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# Addressing food waste: How to position upcycled foods to different generations

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## Abstract

Food waste is a global crisis that paradoxically exists alongside food scarcity. A promising solution to these connected problems of food insecurity and food waste is upcycled foods. Upcycled foods are made from ingredients that are usable but generally discarded. While upcycled foods can help reduce food waste, little is known about the best market strategy for these foods. This research investigates how consumers from different generations perceive upcycled foods. Our findings show that Gen Z, Gen Y, and Baby Boomers have higher intentions to purchase upcycled foods while Gen X shows lower intentions to purchase because of quality concerns. The present research also explores lifestyle patterns of each generation. Based on lifestyle analyses, positioning strategies for upcycled foods are proposed.

## 1 | INTRODUCTION

The World Trade Organization (WTO) listed food insecurity as one of the major issues to be solved in sustainable development (WTO, 2020). Food insecurity is an alarming issue around the globe. According to the United Nations Food and Agriculture Organization (FAO) Food Security Report (Food and Agriculture Organization of the United Nations, 2019), the issue has been worsening every year. According to this report, over 700 million people experienced severe food insecurity in 2018. Paradoxically, food waste is also a pressing global issue. It is estimated that nearly half of the food produced worldwide is wasted (Lundqvist, de Fraiture, & Molden, 2008). Such a high rate of food waste coexisting with increasing food insecurity is truly a global crisis. A range of natural and man-made causes lead to food insecurity. Food waste is one of the many man-made causes of food insecurity. Therefore, researchers have argued that at least part of the food insecurity problem can be tackled by reducing the amount of food wasted (Mourad, 2016; O'Donnell, Deutsch, Yungmann, Zeitz, & Katz, 2015).

Past research has done some investigation on a promising solution to reduce food waste—a newly developed variety of foods called upcycled foods (Aschemann-Witzel & Peschel, 2019; Bhatt et al., 2018; Bhatt, Ye,

Deutsch, Ayaz, & Suri, 2020; McCarthy, Kapetanaki, & Wang, 2020). Upcycled foods are made from food ingredients that have nutritious value and are usable but generally discarded. For instance, carrots are widely consumed but carrot peels are generally discarded. However, carrot peels can be dried and processed into an upcycled powdered soup that is safe for human consumption. Several companies across the globe have now started offering such foods that use such ingredients. For example, a US based company named Planetarians has successfully developed a plant-based protein extracted from used sunflower seeds. The protein is used to create a variety of foods that are safe and have nutritive value. Other examples include companies such as Regrained that uses upcycled grains as an ingredient in food products, such as bars and puffs.

Upcycled foods help reduce food waste closer to the source and are, therefore, a superior solution to the problem compared with other solutions, such as feeding to animals and composting. As per the Food Recovery Hierarchy proposed by the United States Environmental Protection Agency (EPA), solutions, such as upcycled foods, are closer to the source of food production and, therefore, are superior in promoting sustainability (United States Environmental Protection Agency, 2020). In fact, research has shown that many consumers are able to see the advantages of upcycled foods and perceive these foods to be very beneficial to the

environment (Bhatt et al., 2018). We conducted a pilot study ( $n = 199$ ) to assess consumer sentiment with respect to upcycled foods and our findings align with those in Bhatt et al. (2018). Seventy-four percent of the participants in the pilot study indicated that upcycled foods can help reduce food waste and 22% found it to be environmentally sustainable.

While upcycled foods are a promising solution to the food waste problem, little research has been done to understand the right market strategy for these foods. For these foods to command a position as a new category of foods, it is essential to understand consumer perception of these foods. As with all new products, the first step is to examine the right target markets for upcycled foods. While prior research suggests some *prima facie* market potential, no systematic studies have been conducted to identify the right target markets for upcycled foods. The current research seeks to fill this gap and identifies a suitable target market for upcycled foods by focusing on age and then inquiring into lifestyle variables to profile consumers in various age segments (Cahill, 1997; Dickson & Ginter, 1987; Kotler, Keller, Ang, Tan, & Leong, 2018; Wedel & Kamakura, 2012). In our study, we first looked at different generations' (grouped by age) purchase intentions for upcycled foods. Next, we assessed each generation's perceptions of the quality of upcycled foods. In addition, we analyzed lifestyle patterns for each generation and created four consumer profiles based on the results. Our findings provide marketers with actionable segments, based on generational differences that are supplemented with variations in lifestyles.

## 2 | CONCEPTUAL BACKGROUND

### 2.1 | Perceptions of upcycled foods

Understanding consumers' perception of upcycled foods is essential in order to market these foods. While consumer perceptions can be studied in different ways, we focused on two managerially relevant indicators: (a) purchase intentions and (b) perceived quality of upcycled foods. Purchase intentions provide a stated and direct measure of consumers' willingness to buy. Thus, understanding which generational segments indicate greater purchase intentions will help determine whether to target these segments. Furthermore, given the unconventional ingredients used to make upcycled foods, consumers may be hesitant to buy such foods due to concerns about their quality (Barber, Taylor, & Deale, 2010; Saba & Messina, 2003; Williamson, 2007). Indeed, past research has shown that perceptions of quality are a strong indicator of consumers' willingness to buy products (Grewal, Krishnan, Baker, & Borin, 1998; Grewal, Monroe, & Krishnan, 1998; Lalwani & Forcum, 2016; Lalwani & Shavitt, 2013). Thus, it is important to assess both purchase intentions and perceptions of quality of upcycled foods. Together, these two measures will help us assess consumers' acceptance of upcycled foods.

### 2.2 | Age and generation

Age is a widely used basis for segmentation across industries and products (Sudbury & Simcock, 2009; Tepper, 1994; Yoon, 1997).

Research on sustainable products has investigated the effects of age. However, the literature on the role of age in driving consumption of sustainable foods is inconclusive. For example, some research finds that older consumers have higher interests in sustainable consumption (Gordon-Wilson & Modi, 2015; Han, Hsu, & Lee, 2009). Specifically, it has been suggested that older consumers are more likely to engage in ecologically conscious consumer behavior (Roberts, 1996; Straughan & Roberts, 1999), are more likely to shop for environmentally friendly products (Olli, Grendstad, & Wollebaek, 2001; Vining & Ebreo, 1990), and are more receptive to environmental messages (D'Souza, Taghian, Lamb, & Peretiatko, 2007). However, other studies find that younger consumers are more likely to purchase sustainable foods (Anvar & Venter, 2014; Gan, Wee, Ozanne, & Kao, 2008; Singh & Verma, 2017). Given such mixed findings about the influence of age on consumption of sustainable foods, researchers have called for more research on this issue (Krystallis & Chrysosohoidis, 2005; Nie & Zepeda, 2011). In sum, past literature underscores the need to investigate the role of age in driving consumer preferences for sustainable foods, such as upcycled foods.

While age can be conceptualized as a continuous variable, a large stream of research has focused on identifying generational differences. Such an approach enables comparison across generations and facilitates interpretation of research findings (Bakewell & Mitchell, 2003; Lissitsa & Kol, 2016; Noble, Haytko, & Phillips, 2009; Pitta & Gurău, 2012). Thus, given our aim to uncover the right target markets for upcycled foods, it is useful to focus on generation as the unit of analysis.

### 2.3 | Lifestyle

Lifestyle is another key factor that shapes consumer behavior. Furthermore, different age groups have been found to exhibit different lifestyles (Gilg, Barr, & Ford, 2005; Hallin, 1995; Olli et al., 2001). Thus, an additional analysis of lifestyle variables across generational groups adds value to target market identification. While many lifestyle characteristics have been studied, two characteristics have been of particular relevance in food research—(a) preference for online grocery shopping, and (b) food preparation preference (cooking vs. eating out). Past research suggests that online grocery shopping is on the rise since consumers see the benefits of convenience from shopping for groceries online instead of in-store (Hand, Riley, Harris, Singh, & Rettie, 2009; Morganosky & Cude, 2000). Furthermore, research indicates that grocery shopping preferences have an impact on sustainable food consumption such that online shopping positively influences shopping for sustainable foods (Bryła, 2018; Yang, Li, & Zhang, 2018). In terms of consumers' food preparation preference, Li, Zepeda, and Gould (2007) suggest that consumers who enjoy cooking evaluate sustainable foods more favorably. Moreover, the do-it-yourself (DIY) literature suggests that consumers who like to get involved in the creation of products have higher preferences for sustainable products. Thus, these two lifestyle characteristics need to be examined while identifying target markets for upcycled foods.

### 3 | METHOD

Five hundred and fifty-one (Mean Age = 41.67 years, 59.9% females) U.S. consumers from an online panel participated in an online survey. Participants first read a description of upcycled foods (**"Upcycled foods are foods that are created using byproducts from the manufacture of other products. These byproducts are then turned into something new. For example, spent grain from beer brewing can be dried and made into granola bars rather than being discarded; carrot peels can be dried and added to a powdered soup mix,"** Bhatt et al. [2018]). After reading the description, participants indicated their intentions to purchase upcycled foods on a three-item scale (the likelihood I would buy upcycled foods is; the probability that I would consider buying upcycled food is; my willingness to buy upcycled foods is; 1 = "extremely low," 9 = "extremely high";  $\alpha = 0.98$ ; Grewal, Krishnan, et al. [1998]). Next, participants indicated their perceptions of the quality of upcycled foods on a two-item scale (I feel that the described upcycled foods appears to be of good quality; the quality of such upcycled foods is likely to be good; 1 = "strongly disagree," 9 = "strongly agree";  $\alpha = 0.90$ ; Dodds, Monroe, and Grewal [1991]). Next, participants responded to questions regarding their lifestyles: frequency of online grocery shopping ("how many times per week do you shop groceries online?"; 1 = "never," 9 = "more than 7 times"), frequency of eating out ("how often do you eat outside?"; 1 = "extremely infrequently," 9 = "extremely frequently"), and frequency of cooking at home ("how often do you cook for yourself?"; 1 = "extremely infrequently," 9 = "extremely frequently"). The scale items are given in Table 1.

### 4 | RESULTS

In order to analyze differences between generations, participants' responses on age were used to create four categories (Kasasa, 2019): Gen Z (Born 1995–2015), Gen Y (Born 1980–1994), Gen X (Born 1965–1979), and Baby Boomers (Born 1944–1964). First, we compared purchase intentions and perceptions of quality of upcycled

foods among the four generations. Second, we examined the relationship between purchase intentions and perceptions of quality of upcycled foods. Third, we assessed lifestyle differences among the four generations.

#### 4.1 | Purchase intentions and perceptions of quality

Analysis of variance (ANOVA) revealed a significant difference among the four generations on their intentions to purchase upcycled foods ( $F(3, 547) = 4.27, p < .01$ ). Baby Boomers indicated the highest intentions to purchase upcycled foods and Gen X showed the lowest intentions to purchase upcycled foods. Similarly, there was a significant difference among the generations on their perceptions of quality of upcycled foods ( $F(3, 547) = 4.24, p < .01$ ). Among the four generations, the perceptions of the quality of upcycled foods were highest for Baby Boomers and were lowest for Gen X (see Table 2).

Regressing perceptions of quality on intentions to purchase upcycled foods revealed that perceptions of quality predicted intentions to purchase upcycled foods ( $\beta = 0.94, p < .001, R^2 = 0.682$ ). These results indicate that higher perceptions of quality increase intentions to purchase upcycled foods.

#### 4.2 | Lifestyles

The first lifestyle variable we measured was preference for online grocery shopping. Respondents' preference for online grocery shopping was measured by how many times they shop for weekly groceries online. The generations differ significantly on their frequency of online grocery shopping ( $F(3, 547) = 9.72, p < .001$ ). The younger generations (Gen Z and Gen Y) shop groceries online more frequently than the older generations (Gen X and Baby Boomers). These results indicate that younger consumers show a higher preference for shopping for groceries online compared with older consumers.

**TABLE 1** Scale items

Variables	Items	Sources
Purchase intention	1 The likelihood I would buy upcycled food is 2 The probability that I would consider buying upcycled food is 3 My willingness to buy upcycled foods is (1 = <i>extremely low</i> , 9 = <i>extremely high</i> )	Grewal, Krishnan, et al. (1998); Grewal, Monroe, & Krishnan, (1998)
Perceptions of quality	1 I feel that the described upcycled foods appears to be of good quality 2 The quality of such upcycled foods is likely to be good (1 = <i>strongly disagree</i> , 9 = <i>strongly agree</i> )	Dodds et al. (1991)
Lifestyles	How many times per week do you shop groceries online? (1 = <i>never</i> , 9 = <i>more than 7 times</i> ) How often do you eat out? (1 = <i>extremely infrequently</i> , 9 = <i>extremely frequently</i> ) How often do you cook for yourself? (1 = <i>extremely infrequently</i> , 9 = <i>extremely frequently</i> )	New

The second lifestyle variable, food preparation preference, was measured by (a) the number of times a consumer cooked for oneself each week, and (b) the number of times a consumer ate out each week. ANOVA revealed significant differences among the four generations on both the frequency of cooking ( $F(3, 593) = 4.17, p < .01$ ) and the frequency of eating out ( $F(3, 547) = 12.08, p < .001$ ; see Table 3).

### 4.3 | Consumer profiles

The generational analysis helped uncover the differences in consumers' perceptions of upcycled foods. In addition, the two lifestyle characteristics of interest were found to be different among the four generations. Based on these results, we created four consumer profiles that can be viewed as actionable segments for upcycled foods (see Figure 1).

### 4.4 | Gen Z

Gen Z are consumers who were born between 1995 and 2015. As one of the youngest group of consumers, this generation has been profiled as a group that is innovative, strongly influenced by social media, impatient, and active in online shopping (Gutfreund, 2016; Priporas, Stylos, & Fotiadis, 2017; Su, Tsai, Chen, & Lv, 2019; Weinswig, 2016). Our results show that Gen Z showed higher evaluation for upcycled foods (purchase intentions and perceptions of quality). In terms of lifestyle, Gen Z had the highest tendency to shop online groceries and to eat out. Past research has shown that the preference for shopping online for groceries is positively related with their preference for sustainable foods (Bryła, 2018; Yang et al., 2018). In our sample, Gen Z participants had a low tendency to cook for themselves. Consequently, prepared meals made from upcycled ingredients may be of greater interest to consumers in Gen Z.

	Purchase intentions			Perceptions of quality		
	Mean	95% CI		Mean	95% CI	
		Lower	Higher		Lower	Higher
Gen Z	6.49	5.71	7.27	6.51	5.91	7.11
Gen Y	6.57	6.28	6.86	6.43	6.16	6.69
Gen X	5.86	5.49	6.23	5.79	5.47	6.10
Baby boomers	6.85	6.31	7.39	6.85	6.37	7.31
Group difference						
Gen Z vs. Gen Y	−0.08	−0.93	0.78	0.08	−0.60	0.76
Gen Z vs. Gen X	0.63	−0.26	1.52	0.72	0.02	1.42
Gen Z vs. Baby boomers	−0.36	−1.33	0.62	−0.34	−0.85	0.72
Gen Y vs. Gen X	0.71	0.24	1.18	0.64	0.22	1.05
Gen Y vs. Baby boomers	−0.28	−0.90	0.35	−0.42	−0.70	0.41
Gen X vs. Baby boomers	−1.01	−1.65	−0.32	−0.34	−1.36	−0.20

**TABLE 2** Purchase intentions and perceptions of quality of upcycled foods

**TABLE 3** Consumer lifestyle results

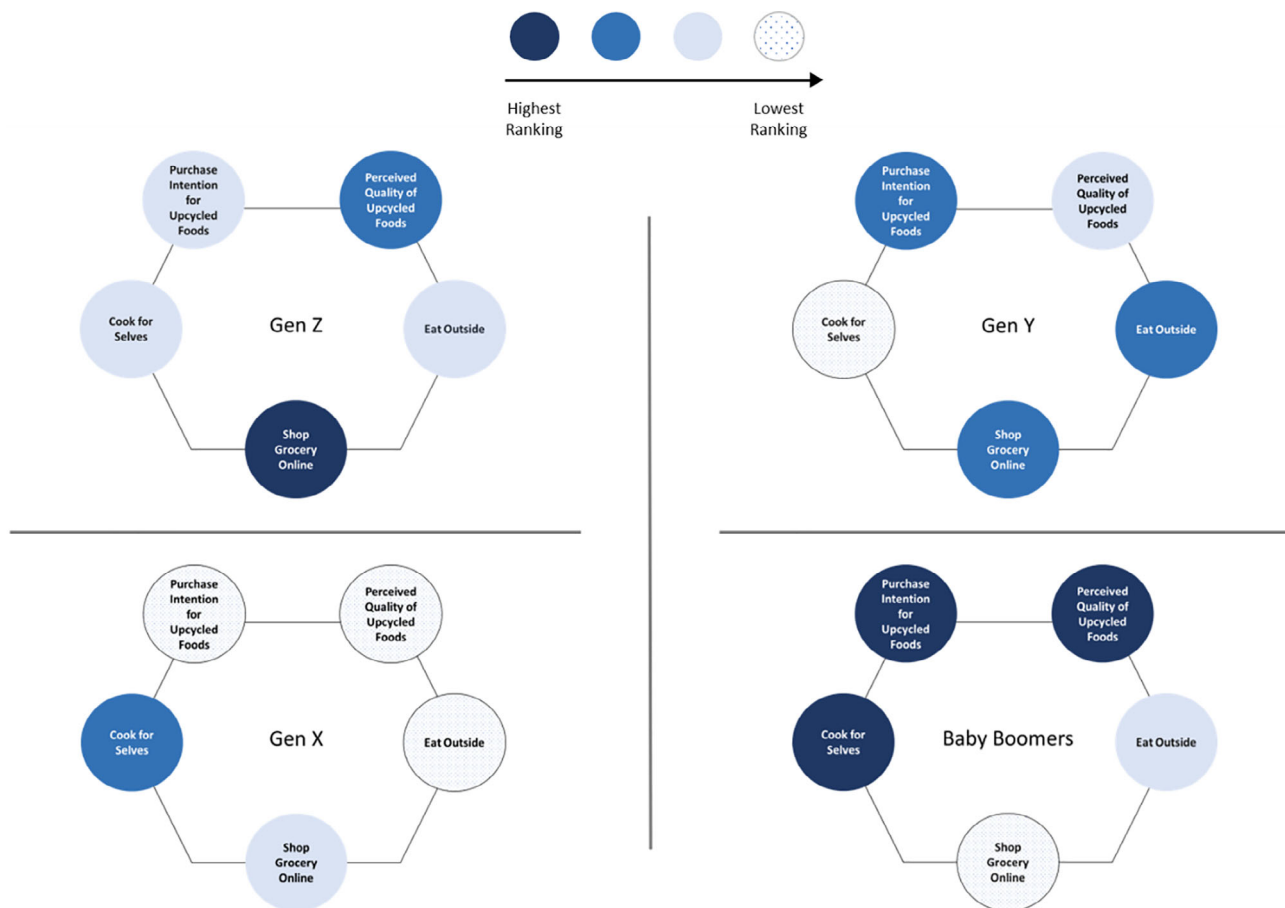
	Online grocery shopping			Eating outside			Cooking for yourself		
	Mean	95% CI		Mean	95% CI		Mean	95% CI	
		Lower	Higher		Lower	Higher		Lower	Higher
Gen Z	2.86	2.13	3.59	4.61	3.84	5.39	7.28	6.71	7.85
Gen Y	2.69	2.41	2.97	4.37	4.07	4.67	7.13	6.89	7.37
Gen X	2.09	1.84	2.34	3.26	3.01	3.51	7.61	7.40	7.82
Baby boomers	1.39	1.24	1.54	3.41	2.92	3.90	7.81	7.39	8.23
Group difference									
Gen Z vs. Gen Y	0.17	−0.63	0.97	0.24	−0.60	1.09	0.15	−0.49	0.78
Gen Z vs. Gen X	0.77	−0.02	1.56	1.35	0.52	2.18	−0.33	−0.96	0.29
Gen Z vs. Baby boomers	1.47	0.71	2.24	1.20	0.27	2.12	−0.53	−1.25	0.19
Gen Y vs. Gen X	0.60	0.22	0.98	1.11	0.71	1.50	−0.48	−0.80	−0.16
Gen Y vs. Baby boomers	1.30	0.98	1.63	0.96	0.37	1.54	−0.68	−1.16	−0.19
Gen X vs. Baby boomers	0.70	0.41	1.00	−0.15	−0.71	0.41	−0.20	−0.67	0.28

## 4.5 | Gen Y

Gen Y, also known as Millennials, are consumers who were born between 1980 and 1994. Gen Y is a generation that has witnessed drastic changes in technology and communications during their teenage years (Morton, 2002). Past research has shown that Gen Y is active in the digital space, values trust, displays high consumer involvement, and is expected to have an increasing impact in the market (Bilgihan, 2016; Regine, 2011; Stevens, Lathrop, & Bradish, 2005; Sullivan & Heitmeyer, 2008). Our results indicate that Gen Y showed high evaluation for upcycled foods (purchase intention and perceptions of quality). In terms of lifestyle, Gen Y had a significantly higher tendency to shop online for groceries compared with Gen X and Baby Boomers. In addition, Gen Y consumers were more likely to eat outside than those in the older generations (Gen X and Baby Boomers). Moreover, Gen Y consumers were the least likely to cook for themselves. In essence, Gen Y shares the lifestyle characteristics of Gen Z. Given these similarities, Gen Y can be considered a target that is similar to Gen Z. Therefore, upcycled foods that are already prepared and need to be replenished often may be appropriate for both Gen Z and Gen Y.

## 4.6 | Gen X

Gen X are consumers who were born between 1965 and 1979. Gen X consumers are a group that is cost conscious, hard to persuade, and confident in taking actions (Bathmanathan, Rajadurai, & Sohail, 2018; Lissitsa & Kol, 2016; Pitta & Gurău, 2012). Our results indicate that Gen X has strong opinions on upcycled foods—they indicated the lowest purchase intentions for upcycled foods and the lowest perceptions of quality of upcycled foods. Such results are consistent with the past literature that finds that Gen X is skeptical. In terms of lifestyle, consumers in Gen X were least likely to eat outside. Rather, consumers in this generation were more likely to cook for themselves. They were less likely to shop online for groceries. These results suggest that when marketing upcycled foods to Gen X, practitioners need to focus on improving product quality and providing assurance about the quality of upcycled foods. Therefore, when targeting Gen X, conventional channels, such as brick-and-mortar grocery stores and stores with higher reputation, would be more suitable (Agnihotri, 2015; Anderson & Narus, 1990; Chaudhuri & Ligas, 2009).



**FIGURE 1** Consumer profiles [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

#### 4.7 | Baby boomers

Baby Boomers, the oldest among the four generations, are consumers who were born between 1944 and 1964. Past research suggests that Baby Boomers are health conscious, have higher accumulated wealth, show higher social awareness, and are less likely to shop impulsively (Cleaver, Green, & Muller, 2000; LeRouge, Van Slyke, Seale, & Wright, 2014; Valkeneers & Vanhooymissen, 2012). Our results show that Baby Boomers evaluated upcycled foods more favorably (high purchase intentions and high perceptions of quality). In terms of lifestyle, Baby Boomers preferred to cook for themselves rather than eating outside. In addition, Baby Boomers showed the lowest tendency to shop online for groceries. These results suggest that Baby Boomers may prefer upcycled foods as ingredients instead of prepared meals. Furthermore, offering upcycled foods in traditional channels, such as stores, are advisable when targeting this generation.

### 5 | GENERAL DISCUSSION

According to the United Nations Food and Agriculture Organization (FAO), the number of people experiencing food insecurity is on the rise (Food and Agriculture Organization of the United Nations, 2019). Past research suggests many natural and man-made causes for food insecurity. Clearly, food waste is one reason that contributes to the problem of food insecurity. It is estimated that nearly half of the food produced worldwide is wasted (Lundqvist et al., 2008). While the exact amount of food waste can be debated, these estimates help visualize how big the problem is. The magnitude of the food waste problem bears testimony to the fact that food chains are far from being sustainable. Many solutions have been offered to make food chains more sustainable. A promising solution to food waste is a new category of foods termed upcycled foods (Aschemann-Witzel & Peschel, 2019; Bhatt et al., 2018; Bhatt et al., 2020; McCarthy et al., 2020). While these foods have many benefits for the environment, little is known about how to market these foods. Launching new products, such as upcycled foods, require understanding of various consumer segments. Identifying responsive consumer segments is critical in marketing upcycled foods. To our knowledge, no research has examined market segmentation for upcycled foods. Our study fills this gap by examining a widely used segmentation approach based on age. Past research on market segmentation has extensively investigated the variable of age (Dholakia & Uusitalo, 2002; Sudbury & Simcock, 2009; Tepper, 1994). Market research has also focused on generations (based on age) as a basis for segmentation (Bakewell & Mitchell, 2003; Morgan & Levy, 2002; Schewe, Meredith, & Noble, 2000). This stream of research has found considerable differences in attitudes and behaviors of consumers in different generations. Thus, we focused on examining differences in perceptions of upcycled foods among different generations.

Our results show that three out of four generational cohorts (Baby Boomers, Gen Y, and Gen Z) indicated high intentions to purchase upcycled foods. These results suggest that there is a sizeable

market for upcycled foods. However, Gen X consumers may differ from the other generations in their evaluations of upcycled foods. Consumers in Gen X reported the lowest perceived quality of upcycled foods and, therefore, the lowest purchase intentions. This may be because Gen X consumers are more difficult to persuade (Pitta & Gurău, 2012). Furthermore, we found that as the perceived quality of upcycled foods decreased, the intentions to purchase upcycled foods also decreased. These results are in line with past research that shows that concerns about product quality generally result in lower willingness to buy the product (Grewal, Krishnan, et al., 1998). In other words, to increase consumers' willingness to buy upcycled foods, especially for Gen X, it is necessary to assure consumers about the quality and benefits of upcycled foods. A positive perception of quality can be created by crafting messages that highlight the quality of these foods. Past literature suggests that when consumers are uncertain about the quality of the products, they use intrinsic and extrinsic cues around the product (Bredahl, 2004; Grewal, Roggeveen, & Nordfält, 2014; Miyazaki, Grewal, & Goodstein, 2005; Olson & Jacoby, 1972; Rao & Monroe, 1988). Such cues are often peripheral cues, such as packaging, brand, logos, and so forth. In the context of food products, certification can be a pivotal cue. Certifications related to both ingredients and processes of manufacturing these foods can go a long way in convincing consumers about their quality (Ghodeswar, 2008; Janssen & Hamm, 2012). Certifications improve consumer confidence in general and are especially helpful in promoting new categories of foods (Banterle, Cereda, & Fritz, 2013). In addition to certifications, other cues that consumers often rely on can be leveraged by marketers of upcycled foods. For example, research demonstrates that consumers' acceptance of upcycled foods can be shaped by pricing these foods lower than similar conventional foods and/or by appropriately communicating the value of consuming upcycled foods (Bhatt et al., 2020).

While Baby Boomers, Gen Y, and Gen Z perceived upcycled foods favorably, the lifestyle differences between these generations may predispose them to evaluate different types of upcycled foods differently. For example, Baby Boomers are most likely to cook for themselves rather than eat outside and are, therefore, more likely to buy upcycled ingredients (e.g., upcycled protein powder, upcycled flour, upcycled seasonings, etc.). On the other hand, Gen Y and Gen Z consumers are more likely to prefer premade upcycled meals or snacks (e.g., upcycled bars, upcycled canned soups, upcycled noodles, upcycled chips, etc.). Similarly, offering upcycled foods through online channels will be necessary to target Gen Y and Gen Z consumers. However, in order to appeal to Gen X and Baby Boomers, it will be necessary to distribute upcycled foods through traditional channels. The findings from our research not only help identify the most responsive generational segments but also provide insights into why it is necessary to inquire further into the lifestyle characteristics. Focusing only on generational differences does not reveal why different generations perceive upcycled foods differently. Furthermore, looking at lifestyle differences helps understand—(a) right product development strategies and (b) appropriate distribution strategies. Given that upcycled



foods are a new category of products that are still in development, such insights are valuable to practitioners in this industry.

While the current study provides important managerial implications, certain limitations must be noted. First, there are several ways to approach segmentation and targeting. This research focused on age as the primary basis, given its widespread use across industries (Sudbury & Simcock, 2009; Tepper, 1994; Yoon, 1997). Inter-generational differences provide a meaningful way to segment the market and choose target markets. However, there are other demographic variables (e.g., gender, income, education, etc.) that need to be examined. Furthermore, the heterogeneity attributable to sub-groups within each generation may also be important to examine (Reisenwitz & Iyer, 2007). It is also important to acknowledge that Gen Y consumers will enter the next life stage which may contribute to changes in their preferences and behaviors (Andreasen, 1984; Mathur, Moschis, & Lee, 2003, 2008). Thus, future research should consider not only the current life stage but also imminent life stage changes. Future research should also consider the possibility that differences among the generations observed in our sample of U.S. participants may vary in other cultures. Differences in values, beliefs, social structures, and technological exposure among many other variables may influence the attitudes and behaviors of consumers in other cultures. Furthermore, there could be other lifestyle variables (e.g., athletic orientation, diet preferences, etc.) that also impact attitudes toward upcycled foods. Therefore, future research can look into a diverse set of variables and their interactions that impact consumers' acceptance of upcycled foods.

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