Department of Business and Management

Master's Degree in Marketing

Chair of Consumer Behaviour

REDUCTION OF OVEREATING RELATED TO FOOD OVERCONSUMPTION BY INFLUENCING CONSUMER BEHAVIOR AND PURCHASE INTENTION THROUGH FOODSTUFFS PACKAGING MANIPULATIONS

SUPERVISOR

Simona Romani

CO-SUPERVISOR

Giacomo Sillari

CANDIDATE

Edoardo Scalia

711221

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INTRODUCTION

This thesis aims to demonstrate, starting from a scientific basis, that it is possible to reduce food consumption by exploiting the minds of consumers and trying to give them sensory impulses to reduce their desire for excessive consumption.

The implications may seem completely uneconomic because, in order to moderate the consumption of products, it is inevitable to reduce the purchase of products, thus reducing the profits from the sales of companies. the aim of this thesis is not to maximize the profit of companies, but to try to improve the quality of life of consumers, in economic and health terms. At the same time, as an indirect effect, it could also generate a positive response to problem of environmental pollution since the excessive purchase of products also involves excessive disposal of packaging.

However, despite the companies' apparent lack of earnings, they could gain a competitive advantage in terms of brand reputation, image, and perception, all of which have an economic impact in the long term.

We will see in the first chapters of the paper why it is necessary to intervene on the consumer to try to moderate excessive consumption, what has been done so far and what therefore this thesis aims to do to provide a new basis for the scientific community.

Then, through a field experiment, we will deeply analyse primary data in order to better understand social and managerial implications.

By trying to create a series of ad hoc products, following the scheme designed by Cornil & Chandon, we will try to reduce consumers' desire for consumption, trying to bring consumption back to an acceptable per capita level, at least for the food sector.

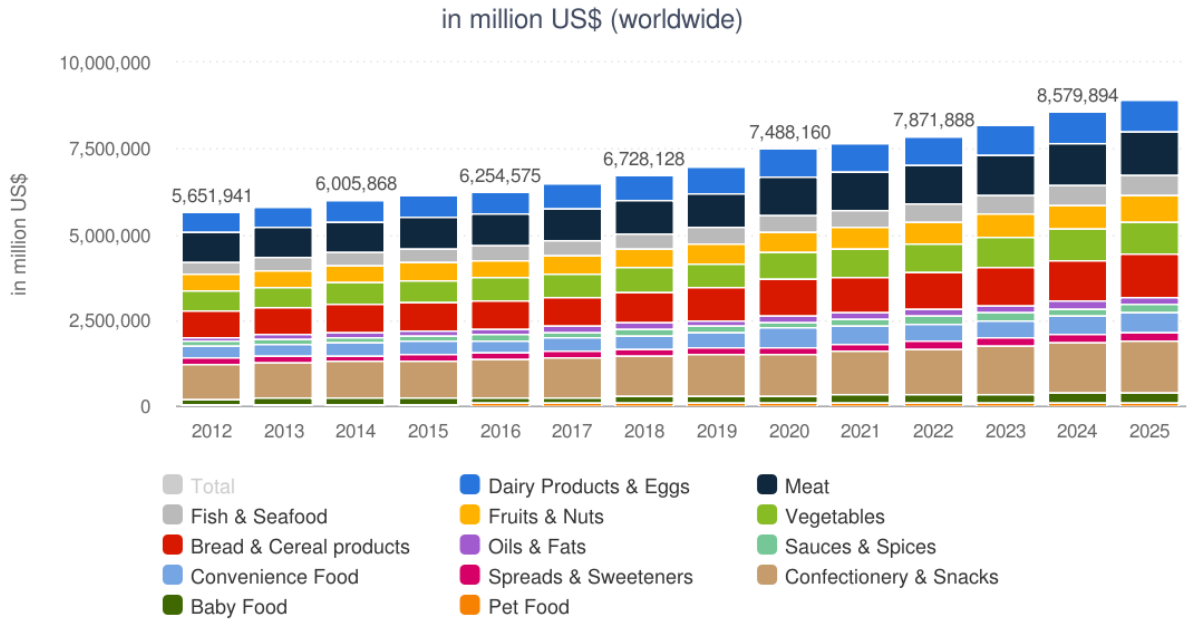
1. THE FOOD INDUSTRY

1.1 WORLDWIDE OVERVIEW

The food sector is one of the most profitable sectors in the world and sees increasing earnings, both because of the discrepancy between cost and revenue that allows a large profit margin for companies that dominate the sector, and because of the growing demand for products dictated by the consumer society that requires an ever increasing amount of food, from supermarket shelves to fast food, restaurants, etc; according to Food consumption trends in leading world markets report, "the Food market includes all kinds of fresh and processed foods. The market is divided into following segments: Dairy Products & Eggs, Meat, Fish & Seafood, Vegetables, Fruits, Bread & Cereal Products, Oils & Fats, Spreads & Sweeteners, Sauces & Condiments, Convenience Food, Confectionery & Snacks, Baby Food and Pet Food."[1]

The entire industry, according to Statista's 2019 report, generates worldwide revenue for to US$ 7,488,160 m in 2020, with a YoY growth of 7.7%, considering the pandemic crisis due to Covid-19, and a significant forecast growth since 2025* the Composed Annual Growth Rate of 3,6% (CAGR 2020-2025).

Charts 1 - Revenue of the Food market worldwide

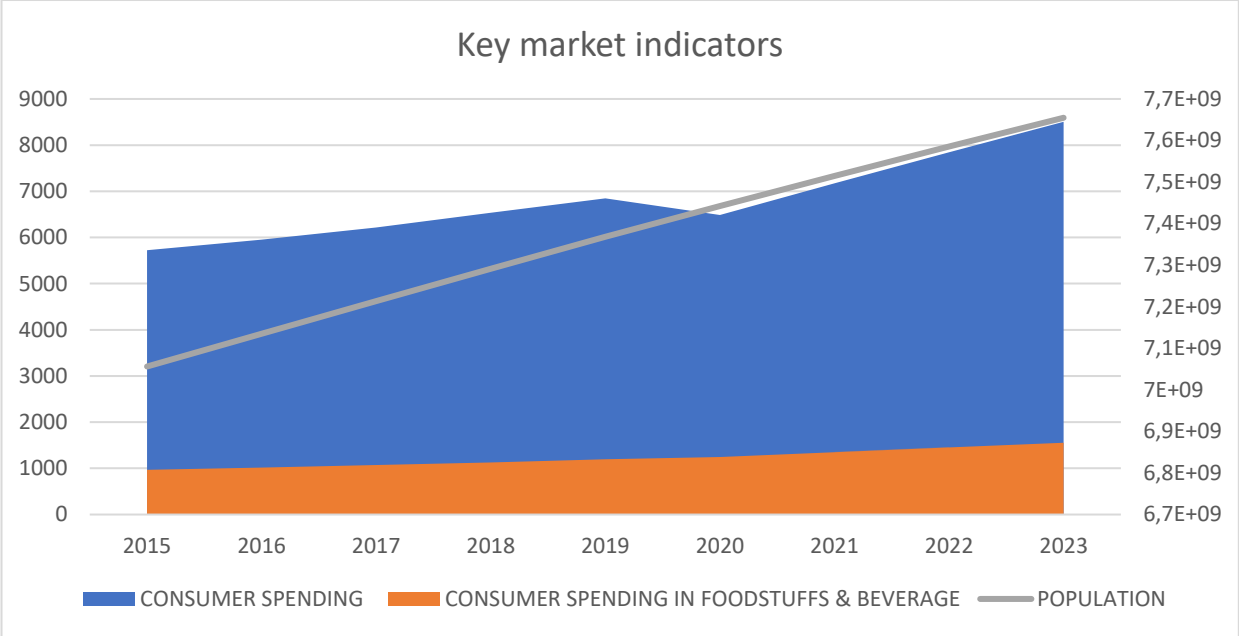


Source: Statista – 2019 Statista Consumer Market Outlook - Market Report

Another interesting data that provides us with the report is the amount of food per capita that is consumed on average; this is about 318.8 kg per head in 2020. Being an average and taking into account the large amount of undernourished, malnourished people this data gives us a partial wake-up call on the problem related to the immoderate consumption of food that characterizes most Western countries.

[1] FOOD REPORT – 2019 Statista Consumer Market Outlook - Market Report

Charts 2 – Key market indicators



Source: Own elaboration, data retrieved from Statista, May 2020

In the Key Market indicators' chart above we can see how the trend of the Consumer spending per capita for food and non-alcoholic beverages (according to the Classification of Individual Consumption Purposes, COICOP) in the selected region (in current prices, constant exchange rate), that covers all private household spending meant for consumption at home, is increasing among time, with an estimated CAGR of 6.1% in the forecast 2015-2023*, compared to the CAGR of consumption in general, which, according to the report, is growing by 5.1% and the population by 1% in the same period.[2]

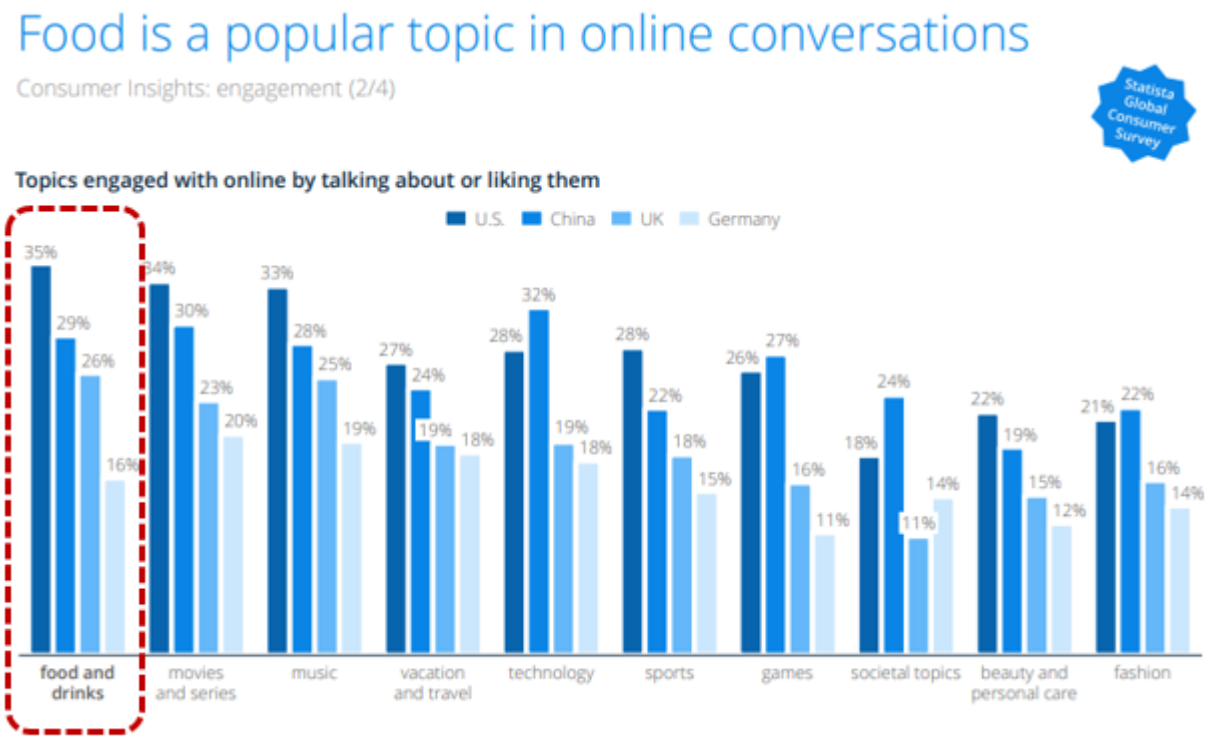
In addition, the Consumer Price Index (CPI) also confirm the importance of the food sector in the whole world consumption.

According to the report, the CARG of food for CPIs is +4.2%, far above the other sectors that make up the dataset and that give as average CPI only +2.4%. To better understand the importance of this data we can use as a term of comparison a sector that we conventionally consider to be among the "engines of the economy" such as transport. The CPIs CAGR of transport is estimated at +2.9%, well below that of food.

A less "financial" view of the food sector, but no less deserving of further study, is the overview of the conversations that consumers have online. this data gives us further real information on how relevant the sector is. The report, (in the Chart 3 below) takes into account US, China, Germany, and UK in considering the topic of online research. Probably dictated by the growth of communities and social platforms such as Instagram, the online dialogue is increasingly driven by bloggers, vloggers and the like; in fact, according to the research, already almost a third of the U.S. and more than a quarter of the Chinese are online consumers who have reported buying food advertised by influencers in the last year.

[2] Statista, based on IMF, UN, World Bank, Eurostat, and national statistical offices

Charts 3 – Online conversation about Food[3]



Source: Statista Global Consumer Survey, data from: September 2018

We therefore have a clear vision of the importance of the sector from both a quantitative and qualitative point of view. Opening a parenthesis on the qualitative side, the report provides us with an interesting data on brand awareness; this, in the U.S., is only 39%, compared to 62% that characterizes smartphones. To have a vision even closer to the Italian market, I also quote the data from Germany, which sees, for the same categories examined in the U.S., 20% against 51% respectively[4], probably due to a high degree of commoditization, overall brand awareness is relatively low for food in comparison to other consumer goods categories. To complete the vision of the food industry in the world, I think it is appropriate to also take a closer look at the distribution and sales chain.

In terms of sales channels in recent years, eCommerce has played an important role in the evolution of the whole trade, changing the structure of trading (currently, global user penetration stands at 49%). As a powerful spiral, the spread of the internet and the growing number of online shops have led to an inevitable digitization, a radical change, within the retail scenario. Of course, this has also had a huge influence on purchasing behavior.

However, logistical problems related to storage (especially in the cold chain), the rapid perishability of some products, the lack of an adequate structure, the "prehistoric" layout of the production chain that characterizes most of the sector, the relative mass of food, their low price per kilogram have so far limited and often

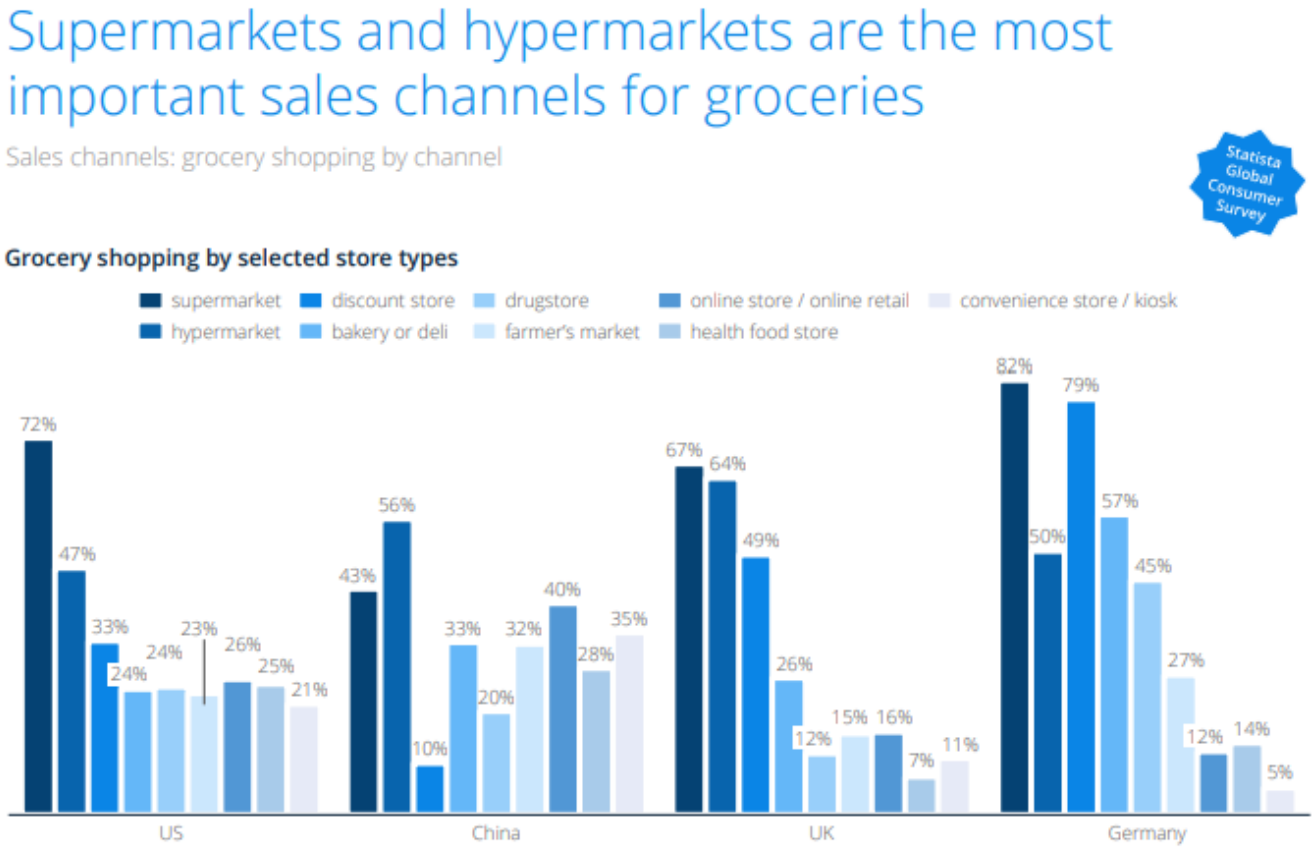
[3] On which of these topics have you expressed your opinion on the internet in the past 4 weeks (e.g. by "liking" an article on social media)? "; Multi Pick; n=10,242"
[4] Data refers to the Percentage of internet users paying particular attention to brands

prevented the emergence of food as the main category in online retailing. However, the industry is adapting to this change, and to expand the sales funnel, it is forced to overcome barriers to entry and change; in other words, to cast its nets where the fish are.

The forecasts are encouraging for the supporters of digitization, both for the reasons discussed above, and for the growth of the new generations, in particular the "GenZ" that tomorrow will make up a large part of the total consumers, the new public. Especially in the Asian scenario, forecast suggest an increase from 2018 to 2023*[5].

Nowadays, the most important sales channel for groceries are, (since the "digital" limitation discussed above) the Supermarket and Hypermarket.

Charts 4 – Sales channel distribution[6]



Source: Statista Global Consumer Survey, September 2018.

To conclude this brief overview on the worldwide industry, I would like to say something about the key players of the food production per sales in 2018.

Financial data give us a clear vision on who is the "MVP" of the game; with US$63.2bn, Nestlé has by far the highest food sales among brand manufacturers. The Swiss company Nestlé is the world's largest food and beverage companies and it is represented by more than 2,000 brands in 189 countries around the world.

[5] Statista Global Consumer Survey, September 2018

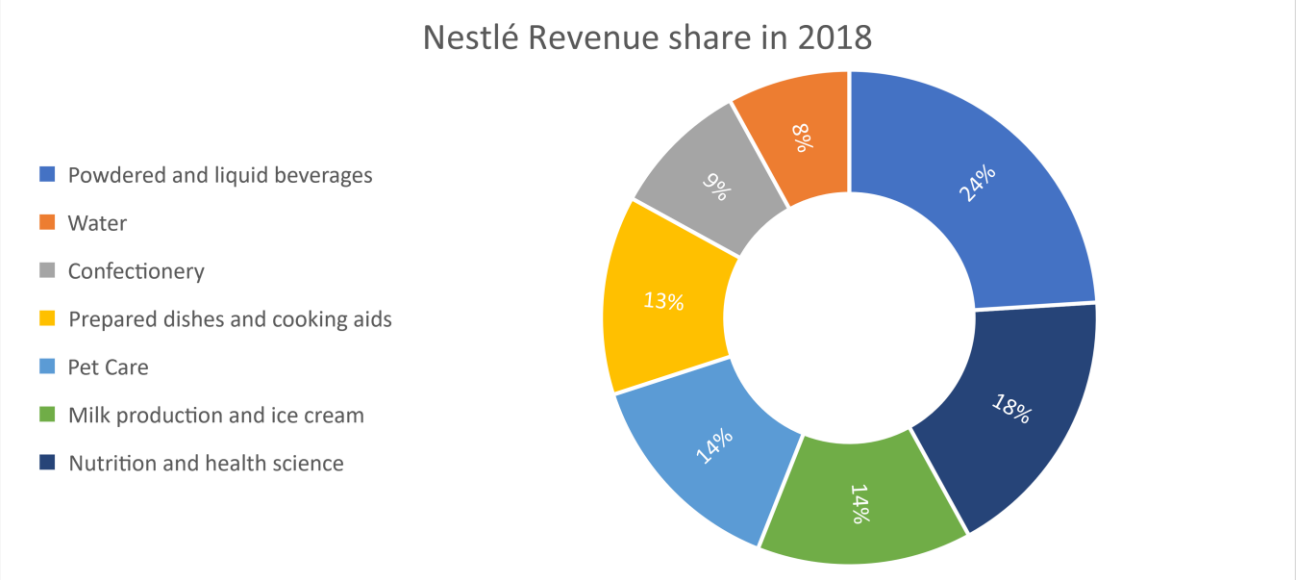
[6] "Where do you regularly buy food and products for everyday use?"; Multi Pick; n=10,039

The silver medal goes to PEPSICO, better known for the non-alcoholic drink Pepsi the company in 2018 has generated 53% of its revenue from (mostly snack) foods (Frito Lay, Quaker Foods) with US$34bn.

Completes the podium the food and beverage company headquartered in Deerfield, Mondelez International with his " star products" (Milka, Toblerone, Oreo, Tuc and others) with US$24.6bn.

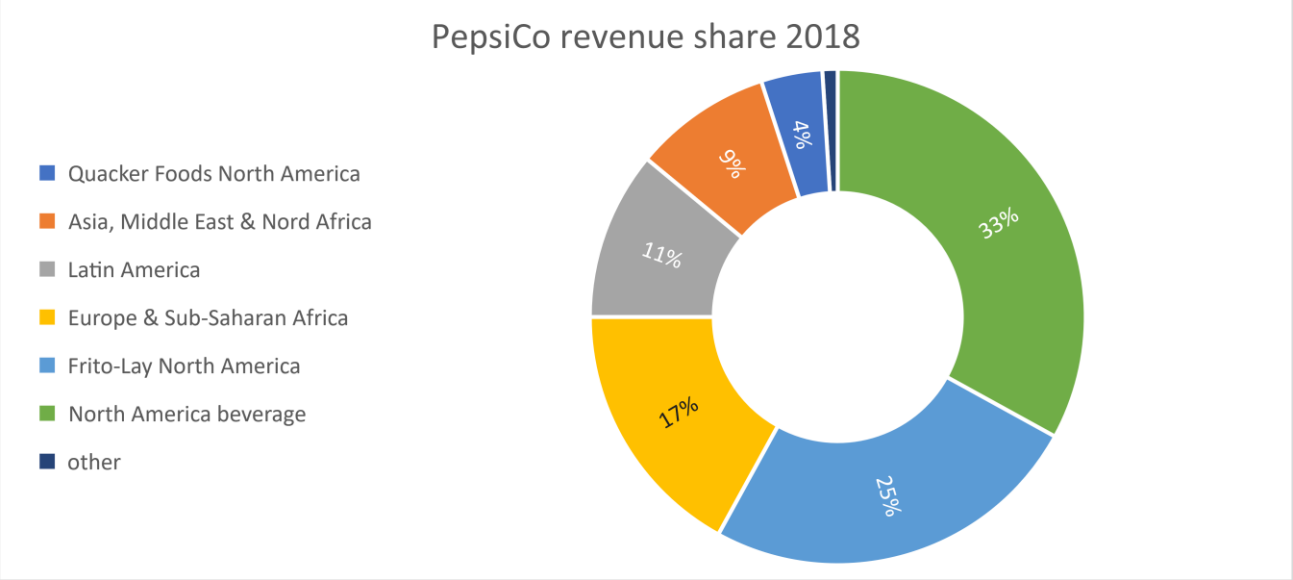
To better understand the composition of the revenues of these 3 giants just mentioned, we are going to break down the revenues for 2018.

Charts 5 - Nestlé Revenue share 2018



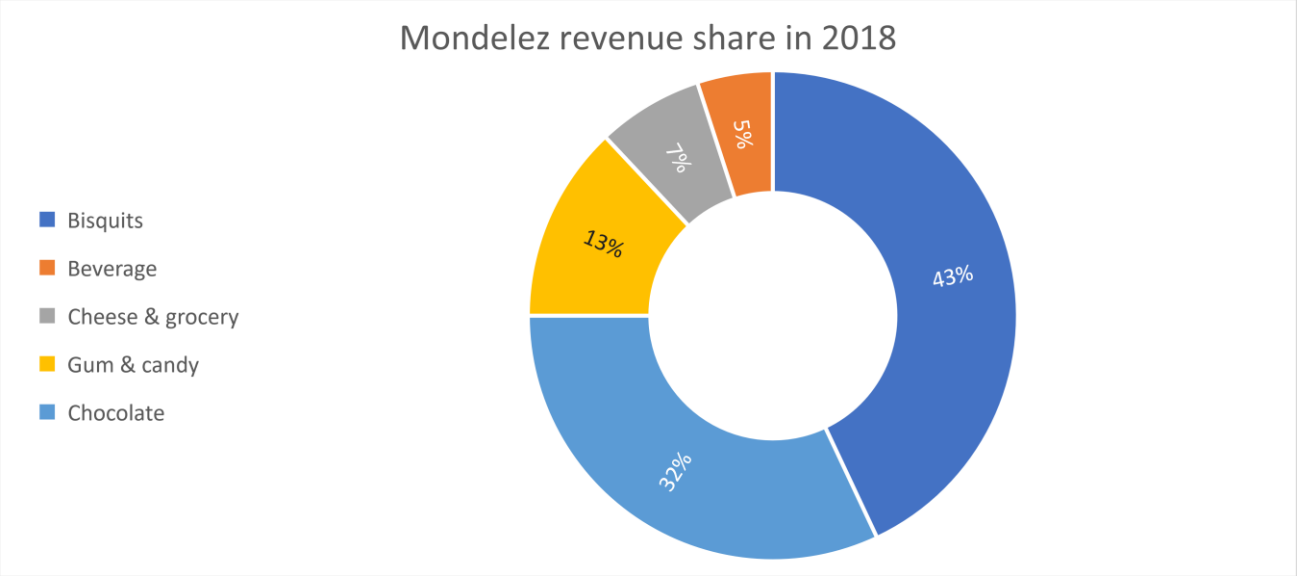
Source: Own elaboration, data retrieved from Statista, May 2020

Charts 6 - PepsiCo Revenue share 2018



Source: Own elaboration, data retrieved from Statista, May 2020

Charts 7 - Mondelz Revenue share 2018



Source: Own elaboration, data retrieved from Statista, May 2020

Now we put attention on what are the trends of the industry, looking at what supermarket does to catch consumers.

We can summarize the trends in 3 main categories: channel convergence, connected devices, and clean eating.

Thanks to the introduction of ready-to-eat and take-away meals, the trend of grocers is showing a diversification of supermarkets into food services.

Examples of this phenomenon are freshly cut salad or freshly prepared sushi and freshly made sandwiches and instore catering areas provided by the supermarket.

This trend is driven by the growing consumer preference for fresh products over processed and packaged products and is probably influenced by the trend towards convenience resulting from an increasingly tight time budget due to busy workplaces.

This "adaptive" diversification to the needs of the consumer means for food stores to expand into a higher margin territory, as packaged food is increasingly being challenged by competition from discounters in many countries.

For the chaotic life that consumers lead every day and the increased discretionary purchasing power that allows consumers to maximise the use of time, Food consumption is gradually moving away from home. To clarify the extent of the phenomenon, in the United States, spending on meals out of home has already outstripped food retail sales and continues to grow more dynamically. This expansion, however, is countered by the barriers posed by those who have been able to understand consumers' needs from the outset; the main competitors are in fact delivery applications such as JustEat, Glovo, Foodora, UberEats, and all food delivery platforms that aim to bring the offers of traditional restaurants into consumers' homes. No less important are secondary competitors such as suppliers of meal kits such as Blue Apron, and similar start-ups that deliver recipes complete with all the ingredients for a family dinner.

In countries where eCommerce in food has had a particularly significant penetration, retailers have adopted click-and-collect formats that have led consumers to purchase their own food online - saving them the time - and at the same time not, in addition to the logistics costs borne by the retailer; as mentioned before, mainly because of the logistical challenge of the wide geographical spread, food has so far remained a kind of niche category.

However, retailers are experimenting with new formats that combine channels to open up the latest frontier of online shopping; As an example, food market leader Walmart acquired Jet.com in 2016 for $3.3 billion and uses the company's eCommerce expertise to grow its digital marketplace. This "cross-pollination" works both ways, Jet has infused Walmart with much-needed eCommerce, and Walmart can provide extensive institutional knowledge in supplier relationships, resulting in a win-win strategy.

It is now clear to us that online ordering processes follow a constant trend towards greater convenience and increasingly fade into the background. these processes are the nodes of a network of routine consumer interactions that are always connected to mobile devices, moreover, the increasing penetration of the Internet of Things (IOT) market could partially change the journey of home shopping.

To cope with this development, retailers must redirect their stores from warehouses to experiential places that offer fun and exciting food that exposes consumers to new culinary trends and inspires them.

The last category (clean eating), could be considered as an "advice" and can be understood as a generic term for a right movement that propagates eat only "whole" and "unprocessed" foods such as fresh vegetables; nowadays, following the wave, influencers are giving dietary advice on new superfoods and dietary restrictions that often lack sufficient scientific evidence, both organic content and paid sponsored ones (giving life to the "food blogger" market which, however, we will not analyse in this work).

The prolonged and combined neglect of traditional western health systems and food companies have left an information gap on the health impact of nutrition by leaving the field to hobbyists and self-promotions. The situation was then aggravated by one general erosion of trust in large institutions such as governments, international corporations, and organizations. Is it a coincidence that all this coincides with the historical period characterized by an abnormal amount of fake news?

Personally, I think not, but, since this is not the place to discuss this fact, I refrain from giving opinions on the matter. However, I now focus on the theme that characterizes this research project, the overconsumption. The unmet need that arises from the heightened awareness of the health of consumers whom the Guardian newspaper called "a dream of purity in a toxic world"[7] is proving to be both a challenge and an opportunity for the whole food industry.

"On the one hand, the proliferation of social media has complicated controlling the narrative about products and issues. On the other hand, consumers are willing to engage more with a topic that hitherto had been defined by increasingly commoditized staple items with low attention spans. Companies can harness this attention to

[7] https://www.theguardian.com/lifeandstyle/2017/aug/11/why-we-fell-for-clean-eating

their benefit by providing more transparency about supply chains and by diversifying product ranges into modular system that can fit multiple dietary requirements."[8]

1.2 FOCUS ON ITALY

Table 1 - Italy KPIs

	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
POPULATION (Mln)	60.6	60.7	60.7	60.6	60.6	60.5	60.4	60.3	60.1	▼ 0,1%
CONSUMPTION spending (US$)	18.9	19.2	19.7	20.1	20.3	17.9	19.3	20.6	21.9	▲ 1,9%
Foodstuff, beverage (US$)	2.8	2.8	2.9	2.9	2.9	2.9	2.9	3.1	3.1	▲ 1,6%

Source: Own elaboration, data retrieved from Statista, May 2020

As we can see in the Table 1, Italy has a negative population growth outlook, a relevant factor is the reduction of births and the longevity of the Italian population (among the longest in the world together with Japan).

The "worrying" figure is provided by the CAGR 2015-2023* of the population by age group; this is negative for most of the groups up to 49 years of age (except for the 15-19 age group which has an estimated growth of 0.3%), while for the 50+ age group the CAGR shows a growth that also touches the double digit for the 95-99 age group (CAGR 10.5%).

The negative trend of the Italian population seems to be in line with the process of the reduction of fertility, of the consequences of the financial crisis of 2008 and of the economic crisis of 2011, in short, it is no coincidence that the prospect of growth is negative and that the average age of the population has risen significantly. On the other hand, the ISTAT[9] warns us already for some time.

The question that now arises, however, is: why is it that if the number of consumers is reduced, the amount of consumption of goods will increase significantly (CAGR +1.9%)?

You will tell me that consumerism, increasingly aggressive and personalized advertising, the possibility of deferring payments, globalization, hyper-choice of products, etc. can influence consumers' purchasing intentions leading to an increase in the number of goods consumed over time and we might also agree with this; but, looking at the foodstuff and beverage consumption, we can see how this too has risen significantly with a forecast of +1.6% in 2023*, however, let us remember that the mouths to be fed will decrease by -0.1% (such a small figure seen as a percentage represents about 500,000 fewer people in the country, 500,000 fewer consumers).

[8] Food Report 2019 Statista Consumer Market Outlook – Market Report, August 2019
[9] https://www.istat.it/it/archivio/demografia

We can therefore say that the consumption of food is not different, in terms of purchase intention, than that of non-food goods such as smartphones. if this is true, then we can point to the "blame" of this over-consumption to the same causes described above related to the increase in consumption in general. To shortly recap, we can say that, independently from the goods, we purchase more than we need to. But if purchasing too many iPhones do not have a direct negative effect on the health, food does (in terms of more you purchase, more you consume). We will deeply describe this on the next pages, in the paragraph 1.4 of this thesis.

1.3 PRODUCTION AND CONSUMPTION[10]

We have now a general idea of the worldwide food industry in terms of foodstuff and beverage consumption related to the overall consumption and to the world population from 2015 to 2023.

Looking more closely at the composition of the food sector, we can divide food products into 13 macro-categories: Milk; Meat products and sausages; Processed fish and seafood; Processed vegetables, fruit and potatoes; Bread and bakery products, Pasta and rice, Sauces and condiments; Convenience food; Breakfast products; Confectionery; Snack food; Baby food; Pet food. To better understand then how the food sector is structured, we will go, in this paragraph, to see category by category, details and data related to the production of food goods.

The first category, Milk, accounts for 18% of the food revenue and 26% of volume sold in 2018; the main players are Luxemburg and Iceland, with the highest annual revenue per capita (US$501 Luxemburg, and US$493 Iceland), while Italy is in 9th place with US$356. The segment has a forecast CAGR 2010-2022* of +5.9%, (a soft slowdown prospect compared to the +6.3% CAGR 2010-2018). This growth is not a symmetric ones, South America and China markets would be the ones with the highest growth in CAGR 2010-2023* (+8% China and +9.5% South America, against the actual key players Europe +2.8% and United States +2.1%).

The Meat products & Sausages segment amount a total of US$492 billion, the 14% of the food sector revenue and the 5% in the 2018. As per the Milk sector, the countries with the highest per-capita revenue are Europeans, (Norway US$522, Iceland US$494, and Luxemburg US$453), while Italy is not in the top 10 countries. Most of the revenues of the sector are given by the cold and roast meat products. Following the trend sow for the milk products, CAGR 2010-2023* would be higher in South America +9.9% and China +7.3% rather than Europe +2.2% and United States +4.1%.

Processed fish and seafood could be considered as a "niche" in the industry since, in 2018, it boasted revenue for only 5% of total industry and 1% of sales volumes, by the way its sales amount to US$175 billion. Here too, in 2018, European countries boast a record of revenue per capita, (Iceland US$181, France US$158, and Portugal US$157, while Italy is not in the top10.) as the two sectors mentioned above, China and South America, respectively CAGR 2010-2023* +6.2% and +9.3%, are “eating” market share in Europe (+3.7%) and United States (+1.9%).

[10] All data were retrieved from Statista Consumer Market Outlook 2019

In 2018 worldwide processed vegetables, fruit and potatoes sales amounted to US$335 billion, with a YoY growth of 7.3% in comparison with 2017. The top per capita revenue countries were in 2018, United Kingdom US$272, Luxemburg US$174, and Iceland US$171. Following the trends already clarified in the previous categories, China and South America drives the growth forecast with a revenue CAGR 2010-2023* of +7.7% (China) and +9.5% (South America), follows Europe with +3.5% and US with +1.6%.

Bread and bakery products sales amounted to US$440 billion in 2018, representing the 12% of the food revenue and the 9% of volume sold. Norway, Austria, and Finland are the top 3 country per capita revenue, respectively with US$489, US$455, and US$392. The sector presents a CAGR 200-2023* in line with what was said earlier for the other sectors, China +9.3%, South America +8.0%, Europe +3.1%, and US +2.5%.

The other area of "carbohydrates" Pasta and Rice, generated in 2018 revenues for US$369 billion, the 10% of the whole food industry, and the 29% of the volume of sales of the total. Unlike the categories listed above, the primacy of per capita revenues shifts to Asia, Indonesia (US$134), Thailand (US$119) and Vietnam (US$12) are the top three country per capita revenues. According to this data, we can easily argue that rice is the main driver of the sector (80% of revenues), rather than pasta (20%). Here also China and South America have the highest CAGR 2010-2023* (+4.9% and +6.2%) against the +3.6% for Europe and the +1.2% for the United States.

Sauces and condiments generated revenues for US$123 billion in 2018 (the 3% of the total). The sector gives us a clear idea on which country has the most per capita revenue. United States has US$129 per capita revenue, followed by Sweden (US$96) and United Kingdom (US$94).

Convenience food sales amounted to US$235 billion in 2018, the 7% of the industry's revenue; Finland, United States and United Kingdom drives the per capita top country list with, respectively, US$213, US$209, US$204. Most of the revenue of the sector are given by "Ready meals"; and the whole sector has a forecast double digit (+11.8%) CARG 2010-2023* in South America.

Looking at breakfast products sector, we can see that this weighs only the 3% of the food revenue (US$93 billion) and the 2% of the volume sales in 2018. Ireland, Switzerland, and Norway have the highest per capita revenues (US$66, US$59, and US$57). Cereals generates the most revenue of the category.

Confectionery top per capita country's list sees Denmark (US$369), Luxemburg (US$327), and Switzerland (US$319) on the podium. The segment accounted 11% of the food revenue (US$380 billion) and the 5% of the volume of sales in 2018.

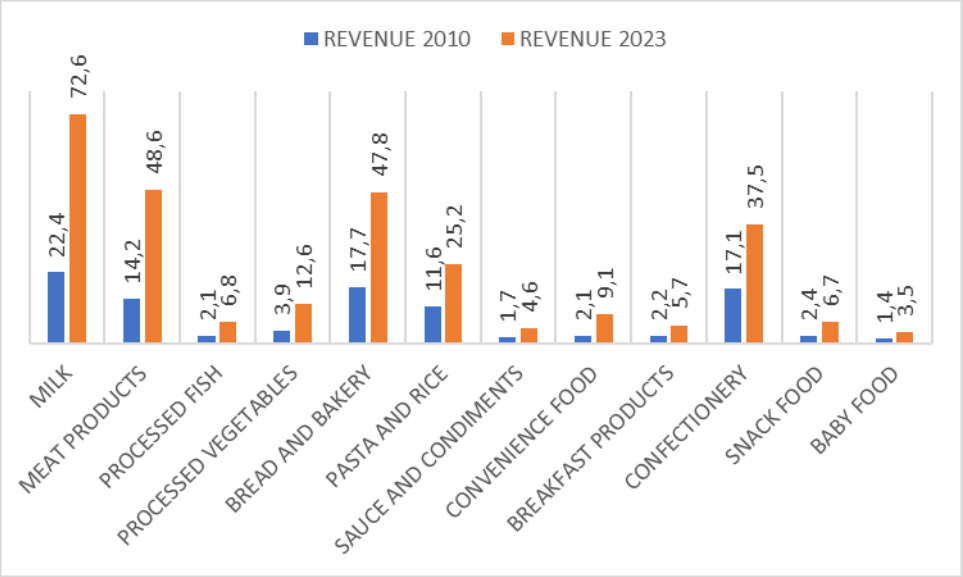
In 2018, snack food generated the 4% of the food revenues and 2% of volume sales. As per the convenience food category, the United States, with US$195, leads the ranking of the countries with the highest revenue per capita, with a gap from Canada (in second place with US$94) of US$101, follows Iceland with US$92.

To complete the overview, we now briefly look at baby food and pet food category.

Baby food accounted for 2% of the food revenue while pet food for the 5%. For the baby food sector Hong Kong alone leads the ranking of countries with the highest per capita revenue per capita with US$478, against US$93 in Israel.

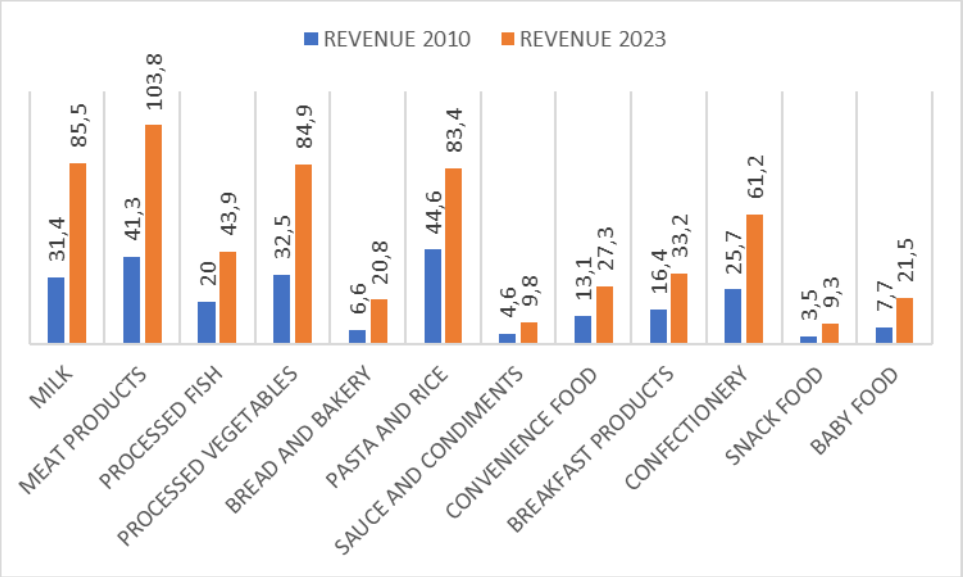
To summarize this enormity of figures listed in this "analytical" paragraph I will now report in graphs the composition to 2010 and 2023* for the geographical macro-aeras (South America, China, Europe, and United States) that we used to compare the CAGRs of the various sectors.

Charts 8- South America revenue in US$ billion



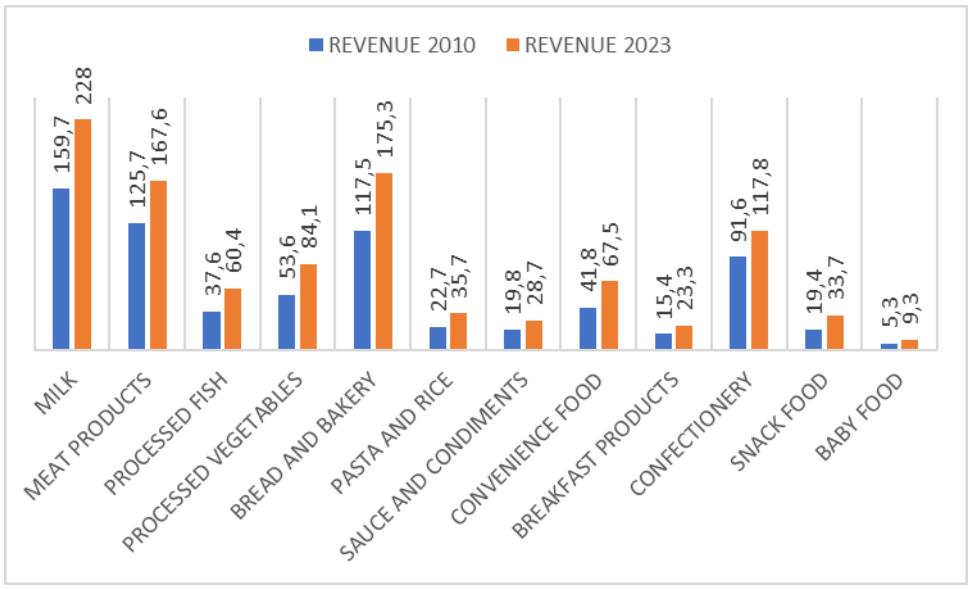
Own elaboration, data retrieved from Statista, May 2020

Charts 9 – China revenue in US$ billion



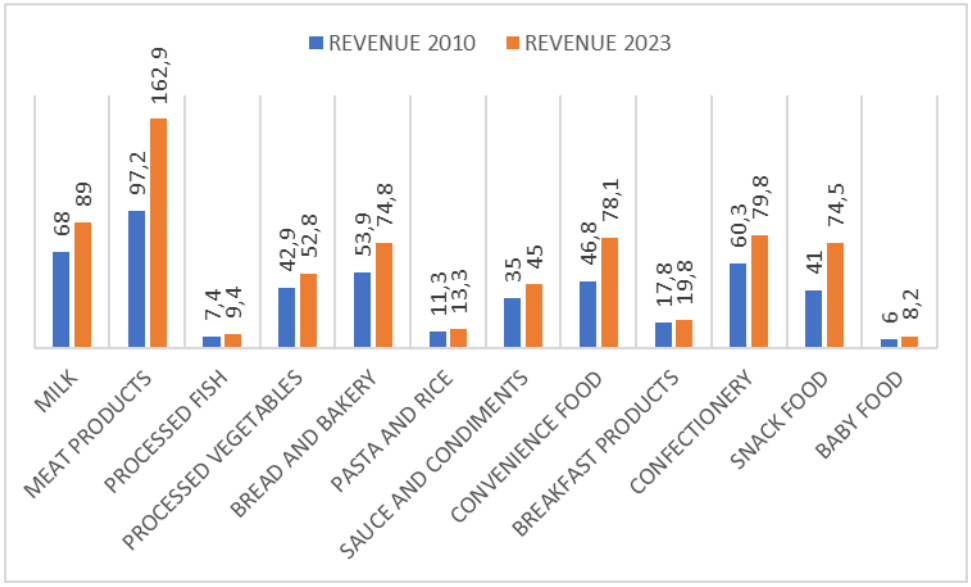
Own elaboration, data retrieved from Statista, May 2020

Charts 10 - Europe revenue in US$ billion



Own elaboration, data retrieved from Statista, May 2020

Charts 11 - United States revenue in US$ billion



Source: Own elaboration, data retrieved from Statista, May 2020

1.4 ISSUES

Having now a clear idea of the composition of the sector in terms of revenue described in the previous paragraphs (1.1 and 1.3), we now focus on the possible problems linked to this immoderate consumption of food. The problems directly attributable to the over-purchase of food products are essentially divided into two categories: food waste, most of which are easily perishable in the short term, and overeating.

We now briefly look at these issues.

1.4.1 FOOD WASTE

Most of the times food waste is related to "imperfect food", food produced but that has an ugly shape/packaging and consumer will not buy.

Food system and food safety have drawn spontaneous global attention due to the effect of substantial environmental concerns. Three billion tons of food are wasted every year, estimated as being a third of all produced food. However, beyond the economic losses associated to this issue, food-waste has also a negative impact on the environment by strongly contributing to pollution. Institutions all around the world are adopting several measures to solve this problem. For example, in Italy there is a fiscal reduction for bakeries that donate bread 24 hours after its production instead of trashing it[11]; in addition, European Commission offers general guidelines for restaurants and cafes in order to reduce and finally prevent food waste[12].

To fully understand why food imperfection has a great significance, it is necessary to describe the whole framework of all the individuals, players in the supply chain and institutions involved in the phenomenon. More in detail, the main actors involved are the consumers; the criteria they follow in order to make their purchases play a fundamental role in influencing retailers' decisions about the offerings to be presented on the shelves. In this specific case, the assumption that consumers will not buy imperfect products forces retailers to offer only perfect foods, thus setting the standards for aesthetic appearance. On the other side, forcing retailers to physically process products to make them more desirable would increase their prices due to the costs associated to such procedures that can occur in different ways. In addition, avoiding such food-waste is in the interest of retailers and producers themselves since every unit of imperfect products not sold represents an economical loss for them. In fact, several supermarket chains and retailers around the World are already implementing strategies to boost up the sales of imperfect products. For instance, to fight against food waste, Intermarché, the 3rd largest supermarkets chain in France decided to sell (at 30% less) the non-calibrated and imperfect fruits and vegetables: "the inglorious fruits and vegetables".[13]

This strategy boosted the store traffic by 24% during the days of the promotion and, at the same time, it actively reduced the waste related to the dismissal of these products.

1.4.2 OVEREATING

While food waste is more an economic and environmental problem, overeating has negative effects on health. It is no secret that 'developed' countries such as the United States have so many problems with childhood obesity that the World Health Organisation (WHO) is investigating them.

According with WHO: "The fundamental cause of childhood overweight and obesity is an energy imbalance between calories consumed and calories expended."[14]

Factors influencing the increase in overweight and childhood obesity include: a significant increase in the consumption of foods with higher calorie and energy intake, excessive fats and sugars and few vitamins, and a trend towards lower levels of physical activity due to the increasingly sedentary nature of many forms of leisure time, changing modes of transport and increasing urbanization. According to the WHO, in addition to

[11] *http://www.gazzettaufficiale.it/eli/id/2016/08/30/16G00179/sg*
[12] *https://ec.europa.eu/food/safety/food_waste/eu_actions_en*
[13] *http://itm.marcelww.com/inglorious/*

[14] https://www.who.int/dietphysicalactivity/childhood_why/en/

the diet and physical activity problems just described, the importance of the psychological and social factor characterised by social and economic development and policies in the areas of agriculture, transport, urban planning, the environment, food processing, distribution and marketing, as well as education. The unhealthy

For overweight and obese children, the chances of developing non-communicable diseases (NCDs) such as cardiovascular disease and diabetes are higher than for children with a "normal" weight. Among the most significant health consequences of childhood overweight and obesity, which often do not become apparent until adulthood, are: cardiovascular disease (mainly heart disease and stroke); diabetes; musculoskeletal disorders, particularly osteoarthritis; and some types of cancer (endometrium, breast and colon).[15]

What can be done to reduce the spread of the childhood obesity consists in increase consumption of fruit and vegetables, be physically active and limit the intake of sugars. By the way there is actually a “dark side” of the overeating phenomenon. What about people who eat too much healthy food? Is there a limit at the healthiness, or we can eat as much as we want the healthy food? Researches has shown as healthy food can have unhealthy effects if consumed too much; in other words, 1kg of salad is not healthier than 100gr of chocolate.

The "vegan" drift that has taken hold in recent years, especially among young people, should not be underestimated. If they are healthy products in themselves, excessive consumption of them can lead to harmful consequences for the body. The internet has played a key role in spreading these "sound principles", but the internet itself, specifically the internet part of personal blogs and social media, has made doctors' opinions as relevant as those of "influencers" or "food bloggers", thus providing a distorted perception of reality and manipulating the importance of a balanced diet.

“The goal in fighting the childhood obesity epidemic is to achieve an energy balance which can be maintained throughout the individual's life-span.”[16]

1.5 RECAP

To summarize the chapter, therefore, we have seen the importance of the food sector first of all in terms of general consumption at a global level and then specifically in its components, both in terms of profits and in terms of sales volumes. we have also seen the Italian situation in forecast 2023* with the trend of the population in relation to that of consumption for all categories of goods and, specifically, for the food category.

We then saw what the repercussions in terms of health and food waste of this excessively inordinate trend in food consumption could be, with emphasis on the situation of childhood obesity analysed by the WHO, and on the overeating of healthy food. We can now then analyse the literature about the mental processes to which we are subjected in the consumption of food, to have a more complete view of the phenomenon that this thesis has proposed to combat, the overeating.

[15] https://www.who.int/dietphysicalactivity/childhood_consequences/en/
[16] https://www.who.int/dietphysicalactivity/childhood_what_can_be_done/en/

2. THEORETICAL BACKGROUND

The problem of excessive consumption of goods, food in particular, affects a large part of the academic world. Affected in the foreground are the branch of medicine and economics, (given the economic and health repercussions described in the previous chapter), but also behavioral studies such as marketing which, although part of the class of economy, could make a significant contribution in the search for a solution or otherwise in the fight against the problem. Marketing should in fact intervene in people's purchasing behaviour, because if the purchasing behaviour is "manipulated" then the quantity of goods purchased is also controlled.

This thesis, however, does not want to be an aid to companies to sell their products through the manipulation of the purchase, on the contrary, it wants to set itself the objective of limiting, where possible, waste products.

In this chapter we will therefore see in depth what has been done to solve the problem of excessive food consumption, to better understand what we can do.

2.1 LITERATURE REVIEW

The basis of the current research is the work presented by Yann Cornil (Assistant Professor of Marketing University of British Columbia Sauder School of Business) & Chandon (L'Oréal Chaired Professor of Marketing, Innovation and Creativity at INSEAD in France, and the Director of the INSEAD-Sorbonne University Behavioural Lab.) called “Pleasure as a Substitute for Size: How Multisensory Imagery Can Make People Happier with Smaller Food Portions”.[17]

Starting from the famous phrase of Epicurus: “A wise person does not simply choose the largest amount of food but the most pleasing food”[18], the research tries to answer the difficult question of discover a method to encourage people to choose and prefer smaller food portion rather than enormous quantity, without hurting the pleasure perception related to the eating enjoyment; in other words, it tries to convince people that if one does well, two doesn’t do better.

While governments and health institutions have imposed portion size limitations and health appeals designed to encourage people to exchange the expected enjoyment of hedonic foods for health benefits, in order to stop portion supersizes leading to overeating, these efforts have had limited success because they have a hedonic cost for consumers who like to eat bigger portions of pleasant food and involve an economic cost for food market operators who typically extract more profit from larger portions. Accordingly, Cornil and Chandon’s research challenges the assumption that sensory pleasure is the enemy of the healthful eating. They designed and tested a multisensory (taste, smell, texture) mental imagery as an alternative to health warnings.

[17] Cornil & Chandon, Journal of Marketing Research · October 2016

[18] Epicurus (341–270 BC), Letter to Menoeceus

2.1.1 THE MULTISENSORY PLEASURE

The research is based on the conceptual background of multisensory pleasure and portion size.

Accordingly, consumers are influenced by at least three expectations in purchasing and consuming foodstuffs with a small or large portion:

1) Will it fit the need to satiate the hunger?
2) What about health and weight?
3) How pleasure it will be?

Answering to the first question mentioned above, hunger tends to lead people to choose larger portion sizes[19], so we can argue that the choice of portion size is strongly influenced by mental expectations about the ability of food to satiate hunger, we think that therefore the bigger the dish the more it will satiate us, completely ignoring the excessive caloric intake contained in the "super portion".

The second driver that influences portion choice, as we can see in the second question, concern about health perception; especially in chronic dieters' people, health influences food choices.

The last pillar of the "choices' journey" refers on the expectation of sensory pleasure; research has shown how it has an important role in affecting people's choices on food and beverage. By the way it has a smaller effect on the portion size.

Moreover, according to research, specific-sensory satiety means that the larger portions are not necessarily more enjoyable than the smaller ones, going against the advertising marketing strategies undertaken mainly by fast food. At the basis of this assumption is the theory that the overall retrospective enjoyment of a food is not an accumulation of pleasure from every bite, but rather the average pleasure on every bite.[20]

Cornil and Chandon created a multisensory imagery to mentally stimulate the multisensory hedonic experience of eating indulgent food; focusing on sensory pleasure, they argued that multisensory imagery should help the consumer anticipate greater sensory pleasure from smaller portions, increasing the relative importance compared to criteria.

Thanks to the emulation of the mental process, people can recreate past experiences and better anticipate future ones, idealizing the satisfaction obtained in the past. Since the purpose of this thesis is to find out a way to reduce food consumption through manipulating consumer behavior is pretty relevant what emerges from the Cornil & Chandon's study; they find out a relation within the increase of reliance given by multisensory imagery and the decrease of enjoyment with food quantity. In this point of view, multisensory stimuli should be able to improve the "balance" between the enjoyment of food portion and the expected, also increasing the relative importance of sensory pleasure. The bias of the research is that people that are sated or dieting are not affected by the sensory imagery's power, and it should not lead them to reduce portion sizes when they are in

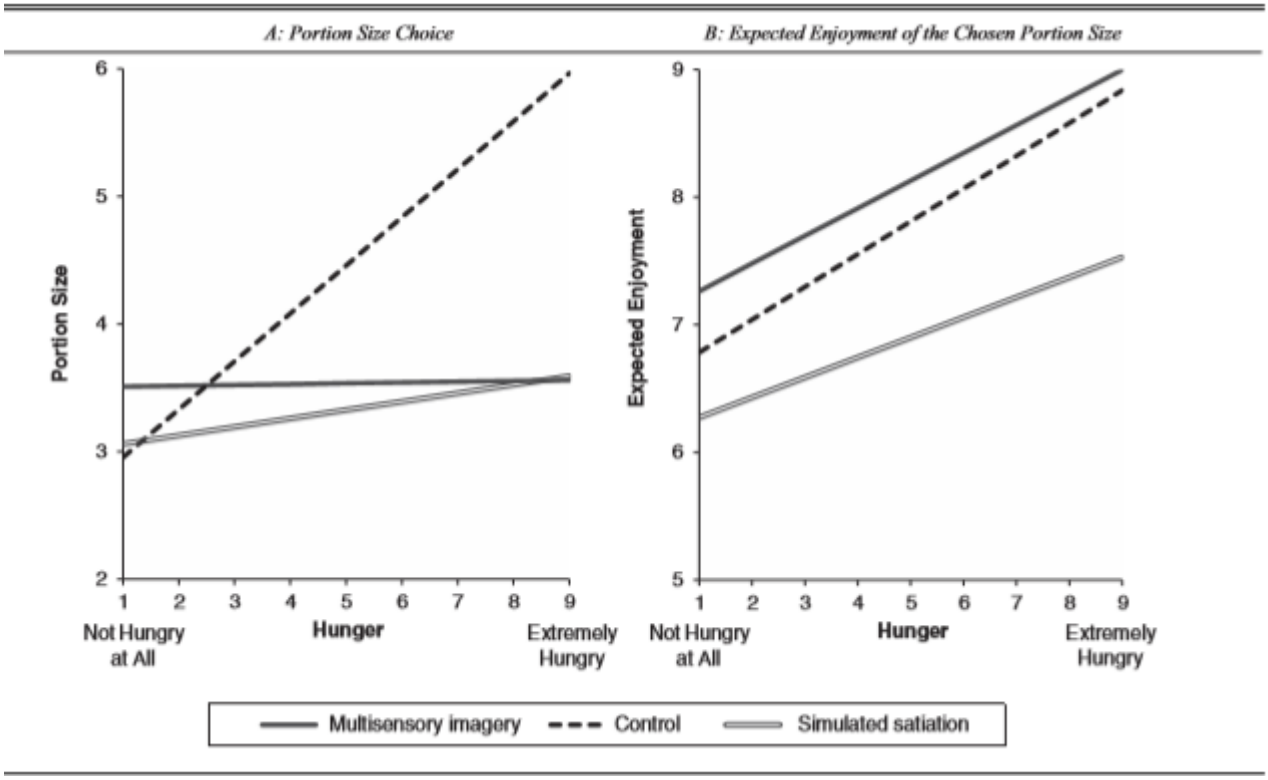
[19] Herman and Polivy, 1983

[20] Rode, Rozin, and Durlach 2007; Tully and Meyvis 2016; Van Kleef, Shimizu, and Wansink 2013

that particular conditions, on the other hand, Cornil and Chandon's theory is therefore applicable regardless of their cultural background and age.

Another interesting finding is that sensory imagery, in the field experiment taken by Cornil & Chandon, also increases the willingness to pay for the smaller portion rather than the control condition[21].

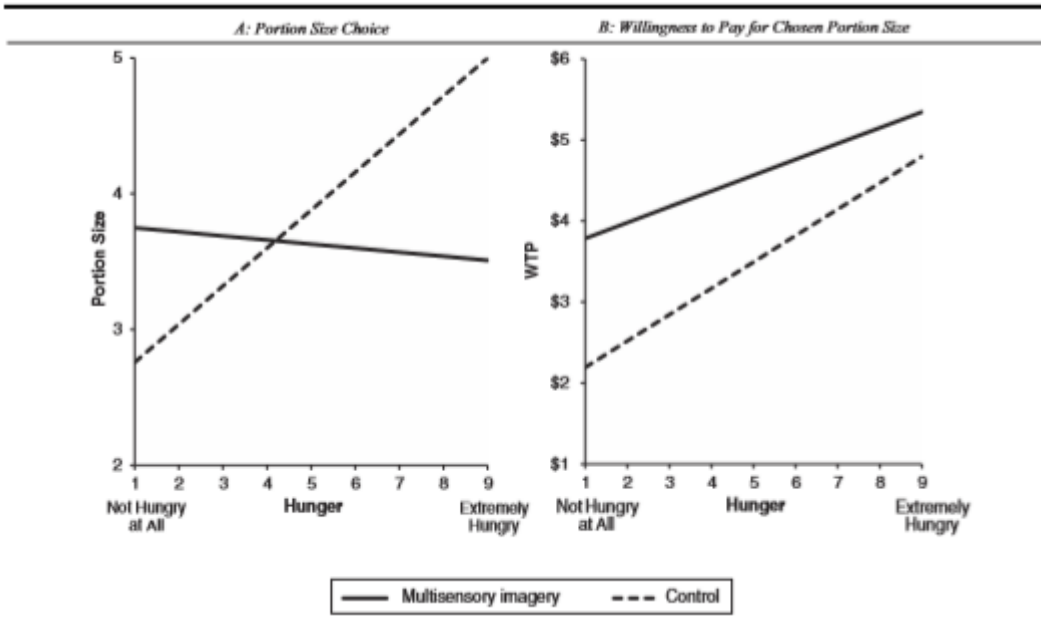
Figure 1 – Cornil & Chandon Study2: Effects of Multisensory imagery and simulated satiation on portion size choice and expected enjoyment of chosen portion



Source: Cornil, Y., & Chandon, P.; Pleasure as a Substitute for Size: How Multisensory Imagery Can Make People Happier with Smaller Food Portions. Journal of Marketing Research Vol. LIII, 847-864. October 2016

[21] People who were not exposed to a sensory imagery related to the food

Figure 2 - Cornil & Chandon Study 3: Portion size choice and willingness to pay for chosen portion



Source: Cornil, Y., & Chandon, P.; Pleasure as a Substitute for Size: How Multisensory Imagery Can Make People Happier with Smaller Food Portions. Journal of Marketing Research Vol. LIII, 847-864. October 2016

As we can see in the figures above, the basis of the Cornil and Chandon's research give us a clear idea of the functionality of the multisensory "manipulation" that leads to a triple win results for all, consumers, marketers, public health and environment.

The basis of the sensory approach discussed above is that the pleasure is not given by the size of the portion because the enjoyment peaks at the first "bites" and decline with the next ones; accordingly, a large portion (i.e. 40 bites) in not more pleasurable than a small portion (i.e. 15 bites) because we reach the peak of pleasure in the first mouthful and the "15 bites" of a small portion are enough to satisfy our need for pleasure.

Multisensory images also reduced the gap between pleasure expectations and real pleasure and made people choose the smaller portions that offered the best real eating experience and increased the relative influence of sensory pleasure versus hunger satiety over the option of portion sizes.

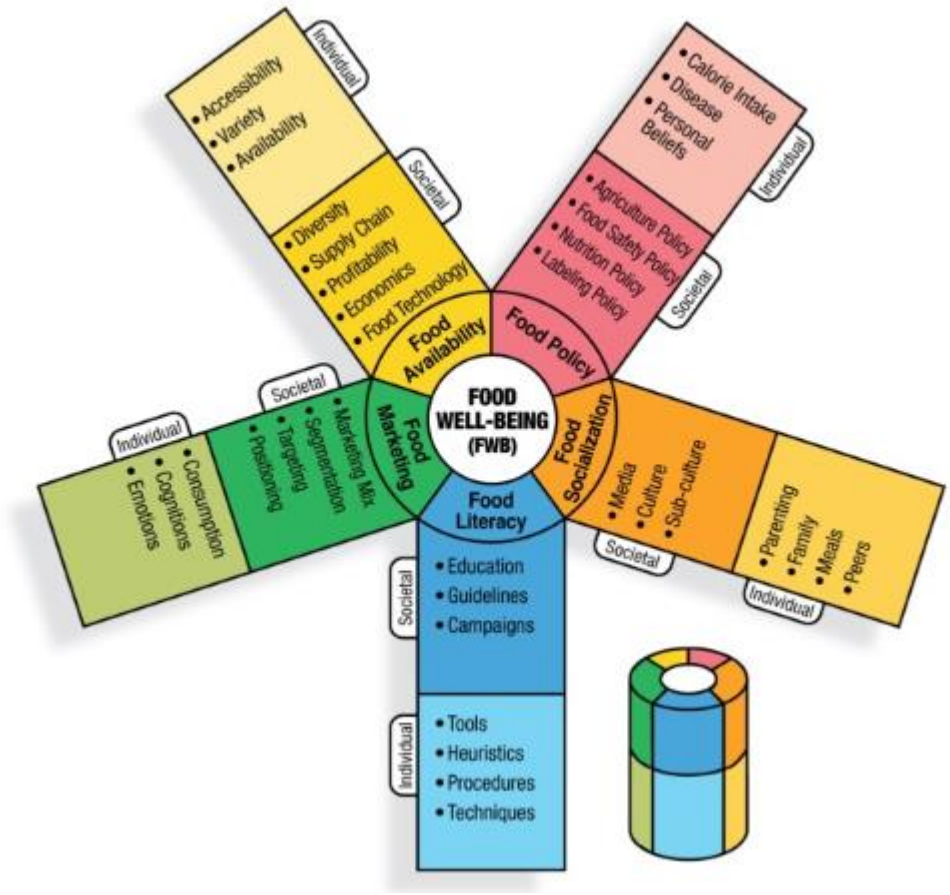
To conclude this digression on Cornil and Chandon's research, the choice of reduced portions of hedonic food, especially if done because of expectations of pleasure, may therefore be more favourable to a healthier nourishment in the long term than a strict but dangerous cognitive restriction followed by an excess of food.

The two researchers, however, leave possibilities to implement their research because it would be possible that multisensory images, emphasizing sensory pleasure, lead people to choose tastier foods than healthier ones, which could partially or totally cancel out the health benefits of choosing smaller portions. Let us therefore arrive at a first basis for what is the purpose of this thesis: *Is it possible, starting from the work of Cornil and Chandon, to generalize the effect of multisensory images to all categories of products, healthy or not, in order to manipulate the consumer's choice, thus leading him/her to consume all types of food in a moderate way?*

2.1.2 CONCEPTUAL INTRODUCTION TO FOOD WELL-BEING

Lauren G. Block defines food wellness as a positive, psychological, physical, emotive, and social connection to food on both an individual and social level. It is shaped by social, legal, and cultural elements that influence people's attitudes and eating habits. We can argue that food well-being (FWB) is composed of food availability, food policy, food socialization, food marketing and food literacy; where, each of these parts has an individual and social perspective

Figure 3 - The FWB Pinwheel



Source: Block L. G. et al; "From Nutrients to Nurturance: A Conceptual Introduction to Food Well-Being" Spring 2011

"Food socialization" is defined as the process that consumers use to learn about food, its role, and FWB in a person's cultural realm; it can take place explicitly or implicitly.

Research shows that fast food marketing can influence parents' regulatory beliefs and how often their children eat fast food[22]. Consequently, FWB can be provided to children (and indeed to all consumers) through individual and collective socialization processes. Moreover, food interactions can also provide helpful opportunities to socialize with other family members.

[22] Grier, Sonya A. and Shiriki Kumanyika (2008), "The Context for Choice: Health Implications of Targeted Food and Beverage Marketing to African Americans," American Journal of Public Health, 98 (9), 1616–29.

The "Food literacy" component regards the knowledge about nutrition and food, but it is more than the basic knowledge, it also involves the motivation to apply nutrition information to food choices. It has three main characteristics: Conceptual or declarative knowledge, procedural knowledge and the ability, opportunity, and motivation to apply or use such knowledge. The first involves reading and acquiring knowledge about food, food sources, nutritional facts and other activities of knowledge acquisition and apprehension about food and nutrition. By contrast, procedural knowledge leads to the application of this knowledge to food decision-making, which includes skills in food purchasing and food processing. Procedural knowledge involves the elaboration of food scripts - sequences of events, actions or routines that occur in a specific scenario.

The acquisition process of food literacy and the reach of FWB evolves in the lifetime of a person. From a community perspective, promoting food literacy can lead to educating people on how to embed food into their daily routines in a manner that sustains their nutritional goals. Lack of food literacy has negative and harmful consequences for the individual and society, leading to the absence of FWB. The improvement of food literacy has the capacity to enable healthier lifestyle consumption choices on a daily basis and to have a beneficial effect on individual decisions and societal FWBs.

An important role is played by "Food marketing"; Following the 5Ps[23] structure, the research takes into account Production, Price, and Promotion.

Madzharov and Block (2010) demonstrate that people unconsciously hook their consumption to the number of units shown on the packaging: the more units are viewed; the more people buy. Under-consumption is also triggered by marketing activities like the influence of ads on body image fulfilment among both men and women and eating problems such as bulimia and anorexia.

Marketing activities, in addition to the amount of food consumed, can also influence the cognitions and emotions associated with food. Past research[24] has focused on the psychology of food, investigating the interaction between positive and negative aspects at an intercultural level. changing from one country to another, from one culture to another, food can take on a positive (pleasure) or negative (stress) connotation and these differences influence the health perception.

The increasing availability of energy-intensive foods and the intensive exploitation of economies of scale by companies operating in the sector, with the associated problems related to the physical health of consumers, has led to a particular alert on global health concerns, both in rich and developing countries.

The 5p of marketing that, combined with behavioural studies, can help to change consumption patterns without disrupting consumer habits, is once again useful.

The availability of food involves how the distribution of food influences purchasing and consumption behavior. Consumers find themselves choosing daily what to buy and what to eat among the many (perhaps too many) options available. These choices, seemingly individual choices or in any case mainly concerning

[23] Philip Kotler

[24] Rozin et al. (1999)

only the household, can be influenced by social factors. In purchasing, gender, age, culture, nationality, social status, psychological components play a key role, as do discounts, product placement and advertising.

Given the importance of the behavioural and physiological dynamics of consumers, the economic environment also shapes the relationship of marketing channels at FWB.

In the industrialised world, where there is a profit maximisation rule for businesses, profitability in the supply chain is at odds with consumers' desire for low prices. In order to meet supply and demand it will therefore be necessary to reduce prices but, in order to maximise revenues by reducing sales prices, the chain will be forced to reduce the diversity of healthy products, in favour of global production, which are less expensive to pack, transport and warehouse. The result of this globalized and delocalized industrialization is food that is cheaper but less healthy. Instead, this research proposes that economic welfare and FWB can be complementary and not exclusive to each other.

2.1.3 A SAVOURING JOURNEY TO FOOD WELL-BEING

Following the basis given by Block et al., 2011, researchers continues on the food well-being journey. In particular, W. Batat[25] (2018) introduces the experiential pleasure of food (EPF) as a journey that involves the enduring cognitive pleasure and the emotional pleasure that consumers derive from enjoying the multi-sensory, communal, and cultural significances of eating trials.

Extending the concept of Epicurean food pleasure (EEP) of Cornil and Chandon's work and defining three levels (contemplation, connection, and creation) and its determinants as they lead to consumers' food well-being (Block et al., 2011).

The EPF aims to promote the long-term welfare of consumers and investigates the marketing and public policy issues and future research areas that could help to reach FWB. The EPF therefore positions itself as a point of contact between EEP and FWB. The EPF therefore wants to eradicate the wrong associations between pleasure and unhealthy food and sacrifice and healthy food.

2.1.3.1 THE EPF JOURNEY

The experiential pleasure of food can be defined as the prolonged pleasure that consumers experience on a multisensory, cognitive (satisfaction) and emotional (i.e. pleasure) level in food experiences.

Like the EEP, the EPF is based on the philosophy of experiential pleasure, which is fundamental to support positive associations and emotions involving food activities and can lead to improved consumer satisfaction and well-being[26].

Following the research of Bryant and Veroff[27] we can define the EPF as the ability "to assist, appreciate and value the positive experiences of one's life". EPF therefore extends beyond a mere simplification of the visceral or epicurean enjoyment. The EPF goes one step further than the works of Cornil and Chandon in a certain

[25] The experiential pleasure of food: A savoring journey to food well-being

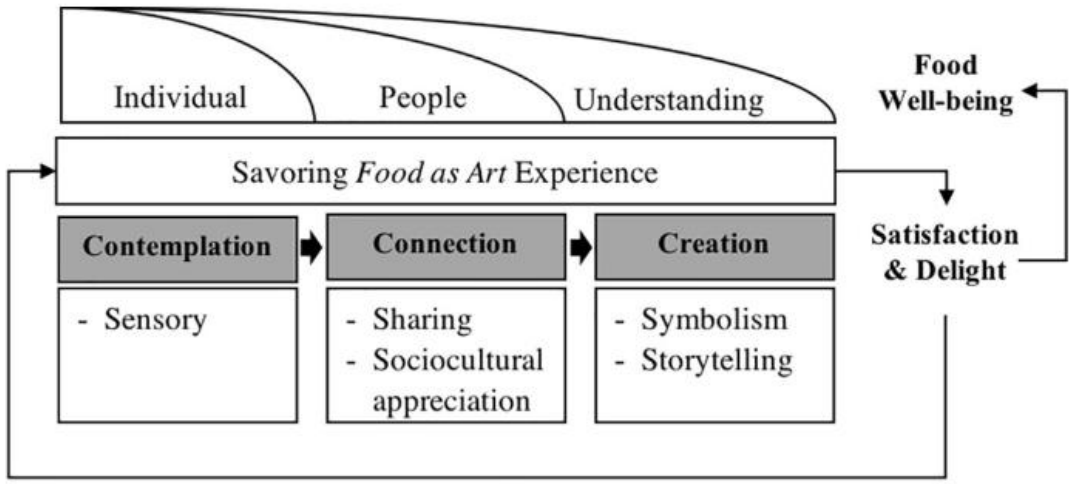
[26] Jose, Lim, & Bryant, 2012

[27] Bryant, F. B., & Veroff, J. (2006). Savoring: A new model of positive experience. New York: Psychology Press.

sense, positioning itself as a holistic integrated nutritional experience and providing three new features that have not been taken into account in the Epicurean Eating Pleasure (EEP) approach. EPF is an adaptive, modular, and transformative learning process that is co-constructed by taking into account the different macro, meso, and micro experience drivers related to different phases of the food experience journey. The EPF underlines the value of a vision that puts the consumer's enjoyment and well-being of food within a specific culture and subculture of food. It also distinguishes between the pleasure as a consequence of enduring well-being and as a journey or trial that enables consumers to seek their increased wellness. The EPF takes into account that food experiences involve actions from production and distribution to purchase, consumption and waste disposal, are incorporated within a specific nutritional culture and are modelled by the historical background, social norms, behaviors, and ideals. EPF affects the whole tasting experience in anticipating, tasting, and recollecting. The EPF journey highlights the positioning and duration of the savouring experience's salience in achieving food wellness.

The journey consists of three stop-offs (Fig 4) Contemplation (which culminates in anticipation), Connection (which climaxes in tasting) and Creation (which culminates in remembrance). There are five principles (sensory, sharing, socio-cultural meaning, symbolism, and narrative) within these three stages that can be affected to generate lasting pleasure and satisfaction.

Figure 4 - The EPF Journey



Source: Batat, W., Peter, P. C., Moscato, E. M., Castro, I. A., Chan, S., Chugani, S., Muldrow, A.; "The experiential pleasure of food: A savoring journey to food well-being", Journal of Business Research, 100, pages 392-399. December 2018

In the EPF model food is conceptualized as a form of art and artistic expression, as if food were a painting, but where the predominant sense in charge of perceiving the beauty of the work is taste instead of sight. With the contemporary sociology of eating[28] it has been shown that any kitchen can evoke an epicurean atmosphere through the enjoyment of eating, as long as it concentrated either on authenticity or identity.

[28] Johnston & Baumann, 2007

In the experiential pleasure approach, food as an art can generate many perceived identities[29] comprising five major aspects: related to the object (food stuffs and ingredients), factual (food narratives), locational (the food's incorporation into a specific food culture), personal (knowledge and abilities developed by the cook) and contextual (market and social interactions). EPF moves consumers over and beyond familiar and meaningful gastronomic habits, which can be both mechanical and skilled, by helping them to achieve their own natural wakefulness, balance, and inherent awareness. The EPF is powered by the EEP and helps the FWB by concentrating on the successful and sustainable food experience of processing through pleasure over time. While the EEP proposes to pay attention to the aesthetical aspects of eating, the EPF aims to highlight the unique multisensory experience over and above the purely taste. EPF also focuses on the conscious and conscious acknowledgement of food as an integral part of the socio-cultural, community and individual significance of food, in view of gaining a durable FWB.

FWB's background statement concentrates on the individual and socially good relationship of the consumer with food through timescales. Five areas that help to contribute to FWB are highlighted: Socialization, Literacy, Marketing, Politics, and Availability. The EPF exploits the EEP as the enduring enjoyment of the aesthetic value of the sensorial and symbolical qualities of food, but uses the conceptualization of relishing food as an art in order to encourage a knowledgeable and lasting enjoyment of food, in an effort to support institutions and users in concentrating on the creation and preservation of food appreciation. Instead of considering food only as a survival mechanism and an immediate pleasure, consumers who consciously develop an EPF perspective see food as an artistic experience to be enjoyed. Consumers who knowingly evolve an EPF approach view food as a changing and transforming experience that empowers them to gain both the knowing and the enjoyment to reach FWB.

Experiential Food Pleasure is multifaceted and considers how pleasure contributes to FWB in the entire journey of the anticipation, purchase, eating and remembering of food experiences. The EPF needs a combination of activity and reflection to obtain its advantages. It calls for the recognition of key elements which can enhance the EPF and support consumers in finding and expanding their sources of pleasures that get them to reach FWB objectives. All stages of the EPF process involve different principles or impacts which are characteristic of the EPF and which may affect the healthy eating and well-being of its consumers.

The journey starts with the Contemplation stage which involves the internal and the external feelings faced by the customer. In this stage, enjoyable food experiences are aroused by the multisensory experiences.

The second step regards sociocultural gratitude and food sharing. The incorporation of identity and culture into food offers the chance to boost experiential gratification by strengthening one's own positive cultural heritage and the promotion of diversity. By investigating the socio-cultural meaning of food and eating patterns, we learn about how to better place taste education that echoes with people, arouses enjoyment, and enhances positive lasting connections with eating well being. Moreover, through the strength of the sharing

[29] Chronis & Hampton, 2008

patterns, an opportunity to enhance values can be taken advantage of. In particular, two areas of sharing offer a special insight to enhance the enjoyable food experience: commensality and collaborative consumption. The first one is the practice of eating together. The other one is considered through the cultures as being essential for the family' s identity and oneness.

The last step is called “Creation stage” and it regards food symbolism and its storytelling’s narrative level. It can be pretty useful to better create a connection among the person and other people, by strengthening links and by offering ways of comprehension. Food nostalgia is one of the strongest emotions that can be used for marketing and commercial purpose. Having a small memory of taste memorized is all it takes to trigger it back into the mind and let the consumer taste the related pleasure. Because the words and the categories connect to those remembrances, their semantic significances impact our responsiveness to food.

The identification of the above discussed phases of the EPF's consumer journey provides a new perspective on how enjoyment can influence eating habits and food events, and therefore the FWB.

3. RESEARCH

3.1 THEORETICAL FRAMEWORK

Past research has established that through multisensory imagery a state of food well-being can be achieved. Following Cornil & Chandon's theory, we can establish the assumption that hunger tends to make people choose larger portions of food.

The present study therefore seeks to fill some of the research gaps that emerged from the literature of the previous chapter; the articles taken as a starting point set out the theoretical assumptions for achieving FWB, but considering only the act of eating or being in front of food already portioned, do not take into account the stages before consumption. To complete the literature, this research aims to create a connection between food wellness and the purchase of products, lengthening the path of FWB and anticipating the starting point to the choice of food. Following the literature, this research aims to bring these mental images into reality, on product packaging, to reach the level of hedonic stimulation theorized and thus reduce excessive food consumption. Following the EPF model, this thesis focuses on the aesthetic aspect of eating, but it does so on the real first step of the food process; the aesthetic aspect is placed on the product packaging, transposing the concept of food as art on the packaging, using multisensory stimuli. This research can be placed in the "food availability" section of Lauren G. Block's FWB pinwheel (Fig 3), in support and integration of the EPF (Batat) model, the research is based like the EPF on the idea of food as an art form, enhancing its aesthetic appearance. However, this study is a step forward from the act of eating, the research, in fact, focuses on the purchase of the product, the beauty of the packaging and the use of multisensory images on it. We could consider this research as a derivation of EPF to support the realization of FWB.

The holistic perspective of food and well-being can be carried on the packaging to see if multisensory stimuli can be used to engage the consumer and lead them into the FWB funnel, thus making them consume less food.

Accordingly, the present research starts from one of the gaps of the Cornil & Chandon study: "Can multisensory imagery lead people to choose tastier over more healthful foods, which may partially or totally negate the health benefits of choosing smaller portions?"[30]; this study starts from Cornil & Chandon's research gap and develops a research question to try to answer the needs of scientific research. Following, the present research question is: *"Is it possible to use multisensory images in changing the packaging for healthy food and unhealthy ones, in order to lead people to consume food in a moderate way?"* The holistic perspective of food and well-being can be carried on the packaging to see if multisensory stimuli can be used to engage the consumer and lead them into the FWB funnel, thus making them consume less food.

[30] Cornil Y., & Chandon P.; "Pleasure as an allay healthy eating? Contrasting visceral and Epicurean eating pleasure and their association with portion size preference and wellbeing", Appetite 104, 52-59. September 2016

The first hypothesis is based on the concept of the idea is that multisensory stimuli on packaging positively influence the propensity to buy. The second hypothesis focuses instead on pleasantness. On the basis of the above-mentioned research on FWB, it could be hypothesized that food can be seen as a kind of art form and as such would benefit from its aesthetic appearance before the taste, the present research took in consideration the aesthetic characteristic on the packaging rather than the product, using a multisensory stimulus to evoke in the consumer's mind images and feelings of satiety in the purchase phase. From the research question above, two successive hypotheses have been developed that will be tested through the methodological study.

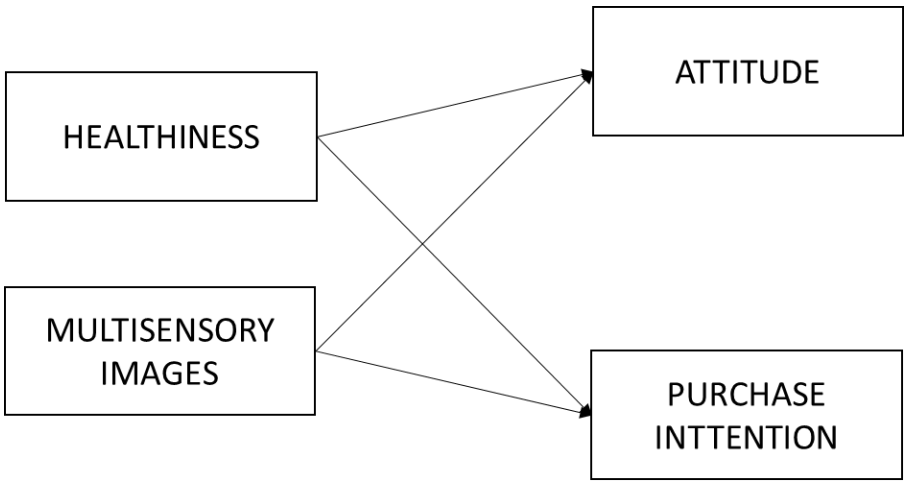
Since the main aspects of the past research to gapped are the pleasure and the purchase intention and how multisensory stimuli could affect them, the hypothesis about the main effects expected are:

H1: Attitude in the products with multisensory stimuli on the packaging is higher than the ones of products without multisensory stimuli

H2: Consumers will express more purchase intentions when there are multisensory stimuli on the packaging of the product

Thus, in order to investigate the effect of multisensory imagery theorized by Cornil & Chandon, a survey was carried out to understand if consumers are influenced by multisensory images on packaging of healthy and unhealthy products during the purchase phase. To achieve this comparison, it was necessary to define both dependent variables and independent variables. As independent variables the presence of multisensory stimuli and the product typology were placed. We use as dependent variables "the purchase intention", defined as the probability that a consumer buys a specific product, and the "attitude" defined as the pleasantness perceived looking at the stimuli.

Figure 5 - Conceptual model

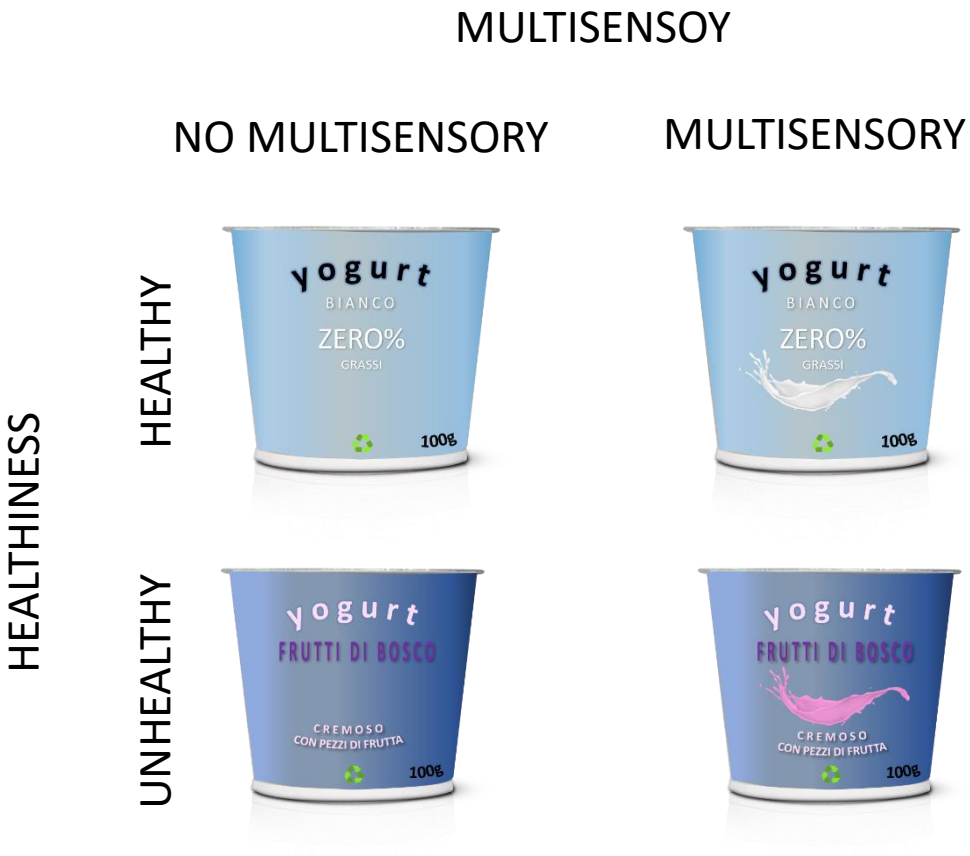


Source: Own elaboration

3.2 METHODOLOGY

To deepen, a survey[31] between subject was carried out. 240 people were randomly divided into 4 groups (60 people each); each group presented a different situation characterized by a different product (yogurt). A 2 Healthiness (healthy vs. unhealthy) x 2 Multisensory (multisensory vs. no multisensory) matrix was used. The 240 people were randomly selected and varied by age, gender, educational level, and job title.

Figure 6 - Conditions of the study, 2(healthiness) x 2(multisensory) Matrix



Source: Own elaboration

3.2.1 COLLECTION OF DATA & CODING PROCESS

The survey was conducted through Qualtrics in Italian as it was addressed to the Italian public.

Respondents were asked to indicate on a Likert-scale of 1 to 7 their level of agreement with statements retrieved from Nancy Spears Ph.D. & Surendra N. Singh Ph.D's research[32] regarding the product displayed. To exclude errors due to the respondent's lack of attention or lack of memory of the product, this was shown to the respondent before each question. The questions asked to participants aimed to get answers about the pleasantness of the product and the intention to purchase it.

5 items were asked for the pleasantness "Attitude" in the question: "How do you generally rate the yogurt in the image above?" (1 = Unappealing, 7 = Appealing; 1 = Bad, 7 = Good; 1= Unpleasant, 7 = Pleasant; 1 =

[31] Full text of the survey in Appendix B

[32] https://www.tandfonline.com/doi/pdf/10.1080/10641734.2004.10505164

Unfavorable, 7 = Favorable; 1= Unlikable, 7 = Likable) and 3 items for the “Purchase Intention” in the following questions: “Indicates the probability with which you would buy the yogurt in the image above.” (1 = Not at all likely , 7 = Very likely); “Indicates how much you are willing to buy yogurt in the image above.” (1 = Not at all intended, 7 = Very intent); “Indicates how much you would be inclined to buy yogurt in the image above.” (1 = Not at all inclined, 7 = Very inclined), to make the comparison between the randomized conditions as homogeneous as possible, each condition presented the same questions in the same order. Once the 240 total responses were reached, the dataset was exported to the SPSS statistical platform, on which, after being cleaned, it was analyzed. The dataset was cleaned in the parts not essential to the analysis, such as start date, session duration, end of session, respondent's IP, geographical area; then an analysis was carried out on the attention check question to evaluate the reliability of the answers, reliability that was found in all 240 so no answer was excluded in the analysis (Tab 2).

Table 2 - Attention Check

Attention Check

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Pass	240	100,0	100,0	100,0

Source: Own elaboration

Demographic questions such as age (Tab 3), gender (Tab 4), occupation (Tab 5), and educational qualifications (Tab 6) were subsequently asked.

Table 3 - Age of respondents

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-25	90	37,5	37,5	37,5
	26-34	104	43,3	43,3	80,8
	35-43	40	16,7	16,7	97,5
	44-52	4	1,7	1,7	99,2
	53-61	1	,4	,4	99,6
	62+	1	,4	,4	100,0
	Total	240	100,0	100,0	

Source: Own elaboration

As we can see, the 26-34 range is the mode of the dataset with F = 104, 43.3%. Another interest data on the age of participants is that the 97.5% cumulative percent is aged under 44.

Table 4 - Gender of respondents

Sex

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	122	50,8	50,8	50,8
	Female	118	49,2	49,2	100,0
	Total	240	100,0	100,0	

Source: Own Elaboration

From the point of view of the sex of the respondents, we have an almost perfect distribution, the males are 122 (50,8%) and the females 118 (49,2%).

Table 5 - Job title of respondents

Job title

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Student	94	39,2	39,2	39,2
	Freelancer	8	3,3	3,3	42,5
	Manager	10	4,2	4,2	46,7
	Employee	124	51,7	51,7	98,3
	Unemployed	1	,4	,4	98,8
	Retired	2	,8	,8	99,6
	Other	1	,4	,4	100,0
	Total	240	100,0	100,0	

Source: Own elaboration

The most frequent job among the respondents is “Employee”, more than half respondents (51.7%), while students are in second place (n = 94), 39.2%; just one of the participants is unemployed and 2 are retired. 10 managers and 8 freelancers complete the demographic picture.

Table 6 - Education of respondents

Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Middle school diploma	1	,4	,4	,4
	Highschool diploma	30	12,5	12,5	12,9
	Bachelor's degree	158	65,8	65,8	78,8
	Master of Science	48	20,0	20,0	98,8
	PhD	3	1,3	1,3	100,0
	Total	240	100,0	100,0	

Source: Own elaboration

As far as the level of education of the sample is concerned this is very high, 83.1% of the total in fact has achieved at least the bachelor's degree, (n = 158 bachelor's degree (65.8%); 48 master of science (20%); 3 PhD(1.3%)) while not graduated participants are 30 high school (12.5%) and 1 middle school (.4%) diploma.

Before proceeding with the data analysis, the scales were validated with a test on reliability, carried out to understand if all the attributes used in the survey questions could be used in the analysis. The reliability tests revealed Cronbach Alpha > .90 for all the variables analyzed, the results are considered "excellent"[33] and all the items were then used later in the factor interaction analysis.

Table 7 – Cronbach's Alpha "ATTITUDE"

Reliability Statistics

Cronbach's Alpha	N of Items
,965	5

Table 8 - Cronbach's Alpha "PURCHASE INTENTION"

Reliability Statistics

Cronbach's Alpha	N of Items
,971	3

Following, validated the 5 items on the attitude and the 3 on the purchase intention asked to the participants have been calculated the averages until obtaining two main variables:

[33] Janssens, Winjen, De Pelsmacker, & Van Kenhove, 2008

Average ATTITUDE = MEAN(H_Attitude1, H_Attitude2, H_Attitude3, H_Attitude4, H_Attitude5, HM_Attitude1, HM_Attitude2, HM_Attitude3, HM_Attitude4, HM_Attitude5, U_Attitude1, U_Attitude2, U_Attitude3, U_Attitude4, U_Attitude5, UM_Attitude1, UM_Attitude2, UM_Attitude3, UM_Attitude4, UM_Attitude5)

Average PURCHASE INTENTION = MEAN(H_Purchase1, H_Purchase2, H_Purchase3, HM_Purchase1, HM_Purchase2, HM_Purchase3, U_Purchase1, U_Purchase2, U_Purchase3, UM_Purchase1, UM_Purchase2, UM_Purchase3).

Where H stands for Healthy, HM for Healthy Manipulated, U for Unhealthy and UM for Unhealthy Manipulated.

Table 9 - Means of Variables

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
meanH_ATTITUDE	60	3	5	3,66	,451
meanH_PURCHASE	60	1	5	3,47	,724
meanHM_ATTITUDE	60	1	7	5,97	1,259
meanHM_PURCHASE	60	1	7	5,96	1,432
meanU_ATTITUDE	60	2	6	4,20	,606
meanU_PURCHASE	60	1	6	4,02	,654
meanUM_ATTITUDE	60	2	7	6,04	1,151
meanUM_PURCHASE	60	1	7	6,02	1,360
Valid N (listwise)	0				

Source: Own elaboration

The stimuli used presented 100g of product instead of 125g the classical quantity of yogurt contained in a cup; nevertheless, the registered purchase intentions are on average high for the manipulated conditions for both the categories taken into account: 5.96 out 7 for the healthy manipulated rather than 3.66 out 7 for healthy non manipulated, and 6.02 out 7 for unhealthy manipulated rather than 4.02 out 7 for unhealthy non manipulated.

To analyse the answers was used the statistical program SPSS[34], with which a factorial analysis of the variance was carried out, 2-way ANOVA test, using as dummy variables (0 1) the presence of multisensory stimuli on the packaging (0 = no multisensory; 1 = multisensory), and the typology of the product "healthiness" (0 = healthy; 1 = unhealthy). The ANOVA tests have been set with a 95% confidence interval and with a type II sum of squares, moreover, F Test for Heteroskedasticity and descriptive statistics have been added to give a complete overview.

Afterwards the 2 dummy variables have been put as independent factors to analyse the interaction of the presence of the multisensory stimulus and the type of product in the dependent variables (Purchase Intention and Attitude).

3.3 RESULTS

The 2way ANOVA analysis was run to understand the main effects of the presence of multisensory, the typology of the product and the interaction of the two independent factors "healthiness*multisensory" among the dependent variables, and the results are the following:

About the Attitude, we have a significant effect of multisensory presence on the packaging $F(1.236) = 296.92$, $p < .05 = .000$ and a significant effect of Healthiness, $F(1.236) = 6.56$, $p < .05$, $= .011$; the interaction effect is marginally significant $F(1.236) = 3.81$, $p > .05$, $= .052$. p value is pretty close to 0.05, but is greater, so we cannot statistically reject the null hypothesis H0: $\mu 1 = \mu 2 = \ldots = \mu k$; by the way the value is ~ 0.05 so we can "not reject" it and argue that our H1: Attitude in the products with multisensory stimuli on the packaging is higher than the ones of products without multisensory stimuli is supported. The F Test[35] for Heteroskedasticity is significant for $F(1.238) = 11.880$, $p < .05$, $= .001$ so we can reject the null hypothesis of heteroskedasticity and argue that the variances have a homoscedastic distribution.

As we can see in Tab 10, the means for the manipulated categories are higher: meanHealthy = 3.66, SD = .45; meanHealthyManipulated = 5.97, SD = 1.26, meanUnhealthy = 4.20, SD = .61 and meanUnhealthyManipulated = 6.04, SD = 1.15. The overall delta between "no manipulation" condition n = 120, mean = 3.93 SD = .60 and the "manipulated" conditions n = 120, mean = 6.00, SD = 1.2 is about 2.08.

[34] Full SPSS output in Appendix B

[35] Appendix B, SPSS output

Table 10 - Descriptive statistics Attitude

Descriptive Statistics

Dependent Variable: AverageATTITUDE

MULTISENSORY	HEALTHINESS	Mean	Std. Deviation	N
NO MANIPULATION	HEALTHY	3,6600	,45144	60
	UNHEALTHY	4,2033	,60561	60
	Total	3,9317	,59775	120
MANIPULATION	HEALTHY	5,9700	1,25891	60
	UNHEALTHY	6,0433	1,15103	60
	Total	6,0067	1,20166	120
Total	HEALTHY	4,8150	1,49400	120
	UNHEALTHY	5,1233	1,30086	120
	Total	4,9692	1,40634	240

Source: Own elaboration

Table 11 - 2Way ANOVA, DV Attitude

Tests of Between-Subjects Effects

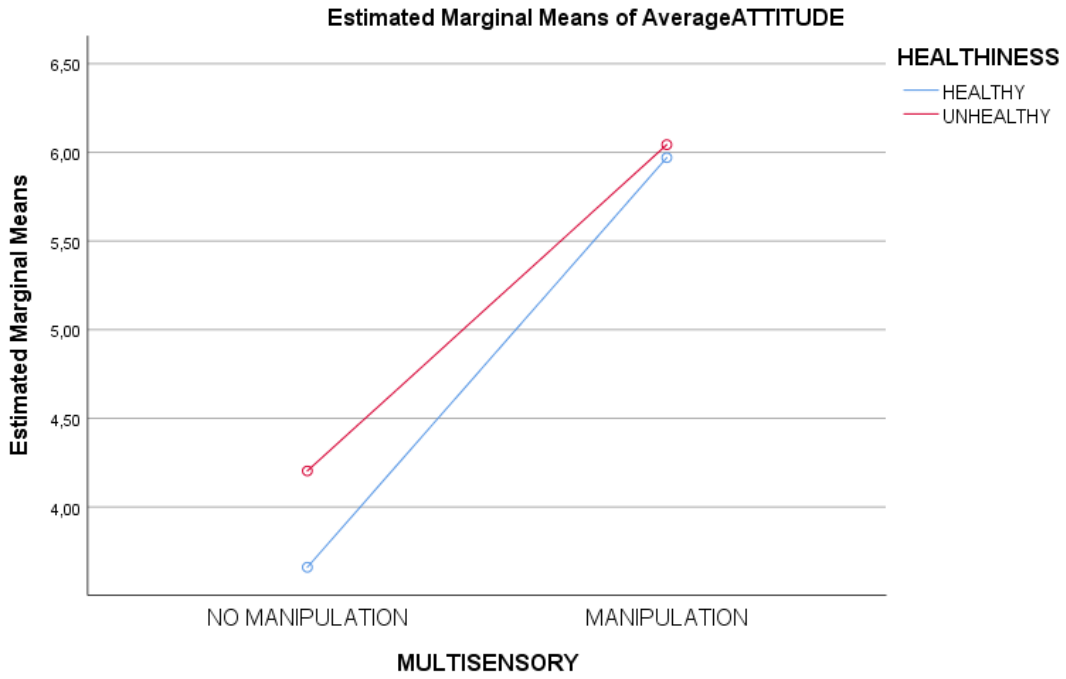
Dependent Variable: AverageATTITUDE

Source	Type II Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	267,355[a]	3	89,118	102,427	,000
Intercept	5926,228	1	5926,228	6811,204	,000
MULTISENSORY	258,338	1	258,338	296,916	,000
HEALTHINESS	5,704	1	5,704	6,556	,011
MULTISENSORY * HEALTHINESS	3,313	1	3,313	3,808	,052
Error	205,337	236	,870		
Total	6398,920	240			
Corrected Total	472,692	239			

R Squared = ,566 (Adjusted R Squared = ,560)

Source: Own elaboration

Charts 12 - Multisensory effect on Attitude



Source: Own elaboration

As we can see in the chart 12 above, the manipulated conditions, the ones with multisensory stimuli, presents a higher perception of attitude. Specifically, for both types of products, healthy and unhealthy, there was an increase in perceived pleasantness with the presence of multisensory stimuli on the pack. however, the condition that has recorded a greater increase is the healthy one.

As for the Attitude, also purchase intention shows higher means for the manipulated conditions, in particular: meanHealthy = 3.47, SD = .72; meanHealthyManipulated = 5.96, SD = 1.43, meanUnhealthy = 4.01, SD = .65 and meanUnhealthyManipulated = 6.01, SD = 1.36. The overall delta between “no manipulation” condition n = 120, mean = 3.74 SD = .74 and the “manipulated” conditions n = 120, mean = 5.99, SD = 1.4 is about 2.25.

Table 12 – Descriptive statistics Purchase Intention

Descriptive Statistics

Dependent Variable: AveragePURCHASE_INTENTION

MULTISENSORY	HEALTHINESS	Mean	Std. Deviation	N
NO MANIPULATION	HEALTHY	3,4667	,72408	60
	UNHEALTHY	4,0167	,65362	60
	Total	3,7417	,74028	120
MANIPULATION	HEALTHY	5,9583	1,43163	60
	UNHEALTHY	6,0167	1,36049	60
	Total	5,9875	1,39094	120
Total	HEALTHY	4,7125	1,68560	120
	UNHEALTHY	5,0167	1,46216	120
	Total	4,8646	1,58189	240

Source: Own elaboration

Table 13 - 2Way ANOVA, DV Purchase Intention

Tests of Between-Subjects Effects

Dependent Variable: AveragePURCHASE_INTENTION

Source	Type II Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	311,803[a]	3	103,934	85,684	,000
Intercept	5679,401	1	5679,401	4682,110	,000
MULTISENSORY	302,626	1	302,626	249,486	,000
HEALTHINESS	5,551	1	5,551	4,576	,033
MULTISENSORY * HEALTHINESS	3,626	1	3,626	2,989	,085
Error	286,268	236	1,213		
Total	6277,472	240			
Corrected Total	598,071	239			

R Squared = ,521 (Adjusted R Squared = ,515)

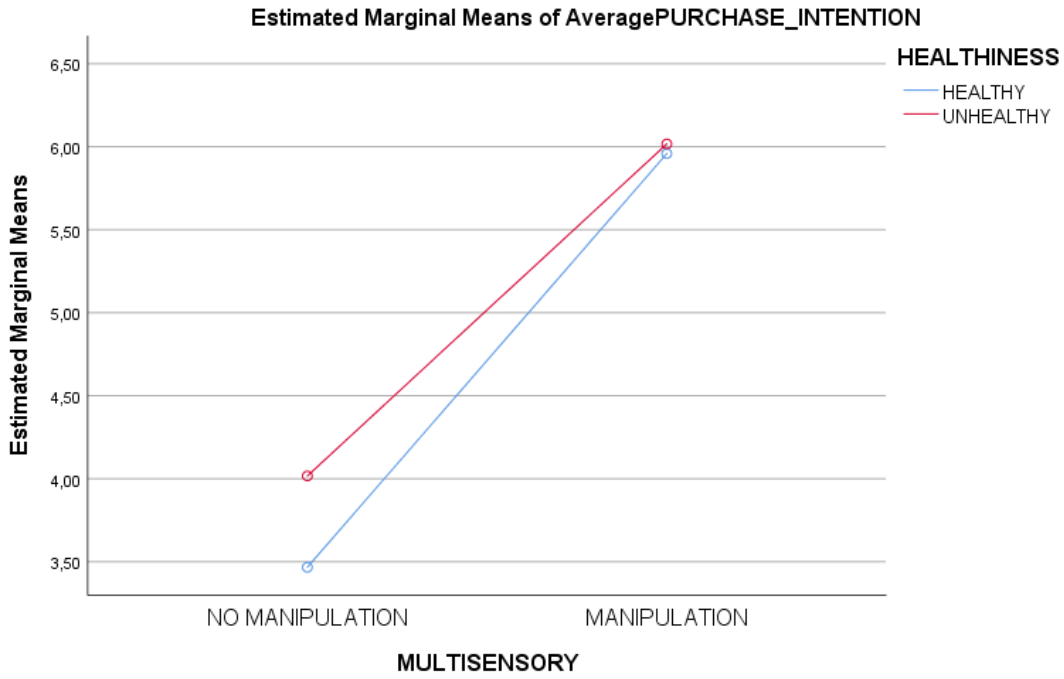
Source: Own elaboration

As we can see in the chart 13 below, the manipulated conditions, the ones with multisensory stimuli, presents a higher purchase intention. Specifically, for both types of products, healthy and unhealthy, there was an increase in the willingness to buy with the presence of multisensory stimuli on the pack. As for the attitude variable, the condition that has recorded a greater increase is the healthy one.

In Tab 9 below, are shown the results of the 2way ANOVA. As for the other DV, we can see a significant main effect of the two factors on the dependent variable and a marginally significant effect of the interaction effect. Multisensory stimuli have a significant effect for $F(1.236) = 249.49$, $p < .05$, $= .000$, Healthiness for $F(1.236) = 4.58$, $p < .05$, $= .033$.

The interaction effect "multisensory*healthiness" is not strongly significant for the 95% confidence interval taken in consideration, $F(1.236) = 3.626$, $p > .05 = .085$. Since p value is greater than the critical value 0.05, we have to reject the null hypothesis of the ANOVA test $H\ 0 : \mu 1 = \mu 2 = \ldots = \mu k$ "the means are equal" and not reject the H1: at least two μ are different. By the way, p value is not "not significant" but it is marginally significant, because it is close to the critical value 0.05 and we cannot consider it as not significant. The F Test[36] for Heteroskedasticity is significant for $F(1.238) = 8.200$, $p < .05$, $= .005$ so we can reject the null hypothesis of heteroskedasticity and argue that the variances have a homoscedastic distribution. Accordingly, given the significant effect of the IVs on the DV, we can argue that there is a positive effect of multisensory stimuli on the attitude. In other words, we can support our H2: Consumers will express more purchase intentions when there are multisensory stimuli on the packaging of the product.

Charts 13 - Multisensory effect on Purchase Intention



Source: Own elaboration

[36] Appendix B, SPSS output

Both hypotheses are supported and can be placed in the theoretical framework, auxiliary the food's aesthetic function in the EPF model, eradicating the wrong associations between pleasure and unhealthy food and sacrifice and healthy food in terms of aesthetic function. Accordingly, from the present research emerges that healthy food is better perceived with multisensory images, to the point that it almost completely closes the gap that separated it from unhealthy product perception before manipulation. The difference in pleasantness goes from meanU - meanH = 0.54 to meanUM - meanHM = 0.07, while in the Purchase Intention goes from meanU – meanH = 0.55 to meanUM – meanHM = 0.06.

3.4 LIMITATIONS AND FUTURE RESEARCH

The research was conducted on a very age variegated sample (see tab3) so future research could analyse the same test on a more specific sample based on an age discrimination, i.e. research on the GenZ or Millennials purchase intention, moreover, the current study does not take in consideration important factor such as the price of the product or the "brand loyalty effect" that can influence the purchase intention.

Future research can run an analysis on other foodstuff category such as meet and food, rather than yogurt (product took in consideration in the present research). Since the interaction effects for both the independent factors are close to 0.05, the significance interval in the analysis with a 95% confidence interval, future research could run a research on a greater sample to investigate the same effect with more accuracy. Researchers can run the analysis with a field experiment, creating a real cup of yogurt, in order to test items such as pleasurable that are difficult to test with a survey.

Since the most of respondents were age under 44, future research could deeper analyse the over 44 aged sample.

3.5 SOCIAL & MANAGERIAL IMPLICATIONS

Companies that aim to reach consumers in the food industry have the opportunity to develop innovative ways to improve the EPF to increase consumer satisfaction, and well-being. Packaging manipulation could be used by these companies in an attempt to make consumers more aware of the choice to eat less, leading them in a hedonic way to reduce excessive food consumption. Consumers want products with positive attributes for themselves (e.g., tasty and organic) and for the world (e.g., donating food to reduce food waste), and companies that want to be leaders in the future must take advantage of this trend today. Through multisensory marketing and specifically through packaging manipulation, companies could still obtain high sales volumes of products and a good perception of them, even by reducing the amount of food they contain. Marketers should know how to exploit the aesthetic sense of packaging as a fundamental part of the consumer choice process, directing purchases towards the best product for consumers, thus creating a win-win strategy.

Reducing food in packaging could therefore reduce over-consumption of food and improve the current situation of excess food; since according to research by Cornil & Chandon, multisensory imagery can reduce people's appetite by bringing them to a state of satiety before food consumption.

Reducing the amount of food in a package, on the other hand, could increase the production of packaging by increasing the number of tons of plastic used to create the packaging. As a result, companies should use recycled plastic or organic materials to build packaging, so as not to contribute to the worsening of the environmental situation, thus increasing the other problem of over-consumption. Supranational institutions must be courageous and anticipate the needs of the market, structuring strict rules on the limitation of the use of plastic material for large companies, already guilty of the majority of plastic waste.[37]

The modelling of the packaging must faithfully follow the EPF model and must be the starting point for a more moderate and sustainable consumption.

[37] https://www.nationalgeographic.com/news/2018/05/plastics-facts-infographics-ocean-pollution/

CONCLUSIONS

This thesis wanted to contribute to the reduction of the immoderate consumption of food that characterizes today's society through a study on the purchase intentions of Italian consumers. Through a factorial analysis of the variance, the 2 dependent variables of the model (Attitude; Purchase Intention) have been analyzed with respect to the 2 fixed factors assumed (Multisensory; Healthiness).

The objective of the research was to investigate the potential of multisensory stimuli. In particular, the research was aimed at exploring whether and when consumers perceived as positive the presence of multisensory stimuli on the product packaging, and how the purchase intention change within the presence of stimuli. Looking at the means, we can find a clear successful result; means of the variable took in consideration increased in the multisensory condition for the purchase intention, and main effects are significant at a 95% confidential interval. A further objective of this research was to understand if attitude increases in the presence of multisensory stimuli. As per the other variable (purchase intention) the means of the items are higher in the multisensory condition, and main effects are significant at a 95% confidential interval.

By the way interaction effects multisensory*healthiness are not strictly significant in the two dependent variables analyzed. However, the p values of the interactions are very close to the value 0.05 and can therefore be considered marginally significant. The average comparison of conditions clearly shows us that the presence of multisensory stimuli on the packaging increases the purchase intention and attitude for healthy products and also for unhealthy products.

$$\mu\text{Purchase Intention}_{\text{Healthy*No multisensory}} = 3.47 < \mu\text{Purchase Intention}_{\text{Healthy*Multisensory}} = 5.96$$

$$\mu\text{Purchase Intention}_{\text{Unhealthy*No multisensory}} = 4.02, < \mu\text{Purchase Intention}_{\text{Unhealthy*Multisensory}} = 6.02$$

for $p = .085$ marginally significant

$$\mu\text{Attitude}_{\text{Healthy*No multisensory}} = 3.66, < \mu\text{Attitude}_{\text{Healthy*Multisensory}} = 5.97$$

$$\mu\text{Attitude}_{\text{Unhealthy*No multisensory}} = 4.20, < \mu\text{Attitude}_{\text{Unhealthy*Multisensory}} = 6.04$$

for $p = .052$ marginally significant

APPENDIX A

Table of Figures

APPENDIX B

Qualtrics: questionnaire design

Block: intro (1 Question)

BlockRandomizer: 1 – Uniform Distribution

Standard: HEALTHY (8 Questions)

Standard: HEALTHY MANIPULATION (8 Questions)

Standard: UNHEALTHY (8 Questions)

Standard: UNHEALTHY MANIPULATION (8 Questions)

Standard: ATTENTION CHECK (1 Question)

Standard: SOCIO DEMO (4 Questions)

Start block: intro

intro

Ciao, sono Edoardo, uno studente di Marketing della LUISS Guido Carli e sto conducendo una ricerca per la mia tesi di laurea magistrale.

Ti verranno sottoposte delle domande, per favore rispondi e ricorda che non ci sono risposte giuste o sbagliate ma conta solo la tua opinione.

Il sondaggio è anonimo!

Grazie per la partecipazione, ci vorranno pochi minuti!

End block: intro

Start Block: HEALTHY

H_Attitude1 Osserva attentamente l'immagine seguente

Come valuti in generale lo yogurt presente nell'immagine sopra?

- 1 - per nulla attraente (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 - molto attraente (7)

H_Attitude2 Osserva attentamente l'immagine seguente

Come valuti in generale lo yogurt presente nell'immagine sopra?

- ○ 1 - cattivo (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (5)
- ○ 6 (6)
- ○ 7 - buono (7)

H_Attitude3 Osserva attentamente l'immagine seguente

Come valuti in generale lo yogurt presente nell'immagine sopra?

- ○ 1 - per nulla piacevole (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (5)
- ○ 6 (6)
- ○ 7 - molto piacevole (7)

H_Attitude4 Osserva attentamente l'immagine seguente

Come valuti in generale lo yogurt presente nell'immagine sopra?

- 1 - in modo molto sfavorevole (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 - in modo molto favorevole (7)

H_Attitude5 Osserva attentamente l'immagine seguente

Come valuti in generale lo yogurt nell'immagine sopra?

- 1 - non mi piace per niente (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 - mi piace molto (7)

H_Purchase1 Osserva attentamente l'immagine seguente

Indica la probabilità con la quale acquisteresti lo yogurt nell'immagine sopra.

- 1 - per nulla probabile (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 - molto probabile (7)

H_Purchase2 Osserva attentamente l'immagine seguente

Indica quanto sei intenzionato a comprare lo yogurt nell'immagine sopra.

- 1 - per nulla intenzionato (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 - molto intenzionato (7)

H_Purchase3 Osserva attentamente l'immagine seguente

Indica quanto saresti propenso a comprare lo yogurt nell'immagine sopra

- ○ 1 - per nulla propenso (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (5)
- ○ 6 (6)
- ○ 7 - molto propenso (7)

End block: HEALTHY

Start block: HEALTHY MANIPULATION

HM_Attitude1

Come valuti in generale lo yogurt presente nell'immagine sopra?

- 1 - per nulla attraente (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 - molto attraente (7)

HM_Attitude2 Osserva attentamente l'immagine seguente

Come valuti in generale lo yogurt presente nell'immagine sopra?

- ○ 1 - cattivo (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (5)
- ○ 6 (6)
- ○ 7 - buono (7)

HM_Attitude3

Come valuti in generale lo yogurt presente nell'immagine sopra?

- ○ 1 - per nulla piacevole (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (5)
- ○ 6 (6)
- ○ 7 - molto piacevole (7)

HM_Attitude4

Come valuti in generale lo yogurt presente nell'immagine sopra?

- ○ 1 - in modo molto sfavorevole (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (5)
- ○ 6 (6)
- ○ 7 - in modo molto favorevole (7)

HM_Attitude5

Come valuti in generale lo yogurt nell'immagine sopra?

- 1 - non mi piace per niente (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 - mi piace molto (7)

HM_Purchase1

Indica la probabilità con la quale acquisteresti lo yogurt nell'immagine sopra.

- 1 - per nulla probabile (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 - molto probabile (7)

HM_Purchase2

Indica quanto sei intenzionato a comprare lo yogurt nell'immagine sopra.

- 1 - per nulla intenzionato (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 - molto intenzionato (7)

HM_Purchase3

Indica quanto saresti propenso a comprare lo yogurt nell'immagine sopra

- 1 - per nulla propenso (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 - molto propenso (7)

End block: HEALTHY MANIPULATION

Start block: UNHEALTHY

U_Attitude1

Come valuti in generale lo yogurt presente nell'immagine sopra?

- 1 - per nulla attraente (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 - molto attraente (7)

U_Attitude2

Come valuti in generale lo yogurt presente nell'immagine sopra?

- ○ 1 - cattivo (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (5)
- ○ 6 (6)
- ○ 7 - buono (7)

U_Attitude3

Come valuti in generale lo yogurt presente nell'immagine sopra?

- ○ 1 - per nulla piacevole (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (5)
- ○ 6 (6)
- ○ 7 - molto piacevole (7)

U_Attitude4

Come valuti in generale lo yogurt presente nell'immagine sopra?

- 1 - in modo molto sfavorevole (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 - in modo molto favorevole (7)

U_Attitude5

Come valuti in generale lo yogurt nell'immagine sopra?

- 1 - non mi piace per niente (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 - mi piace molto (7)

U_Purchase1

Indica la probabilità con la quale acquisteresti lo yogurt nell'immagine sopra.

- 1 - per nulla probabile (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 - molto probabile (7)

U_Purchase2

Indica quanto sei intenzionato a comprare lo yogurt nell'immagine sopra.

- 1 - per nulla intenzionato (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 - molto intenzionato (7)

U_Purchase3

Indica quanto saresti propenso a comprare lo yogurt nell'immagine sopra

- 1 - per nulla propenso (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 - molto propenso (7)

End block: UNHEALTHY

Start block: UNHEALTHY MANIPULATION

UM_Attitude1

Come valuti in generale lo yogurt presente nell'immagine sopra?

- 1 - per nulla attraente (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 - molto attraente (7)

UM_Attitude2

Come valuti in generale lo yogurt presente nell'immagine sopra?

- 1 - cattivo (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 - buono (7)

UM_Attitude3

Come valuti in generale lo yogurt presente nell'immagine sopra?

- ○ 1 - per nulla piacevole (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (5)
- ○ 6 (6)
- ○ 7 - molto piacevole (7)

UM_Attitude4

Come valuti in generale lo yogurt presente nell'immagine sopra?

- ○ 1 - in modo molto sfavorevole (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (5)
- ○ 6 (6)
- ○ 7 - in modo molto favorevole (7)

UM_Attitude5

Come valuti in generale lo yogurt nell'immagine sopra?

- ○ 1 - non mi piace per niente (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (5)
- ○ 6 (6)
- ○ 7 - mi piace molto (7)

UM_Purchase1

Indica la probabilità con la quale acquisteresti lo yogurt nell'immagine sopra.

- ○ 1 - per nulla probabile (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (5)
- ○ 6 (6)
- ○ 7 - molto probabile (7)

UM_Purchase2

Indica quanto sei intenzionato a comprare lo yogurt nell'immagine sopra.

- ○ 1 - per nulla intenzionato (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (5)
- ○ 6 (6)
- ○ 7 - molto intenzionato (7)

UM_Purchase3

Indica quanto saresti propenso a comprare lo yogurt nell'immagine sopra

- ○ 1 - per nulla propenso (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (5)
- ○ 6 (6)
- ○ 7 - molto propenso (7)

End block: UNHEALTHY MANIPULATION

Start block: ATTENTION CHECK

attention

Che prodotto hai visto nelle immagini precedenti

- ○ uno shampoo (1)
- ○ un vasetto di yogurt (2)

End block: ATTENTION CHECK

Start block: SOCIO DEMO

age

Età

- ○ 18-25 (1)
- ○ 26-34 (2)
- ○ 35-43 (3)
- ○ 44-52 (4)
- ○ 53-61 (5)
- ○ 62+ (6)

sex

Sesso

- ○ Maschio (1)
- ○ Femmina (2)

job

Occupazione

- ○ Studente (1)
- ○ Libero Professionista (2)
- ○ Dirigente (3)
- ○ Impiegato (4)
- ○ Disoccupato (5)
- ○ Pensionato (6)
- ○ Altro (7)

education T

itolo di studio

- ○ Diploma di scuola secondaria di primo grado (1)
- ○ Diploma di scuola superiore (2)
- ○ Laurea Triennale (3)
- ○ Laurea Magistrale (4)
- ○ PhD (6)

End block: SOCIO DEMO

SPSS Output

```
FREQUENCIES VARIABLES=attention age sex job education
  /ORDER=ANALYSIS.
```

Frequencies

Notes

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	Cases Used	Statistics are based on all cases with valid data.
Syntax		FREQUENCIES VARIABLES=attention age sex job education /ORDER=ANALYSIS.
Resources	Processor Time	00:00:00,02
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Frequency Table

Attention Check

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	un vasetto di yogurt	240	100,0	100,0	100,0

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-25	90	37,5	37,5	37,5
	26-34	104	43,3	43,3	80,8
	35-43	40	16,7	16,7	97,5
	44-52	4	1,7	1,7	99,2
	53-61	1	,4	,4	99,6
	62+	1	,4	,4	100,0
	Total	240	100,0	100,0	

Sex

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	122	50,8	50,8	50,8
	Female	118	49,2	49,2	100,0
	Total	240	100,0	100,0	

Job title

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Student	94	39,2	39,2	39,2
	Freelancer	8	3,3	3,3	42,5
	Manager	10	4,2	4,2	46,7
	Employee	124	51,7	51,7	98,3
	Unemployed	1	,4	,4	98,8
	Retired	2	,8	,8	99,6
	Other	1	,4	,4	100,0
	Total	240	100,0	100,0	

Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Middle school diploma	1	,4	,4	,4
	Highschool diploma	30	12,5	12,5	12,9
	Bachelor’s degree	158	65,8	65,8	78,8
	Master of Science	48	20,0	20,0	98,8
	PhD	3	1,3	1,3	100,0
	Total	240	100,0	100,0	

COMPUTE ATTITUDE1=MEAN(H_Attitude1,HM_Attitude1, U_Attitude1,UM_Attitude1).
EXECUTE.

COMPUTE ATTITUDE2=MEAN(H_Attitude2,HM_Attitude2, U_Attitude2,UM_Attitude2).
EXECUTE.

COMPUTE ATTITUDE3=MEAN(H_Attitude3,HM_Attitude3, U_Attitude3,UM_Attitude3).

```
EXECUTE.

COMPUTE ATTITUDE4=MEAN(H_Attitude4,HM_Attitude4, U_Attitude4,UM_Attitude4).
EXECUTE.

COMPUTE ATTITUDE5=MEAN(H_Attitude5,HM_Attitude5, U_Attitude5,UM_Attitude5).
EXECUTE.


RELIABILITY
  /VARIABLES=ATTITUDE1 ATTITUDE2 ATTITUDE3 ATTITUDE4 ATTITUDE5
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA.
```

Reliability

Notes

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	N of Rows in Working Data File	240
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.

Syntax		RELIABILITY /VARIABLES=ATTITUDE1 ATTITUDE2 ATTITUDE3 ATTITUDE4 ATTITUDE5 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA.
Resources	Processor Time	00:00:00,02
	Elapsed Time	00:00:00,01

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	240	100,0
	Excluded[a]	0	,0
	Total	240	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
,965	5

COMPUTE PURCHASE1=MEAN(H_Purchase1,HM_Purchase1, U_Purchase1,UM_Purchase1).
EXECUTE.

COMPUTE PURCHASE2=MEAN(H_Purchase2,HM_Purchase2, U_Purchase2,UM_Purchase2).
EXECUTE.

COMPUTE PURCHASE3=MEAN(H_Purchase3,HM_Purchase3, U_Purchase3,UM_Purchase3).
EXECUTE.

```
RELIABILITY
  /VARIABLES=PURCHASE1 PURCHASE2 PURCHASE3
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA.
```

Reliability

Notes

Output Created		20-SEP-2020 19:54:07
Comments		
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	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	240
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax		RELIABILITY /VARIABLES=PURCHASE1 PURCHASE2 PURCHASE3 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA.
Resources	Processor Time	00:00:00,02
	Elapsed Time	00:00:00,04

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	240	100,0
	Excluded[a]	0	
	Total	240	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
,971	3

```
COMPUTE AverageATTITUDE=MEAN(H_Attitude1,H_Attitude2,H_Attitude3,H_Attitude4,H_Attitude5,
    HM_Attitude1,HM_Attitude2,HM_Attitude3,HM_Attitude4,HM_Attitude5,U_Attitude1,U_Attitude2,
    U_Attitude3,U_Attitude4,U_Attitude5,UM_Attitude1,UM_Attitude2,UM_Attitude3,UM_Attitude4,
    UM_Attitude5).
EXECUTE.
COMPUTE
AveragePURCHASE=MEAN(H_Purchase1,H_Purchase2,H_Purchase3,HM_Purchase1,HM_Purchase2,

HM_Purchase3,U_Purchase1,U_Purchase2,U_Purchase3,UM_Purchase1,UM_Purchase2,UM_Purchase3).
EXECUTE.


UNIANOVA AverageATTITUDE BY MULTISENSORY HEALTHINESS
  /METHOD=SSTYPE(2)
  /INTERCEPT=INCLUDE
```

```
  /PLOT=PROFILE(MULTISENSORY*HEALTHINESS) TYPE=LINE ERRORBAR=NO
MEANREFERENCE=NO YAXIS=AUTO
  /PRINT F ETASQ DESCRIPTIVE HOMOGENEITY
  /CRITERIA=ALPHA(.05)
  /DESIGN=MULTISENSORY HEALTHINESS MULTISENSORY*HEALTHINESS.
```

Univariate Analysis of Variance

Notes

Output Created		20-SEP-2020 19:54:07
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	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	240
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the model.

Syntax		UNIANOVA AverageATTITUDE BY MULTISENSORY HEALTHINESS /METHOD=SSTYPE(2) /INTERCEPT=INCLUDE /PLOT=PROFILE(MULTISENSORY*HEALTHINESS) TYPE=LINE ERRORBAR=NO MEANREFERENCE=NO YAXIS=AUTO /PRINT F ETASQ DESCRIPTIVE HOMOGENEITY /CRITERIA=ALPHA(.05) /DESIGN=MULTISENSORY HEALTHINESS MULTISENSORY*HEALTHINESS.
Resources	Processor Time	00:00:00,30
	Elapsed Time	00:00:00,26

Between-Subjects Factors

		Value Label	N
MULTISENSORY	0	NO MANIPULATION	120
	1	MANIPULATION	120
HEALTHINESS	0	HEALTHY	120
	1	UNHEALTHY	120

Descriptive Statistics

Dependent Variable: AverageATTITUDE

MULTISENSORY	HEALTHINESS	Mean	Std. Deviation	N
NO MANIPULATION	HEALTHY	3,6600	,45144	60
	UNHEALTHY	4,2033	,60561	60
	Total	3,9317	,59775	120
MANIPULATION	HEALTHY	5,9700	1,25891	60
	UNHEALTHY	6,0433	1,15103	60
	Total	6,0067	1,20166	120
Total	HEALTHY	4,8150	1,49400	120
	UNHEALTHY	5,1233	1,30086	120
	Total	4,9692	1,40634	240

Levene's Test of Equality of Error Variances[a,b]

		Levene Statistic	df1	df2	Sig.
AverageATTITUDE	Based on Mean	7,553	3	236	,000
	Based on Median	2,470	3	236	,063
	Based on Median and with adjusted df	2,470	3	146,772	,064
	Based on trimmed mean	4,283	3	236	,006

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.[a,b]

a. Dependent variable: AverageATTITUDE

b. Design: Intercept + MULTISENSORY + HEALTHINESS + MULTISENSORY * HEALTHINESS

Tests for Heteroskedasticity

F Test for Heteroskedasticity[a,b,c]

F	df1	df2	Sig.
11,880	1	238	,001

a. Dependent variable: AverageATTITUDE

b. Tests the null hypothesis that the variance of the errors does not depend on the values of the independent variables.

c. Predicted values from design: Intercept + MULTISENSORY + HEALTHINESS + MULTISENSORY * HEALTHINESS

Tests of Between-Subjects Effects

Dependent Variable: AverageATTITUDE

Source	Type II Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	267,355[a]	3	89,118	102,427	,000
Intercept	5926,228	1	5926,228	6811,204	,000
MULTISENSORY	258,338	1	258,338	296,916	,000
HEALTHINESS	5,704	1	5,704	6,556	,011
MULTISENSORY * HEALTHINESS	3,313	1	3,313	3,808	,052
Error	205,337	236	,870		
Total	6398,920	240			
Corrected Total	472,692	239			

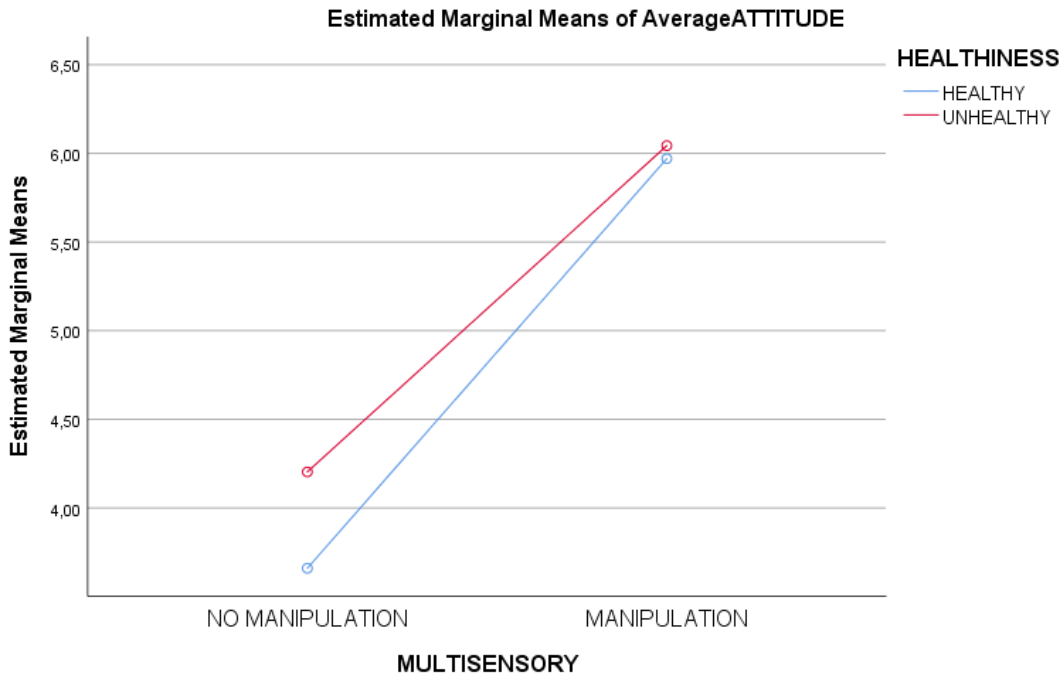
Tests of Between-Subjects Effects

Dependent Variable: AverageATTITUDE

Source	Partial Eta Squared
Corrected Model	,566
Intercept	,967
MULTISENSORY	,557
HEALTHINESS	,027
MULTISENSORY * HEALTHINESS	,016
Error	
Total	
Corrected Total	

a. R Squared = ,566 (Adjusted R Squared = ,560)

Profile Plots




```
UNIANOVA AveragePURCHASE_INTENTION BY MULTISENSORY HEALTHINESS
  /METHOD=SSTYPE(2)
  /INTERCEPT=INCLUDE
  /PLOT=PROFILE(MULTISENSORY*HEALTHINESS) TYPE=LINE ERRORBAR=NO
MEANREFERENCE=NO YAXIS=AUTO
  /PRINT F ETASQ DESCRIPTIVE HOMOGENEITY
  /CRITERIA=ALPHA(.05)
  /DESIGN=MULTISENSORY HEALTHINESS MULTISENSORY*HEALTHINESS.
```

Univariate Analysis of Variance

Notes

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	Split File	<none>
	N of Rows in Working Data File	240
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the model.

Syntax		UNIANOVA AveragePURCHASE_INTENTION BY MULTISENSORY HEALTHINESS /METHOD=SSTYPE(2) /INTERCEPT=INCLUDE /PLOT=PROFILE(MULTISENSORY*HEALTHINESS) TYPE=LINE ERRORBAR=NO MEANREFERENCE=NO YAXIS=AUTO /PRINT F ETASQ DESCRIPTIVE HOMOGENEITY /CRITERIA=ALPHA(.05) /DESIGN=MULTISENSORY HEALTHINESS MULTISENSORY*HEALTHINESS.
Resources	Processor Time	00:00:00,28
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Between-Subjects Factors

		Value Label	N
MULTISENSORY	0	NO MANIPULATION	120
	1	MANIPULATION	120
HEALTHINESS	0	HEALTHY	120
	1	UNHEALTHY	120

Descriptive Statistics

Dependent Variable: AveragePURCHASE_INTENTION

MULTISENSORY	HEALTHINESS	Mean	Std. Deviation	N
NO MANIPULATION	HEALTHY	3,4667	,72408	60
	UNHEALTHY	4,0167	,65362	60
	Total	3,7417	,74028	120
MANIPULATION	HEALTHY	5,9583	1,43163	60
	UNHEALTHY	6,0167	1,36049	60
	Total	5,9875	1,39094	120
Total	HEALTHY	4,7125	1,68560	120
	UNHEALTHY	5,0167	1,46216	120
	Total	4,8646	1,58189	240

Levene's Test of Equality of Error Variances[a,b]

		Levene Statistic	df1	df2
AveragePURCHASE_INTENTION	Based on Mean	5,781	3	236
	Based on Median	2,069	3	236
	Based on Median and with adjusted df	2,069	3	162,928
	Based on trimmed mean	3,052	3	236

Levene's Test of Equality of Error Variances[a,b]

		Sig.
AveragePURCHASE_INTENTION	Based on Mean	,001
	Based on Median	,105
	Based on Median and with adjusted df	,106
	Based on trimmed mean	,029

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.[a,b]

a. Dependent variable: AveragePURCHASE_INTENTION

b. Design: Intercept + MULTISENSORY + HEALTHINESS + MULTISENSORY * HEALTHINESS

Tests for Heteroskedasticity

F Test for Heteroskedasticity[a,b,c]

F	df1	df2	Sig.
8,200	1	238	,005

a. Dependent variable: AveragePURCHASE_INTENTION

b. Tests the null hypothesis that the variance of the errors does not depend on the values of the independent variables.

c. Predicted values from design: Intercept + MULTISENSORY + HEALTHINESS + MULTISENSORY * HEALTHINESS

Tests of Between-Subjects Effects

Dependent Variable: AveragePURCHASE_INTENTION

Source	Type II Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	311,803[a]	3	103,934	85,684	,000
Intercept	5679,401	1	5679,401	4682,110	,000
MULTISENSORY	302,626	1	302,626	249,486	,000
HEALTHINESS	5,551	1	5,551	4,576	,033
MULTISENSORY * HEALTHINESS	3,626	1	3,626	2,989	,085
Error	286,268	236	1,213		
Total	6277,472	240			
Corrected Total	598,071	239			

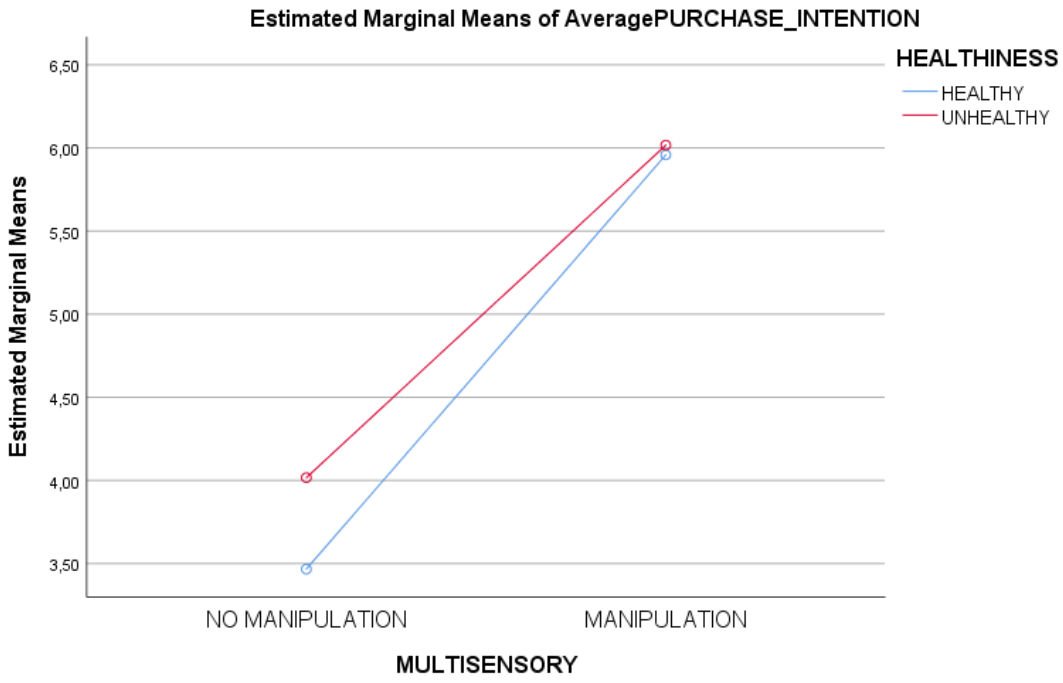
Tests of Between-Subjects Effects

Dependent Variable: AveragePURCHASE_INTENTION

Source	Partial Eta Squared
Corrected Model	,521
Intercept	,952
MULTISENSORY	,514
HEALTHINESS	,019
MULTISENSORY * HEALTHINESS	,013
Error	
Total	
Corrected Total	

a. R Squared = ,521 (Adjusted R Squared = ,515)

Profile Plots



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Sitography

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Summary

This thesis aims to address the problem of over-eating, attacking it from the point of view of excessive consumption. In order to structure the research is necessary to understand the mechanisms of the food market.

The food sector is one of the most profitable sectors in the world and sees increasing earnings, both because of the discrepancy between cost and revenue that allows a large profit margin for companies that dominate the sector, and because of the growing demand for products dictated by the consumer society. According to Statista's 2019 report[38], the entire industry generates worldwide revenue for to US$ 7,488,160 m in 2020, with a YoY growth of 7.7%, considering the pandemic crisis due to Covid-19, and a significant forecast growth since 2025* the Composed Annual Growth Rate of 3,6% (CAGR 2020-2025). According to the report, the CARG of food for CPIs is +4.2%, far above the other sectors that make up the dataset and that give as average CPI only +2.4%. To better understand the importance of this data we can use as a term of comparison a sector that we conventionally consider to be among the "engines of the economy" such as transport. The CPIs CAGR of transport is estimated at +2.9%, well below that of food.

In terms of national data, Italy has a negative population growth outlook, a relevant factor is the reduction of births and the longevity of the Italian population (among the longest in the world together with Japan). The "worrying" figure is provided by the CAGR 2015-2023* of the population by age group; this is negative for most of the groups up to 49 years of age (except for the 15-19 age group which has an estimated growth of 0.3%), while for the 50+ age group the CAGR shows a growth that also touches the double digit for the 95-99 age group (CAGR 10.5%). The negative trend of the Italian population seems to be in line with the process of the reduction of fertility, of the consequences of the financial crisis of 2008 and of the economic crisis of 2011, in short, it is no coincidence that the prospect of growth is negative and that the average age of the population has risen significantly. On the other hand, the ISTAT[39] warns us already for some time. The question that now arises, however, is: why is it that if the number of consumers is reduced, the amount of consumption of goods will increase significantly (CAGR +1.9%)?

To complete the overview, we look now closely at the composition of the food sector, we can divide food products into 13 macro-categories: Milk (accounts for 18% of the food revenue and 26% of volume sold in 2018); Meat products and sausages(amount a total of US$492 billion, the 14% of the food sector revenue and

[38] Statista Global Consumer Survey, September 2018
[39] https://www.istat.it/it/archivio/demografia

the 5% in the 2018); Processed fish and seafood (it boasted revenue for only 5% of total industry and 1% of sales volumes, by the way its sales amount to US$175 billion); Processed vegetables & fruit and potatoes (in 2018 sales amounted to US$335 billion, with a YoY growth of 7.3% in comparison with 2017); Bread and bakery products (sales amounted to US$440 billion in 2018, representing the 12% of the food revenue and the 9% of volume sold.), Pasta and rice (generated in 2018 revenues for US$369 billion, the 10% of the whole food industry, and the 29% of the volume of sales of the total), Sauces and condiments (generated revenues for US$123 billion in 2018, the 3% of the total); Convenience food (sales amounted to US$235 billion in 2018, the 7% of the industry's revenue); Breakfast products (sales amounted to US$235 billion in 2018, the 7% of the industry's revenue); Confectionery (the segment accounted 11% of the food revenue (US$380 billion) and the 5% of the volume of sales in 2018); Snack food (generated the 4% of the food revenues and 2% of volume sales); Baby food (accounted for 2% of the food revenue); Pet food (accounted for 5% of the food revenue).

Having now a complete overview of the food industry we now focus on the possible problems linked to this immoderate consumption of food. The problems directly attributable to the over-purchase of food products are essentially divided into two categories: food waste, most of which are easily perishable in the short term, and overeating.

Most of the times food waste is related to "imperfect food", food produced but that has an ugly shape/packaging and consumer will not buy. Food system and food safety have drawn spontaneous global attention due to the effect of substantial environmental concerns. Three billion tons of food are wasted every year, estimated as being a third of all produced food. However, beyond the economic losses associated to this issue, food-waste has also a negative impact on the environment by strongly contributing to pollution.

While food waste is more an economic and environmental problem, overeating has negative effects on health. It is no secret that 'developed' countries such as the United States have so many problems with childhood obesity that the World Health Organisation (WHO) is investigating them.

According with WHO: "The fundamental cause of childhood overweight and obesity is an energy imbalance between calories consumed and calories expended."[40] For overweight and obese children, the chances of developing non-communicable diseases (NCDs) such as cardiovascular disease and diabetes are higher than for children with a "normal" weight. Among the most significant health consequences of childhood overweight and obesity, which often do not become apparent until adulthood, are: cardiovascular disease (mainly heart disease and stroke); diabetes; musculoskeletal disorders, particularly osteoarthritis; and some types of cancer (endometrium, breast and colon).[41]

[40] https://www.who.int/dietphysicalactivity/childhood_why/en/
[41] https://www.who.int/dietphysicalactivity/childhood_consequences/en/

What can be done to reduce the spread of the childhood obesity consists in increase consumption of fruit and vegetables, be physically active and limit the intake of sugars. By the way there is actually a "dark side" of the overeating phenomenon. What about people who eat too much healthy food? Is there a limit at the healthiness, or we can eat as much as we want the healthy food? Researches has shown as healthy food can have unhealthy effects if consumed too much; in other words, 1kg of salad is not healthier than 100gr of chocolate.

Past researches have taken into account several aspects of the food consumption journey, in order to understand how to reduce the portion chosen by the consumers.

Among the most important researches for Food Well-being (FWB) we find that of Cornil & Chandon (2016)[42], Batat et. al (2018)[43], and Block at. al (2011)[44].

Lauren Block's research draws a diagram of the FWB, listing the social and individual components that lead to the well-being of food. Accordingly, FWB is composed by "Food socialization" defined as the process that consumers use to learn about food, "Food literacy" (regards the knowledge about nutrition and food), "Food marketing", taking into account Production, Price, and Promotion, "Food availability" involves how the distribution of food influences purchasing and consumption behavior and "Food policies". Following, Cornil & Chandon, in 2016 introduced the use of multisensory images to reduce the amount of food chosen by consumers. They hypothesized that through a mental stimulation, people can feel full before they have even eaten and therefore consume less food. They find out a relation within the increase of reliance given by multisensory imagery and the decrease of enjoyment with food quantity; In this point of view, multisensory stimuli should be able to improve the "balance" between the enjoyment of food portion and the expected, also increasing the relative importance of sensory pleasure. The basis of the sensory approach discussed above is that the pleasure is not given by the size of the portion because the enjoyment peaks at the first "bites" and decline with the next ones; accordingly, a large portion (i.e. 40 bites) in not more pleasurable than a small portion (i.e. 15 bites) because we reach the peak of pleasure in the first mouthful and the "15 bites" of a small portion are enough to satisfy our need for pleasure.

Following the basis given by Block et al., 2011, researchers continues on the food well-being journey. In particular, W. Batat[45] (2018) introduces the experiential pleasure of food (EPF) as a journey that involves the

[42] Cornil, Y., & Chandon, P.; Pleasure as a Substitute for Size: How Multisensory Imagery Can Make People Happier with Smaller Food Portions. Journal of Marketing Research Vol. LIII, 847-864. October 2016

[43] Batat, W., Peter, P. C., Moscato, E. M., Castro, I. A., Chan, S., Chugani, S., Muldrow, A.; "The experiential pleasure of food: A savoring journey to food well-being", Journal of Business Research, 100, pages 392-399. December 2018

[44] Block L. G. et al; "From Nutrients to Nurturance: A Conceptual Introduction to Food Well-Being" Spring 2011

[45] The experiential pleasure of food: A savoring journey to food well-being

enduring cognitive pleasure and the emotional pleasure that consumers derive from enjoying the multi-sensory, communal, and cultural significances of eating trials.

The experiential pleasure of food can be defined as the prolonged pleasure that consumers experience on a multisensory, cognitive (satisfaction) and emotional (i.e. pleasure) level in food experiences, it underlines the value of a vision that puts the consumer's enjoyment and well-being of food within a specific culture and subculture of food. This research can be placed in the "food availability" section of Lauren G. Block's FWB pinwheel, in support and integration of the EPF (Batat) model, the research is based like the EPF on the idea of food as an art form, enhancing its aesthetic appearance. However, this study is a step forward from the act of eating. The research, in fact, focuses on the purchase of the product, the beauty of the packaging and the use of multisensory images on it. We could consider this research as a derivation of EPF to support the realization of FWB. The holistic perspective of food and well-being can be carried on the packaging to see if multisensory stimuli can be used to engage the consumer and lead them into the FWB funnel, thus making them consume less food.

Accordingly, the present research starts from one of the gaps of the Cornil & Chandon study: "Can multisensory imagery lead people to choose tastier over more healthful foods, which may partially or totally negate the health benefits of choosing smaller portions?"[46]. Following, the present research question is: *"Is it possible to use multisensory images in changing the packaging for healthy food and unhealthy ones, in order to lead people to consume food in a moderate way?"* The holistic perspective of food and well-being can be carried on the packaging to see if multisensory stimuli can be used to engage the consumer and lead them into the FWB funnel, thus making them consume less food.

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[46] Cornil Y., & Chandon P.; "Pleasure as an allay healthy eating? Contrasting visceral and Epicurean eating pleasure and their association with portion size preference and wellbeing", Appetite 104, 52-59. September 2016

Accordingly, the present research starts from one of the gaps of the Cornil & Chandon study: "Can multisensory imagery lead people to choose tastier over more healthful foods, which may partially or totally negate the health benefits of choosing smaller portions?"[47]; this study starts from Cornil & Chandon's research gap and develops a research question to try to answer the needs of scientific research. Following, the present research question is: "Is it possible to use multisensory images in changing the packaging for healthy food and unhealthy ones, in order to lead people to consume food in a moderate way?" The holistic perspective of food and well-being can be carried on the packaging to see if multisensory stimuli can be used to engage the consumer and lead them into the FWB funnel, thus making them consume less food. The first hypothesis is based on the concept of the idea is that multisensory stimuli on packaging positively influence the propensity to buy. The second hypothesis focuses instead on pleasantness. On the basis of the above-mentioned research on FWB, it could be hypothesized that food can be seen as a kind of art form and as such would benefit from its aesthetic appearance before the taste, the present research took in consideration the aesthetic characteristic on the packaging rather than the product, using a multisensory stimulus to evoke in the consumer's mind images and feelings o*f satiety in the purchase phase. From the research question above, two successive hypotheses have been developed that will be tested through the methodological study.*

Since the main aspects of the past research to gapped are the pleasure and the purchase intention and how multisensory stimuli could affect them, the hypothesis about the main effects expected are:

H1: Attitude in the products with multisensory stimuli on the packaging is higher than the ones of products without multisensory stimuli

H2: Consumers will express more purchase intentions when there are multisensory stimuli on the packaging of the product

Thus, in order to investigate the effect of multisensory imagery theorized by Cornil & Chandon, a survey was carried out to understand if consumers are influenced by multisensory images on packaging of healthy and unhealthy products during the purchase phase. As independent variables the presence of multisensory stimuli and the product typology were placed. We use as dependent variables "the purchase intention", defined as the

[47] Cornil Y., & Chandon P.; "Pleasure as an allay healthy eating? Contrasting visceral and Epicurean eating pleasure and their association with portion size preference and wellbeing", Appetite 104, 52-59. September 2016

probability that a consumer buys a specific product, and the "attitude" defined as the pleasantness perceived looking at the stimuli.

240 people were randomly divided into 4 groups (60 people each); each group presented a different situation characterized by a different product (yogurt). A 2 Healthiness (healthy vs. unhealthy) x 2 Multisensory (multisensory vs. no multisensory) matrix was used. The 240 people were randomly selected and varied by age, gender, educational level, and job title. Respondents were asked to indicate on a Likert-scale of 1 to 7 their level of agreement with statements[48] regarding the product displayed. To exclude errors due to the respondent's lack of attention or lack of memory of the product, this was shown to the respondent before each question. the questions asked to participants aimed to get answers about the pleasantness of the product and the intention to purchase it.

5 items were asked for the pleasantness "Attitude" (1 = Unappealing, 7 = Appealing; 1 = Bad, 7 = Good; 1= Unpleasant, 7 = Pleasant; 1 = Unfavorable, 7 = Favorable; 1= Unlikable, 7 = Likable) and 3 items for the "Purchase Intention"(1 = Definitely do not intended to buy, 7 = Definitely intended to buy; 1 = Very low, 7 = High purchase interest; 1 = Probably not buy it, 7 = Probably buy it), to make the comparison between the randomized conditions as homogeneous as possible, each condition presented the same questions in the same order. Demographic questions such as age, gender, occupation, and educational qualifications were subsequently asked. About the age, the 26-34 range is the mode of the dataset with F = 104, 43.3%. Another interest data on the age of participants is that the 97.5% cumulative percent is aged under 44. From the point of view of the sex of the respondents, we have an almost perfect distribution, the males are 122 (50,8%) and the females 118 (49,2%). The most frequent job among the respondents is "Employee", more than half respondents (51.7%), while students are in second place (n = 94), 39.2%; just one of the participants is unemployed and 2 are retired. 10 managers and 8 freelancers complete the demographic picture. As far as the level of education of the sample is concerned this is very high, 83.1% of the total in fact has achieved at least the bachelor's degree, (n = 158 bachelor's degree (65.8%); 48 master of science (20%); 3 PhD(1.3%)) while not graduated participants are 30 high school (12.5%) and 1 middle school (.4%) diploma.

The dataset was cleaned in the parts not essential to the analysis, then an analysis was carried out on the attention check question to evaluate the reliability of the answers, reliability that was found in all 240 so no answer was excluded in the analysis (Cronbach alpha >.80).

[48] https://www.tandfonline.com/doi/pdf/10.1080/10641734.2004.10505164

Following, validated the 5 items on the attitude and the 3 on the purchase intention asked to the participants have been calculated the averages until obtaining two main variables:

> Average ATTITUDE = MEAN(H_Attitude1, H_Attitude2, H_Attitude3, H_Attitude4, H_Attitude5, HM_Attitude1, HM_Attitude2, HM_Attitude3, HM_Attitude4, HM_Attitude5, U_Attitude1, U_Attitude2, U_Attitude3, U_Attitude4, U_Attitude5, UM_Attitude1, UM_Attitude2, UM_Attitude3, UM_Attitude4, UM_Attitude5)
>
> Average PURCHASE INTENTION = MEAN(H_Purchase1, H_Purchase2, H_Purchase3, HM_Purchase1, HM_Purchase2, HM_Purchase3, U_Purchase1, U_Purchase2, U_Purchase3, UM_Purchase1, UM_Purchase2, UM_Purchase3).

Where H stands for Healthy, HM for Healthy Manipulated, U for Unhealthy and UM for Unhealthy Manipulated.

The stimuli used presented 100g of product instead of 125g the classical quantity of yogurt contained in a cup; nevertheless, the registered purchase intentions are on average high for the manipulated conditions for both the categories taken into account: 5.96 out 7 for the healthy manipulated rather than 3.66 out 7 for healthy non manipulated, and 6.02 out 7 for unhealthy manipulated rather than 4.02 out 7 for unhealthy non manipulated.

To analyse the answers was used the statistical program SPSS, with which a factorial analysis of the variance was carried out, 2-way ANOVA test, using as dummy variables (0 1) the presence of multisensory stimuli on the packaging (0 = no multisensory; 1 = multisensory), and the typology of the product "healthiness" (0 = healthy; 1 = unhealthy). The ANOVA tests have been set with a 95% confidence interval and with a type II sum of squares, moreover, F Test for Heteroskedasticity and descriptive statistics have been added to give a complete overview.

The 2way ANOVA analysis was run to understand the main effects of the presence of multisensory, the typology of the product and the interaction of the two independent factors "healthiness*multisensory" among the dependent variables, and the results are the following:

About the Attitude, we have a significant effect of multisensory presence on the packaging $F(1.236) = 296.92$, $p < .05 = .000$ and a significant effect of Healthiness, $F(1.236) = 6.56$, $p < .05$, $= .011$; the interaction effect is marginally significant $F(1.236) = 3.81$, $p > .05$, $= .052$. The F Test for Heteroskedasticity is significant for $F(1.238) = 11.880$, $p < .05$, $= .001$.

The manipulated conditions, the ones with multisensory stimuli, presents a higher perception of attitude. Specifically, for both types of products, healthy and unhealthy, there was an increase in perceived pleasantness with the presence of multisensory stimuli on the pack. however, the condition that has recorded

a greater increase is the healthy one. The means for the manipulated categories are higher: meanHealthy = 3.66, SD = .45; meanHealthyManipulated = 5.97, SD = 1.26, meanUnhealthy = 4.20, SD = .61 and meanUnhealthyManipulated = 6.04, SD = 1.15. The overall delta between "no manipulation" condition n = 120, mean = 3.93 SD = .60 and the "manipulated" conditions n = 120, mean = 6.00, SD = 1.2 is about 2.08.

For the other DV "purchase intention" we can see a significant main effect of the two factors on the dependent variable and a marginally significant effect of the interaction effect. Multisensory stimuli have a significant effect for $F(1.236) = 249.49$, $p < .05$, $= .000$, Healthiness for $F(1.236) = 4.58$, $p < .05$, $= .033$. The interaction effect "multisensory*healthiness" is not strongly significant for the 95% confidence interval taken in consideration, $F(1.236) = 3.626$, $p > .05 = .085$. Since p value is greater than the critical value 0.05, we have to reject the null hypothesis of the ANOVA test $H_0 : \mu 1 = \mu 2 = \ldots = \mu k$ "the means are equal" and not reject the H1: at least two μ are different. By the way, p value is not "not significant" but it is marginally significant, because it is close to the critical value 0.05 and we cannot consider it as not significant. The F Test for Heteroskedasticity is significant for $F(1.238) = 8.200$, $p < .05$, $= .005$. Accordingly, given the significant effect of the IVs on the DV, we can argue that there is a positive effect of multisensory stimuli on the attitude. In other words, we can support our H2: Consumers will express more purchase intentions when there are multisensory stimuli on the packaging of the product. As for the Attitude, also purchase intention shows higher means for the manipulated conditions, in particular: meanHealthy = 3.47, SD = .72; meanHealthyManipulated = 5.96, SD = 1.43, meanUnhealthy = 4.01, SD = .65 and meanUnhealthyManipulated = 6.01, SD = 1.36. The overall delta between "no manipulation" condition n = 120, mean = 3.74 SD = .74 and the "manipulated" conditions n = 120, mean = 5.99, SD = 1.4 is about 2.25.

Both hypotheses are supported and can be placed in the theoretical framework, auxiliary the food's aesthetic function in the EPF model, eradicating the wrong associations between pleasure and unhealthy food and sacrifice and healthy food in terms of aesthetic function. Healthy food is better perceived with multisensory images, to the point that it almost completely closes the gap that separated it from unhealthy product perception before manipulation. The difference in pleasantness goes from meanU - meanH = 0.55 to meanUM - meanHM = 0.06.

Limitations of the present research are that the research was conducted on a very age variegated sample, so future research could analyse the same test on a more specific sample based on an age discrimination, i.e. research on the GenZ or Millennials purchase intention, moreover, the current study does not take in consideration important factor such as the price of the product or the "brand loyalty effect" that can influence the purchase intention.

Future research can run an analysis on other foodstuff category such as meet and food, rather than yogurt (product took in consideration in the present research). Since the interaction effects for both the independent factors are close to 0.05, the significance interval in the analysis with a 95% confidence interval, future research could run a research on a greater sample to investigate the same effect with more accuracy. Researchers can run the analysis with a field experiment, creating a real cup of yogurt, in order to test items such as pleasurable that are difficult to test with a survey. Since the most of respondents were age under 44, future research could deeper analyse the over 44 aged sample.

By the way there are several managerial implications, for example, foodstuff companies can reduce the quantity of food in the packaging and obtain a high purchase intention using multisensory images on the packaging for healthy and unhealthy products. This would reduce the overconsumption and could reduce the overeating problem; the reduction of quantity of food in a package, on the other hand, could increase the production of packages increasing the number of tons of plastics used to create packages, accordingly, firms should use recycled plastic or organic materials to build packaging, in order to not contribute to the worsening of the environmental situation. Supranational institutions must cowardly and anticipate the needs of the market, structuring strict rules on the limitation of the use of plastic material for large companies, already guilty of most plastic waste[49].

[49] https://www.nationalgeographic.com/news/2018/05/plastics-facts-infographics-ocean-pollution/