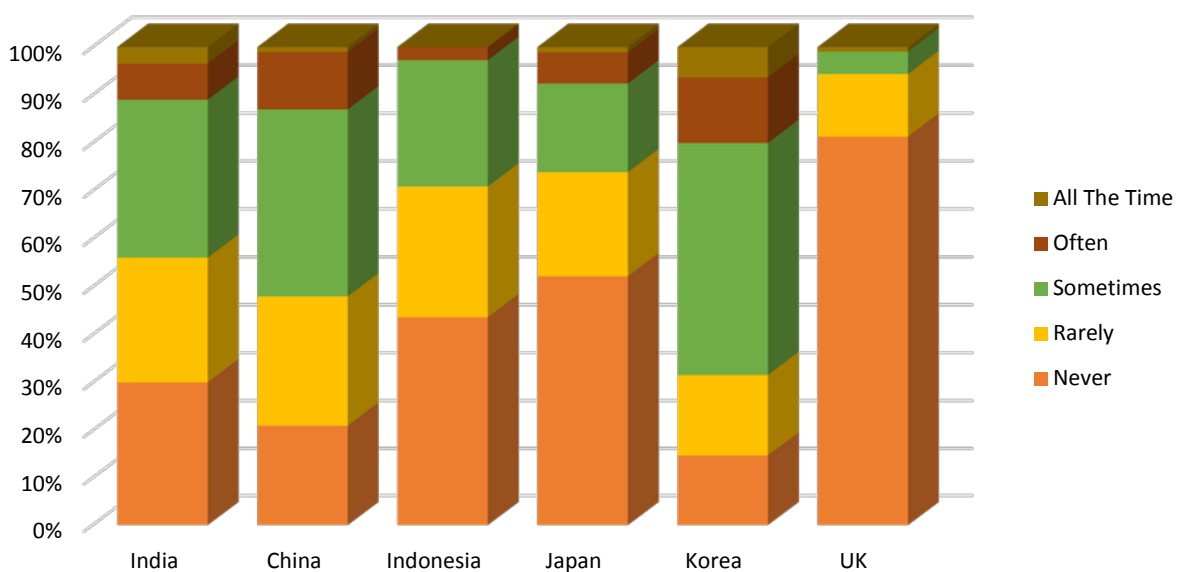
In examining mobile use within these markets, it is important to consider the type of mobile devices currently being used. This is particularly true as the type of mobile device used will determine the way in which consumers use and interact with the device and its applications. As shown in Figure 5.3, the most common mobile device for participants in all countries was that of Android, particularly within Korea (79 per cent) and the developing countries of India (68 per cent), China (63 per cent) and Indonesia (59 per cent). While Android was less commonly owned by participants in the UK and Japan, it was still the mobile device used by the majority in these markets. Apple’s iOS devices (i.e. iPhone and iPad) were most commonly owned by Chinese participants (30 per cent), closely followed by Japan (28 per cent). Microsoft’s Windows phone format was particularly common in Japan (24 per cent) and India (14 per cent) with small pockets of ownership seen in other markets. Only a small percentage of participants across all countries used either Symbian or Blackberry mobile devices.

Figure 5.4: Mobile apps used for food information retrieval



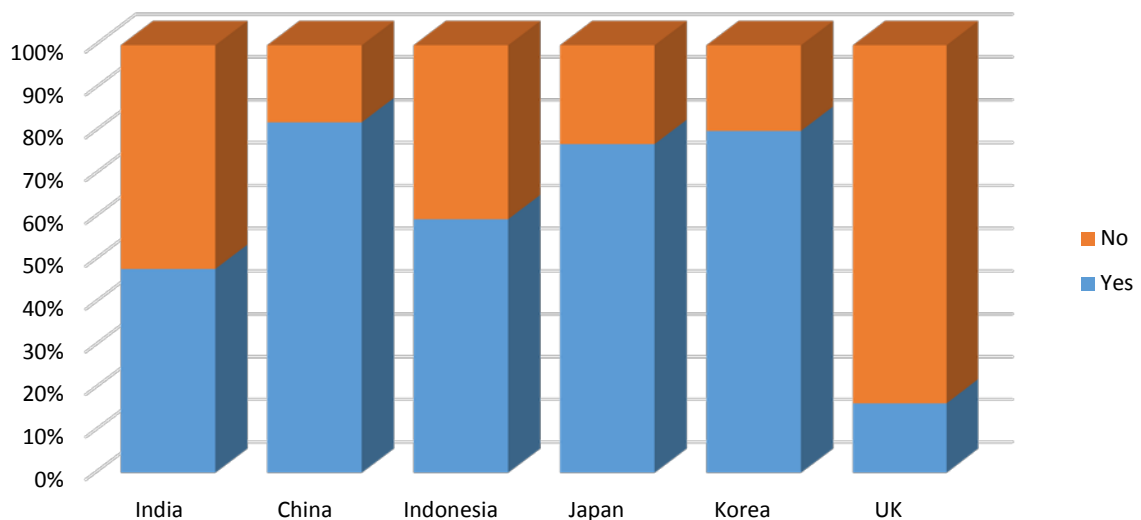
One of the key objectives of this research was to examine methods by which product information could be communicated to consumers across the surveyed markets. Thus, this survey included questions examining relationships between mobile device use and food purchasing behaviours. When participants were asked to state if they had ever used a mobile app to find out more about a food product, a large portion of participants in developing countries stated *yes* (see Figure 5.4). This was particularly true for Chinese participants, with 54 per cent of Chinese participants indicating that they had used a mobile application to find out more about a food product. This was followed by Korean participants (53 per cent). As previously stated, response rates were also high amongst participants in the developing countries of India (46 per cent *yes*) and Indonesia (46 per cent *yes*). The lowest percentage in relation to this question was that of the UK, with 13 per cent of UK participants stating *yes*.

Figure 5.5: The use of mobile devices in food purchasing (by frequency)



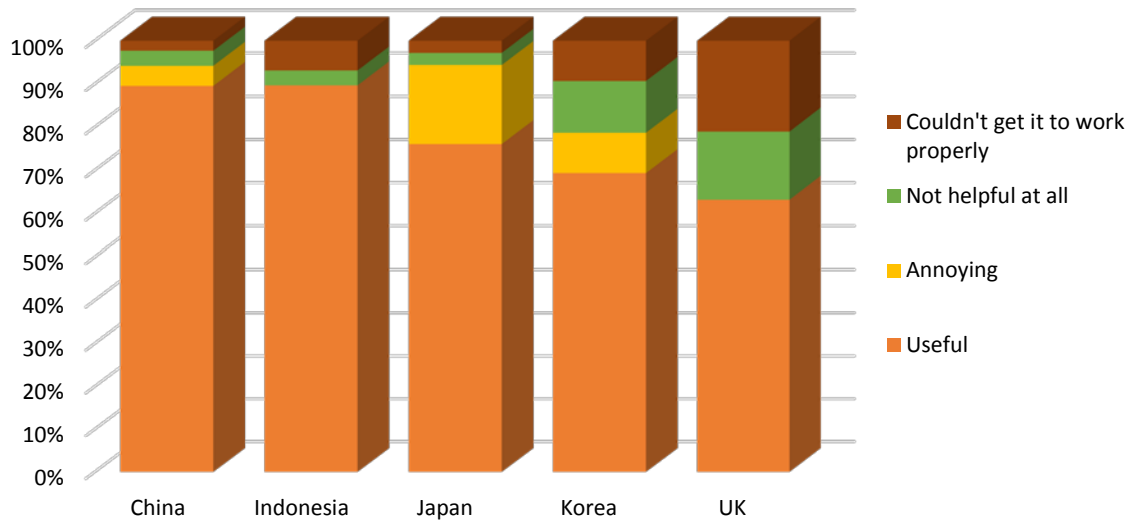
In addition, the survey asked participants to indicate the frequency at which they used their mobile device to purchase food products. As shown in Figure 5.5, mixed responses were received, with many countries stating that they engaged in food purchases using their mobile device(s) either *sometimes* or *rarely*. Korean participants indicated the highest frequency of purchasing food products with their mobile device (48 per cent *sometimes*, 14 per cent *often*, 6 per cent *all of the time*), followed by those in the developing countries of China (39 per cent *sometimes*, 12 per cent *often*) and India (33 per cent *sometimes*, 8 per cent *often*). This is not surprising as Korean consumers have access to a wide range of opportunities for food purchase using mobile devices (Miller et al 2014). In contrast, participants in the UK indicated a low frequency for food purchases via mobile devices, with 81 per cent indicating that they *never* use their mobile device(s) to purchase food.

Figure 5.6: Mobile use in conjunction with barcodes and/or QR codes



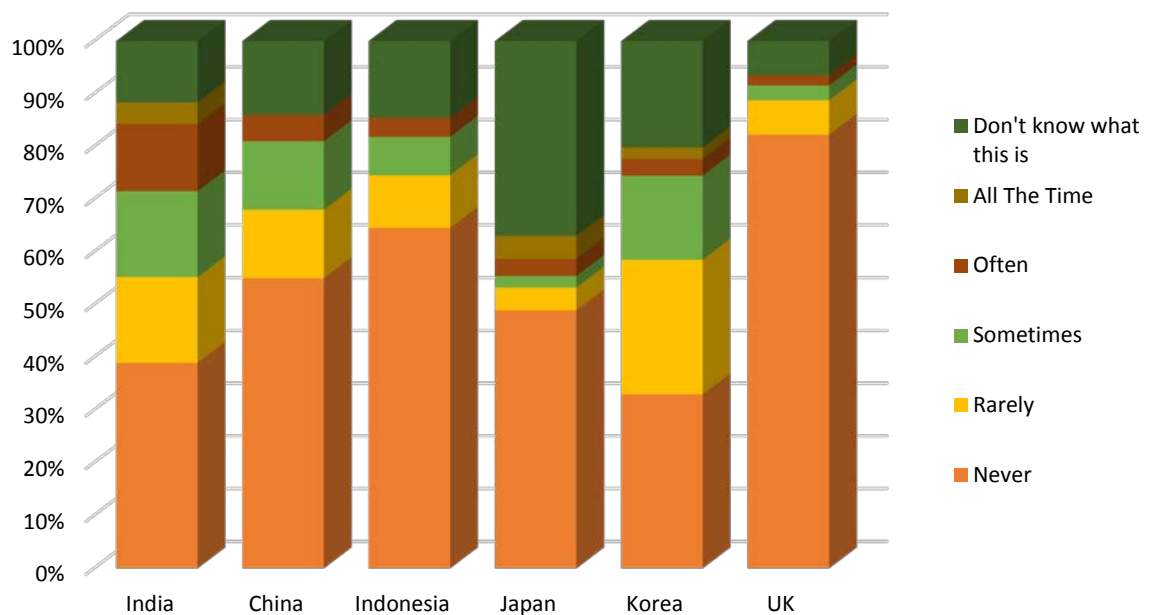
In examining mobile device use across the key markets, the interaction between these devices and promotional or marketing campaign materials was considered. One of the most prominent points of interaction between mobile device use and access to product information is that of the QR code. This is a 2-dimensional image that can be scanned by a mobile device user, prompting the display of a particular website or other online location, usually pertaining to the product or service it is associated with (Miller et al 2014). When participants were asked if they had ever used a mobile device in conjunction with barcodes or QR codes, most participants across all countries stated *yes*, with some exceptions. As shown in Figure 5.6, participants in China indicated the highest use of barcodes/QR codes via mobile devices (82 per cent *yes*), closely followed by Korea (77 per cent *yes*) and Japan (76 per cent *yes*). UK participants indicated the lowest overall use of mobile devices in conjunction with barcodes/QR codes, with 81 per cent indicating that they had not used these previously.

Figure 5.7: Experience(s) with QR code use



In addition, participants were asked to rate their past experience(s) with QR codes, stating whether they found these experiences *useful*, *annoying*, *not helpful at all* or if they *couldn't get it to work properly*. Results are shown in Figure 5.7. In general, most participants across all markets indicated that they found QR codes at least *useful*, particularly within the developing countries of China (94 per cent *useful*) and Indonesia (91 per cent *useful*). UK participants indicated the lowest overall positive experience with QR codes (24 per cent *couldn't get it to work properly*, 18 per cent *not helpful at all*), with a large portion of Japanese participants indicating at their experience with QR codes was *annoying* (19 per cent).

Figure 5.8: Use of RFID technology



This research also examined technologies with future potential in communication applications for consumers within these markets. One such technology was that of RFID (Radio Frequency Identification Device) or NFC (Near Field Communication) which can be used in physical interaction with mobile devices to access product information, as well as having a multitude of other potential applications. Examples of such technology include MasterCard's PayPass and Visa's PayWave credit cards which are used to make financial transactions easier and faster at point of purchase.

When participants were asked "Have you ever used RFID technology?" mixed responses were recorded for all countries. Overall, most participants in all countries indicated that they had used this technology either *rarely* or *never*. The highest positive response in relation to this question was given by Indian participants (13 per cent *often*, 16 per cent *sometimes*), closely followed by Korean participants (16 per cent *sometimes*).

Chapter 6

Conclusion

This study is part of a wider research programme “Maximising Export Returns (MER)” which aims to explore how export firms can capture price premiums by including and communicating credence attributes in products for overseas markets. Previous research has shown that consumers in the developing countries of China and India placed a higher importance on environmental and ethnical attributes of food products than those in the United Kingdom (UK).

Following on from this work, this study was a pilot survey with 100 participants in each of China, India, Indonesia, Japan, Korea and the UK in order to assess consumer attitudes towards a variety of food attributes, as well as their perceptions of factors in relation to New Zealand, and current and potential technology use concerning food information and purchase behaviour in these markets.

Initially, seven key attributes in food products were selected (quality, price, fair trade, animal welfare, environmental quality, health food and food safety) with participants indicating the importance of each attribute. Results showed that in relation to quality and price, most participants in all countries stated that these were either *very important* or *important*, particularly India and Indonesia. Similarly, in relation to animal welfare, environmental quality, health food and food safety, developing countries indicated an overall higher rating of importance than developed countries, particularly Indonesian, Indian and Korean participants.

From these seven key attributes, four were selected for analysis in more detail; these were food safety, environmental quality, animal welfare and health food. For each of these attributes, participants were asked to rate the importance of a range of factors underpinning these attributes.

Firstly, the survey asked participants to consider the importance of factors affecting food safety, including hygiene standards, rates of contamination, traceability, private and government certification, country of origin, barn-raised animals, type of feed, animal welfare, reduced use of pesticides, organic production, GM-free, number of additives, environmental quality, low input agriculture, freshness and brand. Participants in developing countries tended to rate factors attributed to food safety higher than participants within developed countries. The most important factors within all countries were freshness, labelling of “use by date”, hygiene standards and rates of contamination. In addition, environmental quality was listed as one of the top five factors affecting food safety amongst developing countries, signalling its importance in these markets. Animal welfare was also listed by Indian, Indonesian and UK participants as an important factor affecting food safety.

Following this, participants were asked to rate the importance of factors related to environmental quality; these included water quality, the protection of species and environments (such as wetlands, coastal and sea-life, endangered plants and animals, and native and non-native biodiversity), air quality, greenhouse gas (GHG) emissions, organic production, low input agriculture, recycling, open spaces and wilderness. Almost consistently, participants in developing countries considered all factors to be more important to environmental quality than developed countries. The most important factors overall in relation to environmental quality were water and air quality, protecting endangered animals, organic production and recycling.

The survey then asked participants to consider the importance of factors related to animal welfare, including good quality of life, good shelter and living conditions, certification, adequate diets, type of feed, no cruelty, humane slaughter, free range, natural conditions and barn-raised animals. Overall, all of these factors were considered to be at least *important* by participants in all countries, particularly in Indonesia, India and the UK. The factors of good quality of life, natural conditions, type of feed and no cruelty were identified as the most important factors, and barn raised identified as the least important factor across all countries.

Finally, participants were asked to rate the importance of factors relating to health foods, including digestive health, detoxification, beauty and skin benefits, heart, blood and bone/joint health, pregnancy, child/baby health, energy and endurance, weight management, cholesterol, memory, immune system, country of origin and brand. Overall, the highest importance for each factor was indicated by participants in developing countries, particularly from Indonesia and India. Differences across countries were shown for the importance of brand, country of origin and beauty benefits in relation to health food with participants from all countries rating these as the least important factors.

In the survey, participants were also asked to rate the importance of factors in relation to New Zealand; these were open spaces and wilderness, not crowded, clean environment, integrity, innovative, friendly, and safe. For all countries, the most important factors were shown to be a clean environment and safety. However, participants in all countries rated each factor as being at least *important*. In addition, participants in developing countries, particularly India and Indonesia, placed higher importance on all of the above factors than participants in developed countries.

An additional objective of this research was to examine means by which product information may be communicated within these markets. This specifically referred to digital media and smart technology that are currently used internationally for communication or information sharing purposes. The questionnaire included several questions on consumers' use of these technologies both for obtaining information and purchasing of food products within the six markets.

Survey results showed that the frequency of internet shopping was highest for Korean participants (37 per cent shopping for food products and 54 per cent shopping for "other" products), followed by the developing countries of India (35 per cent food shopping, 51 per cent other shopping) and China (32 per cent food shopping, 49 per cent other shopping). Interestingly, Indonesian participants indicated the lowest overall percentage of online shopping for "other" products, which was shown to be equal with the frequency of online food shopping (36 per cent food shopping, 37 per cent other shopping). This is also interesting considering that overall rates of online shopping (or "e-commerce") are expected to increase in Indonesia with a slight decrease in the percentage of food shopping carried out online in Indonesia. For the majority of survey respondents, the main reason for online shopping was that they liked the convenience of having products delivered to their homes, particularly amongst UK participants (59 per cent), but the ability to access products outside of the domestic market was also significant.

This study also examined modern technology-based means of communication, including social media, across the six key international markets of India, China, Indonesia, Japan, Korea and the UK. In general, Facebook was the most popular website across all countries surveyed, closely followed by YouTube. In addition, while access to particular social media sites (including Facebook and Twitter) is restricted in China, the most popular sites as identified in this study were QQ, Weixen QQ and Qzone.

In addition, the use of personal mobile technology in relation to communication and purchase behaviours in the six markets was examined in this study. In general, the majority of participants across all countries stated that they currently own a mobile device, with India and Indonesia having the highest ownership rates for personal mobile devices, and Japan the lowest. The most common type of mobile device for participants in all countries was that of Android, particularly within Korea (79 per cent) and the developing countries of India (68 per cent), China (63 per cent) and Indonesia (59 per cent).

Also, the survey included questions examining mobile device use for obtaining information on food products. A large proportion of participants in developing countries stated that they had used a mobile app to find out more about a food product. Chinese participants indicated the highest use of a mobile app for this purpose (54 per cent), followed by Korea (53 per cent). The lowest percentage was indicated by UK participants (13 per cent).

Mixed responses were given in relation to the use of mobile devices for purchasing food products, with many countries stating that they engaged in food purchases using their mobile device(s) either *sometimes* or *rarely*. Korean participants indicated the highest frequency of purchasing food products with their mobile device (48 per cent *sometimes*, 14 per cent *often*, 6 per cent *all of the time*), followed by China (39 per cent *sometimes*, 12 per cent *often*) and India (33 per cent *sometimes*, 8 per cent *often*). This is not surprising as Korean consumers have been found to have access to a wide range of opportunities for food purchases using mobile devices. Participants in the UK indicated the lowest use of their mobile device(s) in purchasing food (81 per cent *never*).

Participants were also asked if they had used their mobile device in conjunction with barcodes or QR codes, with most participants across all countries stating “yes”, particularly in China (82 per cent), Korea (77 per cent) and Japan (76 per cent). UK participants indicated the lowest overall use of mobile devices in conjunction with barcodes/QR codes with 81 per cent stating they hadn’t used their mobile device in conjunction with barcodes or QR codes. In addition, participants were asked to rate their experience(s) with QR codes. Most participants across all markets indicated that they found QR codes at least useful, particularly within the developing countries of China (94 per cent *useful*) and Indonesia (91 per cent *useful*). UK participants indicated the lowest overall positive experience with QR codes (24 per cent *couldn’t get it to work properly*, 18 per cent *not helpful at all*).

Mixed responses across countries were shown for the use of RFID technology. Overall, most participants in all countries indicated that they had used this technology either *rarely* or *never*, suggesting that this is not yet prominent internationally. The highest positive response in relation to this question was indicated by Indian participants (13 per cent *often*, 16 per cent *sometimes*), followed by Korean participants (16 per cent *sometimes*). This may be an indication that these markets operate as test markets for companies employing such technologies prior to its release on a larger scale internationally.

The results from the pilot surveys are indicative only, since the sample sizes are small. However, these findings will inform the larger survey with 1,000 participants in each of China, India, Indonesia, Japan and the UK that will be conducted in 2015 to elicit the willingness-to-pay for attributes in different markets using choice experiments. In a further step, these results will then be used to calculate the impact of this on New Zealand producer returns using the Lincoln Trade and Environment Model (LTEM); this partial equilibrium trade model forecasts international trade, production and consumption of agricultural commodities.

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Appendix 1 Social Media Figures

Figure A1-1. Website use in India

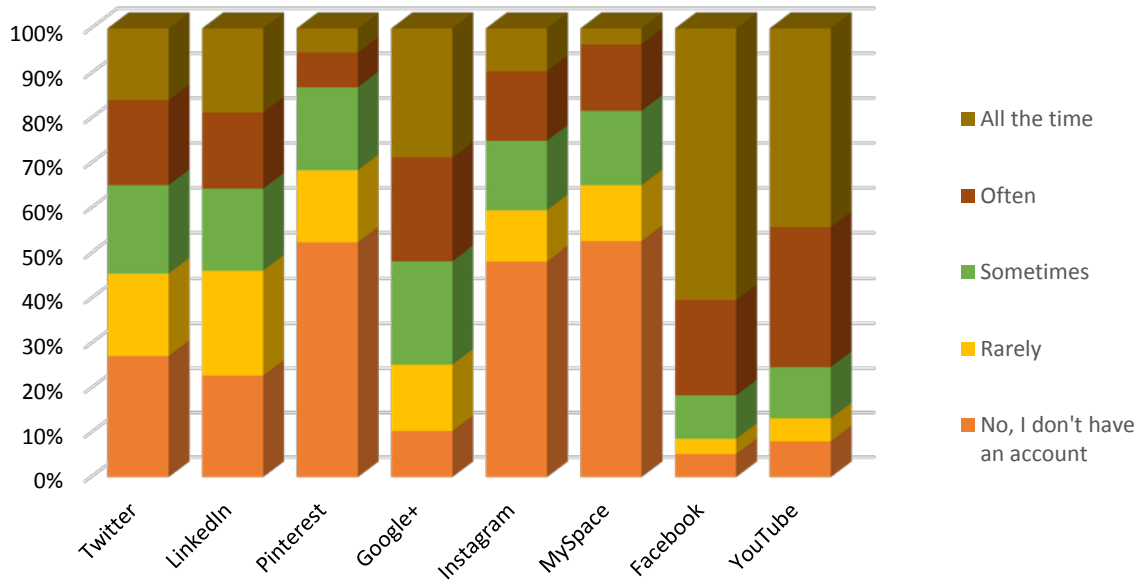


Figure A1-2. Website use in China

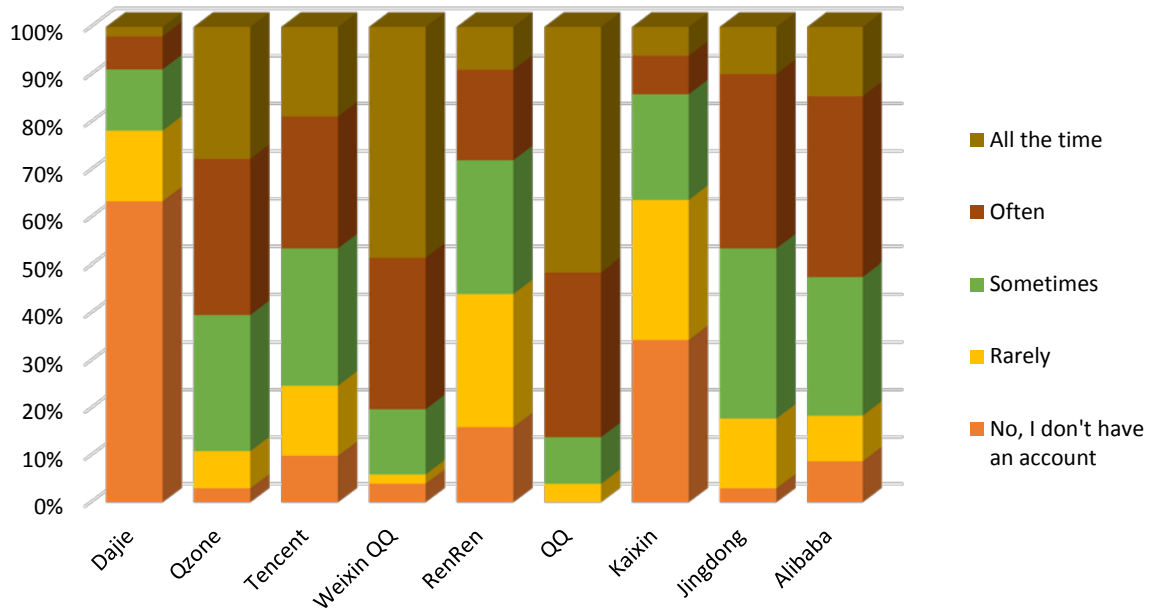


Figure A1-3. Website use in Indonesia

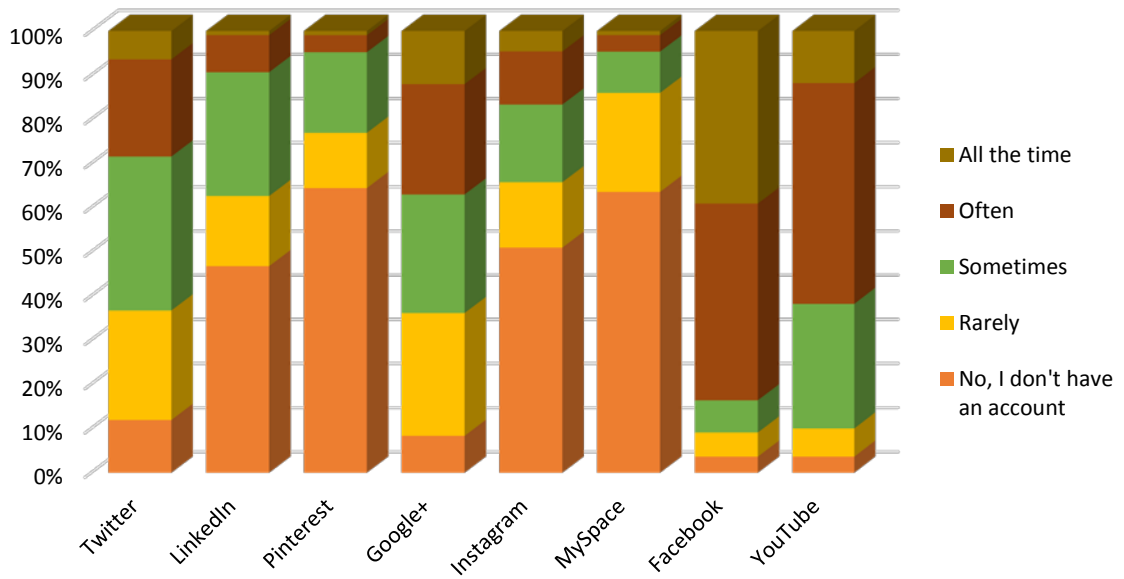


Figure A1-4. Website use in Japan

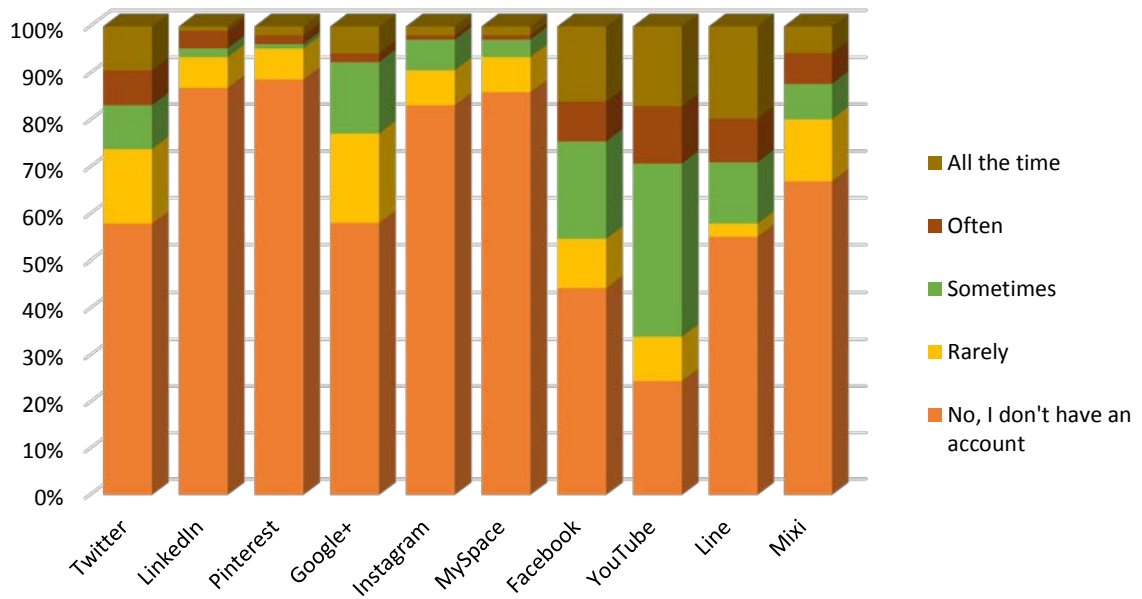


Figure A1-5. Website use in Korea

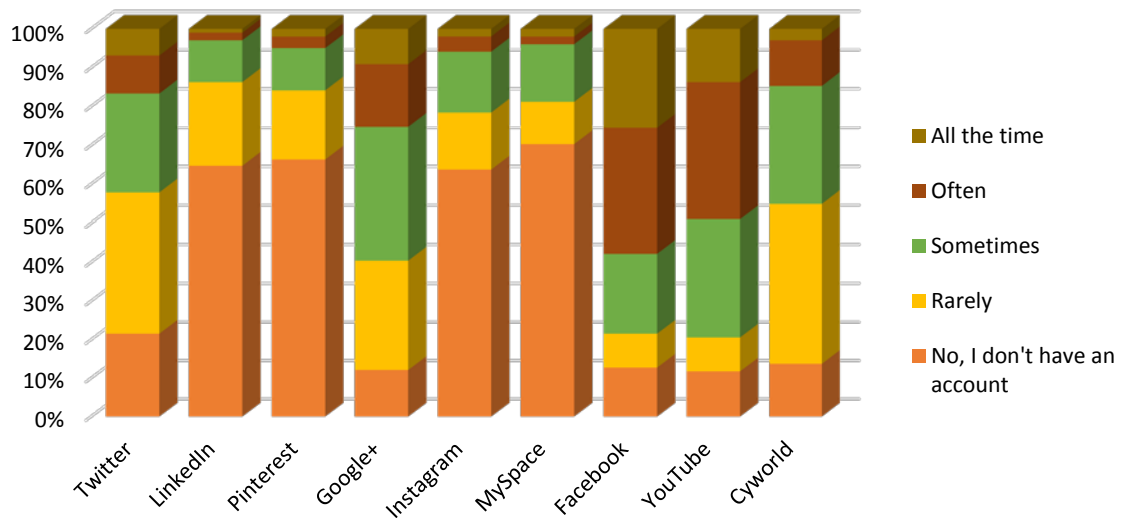
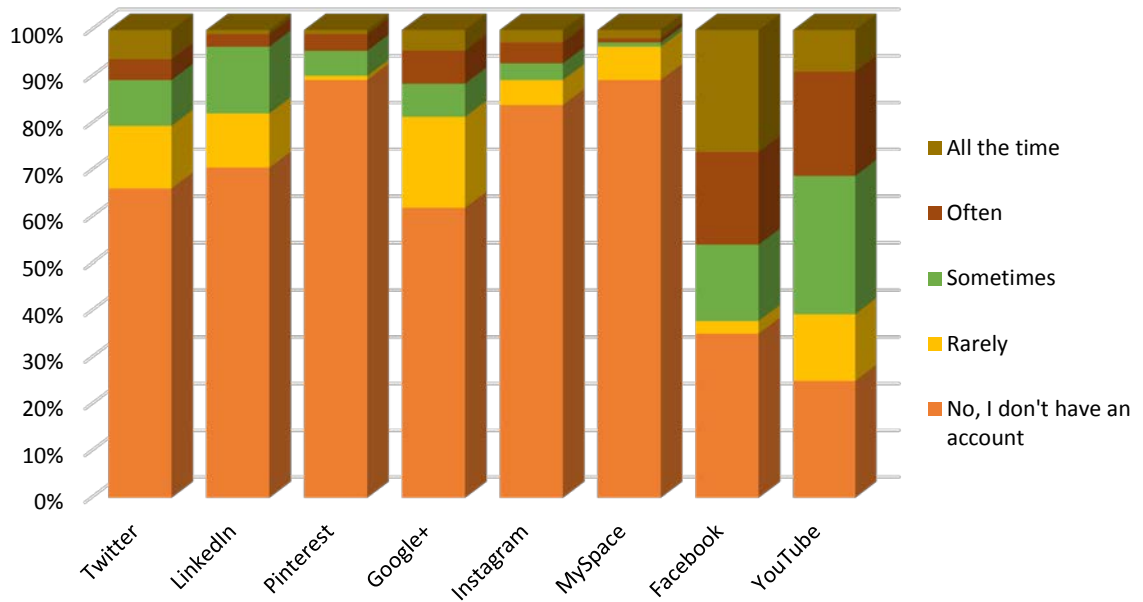


Figure A1-6. Website use in the UK



Appendix 2 Demographics

Table A2-1. Demographics

	China	India	Indonesia	Japan	Korea	UK
Gender						
Female	63%	43%	28%	48%	66%	59%
Male	37%	57%	72%	52%	34%	41%
Age						
16-29	42%	48%	36%	10%	25%	12%
30-44	39%	42%	51%	33%	55%	27%
45-64	20%	10%	13%	53%	21%	50%
65-75+	0%	1%	0%	5%	0%	13%
Type of Area						
Urban	74%	87%	55%	46%	87%	33%
Suburban	18%	12%	30%	41%	9%	46%
Rural	7%	1%	15%	13%	4%	21%
Household Make-Up						
With children	57%	50%	62%	52%	53%	40%
No children	42%	47%	34%	48%	37%	58%
Education						
Up to High School	5%	2%	27%	13%	16%	38%
Tertiary qualification (below degree)	61%	8%	42%	51%	72%	33%
University degree or higher	34%	90%	31%	34%	13%	28%

Table A2-2. Income (China, India, Indonesia)

China	
Less than ¥50,000	4%
¥50,000 to ¥69,999	12%
¥70,000 to ¥89,999	9%
¥90,000 to ¥109,999	13%
¥110,000 to ¥129,999	18%
¥130,000 to ¥149,999	14%
¥150,000 or above	30%
Prefer not to answer	1%
India	
Less than Rs 1,000,000	38%
Rs 1,000,000 to Rs 1,199,999	15%
Rs 1,200,000 to Rs 1,399,999	9%
Rs 1,400,000 to Rs 1,599,999	4%
Rs 1,600,000 to Rs 1,799,999	3%
Rs 1,800,000 to Rs 1,999,999	5%
Rs 2,000,000 or more	16%
Prefer not to answer	10%
Indonesia	
Less than Rp15 million	22%
Rp15 million to Rp30 million	19%
Rp30 million to Rp60 million	20%
Rp60 million to Rp90 million	16%
Rp90 million to Rp120 million	7%
Rp120 million or more	11%
Prefer not to answer	5%

Table A2-3. Income (Japan, Korea, United Kingdom)

Japan	
2 million yen or less	9%
2 million yen to 3.5 million yen	19%
3.5 million yen to 5.5 million yen	21%
5.5 million yen to 8.5 million yen	27%
8.5 million yen or above	19%
Prefer not to answer	5%
Korea	
Less than 20 million won	5%
20 to 40 million won	16%
40 to 60 million won	36%
60 to 80 million won	18%
80 to 100 million won	16%
100 million won or above	4%
Prefer not to answer	6%
United Kingdom	
Less than £20,000	26%
£20,000 to £39,999	33%
£40,000 to £59,999	22%
£60,000 to £79,999	4%
£80,000 to £99,999	6%
£100,000 or more	1%
Prefer not to answer	8%

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