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Consumers' Understanding of Healthy Foods: The Evidence of Superfoods in Belgium

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Summary

This paper presents the result of an investigation over healthy foods information acquisition among Belgian consumers. As modern food scenario grows in complexity for the ways it needs to produce food and its consequences on health, understanding the behaviour and beliefs of consumers towards healthy nutrition is a step closer to more effective policies on health and nutrition. Our results have found that one respondent out of three would state a superfood as being the healthiest. The use of social media has contributed to building up the belief that such superfoods are healthy despite these respondents were not found to make more use of online sources than others to acquire general food information. The conclusion is then that information sources that are free of access and possibly cannot be verified in their scientific accuracy have an important influence on dietary behaviour among Belgian consumers. This leads us to suggest a more accurate validation on the content of such sources and to further investigate the way consumers make use of such channels, in order to help constructing better frameworks for healthier dietary behaviours.

Keywords: Superfoods; Consumers perception; healthy foods; Belgium; social media

JEL Classification codes: I12; L82; Q18

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1. INTRODUCTION

The social, economic, industrial and technological developments of the last decades have led to drastic changes in consumer behavior, life choices and lifestyles. The manners and the motivations people consume goods and make use of services are changing rapidly and across all sectors, including foods (Brito and De Freitas, 2019; Correa *et al.*, 2019). Concerns about the safety of food animate the debate on such sector in modern society. Important guidelines on EU food safety regulations can be found in the White Paper on Food Safety, where it is clear that the continent benefits of higher standards in such issues compared to other countries, (European Commission, 2000) leading often to conflicts during international trade (Lang, 2016; BBC, 2019; Eustice, 2019). An important European Agency to address food quality and safety is the European Food Safety Authority (EFSA), designed for assessing the risk, developing scientific opinions that form the basis of European legislation and create policies on nutrition. The EFSA, with the collaboration of the Member States, is fully involved in elaborating methodical advice to ensure food safety and keeping its standards on the level (EFSA, 2015).

Concern over food composition in the EU and not only, expresses broader concerns on the effects of food on someone's health. As a matter of fact food, and in general nutrition are considered the main elements linked to non-communicable diseases in Western societies, those being like cancers, heart and cardiovascular issues, obesity and diabetes: in this respect, foods are both causes and possible remedies to those (WHO, 2002; WHO, 2003; WHO, 2004). Worldwide, 52% of adult population is overweight and obese (Abarca-Gómez *et al.*, 2017) and the comorbidities related to it list for example abnormal anthropometric and metabolic dysfunctions (better known as metabolic syndromes), these eventually leading to increased hypertension and circumference of the waist, and hypertriglyceridemia (Biro and Wien, 2010). Experts do not relate obesity strictly to calories intake (Witkos *et al.*, 2008), as it is not overnutrition to bring these health consequences only, but malnutrition in general, as a result of poor diets composed by energy-dense as well as nutrient-poor foods (Stuckler *et al.*, 2012). Then, healthy diets are more closely associated to the intake of a broad variety of nutrients (Van Duyn and Pivonka, 2000).

It appears clear then that the importance of research related to food and intervention in such field is high, to the point that a country's degree of support for its citizens' health can be measured by its research for nutrition, chronic diseases, food composition, and population's nutritional monitoring (WHO, 2003; Schulze *et al.*, 2018). As the British Prime Minister of the time Winston Churchill stated (1943), "healthy citizens are the greatest asset any country can have". Then, the incremental rise for research studies dealing with innovative nutrition and its ways to identify solutions to health-related pathologies, with the aim of ensuring a healthier and more satisfying life, is well understood (Haas and Levin, 2012; Nestle, 2013; Tyszler *et al.*, 2015).

Moreover, if health and food are intertwined, they carry together with them more topics related to environment, economic and rural development, both on local global levels. Correct use of food information will not only serve for better dieting, but to positively affect agricultural practices as well. As population grows, increased agricultural production is necessary: and this constitutes a challenge when considering the freshness and healthiness of the food required for a healthy population (Borlaug, 2002; Southgate, 2009).

The American Society for Nutrition has defined “Nutrition Research Needs” the biggest challenge for nutrition and science research fields and organizations in this century (ASN, 2013). Results from such paper clarifies the strategies to be implemented for treating and preventing illnesses and infections, hoping that more work will be able of improving nutrition knowledge and of putting a faster end to the main illnesses it causes. Working on those will have a significant impact and influence on policy-making, global economies, and market trends (Swinburn *et al.*, 2011). It is true that consumers themselves are in rising demand for better quality food, especially in those societies where illnesses mentioned before are widespread. These requests set up new challenges for the food sector industry too, which needs to be able to reinvent itself of constantly producing or discovering new food items to be able of preventing nutrition-related pathologies and/or help maintaining a longer and healthier life for its consumers (Branca *et al.*, 2019; Yach *et al.*, 2010).

Some food items that have become familiar to average consumers for being healthy, are the so-called “superfoods” (Daugherty, 2011). The “healthy” aura surrounding them relate to the most different food categories, dealing either with sodium or sugar content, vitamins, phytosterols stanols, fibers, and so on. The Concerted Action of the European Commission on Functional Food Science in Europe, together with the International Life Science Institute, described a food product of being “super” if there are positive effects on the vital functions of the human body, if there are general physical conditions improvements, or reductions in the risk of appearance of diseases (Shiomi and Waisundara, 2017; Siro *et al.*, 2008). Moreover, superfoods cannot to be supplements, i.e. pills or drugs but they should be normal food products (Siró *et al.*, 2008). Superfoods also differ from the also well-known “functional foods” as the latter are “fortified” of an ingredient that can have been added artificially (Stein and Rodriguez-Cerezo, 2008). To date, the market of superfoods despite academically sketchy, is booming ad this trend appearing of being long-lasting (Lau *et al.*, 2013). The global superfood market has been evaluated at approximately 141 billion USD in 2017 and is expected to become about 251 billion USD by the end of 2025, growing at a CAGR (Compound Annual Grow Rate) of 7.47% between 2017 and 2025 (Market Research Report, 2018). Still, uncertainties and confusions around superfoods are widespread, and no fixed “list” of superfood items has been agreed upon on any level, leading many food companies and actors to use such term with relative, dangerous freedom (Ameratunga *et al.*, 2014; Rankin, 2015).

As indicated by Lawrence and Rayner (2008) there is a growing concern for appropriateness and use Health Claims (HCs) in relation to healthy foods. HCs are influential tools in consumer communication since they principally express food characteristics and benefits that could otherwise be strange to the consumer. The potential of HCs is to drive consumers’ preference to increase their nutritional understanding and facilitate their decision-making towards healthy eating (Lawrence and Rayner, 1998). Nonetheless, the power of HCs could be lowered if such claims are displayed in an unclear manner to the consumers, as they might misuse the food product it is applied upon. To avoid this, the EU has been stepping into HCs regulation, stating that “the use of nutrition and health claims shall only be permitted if the average consumer can be expected to understand the beneficial effects expressed in the claim” (article 5.2) (European Parliament and Council of the European Union, 2007).

In this scenario, it is also necessary to consider the growing importance of the digital and online world (Abolhassan, 2016) which influences food trends and consumers behavior. It is evident of how a growing

number of companies make use of different channels to promote their food products and being especially catchy to the eye when the food item promoted is unhealthy (Cairns *et al.*, 2009). This has led to a growing consumers' exposition to unhealthy food, increasing their adoption of low-quality eating patterns (Spence *et al.*, 2016), stressing the fact that products' ubiquity and techniques of branding and advertising can guarantee the popularity of a food product regardless of its healthiness (Dubois *et al.*, 2018;).

Studies have confirmed that it is in consumers' preference to choose purchasing healthy foods. The most important features that in the eyes of the consumers make a product healthy include factors of genuineness and quality. These factors need to be added to consumers' demographic background, societal influence and infrastructure, access to the health-related information and personal motivations to adopt health-related behaviors (Kelly and Barker, 2016). Thus, to get people to eat more healthily requires more understanding of consumers behavior, preference, and modality of building knowledge, also in terms of the channels used. To this point, in the midst of the many types of food information coming from countless sources and often non-scientific, focus on the healthiness/unhealthiness of food still proves to be of a bigger concern (Paquette, 2005). And unfortunately it is easier for consumers to get food information just on mass media sources, rather than finding a way to get to academically approved (Bisogni *et al.*, 2012; Ronteltap *et al.*, 2012).

The situation in Belgium is that respect of dietary guidelines is generally low, regardless of the source (Bel *et al.*, 2019). A large majority of the Belgian population has an inadequate consumption of vegetables (95%), fruit (91%), potatoes, rice and pasta (88%), bread and cereals (83%), water and drinks with no added sugars (73%) (Bel *et al.*, 2019). This demonstrates that further efforts are required to promote healthy eating in the country. There is some evidence that translating dietary recommendations into real healthy food choices can be challenging for Belgian consumers (Spronk *et al.*, 2014). However, more investigation is required to understand how Belgians build up the constructs of certain foods being healthy, especially under the lens of the use of social media and online sources, which might be more challenging in terms of reliability and scientific content. This especially in relation to the large use both consumers and these information sources make of the term superfoods which has not been defined from any side (nor suppliers, consumers, or regulators) fully yet.

The present study offers then a first investigation on linkages that Belgian consumers make between superfoods as being healthy food for their own health, the effect of social media/online sources on both building up the belief of superfoods being healthy and, finally, it investigates on the importance of online sources for further information on food they need. The paper first presents the questionnaire building and data analysis; then, the results of the survey, followed by the responses collected. The results and discussion sections figure after that, the latter examining the level to which the goals of the study have been fulfilled. Finally, the conclusions sum-up the most important key points of the research and present some useful managerial insights for the superfoods industry.

2. METHODOLOGY

2.1. *Experimental design*

The survey was conducted in Belgium among a Dutch-speaking sample in the year 2018 under the coordination of *Universiteit Gent*. The research aimed at individualizing the information sources bringing consumers to consider foods healthy and unhealthy. As some relevant patterns have emerged during the collection and elaboration of the results, it has been decided to analyse forward some relevant conclusions.

As people in Western societies spend an increasing amount of time online, the present study wanted to verify to which extent do online sources, often non-scientific and/or unreviewed, influence people's beliefs on what foods they should consider to be healthy and unhealthy: to this, to be considered also their actions following such consumers assessment.

2.2. *Questionnaire and participants*

The questionnaire was written in English and then translated and checked by different native Dutch speakers belonging to the academia and to the department supervising the work conducted. The choice of the language was due to the fact that the survey was carried in Flanders, the Dutch speaking region of Belgium. The responses, collected in anonymous way, have been translated into English, organized and recoded if necessary for an easier and faster analysis to be carried forward.

In this paper, only part of the original questionnaire is in the interest of the analysis discussed. Focus has been on the respondents reporting superfoods as healthy foods. The questions linked to them relate to: the food item that they considered to be the healthiest consumed in the previous three days; the information sources considered to be relevant for the acquisition of such belief; the information sources that would be used in order to get more information on the healthy food; the information sources being used in order to get general food information; the use of information sources they are familiar with from since they were young; and finally, questions helping the profiling of the respondents stating superfoods as healthy foods – thus concerning their age, gender, work and financial status, and so forth.

2.3. *Data analysis*

All data has been treated with the software SPSS 23 (IBM Corp, 2015) with which different tests have been run. First, as the research here had focused on the information sources related to consumers' reporting of superfoods, a first recoding for those items to be considered as superfoods had to be made. As discussed, superfoods have not been treated by academia extensively yet; and no homogenized or official definition is somewhere provided. And despite such foods have entered the broader knowledge and understanding and some deduction can be made, a more official source wanted to be used. Hence, indications on what to be considered superfoods have been taken by Harvard Medical School (McManus, 2018). The list reports the following items: berries, fish, leafy greens, nuts, olive oil, whole grains, yogurt, cruciferous vegetables, legumes and tomatoes.

Data analysis of various type has been applied. First, it was needed a general profile of the respondents: this has been done by making use of frequencies on categorical data (such as age group, gender, etc.) and descriptive on ordinal data (such as the mean variables for the use of certain information sources, the length of use of the information sources, etc.). Later, One Sample statistics on these variables has been run independently among the respondents stating and not stating the superfoods as the healthiest foods.

Then, the information sources of bloggers and social media as constructing the belief for the healthiness of the superfood stated have been analysed on an aggregate scale. The *Cronbach Alpha* resulted of being .699, thus still acceptable to consider the two variables jointly. Nonetheless, *Independent Samples t-test* to analyse the group differences between those stating superfoods and those who did not has been greater when used on the variables separately, as discussed later. Group differences have been run also for the variables of information sources they could make use of in order to acquire more information on the healthy food stated. The test used for this analysis has been again *Independent Samples t-test*. Other group

differences regarded those stating superfoods and the use they make of online sources in order to acquire general information on food.

Association and correlation analysis have been carried out for those stating superfoods and the influence of social media and bloggers to build up such belief. The test chosen has been *Point Biserial correlation* and again here has proven to be more relevant when carried on single variables alone rather than the set hypothesized. Lastly, *Fisher Exact test* has been run for the variables of making use of smartphones and computers since younger than 12.

3. RESULTS

3.1. Respondents profiling

The total sample from which satisfactory answers could be deducted was of 205. The amount of people stating superfoods as the healthiest food consumed in the previous three days amounted to 67. People responding any food different from that indicated by McManus (2018) were excluded from the superfood category, as well as those indicating broad categories, like “fruit” and “vegetables”. Respondents indicating superfoods were mostly in the age group 56-65, despite the 31-45 also had a consistent number of those. The distribution for these categories might be due to the sample having been mostly representatives of the older age groups, this reflecting also the distribution of age across the whole Belgium (StatBel, 2018). The majority of the respondents for superfoods obtained a diploma different than university (52.2%) and considered his/her financial situation as “Somewhat Easy” (34.3%). The sample had been predominantly female (58.2%) and was working full time (56.7%). All the information here stated and more can be found in **Table 1**.

Then, some additional information has been derived on the characteristics of such sample. The majority of people of the age 18-30 were either students or full-time employees, whereas people on the age group 56-65 had mostly higher education rather than university diplomas. Nonetheless, this additional information did not seem particularly relevant for the sake of the discussion here and thus had not been reported.

Table 1. <Superfood respondents profiling.>

Superfoods (n=67)			
Age group (%)	Financial situation (%)		
18-30	19.4	Difficult	1.5
31-45	23.9	Somewhat difficult	9.0
46-55	22.4	Not easy not difficult	32.8
56-65	29.9	Somewhat easy	34.3
>66	4.5	Easy	22.4
Education (%)	Work situation (%)		
Elementary school	3.0	Student	7.5
High school	19.4	Part-time job	13.4
Higher education	52.2	Full-time job	56.7
University	25.4	Retired	13.4
Female/Male (%)	58.2/41.8	Housewife or houseman	3.0
		Other	6.0

Source: own elaboration

3.2. Information sources related to the superfoods

The information sources that wanted to be analysed in order to acquire information on the stated superfoods were those accessed online, thus being the following present in the questionnaire: “Bloggers/celebrities say it is healthy” and “Social media say it is healthy”. First, a reliability scale on the two variables jointly has been run, and it has been observed that the *Cronbach Alpha* was till acceptable (this being .699). *Independent Samples t-test* between the respondents not stating superfoods as healthy food and those who did proved, nonetheless, to be more significant for the variables when taken independently. Social media in particular had a significant value ($p < 0.05$) for having determined such belief. The *Point Biserial correlation analysis* indicated that the two variables jointly were not significantly correlated to the variables of superfoods ($p .356$) and not did the bloggers variable either ($p .482$) whereas social media alone was significant ($p .025$).

Another test was carried out with *Independent Samples t-test* to verify whether social media and public figures would have been ranked higher as primary information sources in order to get information on the food they stated as healthy.

The test was done on the two variables independently – as reliability test did not bring any satisfactory results for grouping those – and showed that distribution among superfoods and non-superfoods respondents in both ranking public figures and social media as future information sources is higher in superfoods respondents, as $p < 0.05$ for both variables: public figures ($p .011$) and social media ($p .027$).

The main results discussed in this paragraph can be found in **Table 2** below.

Table 2. <Information sources used and to be used related to the stated healthy foods¹.>

	Superfoods (n =67)		Not Superfoods (n=138)		Sig. (2-tailed)
	Mean	Std	Mean	Std	
Blogger/celebrity says it is healthy²	2.04 _a	1.3	2.04 _a	1.2	.750
Social media says it is healthy²	2.40 _a	1.4	2.03 _b	1.2	.006
Public figures ranking³	7.58 _a	1.8	8.45 _b	2.4	.011
Social media ranking³	6.75 _a	2.2	7.51 _b	2.4	.027

Source: own elaboration

¹< In each row, values with different subscripts letters are significantly different ($p < 0.05$) >

²< Values are expressed as average score on an ascending Likert scale 1-5 (from the least to the most) >

³< Values are expressed as average score on ranking scale 1-10 (from the most to the least) >

3.3. Familiarity of online sources and tools

Respondents reporting superfoods would make larger use of blogs as information sources for general food information: their daily use being reported from the 6% of superfood respondents compared to the 2.9% of the non-superfoods respondents. Daily use of social media would be larger in superfoods respondents (6% compared to the 3.6% of non-superfoods). However, *Chi-Square test* on these two variables relevant to the use of internet on food information has been proved to be non-significant, possibly due to a large distribution of those answers.

The use of the following information sources analysed with *Independent Samples Mann-Whitney U Test* retained the null hypothesis that distribution of general information for food from the sources blogs and social media was not different (.830 and .269 respectively). Nonetheless, the mean observed in these variables has been higher for the respondents of superfoods rather than non-superfoods respondents, as observed in **Table 3**.

Descriptive statistics was run on the regular use of certain information sources from the superfoods respondents since a young age (younger than 12 years old) and the following results has been observed: 79% had used TV, 90% had used Radio, 1% had used mobile phones, 1% had used smartphones, 16% had used computers with an Internet connection, and 60% had used magazines regularly. A further test on the variables determine the familiarity with online resources was applied: *Fisher exact test* for the smartphone variable was not possible due to the limited sample size; the same test applied to computers proved to be non-relevant related to the variable of superfoods (significance .617).

Table 3. <Use and familiarity of information sources for general food information for the stated healthy foods¹.>

	Superfoods (n = 67)		Not Superfoods (n = 138)		Sign.
	Mean	Std	Mean	Std	
General food information from blogs	3.33 _a	2.1	3.25 _a	1.9	.830
General food information from social media	3.12 _a	2.2	2.82 _a	2.1	.269

Source: own elaboration

¹< In each row, values with different subscripts letters are significantly different ($p < 0.05$) >

4. DISCUSSION AND LIMITATIONS

The research has illustrated several findings on the influence and use of online sources for the belief construction that superfoods were considered healthy foods. The online sources have been presented to the respondents in the form of social media, blogs, bloggers, and public figures. Regarding the latter, we recognize that not always such figures make use of online sources to communicate with their public. The first two have represented an interesting point for the discussion that follows: firstly because their scientific accuracy cannot be easily verified, and because they can reach a growing number of people through devices purchasable at very low prices (Lupton and Maslen, 2019).

A first investigation in our work has shown that consumers believing that superfoods are the healthiest foods are a third of the whole survey study, and that do not belong necessarily in the youngest group ages. This might be due to the fact that the largest age group across all Belgian population is the one ranging from 45-59 years old (Stat Bel, 2018). Then, our results bear two meanings: on one hand, they reflect the age distribution proportioned to the whole Belgium; on the other, we are suggesting that making use of terminology that have recently entered the popular jargon related to food is not a peculiarity for younger generations only. This might go against other studies of such suggesting that growing age means less use and understanding of nutritional terminology (Byrd-Bredbenner and Kiefer, 2000; Cowburn and Stockley, 2004). Other data we unravelled from such respondents related to their working status, income and family composition: nonetheless, these categories did not differentiate substantially to the non-superfoods respondents.

Further analysis of data has proved that superfoods have gained the status of being healthy especially because of social media influence. As bloggers or celebrities seem to not have contributed to building such belief, this might lead us to think that people feel confident enough to trust sources of information also when no specific person can be related to that information. On the other hand, the low significance of public figures and celebrities might also be explained by the fact that respondents feel that these are to be associated with other competences/areas. For example, a study conducted by Coates *et al.* (2019) has revealed that

social media influencers do affect the children intake amount for unhealthy, but not healthy foods. Thus, a similar behaviour might be observed in adults.

On future information sources to be used to acquire more knowledge on the superfood, respondents would make more use of social media and public figures for further investigation on the food product chosen. In this section it is possible that people would also include celebrities' chefs, whom might be expert in food topics but not necessarily in the health consequences associated (Howard *et al.*, 2012; Jones *et al.*, 2013). The fact that superfood respondents would make more use of these information sources than non-superfood respondents, mean that the possibility to access to other more academic, reliable sources is lower for the first group; or that they feel these sources are satisfying their need for accurate information enough. It is true that easier and more understandable information sources are preferred from consumers in general (Bettman and Kakkar, 1977) as to avoid information "overload" (Jacoby *et al.*, 1974; Scammon, 1977). Thus, consumers' willingness of acquiring further information on food products might decrease after the first sources they use regardless of information accessibility; or, that they prefer those who are easier to be reached, as noted by Verbeke (2008).

Nonetheless, our discussion does not want to exclude completely the possibility that academic content is available online. As noted by Schroeder (2018), academic material can be made available as open access to everybody on the world wide web. Having said so, the issue in the online publications lies in distinguishing between those resulting from scientific investigation to those representing a personal opinion, especially for those consumers not accustomed in consulting academic publications.

Our results have shown that despite the use of online information sources would be relevant in building up different dietary beliefs between superfoods and non-superfoods respondents, the length by which certain information sources have been used is not relevant in such belief construction. This might also be due to the older population sample, and the fact that younger superfoods respondents were not sufficient in number to carry a statistical analysis of their responses. Therefore, the larger use of blog and social media as information sources for general food information from superfoods respondents, large but not significant, might be explained by the large distribution of the sample.

Also, it must be considered that when referring to a specific food and the first time they had learned about it, respondents might think to the specific instance referred and tend to make more concrete examples (Caplin and Dean, 2015). On the other hand, if one is posed a general inquisition on what source she would make use of for food information, there could be more social desirability bias occurring (Podsakoff *et al.*, 2012). The fact that one should fall into these biases means that, despite used, superfoods are still considered of not being part of the academic discourse also by consumers. This use of superfoods regardless of its status, goes in line with other studies identifying that consumers' choice does not represent the best choice they could take and their being aware of it (Warin, 2010; Lessa *et al.*, 2017).

Some limitations of our study should be presented. Our research has only focused on the healthiest food consumed in the past three days by respondents, not what they would consider being the healthiest ever. This might increase the chances that reporting a superfood might just have happened as a coincidence. Another constraint of our thesis regards the forced exclusion of the broad food categories from the analysis, such as fruit and vegetables, or water. This exclusion is nonetheless motivated by the fact that people regarding a superfood as healthy might be keener in stating the specific food, as they are also more self-conscious about what they eat, as observed by different studies (Urala and Lähteenmäki, 2003; Urala and Lähteenmäki, 2004; Shiomi and Waisundara, 2017)

5. CONCLUSIONS AND RECOMMENDATIONS

Our research has underlined the correlation of online sources, and especially of social media and blogs of which accuracy and/or scientific reliability cannot be easily verified completely, in building up the belief that superfoods are healthy for those who consume them. Academia and governments have done still little to define concretely this food category; and even less can be said it has been undertaken in order to verify the trustfulness of the content presenting superfoods' information online.

Knowledge about nutritional content disseminated online and the manner by which it is understood by consumers helps providing resolute policies to the difficulties related. Research by now has especially pointed out at the importance of making consumers understand that a healthy diet is given by a combination of different foods, rather than the presence of a few only. As McManus (2018) observed, "No single food – not even a superfood – can offer all the nutrition, health benefits, and energy we need to nourish ourselves". Nonetheless, witnessing the use it is made of those, more academic interest to define better terminology and to investigate further the consumers' attitudes towards superfoods is recommended.

Further analysis should also consider the extent of consumers' trust regarding the authority of online sources. In a world in which the food scenario is growing in complexity because of the manners of producing it and the health consequences related to nutrition, we suggest that governments increase the monitoring of what it is provided online and to the general public, and the research institutes to continue providing insights in consumers behaviour and attitudes for perceived healthy nutrition. Speculation have often reached the point of suggesting verification mechanisms to be applied before having any material being published online, medical and not only. Nonetheless, one should keep in mind that limiting the possibility of online dissemination can be associated to authoritarian governmental behaviour, resulting in users upraise to it.

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REFERENCES

- Abarca-Gómez, L., Abdeen, Z. A., Hamid, Z. A., Abu-Rmeileh, N. M., Acosta-Cazares, B., Acuin, C., ... & Agyemang, C. (2017). Worldwide trends in body-mass index, underweight, overweight, and obesity from 1975 to 2016: a pooled analysis of 2416 population-based measurement studies in 128· 9 million children, adolescents, and adults. *The Lancet*; 390 (10113), 2627-2642. [https://doi.org/10.1016/S0140-6736\(17\)32129-3](https://doi.org/10.1016/S0140-6736(17)32129-3)
- Abolhassan, F. (2016). *The Drivers of Digital Transformation*. Switzerland: Springer International Publishing.
- Ameratunga, R., Crooks, C., Simmons, G., Woon, S.-T. (2016). Health Risks and Adverse Reactions to Functional Foods. *Critical Reviews in Food Science and Nutrition*; 56(2), 318–325. <https://doi.org/10.1080/10408398.2012.751895>

- American Society for Nutrition. (2013). The American Society for Nutrition Announces Nutrition Research Needs and a Statement on Fiber: 6 Nutrition Research Areas with Greatest Opportunity for Health Impact. *Nutrition Today*; 48(5), 189-190. <https://doi.org/10.1097/NT.0b013e3182a731bb>
- BBC. (2019). UK Says Food Standards Will Not Be Lowered for US Trade Deal. *BBC News*. Retrieved from <https://www.bbc.com/news/uk-politics-47418505>
- Bel, S., De Ridder, K. A., Lebacqz, T., Ost, C., Teppers, E., Cuypers, K., & Tafforeau, J. (2019). Habitual food consumption of the Belgian population in 2014-2015 and adherence to food-based dietary guidelines. *Archives of Public Health*; 77(1), 14. <https://doi.org/10.1186/s13690-019-0343-3>
- Bettman, J. J. R., and Kakkar, P. (1977). Effects of Information Presentation Format on Consumer Information Acquisition Strategies. *Journal of Consumer Research*; 3(4), 233. <https://doi.org/10.1086/208672>
- Biro, F. M., and Wien, M. (2010). Childhood obesity and adult morbidities. *American Journal of Clinical Nutrition*; 91(5), 1499S-1505S <https://doi.org/10.3945/ajcn.2010.28701B>
- Bisogni, C. A., Jastran, M., Seligson, M., Thompson, A. (2012). How people interpret healthy eating: contributions of qualitative research. *Journal of Nutrition Education and Behaviour*; 44(4), 282–301. <https://doi.org/10.1016/j.jneb.2011.11.009>
- Borlaug, N. E. (2002). Feeding a world of 10 billion people: the miracle ahead. *In Vitro Cellular & Developmental Biology-Plant*; 38(2), 221-228. <https://doi.org/10.1079/IVP2001279>
- Branca, F., Lartey, A., Oenema, S., Aguayo, V., Stordalen, G. A., Richardson, R., ... & Afshin, A. (2019). Transforming the food system to fight non-communicable diseases. *British Medical Journal*; 364, 1296. <https://doi.org/10.1136/bmj.1296>
- Brito, F. W. C., and de Freitas, A. A. F. (2019). In Search of “likes”: The Influence of Social Media on Consumer Behavior in Travel Consumption. *PASOS: Revista de Turismo y Patrimonio Cultural*; 17(1), 113-128. <https://doi.org/10.25145/j.pasos.2019.17.008>
- Byrd-Bredbenner C, Kiefer L. (2000). The ability of elderly women to perform Nutrition Facts label tasks and judge nutrient content claims. *Journal of Nutrition for the Elderly*; 20(2): 29–46. https://doi.org/10.1300/J052v20n02_03
- Caplin, A., & Dean, M. (2015). Revealed preference, rational inattention, and costly information acquisition. *American Economic Review*; 105(7), 2183–2203. <https://doi.org/10.1257/aer.20140117>
- Cairns, G., Angus, K. Hastings, G. (2009). The Extent, Nature and effects of Food Promotion to Children: A Review of the Evidence to December 2008. World Health Organization (WHO). United Kingdom: WHO.
- Churchill, W. (1943). BBC Broadcast, March 21, 1943. Retrieved from <http://veday.discoveryuk.com/winston-churchills-greatest-quotes/>
- Coates, A. E., Hardman, C. A., Halford, J. C. G., Christiansen, P., Boyland, E. J. (2019). Social Media Influencer Marketing and Children’s Food Intake: A Randomized Trial. *Pediatrics*; 143(4), 39-52. <https://doi.org/10.1542/peds.2018-2554>
- Correa, J. C., Garzón, W., Brooker, P., Sakarkar, G., Carranza, S. A., Yunado, L., & Rincón, A. (2019). Evaluation of Collaborative Consumption of Food Delivery Services Through Web Mining

techniques. *Journal of Retailing and Consumer Services*; 46, 45-50. <https://doi.org/10.1016/j.jretconser.2018.05.002>

Cowburn, G., Stockley, L. (2004). Consumer Understanding and Use of Nutrition Labelling: A Systematic Review. *Public Health Nutrition*; 8(1), 21-28. <https://doi.org/10.1079/PHN2004666>

Daugherty, B. (2011). Superfoods: The Healthiest Foods on the Planet. *Journal of Nutrition Education and Behavior*; 43(3), 207-e7. <https://doi.org/10.1016/j.jneb.2011.03.008>

Dubois, P., Griffith, R., & O'Connell, M. (2018). The effects of banning advertising in junk food markets. *The Review of Economic Studies*; 85(1), 396-436. <https://doi.org/10.1093/restud/rdx025>

EFSA. (2015). European food safety authority homepage. Retrieved from: <http://www.efsa.europa.eu/>

European Commission. (2000). White paper on food safety. COM (1999) 719. Commission of the European Communities. Brussels: Commission of the European Communities.

European Parliament and Council of the European Union (2007). Regulation (EC) no. 1924/2006 of 20 December 2006 on nutrition and health claims made on foods. In Official Journal of the European Union, pp. L 12/3 – L 12/18, 18 January 2007. Brussels: European Parliament and Council of the European Union.

Eustice, G. (2019). The UK can't accept backward US food standards – or chlorinated chicken. *The Guardian*. Retrieved from: <https://www.theguardian.com/commentisfree/2019/mar/06/us-chlorinated-chicken-trade-deal-agriculture>

Haas, E., and Levin, B. (2012). *Staying Healthy with Nutrition, Rev: The Complete Guide to Diet and Nutritional Medicine*. United States of America: Celestial arts.

Howard, S., Adams, J., & White, M. (2012). Nutritional Content of Supermarket ready Meals and Recipes by Television Chefs in the United Kingdom: Cross Sectional Study, *British Medical Journal*; 345, e7606. <https://doi.org/10.1136/bmj.e7607>

Jacoby, J., Speller, D. E., & Kohn, C. A. (1974). Brand Choice behavior as a Function of Information Load: Replication and Extension, *Journal of Marketing Research*; 1, 33-42. <https://doi.org/10.1086/208579>

Kelly, M. P., and Barker, M. (2016). Why is changing health-related behaviour so difficult? *Public Health*; 136, 109-116. <https://doi.org/10.1016/j.puhe.2016.03.030>

Lang, T. (2016). How will leaving the European Union affect our food? *The Guardian*. Retrieved from: <https://www.theguardian.com/environment/2016/jun/29/how-will-leaving-the-european-union-affect-our-food>

Lau, T. C., Chan, M. W., Tan, H. P., & Kwek, C. L. (2013). Functional food: a growing trend among the health conscious. *Asian Social Science*; 9(1), 198-208. <http://dx.doi.org/10.5539/ass.v9n1p198>

Lawrence, M., and Rayner, M. (1998). Functional foods and health claims: a public health policy perspective. *Public Health Nutrition*; 1(2), 75-82. <https://doi.org/10.1079/PHN19980013>

Lessa, K. Cortes, C., Frigola, A., Esteve, M. J. (2017). Food Healthy Knowledge, Attitudes and Practices: Survey of the General Public and Food Handlers. *International Journal of Gastronomy and Food Science*; 7, 1-4. <http://dx.doi.org/10.1016/j.ijgfs.2016.11.004>

- Market Research Report (2018). *Global Superfoods Market Insights, Forecast to 2025*. Available at: <https://www.giiresearch.com/report/qyr744560-global-superfoods-market-insights-forecast.html>
- McManus, K. D. (2018). *10 Superfoods to boost a healthy diet*. Harvard Health Blog. Retrieved from <https://www.health.harvard.edu/blog/10-superfoods-to-boost-a-healthy-diet-2018082914463>
- Nestle, M. (2013). *Food politics: How the food industry influences nutrition and health* (Vol. 3). United States of America: University of California Press.
- Paquette, M. C. (2005). Perceptions of healthy eating: state of knowledge and research gaps. *Canadian Journal of Public Health*; 96, Suppl 3, 15–19. <https://10.17269/cjph.96.1500>
- Podsakoff, P.M., MacKenzie, S. B., Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology*; 63, 539–569. <https://doi.org/10.1146/annurev-psych-120710-100452>
- Rankin, N. (2015). Why Are We So Obsessed with Food Trends? *The Guardian*. Retrieved from <https://www.theguardian.com/lifeandstyle/wordofmouth/2015/jan/26/chef-neil-rankin-whyi-hate-food-trends>
- Ronteltap, A., Sijtsema, S. J., Dagevos, H., De Winter, M.A. (2012). Construal levels of healthy eating. Exploring consumers' interpretation of health in the food context. *Appetite*; 59(2), 333–340. <https://10.1016/j.appet.2012.05.023>
- Scammon, D. L. (1977). “Information Load” and Consumers. *Journal of Consumer Research*; 4(3), 148. <https://doi.org/10.1086/208690>
- Schulze, M. B., Martínez-González, M. A., Fung, T. T., Lichtenstein, A. H., & Forouhi, N. G. (2018). Food based dietary patterns and chronic disease prevention. *British Medical Journal*; 361, k2396. <https://doi.org/10.1136/bmj.k2396>
- Shiomi, N., and Waisundara, V. (Eds.). (2017). *Superfood and Functional Food: The Development of Superfoods and Their Roles as Medicine*. InTech Open. <https://doi.org:10.5772/65088>
- Siro, I., Kápolna, E., Kápolna, B., & Lugasi, A. (2008). Functional food. Product development, marketing and consumer acceptance—A review. *Appetite*; 51(3), 456-467. <https://10.1016/j.appet.2008.05.060>
- Southgate, D. (2009). Population growth, increases in agricultural production and trends in food prices. *The Electronic Journal of Sustainable Development*; 1(3), 29-35.
- Spence, C., Okajima, K., Cheok, A. D., Petit, O., & Michel, C. (2016). Eating with Our Eyes: From visual Hunger to Digital Satiation. *Brain and cognition*; 110, 53-63. <https://10.1016/j.bandc.2015.08.006>
- Spronk, I., Kullen, C., Burdon, C., O'Connor, H. (2014). Relationship Between Nutrition Knowledge and Dietary Intake. *British Journal of Nutrition*; 111(10), 1713–1726. <https://10.1017/S0007114514000087>
- StatBel, (2017). België 2017: 11.322.088 inwoners. *Structure of the Population*. StatBel fgov website. Retrieved from: <https://statbel.fgov.be/en/themes/population/structurepopulation#panel-13>
- Stein, A. J. and Rodríguez-Cerezo, E. (2008). Functional Food in the European Union. *JRC Scientific and Technical reports*; 22380. <https://doi.org/10.2791/21607>

-
- Stuckler, D., McKee, M., Ebrahim, S., Basu, S. (2012). Manufacturing Epidemics: The Role of Global Producers in Increased Consumption of Unhealthy Commodities Including Processed Foods, Alcohol, and Tobacco. *PLoS Medicine*; 9(6): e1001235. <https://doi.org/10.1371/journal.pmed.1001235>
- Swinburn, B. A., Sacks, G., Hall, K. D., McPherson, K., Finegood, D. T., Moodie, M. L., & Gortmaker, S. L. (2011). The global obesity pandemic: shaped by global drivers and local environments. *The Lancet*; 378(9793), 804-814. [https://10.1016/S0140-6736\(11\)60813-1](https://10.1016/S0140-6736(11)60813-1)
- Tyszler, M., Kramer, G. F., & Blonk, H. (2015). Just Eating Healthier Is Not Enough: Studying the Environmental Impact of Different Diet Scenarios for Dutch Women (31-50 years old) by Linear Programming. *The International Journal of Life Cycle Assessment*; 21(5), 701-709 <https://10.1007/s11367-015-0981-9>
- Urala, N., and Lähteenmäki, L. (2003). Reasons Behind Functional Food Choices. *Nutrition and Food Science*; 33(4), 148–158. <https://doi.org/10.1108/00346650310488499>
- Urala, N., and Lähteenmäki, L. (2004). Attitudes Behind Consumers' Willingness to Use Functional Foods. *Food Quality and Preference*; 15(7), 793–803. <https://10.1016/j.foodqual.2004.02.008>
- Van Duyn, M. A., Pivonka, E. (2000). Overview of The Health Benefits of Fruit And Vegetable Consumption For The Dietetics Professional: Selected Literature. *Journal of the American Dieticians Associations*; 100(12), 1511-21. [https://10.1016/S0002-8223\(00\)00420-X](https://10.1016/S0002-8223(00)00420-X)
- Warin, M. (2010). Foucault's Progeny: Jamie Olivier and the Art of Governing Obesity. *Social Theory & Health*; 9, 24-40. <https://10.1057/sth.2010.2>
- WHO. (2002). The World Health Report 2002: Reducing risks, Promoting Healthy Life. France: World Health Organization.
- WHO. (2003). Diet, Nutrition and The Prevention of Chronic Diseases. WHO Technical Report Series 916, Geneva, Switzerland: World Health Organization.
- WHO. (2004). Global Strategy on Diet, Physical Activity and Health. Switzerland: World Health Organization.
- Witkos, M., Uttaburanont, M., Lang, C. D., Arora, R. (2008). Costs of and Reasons for Obesity. *Journal of the Cardiometabolic Syndrome*; 3(3), 173-176. <https://doi.org/10.1111/j.1559-4572.2008.00012.x>
- Yach, D., Khan, M., Bradley, D., Hargrove, R., Kehoe, S., & Mensah, G. (2010). The Role and Challenges of the Food industry in Addressing Chronic Disease. *Globalization and Health*: 6(1), 10. <https://doi.org/10.1186/1744-8603-6-10>
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