

AHFES

A QUADRUPLE HELIX ATLANTIC AREA HEALTHY FOOD ECOSYSTEM FOR GROWTH OF SMES

D5.1 Consumer analysis

08.09.2020

Project acronym: AHFES

Project title: A quadruple helix Atlantic Area healthy food Ecosystem for growth of SMEs

Project code: EAPA_1071/2018

Deliverable number and name: WP5.1 Consumer analysis

Work Package: WP5 - Building intelligence for SMEs innovation and growth in healthy food and lifestyles

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Document history:

Version	Date of issue	Content and changes	Edited by
0.1	27.03.2020	First report version	INSA
0.2	11.05.2020	Edited report	NUIG
0.3	06.06.2020	Change report	INSA
0.4	08.08.2020	Edited report	NUIG
0.5	08.09.2020	Final formatting	INSA
1	08.09.2020	Final version	INSA

The AHFES project is implemented by the following partners:



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Abbreviations and Acronyms

FAO	Food and Agriculture Organization of the United Nations
SMEs	Small and medium-sized enterprises

Executive summary

This report aims to understand and raise awareness of future trends in the food sector, more specifically in healthy foods. This report provides an analysis of the nature of changes in consumers' preferences and patterns of food consumption, which will directly influence the process of product development and its acceptance by the consumer. The changes that occur in an individual's eating patterns are the result of several factors including demographics, urbanization, lifestyle and individual and social determinants.

To have information about the future market in the area of healthy eating, a questionnaire was applied to SMEs to collect data on the SMEs' perspectives regarding their consumers (section 1). This information was complemented with two databases which were selected: Mintel and GlobalDatabase. The Mintel database allows us to acquire more data regarding future scenarios in terms of product innovation, both globally and locally. On the other hand, the Globaldata database makes it possible to have a more detailed view of the consumer and his preferences and activities.

The results of the present consumer analysis reveal four trends driving consumer preference, namely: Health and well-being, sustainability, organic and naturalness and convenience.

The food sector faces challenges related to sustainability and health, that due to an increasingly demanding consumer, will need to be overcome in the future. Nonetheless, the health crisis and the unprecedented interaction caused by COVID-19 have had an impact on SMEs and consumers around the world, changing the way consumers live, work and buy. There is currently more uncertainty about the future of innovation. However, the main priorities remain the same. With the pandemic, consumers increasingly cook at home using local organic products, natural and at the same time convenient, with an even greater focus now on healthy eating.

1 Introduction

In recent years, important changes have occurred in the eating behaviour of consumers, which have had a direct impact on the food industry. The success of a company that produces and sells food products is largely dependent on the consumers' market decision. Currently, new food products that are introduced to the market have only a 30% success rate. Consequently, it is increasingly necessary to analyse the market with a consumer-centred approach in order to fully understand the market. There is currently a perception that the constant change in food generates a more heterogeneous population in terms of food needs ¹.

The primary factor that drives humans to eat is hunger. However, the food we choose is not determined solely by physiological or nutritional needs. There are other determinants in the selection of healthy foods by the consumer, which are biological, psychological, economic, physical, social and physiological². Understanding consumer behaviour is complex, because food choice factors also vary according to the stage of life and the power of a factor varies from one individual or group of people to the next. So, with variable challenges in the food industry there is a need to embrace and drive the change with innovation by integrating the latest technology, digitalization, trends and sustainability with consumer needs. Therefore, the factors that shape the consumer and future needs and trends are the basis for the food industry to combat the needs and failures of the industry.

1.1 Biological determinants

Human beings need energy and nutrients to survive and respond to feelings of hunger and satiety. Within this category, the palatability and sensory aspects of food products primarily stand out. "Taste" is often reported as a major influence on choice, followed by the smell, appearance and texture of food.

1.2 Economic determinants

The cost of food products is a primary determinant in the choice of food by the consumer, since it depends directly on the economy of each consumer. Several studies show that consumer groups with lower economies are more likely to consume unbalanced diets³. However, access to more capital is not directly related to a more balanced diet, but to a greater variety of affordable foods.

¹ Horvat, A., Granato, G., Fogliano, V., & Luning, P. A. (2019). Understanding consumer data use in new product development and the product life cycle in European food firms – An empirical study. *Food Quality and Preference*, 76, 20–32. <https://doi.org/10.1016/j.foodqual.2019.03.008>

² EUFIC, (2006). The factors that influence our food choices

³ Tehranipour, A., Lipsky, L., & Leong, I. T. (1989). Comparative study of switching schemes in isotropic networks. 515–519. <https://doi.org/10.1109/icsyse.1989.48728>

1.3 Physical determinants

In this group, education, knowledge of food nutrition and demographic changes is a key feature. Recent studies indicate that the consumer's level of education can influence eating behaviour during adulthood and therefore directly influence the selection of the food product^{4,5}. However, knowledge about nutrition does not necessarily lead to direct action when the individual exercises the power of food choice. As for demographic changes, they are related to the age of the population, which has a lot of influence on the segmentation process of the food market. Each age group has its consumption pattern, and the most different is the age group of the elderly, who need more specific foods for health.

1.4 Social Determinants

What each person eats is shaped and restricted by social and cultural circumstances. There are several studies that show differences in social classes in relation to food and nutrients. On the other hand, cultural influences relate to the difference in the habitual consumption of certain foods and in the traditions regarding their preparation⁶. However, cultural influences are liable to change, when, for example, the individual goes to live in another country adopting eating habits specific to the local culture. Finally, there is also the social context in which the individual is living, which may be under direct influence (in the act of buying food), indirect influence (learning from the behaviour of colleagues) and conscious influences (transfer of beliefs).

1.5 Psychological determinants

There are several psychological factors that affect food selection. Stress is a feature that is increasingly present in the modern life of populations in general and can lead to a change in the "state" of the individual, from his health to the selection of the food product. However, the influence of this factor is still very complex, and it varies from person to person⁷. Other studies show the recognition that food influences the individual's mood and therefore that mood has a strong influence on food selection. But, as in the case of stress, this factor is also complex, and sometimes it is only through visualization of the food that a memory can arise in the individual that generates a change in mood and consequently changes his choice⁸.

⁴Kearney, M., Kearney, J., Dunne, A., & Gibney, M. (2000). Sociodemographic determinants of perceived influences on food choice in a nationally representative sample of Irish adults. *Public Health Nutrition*, 3(2), 219–226.

⁵Moreira, P. A., & Padra, P. D. (2004). Educational and economic determinants of food intake in Portuguese adults: A cross-sectional survey. *BMC Public Health*, 4, 1–11.

⁶Rozin, P. (2007). How does culture affect choice of foods? In *Consumer-Led Food Product Development*. Woodhead Publishing Limited. <https://doi.org/10.1533/9781845693381.1.66>

⁷Oliver, G., & Wardle, J. (1999). Perceived effects of stress on food choice. *Physiology and Behavior*, 66(3), 511–515.

⁸Bartkiene, E., Steibliene, V., Adomaitiene, V., Juodeikiene, G., Cernauskas, D., Lele, V., Klupsaite, D., Zadeike, D., Jarutiene, L., & Guiné, R. P. F. (2019). Factors Affecting Consumer Food Preferences: Food Taste and Depression-Based Evoked Emotional Expressions with the Use of Face Reading Technology. *BioMed Research International*.

2 Methodology

The current report of D5.1 Consumer analysis aims to provide information about consumer analysis with regard to the future needs and trends of consumers in the healthy food, which can be used by food industry to increase their knowledge in relation of consumer and the healthy food globally and in the Atlantic Area countries

The methodology used for this report combined diverse sources including desk research and a survey. The research encompasses the literature about consumers behaviour, needs and trends and databases such as Mintel, Globaldata (chapter 3 – Global and EU consumer trends in healthy food products)

A survey was designed in collaboration with project partners to solicit views from SMEs about the consumers preferences from their perspective. The survey was conducted online using SurveyMonkey and the target groups were food and drink SMEs situated in the Atlantic Area (AA) area (Chapter 4- Findings on SME perceptions of consumer trends). The survey was divided in three sections, companies' perfil, companies' perceptions of consumer trends and the companies' perceptions of market trends.

The section related with companies of consumer trends was constituted by the follow questions:

1. Focusing broadly on the population, what in your opinion is the level of consumer concern in relation to healthy eating?
2. Do consumers of your company's products follow a diet?
3. If yes, which of these diets are most common?
4. From your point of view, do consumers of your company's products give importance to the below food attributes? (convenience, appearance, age-targeted, functional value, naturalness, origin, price, safety, taste,...)
5. From your point of view, what are the key reasons why consumers purchase healthy food? (health benefits, medical recommendation, disease prevention, healthy food is quality and enjoyment)
6. From your point of view, what are the most important nutrition information labels to provide to consumers? (Calories, carbohydrates, salt, sugar, total fat and vitamins)

Finally, the overall analysis of all information collected was analysed in order to extract the main conclusions.

3 Consumer trends in healthy food products

This section provides a summary of the main trends in healthy food products identified in the scientific research and databases. In the future years it is anticipated that there will be four consumer main trends: health and well-being; sustainability, convenience, organic production and natural foods.

3.1 Health and wellness

The increase in the level of income and the rapid growth of urbanization (figure 1) combined with an increasingly busy lifestyle led to an unbalanced diet, which generally includes unhealthy foods such as fats and sugars.

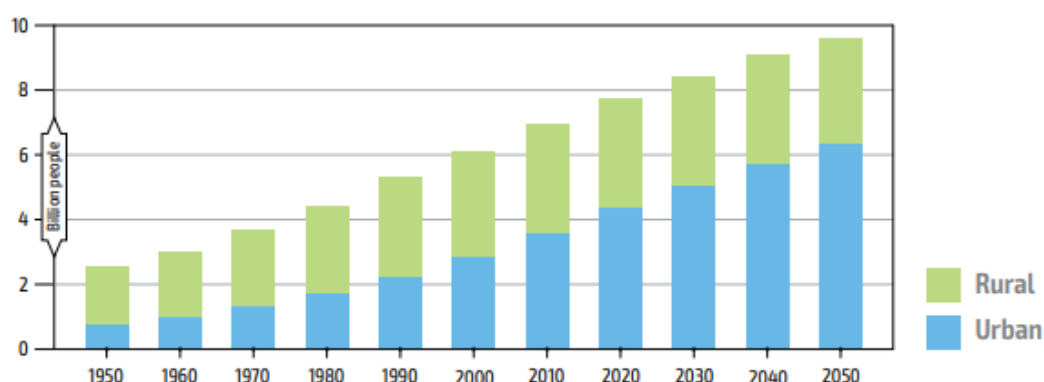


Figure 1. Global urban and rural population

(source: UN, 2015)

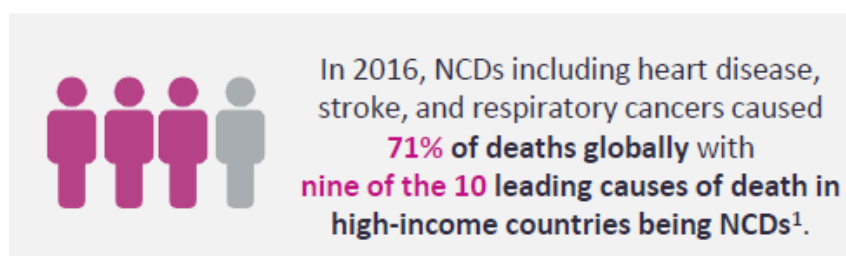


Figure 2. Noncommunicable diseases globally

(source: GlobalData (2018) TrendSights Overview: Health & Wellness)

Consequently, there was a high increase in noncommunicable diseases globally (figure 2). In addition, more and more consumers are becoming aware that food has an impact on their health status. It has been seen that consumers are increasingly concerned and aware of the relationship between diet, food intake and health¹. Since in most of the countries analyzed, consumers are looking for products that “improve” their health (figure 3). This demand ranges from the companies that reformulate products to the introduction of functional foods. In general, the results demonstrate that both men and women have obesity as their primary concern; however, within the group of countries analyzed, consumers are also very concerned with cholesterol.

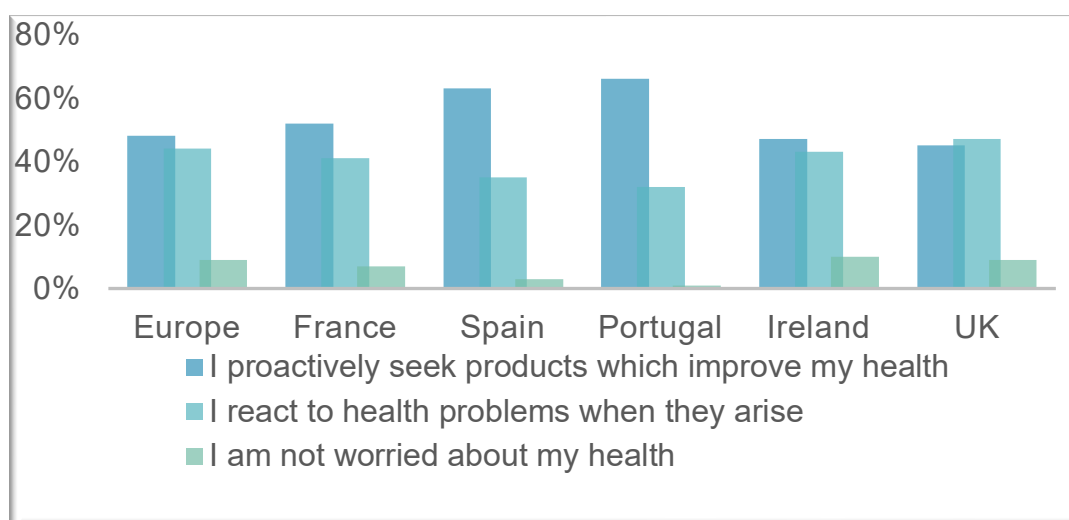


Figure 3. Consumer concerns levels

(source: GlobalData2018Q4Consumer survey)

Another influencing factor is the ageing of the population, which has been increasing the segment of the population "over 65 years old". In this age group, it is well established that the likelihood of health problems increases, and therefore there is a higher demand for products beneficial to health. Finally, another factor corresponds to the increase in technology that encourages consumers to track and monitor personal health (figure 4).

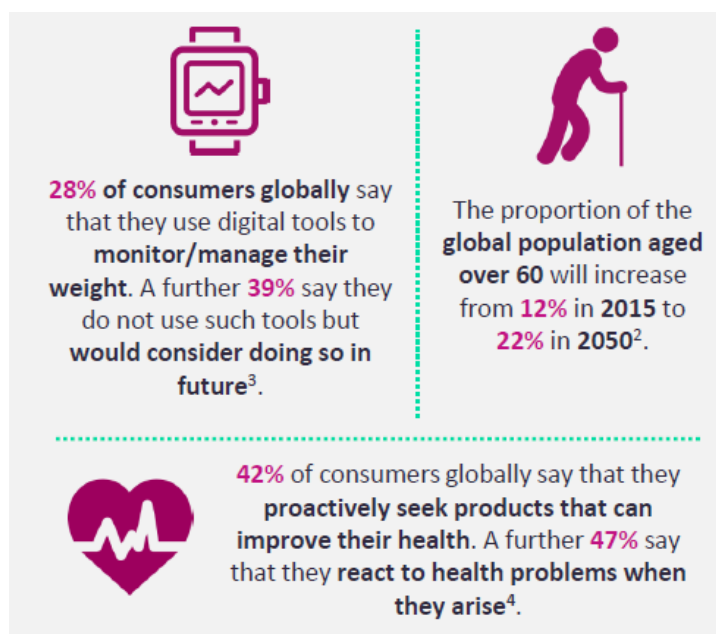


Figure 4. Key drivers for health and well-being

(source: GlobalData TrendSights Overview: Health & Wellness)

3.2 Sustainability

Consumers are concerned with what they eat, how food is produced and the impact that production and consumption have on the environment and society. The primary motivation of consumers to adopt a sustainable lifestyle revolves mainly around health (figure 5). However, more and more consumers are aware that their food also has an impact on the sustainability of the planet, since with the population increasing globally, the available land resources are decreasing, not being enough for future generations⁹.



Figure 5. Sustainability functions

(source: tastewise, 2019)

In all sectors, food represents a substantial use of natural resources, being the main contributor to the planet's environmental degradation (approximately 80%). In 2010, Food and agriculture organization of the United Nations (FAO) indicated that whilst the nutritional value of a diet is essential to consider, it is also necessary to take into account the sustainability of the diet. A "sustainable" diet is defined as a diet with low environmental impact, contributing to the food, nutritional and health security of future generations¹⁰. These diets stand out for being protective of biodiversity and at the same time, optimize the planet's natural resources. There is a consensus that the global transition to a diet based on the consumption of more vegetables is essential to maintain natural resources and simultaneously bring benefits to human health (figure 6).

⁹ LAPPO, A., BJORNDALE, T., FERNANDEZ-POLANCO, J. M., & LEM, A. (2014). Consumer trends and preferences in the demand for food. SNF Working Paper, 51(13), 1–28. <file:///O:/Mis documentos/documentos/separatas/8173.PDF>

¹⁰ Fresán, U., & Sabaté, J. (2019). Vegetarian Diets: Planetary Health and Its Alignment with Human Health. *Advances in Nutrition*, 10, S380–S388. <https://doi.org/10.1093/advances/nmz019>



Figure 6. Link between human health and sustainability

(source: Summary Report of the EAT-Lancet Commission)

According to published studies, the number of plant-based consumers (vegetarian, vegan and flexitarian) is still very low. However, there is evidence that its influence in the food sector on consumption patterns will increase (figure 7).

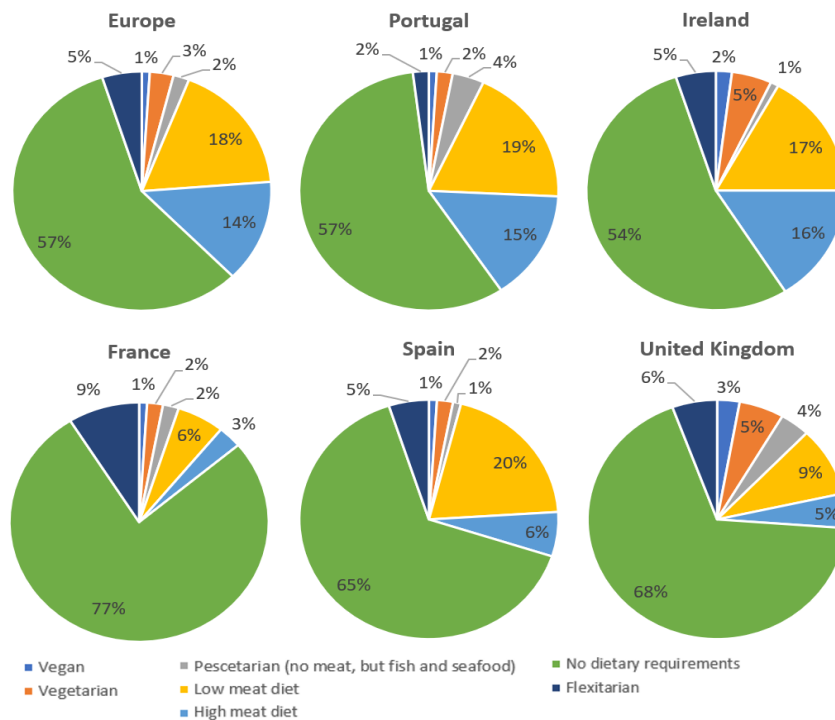


Figure 7. Consumer diet segmentation by country

3.3 Convenience

The term 'convenience' is very complex since it consists of several attributes, such as saving time, ease of preparation and cleaning. According to several scientific studies, convenience can be categorized in two ways: regarding the reduction of effort (time savings, physical energy,

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among others) and the food production chain at home (planning what the individual will eat, buy, prepare and consume)¹¹ (figure 8)



Figure 8. Food convenience

Convenience is a trend that has gained strength in recent years, driven by the increase in the Millennials, a group that is currently at the height of both career and family life. Research indicates that this generation is increasingly interested in high-quality products. However, in general, there is little time available, creating the opportunity for SMEs to develop healthy innovative products that help consumers to have a healthy diet. So, the ageing population and the busiest lifestyles suggest that this trend will continue to increase in the future¹² (figure 9).

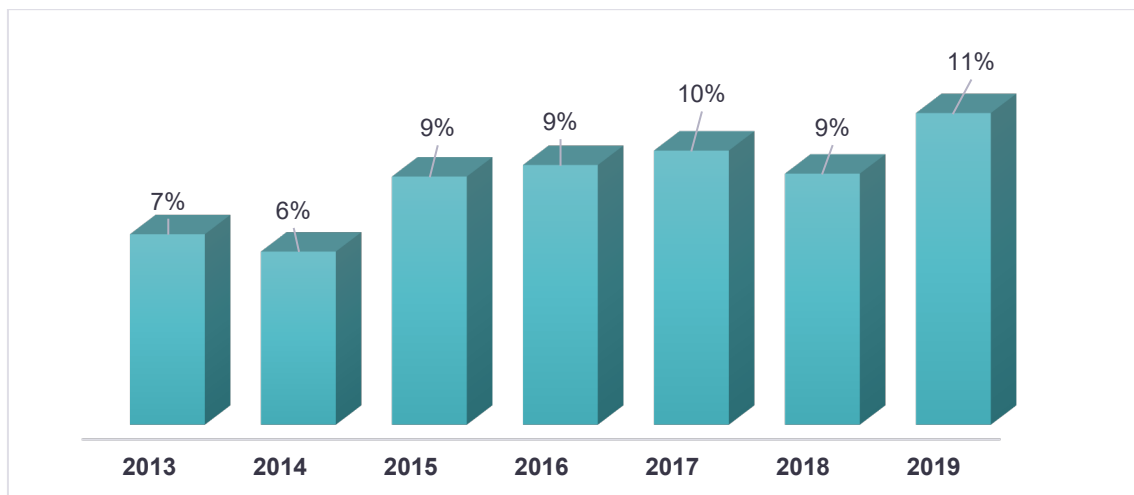


Figure 9. Importance of food convenience to the consumer

(source: The NPD Group/National Eating Trends®, 12ME Feb. 2019)

¹¹ Mehmeti, G., & Xhoxhi, O. (2014). Future Food Trends. June 2014.

¹² Savelli, E., Murmura, F., Liberatore, L., Casolani, N., & Bravi, L. (2019). Consumer attitude and behaviour towards food quality among the young ones: empirical evidences from a survey. Total Quality Management and Business Excellence, 30(1–2), 169–183.

3.3.1 Organic production and naturalness of food

Organic agriculture has been the fastest growing sector (figure 10), and from 2005 to 2011 the total area of land used for organic agriculture increased from 3.6% to 5.5% of the total agricultural area used in Europe. This increase in demand for organic products is related to nutritional value, food security and environmental issues.

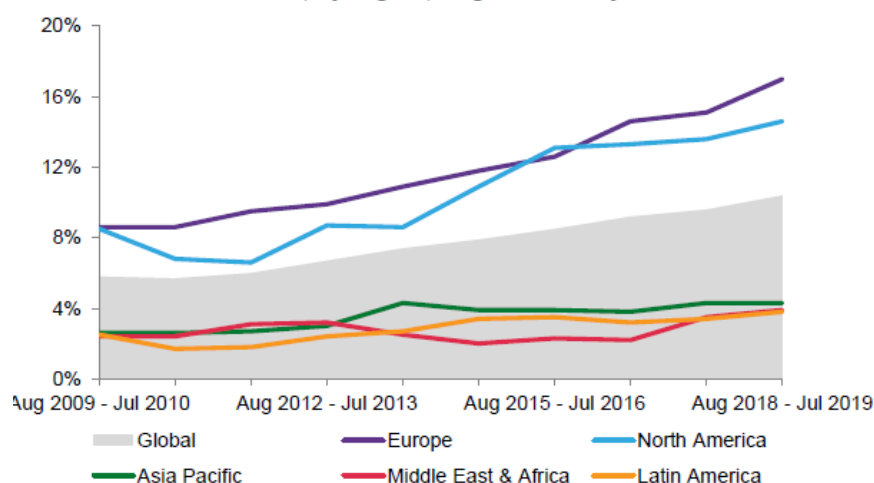


Figure 10. Organic concept growth
(source: Mintel database)

In addition, in recent decades there has been a strong preference for natural foods. It should be noted that for science, naturalness does not necessarily mean that the food is safe, healthier and tastier. Several studies have observed that the opinion of what natural food varies among consumers. In general, consumers believe that natural foods are free of additives or chemicals.



Figure 11. Consumer opinion about “what is organic food” (source: Mintel Database)

Comparing these two trends, it appears that consumers prefer a natural product to an organic product. However, it should be noted that there is an apparent confusion among consumers about the distinction between organic and natural products. Some consumers consider that products labelled “natural” have the same quality as organic products. It was found that 35% of consumers globally consider these two trends to be equivalent (figure 11 and 12).

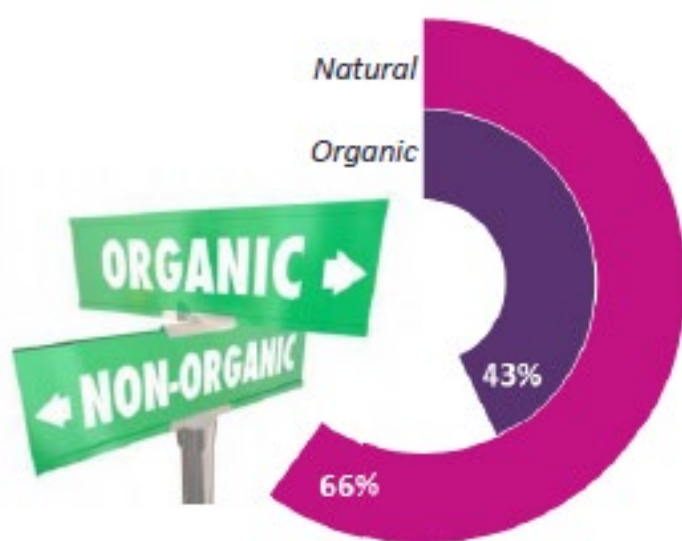


Figure 12. Consumers interest in natural and organic (Global Database)

So, it is important to emphasize that SMEs must make a distinction between these two concepts, i.e. between natural and organic food for consumers. For organic foods, there is a regulation (n° 834/2007), which governs organic production and thus establishes that foods can be labelled "organic" if at least 15% of their agricultural ingredients are organic ¹³.

¹³ Ivana, K. (2015). Organic food : Helping EU consumers make an informed choice (Issue May, p. 10).

4 SMEs Challenges in the future

SMEs are facing increasingly new challenges daily to achieve the successful launch of new products according to new trend. These include; making the healthy choice the easy choice, developing value-added food products with superior quality, convenience, availability and affordability, and achieving sustainable in the food chain. It is necessary to establish collaborations with universities, research centres and government to overcome the challenges more quickly and that the processes involved are following the existing legislation.

SMEs will increasingly need to be focused on a healthy food and wellness market segment, considering consumer nutrition and health as an integral part of their strategy. One way to reach this market is through the reformulation of food products, trying to minimize the content of sugar, salt and fats and at the same time, increase fibre and vitamins. After the product is developed, SMEs should create a close connection with the consumer and hold product presentation sessions where they disseminate the characteristics of the product and its advantages for human health. Finally, in the act of choosing the consumer, he must acquire all the information necessary for the choice quickly, so it is necessary to streamline more and more the way the label and all the information is displayed on the product packaging.

To overcome the challenges of adding value to food products, SMEs will have to find processes to incorporate relevant materials, and that add nutritional value while valuing consumer health. In addition, it is essential that SMEs take into account the importance of developing technologies to improve the bioactivity of nutrients.

One of the most critical problems for SMEs is the challenge of achieving sustainability in the food production chain, as more and more consumers are increasingly demanding in this area. Thus, there are several challenges that SMEs face at each stage of the process, with the need to develop efficient and technological food processing technologies, to minimize waste along the chain, to achieve the recovery and incorporation of food by-products into the food chain. food processing and developing new materials for packaging, so that they are biodegradable and recyclable

Unsustainable System	Conventional Farming	High Procesing	Unsustainable Consumption
	Monoculture	Nutrient Lost	Unhealthy Habits
	Transgenics	Addition of Trans Fat	High Consumption of Processed Foods
	Intensive breeding	Addition of additives and preservatives	Non-diversified Food
Sustainable System	Agroecology	Low Procesing	Unsustainable Consumption
	Diversifie	Maintenance of Nutrients	Fresh Food
	Organic	Minimal Processing	Local Food
	Seasonal	Without Food Additives	Buy Direct to Farmers

Figure 13. Comparation between sustainable system and unsustainable system

5 Findings on SME perceptions on healthy food consumer trends

A questionnaire was developed and distributed to SMEs on their views of consumer trends in the area of healthy food products. It should be noted that in this report only the analysis of the consumer survey carried out in the questionnaire is presented.

Overall, the results show that companies recognise the demand for healthy products. However, currently, the segmentation of the market is increasingly heterogeneous thus hampering the successful launch of a product.

5.1 Consumer level concern about to healthy food

According to the SMEs' responses, it is observed that Spain and France have a "high concern in relation to health eating", however, the remaining countries analysed stand out for having consumers with "medium concern in relation to healthy eating". This variation between countries may be related to the prevalence of older age groups in Spain and France (figure 14).

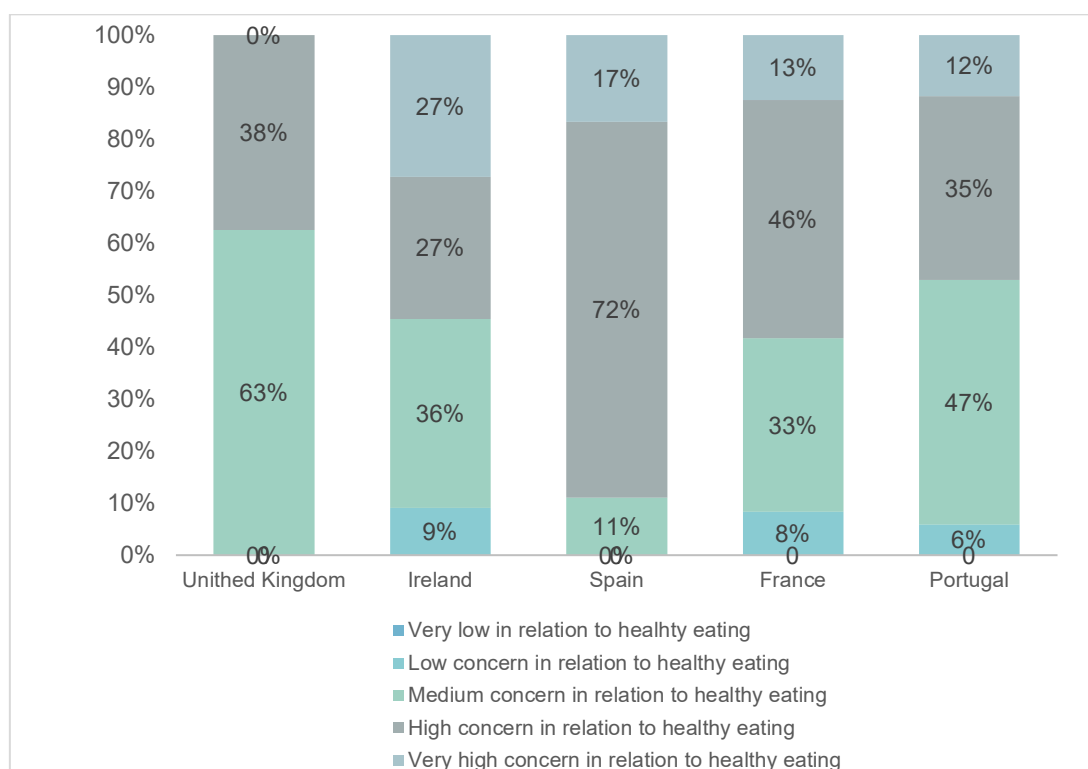


Figure 14. Consumer concern

5.2 Consumer diet segmentation

Figure 15 illustrates extensive heterogeneity in the market segment regarding the diet of each consumer.

England and France have a high percentage of flexitarian or semi-vegetarian diets. In contrast, in Ireland and Spain, there is a higher number of consumers on a lactose-free diet. It should be noted that although the percentage relative to plant-based diets is still low, there has been a slow increase in the number of consumers who adhere to this demand, having as factors the concern for the planet and a healthier diet.

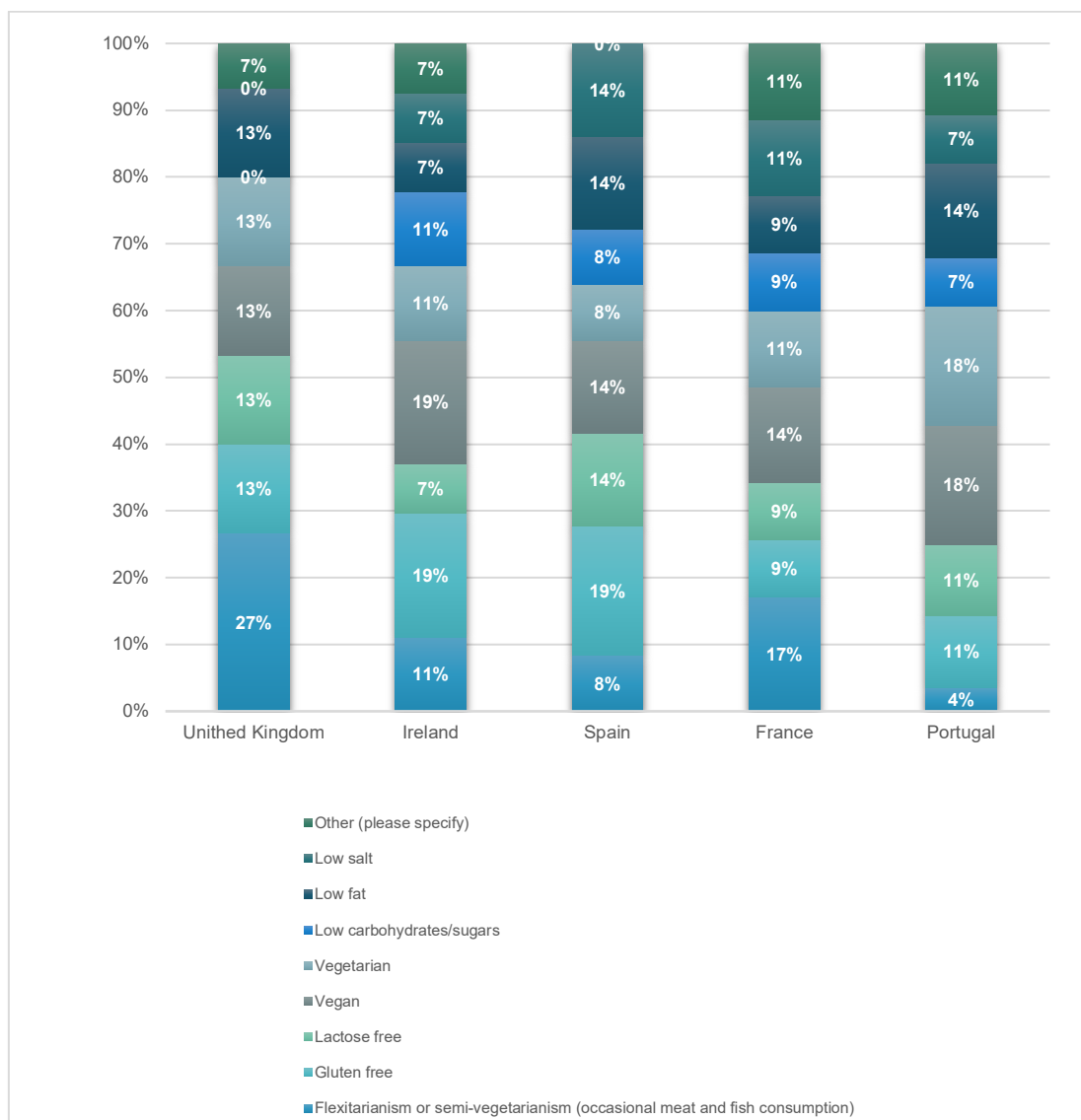


Figure 15. Consumer diet segmentation

5.3 Consumer and Food attributes importance.

SMEs were asked to identify the importance of various food attributes for consumers. For this, a Likert Scale was applied in which 1 corresponds to "unimportant", and 5 corresponds to "very important".

Results presented in Table 1 demonstrated that SMEs highlight the attributes flavour, appearance, origin, naturalness and safety as the most important elements of a product. In contrast, the attributes "traditional production methods", "age-targeted" and "functional foods" are referred to as unimportant for the selection of a product by the consumer.

Do consumers of your company's products give importance to the below food attributes	Very Important	Important	Moderately important	Slightly Important	Unimportant
Age-targeted (for babies & children, for senior persons)	4%	5%	9%	25%	39%
Appearance	10%	10%	9%	3%	4%
Convenience (On-the-Go, Easy to Use, Portionability)	7%	14%	7%	3%	10%
Functional value (cardiovascular, digestive)	8%	6%	12%	13%	16%
Naturalness (Organic, No-GMO, No Additive)	10%	10%	9%	7%	4%
Nutritional value	9%	9%	10%	12%	4%
Origin	10%	9%	9%	12%	2%
Price	8%	11%	14%	2%	2%
Safety	11%	9%	9%	8%	2%
Taste	17%	8%	1%	2%	0%
Traditional production methods	6%	9%	10%	13%	16%

Table 1. Attributes and importance for consumer

5.4 Key reasons for consumer purchase healthy food

As before in this question, the same scale was applied in sub-section before.

In general, the most important reason for consumers to buy healthy foods revolves around health benefits. It can also be highlighted as important factors "enjoyment", "healthy food is quality food", "Disease prevention" and "medical recommendation". Comparing the results between countries, the market segmentation is homogeneous (figure 16).

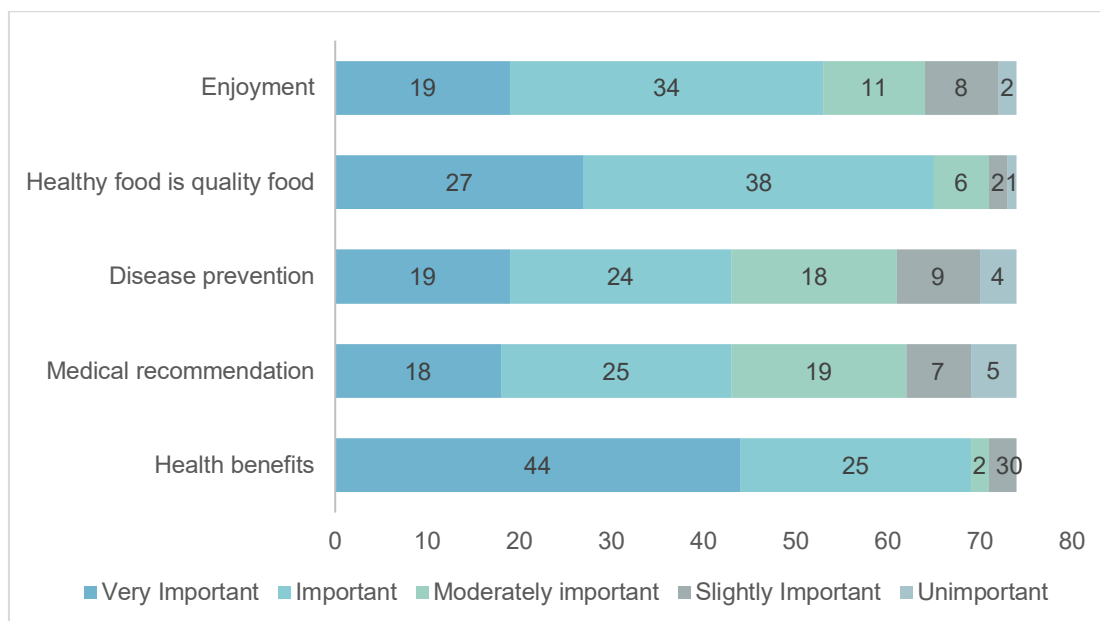


Figure 16. Consumer key factors on healthy food consumption

5.5 Consumer and labels information

The responses given by SMEs are somewhat contradictory in nature, as the nutrients that consumers classify as very important are also those that the consumer expresses a wish to reduce in their diet, in particular, calories and sugars as evident in the figure below (figure 17).

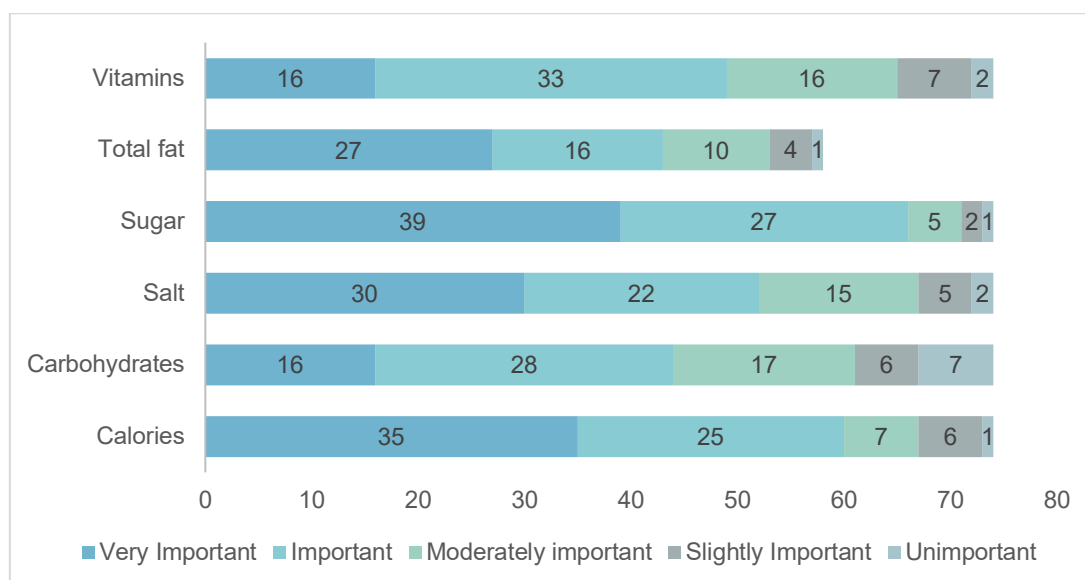


Figure 17. Consumer and labels information

6 Conclusion

The constant changes in consumer behaviour increasingly influence the directions taken by SMEs in new product development. Over the years, changes such as demographic changes, increasing urbanization and other changes to lifestyle have resulted in four key future trends emerging for healthy eating consumers. These are; health and wellness, sustainability, organic and naturalness and convenience.

The results of this survey largely correspond with the findings from both our literature review and the analysis of consumer databases. Overall, there is a growing concern amongst consumers about their health, coupled with a desire to avoid high fat foods.

Also noteworthy is an increase in plant-based diet consumers, which include flexitarians, vegetarians and vegans. This growing demand is related to the concern about the high consumption of the planet's natural resources, which is having a direct impact on consumer behaviour.

In addition, it should be noted that SMEs have defined factors such as taste, safety, origin, naturalness and appearance as important to consider. Within these attributes, origin and naturalness are further important features of new products. Given the new consumer trends and the current state of SMEs, this results in some significant challenges for SMEs, including ensuring that healthy choice is the natural choice for consumers, developing value-added food products with superior quality, convenience, availability and affordability and achieving sustainable food production. In summary, the food industry needs to improve and harmonize the labelling system, promoting the interaction of consumers and the industry when a new product launch occurs, explaining the value added to the product, collaborate more with the scientific and technological community and develop sustainable processes for food processing, preservation, packaging and logistics systems. To survive longer term, it is clear that SMEs need to keep abreast of current consumer trends as outlined above, which further outlines the important contribution of the AHFES project in this endeavour.