

**WHAT DO CONSUMERS UNDERSTAND SUSTAINABLE FOOD TO BE? A
SYSTEMATIC LITERATURE REVIEW**

Rhea Kinsella,
Institute of Technology Carlow,
Wexford Campus,
Summerhill Road,
Wexford.
Tel: 053 91 85800
E-mail: c00203755@itcarlow.ie

Tomas Dwyer,
Institute of Technology Carlow,
Wexford Campus,
Summerhill Road,
Wexford.
Tel: 053 91 85800
E-mail: tomas.dwyer@itcarlow.ie

Stephen Whelan,
Institute of Technology Carlow,
Wexford Campus,
Summerhill Road,
Wexford.
Tel: 053 91 85800
E-mail: Stephen.Whelelan@itcarlow.ie

Eamon Nolan,
Institute of Technology Carlow,
Wexford Campus,
Summerhill Road,
Wexford.
Tel: 053 91 85800
E-mail: eamon.nolan@itcarlow.ie

COMPETITIVE PAPER

Abstract

Purpose: To provide a synthesis and an extended discussion of the literature relating to consumers' understanding of what constitutes sustainable food.

Design/methodology/approach: It presents a Systematic Literature Review (SLR) of the academic literature providing insights into the specific issue. A search of major research databases with multiple keywords was performed to identify 236 relevant peer-reviewed articles dated between 2010-2020. A qualitative thematic analysis was conducted using NVivo.

Findings: Five themes were identified: 1) Consumers' majority associate sustainable food to be environmentally friendly 2) Consumers perceive specific diets to be sustainable 3) Consumers' do not fully understand sustainable food labels 4) Consumers understand organic food to be sustainable food and 5) Consumers understand local food to be sustainable food.

Research implications: This study contributes to the current body of knowledge on consumer understandings of sustainable food. The analysis of the different issues addressed by the literature could build the foundation for future research.

Originality/value: This study presents a comprehensive review of the literature on consumers' understanding of sustainable food. It can serve as a roadmap of literature for both academics and practitioners and help stimulate further interest.

Keywords: Sustainable food, consumer understanding, systematic review

1. Introduction

Sustainable food can be described as ensuring the “security of the supply of food, health, safety, affordability, quality, a strong food industry in terms of jobs and growth and, at the same time, environmental sustainability, in terms of issues such as climate change, biodiversity, water and soil quality” (European Commission, 2019).

Studies show that consumers are becoming more interested in sustainable food (Forbes et al., 2009) due to growing concerns including environmental matters (Singh and Verma, 2015). Indeed, sustainable food consumption is required to avoid causing significant damage to ecological systems, which are occurring with current food models (Kamenidou et al., 2019) including the 21% to 37% contribution of food production to global greenhouse gases and the loss of biodiversity (IPCC, 2019).

Despite the growing interest in sustainable food by consumers, this has not yet translated into actual purchasing behaviour regarding sustainable food (Hsu et al., 2020). It is noted that one of the main barriers for sustainable food consumption is a lack of knowledge amongst consumers (Özkaya et al., 2021). Furthermore, Peschel et al., (2016) states that consumers’ knowledge is key in allowing consumers to purchase sustainable food options. However, while it is widely cited that consumers lack understanding in regard to sustainable food, there has been little investigation into what consumers consider sustainable food to be (Sánchez-Bravo et al., 2021).

Therefore, this paper aims to identify and critically examine to what extent the sustainable food literature has focused on consumers’ understanding of sustainable food. Following this, several contributions can be made including the development of studies in this area by providing a synthesis of the research on consumers’ understanding of sustainable food. Furthermore, the identification of approaches to enhance consumers’ knowledge of sustainable food can aid in consumers making more informed food choices. This can lead to more accurate studies being conducted in the future around sustainable food consumption.

The paper is structured as follows, firstly a background to the research is presented, followed by an outline of the methodology. Next, the major fields and themes are presented within the findings section. The paper concludes by highlighting the implications and limitations of this paper. Subsequently, the paper concludes with recommendations for future research.

2. Background to the research

Adopting sustainable food systems regarding food production and consumption practices is essential due to a multitude of reasons. Firstly, the current food system contributes heavily to greenhouse gas (GHG) emissions, thus it is argued to be one of the main contributors to climate change (Macdiarmid et al., 2012). Additionally, current food consumption contributes to excess waste along with soil and water pollution, thus negatively impacting on the conservation of natural ecosystems (Hoek et al., 2004; Tobler et al., 2011; FAO and WHO, 2019; Wang and Gao, 2017). Furthermore, it is evident that a transition to a sustainable food system is necessary to avoid contributing to the loss of biodiversity and climate change (European Commission, 2014). Additionally, sustainable food consumption and production are needed in ensuring food security and improving food quality in the global system (Zhang et al., 2018).

Environmental and social sustainability of food production has gained strong consumer attention (Banterle et al., 2010; Dobson, 2007). Hence, academic research into consumers' attitudes to sustainable food has dramatically increased. It is argued that to achieve a sustainable food system, consumers need to adopt purchasing behaviours of sustainable food (Grunert, 2011; Gao et al., 2016), as consumers' consumption habits and diets have a significant impact on the types and ways in which food is produced (FAO and WHO, 2019). Consequently, the importance of implementing sustainable food consumption by consumers is undeniable.

There are numerous, frequently cited barriers to consumers implementing sustainable purchasing behaviours. One of the main barriers is consumer knowledge. It has been highlighted within the literature that consumers' knowledge of such concepts has a significant impact on their attitudes and behaviours that support the purchasing of sustainable food (Popovic et al., 2019). Consumer knowledge has frequently been investigated within the literature and it has shown multiple times that when consumers knowledge is enhanced regarding sustainable food, they are more likely to make sustainable food choices (Peschel et al., 2016).

One of the fundamental aspects of improving consumers knowledge on how to purchase sustainably is to first provide them with a definition of what constitutes sustainable food. However, there remains a multitude of definitions of sustainable food provided by both the literature, in addition to authorities such as the European Commission and Food and

Agriculture Organization (FAO). For example, Reheul et al., (2001) defines sustainable food products as “products that positively contribute to one or a combination of the economic, environmental and social aspects of sustainability”. Whilst Goggins and Rau (2016) states that truly sustainable food involves improving animal welfare, supporting the local economy, and creating good working conditions both at home and abroad, lower environmental impact, safeguarding biodiversity and providing safe and healthy food. Whereas, perhaps the most widely accepted definition for sustainable food is provided by the UN FAO which states;

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).

Whilst there are several definitions surrounding sustainable food, it can be agreed that they all encompass the underlying dimensions of sustainability. Namely, that of the economic, social and environmental pillars of sustainable food.

However, it has been found that consumers find the definition of sustainable food and sustainable diets confusing (Peschel et al., 2016). Additionally, there is currently no universal or general label available to signify that produce can be categorised as “sustainable food”. Alternatively, there are several certification schemes which focus on environmental, social and/or ethical aspects of food production (Sidali et al., 2016). These include organic food, animal welfare and fair trade (Verain, 2012). Consumers tend to correlate these kinds of foods as being more sustainable in addition to possessing greater health and environmental benefits (von Meyer-Höfer et al. 2015; Sirieix et al., 2013). However, whilst these labels may signify that these foods are more sustainable, it may only incorporate one aspect of sustainability such as being more environmentally friendly. Thus, not being classified as truly sustainable food with respect to all three pillars of sustainability including environmental, economic, and social.

The literature on sustainable food is substantial but so far, the literature has focussed on topics such as consumers’ willingness-to-pay for specific sustainable food products, particularly those of organic and local food groups (De-Magistris and Gracia, 2016; Annunziata et al., 2019), as well as investigating University students’ knowledge of general

sustainability initiatives (Msengi et al., 2019). However, very few studies have attempted to address consumers' understanding of sustainable food (Sánchez-Bravo et al., 2021).

Furthermore, researchers need to ascertain consumers' understanding of sustainable food, to better assess consumers' buying behaviour (Wang and Gao 2017). It is suggested that research aimed at investigating what consumers associate with sustainable food can provide a valuable contribution to promoting sustainable food consumption. For example, as consumer perceptions have a significant impact on forming their preferences for sustainable food, identifying their perceptions can support producers to adopt sustainable production methods (Gutierrez and Thornton, 2014),

3. Methodology

The aim of a literature review is to 'establish what is already known about a topic' (Bryman, 2015, p.90) and 'to specify a research question to develop the existing body of knowledge (Tranfield et al., 2003, p.208). Thus, a literature review forms the background and justification for a study. There are two main types of literature review, namely, narrative reviews and systematic reviews (Bryman, 2015). Systematic literature reviews (SLR) use specific methods which aim to synthesise and analyse a body of literature. This method is based on the use of keywords search of the literature in selected databases (Gomezelj, 2016).

This study adopted the SLR process as it offers a more objective and transparent alternative to the traditional narrative review method (Dixon-Woods et al., 2006). Moreover, this study implemented the three-stage SLR process as set out by Jesson et al (2011), including.

- Defining the research question and designing the search strategy
- Applying inclusion, exclusion criteria and quality assessment
- Synthesising the results

Each of these stages is outlined in more detail below.

3.1 Defining the research question and designing the search strategy

The first stage of the SLR is to define the research question. This paper seeks to answer the research question, *what do consumers understand sustainable food to be?* Having defined the research question, the next step involved identifying keywords which could subsequently be used to perform a search through the body of literature. The following keywords were

identified: Consumer, Perception, Knowledge, Understanding, Food, Sustainable, Conventional, Local and Organic.

Additionally, Boolean searching was applied to narrow the search and specify exactly what was required, thus excluding any irrelevant articles. Boolean searching works “by using logical operators and specific syntax” (Hart, 2005, p.153). The following search strings were used:

- (consumer) AND ("sustainable food") AND (perception)
- (consumer) AND ("sustainable food") AND (perception) AND (organic)
- (consumer) AND ("sustainable food") AND (perception) AND (local)
- (consumer) AND ("sustainable food") AND (perception) AND (conventional)
- (consumer) AND ("sustainable food") AND (definition)
- (consumer) AND ("sustainable food") AND (definition) AND (organic)
- (consumer) AND ("sustainable food") AND (definition) AND (local)
- (consumer) AND ("sustainable food") AND (definition) AND (conventional)
- (consumer) AND ("sustainable food") AND (understanding)
- (consumer) AND ("sustainable food") AND (understanding) AND (organic)
- (consumer) AND ("sustainable food") AND (understanding) AND (local)
- (consumer) AND ("sustainable food") AND (understanding) AND (conventional)

Furthermore, the Boolean search also allowed for truncation. This is a way of capturing all relevant material by searching words and phrases which use the same root (Hart, 2005, p.153).

Having identified the key terms and the relevant search strings, the next step was to identify appropriate research databases where relevant articles could be extracted. As such, the search was limited to peer-reviewed journals in the following databases:

1. Web of Science
2. Science Direct
3. Emerald Insight
4. Sage Journals
5. Taylor and Francis Online

These databases were selected as they contain publications relevant to sustainability, food studies and behavioural studies. *Appendix A* outlines the number of articles found in each database by the specific search string used.

3.2 Inclusion exclusion criteria and quality assessment

The next step in the SLR process was to apply inclusion criteria. Initially, only peer-reviewed results were included in the search. Thus, ensuring that the articles collected have been subjected to approval by those knowledgeable in the chosen subject (Jesson et al., 2011). Secondly, all results were limited to a time interval of 2010-2020, this time frame was chosen as sustainable food consumption policies are constantly evolving; thus, it was vital to get the most up-to-date publications on consumers' understanding of sustainable food. Lastly, articles were further refined to locate articles in the field of "food, sustainability, environmental and behavioural studies" as they were deemed most relevant. By applying these criteria, the number of articles was reduced from 14257 to 9015 which can be seen in *Appendix B*.

These results were then further refined by limiting the search of key terms to the journal abstracts only. This ensured that sustainable food and consumer perceptions and understanding were the main focus of each article. This further reduced the results from 9015 to 355. Subsequently, after the removal of duplicate articles, the final count amounted to 236 articles as illustrated in *Appendix C*.

3.3 Synthesising the Results

The last step in the process was to synthesis the results found within the articles by organising the articles into groups of meta-themes. The findings were then analysed within each theme. Following this, a synthesis of the overall findings was conducted.

To accomplish this the 236 articles were imported into NVivo to analyse the content. Content themes were created by manually coding significant aspects of the journal articles as well as using text findings to identify certain words with NVivo. The first step of this process was screening the articles based on the title and abstract in regard how each article referenced sustainable food. Following this, the content of each article was coded depending on how the article discussed consumers' understanding of sustainable food. For example, articles were grouped into themes relating to understanding of sustainability, such as organic food and local food being perceived as sustainable food. Lastly, further analysis was conducted using word search and text search queries on all articles. This process formed the basis for identifying relevant research, enabling the author to produce findings relating to consumers' understanding of sustainable food (Annunziata and Vecchio, 2016).

4. Findings

This paper used NVivo to conduct a qualitative thematic analysis of the literature with reference to consumers understanding of sustainable food. Based on an analysis of 236 articles, five themes were identified: consumers majority link sustainable food with being environmentally friendly, consumers' understanding of specific diets as sustainable, consumers' do not fully understand sustainable food labels, organic food as sustainable food and local food as sustainable food. The following section provides a detailed analysis of the literature based on each of these themes. The section concludes by addressing the research question to examine what consumers perceive sustainable food to be.

4.1 Environmental Pillar

From the literature it was discovered that consumers frequently associate sustainable food with being “good for the environment” (Yanarella et al., 2009). Indeed, many studies find that consumers equate sustainability with “greenness”, this implies that consumers are only focused on the environmental pillar of sustainable food, therefore forgoing other aspects such as the social and economic pillars (Yanarella et al., 2009; Gao et al., 2016; García-González et al., 2020). This notion is reflected in a study conducted by Lazzarini et al., (2017) which discusses that while sustainability comprises environmental, social, and economic dimensions (Hanss and Böhm, 2012), consumers tend to neglect economic and social dimensions (FAO, 2014). Furthermore, it was found that consumers frequently relate environmental issues with the term ‘sustainability’ (Grunert et al., 2014).

Consumers' perception of sustainable food can sometimes include the social pillar of sustainable food, which involves people that are situated in the food system (Lazzarini et al., 2017). However, the majority of consumers do not associate issues such as working conditions in food production with sustainable food (Grunert et al., 2014). Indeed, the social dimension is not as extensively considered by consumers when compared to the environmental dimension (Lazzarini et al., 2017). This is further confirmed by other researchers that identified participants associated sustainability more with environmental issues than with societal issues (Grunert et al., 2014; Hanss and Böhm, 2012). It has been discovered that this is a global phenomenon as García-González et al., (2020) finds that most people associate the term “sustainability” to similar concepts, such as environmental aspects, despite belonging to different cultural backgrounds.

Within the literature itself, studies frequently discuss the concept of food sustainability regarding the environmental aspect. For example, a study conducted by Hsu et al., (2020) focuses on exploring consumers' interest in choosing sustainable food. The study emphasises that environmental education is necessary for consumers to adopt purchasing behaviours towards sustainable food. Likewise, a study Vermeir et al., (2020) discusses ways in which to encourage consumers to change their eating habits toward more environmentally sustainable food consumption. Thus, the study looks at increasing the consumption of environmentally sustainable food, rather than food that incorporates all pillars of sustainability. Therefore, not only does there appear to be a trend of consumers mostly focusing on the environmental pillar of sustainable food, but the literature also tends to weigh heavily on the environmental pillar in its investigations.

4.2 Specific Diets

It has been found that consumers often link the concept of sustainable food to specific diets. For example, studies found that consumers perceived the concepts of 'a healthy diet', 'a sustainable diet' and 'a plant-based diet' to be closely compatible (Van Loo et al., 2017; Mylan, 2018). The perception that plant-based diets are considered sustainable is due to the fact that current production of livestock for human food is reported as having a significant negative impact on the environment (González et al., 2020). This transcends into the research that has been carried out regarding sustainable food. Research has focused on the amount of plant versus meat products, and it has been suggested that eating more plants and less meat would contribute to a diet that is good for both people and the planet (Pearson et al., 2014).

In recent times, increasing attention has also been paid to the inclination for individuals to adopt diets which avoid meat altogether by adopting a vegetarian or vegan diet (Mylan, 2018; Fehér et al., 2020). This can be contributed to the fact that authorities, such as the SDC, frequently suggest reducing the consumption of meat as they propose that it would reduce the environmental impact of consumers' diets (Pearson et al., 2014).

So far, valuable contributions have been made in understanding consumers awareness, attitudes, and intentions in relation to meat avoidance and plant-based diets. Additionally, studies have explored the effectiveness of various forms of intervention to stimulate changes in meat consumption to support sustainable food consumption. In summary, various studies

have identified meat reduction as considered necessary in terms of improving the sustainability of the food system (Mylan, 2018; Fehér et al., 2020).

It must be noted however that consumers opting for a more plant-based diet may not necessarily do this out of motivation for achieving a sustainable diet but rather for their personal health, as consumers perceive a strong link between health and sustainability (Aschemann-Witzel, 2015; Pearson et al., 2014). Thus, while consumers perceive the concepts of health and sustainability to be correlated, consumers still prioritise health over sustainability (Van Loo et al., 2017).

4.3 Sustainable Labels

One of the main ways to increase consumers knowledge is through the use of sustainable labels. Food labels are the channel used to pass information about food items to consumers, thus labels are used as a tool to support consumers in making food choices. It has been found that consumers are willing to purchase foods that display certain types of sustainable labels. However, consumers do not always use or correctly understand food labels (Corallo et al., 2019). For example, consumers will seek certain sustainable labels including organic food, local food and food that is in season (Forbes, 2020). Furthermore, as consumers use labels to assess the sustainability of the foods they purchase, they often buy the likes of organic and local food as they perceive them to be sustainable (Corallo et al., 2019).

Considering the majority of sustainable like food labels encompass the likes of organic food, it is clear that consumers would build an understanding that these foods would be classed as sustainable food. However, whilst these foods display labels which confirm they were produced in a more sustainable fashion; they are often produced in certain sustainable ways that achieves one pillar of sustainability. For example, local food can be produced in a way that is more environmentally sustainable but may not necessarily be sustainable in an economic sense for consumers (Cvijanović, et al., 2020). Whereas sustainable food is more of a complex concept which encompasses many varying facets, these labels may only focus on one aspect of sustainable food production. Indeed, research has failed to examine consumers preferences of sustainable labels that encompass all aspects of sustainability including the economic, social, and environmental responsibilities regarding food production (Gao et al., 2016).

4.4 Organic Food

Currently, it is stated that organic food is the most common sustainable food in the market (Wang and Gao, 2017), with most countries possessing their own organic food certification (Janssen and Hamm, 2012). Many influential organisations including the United Nations also support the notion that organic food utilises a more sustainable food production method (Pearson et al., 2014 De Farias et al., 2019). Perceptions held by consumers also show that labels for organic agriculture including the Organic Farmers and the European label are perceived to be sustainable labels (Sirieix et al., 2013). Additionally, in a study conducted by Lazzarini et al., (2016), it was found that the majority of participants mentioned organic production and the presence of an organic label to be a basis used to evaluate the environmental friendliness of the products. Therefore, the study concluded that organic labels positively influenced perceived environmental and social sustainability of the products examined in their study (Lazzarini et al., 2016). Most studies on consumer preferences of sustainable food focuses on food labels, such as organic labels (Sirieix et al., 2013; Xie et al., 2015).

It has been shown that consumers' purchase organic food due to it being considered to be safer, healthier, and more environmentally friendly compared to conventionally produced food (Gifford and Bernard, 2011; Zanolini et al., 2013; Van et al., 2010). Furthermore, consumption of organic food has increased due to the trend in sustainable food consumption (Annunziata and Vecchio, 2016; Bazzania et al., 2017). This is due to consumers wishing to avoid obesity and other health concerns. It is said that health concerns are driving consumers to make sustainable consumption choices (Ukenna and Ayodele, 2019). It is noted that while health concerns are the main factor motivating consumers to purchase organic foods (Hughner et al., 2007; Siegrist and Hartmann 2019), there are secondary goals in the mind of the consumers such as environmental concerns (Hemmerling et al., 2015). In fact, consumers perceive organic food to be healthier, more nutritious and possess better sensory properties along with being environmentally and animal friendly (Schleenbecker and Hamm, 2013; Zhang et al., 2018).

Whilst it has been widely cited that organic food could be considered more sustainable than conventionally produced food, there is an equal volume of research that would debate this notion, as organic food does not necessarily inhabit all aspects of what makes up sustainable food (Muller et al., 2017; Treu et al., 2017). Despite this, it is evident from the literature that consumers have an understanding that organic food is in fact sustainable food (Sirieix et al.,

2013). This understanding is harmful, as while consumers believe they are contributing to sustainable food consumption, this may not be the case. This trend is not only found within the organic food market but also can be found in other niche food markets such as local food.

4.5 Local Food

Studies on the consumption of local food has gained momentum regarding consumer behaviour, as it is considered as environmentally responsible buying (Megicks et al., 2012). The act of buying local food has become intertwined with ethical and socially responsible consumption. The ethical and environmental benefits include reduced food miles and improved animal welfare. When buying local foods, consumers are often choosing to do so for reasons that not only relate to the product itself but also their perceptions of food-related issues, such as a positive association with the environment and sustainable food consumption.

So far what is known regarding consumers' understanding local food to be sustainable food is that often consumers will state that origin of foods being important to sustainability, with long distanced origins of food being classed as bad for the environment. Particularly, there have been studies which investigated consumers' knowledge and/or perceptions of which aspects of food production as being more harmful for the environment. Within this it was found that consumers were more concerned with the country-of-origin impact on the climate compared to the types of foods that have varying degrees of harmful impact on the environment e.g., types of meat (Shi et al., 2018).

It is suggested that people use easily accessible information, such as the country of origin, to evaluate the climate impact of their food choices. Consumers are easily aware of the distances between countries but may lack other information of the climate impacts of foods such as meat being more damaging to the climate (Shi et al., 2018). It is argued that only focusing on distance of the source of food results in an inaccurate estimation of climate impact of the foods as Shi et al., (2018) argues that the type of meat is a better more important indication of the environmental impact than country of origin. Therefore, it could be suggested that consumers have a biased view of local food. The results of Shi et al., (2018) findings are reflected in a study conducted by Tobler et al. (2011). In this study it was found that consumers evaluated the environmental friendliness of different vegetable products based on the product's country of origin and production method. Thus, this may imply that consumers prefer local food when making environmentally friendly food choices. This notion

is supported by studies which state that local food products are more environmentally friendly than imported products due to the transport mode and distance (Jungbluth et al., 2000; Sim et al., 2006; Stoessel et al., 2012). Additionally, Lazzarini et al., (2016) states that this indicates the distance of the production country influences the perceived social sustainability of foods, which raises the question of whether consumers might have difficulty assessing the two aspects of social and environmental sustainability separately.

5. Discussion

The main aim of this paper was to ascertain consumers' understanding of what constitutes sustainable food. From the SLR, it is evident that there are varying understandings from the consumer's perspective of what constitutes sustainable food. The findings include that sustainable food is mostly viewed from the environmental facet of sustainability, therefore forgoing the other aspects of sustainable food such as the economical and societal pillars. In addition, consumers tend to associate specific diets, such as vegetarian and vegan diets, with being more sustainable. It was also found that labels are a powerful tool for communicating the sustainability of food to consumers, however often these labels are situated within an organic context, thus not taking into consideration all elements of sustainability. Lastly, consumers frequently tend to perceive certain food groups as being sustainable, including organic food and local food. While these foods encompass sustainability to a certain degree, it is argued that they do not implement all elements of what it means to be considered "sustainable food".

Our findings have shown that there is a lack of understanding and knowledge about the meaning of sustainable food by consumers. In accordance, we identified the main food types that consumers perceive to be sustainable include vegetarian diets, local foods, and organic foods. Furthermore, it has been identified that consumers knowledge and awareness about what sustainable food is and moreover how to purchase sustainably is critical if society is to move towards a more sustainable food system. This is especially evident when considering that a sustainable food system is consumer-driven (Gao et al., 2016).

From the findings, it was highlighted that while there is increasing interest in sustainable food by consumers, the market of these foods does not reflect this interest. This phenomenon has been explored and classified as the attitude-behavioural gap (Vermeir and Verbeke (2006). It has been discovered that when consumers are shown informational messages about

sustainable food, consumers awareness, attitude and purchasing intention dramatically increase. Therefore, it is evident that from the literature and further from our findings that more is needed to increase consumers' knowledge (Bălan, 2021).

It is evident that a need for education to enhance consumer knowledge is needed, however these studies appear to navigate towards the environmental pillar of sustainable food rather than including all aspects in their educational proposals. Thus, it becomes apparent that the consumers lack a comprehensive focus on all the pillars of sustainability.

Furthermore, given the findings, the literature suggests that by increasing consumers information about sustainability aspects of their food choices can encourage both policy makers and the food industry to initiate more radical actions to stimulate sustainable diets (Garnett et al., 2015). These approaches refer to policies targeting the market environment, such as product reformulations and regulations (Van Loo et al., 2017). Thus, our findings further support previous literature in the discussion that greater information needs to be communicated to the public if society is to move towards a sustainable food system.

6. Conclusion

This study aimed to investigate what consumers understand sustainable food to entail. Using a SLR process, themes were identified from peer-reviewed articles. Multiple themes were identified regarding consumers' understanding of sustainable food including consumers' majority associate sustainable food to be environmentally friendly, consumers perceive specific diets to be sustainable, consumers' do not fully understand sustainable food labels, consumers understand organic food to be sustainable food and consumers understand local food to be sustainable food.

This study provides evidence that consumers lack adequate knowledge on what the term "sustainable food" entails. As such this contributes to the literature of sustainable food consumption by focusing on consumers understanding of the term. The paper demonstrated that without knowledge of sustainable food it is up to consumers' interpretations to guide them in their food choices. Unfortunately, often consumers perceive organic food and/or local food to be sustainable food which may not incorporate all three pillars of sustainability. Therefore, more is needed to enhance consumers knowledge to provide them with a correct

understanding of sustainable food, which will support them in making informed sustainable food choices.

6.1 Implications

This paper provides an overview of consumers' understanding of sustainable food. As such, consumers are interested in sustainable food however they do not possess a high understanding of what sustainable food entails. Additionally, consumers struggle to find reputable sources for providing information that would allow them to make informed sustainable food choices. Thus, the implementation of policies is suggested to enhance consumers knowledge. This includes clarifying how food consumption affects the planet, in addition to informing consumers about other elements of sustainable food including the economic and social pillars. This is especially critical when it is taken into consideration that, from our findings, consumers frequently neglect the economic and social pillars of sustainability, thus not purchasing truly sustainable food.

It is heavily suggested that there is an urgent need for policies, that integrate public health and sustainability goals, to be implemented to encourage the adoption of healthy and sustainable diets (Lang and Barling, 2013). It was found that consumers link sustainable food with healthy food. Moreover, many consumers choose to eat sustainably, as a result of their priorities regarding their health (Feil et al., 2020). It is suggested in order to increase consumers buying behaviour towards sustainable food, to highlight through informational campaign messages the health benefits of a sustainable diet. In doing so, consumers motivation to eat sustainable food may increase. This can be undertaken by introducing 'soft' policy approaches which includes implementing public information campaigns and education which can increase awareness, involvement, and engagement (Garnett et al., 2015). Furthermore, this will aid in informing people on how to make the right food choices for the present and the future (García-González et al., 2020).

Based on the results of this study, it was discovered that labelling is a powerful tool in which to communicate the properties of food to consumers. Moreover, it has been identified that organic food was the most highly perceived sustainable food option by consumers. As previously discussed, it has been debated within the literature if organic food can be classed as truly sustainable as it may not encompass all pillars of what constitutes sustainable food. Therefore, it is suggested that greater work needs to be undertaken to develop highly

recognisable sustainable labels that ensures the food was produced in a way that incorporates all the elements of sustainability. As labels are one of the main channels to communicate to consumers about their possible food choices, it is important that consumers' knowledge is enhanced by these labels so that they may make informed food choices. It is suggested to achieve this by increasing the communication effectiveness and readability of the contents of the sustainable food labels. For example, it is suggested to add information on food labels about the respect for nature during production, the integrity of the farmer, the origin of the food and the healthy benefits of the product (Corallo et al., 2019).

Additionally, it is suggested to develop consumer-based definitions of sustainable food, that builds on consumers current understanding of sustainable food. From this study, it has been found what consumers perceive sustainable food to be, however it is suggested to take this evidence and provide additional knowledge to consumers so that their understanding of sustainable food meets a higher standard. This can be a complex task as it provides consumers with a specific definition of sustainable food involving all three dimensions of sustainable food. However, it is argued that by providing a consumer-based definition that incorporates all elements of sustainability, approaches to increase sustainable food consumption will be less prone to errors potentially created by unidimensional criteria or approaches (Meybeck and Gitz, 2017).

Furthermore, when consumers have adequate knowledge of the impact of their food choices, this can support them in making informed food choices. Increased consumption of sustainable food can be beneficial in a multitude of ways, including reducing greenhouse gases, the loss of biodiversity and waste. Additionally, a higher demand for sustainable food could lead to a reduction in the cost of purchasing of said food. This will dramatically decrease the price premiums that are often cited as being a barrier to purchasing sustainable food.

The theoretical implications arising from this study is foremost addressing the ambiguity around the term 'sustainable food'. Many authors in sustainable food consumption literature have investigated consumers buying behaviour towards various food groups such as organic and local food whereas these are not inherently sustainable food (Muller et al., 2017). Therefore, this paper aims to address the disparity between sustainable food and sustainable like foods.

Thus, there is a greater need to clearly categorise the literature regarding various sustainable like foods, rather than grouping them into the same context. For example, the majority of the papers identified through the SLR for sustainable food showed studies on organic and local food. As these foods do not encompass all elements of sustainability, it leads to a lack of clarity within the sustainable food literature as it is assumed that sustainable like foods are innately sustainable.

6.2 Limitations

This paper used the SLR process to identify articles showing what consumers perceive sustainable food to be. The SLR process offers a reliable method in presenting a synthesis of the literature while simultaneously reducing bias, compared to a traditional literature review (Pittaway et al., 2004). However, a number of limitations can be identified (Jesson et al., 2011; Bryman, 2012).

The five databases chosen for this study were intended to capture a wide range of consumer behaviour, sustainable and food journals. However, this selection does not necessarily capture all the journals where consumer studies may publish research, particularly research closely aligned with sustainable food. For instance, some researchers may select interdisciplinary journals rather than journals focused on a specific topic.

Another limitation of this study concerns the choice of terms for the literature search. Although it is believed that the right search strings and keywords have been used, articles dealing with this subject under different labels may have been missed.

Finally, articles were bound by a timeframe of ten years, 2010-2020, therefore important, theoretical studies, such as those by Wilkins (2002) and Chang and Zepeda (2005), were not included in the analysis. Notwithstanding these limitations, this study can serve as a guide which could stimulate further interest in consumers purchasing sustainable food.

6.3 Future research

From the literature review, it appears to be a relative lack of research into consumers' knowledge of sustainable foods specifically. Moreover, there is a further lack of studies which investigate Irish consumers' knowledge of sustainable food. Pursuing a quantitative approach, incorporating sustainability knowledge scales from consumer studies (Peano et al.,

2019) would advance knowledge in this area. Additionally, an in-depth approach could be pursued to determine consumer perceptions of sustainable food in an Irish context. Moreover, the issue of sustainable food from a food provider's perspective is an interesting one which could be usefully explored in further research. It would be interesting to understand how they attempt to harness the information of consumers' perceptions of sustainable food and how this could impact their food offerings and if this information could be beneficial to their business.

References

- Annunziata, A. and Vecchio, R. (2016) Organic Farming and Sustainability in Food Choices: An Analysis of Consumer Preference in Southern Italy. *Agriculture and Agricultural Science Procedia*, Vol. 8 (1), pp. 193-200. Available at: <https://www.sciencedirect.com/science/article/pii/S2210784316300936> [Accessed 2 June 2021]
- Annunziata, A., Mariani, A. and Vecchio, R. (2019) Effectiveness of Sustainability Labels in Guiding Food Choices: Analysis of Visibility and Understanding among Young Adults. *Sustain. Prod. Consum.*, 17(1), pp. 108–115. Available at: https://www.researchgate.net/publication/328109213_Effectiveness_of_sustainability_labels_in_guiding_food_choices_Analysis_of_visibility_and_understanding_among_young_adults [Accessed 12 June 2021]
- Aschemann-Witzel, J., de Hooge, I., Amani, P., Bech-Larsen, T., and Oostindjer, M. (2015). Consumer-Related Food Waste: Causes and Potential for Action. *Sustainability*, 7(6), pp. 6457-6477. Available at: https://www.researchgate.net/publication/277280676_Consumer-Related_Food_Waste_Causes_and_Potential_for_Action [Accessed 2 March 2021]
- Bălan C. How Does Retail Engage Consumers in Sustainable Consumption? A Systematic Literature Review. *Sustainability*, Vol. 13(1), pp.96. Available at: https://www.researchgate.net/publication/347968619_How_Does_Retail_Engage_Consumers_in_Sustainable_Consumption_A_Systematic_Literature_Review [Accessed 3 June 2021]
- Banterle, A., Carraresi, L. and Stranieri, S. (2010). Small Business Marketing Capability in the Food Sector: The Cases of Belgium, Hungary and Italy. *International Journal on Food System Dynamics*, Vol. 1(2), pp. 94-102. Available at: https://www.researchgate.net/publication/46535619_Small_Business_Marketing_Capability_in_the_Food_Sector_The_Cases_of_Belgium_Hungary_and_Italy [Accessed 2 June 2021]
- Bazzania, C., Caputo, V., Nayga, R. M., and Canavari, M. (2017). Revisiting consumers' valuation for local versus organic food using a nonhypothetical choice experiment: Does personality matter? *Food Quality and Preference*, Vol. 62(1), pp. 144–154. Available at:

<https://www.sciencedirect.com/science/article/pii/S0950329317301568> [Accessed 8 June 2021]

- Béné, C., Oosterveer, P., Lamotte, L., Brouwer, I., Haan, S., Prager, S., Talsma, E.F., and Khoury, C. (2019) When food systems meet sustainability – Current narratives and implications for actions. *World Development*, Vol. 113(1), pp. 116-130.
- Bryman, A. (2015). *Social research methods*. Oxford: Oxford University Press.
- Chang, H. S. and Zepeda, L. (2005) Consumer perceptions and demand for organic food in Australia: Focus group discussions. *Renewable Agriculture and Food Systems*, 20(3), pp. 155-167. Available at:
https://www.researchgate.net/publication/231862876_Consumer_perceptions_and_demand_for_organic_food_in_Australia_Focus_group_discussions [Accessed 2 March 2021]
- Corallo, A., Latino, M., Menegoli, M. and Spennato, A. (2019). A Survey to Discover Current Food Choice Behaviors. *Sustainability*, Vol. 11(1), pp. 5041.
<https://www.semanticscholar.org/paper/A-Survey-to-Discover-Current-Food-Choice-Behaviors-Corallo-Latino/a80aa06f7ea4ec2a3ac57bf7ba7cce407f5ee14a> [Accessed 12 June 2021]
- Cvijanović, D., Ignjatijević, S., Tankosić, J.V., and Cvijanović, V. (2020). Do Local Food Products Contribute to Sustainable Economic Development. *Sustainability*, Vol.12 (7), pp. 1-18. Available at:
https://econpapers.repec.org/article/gamjsusta/v_3a12_3ay_3a2020_3ai_3a7_3ap_3a2847-3ad_3a340949.htm [Accessed 2 March 2021]
- de Magistris, T. and Gracia, A. (2016). Consumers' Willingness-to-Pay for sustainable food products: The case of organically and locally grown almonds in Spain. *Journal of Cleaner Production*, Vol. 118(1), pp. 97-104. Available at:
<https://www.sciencedirect.com/science/article/pii/S0959652616000858> [Accessed 18 June 2021]
- Dixon-Woods, M. and Fitzpatrick, R., (2001) Qualitative research in systematic reviews. *British Medical Journal*, Vol.323(7316), pp. 765–766. Available at :
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1121325/> [Accessed 2 July 2021]

- Dobson, A. (2007). Environmental Citizenship: Towards Sustainable Development. *Sustainable Development*, 15(5), pp. 276-285. Available at: <https://onlinelibrary.wiley.com/doi/abs/10.1002/sd.344> [Accessed 2 March 2021]
- European Commission (2019) Sustainable Food. European Commission. Available at: <https://ec.europa.eu/environment/archives/eussd/food.htm> [Accessed 5 July 2021]
- FAO (2010) Sustainable Diets and Biodiversity Directions And Solutions For Policy, Research And Action. Available at: <http://196.43.165.48/bitstream/handle/123456789/415/biodiversity.pdf?sequence=1&isAllowed=y#page=21> 2010, Food & Agriculture Organisation: Rome.
- FAO (2014) “Definitional framework of food loss”, working paper, Food and Agricultural Organisation, Rome Available at: www.fao.org/3/a-at144e.pdf [Accessed 7 July 2021]
- FAO and WHO. 2019. Sustainable healthy diets – Guiding principles. Rome. Available at: <http://www.fao.org/3/ca6640en/ca6640en.pdf> [Accessed 2 March 2021]
- Fehér, A., Gazdecki, M., Véha, M., Szakály, M. and Szakály, Z. (2020). A Comprehensive Review of the Benefits of and the Barriers to the Switch to a Plant-Based Diet. *Sustainability*, Vol. 12(10), pp. 4136. Available at: https://www.researchgate.net/publication/341515915_A_Comprehensive_Review_of_the_Benefits_of_and_the_Barriers_to_the_Switch_to_a_Plant-Based_Diet [Accessed 2 March 2021]
- Forbes, S. L., Cohen, D. A., Cullen, R., Wratten, S. D., and Fountain, J. (2009). Consumer attitudes regarding environmentally sustainable wine: An exploratory study of the New Zealand marketplace. *Journal of Cleaner Production*, Vol. 17(13), pp. 1195–1199. Available at: <https://www.sciencedirect.com/science/article/pii/S0959652609001486> [Accessed 25 June 2021]
- Gao, Z. Li, C. Bai, J. and Fu, J. (2016). Chinese Consumer Quality Perception and Preference of Sustainable Milk. *China Economic Review*, Vol. 9 (12), pp. 2282. Available at: https://www.researchgate.net/publication/303667899_Chinese_Consumer_Quality_Perception_and_Preference_of_Sustainable_Milk [Accessed 25 June 2021]

- García-González, Á., Achón, M., Carretero Krug, A., Varela-Moreiras, G., and Alonso-Aperte, E. (2020). Food Sustainability Knowledge and Attitudes in the Spanish Adult Population: A Cross-Sectional Study. *Nutrients*, 12(10), pp. 3154. Available at: https://www.researchgate.net/publication/346240572_Food_Sustainability_Knowledge_and_Attitudes_in_the_Spanish_Adult_Population_A_Cross-Sectional_Study [Accessed 20 June 2021]
- Garnett, T., Mathewson, S., Angelides, P., and Borthwick, F. (2015). Policies and actions to shift eating patterns: what works? *Foresight*, Vol. 15(7528), pp. 518-522. Available at: https://tabledebates.org/sites/default/files/2020-10/fcrn_chatham_house_0.pdf [Accessed 25 February 2021]
- Gifford, K. and Bernard, J. (2011) The Effect of Information on Consumers' Willingness to Pay for Natural and Organic Chicken. *International Journal of Consumer Studies*. Vol. 35(3), pp. 282-289. Available at: https://www.researchgate.net/publication/263251868_The_Effect_of_Information_on_Consumers'_Willingness_to_Pay_for_Natural_and_Organic_Chicken [Accessed 25 June 2021]
- Goggins, G. and Rau, H. (2015) 'Beyond calorie counting: Assessing the sustainability of food provided for public consumption'. *Journal of Cleaner Production*, Vol. 112(1), pp. 257-266. Available at: <https://doi.org/10.1016/j.jclepro.2015.06.035> [Accessed 22 June 2021]
- Gomezelj, D.O. (2016). A systematic review of research on innovation in hospitality and tourism. *International Journal of Contemporary Hospitality Management*, Vol. 28 (3), pp. 516-558. Available at: https://www.researchgate.net/publication/303501946_A_systematic_review_of_research_on_innovation_in_hospitality_and_tourism [Accessed 25 June 2021]
- González, N., Marquès, M., Nadal, M., and Domingo, J. L. (2020). Meat consumption: Which are the current global risks? A review of recent (2010-2020) evidences. *Food research international (Ottawa, Ont.)*, Vol. 137(1), pp. 109341. Available at: <https://doi.org/10.1016/j.foodres.2020.109341> [Accessed 12 March 2021]
- Gutierrez, A. and Thornton, T. (2014). Can Consumers Understand Sustainability through Seafood Eco-Labels? A U.S. and UK Case Study. *Sustainability*

(Switzerland), Vol. 6(11), pp. 8195-8217. Available at:

<https://www.researchgate.net/publication/286124245> Can Consumers Understand Sustainability through Seafood Eco-Labels A US and UK Case Study [Accessed 2 March 2021]

- Hanss, D. and Böhm, G. (2012). Sustainability seen from the perspective of consumers. *International IJC*, Vol. 36(1), pp. 678-687. Available at: <https://www.researchgate.net/publication/260790331> Sustainability seen from the perspective of consumers [Accessed 2 June 2021]
- Hart, C. (2005). *Doing a Literature Review*. Sage Publications, London.
- Hartmann, C. and Siegrist, M. (2017). Consumer perception and behaviour regarding sustainable protein consumption: A systematic review. *Trends in Food Science & Technology*, Vol. 61(1), pp. 11-25. Available at: <https://www.researchgate.net/publication/312125208> Consumer perception and behaviour regarding sustainable protein consumption A systematic review [Accessed 10 June 2021]
- Hemmerling, S., Hamm, U. and Spiller, A. (2015). Consumption behaviour regarding organic food from a marketing perspective—a literature review. *Organic Agriculture*, Vol. 5(4), pp. 277–313. Available at: <https://www.researchgate.net/publication/276927967> Consumption behaviour regarding organic food from a marketing perspective-a literature review [Accessed 20 June 2021]
- Hoek, A. C., Luning, P. A., Stafleu, A., and de Graaf, C. (2004). Food-related lifestyle and health attitudes of Dutch vegetarians, non-vegetarian consumers of meat substitutes, and meat consumers. *Appetite*, Vol. 42(3), pp. 265–272. Available at: <https://doi.org/10.1016/j.appet.2003.12.003> [Accessed 25 June 2021]
- Hughner, R.S., McDonagh, P., Prothero, A., Shultz, C.J. II and Stanton, J. (2007). Who are organic food consumers? A compilation and review of why people purchase organic food. *Journal of Consumer Behaviour*, Vol. 6(2-3), pp. 94-110. Available at: <https://onlinelibrary.wiley.com/doi/abs/10.1002/cb.210> [Accessed 3 June 2021]

- IPCC (2019) Climate Change and Land. IPCC. Available at: https://www.ipcc.ch/site/assets/uploads/2019/08/Edited-SPM_Approved_Microsite_FINAL.pdf [Accessed 2 March 2021]
- Jesson J., Matheson L. and Lacey F.M. (2011). *Doing your literature review: traditional and systematic techniques*. Los Angeles & London: SAGE Publications.
- Jungbluth N., Tietje O. and Scholz R. (2000). Food purchases: Impacts from the consumers' point of view investigated with a modular LCA. *Int. J. Life Cycle Assess*, Vol. 5(3), pp. 134–142. Available at: https://www.researchgate.net/publication/226355727_Food_purchases_Impacts_from_the_consumers'_point_of_view_investigated_with_a_modular_LCA [Accessed 2 March 2021]
- Kamenidou, I., Stavrianea, A. and Bara, E.Z. (2019) Generational Differences toward Organic Food Behavior: Insights from Five Generational Cohorts. *Sustainability*, Vol. 12(6), pp. 2299. Available at: https://www.researchgate.net/publication/340025224_Generational_Differences_toward_Organic_Food_Behavior_Insights_from_Five_Generational_Cohorts [Accessed 10 June 2021]
- Lang, T., and Barling, D. (2013) Nutrition and sustainability: An emerging food policy discourse. *Proceedings of the Nutrition Society*, Vol. 72(1), pp. 1-12. Available at: <https://www.semanticscholar.org/paper/Nutrition-and-sustainability%3A-an-emerging-food-Lang-Barling/64ec3c87e75018f5936b4c390162640b046000f8> [Accessed 2 March 2021]
- Lin Y.C. (2020) Sustainable food, ethical consumption and responsible innovation: insights from the slow food and “low carbon food” movements in Taiwan. *Food, Culture & Society*, Vol. 23 (2), pp. 155-172. Available at: <https://www.tandfonline.com/doi/abs/10.1080/15528014.2019.1682885?journalCode=rffc20> [Accessed 2 March 2021]
- Macdiarmid, J., Kyle, J., Horgan, G., Loe, J., Fyfe, C., Johnstone, A., and McNeill, G. (2012). Sustainable diets for the future: Can we contribute to reducing greenhouse gas emissions by eating a healthy diet? *The American journal of clinical nutrition*, Vol. 96(3), pp. 632-639. Available at:

<https://www.researchgate.net/publication/230598764> Sustainable diets for the future Can we contribute to reducing greenhouse gas emissions by eating a healthy diet [Accessed 2 March 2021]

- Meybeck, A., and Gitz, V. (2017). Sustainable diets within sustainable food systems. *Proceedings of the Nutrition Society*, Vol. 76(1), pp. 1-11. Available at: 10.1017/S0029665116000653 [Accessed 2 March 2021]
- Msengi, I., Doe, R., Wilson, T., Fowler, D., Wigginton, C., Olorunyomi, S., Banks, I. and Morel, R. (2019) Assessment of knowledge and awareness of “sustainability” initiatives among college students. *Renew. Energy Environ. Sustain*, Vol. 4(6). Available at: https://www.rees-journal.org/articles/rees/full_html/2019/01/rees180008/rees180008.html [Accessed 15 June 2021]
- Mylan, J. (2018) Sustainable consumption in everyday life: A qualitative study of UK consumer experiences of meat reduction. *Sustainability*, Vol. 10(7), pp. 2307. Available at: <https://www.researchgate.net/publication/326391208> Sustainable Consumption in Everyday Life A Qualitative Study of UK Consumer Experiences of Meat Reduction [Accessed 2 March 2021]
- Özkaya, F.T., Durak, M.G., Dogan, O., Bulut, Z.A., and Haas, R. (2021). Sustainable Consumption of Food: Framing the Concept through Turkish Expert Opinions. *Sustainability*, Vol. 13(7), pp. 3946. Available at: <https://www.mdpi.com/2071-1050/13/7/3946> [Accessed 2 March 2021]
- Peano, C., Merlino, V. M., Sottile, F., Borra, D., and Massaglia, S. (2019). Sustainability for food consumers: which perception? *Sustainability*, Vol. 11(21), pp. 5955. Available at: <https://www.researchgate.net/publication/336817560> Sustainability for Food Consumers Which Perception [Accessed 15 June 2021]
- Pearson, D., Friel, S. and Lawrence, M. (2014) Building environmentally sustainable food systems on informed citizen choices: evidence from Australia. *Biological Agriculture & Horticulture*, Vol. 30(3), pp. 183-197. Available at: <https://www.tandfonline.com/doi/abs/10.1080/01448765.2014.890542> [Accessed 2 March 2021]

- Peschel, A.O., Grebitus, C., Steiner, B., and Veeman, M. (2016). How does consumer knowledge affect environmentally sustainable choices? Evidence from a cross-country latent class analysis of food labels. *Appetite*, Vol. 106(1), pp. 78-91. Available at: <https://www.sciencedirect.com/science/article/pii/S0195666316300903> [Accessed 15 June 2021]
- Pittaway, L., and Cope, J. (2007). Entrepreneurship education: A systematic review of the evidence. *International small business journal*, Vol. 25(5), pp. 479-510. Available at: <https://www.researchgate.net/publication/237433793> Entrepreneurship Education A Systematic Review of the Evidence [Accessed 2 March 2021]
- Popović, I., Bossink, B., and Sijde, P. (2019). Factors influencing consumers' decision to purchase food in environmentally friendly packaging: What do we know and where do we go from here? *Sustainability*, Vol. 11(1), pp. 1-22. Available at: <https://www.researchgate.net/publication/337974233> Factors Influencing Consumers' Decision to Purchase Food in Environmentally Friendly Packaging What Do We Know and Where Do We Go from Here [Accessed 2 March 2021]
- Reynolds, L. (2002). Consumer/Producer Links In Fair Trade Coffee Networks. *Sociologia Ruralis*, Vol. 42(4), pp. 404 - 424. Available at: <https://www.researchgate.net/publication/227537370> Consumer/Producer Links In Fair Trade Coffee Networks [Accessed 15 June 2021]
- Reheul, D., E. Mathijs, and J. Relaes (2001) Elements for a future view with respect to sustainable agri- and horticulture in Flanders, Report from the project “Sustainable Agriculture”, Stedula, Ghent.
- Sánchez-Bravo, P., Chambers, E., Noguera-Artiaga, L., Sendra, E., and Carbonell-Barrachina, Á. (2021). Consumer understanding of sustainability concept in agricultural products. *Food Quality and Preference*, Vol. 89(1), pp. 104136. Available at: <https://www.sciencedirect.com/science/article/pii/S0950329320304055?via%3Dihub> [Accessed 2 March 2021]
- Sauer, L. and Wood, R. (2018). Behaviours and attitudes towards sustainable food provision on the part of Dutch restaurateurs. *Research in Hospitality Management*, Vol. 8(1), pp. 41 - 46. Available at: <https://www.tandfonline.com/doi/abs/10.1080/22243534.2018.1501177> [Accessed 15 June 2021]

- Schleenbecker, R. and Hamm, U. (2013). Consumers' perception of organic product characteristics. A review. *Appetite*, Vol. 71(1), pp. 420-429. Available at: <https://pubmed.ncbi.nlm.nih.gov/24012637/> [Accessed 2 March 2021]
- Schönhart, M., Penker, M. and Schmid, E. (2009). Sustainable local food production and consumption: Challenges for implementation and research. *Outlook Agric*, Vol. 38(2), pp. 175–182. Available at: https://www.researchgate.net/publication/228430504_Sustainable_Local_Food_Production_and_Consumption_Challenges_for_Implementation_and_Research [Accessed 2 March 2021]
- Shi, J., Visschers, V. H., Bumann, N., and Siegrist, M. (2018). Consumers' climate-impact estimations of different food products. *Journal of Cleaner Production*, Vol. 172(1), pp. 1646-1653. https://www.researchgate.net/publication/310811470_Consumers'_climate-impact_estimations_of_different_food_products [Accessed 3 July 2021]
- Sidali, K. L., Spiller, A. and von Meyer-Höfer, M. (2016). Consumer Expectations Regarding Sustainable Food: Insights from Developed and Emerging Markets. *The International Food and Agribusiness Management Review*, Vol. 19(1), pp. 141-170. Available at: https://www.researchgate.net/publication/307607830_Consumer_Expectations_Regarding_Sustainable_Food_Insights_from_Developed_and_Emerging_Markets [Accessed 2 March 2021]
- Siegrist, M., Visschers, V. and Hartmann, C. (2015). Factors influencing changes in sustainability perception of various food behaviors: Results of a longitudinal study. *Food Quality and Preference*, Vol. 46(1), pp. 33-39. Available at: https://www.researchgate.net/publication/280976061_Factors_influencing_changes_in_sustainability_perception_of_various_food_behaviors_Results_of_a_longitudinal_study [Accessed 3 July 2021]
- Singh, A. and Verma, P. (2017). Factors influencing Indian consumers' actual buying behaviour towards organic food products. *Journal of Cleaner Production*, Vol. 167(5), pp. 473- 483. Available at: https://www.researchgate.net/publication/319301264_Factors_influencing_Indian_consumers'_actual_buying_behaviour_towards_organic_food_products [Accessed 2 March 2021]

- Stoessel, F., Juraske, R., Pfister, S., and Hellweg, S. (2012). Life cycle inventory and carbon and water FoodPrint of fruits and vegetables: application to a Swiss retailer. *Environmental science & technology*, Vol. 46(6), pp. 3253–3262. Available at: <https://doi.org/10.1021/es2030577> [Accessed 2 March 2021]
- Tobler, C., Visschers, V., and Siegrist, M. (2011). Eating green. Consumers' willingness to adopt ecological food consumption behaviors. *Appetite*, Vol. 57(3), pp. 674-82. Available at: https://www.researchgate.net/publication/51623627_Eating_green_Consumers'_willingness_to_adopt_ecological_food_consumption_behaviors [Accessed 2 March 2021]
- Tranfield, D., Denyer, D. and Smart, P. (2003). Towards a methodology for developing evidence-informed management knowledge by means of systematic review. *British Journal of Management*, Vol. 14(3), pp. 207-222. Available at: https://www.researchgate.net/publication/216458560_Towards_a_Methodology_for_Developing_Evidence-Informed_Management_Knowledge_by_Means_of_Systematic_Review [Accessed 3 July 2021]
- Ukenna, S. and Ayodele, A. (2019). Applying the Extended Theory of Planned Behavior to Predict Sustainable Street Food Patronage in a Developing Economy. *Journal of Food Products Marketing*, Vol. 25(2), pp. 1-31. Available at: https://www.researchgate.net/publication/330963663_Applying_the_Extended_Theory_of_Planned_Behavior_to_Predict_Sustainable_Street_Food_Patronage_in_a_Developing_Economy [Accessed 2 March 2021]
- Van Loo, E., Caputo, V., Nayga, R.M., Meullenet, J.F., Crandall, P.G and Ricke, S.C. (2010). Effect of organic poultry purchase frequency on consumer attitudes toward organic poultry meat. *Journal of Food Science*, 75(7), pp. 384–397. https://www.researchgate.net/publication/51091632_Effect_of_Organic_Poultry_Purchase_Frequency_on_Consumer_Attitudes_Toward_Organic_Poultry_Meat [Accessed 3 July 2021]
- Van Loo, E., Hoefkens, C. and Verbeke, W. (2017). Healthy, sustainable and plant-based eating: Perceived (mis)match and involvement-based consumer segments as targets for future policy. *Food Policy*, Vol. 69(1), pp. 46-57. Available at: https://www.researchgate.net/publication/315326093_Healthy_sustainable_and_plant-based_eating_Perceived_mismatch_and_involvement-based_consumer_segments_as_targets_for_future_policy

based eating Perceived mismatch and involvement-based consumer segments as targets for future policy [Accessed 2 March 2021]

- Verain, M., Bartels, J., Dagevos, H., Sijtsema, S., Onwezen, M., and Antonides, G. (2012). Segments of sustainable food consumers: a literature review. *International Journal of Consumer Studies*, Vol. 36, pp. 123-132. Available at: https://www.researchgate.net/publication/239846978_Segments_of_sustainable_food_consumers_A_literature_review [Accessed 2 March 2021]
- Vermeir, I. and Verbeke, W. (2006). Sustainable Food Consumption: Exploring the Consumer “Attitude – Behavioral Intention” Gap. *Journal of Agricultural and Environmental Ethics*, Vol. 19(2), pp. 169-194. Available at: https://www.researchgate.net/publication/226354722_Sustainable_Food_Consumption_Exploring_the_Consumer_Attitude_-_Behavioral_Intention_Gap [Accessed 2 March 2021]
- von Meyer-Höfer, M., Wense, V. and Spiller, A. (2015). Characterising convinced sustainable food consumers. *British Food Journal*, Vol. 117(3), pp. 1082-1104. Available at: https://www.researchgate.net/publication/276372184_Characterising_convinced_sustainable_food_consumers [Accessed 2 March 2021]
- Wang, E. and Gao, Z. (2017). Chinese Consumer Quality Perception and Preference of Traditional Sustainable Rice Produced by the Integrated Rice–Fish System. *Sustainability*, 9(12), pp. 2282. Available at: https://www.researchgate.net/publication/321740176_Chinese_Consumer_Quality_Perception_and_Preference_of_Traditional_Sustainable_Rice_Produced_by_the_Integrated_Rice-Fish_System [Accessed 2 March 2021]
- Wang, L., Yang, H., Wang, Y. and Zhang, M. (2015). Consumer perceptions and attitudes of organic food products in Eastern China. *British Food Journal*, Vol. 117(3), pp. 1105-1121. Available at: https://www.researchgate.net/publication/276372230_Consumer_perceptions_and_attitudes_of_organic_food_products_in_Eastern_China [Accessed 2 March 2021]
- Wilkins, J. L. (2002). Consumer perceptions of seasonal and local foods: A study in a US community. *Ecology of food and nutrition*, Vol. 41(5), pp. 415-439. Available at:

<https://www.tandfonline.com/doi/abs/10.1080/03670240214066> [Accessed 2 March 2021]

- Xie, J., Gao, Z., Swisher, M., and Zhao, X. (2016). Consumers' preferences for fresh broccolis: interactive effects between country of origin and organic labels. *Agricultural Economics*, Vol. 47(1), pp. 181-191. Available at: <https://onlinelibrary.wiley.com/doi/abs/10.1111/agec.12193> [Accessed 2 March 2021]
- Yanarella, E.J. Levine, R. and Lancaster, R. (2009). Research and Solutions: "Green" vs. Sustainability: From Semantics to Enlightenment. *Sustainability: The Journal of Record*. 2(5), pp. 296-302. Available at: https://www.researchgate.net/publication/274619517_Research_and_Solutions_Green_vs_Sustainability_From_Semantics_to_Enlightenment [Accessed 2 March 2021]
- Zanolì, R., Scarpa, R., Napolitano, F., Piasentier, E., Naspetti, S. and Bruschi, V. (2013). Organic label as identifier of environmentally-related quality: a consumer choice experiment on beef in Italy. *Renewable Agriculture and Food Systems*, Vol. 28(1), pp. 70–79. Available at: <https://doi.org/10.1017/S1742170512000026> [Accessed 12 March 2021]
- Zhang, J., He, C., Chen, L. and Cao, S. (2018). Improving food security in China by taking advantage of marginal and degraded lands. *Journal of Cleaner Production*, Vol. 171(1), pp. 1020-1030. Available at: https://www.researchgate.net/publication/320352924_Improving_food_security_in_China_by_taking_advantage_of_marginal_and_degraded_lands [Accessed 2 March 2021]

Appendices

Appendix A: Initial Search Results for key term searches

Table 1: Initial Search Results for key term searches				
Database searched	Initial search results for the terms consumer, "sustainable food", perception and organic	Initial search results for the terms consumer, "sustainable food", perception and local	Initial search results for the terms consumer, "sustainable food", perception and conventional	Initial search results for the terms consumer, "sustainable food", perception
Web of science	52	24	12	573
Science Direct	874	1016	712	1418
Emerald Insight	506	540	347	724
Sage Journals	207	296	158	332
Taylor and Francis	682	889	478	1019

Table 2: Initial Search Results for key term searches				
Database searched	Initial search results for the terms consumer, "sustainable food" and definition and organic	Initial search results for the terms consumer, "sustainable food", definition and local	Initial search results for the terms consumer, "sustainable food", perception and conventional	Initial search results for the terms consumer, "sustainable food" and definition
Web of science	1	4	0	13
Science Direct	1083	1392	902	1832
Emerald Insight	373	468	266	592
Sage Journals	288	410	209	466
Taylor and Francis	955	1267	638	1461

Table 3: Initial Search Results for key term searches

Database searched	Initial search results for the terms consumer, "sustainable food" and understanding and organic	Initial search results for the terms consumer, "sustainable food", understanding and local	Initial search results for the terms consumer, "sustainable food", understanding and conventional	Initial search results for the terms consumer, "sustainable food" and understanding
Web of science	38	29	9	147
Science Direct	1511	1924	1230	2588
Emerald Insight	604	736	435	962
Sage Journals	308	440	218	508
Taylor and Francis	1072	1415	699	1622

Appendix B: Refinement of search results for key terms

Table 4: Refinement of search results for key terms				
Database searched	Search results for the terms consumer, “sustainable food”, perception and organic within peer-reviewed consumer and food journals, published 2010-2020.	Search results for the terms consumer, “sustainable food”, perception and local within peer-reviewed consumer and food journals, published 2010-2020.	Search results for the terms consumer, “sustainable food”, perception and conventional within peer-reviewed consumer and food journals, published 2010-2020.	Search results for the terms consumer, “sustainable food”, perception within peer-reviewed consumer and food journals, published 2010-2020.
Web of science	45	20	8	94
Science Direct	39	52	36	118
Emerald Insight	420	417	273	569
Sage Journals	120	171	84	197
Taylor and Francis Online	428	554	288	644

Table 5: Refinement of search results for key terms				
Database searched	Search results for the terms consumer, “sustainable food”, definition and organic within peer-reviewed consumer and food journals, published 2010-2020.	Search results for the terms consumer, “sustainable food”, definition and local within peer-reviewed consumer and food journals, published 2010-2020.	Search results for the terms consumer, “sustainable food”, definition and conventional within peer-reviewed consumer and food journals, published 2010-2020.	Search results for the terms consumer, “sustainable food”, definition within peer-reviewed consumer and food journals, published 2010-2020.
Web of science	4	7	0	19
Science Direct	795	1038	902	1369
Emerald Insight	260	360	203	410
Sage Journals	163	236	117	270
Taylor and Francis Online	709	964	473	1104

Table 6: Refinement of search results for key terms

Database searched	Search results for the terms consumer, “sustainable food”, understanding and organic within peer-reviewed consumer and food journals, published 2010-2020.	Search results for the terms consumer, “sustainable food”, understanding and local within peer-reviewed consumer and food journals, published 2010-2020.	Search results for the terms consumer, “sustainable food”, understanding and conventional within peer-reviewed consumer and food journals, published 2010-2020.	Search results for the terms consumer, “sustainable food”, understanding. within peer-reviewed consumer and food journals, published 2010-2020.
Web of science	41	36	13	164
Science Direct	1095	1431	873	1919
Emerald Insight	433	505	305	670
Sage Journals	171	242	117	279
Taylor and Francis Online	768	1047	504	1189

Appendix C: The final search results for key terms

Database searched	Search results for the terms consumer, “sustainable food”, perception and organic, further refined to search abstract only	Local Search results for the terms consumer, “sustainable food”, perception and local, further refined to search abstract only	Conventional Search results for the terms consumer, “sustainable food”, perception and conventional, further refined to search abstract only	Total Search results for the terms consumer, “sustainable food”, perception, further refined to search abstract only
Web of science	11	8	2	43
Science Direct	38	25	14	59
Emerald Insight	2	2	1	14
Sage Journals	0	0	0	1
Taylor and Francis Online	1	3	2	12

Database searched	Search results for the terms consumer, “sustainable food”, definition and organic, further refined to search abstract only	Local Search results for the terms consumer, “sustainable food”, definition and local, further refined to search abstract only	Conventional Search results for the terms consumer, “sustainable food”, definition and conventional, further refined to search abstract only	Total Search results for the terms consumer, “sustainable food”, definition, further refined to search abstract only
Web of science	0	1	0	3
Science Direct	22	28	19	38
Emerald Insight	0	0	0	1
Sage Journals	0	0	0	0
Taylor and Francis Online	1	0	1	4

Table 9: The final search results for key terms

Database searched	Search results for the terms consumer, “sustainable food”, understanding and organic, further refined to search abstract only	Local Search results for the terms consumer, “sustainable food”, understanding and local, further refined to search abstract only	Conventional Search results for the terms consumer, “sustainable food”, understanding and conventional, further refined to search abstract only	Total Search results for the terms consumer, “sustainable food”, understanding , further refined to search abstract only
Web of science	9	12	6	63
Science Direct	42	42	34	66
Emerald Insight	3	6	1	32
Sage Journals	0	1	1	1
Taylor and Francis Online	2	7	3	18