ORGANIC AND LOCAL FOOD CONSUMPTION: A MATTER OF AGE? EMPIRICAL EVIDENCE FROM THE GERMAN MARKET

Julia Winterstein[1,*] and André Habisch[2]

Abstract

Given the varied experiences and preferences in the course of different people's lives, demographic factors could be an important factor in explaining consumer behaviour. In the literature, however, there is no common view concerning its capacity as a predictor of demand for organic products. Therefore, this article analyzes the willingness of consumers to pay for organic and local food depending on their age. Focusing on the product attributes of 'Region of Origin,' 'Production Condition,' and 'Price', it utilizes a choice-based conjoint analysis to assess the responses of 325 respondents from different age groups in Germany. A general preference for local as well as organic food was noted among all age groups. Thereby, slightly more people over or equal to 30 years perceived the (local) region of origin as well as organic production conditions as important. Younger people also seemed more price sensitive. Choice simulations, however, identified only minimal deviations in the WTP - indicating almost no differences among the age groups. Managerial implications for appropriate marketing and subsidy policy are deduced.

Keywords: Local foods, Organic foods, Age differences, Demographics, Willingness to pay

---

[1,*]Julia Winterstein holds a Master's degree in Business Administration (Market-oriented Management) from the Catholic University of Eichstätt-Ingolstadt, Germany. Currently, she is a Ph.D. candidate in Ingolstadt School of Management, Catholic University of Eichstätt-Ingolstadt, Germany. Email: julia.winterstein@ku.de

[2]Professor Dr. André Habisch obtains a Ph.D. from the University of Tübingen in Germany and is working as a Professor in Ingolstadt School of Management, Catholic University of Eichstätt-Ingolstadt, Germany.

1. INTRODUCTION

Child, adolescent, adult, and senior, or Baby Boomers, Generation X, Millenials, and Digital Natives: age-related market segmentation is a common practice as consumption patterns and buying behavior change with increasing age. The underlying question is how typical customers can be described and consequently targeted based on their demographics. Accordingly, aging brings with it changing needs, personal values, lifestyles, and income. The relevance of customer demographics to marketers also applies to the food sector where people generally become more health-conscious as they grow older (Kumar, 2014). Influencing customers towards the consumption of organic and local food is of great interest, as dietary choices can essentially contribute to preserving soil, water, and biodiversity, reducing food-related energy consumption, and lowering food miles (Born & Purcell, 2006; FAO, 2020). As stated by governmental institutions, the label 'organic' defines the minimum requirements for arable farming and animal husbandry such as restrictions on fertilizers, appropriate housing conditions, or a ban on preventive antibiotics (USDA, 2020b). The term 'local' can be interpreted as the production, processing, and commercialization of a product within a defined geographic region (USDA, 2020a). Consequently, 'organic' refers to environmentally friendly and sustainable production conditions, while 'local' refers solely to a product's origin.

The overall share of organic product sales is rather low, reaching 5.9% in the USA, 5.3% in Germany, and only 0.2% in Vietnam (FiBL & IFOAM, 2020). Food products from local origin only achieve a market share of 1.9% (HDE, 2019). Yet, the market shares for these foods are increasing, with local products growing in popularity, indicating a shift in preferences from organic towards local (Hempel & Hamm, 2016). This trend can also be explained by the fact that Germans buy organics especially due to animal welfare and to support regional businesses; the latter one highlighting the importance of the food concept 'local' (BMEL, 2020).

As interest in organic and local foods grows, various recent studies have attempted to analyze the demand structure more precisely. Results suggest that age effectively influences the intention to buy, as well as the willingness to pay (WTP), regarding organic food (Fotopoulos & Krystallis, 2002; Govindasamy & Italia, 1999; Magnusson, Arvola, Koivisto Hursti, Åberg, & Sjödén, 2001; Omar, Nazri, Osman, & Ahmad, 2017; Onyango, Hallman, & Bellows, 2007; Tsakiridou, Boutsouki, Zotos, & Mattas, 2008; Wier & Calverley, 2002). However, older research results concerning the question vary considerably. Some studies found that young people were more likely to purchase organic foods (Govindasamy & Italia, 1999;

Magnusson et al., 2001; Onyango et al., 2007; Wang & Sun, 2003), while others emphasized their lower willingness to pay (Fotopoulos & Krystallis, 2002; Tsakiridou et al., 2008); other authors observed no such age-effects (Chen, Lobo, & Rajendran, 2014; McCarthy & Murphy, 2013; Yin, Wu, Du, & Chen, 2010; Zepeda & Li, 2006).

Especially considering recent literature, the question of the role of age in purchase decisions for organic products seems to have been neglected. Furthermore, compared to literature from the US, the European and German markets seem to be an under-researched area making further contributions to research a necessary endeavour. Hence, the objective of this study was to examine the influence of consumer age on preferences and WTP in relation to organic and local foods, utilizing a choice-based conjoint analysis. By adding reliable knowledge from the German market, the study contributes substantially to knowledge of sustainable marketing strategies in terms of target group specification and effective communication.

2. LITERATURE REVIEW

In many countries, food markets are highly competitive thereby granting more and more power to consumers (Fotopoulos & Krystallis, 2002). This situation has forced marketers to identify target groups carefully, to improve their ability to come up with tailor-made marketing concepts. Several approaches have been applied for defining and segmenting customers in the organic and local food market. Commonly used are socio-demographic characteristics (Dettmann & Dimitri, 2007; McCarthy & Murphy, 2013; Omar et al., 2017), consumer attitudes (Fotopoulos & Krystallis, 2002; Magnusson et al., 2001; Tsakiridou et al., 2008), and combinations of both features (Chen et al., 2014; Lea & Worsley, 2005). Demographic analyses have an advantage over such methods in that there is greater ease of data collection (Myers, 1996) and versatility (Blackwell, D'Souza, Taghian, Miniard, & Engel, 2006).

Previous studies on consumer demographics suggest that organic and local food consumption is primarily influenced by gender, age, level of education, and income (Govindasamy & Italia, 1999; Magnusson et al., 2001; McCarthy & Murphy, 2013; Onyango et al., 2007; Tsakiridou et al., 2008). For marketers, age-related segmentation is of particular importance regarding consumer activities and behavior, which subsequent to customers varying needs, change over time (Kumar, 2014). Suitable marketing strategies are derived from certain age groups as age influences media consumption and therefore alters the consequent effect of specific advertising measures. As a result of a higher life expectancy, marketers should not fall for stereotypes - as age is no longer a reliable predictor for consumers' life cycles, health, marital status, or professional activities (Kotler & Armstrong, 2014). To make

good marketing decisions, it is all the more important to have a precise understanding of age-related consumer behavior.

Accordingly, researchers' interest in the influence of age on purchase intentions, consumer attitudes, and WTP regarding organic and local foods has existed for several decades. Thirty years ago, Jolly (1991) examined the differences between buyers and non-buyers of organics, and the factors that influence their respective consumer behavior. This US-based study found the typical organic food customer to be on average 40.9 years old, and therefore rather young compared to the typical non-buyer whose average age was 48.6 years. Complementarily, a study on local foods at small farmer's markets in Maine described the typical organic consumer as aged over 35. Though, this result is based on the characterization of a typical customer, the age referred to females and is therefore not generally applicable to all sexes (Kezis, Gwebu, Peavey, & Cheng, 1998). Govindasamy and Italia (1999) confirmed the findings as they characterized organic food purchasers in New Jersey to be rather young individuals. The authors also found that people under 36 showed the highest WTP premium prices, while those aged 65 years or older exhibited the lowest acceptance to do so.

Further research in this field continued in the new millennium. Swedish researchers for example, found younger consumers (18-25 years old) to possess the highest interest in buying organic potatoes and bread compared to those aged 26-65 (Magnusson et al., 2001). In a similar vein, Greek researchers (Fotopoulos and Krystallis, 2002) confirmed that younger consumers (under 40) seemed slightly more willing to buy organic food due to their greater environmental consciousness compared to those who were older. However, due to younger people's lower purchasing power, their greater interest did not result in an increasing demand. Rather, older people appeared more willing to pay, due to increased health consciousness. Wier and Calverley (2002) compared European studies on the relationship between organic food buying propensity and demographic characteristics, describing the typical consumer as aged under 45, thus also rather young. Therefore, it is noted that the demographic findings of most European surveys comply with those of similar American consumer studies. Contrary to this general finding, however, young Greek consumers showed a lower level of environmental behavior. More precisely, the researchers found a significant negative correlation between age and environmental attitude (-.1403) but no significant correlation between age and purchasing behavior (Diamantopoulos, Schlegelmilch, Sinkovics, & Bohlen, 2003). Even in the US state of Vermont, Wang and Sun (2003) identified young consumers as the most likely buyers of organic food. They also suggested that young consumers with higher

incomes seemed more willing to pay premium prices for organic produce. Similarly, Lea and Worsley (2005) observed that Australians under 40 years old perceived organic food as more important than those over 40, even though the higher prices represented a purchase barrier for the participants. A nation-wide study among US-customers determined that people under 32 years old were most likely to buy organic food regularly (Onyango et al., 2007). The purchase probability in this group was 8 percent higher than that of the 33-52 years-olds. Additionally, among customers over 52 years of age, a negative relationship was found between age and organic food purchases. In an almost simultaneous study, Tsakiridou et al. (2008) dealt with the influence of age on attitude towards organic food; they concluded that people older than 51 years considered organic foods as healthier and of better taste and quality than those between 18 and 30 years. Hence, younger customers seemed less interested in organic produce, indicating a less positive attitude towards it. Correspondingly, older people displayed a higher WTP, while the younger ones seemed more price-sensitive and less willing to pay a price premium.

This observation also applied to local food consumption in South Carolina, where Carpio and Isengildina-Massa (2009) suggested a positive relationship between consumer age and the acceptance of a price premium. Accordingly, they observed an increase in the WTP of 0.3% (for local produce), and a further 0.2% (for local animal products) with each additional year of age. In Malaysia too, organics appeared to be more popular with younger consumers. The results showed that consumers under 40 years had an appreciably higher intention to buy organic food than those over 40. The highest mean score was reached by those under 20 (Omar et al., 2017). Other studies, however, found that age did not influence the probability of buying organic food. For example in China, Yin et al. (2010) surveyed consumers' buying intentions for organic food, indicating a very low impact of age as an influencing factor. In general, the purchase intention seemed to increase with the consumer age. Also, Chen et al. (2014) found no significant effect of age on purchase intentions for organic food among Chinese. Accordingly, age affected only 2% of the variation in the purchase intentions of stage 1 in a hierarchical regression analysis. Stage 2 revealed no such correlation. Furthermore, an Australian study by McCarthy and Murphy (2013) concluded that age is not a significant variable with which the typical organic customer can be described. Zepeda and Li (2006) too examined age, concluding that it was not a reliable indicator for the probability of purchasing local foods in the USA.

Generally speaking, even though several studies have examined the predictive power of age as an indicator of organic and local food consumption, these findings represent more of a by-product of other research

priorities. In fact hardly any studies exist which are specifically dedicated towards the topic of 'Age' in the context of organic and local foods. This is despite the fact that this under-researched area is of great interest for marketers, as it is relevant to understand how young generations will behave as consumers and what drives them. In 2019, 26% of the global population was aged under 15 and a whopping 42% were aged under 25. The market segment of young people therefore represents a key factor for the development of global organic and local food consumption. This holds especially true for the Asia Pacific region, where almost 60% (over 700 million people) of the world's 15-24 year olds live (UN, 2020). Thus, further empirical research to better understand the influence of consumer-age on organic and local food consumption is urgently required. Albeit the presented studies remain ambivalent concerning the effect of age. There is however, an assumed influence of age on the preference and WTP regarding organic and local food. Hence, this study offers the following hypotheses:

H1 Consumers under 30 attach more importance to organic food than older ones.

H2 Consumers under 30 attach more importance to local food than older ones.

H3 Consumers aged 30 or older are more willing to pay a price premium for organic food than younger ones.

H4 Consumers aged 30 or older are more willing to pay a price premium for local food than younger ones.

3. METHOD

The purpose of the quantitative research was to identify the influence of age on the preference and WTP for the attributes of 'organic' and 'local' among fresh produce. To gain more realistic insights into consumer behavior, a choice-based conjoint analysis was conducted to identify the part-worth utilities and the relative importance of the product properties. Thereby, choice-based conjoint analysis was preferred over traditional conjoint analysis as it simulates a more realistic purchase situation due to the choice of one product from a set of differently compound products rather than a ranking of single characteristics, as well as the integration of a none-option (Backhaus, Erichson, & Weiber, 2013). Additionally, this analysis method has been used for similar studies on the WTP for organic and local food (Darby, Batte, Ernst, & Roe, 2008; Hempel & Hamm, 2016; Meyerding & Merz, 2018). Focusing on the food concepts 'local' and 'organic', the influence of the attributes 'Region of Origin', 'Production Condition', and 'Price' (independent variables) on respondents' preference (dependent variable) was examined. For this purpose, attributes and attribute levels were adopted from previous studies (Bech-Larsen & Grunert, 2003; Onozaka & McFadden, 2011). More precisely, the survey design

comprised ten choice sets where respondents were required to choose between two product alternatives and a none-option. Five sets each focused on apples and carrots as these products are among the most common fruits and vegetables in Germany (BMEL, 2017). The survey concluded with several demographic questions. To check the experimental design for adequate precision, a preliminary counting test was carried out, showing an overall good quality for a sample size of N = 300 ($p < 0.05$ for main effects, D-efficiency 505.3). Six individuals took part in a pre-test of the survey, reviewing the contents and scales for validity.

The anonymous online questionnaire was distributed through email and social media channels, aimed at all Germans who regularly bought food. The data were collected through a convenience sample in December 2019, with a total of 325 valid data sets obtained for analysis. The sample was composed of German consumers, of which 60.3% were female, and ranging from 16 to 85 years of age (MED = 26, AM = 29.6, SD = 12). The majority of respondents had a university degree (49.5%) and a net income of up to 2,000 € (60.0%).

The study used the Sawtooth software 'Lighthouse Studio' to carry out the choice-based conjoint analysis and choice simulations. 'Aggregate Logit' provided an initial assessment, while 'Hierarchical Bayes' was applied for the final modeling as its individual-level estimations allow more accurate calculations of the preferences and market simulations (Sawtooth Software, 2019b). Two age groups were defined for the analysis: younger than 30 years (76.3% of all respondents), and 30 years or older. The group allocation was based on the definition of 'young consumers' by the German Federal Ministry of Justice and Consumer Protection (BMJV, 2020).

4. RESULTS

The results of the pre-test with the Aggregate Logit model were statistically significant at the level of $p < 0.01$. Accordingly, the study assumes a good overall quality for the Hierarchical Bayes analysis, as the goodness of fit of the estimates can be assessed by the significance of the Aggregate Logit model (Sawtooth Software, 2019a).

The findings of the Hierarchical Bayes analysis showed that the attribute 'Region of Origin' had the highest relative importance (RI) and that the attribute level 'Home Federal State' had the highest part-worth utility within both groups. All consumers, regardless of their age, preferred organic to conventional farming in 'Production Condition', and lower to higher prices. The preferences for the attribute levels can be derived from the differences between the part-worth utilities, as this determines the probabilities in the choice model (Backhaus et al., 2013). However, older people attached a little more importance to the region of origin (RI 43.5% vs. 47.9%; 49.7% vs. 52.7%) and production condition (RI 22.0% vs. 25.1%; 25.3% vs.

32.1%), while people under 30 years were more price-conscious (RI 34.5% vs. 27.0%; 25.0% vs. 15.2%). Thus, hypotheses *H1* and *H2* were rejected while *H3* and *H4* were supported. Table 1 summarizes the results of the Hierarchical Bayes analysis.

Subsequently, numerous choice simulations were utilized to derive the WTP for organic and local food among the two age groups. A price premium was considered as accepted if the purchase probability of the more sustainable product was above 50.0%, when the purchase probability of all 3 product options (i.e. sustainable option, regular option, and none-option) totalled 100%.

While the Hierarchical Bayes analysis found young consumers to be more price-sensitive, differing by 7.5 and 9.8 percentage points respective to the RI of the older consumers (28% and 64%), the choice simulations found almost no deviation. Based on 28 juxtaposed product combinations, only two differences could be identified in the WTP. Firstly, people under 30 years did not accept a price premium of 200% for German organic apples, while the older respondents did. Secondly, younger people were

Table 1: Relative importance of attributes and part-worth utilities of attribute levels

Attribute		**Apples**			**Carrots**		
Attribute Level		**All**	**< 30**	**>= 30**	**All**	**< 30**	**>= 30**
Region of Origin	**RI**	**44.7%**	**43.5%**	**47.9%**	**51.2%**	**49.7%**	**52.7%**
Home Federal State	Utility	54.5	53.9	54.6	63.7	61.4	63.5
Germany	Utility	24.5	22.2	32.8	24.6	24.4	30.1
Worldwide	Utility	-79.0	-76.1	-87.3	-88.3	-85.8	-93.6
Production Condition	**RI**	**22.4%**	**22.0%**	**25.1%**	**26.9%**	**25.3%**	**32.1%**
Organic	Utility	33.3	32.7	36.5	39.7	37.6	47.6
Conventional	Utility	-33.3	-32.7	-36.5	-39.7	-37.56	-47.6
Price	**RI**	**32.9%**	**34.5%**	**27.0%**	**21.9%**	**25.0%**	**15.2%**
1.25€ / 0.50€	Utility	41.4	43.3	32.0	29.7	34.4	11.6
1.88€ / 0.75€	Utility	18.3	21.4	19.5	10.1	10.8	12.3
2.50€ / 1.00€	Utility	-3.8	-5.8	-4.3	-5.7	-5.9	-3.5
3.75€ / 1.50€	Utility	-55.9	-59.0	-47.2	-34.1	-39.2	-20.3

willing to spend less than 200% for organic carrots from worldwide sourcing, while older people accepted only a 50% to 100% price premium for this product. Hence, *H3* and *H4* were minimally supported. For the summarized findings on WTP, see Table 2.

5. DISCUSSION

5.1 Preference and Willingness to Pay for Organic and Local Food

Based on the results of the choice-based conjoint analysis, several age-related effects were identified regarding the consumption of organic and local food. Results show that respondents, independently of their age, prefer organic over conventional farming and local over worldwide sourcing, confirming that both older and younger consumers have a general preference for organic and local food.

However, differences do exist between the age groups; the first of these is in the RI of the product attributes. As depicted in Table 1, the RI of 'Region of Origin' differed for both apples and carrots, with the older age group having an RI value 10% higher than the younger age group regarding the purchasing of apples, and 6% higher regarding the purchasing of carrots, indicating that

Table 2: Willingness to pay among the two age groups

	Product Properties*	< 30**	>= 30**
Apples	HFS, organic	>= 200%	
	GER, organic	< 200%	>= 200%
	WW, organic	≈ 0%	
	HFS, conventional	>= 200%	
	GER, conventional	≈ 100%	
Carrots	HFS, organic	>= 200%	
	GER, organic	>= 200%	
	WW, organic	< 200%	50-100%
	HFS, conventional	>= 200%	
	GER, conventional	>= 200%	

* Region of Origin: Home Federal State (HFS), Germany (GER), worldwide (WW); Production Condition: organic and conventional farming
** Age-related WTP compared to conventional food from worldwide sourcing

H2 should be rejected. Regarding 'Production Condition', the difference between the RI for the two age groups is even greater, being 14% and 27% higher in the older age group, for apples and carrots respectively. Again this leads to the rejection of *H1*. These findings suggest that older consumers prefer organic and local food more than younger ones, indicating that the typical shopper of these products is more likely to be 30 years or older. Therefore, the results contradict those of Jolly (1991), Govindasamy and Italia (1999), Magnusson et al. (2001), Fotopoulos and Krystallis (2002), Wang and Sun (2003), and Onyango et al. (2007), who found young people to be the main organic food purchasers. Only the results on local food match the existing literature by Kezis et al. (1998) who described shoppers at the small farmer's market to be slightly older.

This observation is surprising, as especially young people seem to be increasingly confronted with topics regarding environmental protection and sustainability in the course of their education. It indicates that their greater knowledge of sustainability does not seem to result in corresponding consumer behavior. A possible explanation for the deviations from other studies could be the survey period. Accordingly, the studies mentioned were conducted between 13 and 30 years ago. The people surveyed during this time have grown older so that they would be more likely to be assigned to the older age group in the current study. Nonetheless, the question arises why today's younger generation seem uninterested in organic and local food. One suitable explanation for the results comes from the work of Diamantopoulos et al. (2003), who found both a higher awareness of environmental quality and an accompanying lower level of environmental behavior among young people, when compared to older consumers. The authors perceived the reason for this discrepancy as a higher price sensitivity among young consumers as well as their different needs. As mentioned in the literature review above, the need for and also the consciousness of health changes with age. Wier and Calverley (2002) concluded that young people tend to buy organic and local food for health reasons, while older people focus rather on health concerns. Consequently, health concerns might have more influence on buying behavior than health reasons.

The idea that young consumers are more price-conscious and therefore less interested in expensive organic and local food can be deduced from the RI of the attribute 'Price'. The RI of price was higher in the younger age group than among the older respondents, with RI values 28% and 64% greater for the younger respondents for apples and carrots respectively, thus supporting *H3* and *H4*. This finding is in line with the previous studies of Fotopoulos and Krystallis (2002) and Tsakiridou et al. (2008), according to which young consumers were less willing to pay a price premium for organics. Consistent with the findings of

Tsakiridou et al. (2008), Carpio and Isengildina-Massa (2009), and Nguyen, Nguyen, and Hoang (2019), this assumption might be traced back to the positive effect of income on the WTP a premium on organic and local foods. Accordingly, younger people tend to earn less money, for example, due to having less work experience, and therefore cannot spend as much. Although, it should be noted that budget constraints would also apply to older people who have less income in their retirement.

However, the choice simulation provided no clear evidence of a higher WTP among older people, as the accepted price premium only differed slightly. Thus *H3* and *H4* were only supported minimally. Hence, one possible conclusion is that the younger generation might be equally interested in organic and local food, but that their preference is being offset by age-related budget restrictions. The lower RI of the attributes 'Region of Origin' and 'Production Condition' among the young respondents would therefore result from their lower available budgets, and not from generally lower interest. Hence, the lower preferences arise from the fact that organic and local foods *are still more of a luxury good* due to their higher prices which younger consumers are consequently least able to afford. Based on Krystallis, Fotopoulos, and Zotos (2006), this derivation might also correspond to the assumption that income does not necessarily affect the WTP but rather the number of purchased goods.

5.2 Implications

Generally speaking, the theoretical contribution of this study to the literature on organic and local food consumption is twofold. This research contributes (1) to the understanding of the influence of age on the preference and WTP for organic and local foods and (2) to scientific knowledge of age-related consumer behavior in the German market. There are social and managerial implications which are closely related to this study. Hence, age-specific marketing strategies may not only lead to an increase in income for retailers and producers but also a reduction in the negative impact of agriculture on climate change by influencing customers' buying decisions.

To increase the demand for organic and local food, and thereby contribute to more sustainable dietary choices, marketers should first develop marketing strategies for older consumers, as they appear to be the current major target group. For marketing measures, it can be concluded that consumption among older people can be promoted by addressing health benefits that fit their concerns. For example, the absence of fertilizers and pesticides in organic food production can have a positive advertising effect, as the human body does not absorb any harmful toxins by consuming such foods.

Since young consumers represent a critical success factor for increasing organic and local food consumption, marketers should try to further arouse

their interest in these foods. One opportunity for reaching young people could be through underlining the health benefits that meet their lifestyle, such as the idea that an organic and local diet might increase well-being and focus, provide energy, or delay the effects of aging.

When it comes to WTP, marketers should remain aware of the fact that age is only a limited informational indicator. Nevertheless, the assumed lower price sensitivity among the elderly should be exploited, while special discounts for young consumers, for example for customers with a student ID, might be offered in supermarkets. For age-related advertising, it is thus not only the marketers who are responsible but also supermarkets and discounters, as they are closest to the customers and can therefore have the greatest influence on them. Furthermore, political subsidies for organic and local agriculture would also allow prices for young consumers to be reduced. In this way, organic and local food could be made more affordable for the young target group. A positive side-effect of this approach would be that buying habits are acquired among young consumers in the long run, which increases the demand of tomorrow.

6 CONCLUSION

6.1 Key Findings

The purpose of this study was to examine the influence of age on the preferences and WTP of German consumers in the context of organic and local foods. With the utilization of a choice-based conjoint analysis, this study verified the results of existing research in the German market. Contrary to previous findings, the study suggests that organic and local food shoppers tend to be older, typically aged over 30 years. This result is derived from the difference in the RI of the attributes 'Region of Origin' and 'Production Condition'. Up-front, both age groups showed a general preference for local and organic foods. In terms of the WTP, however, the Hierarchical Bayes analysis emphasized younger consumers as more price-sensitive, while in the choice simulations age had almost no influence on the WTP. In conclusion, younger age seems to be a suitable indicator for a positive preference concerning organic and local foods but not for WTP, as the budget restriction seems to primarily dominate young consumers' preferences. From a marketing perspective, the study suggests highlighting the health benefits of organic and local foods in such a way that young people see their health reasons fulfilled, while older people should have their health concerns resolved. A subsidy policy would meet the factor of a lower WTP among young consumers - thereby increasing the demand for organic and local food in the long run.

6.2 Limitations and Future Research

Despite its contribution to the

understanding of the impacts of age on the consumption of organic and local food, the existing research is not without limitations. First, the study relied on self-reported data from an online convenience sample. The findings might therefore not be representative and be biased by social desirability. Despite the limited generalization, convenience sampling is deemed appropriate for examining underlying theoretical concepts and relationships (Jager, Putnick, & Bornstein, 2017). However, use of different sampling strategies and real purchase data is recommended for futher research, to achieve higher external validity. Secondly, Hierarchical Bayes analysis assumes a normal distribution in the population. The disproportionate age distribution in the sample could have negatively affected the goodness of the part-worth estimation, even though the model uses individual parameter estimates (Fuchs & Schwaiger, 2007). Future research should therefore pay attention to balanced samples or might use other evaluation techniques such as 'Latent class'. Thirdly, the study only focused on the demographic characteristic of 'Age', and focused solely on the German market. Hence, the results might not be generalized among other demographic features or countries. Further investigation should examine additional states and demographics such as education, ethnicity, or family size. Additionally, the study design might be utilized in Asian regions as the population is rather young, increasing the relevance of subsequent research.

REFERENCES

Backhaus, K., Erichson, B., & Weiber, R. (2013). *Fortgeschrittene multivariate Analysemethoden: Eine anwendungsorientierte Einführung* (2., überarb. und erw. Auflage). *Springer-Lehrbuch*. Berlin: Springer Gabler.

Bech-Larsen, T., & Grunert, K. G. (2003). The perceived healthiness of functional foods. *Appetite*, *40*(1), 9–14. https://doi.org/10.1016/S0195-6663(02)00171-X

Blackwell, R. D., D'Souza, C., Taghian, M., Miniard, P., & Engel, J. (2006). *Consumer behaviour: An Asia Pacific approach* (1st Edition). South Melbourne, Vic.: Thompson Learning Publishers.

BMEL (2017). Deutschlands liebstes Obst und Gemüse ist Zu gut für die Tonne! Retrieved from https://www.zugutfuerdietonne.de/service/presse/pressemitteilungen/deutschlands-liebstes-obst-und-gemuese-ist-zu-gut-fuer-die-tonne/

BMEL (2020). Ökobarometer 2019: Umfrage zum Konsum von Biolebensmitteln. Retrieved from https://www.bmel.de/SharedDocs/Downloads/Ernaehrung/oekobarometer2019.pdf?__blob=publicationFile

BMJV (2020). Verbraucherschutz. Junge Verbraucherpolitik. Retrieved from https://www.bmjv.de/DE/Verbraucherportal/Verbraucherinformation/JungeVerbraucherpolitik/JungeVerbraucherpolitik_node.html

Born, B., & Purcell, M. (2006). Avoiding the Local Trap. *Journal of Planning Education and Research*, *26*(2), 195–207. https://doi.org/10.1177/0739456X06291389

Carpio, C. E., & Isengildina-Massa, O. (2009). Consumer willingness to pay for locally grown products: the case of South Carolina. *Agribusiness*, *25*(3), 412–426. https://doi.org/10.1002/agr.20210

Chen, J., Lobo, A., & Rajendran, N. (2014). Drivers of organic food purchase intentions in mainland China - evaluating potential customers' attitudes, demographics and segmentation. *International Journal of Consumer Studies*, *38*(4), 346–356. https://doi.org/10.1111/ijcs.12095

Darby, K., Batte, M. T., Ernst, S., & Roe, B. (2008). Decomposing Local: A Conjoint Analysis of Locally Produced Foods. *American Journal of Agricultural Economics*, *90*(2), 476–486. https://doi.org/10.1111/j.1467-8276.2007.01111.x

Dettmann, R. L., & Dimitri, C. (2007). *Organic Consumers: A Demographic Portrayal of Organic Vegetable Consumption within the United States.* https://doi.org/10.22004/ag.econ.7899

Diamantopoulos, A.,Schlegelmilch, B. B., Sinkovics, R. R., & Bohlen, G. M. (2003). Can socio-demographics still play a role in profiling green consumers? A review of the evidence and an empirical investigation. *Journal of Business Research*, *56*(6), 465–480. https://doi.org/10.1016/S0148-2963(01)00241-7

FAO (2020). Organic Agriculture. Retrieved from http://www.fao.org/organicag/oa-faq/oa-faq6/en/

FiBL, & IFOAM (2020). The World of Organic Agriculture 2020. Retrieved from https://www.organic-world.net/yearbook/yearbook-2020/pdf.html

Fotopoulos, C., & Krystallis, A. [Athanasios] (2002). Purchasing motives and profile of the Greek organic consumer: a countrywide survey. *British Food Journal*, *104*(9), 730–765. https://doi.org/10.1108/00070700210443110

Fuchs, S., & Schwaiger, M. (2007). Disproportionate Samples in Hierarchical Bayes CBC Analysis. In R. Decker & H.-J. Lenz (Eds.), *Studies in Classification, Data Analysis, and Knowledge Organization. Advances in Data Analysis* (pp. 441–448). Berlin, Heidelberg: Springer Berlin Heidelberg.

https://doi.org/10.1007/978-3-540-70981-7_50

Govindasamy, R., & Italia, J. (1999). *Predicting WILLINGNESS-TO-PAY A PREMIUM FOR ORGANICALLY GROWN FRESH PRODUCE.* https://doi.org/10.22004/ag.econ.27385

HDE (2019). Umsatz mit Konsumgütern mit Aspekten der Nachhaltigkeit in Deutschland im Jahr 2018 (in Milliarden Euro). Retrieved from https://de.statista.com/statistik/daten/studie/1041929/umfrage/umsatz-mit-nachhaltigen-konsumguetern-in-deutschland/

Hempel, C., & Hamm, U. (2016). Local and/or organic: a study on consumer preferences for organic food and food from different origins. *International Journal of Consumer Studies*, *40*(6), 732–741. https://doi.org/10.1111/ijcs.12288

Jager, J., Putnick, D. L., & Bornstein, M. H. (2017). Ii. More THAN JUST CONVENIENT: The SCIENTIFIC MERITS OF HOMOGENEOUS CONVENIENCE SAMPLES. *Monographs of the Society for Research in Child Development*, *82*(2), 13–30. https://doi.org/10.1111/mono.12296

Jolly, D. A. (1991). Differences between buyers and nonbuyers of organic produce and willingness to pay organic price premiums. *Journal of Agribusiness*, *9*(1), 97–111.

Kezis, A. S.,Gwebu, T.,Peavey, S. R, & Cheng, H.-T. (1998). *A STUDY OF CONSUMERS AT A SMALL FARMERS' MARKET IN MAINE: Results FROM A 1995 SURVEY.* https://doi.org/10.22004/ag.econ.27442

Kotler, P., & Armstrong, G. (2014). *Principles of Marketing* (17th edition, global edition, ISBN-13: 978-1292220178): Pearson. Retrieved from http://lib.myilibrary.com?id=1021483

Krystallis, A. [Athanassios], Fotopoulos, C., & Zotos, Y. [Yiorgos] (2006). Organic Consumers' Profile and Their Willingness to Pay (WTP) for Selected Organic Food Products in Greece. *Journal of International Consumer Marketing*, *19*(1), 81–106. https://doi.org/10.1300/J046v19n01_05

Kumar, R. (2014). Impact of Demographic Factors on Consumer Behaviour - A Consumer Behaviour Survey in Himachal Pradesh. *Global Journal of Enterprise Information System*, *6*(2), 35. https://doi.org/10.15595/gjeis/2014/v6i2/51844

Lea, E., & Worsley, T. (2005). Australians' organic food beliefs, demographics and values. *British Food Journal*, *107*(11), 855–869. https://doi.org/10.1108/00070700510629797

Magnusson, M. K., Arvola, A., Koivisto Hursti, U. - K., Åberg, L., & Sjödén, P.-O.

(2001). Attitudes towards organic foods among Swedish consumers. *British Food Journal*, *103*(3), 209–227. https://doi.org/10.1108/00070700110386755

McCarthy, B., & Murphy, L. (2013). Who's buying organic food and why? Political consumerism, demographic characteristics and motivations of consumers in North Queensland. *Tourism & Management Studies*, *9*(1), 72–79.

Meyerding, S. G., & Merz, N. (2018). Consumer preferences for organic labels in Germany using the example of apples – Combining choice-based conjoint analysis and eye-tracking measurements. *Journal of Cleaner Production*, *181*, 772–783. https://doi.org/10.1016/j.jclepro.2018.01.235

Myers, J. H. (1996). *Segmentation and positioning for strategic marketing decisions*. Chicago, Ill.: American Marketing Assoc.

Nguyen, H. V., Nguyen, C. H., & Hoang, T. T. B. (2019). Green consumption: Closing the intention-behavior gap. *Sustainable Development*, *27*(1), 118–129. https://doi.org/10.1002/sd.1875

Omar, N. A., Nazri, M. A., Osman, L. H., & Ahmad, M. S. (2017). The effect of demographic factors on consumer intention to purchase organic products in the Klang Valley: An empirical study. *Geografia-Malaysian Journal of Society and Space*, *12*(2), 68–82. Retrieved from https://core.ac.uk/download/pdf/77967146.pdf

Onozaka, Y., & McFadden, D. T. (2011). Does Local Labeling Complement or Compete with Other Sustainable Labels? A Conjoint Analysis of Direct and Joint Values for Fresh Produce Claim. *American Journal of Agricultural Economics*, *93*(3), 693–706. https://doi.org/10.1093/ajae/aar005

Onyango, B. M., Hallman, W. K., & Bellows, A. C. (2007). Purchasing organic food in US food systems. *British Food Journal*, *109*(5), 399–411. https://doi.org/10.1108/00070700710746803

Sawtooth Software, I. (2019a). CBC Tutorial and Example. Retrieved from https://www.sawtoothsoftware.com/help/lighthouse-studio/manual/cbctutorialandexample.html

Sawtooth Software, I. (2019b). Estimating Utilities with HB. Retrieved from https://www.sawtoothsoftware.com/help/lighthouse-studio/manual/

Tsakiridou, E., Boutsouki, C., Zotos, Y. [Yorgos], & Mattas, K. (2008). Attitudes and behaviour towards organic products: an exploratory study. *International Journal of Retail & Distribution Management*, *36*(2), 158–175.

https://doi.org/10.1108/09590550810853093

UN (2020). World Population Prospects 2019: Data Query. Retrieved from https://population.un.org/wpp/DataQuery/

USDA (2020a). Local Foods: Definition. Retrieved from https://www.nal.usda.gov/aglaw/local-foods#:~:text=Local%20food%20is%20defined%20as,in%20a%20limited%20geographic%20area.

USDA (2020b). USDA Organic. Retrieved from https://www.usda.gov/topics/organic

Wang, Q., & Sun, J. (2003). *Consumer Preference and Demand For Organic Food: Evidence From A Vermont Survey*. Montreal, Canada: July 27-30, 2003. *Conference Paper*.

Wier, M., & Calverley, C. (2002). Market potential for organic foods in Europe. *British Food Journal*, *104*(1), 45–62. https://doi.org/10.1108/00070700210418749

Yin, S., Wu, L., Du, L., & Chen, M. (2010). Consumers' purchase intention of organic food in China. *Journal of the Science of Food and Agriculture*, *90*(8), 1361–1367. https://doi.org/10.1002/jsfa.3936

Zepeda, L., & Li, J. (2006). Who Buys Local Food? *Journal of Food Distribution Research*, *37*(3), 1–11. https://doi.org/10.22004/ag.econ.7064