

University of Parma Research Repository

Exploring the attitude towards the adoption of a sustainable diet: a cross-country comparison

This is the peer reviewd version of the followng article:

Original

Exploring the attitude towards the adoption of a sustainable diet: a cross-country comparison / Pucci, T.; Casprini, E.; Sogari, G.; Zanni, L.. - In: BRITISH FOOD JOURNAL. - ISSN 0007-070X. - ahead-of-print:ahead-of-print(2021). [10.1108/BFJ-04-2021-0426]

Availability: This version is available at: 11381/2912977 since: 2022-01-20T09:58:06Z

Publisher: Emerald Group Holdings Ltd.

Published DOI:10.1108/BFJ-04-2021-0426

Terms of use: openAccess

Anyone can freely access the full text of works made available as "Open Access". Works made available

Publisher copyright

(Article begins on next page)

# Exploring the Attitude Towards the Adoption of a Sustainable Diet: a cross-country comparison

**Purpose**: Understanding the determinants that influence consumers' attitude to adopt sustainable diets represents an important area of research to promote sustainable food consumption. The aim of this study is to investigate how (i) the individual openness to new foods (*ONF*), (ii) the involvement in food trends (*IFT*) and (iii) the social media use (*SMU*) can potentially impact the attitude towards the adoption of a sustainable diet (*ATSD*).

**Design/Methodology/Approach**: We conducted a structured survey in eight countries: Italy, Germany, Poland, USA, Brazil, Japan, Korea and China. The final sample of 5,501 individuals was analysed applying a structural equation model.

**Findings**: The main results show that attitude towards the adoption of a sustainable diet is influenced differently by the antecedents investigated in each country. In particular, the *ONF* positively influences the *ATSD* only in Italy, USA and Germany. *IFT* positively influences the *ATSD* only in Italy, Poland and USA, while negatively in Germany. *SMU* has a positive influence on the *ATSD* only in Japan, USA and Germany, while a negative one in Brazil and Korea.

**Originality**: This study presents a cross-country comparison about the antecedents of attitude towards the adoption of a sustainable diet, thus providing evidence for the need of *ad hoc* marketing strategies by companies and policies by institutions at single country level.

**Keywords:** consumer attitude, sustainable diet, innovation, food trends, social media, cross-country comparison

# 1. Introduction

Global transformation such as climate changes and pollution, social and geopolitical tensions have increased concerns on how we produce, transform, and consume foods (Reisch *et al.*, 2013), pushing policy makers and food supply chains to propose new integrated agendas for a more sustainable food system (Willett *et al.*, 2019). The sustainable food concept is not new, have been often associated with organic, local, fair-trade, Mediterranean-diet food. However, more recently it had also been associated with a reduction of food waste and healthy eating (Barone *et al.*, 2019; Choudhary *et al.*, 2019; Kuttschreuter *et al.*, 2014), thus calling for attitude and practice changes from all the operators of the food supply chain (Moschitz *et al.*, 2021), no latter the consumers.

Consumers are asked to be willing to change their consumption habits, including accepting new foods and technologies, in order to adopt more sustainable diets (Vaterlaus *et al.*, 2015), i.e.

"those diets with low environmental impacts which contribute to food and nutrition security and to healthy life for present and future generations. Sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy; while optimizing natural and human resources" (FAO, 2010, p. ix).

However, despite the increasing sensibilization derived from marketing campaigns (De Groene and Dötsch-Klerk, 2020), new pricing strategies and packaging reformulation (Chandon and Wansink, 2012), guidelines (Lazzarini et al., 2018), changing consumers' current food preferences and habits, which are the result of our culture, familiar habits, and local heritage, is a challenging task. How do people form their attitude towards a new eating consumption pattern? Several factors can influence their attitude towards a new diet. A first aspect is related to individual's intrinsic characteristics: some individuals are, for example, more curious than others and are more attracted by novelties, such as in the case of innovation adoption (Rogers, 2003), even if food preferences may also be influenced by cultural traditions and consumption context (Reisch et al., 2013). A second aspect refers to external factors that might influence individuals' behaviour as being particularly sensitive to new trends. Consumers may be highly involved towards following new trends, as developed by a national or international celebrity who could launch a product and influencing not only the purchasing intention (McCormick, 2016), but also the consumer consumption behaviour of that specific food (e.g. Boyland et al., 2013). Finally, individuals are increasingly using social media to gather information and find out other users' opinions and past experiences (Ayeh et al., 2013; Hajli and Sims, 2015). Indeed, many studies have shown that social media does influence behavior towards sustainability (Närvänen et al., 2018; Pearson et al., 2016; Simeone and Scarpato, 2020; Sogari et al., 2017).

Furthermore, empirical evidence suggests that consumer attitudes and demand for food, including sustainable (e.g., organic) or innovative food may differ widely across countries (Rana and Paul, 2017). However, so far many consumer food studies have focused mainly on one single country (Chan, 2001; Palmieri *et al.*, 2019; Pham *et al.*, 2019; Yazdanpanah and Forouzani, 2015) or a comparison between only two countries (Balakrishnan and Foroudi, 2020). Therefore, there is a call for a broader investigation considering the antecedents of consumers' attitudes towards sustainable diet over multiple countries using the same survey protocol (i.e., measures). For instance, the importance of focusing on multiple countries has been also recently highlighted by the European and Social Economic Committee (EESC) with a 2019 report about the promotion of healthy and sustainable diets in Europe (Schmidt, 2019). The EESC report highlights the importance of considering cultural and geographical differences between and within Member States to better adopt

the Sustainable Dietary Guidelines, including sustainable farming systems. In our study, we included countries from eight countries: Germany, Italy, Poland, Brazil, USA, China, Japan and Korea. To our knowledge, studies measuring the "attitude towards the adoption of a sustainable diet" using such multi-country approach are lacking.

The aim of this paper is to explore which factors influence a person's attitude towards adopting a sustainable diet. In particular, the research questions posed are: (1) which role does openness to new foods contribute to adopt a sustainable diet? (2) are individuals who are inclined to use social media be more open to adopting a sustainable diet?; (3) are individuals more involved in following food trends be more willing to adopt a sustainable diet?; and (4) how do these relationships differ across countries? From a marketing and policy-making perspective, answering these questions will help the development of *ad hoc* promotional campaigns in terms of both content and means.

The paper is structured as follows. The next section provides a brief description of the theoretical background, with a literature review about three individual-related factors, namely the individuals' openness to new food, the involvement in food trends, and the use of social media. The third section describes the methodology and the regression model adopted. The fourth section reports the results of our study. Conclusions summarize the theoretical and managerial and policy implications of the study.

### 2. Theoretical background and conceptual model

Based on the theory of planned behaviour (TPB), which is a social-psychological model to understand and predict human behaviour (Ajzen, 1991; Ajzen, 2016), this study focuses on "the attitude towards the behaviour". This is one specific antecedent of the behavioural intention that, influences the actual behaviour. The attitude towards the behaviour "*refers to the perceived positive or negative consequences of performing that behavior and the subjective values or evaluations of these consequences*" (Ajzen, 2016). This attitude may be influenced by several factors that could be related to the individual, such as his/her health consciousness, but also to the perceived barriers, such as high price of food (Palmieri *et al.*, 2019; Pham *et al.*, 2019).

In this paper, we focus on the "attitude towards the adoption of a sustainable diet", investigating three individual-related antecedents, namely: 1) the individual's openness to new foods; 2) the involvement in food trends, and 3) the use of social media.

First, consumers differ in terms of their new foods openness level. There are people that are fascinated by new food trends and who tend to adopt them before others, which can be defined as "innovators" (Rogers, 2003). Understanding innovative consumers is important for marketing

purposes since their identification could help food companies to investigate the reason behind the success of new innovations: innovative consumers tend to buy new foods before others, buy more new foods than their friends, and purchase new food before tasting it, among the others (Huotilainen *et al*, 2006). However, so far, few studies have been conducted to investigate how far consumers' openness to new foods influences the adoption of *sustainable* foods (e.g. Balakrishnan and Foroudi, 2020; Sogari *et al.*, 2021). For example, very recently, Sogari *et al.* (2021) have looked at the factors impacting the acceptance of a new and sustainable food (a blended meat-mushroom product) among a group of students. Their results show a significant and positive relationship between consumer's inclination towards food innovation and their purchase intention. Focusing on Italian consumers, Palmieri *et al.* (2019) noticed that curiosity towards new food experiences positively influences the willingness to eat insect-based food. In line with above mentioned research, we argue that:

*Hypothesis 1: The openness to new foods positively influences the perception of sustainable diet* 

Second, individuals' perceptions can be influenced by food trends. Nowadays, several trends in the food industry can be identified. Some examples include the categories of functional foods (Santeramo et al., 2018; Urala and Lähteenmäki, 2007), novel foods (Payne et al., 2019), organic foods (Aertsens et al., 2009) and sustainable foods (Bianchi and Mortimer, 2015). Studies in marketing have shown that people's behavioural processes are influenced by trend affinity (So et al., 2018), referring to people who aim to follow trends, and novelty, that is rather linked to the degree to which consumers desire to experience new products (Manning et al., 1995). Indeed, around the globe, there are several new food trends such as the flexitarian diet which is a plant-based diet with the occasional inclusion of animal products, i.e. semi-vegetarian diet (Sogari et al., 2021), new food with insect-based ingredients (Palmieri et al., 2019), and food with nanoparticles, either inside food or in packaging (Santeramo et al., 2018). For example, thanks to nanotechnologies, there has been the introduction of edible packaging (Trajkovska Petkoska et al., 2021). The positive influence of trends can also be derived from some recent experiments. Yang et al. (2020) looked at the introduction of a new, sustainable ingredient in a food snack, among a group of UK consumers who tasted both a sustainable-snack and a non-sustainable one. Their results show no difference in consumers' response in a blind condition, while once the consumers were informed that the snack was made with a sustainable ingredient, consumers had higher emotional response (e.g., consumers were less "guilty"). Therefore, we argue that:

Hypothesis 2: Involvement in food trends positively influences the attitude towards the adoption of a sustainable diet

Third, social media could be an important factor in explaining the attitude towards a certain behaviour since people are influenced by what others think and do (Simeone and Scarpato, 2020; Vaterlaus et al., 2015). Social media are an important mean for communication (Kuttschreuter et al., 2014) and allow people to share their experiences among friends, but also to unknown individuals. People tend to engage with social media for different reasons, from fun to sharing personal opinions to looking for peers or for a specific information about a specific product, brand and also place (Mangold and Faulds, 2009; Pearson et al., 2016; Vaterlaus et al., 2015). Increasingly, social media are used to gather information and understand peers' judgments about their own opinions. We find examples with respect to apparel (Zhao et al., 2019), green products (Singh et al., 2020; Sun and Wang, 2019), but also tourism (Ayeh et al., 2013), thus suggesting that social media are important in several contexts. Previous studies have analysed, for example, the impact of social media engagement on the intention to purchase innovative food products, also finding country-level differences (Balakrishnan and Foroudi, 2020). Others have looked at the social media use on consumers' perception finding that social media has an impact on the individual's subjective norm (Sun and Wang, 2019) and also on attitudes (Zhao et al., 2019). As Copeland and Zhao (2020) noted in their study about the use of Instagram by US consumers, "social media use and perception is an important determining factor on ultimate purchase intention on social networks" (p. 12).

Considering that there are multiple types of social media (Mangold and Faulds, 2009; Vaterlaus *et al.*, 2015), and not all of them are available in every country (e.g. Facebook and Twitter are banned in China - Zhao *et al.*, 2019), in our study we did not refer to any specific name.

Based on the above-mentioned studies, we suggest that:

*Hypothesis 3: The social media use positively influences the attitude towards the adoption of a sustainable diet* 

Insert Figure 1 around here

The conceptual model and the hypotheses are further refined based on the country-level dimension. In fact, food habits are highly influenced by culture that shapes food decisions (Asp, 1999)

and countries differ in terms of both food marketing (Meulenberg, 2017) and consumption (Shaw, 2014). For example, in some countries like in Asia and Europe, eating is a social experience, whereas in some such as the US it is a more individualistic experience (Lee and Ulgado, 1997). Furthermore, there are some studies showing that customers not only tend to perceive certain types of food in a different way across countries, but also within the same country. For example, a recent survey in Italy shows that Northern and Central regions differ from Southern and islands regions with respect to their intention to buy sustainable foods (Vassallo *et al.*, 2016). Furthermore, the social media is used differently in several countries. For example, Goodrich and de Mooij (2014), moving from Hofstede's national culture values, notice that the use of social media differ across cultures such as in the cases of Italy, where the focus is more on selective friendship, and Brazil, where the social media is used for self-enhancement and consumer-to-consumer interactivity. This seems to suggest the importance of exploring individual's attitudes, including potential differences at a country level. Therefore, a fourth hypothesis is:

Hypothesis 4: to what extent hp1-hp3 differ across countries.

# 3. Materials and Methods

In the following we provide detailed information about data collection, measures, and data analysis.

#### 3.1. Data Collection

Data were collected between June 2018 and July 2019 through online and face-to-face questionnaire (Rübsamen et al., 2017; Wongprawmas et al., 2021) over a convenience, non-stratified sample of 5,501 individuals of which 746 from Brazil, 363 from China, 473 from Germany, 1,648 from Italy, 473 from Japan, 447 from Korea, 310 from Poland, and 1,041 from USA. These countries were chosen because they present different diet pattern and traditions. For example, Italy is well known for the Mediterranean diet, which is known to be balanced and varied, including fruit and vegetables (Wongprawmas *et al.*, 2021), whereas Chinese dietary culture presents lot of soy food (Ren *et al.*, 2011) and Korean diet is characterized by lot of "*vegetables, moderate to high consumption of legumes and fish, and also by a low consumption of red meat*" (Kim *et al.*, 2016, p. 31). Table I reports socio-demographics statistics, namely age, gender, level of education and the level of income. Incomplete questionnaires were deleted whether there were missing values on any other variable than control variables. Participants were asked to provide consent to participate at the study before

proceeding. The research has been performed in accordance with the Declaration of Helsinki. Each participant was informed about the definition of sustainable diet as defined by FAO (2010).

Insert Table I around here

#### 3.2 Measures

The original questionnaire was in English and then translated by professional translators for each country. The questionnaire comprises multiple sections based on attitude towards the adoption of a sustainable diet, openness to new foods, involvement in food trends and social media use. Finally, socio-demographic questions were asked.

The main dependent variable, *Attitude Towards the Adoption of a Sustainable diet*" (ATSD), that was measured using a semantic differential scale through four items, i.e., "*Adopting a sustainable diet by me in the coming three months will be: (i) harmful-beneficial, (ii) foolish-wise, (iii) unnecessary-essential, (iv) difficult-easy*".

The three independent variables were measured using multiple items each. Based on several authors (Barcellos *et al.*, 2009; Huotilainen *et al.*, 2006; Palmieri *et al.* 2019; Sogari *et al.*, 2021), the *Openness to New Foods* (ONF) is measured through a question about to what extent the interviewed agrees with six different statements: "(i) I buy new, different or innovative foods before anyone else I know; (ii) Generally I am amongst the first of my circle of friends to buy new, different or innovative foods; (iv) If new, different or innovative foods are available in shops and supermarkets I always purchase them; (v) Generally I am the first amongst my friends to remember a brand of new, different or innovative foods; (vi) I do purchase new, different or innovative foods even if I have not tasted/experienced them beforehand".

The *Involvement in Food Trends* (IFT) is newly developed. This is measured through a question about to what extent the participant agrees with three different statements: "(*i*) New food trends are important for me; (*ii*) I am always very curious about new food trends; (*iii*) I am always fascinated by new food trends".

Based on past studies (Bruwer and Wood, 2005; Chen *et al.*, 2011; Quinton and Harridge-March, 2008; Reyneke *et al.*, 2011; Thach, 2009; Wilson and Quinton, 2012), the *Social Media Use* (SMU) is measured through a question about to what extent the interviewed agrees with three different statements: "(*i*) *I use social media to obtain information on the types of diet; (ii) I use social* 

media to obtain information on new diets and new food trends; (iii) I use social media to get to know others ' opinions on diets and food trends".

All the independent variables are measured using a 5-point Likert scale, ranging from 1 -Strongly disagree to 5 – Strongly agree.

# 3.3 Data analysis

We used a structural equation modelling (SEM) technique (Hair *et al.*, 2009) to test for the model identified in Figure 1. STATA 15 software was used to conduct the SEM.

# 4. Results

Cronbach's Alpha values are reported in Table II, distinguishing for each country. As we can see from Table II, all the values are higher than 0.7. Table III presents the correlation matrix, while Table IV shows the mean of the dependent and independent variables at single country level.

Insert Table II around here

Insert Table III around here

Table IV shows that participants have an average score of 3.857 out of 5 in terms of attitude towards a sustainable diet. In particular, Brazilian, Japanese and Chinese interviewees present values above the average, while Italian, Polish, Korean, American and German below the average. Therefore, it seems that Brazilian, Japanese, and Chinese respondents are more willing to adopt a sustainable diet in the next 3 months than Italian, Polish, Korean, American, and German respondents.

For what concerns the *ONF*, Poland, Korea, China, USA and Germany present values above the average, while Italy, Japan and, in particular, Brazil are below it. It seems that there is a lot of heterogeneity in terms of individual *ONF*, with some countries like Germany, China and Korea that present very high scores (3.243 and 3.214 and 3.127, respectively). Brazilian respondents, instead, score the lowest (1.758). *IFT* presents an average of 2.798, with all countries above the average, but Italy and Brazil. Finally, Japan, Korea, China and Germany present higher value than the average for the *SMU* variable.

#### Insert Table IV around here

---

Table V shows the results of the SEM. First, an adequate model fit is obtained with CFI>0.90 and the RMSEA <0.08, is present for all the countries, but Brazil (with RMSEA =0.104). Based on the model results, we see that all the three antecedents influence the ATSD, but their impact differs across countries. In particular, the *ONF* positively influences the attitude of adopting a sustainable diet (Hp. 1) only in some countries, i.e., Italy, USA and Germany. Therefore, hypothesis 1, i.e., people who reported a greater *ONF* have a higher *ATSD*, is partially supported. As we can see, the highest value is reported for German respondents ( $\beta$ = 0.115, p < 0.05), followed by US ( $\beta$  = 0.098, p < 0.05) and Italian respondents ( $\beta$ = 0.075, p < 0.05).

The fact that *IFT* positively influences the *ATSD* is true only in Italy, Poland and USA, while it has a significant and negative effect in Germany. Our results show that the highest impact is for Polish respondents ( $\beta = 0.231$ , p < 0.05), followed by USA ( $\beta = 0.140$ , p < 0.001) and Italian ones ( $\beta$ = 0.091, p < 0.05). Surprisingly, the *IFT* construct in Germany has a negative impact compared to the other European countries. One explanation could be that some countries have already adopted a sustainable diet to a higher extent than others and therefore the involvement in new food trends could impact differently. For example, a recent study shows that about 50% of German consumers have already adopted a more sustainable diet with respect to the environment, including vegetarian, flexitarian, vegan and pescatarian (Koptyug, 2021). Another explanation could be related to the different food neophobia level in each country that could result from aversion, danger and disgust (Santeramo *et al.*, 2018). For instance, even if a person is highly involved towards new food trends, he/she could be reluctant towards specific new foods that are perceived as disgusting. This could be the case of edible insects. For instance, Orsi *et al.* (2019) showed that neophobia has a negative influence on accepting insect products among German consumers.

Finally, the *SMU* positively influences the *ATSD* only in Japan, USA and Germany, while it has a negative and significant influence in Brazil and Korea. Table V reports the highest value for Japan ( $\beta = 0.170$ , p < 0.001), followed by Germany ( $\beta = 0.154$ , p < 0.05), and USA ( $\beta = 0.047$ , p < 0.1), while Brazil and Korea present negative values ( $\beta = -0.049$  and -0.071 respectively, p < 0.1). It is possible that these different results derive from the type of social media used by companies and consumers, and the country-level policies. There are, in fact, several social media that could be used by companies in different ways (Kaplan and Haenlein, 2010). We think that this could also influence consumers' *ATSD*, and we recommend that future research investigates the different types of social media used by consumers and how each type affects the attitude towards a sustainable diet. Similarly,

also companies and retailers could communicate via social media in different ways across countries. For example, a recent study on retailers' use of Twitter, has highlighted the importance of social media for targeting consumers and the need of identifying multi-channel social media communication mix (Samoggia *et al.*, 2019). Furthermore, the role of institutions is important in influencing eating behaviour since they may sponsor or ban the use of social media as well as adopting tariffs or incentives for certain types of foods. None of the expected relationships are significant, either positively or negatively, in China.

Insert Table V around here

### 5. Discussions and Conclusions

Understanding which factors are important in determining the attitude towards a sustainable diet represents a first step towards a more sustainable food consumption. Our results provide first empirical insights on three individual-level antecedents, namely the *ONF*, the *IFT* and the *SMU*, while the results show that these factors affect the *ATSD* differently across countries. Our four hypotheses were partially supported. More precisely the *ONF* positively influences the *ATSD* only in Italy, USA and Germany. *IFT* positively influences the *ATSD* only in Italy, Poland and USA, while negatively in Germany. This could also be explained by the fact that Poland is quite influenced by Italian cuisine (Śmiglak-Krajewska and Wojciechowska-Solis, 2021) and, therefore, there might be an "imitation" effect. Furthermore, it could be that these results are driven by the socio-demographic characteristics of the sample, where only 1.5% of all Germany respondents are above 45 years. *SMU* has a positive influence on the *ATSD* only in Japan, USA and Germany, while a negative one in Brazil and Korea.

From the data analysed, and based on our three antecedents, we could arrange a rank of countries that are, more or less, ready to develop an *ATSD*. It seems that countries such as the USA, Italy and also Germany (where there is a negative effect of the Food Trends) could be the ones where campaigns on sustainable diets could have a higher effect. Similarly, it is particularly important to identify other antecedents for China, where none of our antecedents has been found as significant in influencing the ATSD.

In the following we describe theoretical and managerial implications, with the limitation of the study, its strengths and future research directions.

#### 5.1 Theoretical implications

From a theoretical point of view, this paper advances extant research in a twofold way. First, it disentangles the impact of three individual-level antecedents of the *ATSD*, thus shedding light on the importance of considering the very first factors that could influence "attitude towards behaviour", that in turns influence "behavioural intention" and, eventually, the "actual behaviour" (Ajzen, 1991, Ajzen, 2016). Second, the cross-countries analysis conducted also fills the call for the need of studies that "*explore consumers' attitudes towards novel and functional foods, and in particular, [...]in Countries for which consumers' attitudes and preferences are still weakly investigated*" (Santeramo *et al.*, 2018, p. 44), the role of social media in the consumers' acculturation process towards sustainable food (Choudhary *et al.*, 2019; Sogari *et al.*, 2017), and the emotional drivers, as represented by our new scale related to the involvement in food trends, that influence consumers to engage more in sustainable food (Yang *et al.*, 2020). In particular, the fact that the hypothesised relationships differ across countries, call for additional research that considers local peculiarities.

# 5.2 Managerial and policy implications

Our results show that there is a lot of heterogeneity across countries and that there is no "one variable that fits all" solution. As a result, each country should leverage on specific marketing tools to encourage people towards more sustainable diets. For example, the negative effect that the SMU has on the ATSD in Brazil and Korea might lead companies and the public authority to carefully monitor what is reported on the web. Additionally, based on previous studies as over Brazilian consumers (Barone et al., 2019), we think that future studies should also make more explicit what sustainable diet means across multiple segments of the population. Moreover, our results seem to support the need of managers to "think global, act local": in an increasing globalized world, countries still present several differences that could be justified by their demography, the sensibility towards international food scandals, the value attached to eating in general (Lee and Ulgado, 1997). Fairly, recent research has shown that consumers are very heterogeneous regarding eating habits also within a specific country (Laureti and Benedetti, 2018; Wongprawmas et al., 2021). Besides demographics, further studies should include multiple factors that could influence attitude such as, knowledge and information seeking, and context (Feldmann and Hamm, 2015). Furthermore, our study also enriches previous studies about sustainable food purchases that have looked to "external" drivers, such as ecolabels and guidelines (Lazzarini et al., 2018), providing evidence about how individual-related factors are important for developing attitudes towards sustainable diets.

Sustainable diets are the new frontier that could help both the planet and our communities by protecting the environment and improving human health. However, beyond having new solutions

from the supply side, we need to understand which are those factors that change individual's food habits and attitudes if we want to reach a sustainable diet at large scale. Consumers need to be informed towards more sustainable food habits and in so, doing, understanding which are those factors that could help, are important from a social, beyond environmental perspective. We think that the three antecedents identified could represent an important first step for both companies and policy makers in order to address the challenge of a worldwide sustainable diet adoption, as also put forward by the Sustainable Development Goals (Ahmed *et al.*, 2020).

#### 5.3 Limitations, strengths, and further research

Our study is not without limitation. First, we are aware that sample size is not representative and therefore results should be carefully considered and avoid generalization. Second, the hypothetical nature of the study (e.g., self-reported measure) cannot allow testing whether the attitude will determine actual behaviour. Third, we are aware that there are several possible scales that could be adopted when measuring "sustainable diet" (Eme et al., 2019; Tepper et al. 2021).

Nevertheless, the main strengths are several. First, we include novel measures that represent a good starting point also for other researchers interested in understanding an individual's attitude towards a sustainable diet. Second, our analysis includes several countries, thus representing, to the best of Authors' knowledge, one of the few contributions worldwide as comparing eight countries. Consequently, we encourage future studies to include the behavioural intention and the actual purchasing behaviour towards sustainable food. Finally, we recommend future studies to select a stratified sample in terms of socio-demographic characteristics to allow a better and more accurate cross-country comparison.

# References

- Aertsens, J., Verbeke, W., Mondelaers, K. and van Huylenbroeck, G. (2009), "Personal determinants of organic food consumption: A review", *British Food Journal*, Vol. 111 No. 10, pp. 1140– 1167.
- Ahmed, S., and Byker Shanks, C. (2020), "Supporting Sustainable Development Goals Through Sustainable Diets". In W. Leal Filho, T. Wall, A. M. Azul, L. Brandli, & P. G. Özuyar (Eds.), Good Health and Well-Being (pp. 688–699). Springer International Publishing. https://doi.org/10.1007/978-3-319-95681-7\_101

- Ajzen, I. (1991), "The theory of planned behavior", *Organizational Behavior and Human Decision Processes*, Vol. 50 No. 2, pp. 179–211. https://doi.org/10.1016/0749-5978(91)90020-T
- Ajzen, I. (2016), "Consumer attitudes and behavior: the theory of planned behavior applied to food consumption decisions", *Italian Review of Agricultural Economics*, pp. 121–138.
- Asp, E.H. (1999), "Factors affecting food decisions made by individual consumers", *Food Policy*, Vol. 24 No. 2–3, pp. 287–294.
- Ayeh, J.K., Au, N. and Law, R. (2013), "Do We Believe in TripAdvisor?' Examining Credibility Perceptions and Online Travelers' Attitude toward Using User-Generated Content", *Journal* of Travel Research, Vol. 52 No. 4, pp. 437–452.
- Balakrishnan, J. and Foroudi, P. (2020), "Does Corporate Reputation Matter? Role of Social Media in Consumer Intention to Purchase Innovative Food Product", *Corporate Reputation Review*, Vol. 23 No. 3, pp. 181–200.
- Barcellos, M.D. de, Aguiar, L.K., Ferreira, G.C. and Vieira, L.M. (2009), "Willingness to try innovative food products: a comparison between British and Brazilian consumers", BAR -Brazilian Administration Review, Vol. 6 No. 1, pp. 50–61.
- Barone, B., Nogueira, R.M., Guimarães, K.R.L.S.L. de Q. and Behrens, J.H. (2019), "Sustainable diet from the urban Brazilian consumer perspective", *Food Research International*, Vol. 124, pp. 206–212.
- Bianchi, C. and Mortimer, G. (2015), "Drivers of local food consumption: A comparative study", *British Food Journal*, Vol. 117 No. 9, pp. 2282–2299.
- Boyland, E.J., Harrold, J.A., Dovey, T.M., Allison, M., Dobson, S., Jacobs, M.-C. and Halford, J.C.G. (2013), "Food Choice and Overconsumption: Effect of a Premium Sports Celebrity Endorser", *The Journal of Pediatrics*, Vol. 163 No. 2, pp. 339–343.
- Bruwer, J. and Wood, G. (2005), "The Australian online wine-buying consumer: Motivational and behavioural perspectives", *Journal of Wine Research*, Vol. 16 No. 3, pp. 193–211.
- Chan, R.Y.K. (2001), "Determinants of Chinese consumers' green purchase behavior", *Psychology* and Marketing, Vol. 18 No. 4, pp. 389–413.
- Chandon, P. and Wansink, B. (2012), "Does food marketing need to make us fat? A review and solutions", *Nutrition Reviews*, Vol. 70 No. 10, pp. 571–593.
- Chen, Y., Fay, S. and Wang, Q. (2011), "The Role of Marketing in Social Media: How Online Consumer Reviews Evolve", *Journal of Interactive Marketing*, Vol. 25 No. 2, pp. 85–94.
- Choudhary, S., Nayak, R., Kumari, S. and Choudhury, H. (2019), "Analysing acculturation to sustainable food consumption behaviour in the social media through the lens of information diffusion", *Technological Forecasting and Social Change*, Vol. 145, pp. 481–492.

- Copeland, L.R. and Zhao, L. (2020), "Instagram and theory of reasoned action: US consumers influence of peers online and purchase intention", *International Journal of Fashion Design*, *Technology and Education*, Vol. 13 No. 3, pp. 265–279.
- Declaration of Helsinki (2001), "World Medical Association Declaration of Helsinki. Ethical principles for medical research involving human subjects", *Bullettin of the World Health Organization*, Vol. 79 No. 4, pp. 373-374
- De Groene, E.M. and Dötsch-Klerk, M. (2020), From Individual Nutrients to Sustainable Nutrition, Vol. 121, p. 80.
- Eme, P., Douwes, J., Kim, N., Foliaki, S., and Burlingame, B. (2019), "Review of Methodologies for Assessing Sustainable Diets and Potential for Development of Harmonised Indicators", *International Journal of Environmental Research and Public Health*, Vol. 16 No. 7, pp. 1184-1203.
- Feldmann, C. and Hamm, U. (2015), "Consumers' perceptions and preferences for local food: A review", *Food Quality and Preference*, Vol. 40, pp. 152–164.
- Goodrich, K. and de Mooij, M. (2014), "How 'social' are social media? A cross-cultural comparison of online and offline purchase decision influences", *Journal of Marketing Communications*, Vol. 20 No. 1–2, pp. 103–116.
- Hair Jr., J.F., Black,W.C., Babin, B.J., and Andersons, R.E. (2009), *Multivariate Data Analysis*, 7/E. Prentice Hall.
- Hajli, N. and Sims, J. (2015), "Social commerce: The transfer of power from sellers to buyers", *Technological Forecasting and Social Change*, Vol. 94, pp. 350–358.
- Huotilainen, A., Pirttilä-backman, A.-M. and Tuorila, H. (2006), "How innovativeness relates to social representation of new foods and to the willingness to try and use such foods", *Food Quality and Preference*, Vol. 17 No. 5, pp. 353–361.
- Kaplan, A.M. and Haenlein, M. (2010), "Users of the world, unite! The challenges and opportunities of Social Media", *Business Horizons*, Vol. 53 No. 1, pp. 59–68.
- Kim, S. H., Kim, M. S., Lee, M. S., Park, Y. S., Lee, H. J., Kangf, S.A., Leeg, H.S. Leeh, K.-E., Yanga, H.J., Kima, M.J., Leei, Y.-E., and Kwon, D.Y. (2016), "Korean diet: Characteristics and historical background", *Journal of Ethnic Foods*, Vol. 3 No. 1, pp. 26–31.
- Koptyug, E. (2021), Nutrion trends in Germany statistics and facts. 8/3/2021. Available at: https://www.statista.com/topics/6857/nutrition-trends-in-germany/
- Kuttschreuter, M., Rutsaert, P., Hilverda, F., Regan, Á., Barnett, J. and Verbeke, W. (2014), "Seeking information about food-related risks: The contribution of social media", *Food Quality and Preference*, Vol. 37, pp. 10–18.

- Laureti, T., and Benedetti, I. (2018), "Exploring pro-environmental food purchasing behaviour: An empirical analysis of Italian consumers", *Journal of Cleaner Production*, Vol. 172, pp. 3367–3378.
- Lazzarini, G.A., Visschers, V.H.M., and Siegrist, M. (2018), "How to improve consumers' environmental sustainability judgements of foods", *Journal of Cleaner Production*, Vol. 198, pp. 564–574.
- Lee, M. and Ulgado, F.M. (1997), "Consumer evaluations of fast-food services: a cross-national comparison", *Journal of Services Marketing*, Vol. 11 No. 1, pp. 39–52.
- Mangold, W.G. and Faulds, D.J. (2009), "Social media: The new hybrid element of the promotion mix", *Business Horizons*, Vol. 52 No. 4, pp. 357–365.
- Manning, K.C., Bearden, W.O. and Madden, T.J. (1995), "Consumer Innovativeness and the Adoption Process", *Journal of Consumer Psychology*, Vol. 4 No. 4, pp. 329–345.
- McCormick, K. (2016), "Celebrity endorsements: Influence of a product-endorser match on Millennials attitudes and purchase intentions", *Journal of Retailing and Consumer Services*, Vol. 32, pp. 39–45.
- Meulenberg, M. (2017), Food and Agribusiness Marketing in Europe, CRC Press, p. 209.
- Moschitz, H., Muller, A., Kretzschmar, U., Haller, L., de Porras, M., Pfeifer, C., Oehen, B., *et al.* (2021), "How can the EU Farm to Fork strategy deliver on its organic promises? Some critical reflections", *EuroChoices*, available at:https://doi.org/10.1111/1746-692X.12294.
- Närvänen, E., Mesiranta, N., Sutinen, U.-M. and Mattila, M. (2018), "Creativity, aesthetics and ethics of food waste in social media campaigns", *Journal of Cleaner Production*, Vol. 195, pp. 102–110.
- Orsi, L., Voege, L.L. and Stranieri, S. (2019), "Eating edible insects as sustainable food? Exploring the determinants of consumer acceptance in Germany", *Food Research International*, Vol. 125, p. 108573.
- Palmieri, N., Perito, M.A., Macrì, M.C., and Lupi, C. (2019), "Exploring consumers' willingness to eat insects in Italy", *British Food Journal*, Vol. 121, pp. 2937–2950.
- Panda, T.K., Kumar, A., Jakhar, S., Luthra, S., Garza-Reyes, J.A., Kazancoglu, I. and Nayak, S.S. (2020), "Social and environmental sustainability model on consumers' altruism, green purchase intention, green brand loyalty and evangelism", *Journal of Cleaner Production*, Vol. 243, p. 118575.
- Payne C., Caparros Megido R., Dobermann D., Frédéric F., Shockley M., and Sogari G. (2019), "Insects as Food in the Global North – The Evolution of the Entomophagy Movement", In:

Sogari G., Mora C., and Menozzi D. (eds) *Edible Insects in the Food Sector*. Springer, Cham. https://doi.org/10.1007/978-3-030-22522-3\_2

- Pearson, E., Tindle, H., Ferguson, M., Ryan, J. and Litchfield, C. (2016), "Can We Tweet, Post, and Share Our Way to a More Sustainable Society? A Review of the Current Contributions and Future Potential of #Socialmediaforsustainability", *Annual Review of Environment and Resources*, Vol. 41 No. 1, pp. 363–397.
- Pham, T.H., Nguyen, T.N., Phan, T.T.H., and Nguyen, N.T. (2019), "Evaluating the purchase behaviour of organic food by young consumers in an emerging market economy", *Journal of Strategic Marketing*, Vol. 27, 540–556.
- Quinton, S. and Harridge-March, S. (2008), "Trust and online wine purchasing: insights into UK consumer behaviour", *Journal of International Journal of Wine Business Research*, Vol. 20 No. 1, pp. 68–85.
- Rana, J. and Paul, J. (2017), "Consumer behavior and purchase intention for organic food: A review and research agenda", *Journal of Retailing and Consumer Services*, Vol. 38, pp. 157–165.
- Reisch, L., Eberle, U. and Lorek, S. (2013), "Sustainable food consumption: an overview of contemporary issues and policies", *Sustainability: Science, Practice and Policy*, Vol. 9 No. 2, pp. 7–25.
- Ren, J., Chung, J.-E., Stoel, L., and Xu, Y. (2011), "Chinese dietary culture influences consumers' intention to use imported soy-based dietary supplements: An application of the theory of planned behaviour: Chinese dietary culture influences", *International Journal of Consumer Studies*, Vol. 35 No. 6, pp. 661–669.
- Reyneke, M., Pitt, L. and Berthon, P.R. (2011), "Luxury wine brand visibility in social media: an exploratory study", *International Journal of Wine Business Research*, Vol. 23 No. 1, pp. 21– 35.
- Rogers, E.M. (2003), Diffusion of Innovations.
- Rübsamen, N., Akmatov, M.K., Castell, S., Karch, A., and Mikolajczyk, R.T. (2017),"Comparison of response patterns in different survey designs: a longitudinal panel with mixed-mode and online-only design", *Emerging Themes in Epidemiology*, Vol. 14 No.4, pp. 1-11.
- Samoggia, A., Bertazzoli, A. and Ruggeri, A. (2019), "Food retailing marketing management: social media communication for healthy food", *International Journal of Retail & Distribution Management*, Vol. 47 No. 9, pp. 928–956.
- Santeramo, F.G., Carlucci, D., De Devitiis, B., Seccia, A., Stasi, A., Viscecchia, R. and Nardone, G. (2018), "Emerging trends in European food, diets and food industry", *Food Research International*, Vol. 104, pp. 39–47.

- Schmidt, P. (2019). Promoting healthy and sustainable diets in the EU (own-initiative opinion). NAT/755-EESC-2018-04568. Text available at: https://www.eesc.europa.eu/en/ourwork/opinions-information-reports/opinions/promoting-healthy-and-sustainable-diets-euown-initiative-opinion
- Shaw, H.J. (2014), *The Consuming Geographies of Food: Diet, Food Deserts and Obesity*, Routledge: New York.
- Simeone, M., and Scarpato, D. (2020), "Sustainable consumption: How does social media affect food choices?", *Journal of Cleaner Production*, Vol. 277, pp. 1-6
- Singh, G., Pandey, N. and Jha, S. (2020), "Promotion of green products on Facebook: insights from millennials", *International Journal of Management Practice*, Vol. 13 No. 3, p. 275.
- Śmiglak-Krajewska, M., and Wojciechowska-Solis, J. (2021), "Consumption Preferences of Pulses in the Diet of Polish People: Motives and Barriers to Replace Animal Protein with Vegetable Protein", *Nutrients*, Vol. 13 No. 2, pp. 454. https://doi.org/10.3390/nu13020454
- So, K.K.F., Oh, H. and Min, S. (2018), "Motivations and constraints of Airbnb consumers: Findings from a mixed-methods approach", *Tourism Management*, Vol. 67, pp. 224–236.
- Sogari, G., Li, J., Wang, Q., Lefebvre, M., Gómez, M.I. and Mora, C. (2021), "Factors influencing the intention to purchase meat-mushroom blended burgers among college students", *Food Quality and Preference*, Vol. 90, https://doi.org/10.1016/j.foodqual.2020.104169.
- Sogari, G., Pucci, T., Aquilani, B., and Zanni, L. (2017), "Millennial Generation and Environmental Sustainability: The Role of Social Media in the Consumer Purchasing Behavior for Wine", *Sustainability*, Vol. 9 No. 10, pp. 1911-1927.
- Sun, Y. and Wang, S. (2019), "Understanding consumers' intentions to purchase green products in the social media marketing context", *Asia Pacific Journal of Marketing and Logistics*, Vol. 32 No. 4, pp. 860–878.
- Tepper, S., Geva, D., Shahar, D. R., Shepon, A., Mendelsohn, O., Golan, M., Adler, D. and Golan, R. (2021), "The SHED Index: A tool for assessing a Sustainable HEalthy Diet", *European Journal of Nutrition*, Vol. 60 No. 7, pp. 3897–3909.
- Thach, L. (2009), "Wine 2.0—The Next Phase of Wine Marketing? Exploring US Winery Adoption of Wine 2.0 Components", *Journal of Wine Research*, Vol. 20 No. 2, pp. 143–157.
- Trajkovska Petkoska, A., Daniloski, D., D'Cunha, N.M., Naumovski, N. and Broach, A.T. (2021), "Edible packaging: Sustainable solutions and novel trends in food packaging", *Food Research International*, Vol. 140, p. 109981.

- Unilever (2021). Unilever Future 50 Foods. Available at: https://www.unileverfoodsolutions.eg/en/chef-inspiration/new-generation-of-food/thefuture-50-foods-were-inviting-chefs-to-embrace.html [last accessed on April 13<sup>th</sup>, 2021]
- Urala, N. and Lähteenmäki, L. (2007), "Consumers' changing attitudes towards functional foods", *Food Quality and Preference*, Vol. 18 No. 1, pp. 1–12.
- Vassallo, M., Scalvedi, M.L. and Saba, A. (2016), "Investigating psychosocial determinants in influencing sustainable food consumption in Italy", *International Journal of Consumer Studies*, Vol. 40 No. 4, pp. 422–434.
- Vaterlaus, J.M., Patten, E.V., Roche, C. and Young, J.A. (2015), "#Gettinghealthy: The perceived influence of social media on young adult health behaviors", *Computers in Human Behavior*, Vol. 45, pp. 151–157.
- Willett, W., Rockström, J., Loken, B., Springmann, M., Lang, T., Vermeulen, S., Garnett, T., *et al.* (2019), "Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems", *The Lancet*, Vol. 393 No. 10170, pp. 447–492.
- Wilson, D. and Quinton, S. (2012), "Let's talk about wine: does Twitter have value?", *International Journal of Wine Business Research*, Vol. 24 No. 4, pp. 271–286.
- Wongprawmas, R., Mora, C., Pellegrini, N., Guiné, R., Carini, E., Sogari, G., and Vittadini, E. (2021),
  "Food Choice Determinants and Perceptions of a Healthy Diet among Italian Consumers", *Foods*, Vol. 10 No. 2, pp. 318. https://doi.org/10.3390/foods10020318
- Yang, Q., Shen, Y., Foster, T. and Hort, J. (2020), "Measuring consumer emotional response and acceptance to sustainable food products", *Food Research International*, Vol. 131, p. 108992.
- Yazdanpanah, M. and Forouzani, M. (2015), "Application of the Theory of Planned Behaviour to predict Iranian students' intention to purchase organic food", *Journal of Cleaner Production*, Vol. 107, pp. 342–352.
- Zhao, L., Lee, S.H. and Copeland, L.R. (2019), "Social media and Chinese consumers' environmentally sustainable apparel purchase intentions", *Asia Pacific Journal of Marketing* and Logistics, Vol. 31 No. 4, pp. 855–874.