

# **Changing consumer preferences for and use of digital media and smart technology for food and beverage information and purchasing in markets relevant to New Zealand**

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## **Abstract**

New Zealand is a geographically isolated country that relies heavily on maintaining market access for its exports of agricultural products. This export focus has shifted from traditional European markets to other international markets, particularly in Asia. This shift has highlighted the importance of understanding consumer use of digital media and smart technology in target markets for New Zealand food and beverage exports as a means of maintaining and enhancing market access via novel marketing and sales channels. This paper presents the results of consumer surveys conducted in China, Japan and the United Kingdom in 2015, 2019 and 2020 examining consumer attitudes to and the use of a range of digital media and smart technology tools for access information about and purchasing food and beverage products. This includes the use of online shopping, social media and mobile devices, as well as interactions with product barcodes, QR codes and microchip reading technology (RFID/NFC). Results showed growth in the use of all digital media and smart technology for this purpose over time across all markets, particularly China. The 2020 survey was undertaken during the COVID-19 pandemic, with results showing only marginal changes in technology use. This research can assist New Zealand industries by informing them of possible opportunities for increasing their export returns by improving their market access via digital marketing and sales strategies.

## **Keywords**

Online shopping; e-commerce; mobile commerce; food and beverage; market access; information gathering; New Zealand; China; Japan; United Kingdom; UK

## 1. Introduction

New Zealand (NZ) is a geographically isolated nation which relies on the export of its primary products, particularly food and beverages (F&B). While NZ has historically relied on key trading partners such as the United Kingdom (UK), more recently NZ's trade focus has expanded to include key Asian markets such as China and Japan. It is useful for NZ's F&B exporters to understand the preferences of consumers in these markets in order to gain and maintain market access, as well as achieve premiums for their products.

In recent years, there has been steady growth in the use of digital media and smart technology by consumers for accessing information and purchasing goods. This has been facilitated, in part, by more widespread global access to information technology, such as home computers, mobile devices and internet access (ITU-D, 2019). The dissemination of mobile phone technology (e.g. smartphones) has led to the development of international markets wherein consumers have near-constant access to information and opportunities for purchasing products, uninhibited by access to physical retailers (Deloitte, 2017).

Increasingly ubiquitous consumer use of digital media and smart technology signals an opportunity for NZ's F&B exporters to achieve enhanced value for their products in international markets. By understanding the mechanisms by which consumers obtain information about and purchase products via these sources, exporters can gain new channels for market access, bypass traditional gatekeepers and achieve higher returns. In particular, this technology can be used by consumers to authenticate product claims, which often require the consumer to place trust in their validity (e.g. animal welfare or environmental stewardship claims) (Saunders et al., 2015). By facilitating consumers' ability to verify such product claims, F&B exporting firms may be able to enhance consumer trust in their products, thereby achieving premiums in key international markets.

## 2. Literature Review

There has been extensive research regarding consumer use of digital media and smart technology in relation to product information and purchasing. This has included the use of such technologies as online shopping (e-commerce), mobile commerce and apps, QR codes, and microchip reading technology (e.g. RFID/NFC). The majority of this research has focused on technology use for general products, with several studies examining consumer use of digital tools within the grocery channel, including F&B and non-F&B products.

The use of *online shopping* for F&B products has received much attention relative to other technologies within the literature. Many studies have highlighted historically low sales volumes of F&B over non-F&B goods through online shopping channels, with the use of online shopping showing markedly higher uptake in more recent studies, suggesting a growing consumer interest in online F&B purchasing over time (Campo and Breugelmans, 2015; Carpio et al., 2013). The drivers of consumer uptake of online shopping for F&B products are diverse, with key motivators including trust, convenience, product and service quality, and overall cost (Chen et al., 2015; Lian and Yen, 2014; Mortimer et al., 2016; Nagar, 2016; Wu et al, 2014; Yeo et al., 2017). In addition, numerous cross-cultural studies have shown country-specific preferences for various characteristics of online shopping channels. For example, previous research has suggested that younger Chinese consumers with higher incomes and education are more likely to shop online, alongside other determinants such as higher educational attainment (Acheampong et al., 2016; Chong et al., 2012; Clemes et al, 2014; Gao et al., 2013; Gong et al., 2013; Yang et al, 2015), whereas the perceived benefits of convenience and trust in e-commerce are more important determinants of online shopping use for Japanese and UK consumers (Cyr, 2013; Frasquet et al., 2015; Moriuchi and Takahasi, 2016; Sakarya and Soyer, 2013; Watson et al., 2013).

The use of digital media sources, such as social media, in relation to F&B information gathering and purchasing activities has also been examined in the literature. Previous studies have indicated that brand presence on and continual use of social media platforms can greatly enhance consumer trust (Boerman and Kruikemeier, 2016; Habibi et al., 2014; Rosenthal and Brio, 2017). In turn, social media and similar platforms also provide consumers with mechanisms to rapidly generate and disseminate negative sentiment towards brands that are deemed to violate their social license to operate (Gregoire et al., 2015; Peng et al., 2015; Roshan et al., 2016). As with online shopping use, numerous cross-cultural studies have shown country-specific preferences for digital media sources for F&B information and purchasing activities. For example, information disseminated online via blogs has been shown to be highly influential in relation to consumer perception of F&B products in China, likewise for social media sources in the UK (Panagiotopoulos et al., 2013; Peng et al., 2015).

The use of smart technology in relation to F&B products, particularly those that require smartphone interaction, have been examined in the literature to a lesser extent. Examples of this technology include the use of mobile apps, Quick Response (QR) codes, and microchip reading technology (e.g. RFID/NFC chips). Firstly, the use of mobile apps in relation to F&B products has shown positive correlation with increased intention to purchase related products (Kim et al., 2015; Wang et al., 2015). International F&B firms have developed product- and brand-specific apps to appeal to their consumer base in novel ways, with branded apps being shown to increase consumer trust and interest in brands (Smith et al., 2018). Similarly, the display and use of QR codes (via smartphone interaction) in relation to F&B products has been shown to enhance consumer trust in F&B products, particularly when used in product traceability schemes, positively influencing consumer perceptions of F&B product safety, quality and sustainability credentials (Dopico et al., 2016). Furthermore, while there is significantly less research available regarding the use of microchip reading technology (e.g. RFID/NFC chips) in relation to F&B products, prior research has suggested that this technology can provide consumers with a range of benefits, including information regarding product expiration, freshness and/or traceability (Grunow and Piramuhu, 2013; Ghaani et al., 2016). As with other technologies, previous cross-cultural studies have suggested country-specific preferences for the above technologies. Importantly, previous research has shown QR codes to be used by consumers in Asian, European and North American markets, with markedly extensive use shown by Chinese consumers (Lerner et al., 2015; Loras, 2015).

Taken together, the literature indicates that consumers derive a range of benefits from the provision of digital media and smart technology sources. While all technologies have the potential to increase consumer trust in products and brands, and strengthen the validity of product claims, consumer preferences for these technologies may vary between countries. This suggests that F&B exporting firms interested in developing digital media and smart technology channels for information dissemination and product purchasing in international markets may need to adopt a market-specific approach. Hence, this research examined differences in digital media and smart technology use in China, Japan and the UK in relation to F&B products over time to identify possible trends in its uptake and use.

### **3. Methodology**

The current study builds on previous work undertaken by the Agribusiness and Economics Research Unit (AERU) at Lincoln University. A series of surveys were conducted in China, Japan and the UK across three time periods (2015, 2019 and 2020). The 2015 data was collected as part of the AERU's Maximising Export Returns (MER) programme (2013-2017), which examined consumer preferences for credence attributes, attitudes towards NZ, regular F&B product purchasing and digital media/smart technology use in China, India, Indonesia, Japan and the UK (see Driver et al., 2015; Guenther et al., 2015). The 2019 and 2020 data was collected as part of the AERU's Unlocking Export Prosperity (UEP) programme (2017-2023), which repeated the MER survey in the form of an annually repeated survey of China, Japan and the UK (2019 and 2020 completed thus far).

The MER survey questionnaire was designed based on extensive literature review, previous research undertaken by the AERU, focus groups and survey tests, and consultation with primary industry partners. The original survey questionnaire was written in English, with Chinese, Japanese and Indonesian surveys translated by a professional translation service and cross-checked by independent translators. The same survey questionnaire was used for the UEP surveys, as these were intended as a continuation of data collection based on MER.

The MER surveys were carried out using Qualtrics™, a web-based survey tool, and completed in April 2015, achieving a sample size of approximately 1,000 consumers in each. Representative quota samples were obtained through the use of online survey panel services, with participants screened out if: 1. Their frequency of grocery shopping was *less than monthly*; 2. They exhibited inattentiveness in survey completion (e.g. speeding through the questionnaire). The UEP surveys were carried out in the same manner, achieving approximately 1,000 consumer samples in each market. The first round of the UEP survey (2019) was completed in June 2019, and the second round (2020) was completed in June 2020. It is important to point out that the second round (2020) was conducted during the COVID-19 pandemic, which may have influenced participants' responses.

All surveys contained questions regarding consumer preferences for credence attributes, attitudes towards NZ, regular F&B product purchasing and digital media/smart technology use. However, the current conference paper presents only the portion examining consumer preferences for and use of digital media and smart technology in relation to F&B products in these markets. To the best of the authors' knowledge, this is the first and only study to examine international consumer use of digital media and smart technology in relation to F&B products over time.

Descriptive statistics have been used to describe preferences for and use of a range of digital media and smart technology over time. Summary demographic statistics are presented in Table 1 below for each market across the three study years.

**Table 1. Summary demographic statistics (%)**

		China			Japan			UK		
		2015	2019	2020	2015	2019	2020	2015	2019	2020
<b>Gender</b>	Male	49.8	44.9	40.3	48.2	52.0	50.9	49.8	45.0	60.8
	Female	50.3	55.1	59.7	51.9	47.8	49.0	50.3	54.7	39.2
<b>Age</b>	16-29	25.4	32.4	22.6	8.1	7.2	7.3	12.3	5.7	7.6
	30-44	57.8	53.7	53.9	39.6	31.8	31.2	36.7	26.6	24.5
	45-59	15.4	12.4	18.7	40.7	47.3	40.1	38.3	38.2	39.7
	60-74	1.4	1.4	4.7	11.2	13.5	19.9	12.1	27.5	25.2
	75+	0	0.1	0.1	0.5	0.2	1.5	0.6	2.0	3.0
<b>Household Make-up</b>	Single, no children	17.9	21.7	15.4	27.2	24.1	22.2	9.7	9.3	9.2
	Single, with children	1.5	1.0	1.3	3.5	3.0	3.6	3.7	2.2	2.6
	Couple, no children	5.3	6.2	5.8	13.2	15.8	15.3	29.4	43.6	42.6
	Couple, with children	74.0	70.0	77.4	55.1	56.7	58.1	53.9	43.7	43.9
	Live with unrelated people	1.0	1.0	0.1	0.8	0.3	0.6	1.7	0.5	0.4
<b>Education</b>	Up to Primary School	0.2	0	1.4	0.1	0	0.1	1.0	1.0	0.2
	Up to High School	0.4	0.5	1.6	1.1	1.2	0.5	1.7	8.5	1.2
	High School	3.6	4.4	7.9	18.4	14.8	12.8	8.8	12.0	8.7
	Tertiary (other than Degree)	15.7	16.8	16.7	19.4	16.3	16.1	11.3	40.9	13.6
	University Degree	68.3	67.8	66.0	47.6	55.6	57.2	41.3	37.1	39.6
	Post-graduate	11.8	10.5	6.3	13.4	11.9	13.3	35.5	0.5	36.7
<b>Frequency of Grocery Shopping</b>	Daily	47.1	37.2	29.4	46.9	56.5	60.5	76.9	78.5	82.9
	Weekly	47.2	55.2	59.6	49.9	56.5	60.5	76.9	78.5	82.9
	Fortnightly	4.9	5.2	9.9	2.1	3.8	2.3	3.5	4.6	4.2
	Monthly	0.9	2.4	1.0	1.1	1.3	0.6	0.9	0.3	0.5

## 4. Results and Discussion

This section presents the results of the digital media and smart technology portions of the three survey years (2015, 2019 and 2020). Within the digital media and smart technology portion of each survey, participants were initially asked to indicate their frequency of use of a range of digital media sources for searching for F&B information online. This included the use of *social media*, *food company web pages*, *blogs* and *forums* for this purpose. Results are presented in Figures 1-4 below.

Figure 1 below shows responses regarding participants' frequency of use of *social media* for searching for F&B information online. This shows a consistently higher frequency of use of social media for F&B information by Chinese participants relative to the other countries. UK participants showed particularly less frequency of use of social media for this purpose. This is consistent with previous findings that suggest that Chinese internet users spent more time on social media platforms daily than Japanese and UK internet users over this period (Global Web Index, 2020).

**Figure 1. Use of *social media* for online information on food and beverages.**

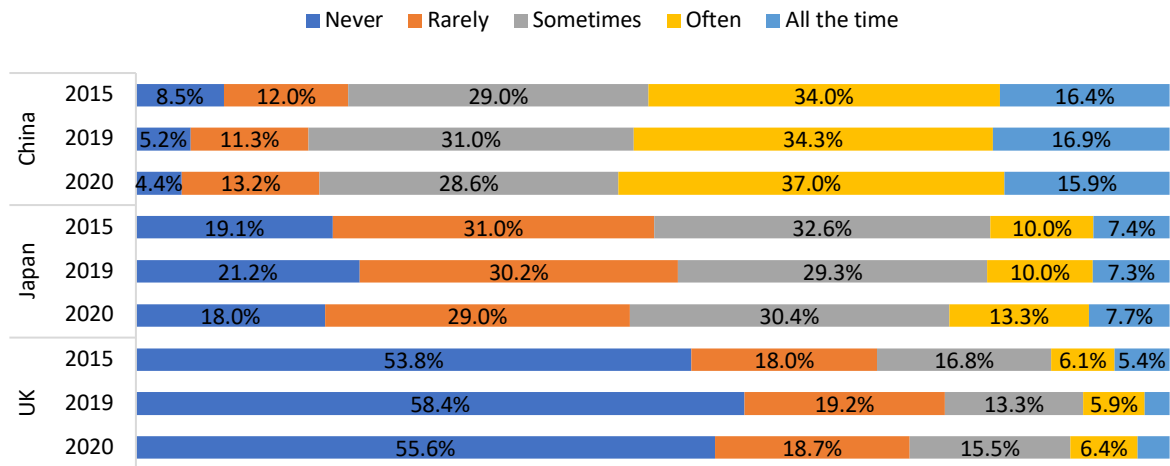


Figure 2 below shows responses regarding participants' frequency of use of *food company web pages* for searching for F&B information online. While these responses were less extreme relative to Figure 1 (*social media*), Chinese consumers indicated consistently higher use over time than the other countries, with UK participants indicating consistently lesser use of *food company web pages* for F&B information searching.

**Figure 2. Use of *food company web pages* for online information on food and beverages.**

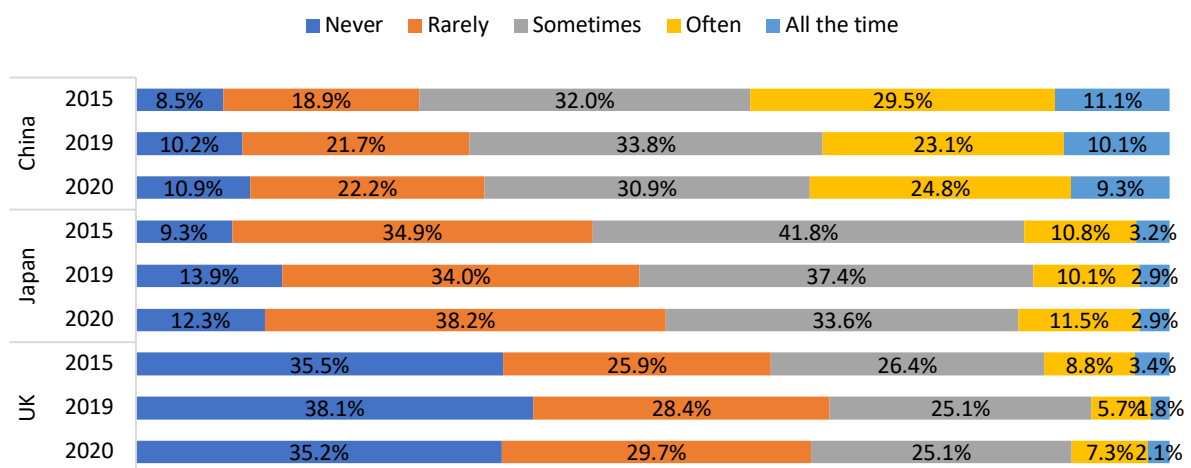


Figure 3 below shows responses regarding participants' frequency of use of *blogs* for searching for F&B information online. These results closely mimic those regarding *food company web pages*, with Chinese participants showing consistently higher frequency of use, and UK participants showing consistently lower frequency of use of *blogs* for F&B information searching. This is in line with previous findings that blogs can be highly effective as a means of disseminating food-related information in the Chinese market that ultimately influences consumer sentiment and purchasing behaviour (Peng et al., 2015).

**Figure 3. Use of *blogs* for online information on food and beverages.**

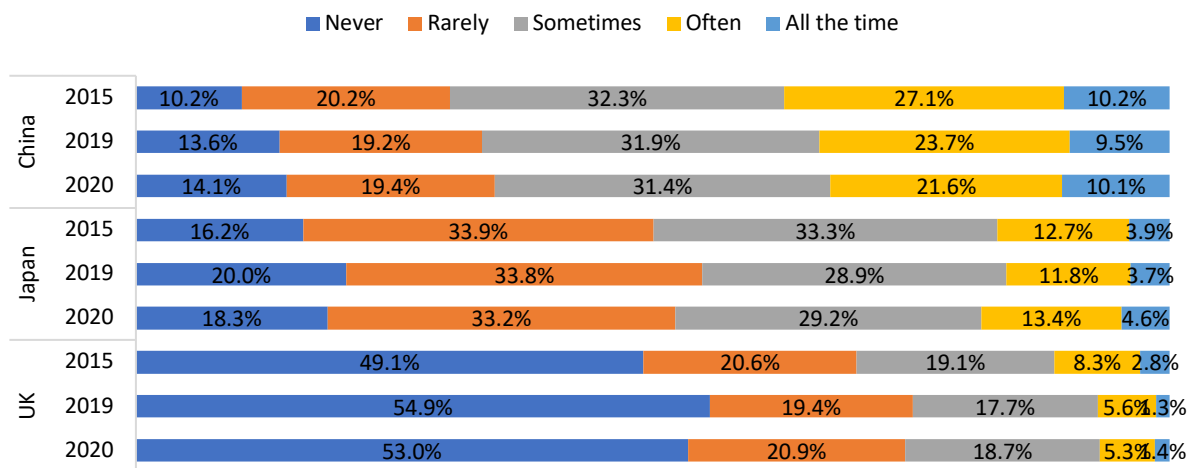
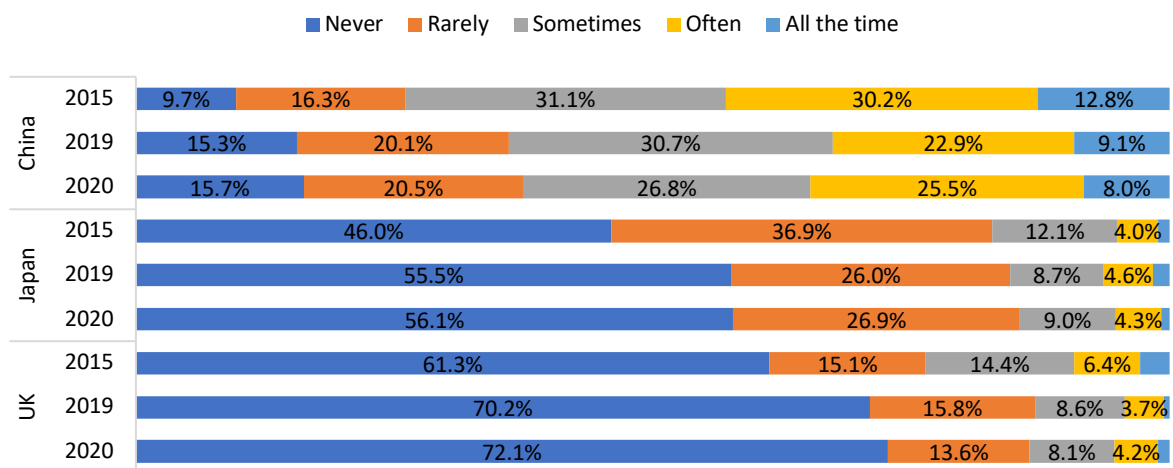


Figure 4 below shows responses regarding participants' frequency of use of *forums* for searching for F&B information online. Similarly to Figures 1-3, Chinese participants indicated consistently higher use of *forums*, while UK participants indicated consistently lower use of *forums* for F&B information searching online.

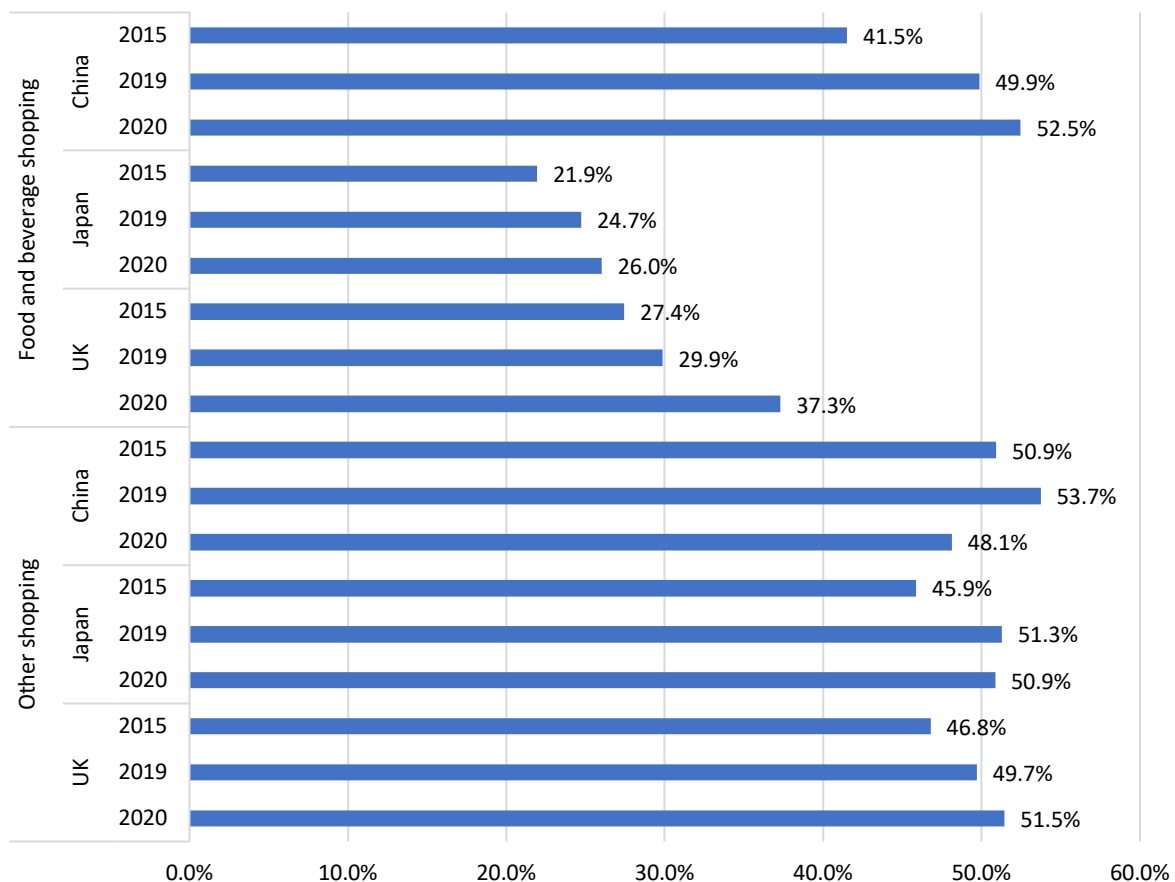
**Figure 4. Use of *forums* for online information on food and beverages.**



As discussed above, the results presented in Figures 1-4 clearly show a higher frequency of use of all online F&B information sources by Chinese participants over time. This is important, as previous research has shown that the presence of positive product information on electronic word-of-mouth generating platforms (including *social media*, *blogs* and *forums*) positively correlates with higher purchase intention by Chinese consumers (Lee et al., 2017; Xu et al., 2017).

Figure 5 below shows participants' responses regarding the average percentage of their usual shopping that is conducted online for either *F&B* or *other* product types. This shows an increase in the average proportion of consumer use of online shopping for *F&B* products over time in all markets, but not for *other* products (which remained relatively constant). While Japanese and UK participants indicated that they usually do a higher proportion of their regular shopping for non-F&B products online, the use of online shopping for F&B products surpassed non-F&B shopping for Chinese participants over this time period. The results for the 2020 survey could be explained, in part, by public health restrictions and/or changes in consumer behaviour brought about by concerns regarding the spread of COVID-19 in these markets, as there is currently evidence suggesting that international consumers increased online shopping and decreased brick-and-mortar retail spending during this period (Huang et al., 2020; McKinsey & Company, 2020).

**Figure 5. Average percentage of usual *food and beverage shopping* and *other shopping* done online.**



Figures 6-11 below show results regarding participants' main reasons for using online shopping for F&B products, including access to lower-priced goods, easier product comparisons, greater product variety, better product quality, convenience of home delivery, and access to overseas goods that are better or not available domestically.



Figure 6 below shows the percentage of participants who rated “prices are generally lower” as their main reason for shopping for F&B products online. This shows a decline in the percentage of participants who considered this their main reason for this activity, particularly for Chinese participants, and proportionally for UK participants. This is in contrast with earlier studies that suggested that access to lower-priced goods was a key antecedent of online shopping use (Acheampong et al., 2016; Brashear et al., 2009; Jiang et al., 2013). This suggests that, for all countries examined, access to lower-priced goods is becoming less important over time.

**Figure 6. Main reasons for shopping for food and beverages online: Lower prices.**

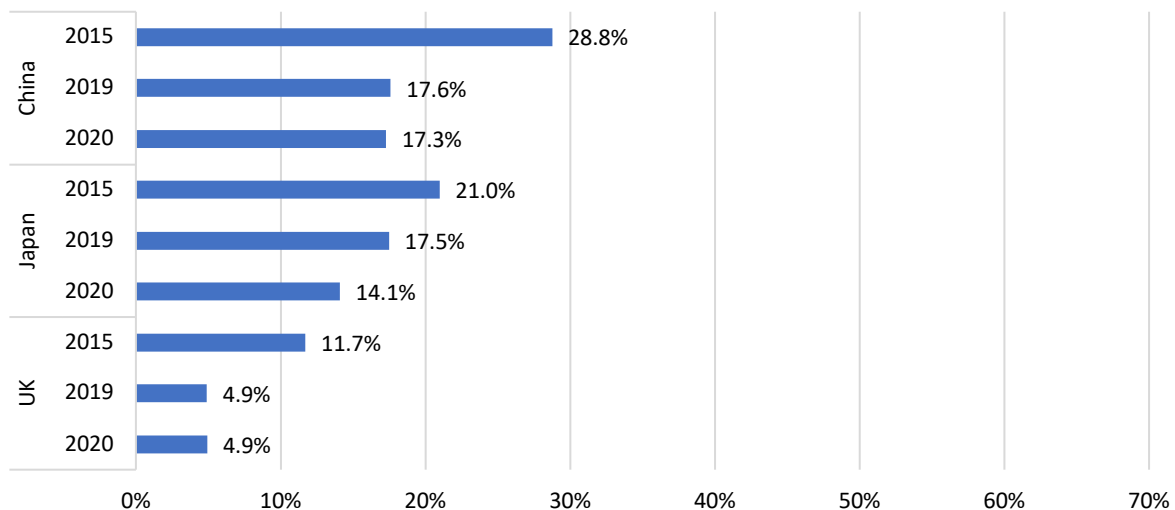


Figure 7 below shows the percentage of participants who rated “comparisons of food and beverage products are easier to make online” as their main reason for shopping for F&B products online. This shows that while the importance of this factor has decreased over time for Japanese and UK participants, it has increased in importance for Chinese participants. This is in line with previous research suggesting that the ability to make easy comparisons between products is an important benefit of online F&B shopping services for Chinese consumers (Acheampong et al., 2016).

**Figure 7. Main reasons for shopping for food and beverages online: Easier product comparisons.**

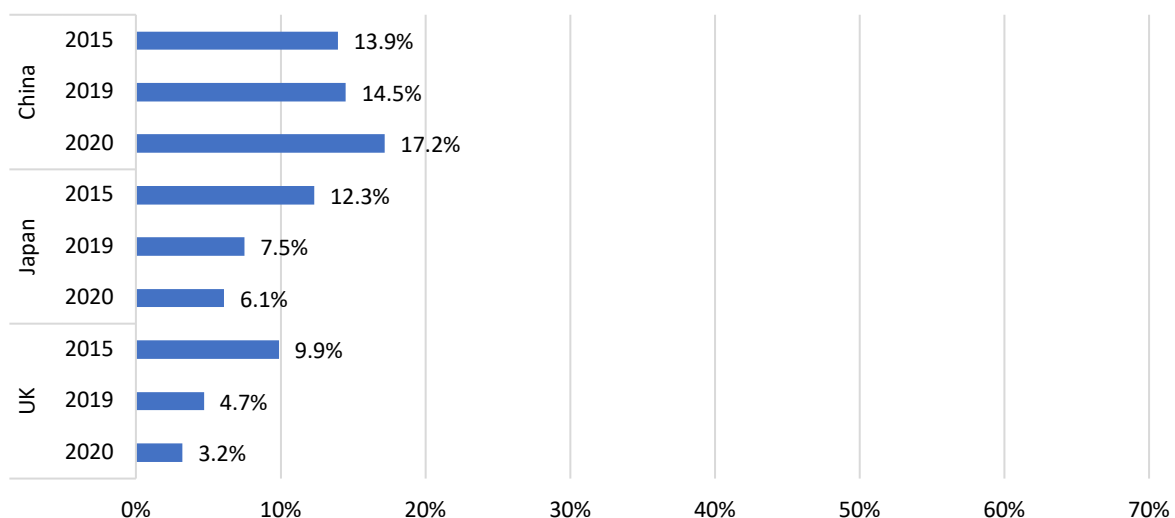


Figure 8 below shows the percentage of participants who rated “the variety of food and beverage products is greater online” as their main reason for shopping for F&B products online. This demonstrates that while Japanese and UK participants have shown mixed ratings of this factor over time, it has increased in importance for Chinese participants. This is consistent with previous research which has shown product variety to be an important benefit of online F&B shopping for Chinese consumers (Acheampong et al., 2016; Brashear et al. 2009; Clemes et al., 2014).

**Figure 8. Main reasons for shopping for food and beverages online: Greater product variety.**

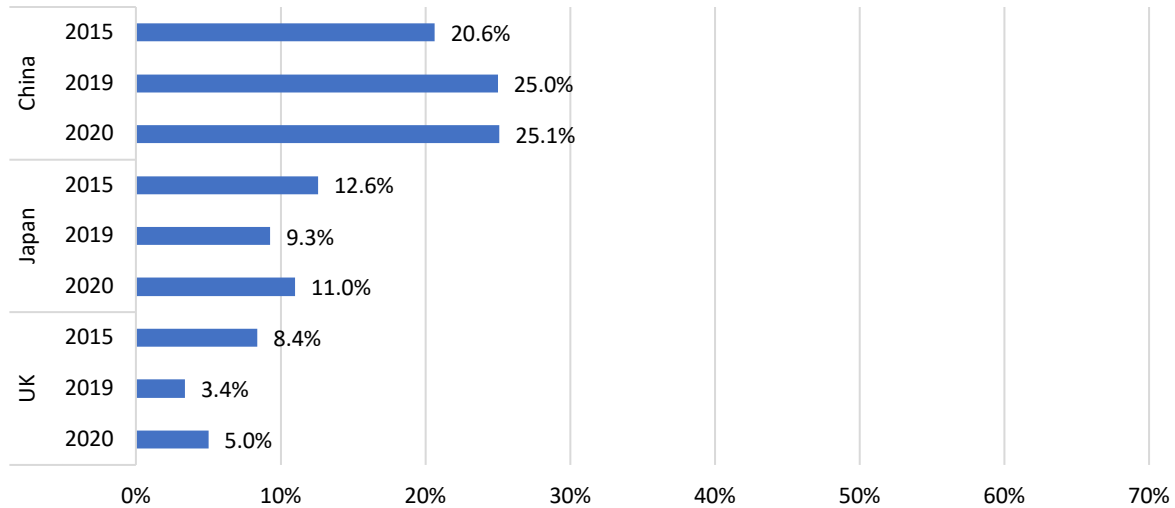


Figure 9 below shows the percentage of participants who rated “the quality of food and beverage products is greater online” as their main reason for shopping for F&B products online. This shows a low and diminishing importance for this factor for Japanese and UK participants, but a large increase in its importance for Chinese participants over time.

**Figure 9. Main reasons for shopping for food and beverages online: Better product quality.**

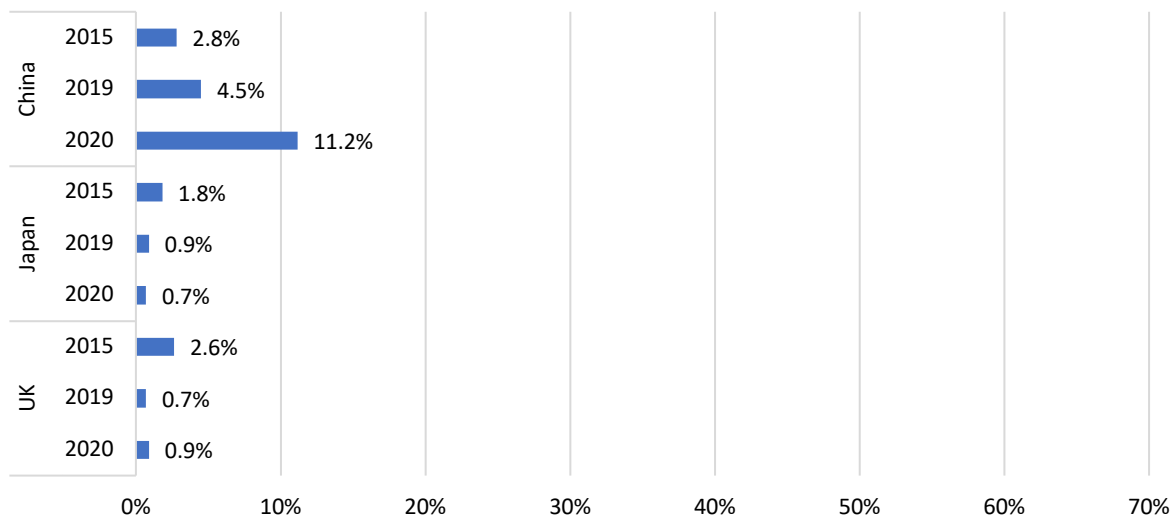


Figure 10 below shows the percentage of participants who rated “I like the convenience of having products delivered to my house” as their main reason for shopping for F&B products online. This shows that this factor is, by far, the most important factor for using online shopping services for Japanese and UK participants, although its importance has diminished over time. It can also be seen that Chinese and Japanese participants indicated mixed importance for this factor over time. This is a surprising result, as previous literature has often shown convenience to be a key motivator towards online shopping use in a range of international markets (Ashraf et al., 2014; Brashear et al., 2009; Campo and Breugelmans, 2015; Chen and Hung, 2015; Clemes et al., 2014; Jiang et al., 2013; Khare, 2016; Yeo et al., 2017).

**Figure 10. Main reasons for shopping for food and beverages online: Convenience of home delivery.**

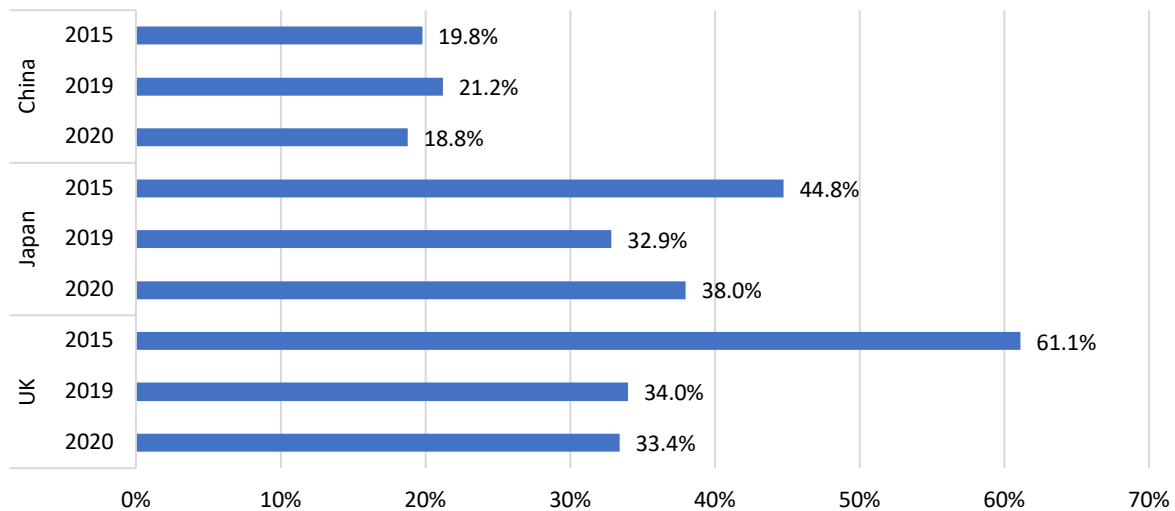
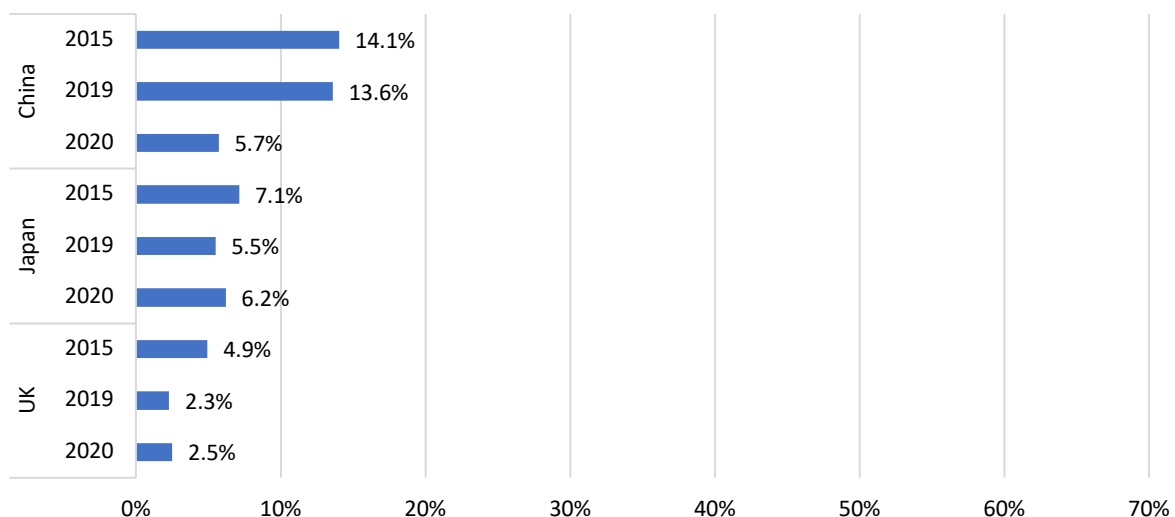


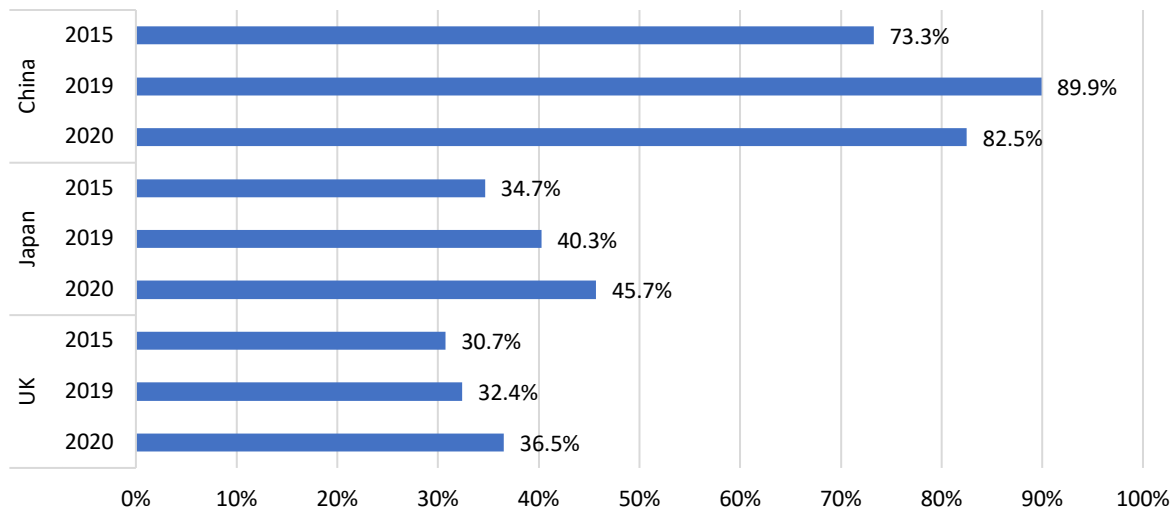
Figure 11 below shows the percentage of participants who rated “I like being able to order food and beverages from overseas that are better or not available domestically” as their main reason for shopping for F&B products online. This has shown relatively low importance across all countries, with mixed results shown for Japanese and UK participants over time. This also shows a swift decline in the importance of this factor for Chinese participants between the 2019 and 2020 surveys. This result, while surprising, could be explained by disruptions to the global supply chain caused by international reaction to the COVID-19 pandemic, during which imports to China fell by 4 per cent (by value) (WEF, 2020).

**Figure 11. Main reasons for shopping for food and beverages online: Access to products from overseas that are better or not available domestically.**



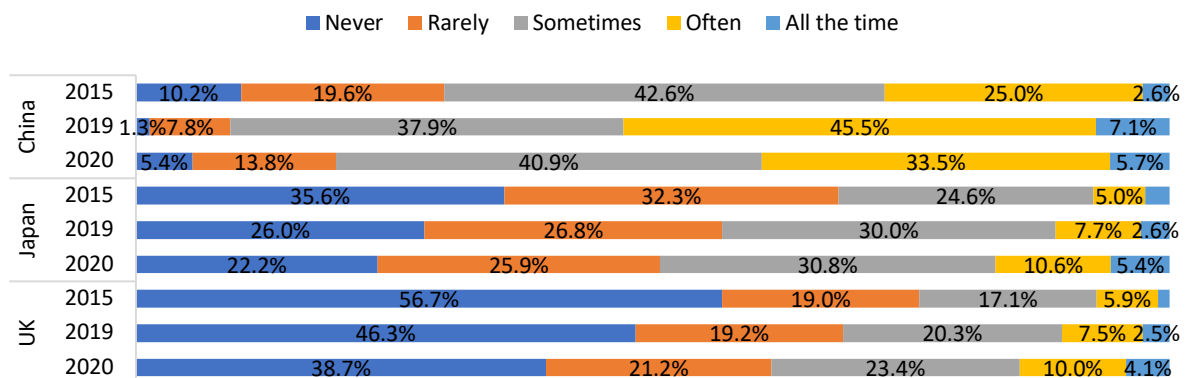
This study also asked participants to consider their use of a range of mobile technologies in relation to F&B product information searching and purchasing, including mobile apps and devices. Participants were asked “have you ever used a mobile app to find out more about a food/beverage product?” – results are shown in Figure 12 below. This shows that, while mobile app use for F&B information searching has increased in Japan and the UK over time, it is by far the most prevalent in China. This signals the importance of mobile apps in the Chinese F&B market relative to other international markets.

**Figure 12. Mobile app use for food and beverage product information.**



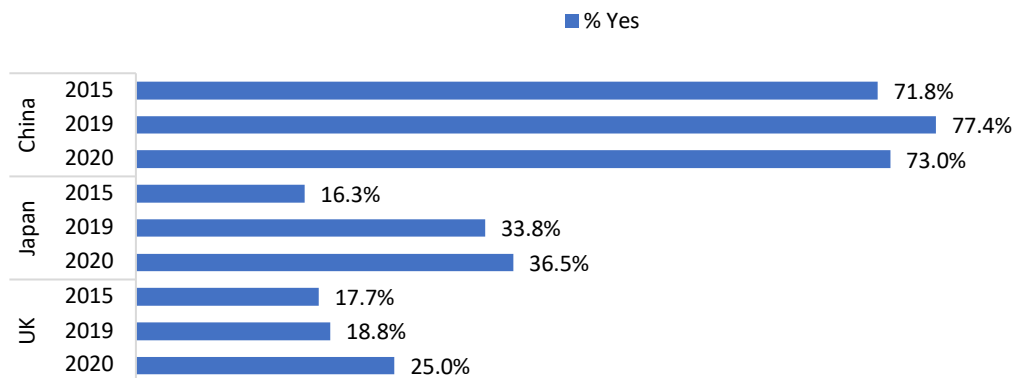
Participants were then asked, “do you use your mobile device to purchase food and beverages?” – results are shown in Figure 13 below. Similarly, while the use of mobile devices for purchasing F&B products has increased for Japanese and the UK participants over time, it is most prominently used by Chinese participants. However, as also seen in Figure 12 above, there was a small reduction in both mobile app use for F&B information and mobile device use for F&B purchasing recorded for Chinese participants between the 2019 and 2020 survey years. This could be explained by Chinese participants’ understanding of the nature of mobile device use for F&B product purchasing. Mobile payment is commonly used in brick-and-mortar retailers in China (i.e. physically scanning a QR code on a shopper’s mobile device to pay for goods), while mobile commerce (i.e. online shopping using a mobile device) may be less common (Klein, 2019). The reduction in mobile device use indicated by Chinese participants in the 2020 survey year could therefore be explained by changes in consumer behavior due to public health restrictions imposed in reaction to the COVID-19 pandemic. Specifically, Chinese consumers reduced their spending at physical retailers and increased their spending on online platforms over this period (Huang et al., 2020).

**Figure 13. Mobile device use for food and beverage product purchasing.**



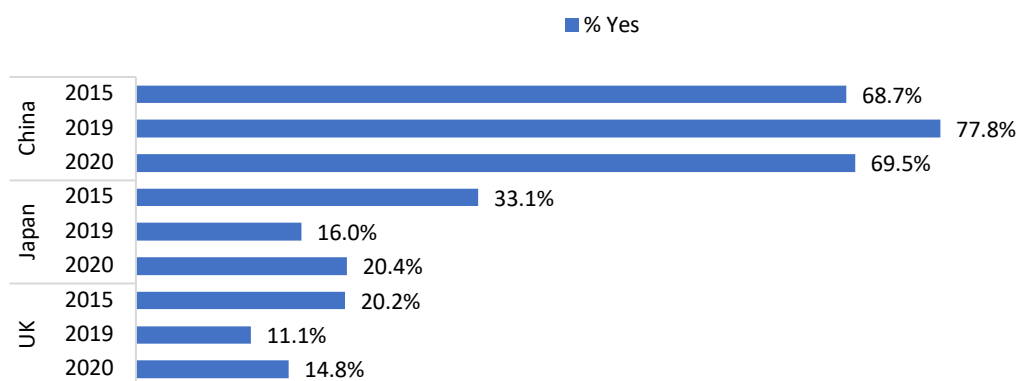
Following this, participants were asked “have you ever used your mobile device in conjunction with barcodes and/or QR codes for finding information about food and beverages?” – results are shown in Figure 14 below. Similar to the previous figures (Figure 12 and 13), this shows that the percentage of Japanese and UK participants stating “yes” has increased over time, with the largest percentages recorded for Chinese participants (with fluctuations between the 2019 and 2020 survey years). This is in line with previous research, which has indicated that QR codes are often used in the Chinese market to convey traceability, food safety or other provenance information to Chinese consumers, with the presence of QR codes increasing consumer trust in products (Benni et al., 2019).

**Figure 14. Use of mobile devices in conjunction with barcodes/QR codes for food and beverage information gathering.**



Participants were then asked “have you ever used your mobile device in conjunction with barcodes and/or QR codes for purchasing food and beverages?” – results are shown in Figure 15 below. This shows mixed responses for participants in all countries over time, with Chinese participants indicating significantly higher relative use than their Japanese and UK counterparts. This is somewhat unsurprising, given that QR codes are frequently and increasingly used as a means of payment for goods in China, particularly via mobile apps such as Alipay and WeChat, whereas there is little evidence to suggest widespread use of similar systems in Japan or the UK (Klein, 2019).

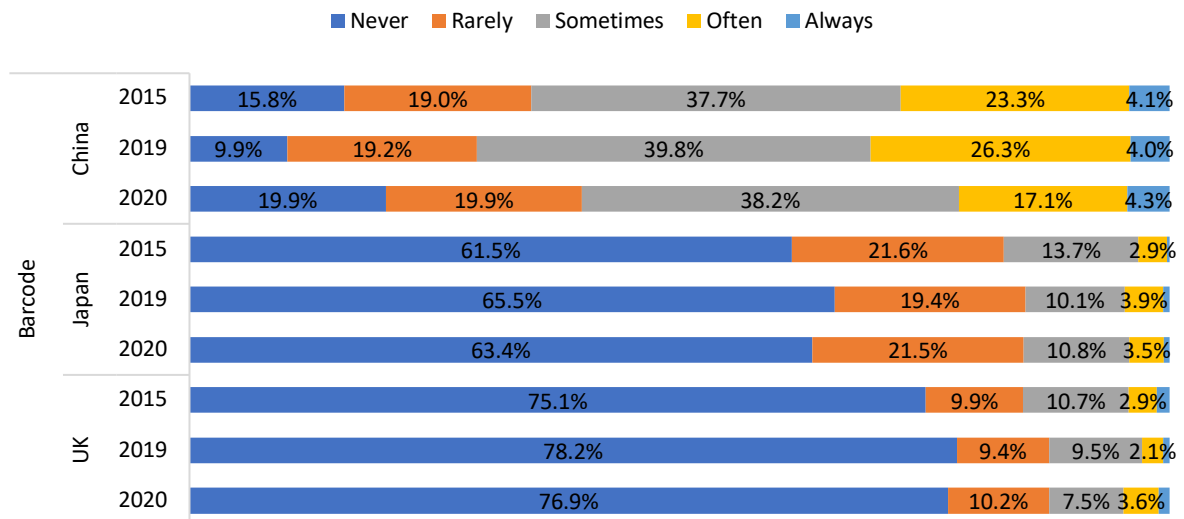
**Figure 15. Use of mobile devices in conjunction with barcodes/QR codes for food and beverage purchasing.**



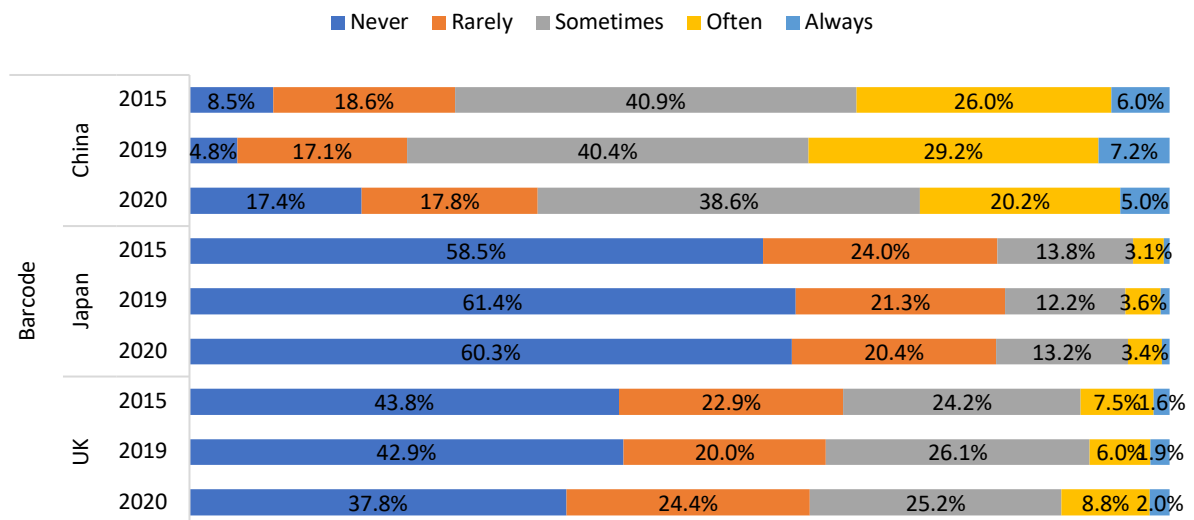
This study also sought to determine the potential use of mobile interactive technology (such as barcodes, QR codes and RFID/NFC) by consumers for verifying F&B product claims. The final two questions asked participants to consider their use of a range of mobile interactive technology for this purpose, asking “do you verify a food and beverage product’s credentials with any of the following”, followed by “if available, would you verify a food and beverage product’s credentials with any of the following”. Participants then rated their *current* or *aspirational* frequency of use of these technologies for F&B product claim verification. Results are shown in Figures 16-21 below.

Figure 16 below shows results regarding participants' use of *barcodes* for F&B product credentials verification. This shows mixed frequency of use by participants in all countries over time, with the highest overall frequency of use shown by Chinese participants, and lowest overall frequency of use by UK participants. Figure 17 below, however, shows results regarded participants' aspirational use of barcodes for F&B product credentials verification (if this technology was available to them). This shows marginal increases in intended frequency of use for Chinese and Japanese participants, but much larger intended frequency of use for UK participants. This suggests that UK consumers may be more inclined to use barcodes as a means of verifying F&B product claims if they were more readily available to them in-market.

**Figure 16. Current use of *barcodes* to verify food and beverage product credentials.**

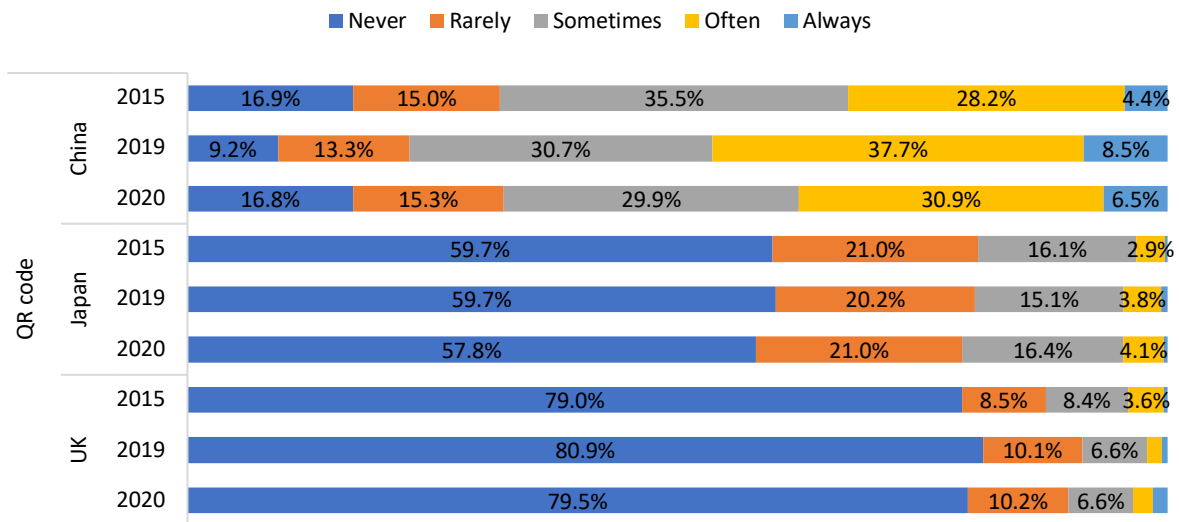


**Figure 17. Aspirational use of *barcodes* to verify food and beverage product credentials.**



Following this, Figure 18 below shows results regarding participants' use of *QR codes* for F&B product credentials verification. Similar to Figure 16 above, this shows mixed frequency of use by participants in all countries over time, with the highest overall frequency of use shown by Chinese participants, and lowest overall frequency of use by UK participants. Figure 19 below shows results regarding participants' aspirational use of QR codes for F&B product credentials verification (if this technology was available to them). As with the findings in relation to the use of *barcodes* for this purpose, while Chinese and Japanese participants indicated a marginal increase in their intended use of QR codes, UK participants indicated much larger intended frequency of use over time. This suggests that UK consumers may be more inclined to use QR codes as a means of verifying F&B product claims if they were more readily available to them in-market.

**Figure 18. Current use of *QR codes* to verify food and beverage product credentials.**



**Figure 19. Aspirational use of *QR codes* to verify food and beverage product credentials.**

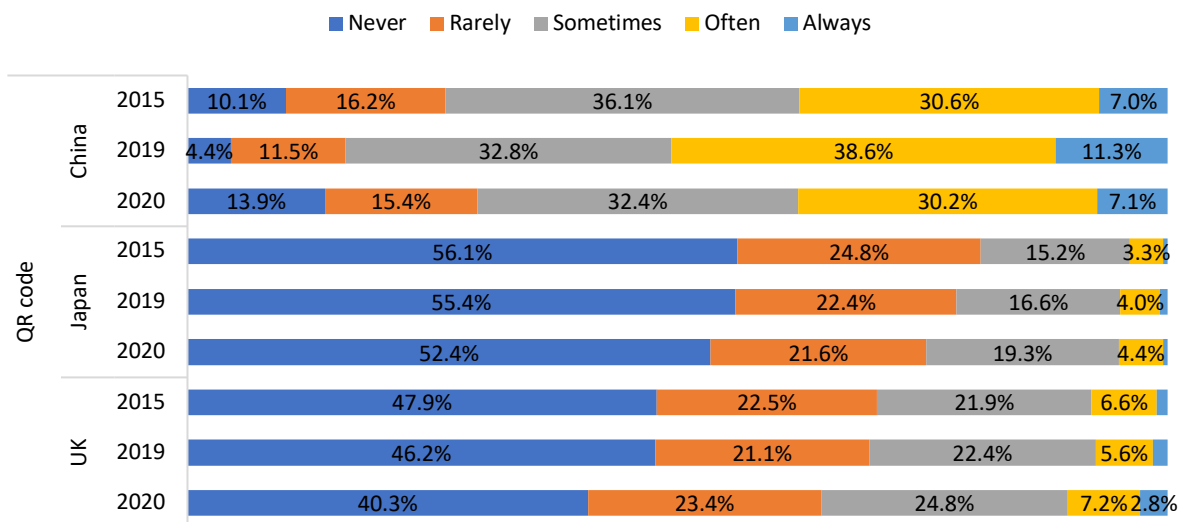
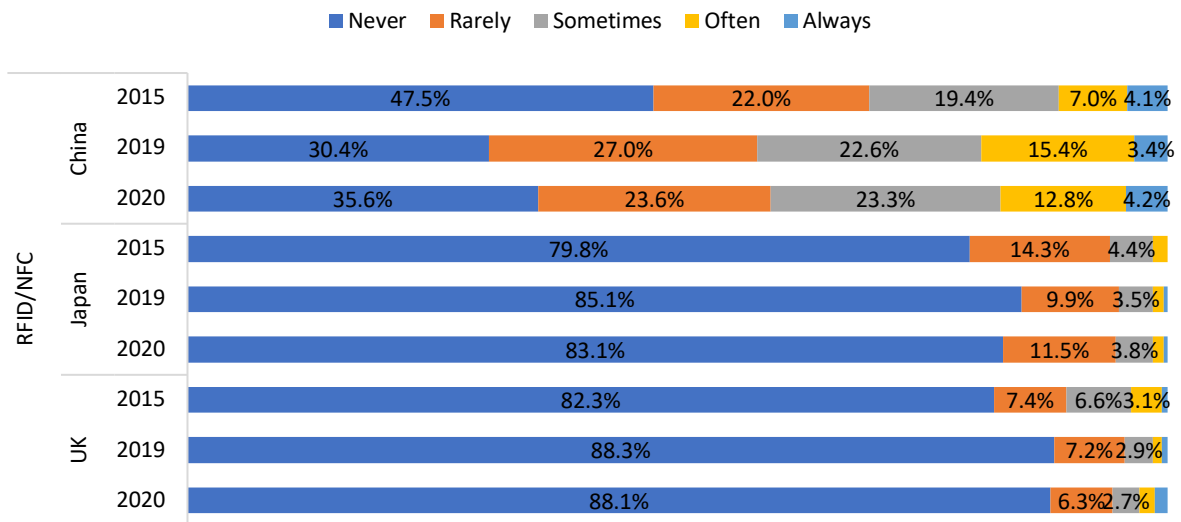
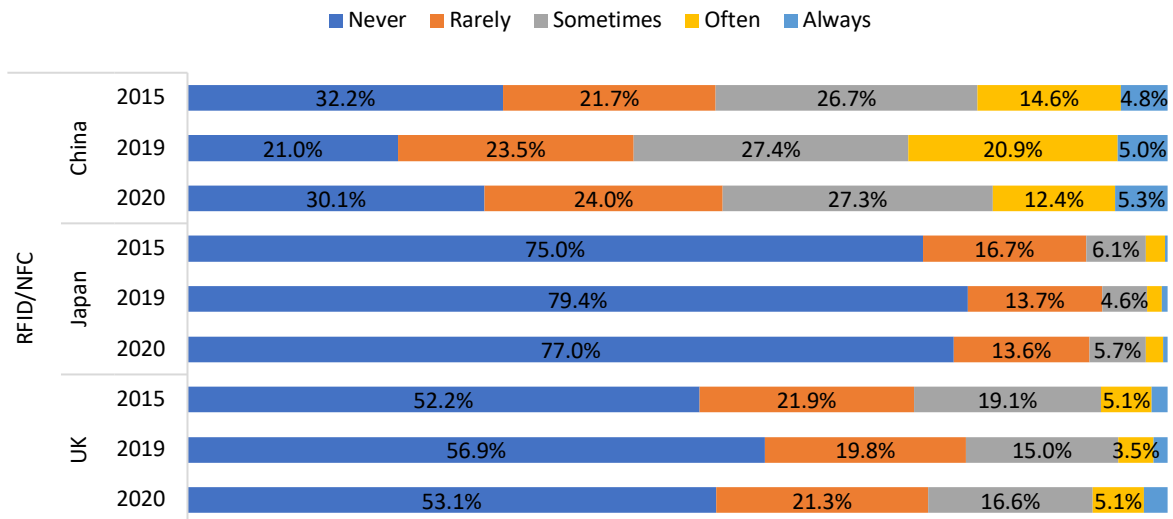


Figure 20 below shows results regarding participants' use of RFID/NFC for F&B product credentials verification. Similar to Figures 16 and 18 above, this shows mixed frequency of use by participants in all countries over time, with the highest overall frequency of use shown by Chinese participants, and similarly low frequency of use by Japanese and UK participants. Figure 21 below shows results regarding participants' aspirational use of RFID/NFC for F&B product credentials verification (if this technology was available to them). As with the findings in relation to the use of barcodes and QR codes for this purpose, while Chinese and Japanese participants indicated a marginal increase in their intended use of RFID/NFC, UK participants indicated much larger intended frequency of use over time. This suggests that UK consumers may be more inclined to use RFID/NFC as a means of verifying F&B product claims if they were more readily available to them in-market.

**Figure 20. Current use of *RFID/NFC* to verify food and beverage product credentials.**



**Figure 21. Aspirational use of *RFID/NFC* to verify food and beverage product credentials.**





As discussed in Section 2 (Literature Review), the antecedents of use for a range of digital media and smart technology channels are diverse, with many studies presenting mixed and counteractive findings. However, the results presented here are in line with many of the previous findings of the literature. One such finding is that Chinese participants show a significantly more frequent use of a range of digital media and smart technology channels to engage in F&B information searching and purchasing behaviour than their Japanese and UK counterparts. This includes the use of digital media for F&B information, online F&B shopping, mobile apps for F&B information, mobile devices for F&B purchasing, and interaction with barcodes, QR codes and RFID/NFC for food information searching, purchasing, and F&B product credential verification.

In addition, Chinese participants showed a greater diversity of benefits derived from the use of online shopping for F&B products relative to Japanese and UK participants, who showed a strong preference for the convenience of home delivery of products over all other perceived benefits. However, while UK participants indicated the lowest overall use of all technologies for F&B product claim verification, they showed a significantly higher interest in the use of these technologies for this purpose given that they were available to them in-market. Overall, the frequency of use of virtually all digital media and smart technologies in relation to F&B products showed increases over time, suggesting that their use is becoming more prevalent in international markets.

## **5. Implications for New Zealand food and beverage exporters**

It is clear from the results presented here that NZ F&B exporters seeking to adopt a digital marketing strategy will be required to customize their approach depending on their targeted export market. For example, while online F&B shopping is increasing over time in Japan and the UK, Chinese consumers generally use online shopping for F&B products more frequently than their Japanese and UK counterparts. This suggests that, while NZ F&B exporters may have more immediate success with online marketing and sales campaigns in the Chinese F&B market, online F&B shopping is increasing in Japan and the UK over time, and may eventually parallel frequency of use in China.

Similarly, Chinese participants showed the highest use of all digital media platforms for F&B information searching purposes. As the presence of positive product information on these sources has been shown to positively correlate with higher purchase intentions by Chinese consumers, NZ F&B exporters may be incentivized to adopt and maintain a presence on such platforms, as well as provide Chinese consumers with reasons to generate positive product information (e.g. product/service quality improvements).

Finally, while UK consumers may exhibit low current use of technologies to verify F&B product claims, this study showed a strong interest by UK participants in using these technologies if available. By making such technologies readily available for UK consumers, NZ F&B exporters may increase UK consumer trust in their products/brands, thereby potentially leading to increased export returns in this market.

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