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HOW CAN CONSUMER SUSTAINABLE BEHAVIOUR BE INFLUENCED?

The power of marketing strategies in overcoming sustainable cognitive biases with a case study on meat substitutes.

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ACADEMIC YEAR 2021/2022

“Nullum magnum ingenium sine mixtura dementiae fuit.”

Seneca, De tranquillitate animi

“Carpe diem, quam minimum credula postero.”

Orazio, Odi I, 11, 8

Table of Contents

Introduction	5
Chapter 1: Understanding consumer behaviour and cognitive biases ..	7
1.1 Concept of Consumer Behaviour and Cognitive Biases	7
1.1.1 Anchoring Effect	8
1.1.2 Availability Heuristic	8
1.1.3 Analysis Paralysis	9
1.1.4 Framing Effect	9
1.1.5 Mere Exposure Effect	10
1.2 Behavioural Economics as a Solution	10
1.3 Do cognitive biases condition environmental concern?	12
Chapter 2: Marketing strategies influencing the food industry	17
2.1 Food Marketing	17
2.2 Behavioural targeting: self-identity and brand-identity	18
2.3 Direct and Indirect Marketing	20
2.4 Efficient Marketing Strategies in Food Industry	21
2.4.1 Digital marketing	21
2.4.2 Social media marketing	22
2.4.3 Real time / Instant marketing	23
2.4.4 Experiential and emotional marketing	24
2.6 Green Marketing and Consumer's Eating Behaviour Relation	25

Chapter 3: case study on meat substitutes	26
3.1 Background and consumer acceptance	26
3.1.1 PBM and CBM	26
3.1.2 Market share and expansion: data and causes	27
3.1.3 Market segmentation and consumer categorisation	28
3.1.4. Consumer acceptance and innovation-decision process	30
3.1.5 Key companies in meat substitutes production and their marketing campaigns	31
3.2 Regulatory Framework.....	33
3.2.1 European law on food safety	33
3.2.2 European law on food marketing and labelling issues	36
3.3 Special case: the Netherlands	38
3.4 Marketing of meat substitutes: some examples	40
Discussion and Conclusion	42
Bibliography	45
Abstract	51

Introduction

Environmental concerns have grown in importance during the recent years with people becoming more knowledgeable and interested in sustainability. Consequently, demand for sustainable goods is growing and consumers purchasing habits have changed and is constantly changing as a result of this. This transition has several causes since external variables are continually influencing consumer behaviour. The rise in the use of eco-friendly goods and services has prompted numerous organisations to embrace and promote environmental principles. In addition, modern companies strongly rely on marketing power in order to direct their business towards a more efficient and effective production, by understanding and following consumers' needs. In particular, food and beverage businesses put a lot of effort into developing powerful marketing tactics, primarily digital ones, to mould the opinions of their customers. This research will try to understand the cognitive perception of consumers towards a more sustainable eating behaviour and lifestyle and how their behaviour is influenced through marketing actions in our society. Is there a relation between marketing power and changes in food lifestyle of modern consumers? How much marketing strategies influence consumer eating behaviour? Do consumers take decisions for themselves or by following the society? Marketing is both a strategic and operational way of communication, therefore it must follow a specific target to be functional. Nowadays, environmental protection has become a crucial factor for customer satisfaction and most companies aim at providing solutions for this general need to be more competitive on the market. For this reason, a new marketing branch, green marketing, developed with new strategies and objectives. Contrary to popular belief, green marketing is not only about sustainable advertising, but it aims to transform sustainable activities into a new culture and way of life. To be effective in terms of communication, especially towards the final consumer, this type of marketing must share the possibility of a social-economical change between the company and its stakeholders to be relevant. Daniel Kahneman, a psychologist, and Nobel laureate, considers climate change to be the most difficult psychological phenomenon. Although consumers claim to have positive views toward pro-environmental activities, they frequently fail to behave sustainably as a result¹. The largest issue for marketers, businesses, public policy makers, and nonprofit organisations working to encourage sustainable consumption is undoubtedly this gap between what people say and do².

This paper will address some of the main digital marketing strategies able to overcome the most relevant cognitive biases related to sustainability and, in particular, consumer eating behaviour. The

¹ Trudel and Cotte, 2009.

² Johnstone and Tan 2015; Prothero et al. 2011.

first chapter will provide a broad understanding of consumer behaviour and its cognitive process in decision-making. Five main biases will be presented and explained as the main causes of influence towards a fairly sustainable lifestyle, highlighting also how behavioural economics can be considered as a solution to understand those biases and overcome consumers' attitude-behaviour gap. The second chapter will focus on marketing strategies influencing the food industry. A major focus will be on the importance of behavioural targeting as an essential strategy in this sector in order to understand and influence consumer eating behaviour. After having analysed the difference between direct and indirect marketing, highlighting the pros and cons of both strategies, four marketing techniques will be explained: digital marketing, social media marketing, real time or instant marketing, and experiential and emotional marketing. For each method a brief definition will be provided together with real life examples in the field of sustainability. Moreover, the effectiveness of each method in overcoming one or more of the biases listed in chapter 1 will be examined. In conclusion, a case-study on meat substitutes will help to answer to the main research questions. Which are the reasons behind choosing meat substitutes? How much is digital marketing affecting the consume of alternative meat? Do consumers increased their consume of substitutes based on individual preferences or societal pressure? Firstly, there will be a general background on two main types of meat substitutes, PBM and CBM, with an analysis of the market share, market segmentation, consumer categorisation and consumer innovation-decision process of the products. After presenting the key companies in the meat substitutes industry, it is fundamental to define the regulatory framework, with a focus on European law on food safety and on food marketing. It is interesting to deeper analyse the Netherlands because of its strong reputation as innovator in this sector and the presence of numerous research hubs in the country. An in-depth study on the growing field of meat alternatives can provide for questions that will help to understand the board picture and aim of this research.

Chapter 1

Understanding Consumer Behaviour and Cognitive Biases

1.1 Concept of Consumer Behaviour and Cognitive Biases

The broad concept of consumer is closely related to the concept of consumer behaviour, defined by the international marketing professor P. Kotler as “*the behaviour of an end user who buys services and goods for personal use*”. At the end of the 1950s, it became clear that in order to succeed, a business must comprehend customer behaviour and utilise that psychological understanding to sell its products and services effectively and efficiently in line with the demands of the consumer. This was the beginning of modern marketing, with marketers being interested in understanding consumer behaviour in order to satisfy the customer’s needs, wants and desires³. Moreover, brand recognition and business reputation increase by the simple action of communicating with potential customers. Consequently, Digital media are a crucial component of marketing because they allow for the analysis of how consumers respond to various aspects of digital advertising and the constantly expanding presence of “the online”. To better understand consumer behaviour is the 6WH rule. By answering to six questions – What? Who? Why? When? Where? How? – it is possible and important to identify: (1) what consumers buy (including what features or attributes they look for in a product); (2) who buys it (what kinds of consumer buy it); (3) why they buy it, i.e. what benefits they seek; (4) when they buy it; (5) where they buy it; (6) how they buy it as well as how often they buy or use it. However, focusing on consumers’ cognitive processes and their associated effect on their decision-making is a crucial component of this study. According to the dual-process theory, two major level of persuasion can be identified: explicit (controlled) level, which is consciously accessible to people while making choices, and implicit (automatic) level, which is activated automatically and effortlessly, without intention or awareness, and that is thus difficult to control. A decision can be influenced both by active instruments, such as advertising messages, which lead people to be conscious of an action, or by “heuristic” systems, such as implicit references or elements which can shape one’s opinion. In this last case, decisions are taken in an irrational manner following implicit and external persuasion: it can be, therefore, stated that some decisions are mainly society-driven. In this regard, the economist and cognitive psychologist Herbert A. Simon introduced specific heuristic models in the 1950s, consisting in simple strategies and shortcuts adopted by humans to adopt specific decisions. Later in

³ Schiffman et al., 2012.

the 1970s, Amos Tversky and Daniel Kahneman added the term cognitive bias, which describes systematic patterns of deviation from rationality to judgment. This theory, which opposes the idea of classical rationality, tries to explain how people make decisions given a set of limited resources: an individual creates and uses its own construction of the reality to take decision which may sometimes lead to perceptual distortion, inaccurate judgment, illogical interpretation, or what is broadly called irrationality of action. In their initial research, Tversky and Kahneman presented two heuristics that are strongly relevant for the present work, anchoring and availability heuristic⁴, which will be explained together with other three biases, analysis paralysis, framing effect, and mere-exposure effect, from which other small biases will follow.

1.1.1 Anchoring Effect

The anchoring effect is a cognitive bias that influences consumers to strongly rely on the first piece of information they receive, called reference point or “anchor”. Once the value of the anchor is set, subsequent arguments, judgments, or estimates made by an individual may change from what they would have otherwise been without the anchor. This leads to the understanding that first impressions matter: for example, under a marketing point of view, the name, logo, and website of a company are important media for the business’ relevance. It is a simple heuristic, but extremely prone to bias. It is very pervasive and very easy to anchor and then hard to adjust when given easily available but possibly irrelevant facts. As explained by Tversky and Kahneman “*People make estimates by starting from an initial value that is adjusted to yield the final answer*”⁵. For example, sustainable technologies often have higher initial costs but longer payback times and there are anchors historically established by less expensive, less effective machinery, making efficient innovations appear much more expensive than they are.

1.1.2 Availability Heuristic

The availability heuristic is a phenomenon concerning the rational choice that are made under the influence on one’s information about the object. It is the heuristic that substitutes judgments of probability with judgments of ease of recall: if an event comes to mind easily, then it must be frequent, it must be more likely. For example, if someone has directly experienced local temperature changes, especially recently, they are more inclined to believe that climate change is real⁶. Similar research by Egan and Mullin (2012) revealed that those who have personally experienced a notable rise in temperatures tended to be more aware of the presence of the global warming phenomena.

⁴ Tversky, A. Kahneman, D., *Judgment under Uncertainty: Heuristics and Biases*, 1974.

⁵ Tversky, A. Kahneman, D., *Judgment under Uncertainty: Heuristics and Biases*, 1974.

⁶ Deryugina, 2013.

1.1.3 Analysis Paralysis

Analysis paralysis is another clear bias. Overanalysing a problem prevents action from being performed, which paralyses the result. For example, it is challenging to decide what to do when there are so many things, we might do to combat climate change. The “Over Choice” phenomenon is then associated with analysis paralysis: so many facets of everyday life are impacted by climate change, including transportation, food, clothes, and hobbies. Therefore, when choosing a more sustainable lifestyle, consumers experience “option overload,” which biases them towards inaction. A direct consequence can also be the “ostrich effect” according to which people tend to disregard negative circumstances even when they are happening or are imminent, always following the prospect theory ideology⁷. Analysis paralysis can also lead to the normalcy bias, which causes people to reject or practice potential threats alert. People thus underestimate the likelihood of a disaster, the chance that it would influence them, and the potential for negative consequences and the bias makes it common for individuals to under-prepare for crises brought on by human mistake, market failures, and natural disasters. During a tragedy, allegedly 70 per cent of individuals exhibit normality bias⁸.

1.1.4 Framing Effect

The framing effect is a very important bias when it comes to marketing influence in consumer decision-making. It consists in the difference in behaviour when the same information is given positively or negatively. When given gain frames, people prefer to practice risks, whereas when given loss frames, they tend to seek out opportunities. By applying the framing effect, decisions are taken by focusing on how the information is presented rather than the information itself. Such choices might not be the best ones since they may be justified by incomplete knowledge or worse alternatives, but this cognitive bias may make them appear more attractive than alternatives or information that are objectively superior but are presented in a negative way. Again, this follows the intrinsic idea of the prospect theory, according to which the perception of a loss is greater than that of an identical gain, making it more deserving of avoidance. Importantly, public opinion may be significantly influenced by the framing effect: depending on how they are presented, public affairs and other events that receive media attention might be understood quite differently. Negative framing can sometimes lead situations or views that are advantageous to most people to be seen negatively. For instance, the way climate change and new sustainable behaviours are presented by politicians and media and how this can influence the public perception of it. A clear example of this bias happened during the Behaviour, Energy and Climate Change Conference in 2009: usually, when a meat-based main meal is offered at big gatherings 5–10% of guests will ask for a vegetarian option, but in this event the organisers

⁷ Karlsson et al., 2009.

⁸ Inglis-Arkell, E. *The frozen calm of normalcy bias*. Gizmodo, 2013.

decided to provide a vegetarian dish as the standard option and 80% chose the vegetarian option. It can be then stated that this big shift results from the options' differing presentation or phrasing (framing).

1.1.5 Mere Exposure Effect

The last relevant cognitive bias is the mere exposure effect. Also known as the familiarity principle, it clearly expressed how people exhibit a preference for things they are familiar with, also related to the normative system where they live in. Therefore, familiarity results in people having a more favourable opinion about a specific thing than they had before they met that stimulus. For example, scholars have observed how specific unhealthy eating behaviours are more common in environments where it is viewed as normal and acceptable. The familiarity principle is a useful heuristic for reducing risk and managing uncertainty⁹: the frequent exposure to something creates a natural bias in favour of the object of our attention and frees up cognitive capacity that allows consumers to make assessments and decisions more quickly. Consequently, with repeated exposure the audience can become familiar with the brand, increasing the interest and awareness.

1.2 Behavioural Economics as a Solution

The application of behavioural economics and the understanding of cognitive biases can help to find solutions to some of the biggest problems in the battle against climate change and it can be applied in a variety of spheres of our everyday life. De facto, both small and large companies are using this discipline to better position their offerings, improve decision-making and build stronger relationships with their consumers. It is, therefore, crucial to comprehend why some individuals choose identical goods and services in such a different manner from others. By using this concept, also governments may better understand user attitudes, develop public policies, and enhance educational achievements at low cost. However, the presence of strong biases can generate several difficulties. The so-called attitude-behaviour gap is one of the key causes of why people don't act logically or even in accordance with their own preferences: studies have shown that sharing facts does not always result in behaviour changes¹⁰ and people frequently make choices that are not in their best interests because of the situation in which they are making the choice or are overloaded with information¹¹. One general approach to correct those biases follows the nudge theory i.e., to create little incentives, stimuli, or "nudges" that encourage individuals to take the intended actions. According to Thaler and Sunstein the term "nudge" refers to any aspect of the decision-making process *"that alters people's behaviour in a predictable way without forbidding any options or significantly changing their economic*

⁹ Daniel, A., *The Familiarity Principle*. Drive Marketing, 2021.

¹⁰ Abrahamse et al., 2005; Steg and Vlek, 2009.

¹¹ Reisch and Gwozdz, 2013.

incentives”¹². This concept might confirm how society – or marketing – can easily influence another person’s behaviour: for example, when a client uses less energy than the average of their neighbours, some energy companies may graphically encourage them to keep up the good work by displaying a happy face on their bill. Verplanken and Wood (2006) estimate that roughly 45% of our daily behaviours aren’t actively thought about. Therefore, nudges are probably suitable for both routine behaviours and complicated decisions that are typically too overwhelming for human cognitive capability. In the food industry, nudging has mostly been used to contrast the growing troubling obesity epidemic that is spreading across several Western nations, most notably the USA. A lower level of nudging has been used to support environmental issues in food consumption, such as reducing meat consumption (and consequently climate change) and food waste, given that eating is mostly a regular and frequently somewhat unconscious behaviour. As already mentioned, the possibility of persuading individual customers and making certain information more prominent is increased when information is simplified and adapted to certain decision-making circumstances. According to Kalnikaite et al. (2013), grocery shoppers make decisions at supermarkets based on a small number of criteria, hence the prominence of certain aspects is important: these variables are most frequently price (for 46% of respondents) and health (36%), but they might vary depending on the option setting. Oullier et al. (2010) present a variety of nudges to promote healthy eating. For example, by inserting red-colored crisps at regular intervals in a tube of crisps, i.e., ‘Pringles’ packaging, managed to reduce crisp consumption by 50%. The introduction of these visual markers, according to the researchers¹³, *“draws the eater’s attention, offers them points of reference for their own eating, and induces them to halt that consumption.”* Another example is the Swedish burger company Max that served as an illustration of the power of signifiers: they started putting carbon labels on all their burgers, and the ones with burgers that had a lower carbon footprint than average saw a 16% spike in sales¹⁴. Overall, research appears that the influence of food’s visibility, presentation, and experience has a considerable impact on the kind and quantity of food consumed in “out-of-house catering” scenarios. For instance, having easy availability – together with food’s appearance, fragrance, and social surroundings influence – of unhealthy food greatly promotes intake of such food¹⁵. The Norwegian researchers placed a sign at the buffet of seven hotel restaurants reading: *“Welcome back! Again! And again! Visit our buffet many times. That’s better than taking a lot once”*. By doing that, they introduced a cue about a normal behaviour, which resulted in 20,5% reduction of food waste compared to the pre-intervention data. However, there has only been a very little amount of actual success with nudging interventions. This is due to the fact that nudging can only be used and be

¹² Thaler and Sunstein, 2008: 8.

¹³ Oullier et al. 2010, p. 44.

¹⁴ van Gilder Cooke, 2012.

¹⁵ Kallbekken and Sælen (2012).

effective in settings with little intervention control, like private houses, or settings with plenty of competing influences, like marketing. Moreover, designing a nudge intervention requires a thorough grasp of the target population and needs the people being addressed to tolerate such behaviour. For example, individuals who are predisposed to react to health-related information are most affected by nutrition labels on food containers, whereas those who are not appeared to be less affected. Or evidence indicates that compliance is low in situations when people are encouraged to consume less meat but do not genuinely believe that this is desirable¹⁶. Therefore, information and education initiatives that persuade people to accept the underlying policy should come before nudging¹⁷, while establishing or enhancing the social norms that serve as the foundation for various nudging initiatives should be a secondary goal of such campaigns. The idea of loss aversion, which states that “not losing” makes us happier than “winning”¹⁸, might also be useful in addressing various sustainability-related problems. For instance, offering discounts as an incentive if customers bring their own cups or thermoses while ordering coffee “to go” does not effectively alter behaviour, while the best approach to have an impact would be to lower the cost of coffee while adding a fee for those who prefer a throwaway cup. People’s perceptions and reactions are significantly different if they believe they are paying too much compared to the sense that they are saving since, generally speaking, saving is not a very powerful motivation. This aspect can be reflected in the Diekmann and Preisendoerfer (1992) low-cost/high-cost model (Figure 1) that explains the divergence between pro-environmental behaviour and environmental attitudes and demonstrates that there is a significant correlation between environmental mindset and low-cost pro-environmental activity. According to them, individuals take pro-environmental actions that need the least amount of money, meaning that positive environmental attitudes have a direct impact on inexpensive pro-environmental action. However, their approach does not define cost in a purely economic sense, but rather in a more general psychological meaning that takes also into account the time and effort required to engage in pro-environmental conduct.

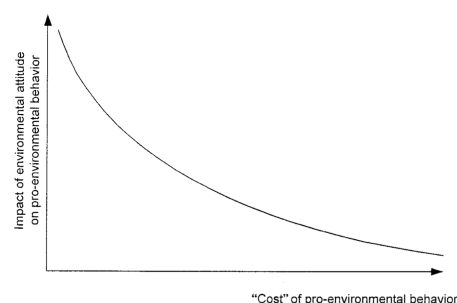


Figure 1. Low-cost high-cost model of pro-environmental behaviour (Diekmann & Preisendoerfer)

1.3 Do cognitive biases condition environmental concern?

In order to understand the connections between environmental attitudes and pro-environmental behaviours, there is a specific field called environmental psychology, established in the US in the

¹⁶ Arvola and Liedgren, 2014; Campos et al., 2011.

¹⁷ Hansen and Jespersen, 2013.

¹⁸ Prospect theory of Tversky, A. Kahneman, D., 1979.

1960s, that looks at a variety of intricate interactions between people and the environment. However, a specific model to describe consumer behaviour in its sustainable decision-making process is not possible due to many variables that interfere in the issue. In particular, human cognitive biases and the normative objective of sustainability are closely related. The idea of justice is frequently used as a defining principle in definitions of sustainability¹⁹ and, for this reason, environmental policies are inherently considered as an opposition to the status quo. Consequently, the temptation for each person is to ignore these principles in favour of what they perceive to be just: the current system²⁰. In fact, studies have shown a negative correlation between pro-environmental beliefs and characteristics of the system justification, such as right-wing authoritarianism, conservatism, and social dominance orientation, all of which are connected to negative beliefs or behaviours regarding the protection of the environment. As a result, the so-called System Justification Theory (SJT), which holds that people find psychological reassurance in the idea of a predictable system because it offers them the opportunity to feel like they can control it, encompasses all of the cognitive biases discussed above. Clearly, there are additional factors that make sustainability less evident to individuals' eyes such as the complexity and uncertainty of the issue, because of its long-term effects and potential risks as well as the strong societal pressure combined with the individual prioritisation of personal interests rather than the collectivity. Since sustainability issues are slowly and gradually developing, it is very difficult for humans to directly perceive or experience them through their senses, and general knowledge is largely based on indirect and abstract cognitive information (experiential bias). For this reason, individuals can underestimate issues during crises and perceive things as less serious than they are and unwilling to seek solutions²¹, resulting in the government' inability to manage disasters or to include civil society in their administration (normalcy bias).

Blake (1999) refers to the previously mentioned attitude-behaviour gap as the *Value-Action Gap* (Figure 2), supporting how the majority of pro-environmental behaviour models have some limitations through new set of research arguing that values are “negotiated, temporary, and occasionally conflicting²²”. He outlines three external and internal obstacles to action: *individualism*, obstacles that originate inside the person and have to do with temperament and attitude; *responsibility*, limitations due to people that believe they have no control over the problem and shouldn't be held accountable

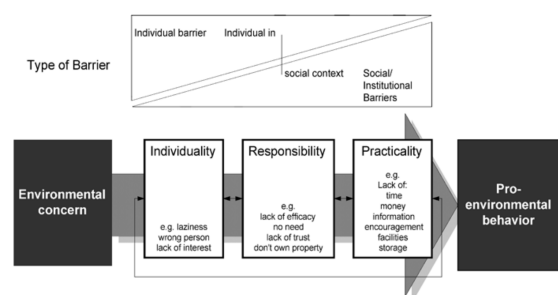


Figure 2. Barriers between environmental concern and action (Blake, 1999)

¹⁹ World Commission on Environment and Development, 1987.

²⁰ Feygina et al., 2010.

²¹ Kuligowski & Gwynne, 2010.

²² Redclift and Benton, 1994, p. 7-8; cited in Blake, J., 1999.

for it also sometimes as a consequence of a lack of trust in the institutions; and *pragmatism*, societal and institutional restraints such a lack of money, information, and time. To address the attitude–behaviour gap, the SHIFT framework can also be used. It is an acronym that demonstrates the significance of taking into account five different factors to promote more environmentally friendly consumer habits: (1) Social influence is one of the most important aspects in affecting a change in consumer behaviour since consumers are frequently affected by other people’s presence, behaviour, and expectations²³; (2) Habit formation, that refers to behaviours that endure because they are mostly spontaneous due to repeated exposure to contextual signals throughout time²⁴. In particular, habit change is essential for sustained behaviour change since many prevalent habits are not long-lasting²⁵; (3) Individual self, including self-concept, self-interest, self-consistency, self-efficacy, and individual differences, strongly influences consumption behaviours; (4) Feelings and cognition, since making decisions can be dominated by either an intuitive, emotive path or a more deliberate, cognitive one; (5) Tangibility, a problem that needs to be addressed in order to overcome sustainable consumer behaviour issues such as uncertainty about solutions and consequences. All the influences can impact on anyone – or more – stage of the consumer’s decision-making process from recognition to information search, evaluation of alternatives, purchase, and post-purchase behaviour, on the base of different topics. Consequently, there are many different aspects that motivate consumers to adopt a more sustainable behaviour. For example, a study carried by Brough et al. (2016) explained that being sensitive to environmental issues is associated with femininity, which would make men who are afraid of losing their masculinity less likely to take environmental stances and participate in pro-environmental activities or debates. Or, in addition to being good for the environment and raising public awareness of the issue, environmental policies have also shown that younger generations have greater levels of environmental concern, possibly as a result of the rising importance of the climate issue. In this regard, Constance Pechmann et al. reviewed research within the fields of neuroscience, psychology, and marketing and identified several biological and psychosocial attributes of the adolescent experience that may make members of this age group more susceptible to certain kinds of marketing²⁶.

In the specific field of sustainable eating habits, a poll conducted by Salleh et al. (2010) at Universiti Teknologi MARA in Malaysia shows how consumers are significantly motivated to eat sustainably

²³ Abrahamse and Steg 2013.

²⁴ Kurz et al. 2014.

²⁵ Verplanken, 2011.

²⁶ Pechmann C, Levine L, Loughlin S, et al., *Impulsive and self-conscious: Adolescents' vulnerability to advertising and promotion*, 2005, 24:202–21.

by their concern for health (Figure 3). Similar findings were made by Zanoli and Naspetti (2002) utilisation information on Italian consumers' perceptions and understanding of organic food, which revealed that customers prioritise pleasure and wellbeing above all other values. Another major issue identified is related to food safety with an increase in consumption of organic food, produced without the use of pesticides and other crop-preserving agents that are bad for human health²⁷. Environmental friendliness and ethical

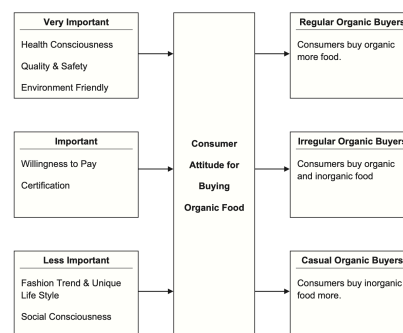


Figure 3. Categories of factors influencing consumer attitude and their consequences

consumption are other two crucial factors. Consumer behaviour has changed throughout time, mostly because of environmental ethics concerns²⁸. The effect of social norms and environmental factors on human behaviour is well acknowledged²⁹. In this regards, Schwartz (1973, 1977) discovered that social norms and environmental concerns have developed a sense of moral obligation and created a positive attitude among consumers toward the environment. This change has encouraged the creation of “green products,” sometimes known as “eco-friendly products,” which has opened the way for organic food in established markets like the USA and Germany³⁰. Environmental protection is a frequent driver of ethical consumption, according to Seyfang’s (2006) findings. Consumer activism, which either entails making ethical product purchases with minimal negative effects on society and the environment or implements a moral boycott of immoral items, includes both forms of ethical consumerism³¹. Consumers who engage in ethical consumerism are motivated to purchase eco-friendly goods to enforce their moral obligations³². This can be a driven reason for companies to include the green factor and adopt green technologies to impact consumers’ attitudes about them positively³³. Moreover, numerous studies carried out in the United States, China, Japan, and India have shown that customers are prepared to pay more for socially responsible products³⁴. The existence of a certification is a significant aspect in encouraging people to purchase organic food; to earn the trust of their customers, producers must verify and validate their products through government certification³⁵. According to Canavari and Olson’s (2007) assessment of the organic food industry in Italy and the United States, some foods are consumed as a status symbol. Because of this, offering expensive and exclusive organic food has recently become a trend in several nations’ affluent culture. It serves as a demonstration of the affluent lifestyle and spending power of customers. Using the theory of heuristics and biases as a foundation, it is possible to formulate the hypothesis that, despite

²⁷ Hay, 1989; Lane and Bruhn, 1992; Demeritt, 2002; Kumar and Ali, 2011; Thomas and Gunden, 2012; Van Loo et al., 2013.

²⁸ McEachern and McClean, 2002.

²⁹ Berkowitz, 1997; Laroche et al., 2001, Paul et al., 2016.

³⁰ Ottman and Terry, 1998.

³¹ Giesler and Veresiu, 2014.

³² Cho and Krasser, 2011.

³³ Olsen et al., 2014; Kouba, 2003; Seyfang, 2006.

³⁴ Makatouni, 2002; Pino et al., 2012; Canavari et al., 2007.

³⁵ Deliana, 2012.

cognitive biases being one of the reasons why people tend to prioritise other issues over the climate issue, they may also have the ability to act in the opposite direction, i.e., to increase environmental concern, in particular if supported by the influence of the new digital marketing strategies. As the following chapter will present, modern marketing strategies, such as experiential marketing, neuromarketing, etc., have a great impact – especially on teenagers – because they often work through “implicit persuasion” techniques that encourage “subtle affective associations” while avoiding the explicit persuasion knowledge of the consumer.

Chapter 2

Marketing strategies influencing the food industry

2.1 Food Marketing

Consumer behaviour in the food and beverage industry refers to the actions people take to obtain, prepare, consume, and discard food and drink. These definitions show that consumer behaviour includes actions and procedures that take place before, during, and following a purchase or acquisition. Recently, there has been a particular expansion of digital food and beverage marketing, with the food industry being more and more related to digital research and innovation with the final aim of taking advantage of people's engagement with social networks, interactive games, mobile phones, online videos, and virtual worlds. One of the main strategies adopted by food companies is relying on the advertising industry, being it particularly influential in the growth and development of digital media content and services³⁶, and including a broad range of disciplines, such as semantics, artificial intelligence, auction theory, behavioural analysis, data mining, and statistical modelling. For example, Coca-Cola's online advertising spending was up 163% in 2009 from 2008. In particular, the Institute of Medicine³⁷ acknowledged the increasingly important role that the Internet and marketing practices in promoting food and beverage products to children and adolescents. By definition, food marketing is the set of strategies, offline and online, aimed at the positioning, distribution and communication of a product in the gastronomic sector, capable of creating this solid producer-consumer relationship and adding value to the product offered in a to persuade the consumer to buy it³⁸. This technique necessitates a thorough understanding of the reference nation's cultural, political, and technical realities as well as a clear and transparent social strategy to keep up with the digital world and take advantage of the most suitable channels and any external sponsorships. Only in this way it will be feasible to engage the customer completely and quickly tell him about the goods. According to the DOXA surveys (2017), 80% of young people between 18 and 24 years of age are inclined to share their opinion on the lived experience, among which 49% use platforms dedicated to the food world. A central role in food marketing is played by food bloggers who, through advice and reviews, condition their customers. This simple sharing action is the key to influencing the reality of gastronomic consumption, creating, and spreading new fashions. That is why, to effectively influence

³⁶ Chester J. *Digital Destiny: New Media and the Future of Democracy*. New York: New Press, 2007.

³⁷ McGinnis, J.M., Gootman, J. Kraak, V., *Food Marketing to Children and Youth: Threat or Opportunity?*. ResearchGate, 2005.

³⁸ Schaffner & Schroder, 1998.

and compete in the market, marketers must have a solid understanding of how to target customer behaviour.

2.2 Behavioural targeting: self-identity and brand-identity

Since not all customers are the same or behave in the same way under all situations, segmenting the current client base and creating specific offers and strategies for each of these groups is essential. For example, the perspectives of millennials (those between the ages of 18 and 39) and adults (those over the age of 50) on sustainability are very different from one another, and the new media generation is typically more open to advertising that is catered to their needs and incorporated into these individualised media experiences. Behavioural targeting has, therefore, become the core strategy in business. By using a wide range of methods (for example cookies or invisible data files) to track the online behaviours of individuals and by creating a personalised on marketing, a company can establish a more direct connection with consumers, strengthening the idea of “customer relationship marketing” (CRM) i.e. a *“business process in which client relationships, customer loyalty and brand value are built through marketing strategies and activities”*³⁹. Consumers, especially youths, actively seek, choose, and modify products based on their own ideas and desires, mainly to explore their identities. According to a 2007 survey by the Pew Internet & American Life Project, *“93% of teens use the Internet, and more of them than ever are treating it as a venue for social interaction—a place where they can share creations, tell stories, and interact with others. a offer networks Social*⁴⁰” simple, approachable framework for developing and expressing one’s online persona, both public and private and the possibility for a high level of personalization of technology has created new opportunities for digital marketers. Recent innovations in technology and software have created a sophisticated and rapidly evolving data collection apparatus, including the growing use of ‘personalisation engines’ for behavioural advertising. Advertising executives for some of the largest food and beverage companies frequently speak of the importance of behavioural targeting⁴¹. For example, the My Coke Incentives programme encourages customers to utilise unique personal identification number (PIN) numbers from Coke drinks to go online and access a website where they may earn a range of rewards, such as downloadable ring tones, sports, and entertainment. According to Coca-Cola’s technological partner company, Fair Isaac, this the new Media Generation shows how *“brands can utilise code promotions to capture behavioural and psychographic information about consumers viewers reach consistently to want you if crucial is approach degree-360 a Therefore,*⁴²” and users wherever they are. This strategy should consider people’s continuous connectedness to

³⁹ *Customer Relationship Marketing (CRM)*. Techopedia, 2016. <https://www.techopedia.com/definition/23326/customer-relationship-marketing-crm>

⁴⁰ Lenhart A, Madden M, Macgill AR, et al., *Teens and Social Media*. Pew Internet & American Life Project, 2007.

⁴¹ Anfuso D., *Pepsi’s John Vail*. iMedia Connection, 2005.

⁴² Zabin J. *Cracking the code on next-generation code promotions*. Chief Marketer, 2006.

technology, multitasking tendencies, and fluid media experiences. Levy (1959)⁴³ first proposed the idea that brands are representations of identity, which is significant to consumer research because of its strong influence on how consumers perceive and react to consumption, especially to specific products and/or brands. In particular, it is crucial to emphasise the link between one's identity and consumption habits, particularly those linked to brands. The "self as hero" and the "brand as hero" are the two major divisions of the identity literature in consumer research. Following the identity-based motivation model, the "self as hero" concentrates on the impact of various elements of identity on consumption. In the past ten years, consumer researchers have studied how a range of social identities, such as ethnicity⁴⁴, gender⁴⁵, biculturalism⁴⁶, nationality⁴⁷, and morality⁴⁸, may impact brand choice or responses to persuasive communication. According to Reed (2004), salient identities influence brand choice when they are meaningful and relevant, supporting Oyserman's claim that salient identities influence behaviour. Additionally, identity salience is connected to social ties, respect, media linkages, and assets⁴⁹: environmental hints presumably could make any of these four characteristics even more accessible. On the other hand, the "brand as hero" looks at a more complex link in which consumption may potentially have an impact – either conscious or unconscious – on identity in addition to how identity affects consumption without consumer awareness. This second stream asserts that brands assist customers in developing and maintaining their identities⁵⁰. Self-brand connections are created through user interactions, advertising, and the brand's relevance to targeted reference groups⁵¹ and are usually strong in brand communities, whose members may identify themselves in terms of their status as brand users⁵². Products provide customers the opportunity to achieve identity-relevant objectives including self-expression, which refers to the act of adopting a specific product because it fits one's personality, or signalling. For example, someone might start buying the brand "Findus Green Cuisine" because it fits the perception of itself as a healthy and green person (self-expression) or to show others these attributes (signalling). Therefore, another important factor influencing consumer decision-making is consumer perception in relation to the others: consumers could favour brands that can be used as signs of membership in important reference groups or to strengthen their current group membership and avoid brands that can be used as signals of membership in undesirable groups⁵³. As already stated, engagement is one of the pillar of digital marketing, which is explained by Nail J as '*subtle, subconscious process in which consumers begin*

⁴³ Levy, S., *Symbols for sale*, 1959. Harvard Business Review, 37(4), 117-24.

⁴⁴ Forehand & Deshpande, 2001; Forehand, Deshpande & Reed, 2002.

⁴⁵ Maldonado, Tansuhaj & Meuhling, 2003.

⁴⁶ Luna, Ringberg & Perrachio, 2008; White and Dahl, 2007.

⁴⁷ White and Dahl, 2007.

⁴⁸ Reed, Aquino, & Levy, 2007.

⁴⁹ Kleine, Kleine and Kernan, 1993.

⁵⁰ Kleine, Kleine, & Allen, 1995.

⁵¹ Escalas & Bettman 2003, 2005.

⁵² Muniz & O'Guinn, 2001.

⁵³ White & Dahl, 2007.

to combine the ad's messages with their own associations, symbols and metaphors to make the brand more personally relevant"⁵⁴. As a result, the goal of contents and products is to get the consumer to start processing the brand subconsciously and reinforce the concept of brand loyalty.

One effective method to contrast the mere-exposure effect is neuromarketing, a brain-based strategy that comes from the merging of two fields of study: neuroscience and marketing. It advocates for the benefits of considering customer behaviour and customers' cognitive reactions to marketing communications from a neurological standpoint, which has long been a methodological difficulty since emotions are potent facilitators of how consumers receive information and play an important role in the understanding of the self and brand identity relationship. With the development of neuro-imaging tools, marketers may finally dive into customers' minds and learn important things about the unconscious mechanisms that determine whether a message will ultimately succeed or fail. Coca-Cola, McDonald's, KFC, and other well-known companies have previously employed neuromarketing research in some measure to comprehend how the brain influences feelings, ideas, and behaviours. An additional technique is retargeting that aims at building a positive association in your audience's mind, becoming a trustworthy business and no longer an unknown entity. However, this effect can be ambivalent: if on one hand and simpler repetition of inputs increases consumers' attention towards them, on the other higher levels of media exposure can also be associated with lower reputations for companies, even when the exposure is mostly positive. However, exposure is most likely to be helpful when a company or product is new and unfamiliar to consumers.

2.3 Direct and Indirect Marketing

Marketing strategies can be both direct or indirect⁵⁵, with different effects on consumers. On one hand, direct marketing actively engages with customers and includes more traditional strategies familiar to everyone. For example, sending a customer an email that contains a promotional offer, TV commercials, billboards, magazine ads, radio ads, and telemarketing. On the other hand, indirect marketing involves passive strategies that allow consumers to directly engage with contents. The main side behind these strategies is to build relationships, create brand authority, and generate brand awareness and loyalty, instead of simply selling a specific product or service. For example, social media or website's blog posts as well as contents which leads can be found through external links or through a search engine. Each strategy has its own advantages and disadvantages that can lead to different impacts on consumers. If on one hand direct marketing is more measurable and easily customisable than indirect marketing, it also requires a deeper understanding of a specific targeted audience to be effective. This leads to a less widespread general reach. On the contrary, indirect

⁵⁴ Nail J, 2006.

⁵⁵ Wagner, N., *Direct vs Indirect Marketing*. Stevens&Tate, 2020. <https://stevens-tate.com/articles/direct-vs-indirect-marketing/>

marketing can provide value to customers, helping in the creation of a strong brand reputation and trust. It is usually less expensive, since it doesn't involve physical contents or manoeuvres, and it is considered as a long-term strategy, with lasting effects throughout the future. However, since this strategy does not address a specific customer and casts a wider public, the tracking performance is more difficult and might not have an instant impact. As a consequence, it requires a constant and peculiar attention: for example, the persistent control on social media insights in order to check the level of engagement. This research will mainly address indirect marketing strategies, being them the main characters of digitalisation and modernisation in our society. The Internet, social media, and digital communication technologies has become part of people's everyday life: the number of internet users worldwide has reached 4.1 billion, where 92% of them access the internet from their mobiles. According to a statistical report in 2019⁵⁶, it is used a wide range of social media platforms, creating a whole new way to communicate between companies and consumers. Consequently, social media support a great part of this growth: they must be considered as an effective mechanism that promotes marketing goals and strategies of companies, especially related to consumer engagement and relationship. Nowadays, more than 2 billion people use social media (Figure 4): it is recored several active social media users of about 4.5 billion⁵⁷ with Facebook alone reaching about 1 billion active users per day.

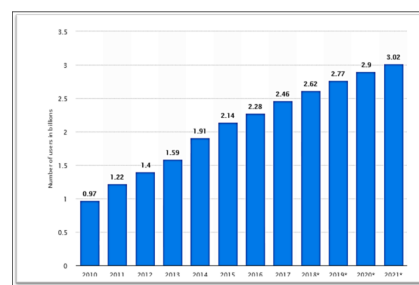


Figure 4. Number of social media users worldwide (from 2010 to 2021) (in billions) (The Statistics Portal, 2019)

2.4 Efficient Marketing Strategies in Food Industry

2.4.1 Digital marketing

The use of digital channels is exponentially increasing by people that want to share common interests and ideas within the same virtual space. According to Raacke and Bonds⁵⁸ social networks allow users to create a tight community through constant communication, by allowing consumers to interact an effective medium of exchange between people. According to W. G. Mangold⁵⁹, social media also influence consumer behaviour: as they significantly changed the way information is disseminated, making it a very easy process to share, they also affect perception, attitude and final behaviour of people⁶⁰, for example by writing reviews or rating the experience of using the product. According to the Robert Wood Johnson Foundation's Healthy Eating Research program, there are six unique concepts that define the new framework for digital marketing: ubiquitous connectivity among people

⁵⁶ The Statistics Portal, 2019.

⁵⁷ Global Statshot Report, *We are social and Hootsuite*, 2021.

⁵⁸ J. Raacke, J. Bonds-Raacke, *Cyberpsych. & Beh.*, 2008, T. 11. – No. 2., 169-174.

⁵⁹ W. G. Mangold, D. J. Faulds, *Bus. Horiz.*, 2009, 52(4), 357-365.

⁶⁰ M. Laroche, *Compu. Hum. Be.*, 2012, 28(5), 1755-1767.

used by marketers to take advantages of users' "always-on" Internet experience⁶¹; active engagement that creates emotional connections and relationships between consumers and brands, rather than simply exposing consumers to a particular message, product, or service; user-generated contents that make it possible for people to be active practitioners in the marketing enterprise; personalisation that makes a brand unique following customers' preferences, behaviours, and psychological profiles; social graph and participation to Web 2.0 platforms to easily access and influence both individuals and their communities (one example is the intersection of online social interactions with eating behaviours); immersive environments, such as interactive games and three-dimensional virtual worlds, that are able to create intense experiences by plunging users into the centre of the action and inducing a strong sense of subjectivity, heighten emotional arousal, and trigger unconscious processes. For example, MyCoke.com is a virtual and immersive space where young people can be their alter-identities, or "v-egos," and are "encouraged to correlate personal identification with brand identity"⁶². Coca-Cola has also developed a presence in Second Life, where Coke vending machines can be seen littering the scenery of the wildly popular three-dimensional virtual reality⁶³. Since digital media are able to reach and engage with people across multiple contexts by seamlessly weaving together content, advertising, marketing, and direct transactions, it has a strong impact. Consumer behaviour models incorporate the cognitive and emotional components of consumer decision-making, going beyond economic theory: also, normative influences can be thought of as biases since they have such a powerful impact on people's attitudes. As mentioned in the first chapter, if the prevailing culture promotes an unsustainable way of life, pro-environmental behaviour is less likely to occur and the gap between attitude and action will increase. The interconnected online world may be the ideal solution to overcome this bias by making all knowledge available, enabling constant connectivity, and making learning possible. It is, thus, fundamental to also check how digital marketing intersects with other factors such as social, psychological, and biological to understand its role in consumer behaviour and, more specifically, food consumption.

2.4.2 Social media marketing

Within the broad field of digital marketing, a specific content strategy might be the solution to avoid many of the above-mentioned biases. As stated in the first chapter, influence and persuasion are mainly influenced by how something is communicated or presented (framing effect). A social media strategy based on spreading a very small amount of consistently simple and clear information (following the law of small numbers) that shares pro-environmental messages, focusing on results and consequences rather than probability and procedures, might be a way to overcome potential

⁶¹ Montgomery, 2009.

⁶² The Coca-Cola Company. MyCoke.com.

⁶³ Coke in the community. Brand Strategy. February 5, 2007.

framing biases. In this regard, also the creation of new names or frames to label something that is imprecise, abstract, immaterial, or metaphysical, to make it “real“ in individual minds as a concrete and substantial phenomena or entity over time can be a possible solution. This phenomenon, described by Nietzsche as *Verdingung*⁶⁴, while in modern times as *Reification*⁶⁵, can be found in the term “global warming” within the sustainability field. Furthermore, influencer marketing can be mentioned: since 2019, the size of the worldwide influencer marketing industry has more than doubled, reaching \$13.8 billion in USD in 2021. It consists of collaborating with influencers on social media platforms that, being them people who already have engaged followers that would follow their advice, are able to spread information and make a product more credible to consumers. In addition to offering guidance to the general audience, influencers may be thought of as role models with excellent ideals and an honourable or commendable way of life. One example can be “Cucina Botanica”, an Italian social media channel dedicated to vegan cuisine that is creative, healthy, and simple to make and it counts 784.000 followers on Instagram and 522.000 followers on YouTube. Furthermore, the community-based strategy of social marketing provides a more successful alternative to conventional campaigns that are regarded ineffective because they only spread information without lasting relationship with consumers⁶⁶. This strategy, in addition to increase brand awareness and new clients, can be effective against the anchoring bias by being persuasive and able to influence and change consumers’ ideas.

2.4.3 Real time / Instant marketing

Real time or instant marketing is a communication approach that exploits exciting and current events in different fields to generate an advertising campaign that can induce or facilitate the perception of something happening in the future. It guides individuals in present actions rather than postponing them by providing for a better education and spreading awareness, especially through social media. Several well-known companies, such Barilla, Ceres, and Ikea, have successfully used this strategy to increase their target market. Nicolò Scala, marketing manager of Durex, states the main two rules for this technique: firstly, to be quick to react to the major news and trends; secondly, to use real time marketing only when there is a real connection between the event and the brand. In the specific field of sustainability, it tries to raise awareness among individuals that they live in a connected and globalized society, which may be subject to unanticipated threats and catastrophes as a result of societal decisions. This strategy can be effective against the analysis paralysis and normalcy bias: by presenting directly a problem related to current and worldwide known events, information are shared making the true reality visible and people can be motivated to behave and be guided towards specific

⁶⁴ Nietzsche 1882, 1999.

⁶⁵ Widiger, 2012; Korteling, 2014; Nieweg, 2005.

⁶⁶ McKenzie-Mohr and Smith, 1999, p. 15.

actions, avoiding the possible bias of option overload. According to Thorndike (1927, 1933), the Law of Effects states that the more times something is reinforced, the greater the likelihood that it will be repeated and have the desired effect. Therefore, multiple reinforcing on the desired social, as opposed to one, will thereby improve the likelihood that this will hold or occur again in the future. Moreover, by showing pro-environmental behaviours as those of the majority of people, consumers can be persuaded to act in a certain way as part of a large community. Accordingly, to encourage the desired group tendencies through advertisements that claim this behaviour is already being embraced by groups of people as a reaction to an existent threat, as well as through emphasising of the interests of all generations, especially the following one, can be a strategy to overcome those biases.

2.4.4 Experiential and emotional marketing

Experiential marketing, also known as engagement marketing, actively engage consumers by inviting them to take part in a brand experience and making them active receivers of information. It is built on providing distinctive and creative customer experiences to establish strong emotional bonds with the target market and the company. Customers' experiences and emotions are created with the use of experiential marketing. According to the International Experiential Marketing Association (2011), experiential marketing "encourages consumers to engage and interact with companies, products, and services through sensory means." Through the production of visible contents, it is possible to increase awareness among people, allowing them to experience how future situations will look and feel through their own human sense. Furthermore, a potential useful solution to make people more concerned can also be spreading evocative pictures from the past that are imprinted in people's shared memories. Strictly connected to experiential marketing there is emotional marketing includes any marketing strategy that primarily appeals to consumers' emotions to persuade them to make a purchase or otherwise interact with a company. This kind of marketing is able not only to connect people to a specific product but to make them loyal, changing positively the perception of a brand. For this reason, it can easily construct a broad framework of interconnected (conjunct) events that make something more appealing and simpler to remember and can be very effective to present pertinent information in the form of a coherent story and to develop narratives in order to leave an enduring (emotional) impression. Narratives have a much greater influence on public opinion than statistics or predictions do, and they also help people feel more connected to one another and more committed to a cause. In particular, by referring again to the loss version bias, it is important to create a story different from loss but focused on gains without addressing people as consumers, but as citizens and potential change-makers. Together with experiential marketing, it can help to overcome the availability bias providing consumer with concrete and frequent examples about events, bypassing general misinformation.

2.5 Green Marketing and Consumer's Eating Behaviour Relation

There is, then, a strong positive relationship between eating habits and exposure to food marketing, especially in adolescents that are routinely exposed and influenced by both commercial television and non-broadcast types of food marketing⁶⁷. In particular, this relationship has been observed in relation to the EDNP foods consumption. It is important to highlight why digital marketing is the main influence in this behaviour: it facilitates active engagement compared to television or ambient forms of marketing that are more passive⁶⁸. Therefore, there is a strong need to ensure more responsible marketing practices and to increase transparency in company research concerning behavioural targeting, in general and to youth in particular. Interactive marketing's ability to reach and influence consumers will continue to grow, as it further incorporates knowledge from semantics, artificial intelligence, neuroscience, and many other fields, making more urgent the need to protect consumers from being negatively manipulated by those techniques. One possible dimension that could influence consumer behaviour is trust. According to Rajkovic' et al.⁶⁹ study on how companies could influence attribute "trust" in their social media communication, communication within and towards a virtual community and the related trust-building mechanisms in an online environment strongly influence purchase decisions. This highlights the important role of digital media in consumers' decisions. Media coverage of health-related issues has increased recently, which has made people more aware of their health and motivated to live healthier lives. Additionally, "green" customers have emerged due to the rising expenses of the environment⁷⁰. Geographically, the demand for safe and healthy food among consumers in Central and Eastern European nations is rising because of rising levels of globalisation, education, and money⁷¹. Although identifying the "green consumer" segment has historically been a method of addressing the question of how marketing relates to sustainable consumption⁷², academics are now urging research on the factors that influence sustainable consumption⁷³. Marketing professionals may broaden their market for the long-term joint benefit of their company and the environment rather than focusing just on the green customer sector. Therefore, as businesses operate and provide goods and services in a more sustainable way, they might also hope that consumers will acknowledge, support, and reward their sustainable actions and values in a way that encourages sustainable consumption and maximises the firm's sustainability and strategic business benefits.

⁶⁷ Scully, M. Wakefield, M. Niven, P. Chapman, K. Crawford, D. Pratt, I.S. Baur, L.A., *Association between food marketing exposure and adolescents' food choices and eating behaviors*

⁶⁸ Montgomery & Chester, 2009.

⁶⁹ Rajkovic, B. Đuric, I. Zaric, V. Glaben, T. *Gaining trust in the digital age: The potential of social media for increasing the competitiveness of small and medium enterprises*, 2021.

⁷⁰ Peattie and Ratnayaka, 1992.

⁷¹ Anderson, 2000; Zakowska-Biemans, 2011.

⁷² Anderson and Cunningham 1972; Kilbourne and Beckmann 1998.

⁷³ Kotler 2011; Menon and Menon 1997; Mick 2006.

Chapter 3

Case study on Meat Substitutes

3.1 Background and consumer acceptance

3.1.1 PBM and CBM

Global production and consumption of meat is increasing in demand, mostly driven by population growth, individual economic gain, and urbanisation. According to the Food and Agriculture Organisation (FAO) of the United Nations, the global demand for meat will reach 455 million metric tons by 2050 (a 76% increase from 2005)⁷⁴, as a result of both improving living circumstances for some of the population and an expanding world population (which increased from 3 billion to 7.6 billion during the same era). This exponential rising in demand is problematic if we look at the methods of large-scale animal husbandry and their link to social and environmental issues: if on one hand, farming technology and intensification of animal agriculture increase the cost-efficiency and production volume of meat, on the other they inflict negative externalities on public health, the environment and animal welfare. In response, research and industries are working to improve different alternatives by introducing an advanced cellular agriculture methodology. It is possible to identify two main approaches that try to generate food from non-animal sources: *plant-based meat (PBM)* and *cell-based meat (CBM)*. The first alternative seeks to approximate the texture, flavour, and/or nutrient profiles of farmed meat by using ingredients derived from pulses, grains, oils, and other plants and/or fungi. PBM products can be differentiated into *traditional* (tofu), that include relatively simple derivatives from soybeans and have existed for centuries with their first development in Asia, and *novel*, which have only been commercialised more recently since they are characterised by particular sensory characteristics and constitute near equivalent replacements for animal based meat (ABM) with regard to taste, texture, and nutrition. The CBM option, also referred to as cultured meat, *in-vitro* meat, lab-grown meat, cellular meat, cultivated meat, or clean meat grown, consists in meat produced by cultivating cells (like in muscles or fat cells) as opposed to farming animals. CBM technology is based on advances in stem cell biology and tissue engineering, for this reason it is currently for the most part in the prototype stage of development. In their study, Verbeke et al.⁷⁵ tested how information treatment influences willingness to try cultured meat. In 2013, the Maastricht University team led by Prof. Mark Post created the first hamburger ever manufactured

⁷⁴ Alexandratos, N. & Bruinsma, J. *World Agriculture Towards 2030/2050: The 2012 Revision*. Agricultural Development Economics Division, 2012.

⁷⁵ Verbeke, W. Sans, P. van Loo, E.J., *Challenges and prospects for consumer acceptance of cultured meat*. J. Integr. Agr. 2015, 14, 285–294.

using in vitro meat grown from a culture of bovine muscle cells. Sergey Brin, a co-founder of Google, contributed \$325,520⁷⁶ to its funding and a large portion of that share was spent to construct the lab. However, according to Prof. Post, producing vast amounts of meat, improving its quality, and bringing down production costs significantly enough to make it competitive would require ten years and a significant investment and more awareness need to be spread among consumers compared to the consumption of PBM.

3.1.2 Market share and expansion: data and causes

The new meat market faced an enormous growth: by 2023, the market value of PBM worldwide was already of was \$4.63 billions in 2018 and it is estimated to be worth \$6.43 billions in 2023⁷⁷, a number which is expected to steadily rise over the next years, probably reaching 16.7 billion in 2026⁷⁸. In addition, the number of publications concerning the introduction of meat substitutes has risen over recent years: in the 1970s there was just one publication, focusing on research

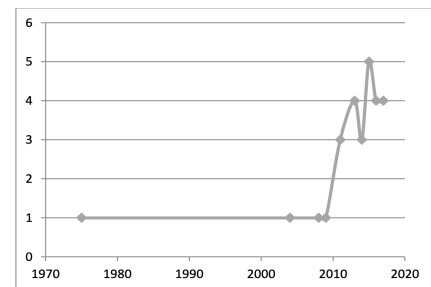


Figure 5. Number of publications per year (for 2018, only publications until February are included)

on meat substitutes, while in both 2015 and 2016 there were four publications on this topic (Figure 5)⁷⁹. Multiple reasons exist behind the exponential growth of the meat substitutes market, which revolve around the idea of sustainability of food consumption. This topic is mainly related to three main dimensions: ecological, social, and economic. Regarding environmental issues, animal agriculture industry is strongly interconnected with greenhouse gas emissions, land use, and water use. The United Nations Intergovernmental Panel on Climate Change released a 2018 report stating that greenhouse gas emissions must be reduced 45% by 2030 to prevent global temperatures from increasing 1.5 °C and animal welfare can be an important issue to fight. However, a fourth important dimension can be added: health. Eating behaviours with high meat rates are far from being sustainable⁸⁰: although moderate consumption of red meat might play a positive role in cancer prevention⁸¹, overly high meat consumption is thought to have negative impacts on human health, causing food-borne illness, diet-related disease, antibiotic resistance, and infectious disease⁸². More

⁷⁶ Fountain, H., *A Lab-grown burger gets a Taste Test*. New York Times, 2013.

⁷⁷ Newswire, P.R., *Meat Substitutes Market 2018 – Global Forecast to 2023*. Research and Markets, 2018.

⁷⁸ Global meat substitutes market revenue 2016-2026. Statista Research Department, 2021.

⁷⁹ Opportunities for the Adoption of Health-Based Sustainable Dietary Patterns: A Review on Consumer Research of Meat Substitutes.

⁸⁰ Oostindjer, M. Alexander, J. Amdam, G.V. Egeland, B., *The role of red and processed meat in colorectal cancer development: A perspective*. Meat Sci., 2014, 97, 583–596.

⁸² Larsson, S.C. Wolk, A. *Meat consumption and risk of colorectal cancer: A meta-analysis of prospective studies*. Int. J. Cancer, 2006, 119, 2657–2664.

Song, Y. Manson, J.E. Buring, J.E. Liu, S. *A Prospective Study of Red Meat Consumption and Type 2 Diabetes in Middle-Aged and Elderly Women*. Diabetes Care 2004, 27, 2108–2115.

Taylor, F. Burley, V. Greenwood, D.C. Cade, J.E. *Meat consumption and risk of breast cancer in the UK Women's Cohort Study*. Br. J. Cancer 2007, 96, 1139–1146.

than 1.8 million people die each year from heart disease, a quarter of which is linked with overconsumption of certain meat products⁸³. The Stanford School of Medicine demonstrated that participants to a clinic trial who substituted PBM for ABM over eight weeks exhibited lower risk for cardiovascular disease⁸⁴. Moreover, PBMs production involves lower risks of food poisoning or contamination as compared to ABM, which usually leads to animal waste and slaughtering. This leads to a strong rising of clean consumption trends and costumers' willingness to understand of what they are eating⁸⁵: modern consumers always search for clearer labels and ingredients, while producers try to opt for high-performance but simple ingredients, coming from low-processed food. In this regard, PBMs include multi-functional and natural ingredients, such as fibres, starches, gums, and other stabilisers, as well as plant-based proteins. In late 2018, a cell-based small steak was created by an Israeli laboratory, but its unit price was \$50⁸⁶, which was still too expensive for the market. It is possible to state, then, that the overall consumers and companies' awareness increased in the past years, searching for more sustainable products in their entire production: from ingredients to packaging and transportation. A more sustainable diet should, thus, include less meat consumption by potentially replacing meat by meat substitutes.

3.1.3 Market segmentation and consumer categorisation

This market is forecast to expand even further, since the number of consumers that prefer meat alternatives keep rising and investing in product innovation⁸⁷. Especially during the COVID-19 outbreak in 2020, consumers started being more concern about health issues: consequently, the demand for meat substitutes has experienced substantial growth and the demand for PBMs increased also as a compensation of shortage of meat products. However, this industry has a different market share depending on different segmentations: *product type*, such as TVP-based with a major market share; *source*, such as soy-based with the highest revenue in 2020; *category*, such as frozen with the highest revenue in 2019 (frozen burgers, sausages, nuggets, pizza), refrigerated, and shelf stable; and *region* across North America, Europe, Asia-Pacific, and LAMEA⁸⁸. It is therefore essential to understand how consumers classify products into different categories, defined as a set of similar objects that have one or more characteristics or functions in common. There exist different set of categories: taxonomic categories, where products within share certain physical characteristics that are relevant to consumers; goal-derived categories, where products can lead to similar results or

⁸³ Key, T. J., Davey, G. K. & Appleby, P. N. *Health benefits of a vegetarian diet*. Proc. Nutr. Soc. 58, 271–275, 1999.

⁸⁴ Crimarco, A. et al., *A randomized crossover trial on the effect of plant-based compared with animal-based meat on trimethylamine-N-oxide and cardiovascular disease risk factors in generally healthy adults: Study With Appetizing Plantfood*. Meat Eating Alternative Trial, 2020.

⁸⁵ Chouhan, N. Vig, H. Deshmukh, R. *Meat Substitute Market by Product Type (Tofu-Based, Tempeh-Based, TVP-Based, Seitan-Based, Quorn-Based, and Others), Source (Soy-Based, Wheat-Based, Mycoprotein, Pea-based and Others), and Category (Frozen, Refrigerated, and Shelf Stable): Global Opportunity Analysis and Industry Forecast, 2021–2030*. Allied Market Research, 2022.

⁸⁶ Carrington, D., *World's first lab-grown steak revealed – but the taste needs work*. Guardian, 2018.

⁸⁷ I will add some data to this point

⁸⁸ Latin America, Middle East and Africa.

outcomes; or categories where products that play the same role in a routine or event, such as products used for breakfast time or at a birthday party. Meat substitute products are mainly influenced by a taxonomic classification⁸⁹ of meat, thus based on its animal source, might it be pork, beef, or chicken. *How to make people increase meat substitutes consumption?* To achieve a successful replacement of meat by new sustainable meat substitutes, consumers need to recognise these products as a substitute for meat. However, even if this could be a difficult process, there are different ways to make sure alternative products are not too similar nor too dissimilar from the original ones: firstly, meat substitutes should be positioned as a fellow category of processed meat products by having a similar visual appearance and by avoiding a direct comparison to typical meat products; secondly, they should have a similar application in meals which increases the degree of similarity with meat. In this regard, Desai and Ratneshwar (2003)⁹⁰ demonstrated how buying intentions of certain alternative products significantly increased when these atypical products were placed in goal-based shelf displays instead of taxonomic shelf displays.

Innovative products are constantly asked by consumers: innovation is thus a key aspect in the sector. It can be involved in providing a wide range of ingredients with different nutritional values or labor allowing for more choosing power and diet variety. Numerous small-scale startup brands started growing in this market space, being recognised by already big food and beverage existing companies: one example, is the acquisition of the Netherlands-based meat substitute brand “the Vegetarian Butcher” by Unilever (December 2018). One decisive factor for a successful product launch of these products is consumer-related preferences and willingness to pay (WTP), plus a surplus for the added value of product innovation⁹¹. Therefore, before the launch of a product, a deep and strong market research is needed to estimate the product’s potential and future positive impact. Especially in the beginning, the innovative food market faced an high rate of failure (65-90%)⁹², which could be caused by a lack of consumer understanding, insufficient market orientation from the producers’ point of view or food neophobia. In order to reduce this risk in the meat substitute sector, it is essential to pursue a careful market research into target consumer segments.

⁸⁹ Hoek, A.C. Boekel, M. Voordouw, J. Luning, P.A. *Identification of new food alternatives: How do consumers categorize meat and meat substitutes?* Food Quality and Preference, 2011.

⁹⁰ Desai, K. K., & Ratneshwar, S., *Consumer Perceptions of Product Variants Positioned on Atypical Attributes*. Journal of the Academy of Marketing Science, 2003, 31, 22–35.

⁹¹ Horowitz, J.K. McConnell, K.E., *A Review of WTA/WTP Studies*. J. Environ. Econ. Manag. 2002, 44, 426–447.

Zhao, J. Kling, C.L., *Willingness to pay, compensating variation, and the cost of commitment*. Econ. Inq. 2004, 42, 345–358.

⁹² Siegmund, B. *Food Sensors as an Essential Tool in Quality Assurance and Product Development*. University of Technology: Graz, Austria, 2010.

3.1.4. Consumer acceptance and innovation-decision process

Consumers' adoption of meat substitutes is based on an innovation-decision process (Figure 6)⁹³, a model that could be adapted to determine whether a consumer decides in favour of a meat substitute or rejects it. Following the Rogers' model, five stages can be identified.

The first stage is knowledge where consumers learn about meat substitutes (processes, ingredients etc...) and

the information received strongly influence consumer's potential adoption. According to a 2018 Switzerland study, providing information on the final product – such as its availability and benefits (e.g., health benefits of eating less meat), rather than its technical processes, would be the most successful strategy⁹⁴. Secondly, there is persuasion consisting in consumers' – positive or negative – evaluation of the available information. Nowadays, there are multiple barriers that block consumers to be persuaded such as the taste and appearance, habits, personal characteristics such as sociodemographic variables, food lifestyle and attitudes. However, positive factors such as animal welfare, environmental and health concerns compensate the negative aspects. Subsequently, there is the final decision of consumers which can be wither the adoption or rejection in trying the substitute. In this regard, numerous consumer studies on meat substitutes show that at this stage consumers decide mainly in terms of appearance and sensory rather than on environmental arguments⁹⁵. The implementation stage, different from the previous one, consists in the regularly consumption of the substitute⁹⁶. *Is the aim of meat alternatives to totally substitute meat in meals or are consumers just looking for an alternative that does not have to be meat-like?* In both Italy and in the Netherlands, this phase is easily influenced by health and environmental issues⁹⁷, with consumers put more emphasis on the meat substitute in the daily context of a meal, in contrast to the more experimental setting. Again, some barriers exist such as lack of availability, incompatibility with local food, high prices and insufficient information on the food package as well as uniform taste and consistency, These barriers can also have cross-cultural differences, thus marketing needs to be adjusted for each

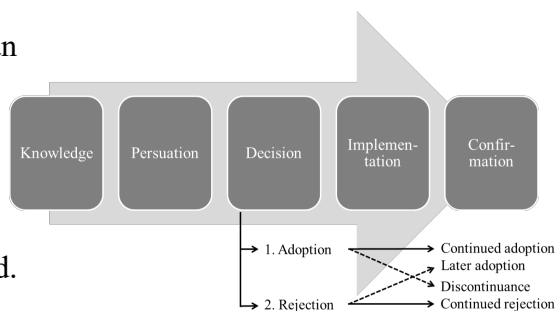


Figure 6. Roger's innovation-decision process

⁹³ Rogers, E.M. *Diffusion of Innovations*, 4th ed. The Free Press: New York, NY, USA, 1995.

⁹⁴ Siegrist, M., Sütterlin, B. & Hartmann, C., *Perceived naturalness and evoked disgust influence acceptance of cultured meat*. *Meat Sci.*, 2018, 139, 213–219.

⁹⁵ Hoek, A.C.; van Bockel, M.A.J.S.; Voordouw, J.; Luning, P.A. Identification of new food alternatives: How do consumers categorize meat and meat substitutes? *Food Qual. Prefer.* **2011**, *22*, 371–383.

⁹⁶ Elzerman, J.E. Van Bockel, M.A.J.S. Luning, P.A. *Exploring meat substitutes: Consumer experiences and contextual factors*. *Br. Food J.*, 2013, 115, 700–710.

Menozzi, D. Sogari, G. Veneziani, M. Simoni, E. Mora, C., *Eating novel foods: An application of the Theory of Planned behaviour to predict the consumption of an insect-based product*. *Food Qual. Prefer.*, 2017, 59, 27–34.

De Boer, J. Schösler, H. Aiking, H. *'Meatless days' or 'less but better'?* Exploring strategies to adapt Western meat consumption to health and sustainability challenges. *Appetite*, 2014, 76, 120–128.

⁹⁷ the brand-new market does not provide enough information about this stage yet.

ethnic target group. For example, Bosman et al.⁹⁸ found cultural differences in South Africa between Blacks, Indians and Whites, or a high consumer acceptance for PBM products was recorded in China (95.6%) and India (94.5%), compared to the United States (74.7%)⁹⁹. Finally, there is the confirmation phase where consumers can sometimes revise decisions¹⁰⁰. Policy makers can here have a strong power in developing strategies to reduce meat consumption or rather increase consumption of meat substitutes, for example through *nudging* or marketing campaigns or by supporting start-ups developing and selling meat substitutes. A 2020 Netherlands study reported that educating consumers on the personal and societal benefits had a positive impact on consumer acceptance¹⁰¹: for example, nomenclature of meat grown from cell cultures may also influence consumer perspective.

3.1.5 Key companies in meat substitutes production and their marketing campaigns

After having provided an insight on the differences between meat substitutes and their market characteristics, a brief and general explanation of the key players in this sector must be made. The recent boom in global meat consumption has resulted in a comparable increase in industrial meat production, allowing vast amounts of meat to be sold at low rates by taking advantage of lower animal feed costs, reduced labour costs, and the quick growth periods of new high-yield breeds. A small group of multinationals now controls the whole supply chain from animal genetics to feed manufacturing, medications to breeding, and slaughter to distribution, concentrating power in the hands of a few huge businesses. Farmers are dwindling in number, but the number of animals per farm is growing. Therefore, the meat-substitute market had become hyper-competitive, with several new and existing brands entering the segment. The major brand is the world-wide known BeyondMeat company with its increasing revenue from \$16.2 million in 2016 to \$87.9 million in 2018. The total available market for plant-based meat was expected to achieve a size of \$100 billion by 2034 and, out of this, Beyond Meat is expected to generate at least \$5 billion in net revenue. An interesting issue is how, according to Will Schafer, Beyond Meat's vice-president of marketing, the company's customers were mostly meat eaters: more than 90 percent of consumers who purchased the Beyond Burger also purchased animal protein. Consequently, the focus of Beyond Meat was not for vegetarian consumers, but rather, flexitarians who were trying to increase their weekly plant-based intake to eat in a more healthy and sustainable fashion. It is interesting to see, also in relation to the idea of influencer marketing, how the company partnered with many celebrities such as Tia Blanco, Leonardo DiCaprio, and Snoop Dogg, whose interest in organic products and involvement with

⁹⁸ Bosman, M.J.C. Ellis, S.M. Bouwer, S.C. Jerling, J. Erasmus, A.C. Harmse, N. Badham, J., *South African consumers' opinions and consumption of soy and soy products*. Int. J. Consum. Stud. 2009, 33, 425–436.

⁹⁹ Bryant, C., Szejda, K., Parekh, N., Desphande, V. & Tse, B., *A Survey of Consumer Perceptions of Plant-Based and Clean Meat in the USA, India, and China*. Front. Sustain. Food Syst., 2019, 3, 11.

¹⁰⁰ Perignon, M. Vieux, F. Soler, L.G. Masset, G. Darmon, N. *Improving diet sustainability through evolution of food choices: Review of epidemiological studies on the environmental impact of diets*, 2017, 75, 2–17.

¹⁰¹ Rolland, N. C. M. Markus, C. R. & Post, M. J. *The effect of information content on acceptance of cultured meat in a tasting context*. PLoS, 2020.

Beyond Meat helped promote the company's overall mission. With its closest rival, Impossible™ products, BeyondMeat introduced a new class of PBM products that more closely mimic ABM compared to the previously established texturised vegetable protein items. These products may be viewed as “highly processed” compared to traditional vegetable burgers and may alienate “clean label” consumers, who are concerned about “unnatural” methods of food production. In order to follow the sustainability trend, also several fast-food chains started offering meat-free products, either by collaborating with Beyond Meat or Impossible Foods or by developing their own proprietary offerings. For example, the McDonald's and BeyondMeat three-years partnership over the production of a new McPlant menu; Nestle's own meat-free burger; Burger King collaboration with Impossible Foods to launch Impossible Burger; and Del Taco partnership with Beyond Meat to launch Beyond Taco. Among companies that are trying to focus on CBM creation and distribution we can find the American Mosa Meat (connected to Mark Post) and the American Memphis Meats, which produce in vitro meat. A huge investment of 22 million dollars has been made by Bill Gates, Richard Branson (Virgin Group), and the multinationals Cargill (the first food multinational to invest in cultivated meat) and Tyson Foods, considered to be the major protagonists of industrialised animal husbandry in recent decades and leaders in the meat market¹⁰². In order to fund the production of cage-free eggs and meat, Bill Gates is also investing in the business Impossible Foods, which is strongly supported also by companies such as Open Philanthropy, Temasek, Khosla Ventures, UBS, GV (Google Ventures), Viking Global Investors, and Horizon Ventures with a total investment of 300 million dollars¹⁰³. Also different start-ups decided to invest and generate new alternatives to plant-based meat: in the US, the Modern Meadow company has created “steak chips” composed of cultivated skin, hydrogel, and muscle cells, or the Finless Foods company, is focusing on aquaculture and developing shrimp from genetically modified algae to acquire proteins; in Israel a \$300 million trade agreement between China and Israel that was concluded in 2017 created big benefits to companies such as SuperMeat, Future Meat Technologies, and Meat the Future. In addition, several academic institutions have labs with an interest in this field: The University of Bath, University of Ottawa, Tufts University, and North Carolina State University have all received funding from the New Harvest Cultivated Meat Advocacy Group for their study. A research organization in Japan called *Shojinmeat*¹⁰⁴ is active, and in 2018, the Japanese government helped fund a start-up company called *Integriculture*, which is known for making “cultivated” foie gras¹⁰⁵.

¹⁰² *Plant-Based Profits: Investment Risks and Opportunities in Sustainable Food Systems*. FAIRR, 2018 <https://www.fairr.org/article/plant-based-profits-investment-risks-opportunities-sustainable-food-systems/>

¹⁰³ Loizos, C., *Impossible Foods just raised 75 million dollars for its plant-based burgers*. Campfire, 2017.

¹⁰⁴ Swartz, E., *The Science Behind Lab-Grown Meat*, 2017.

¹⁰⁵ Starostinetskaya, A., *Japan part of 2,7 million investment in new clean meat brand*. VegNews, 2018.

3.2 Regulatory Framework

With this strong new network of companies, a legislation is required to reassure customers about the safety of innovative meat, to retain competition with other research-intensive nations (Israel, the Netherlands, for example), and to attract additional corporate and governmental investment in research. A regulation would create a market for these goods and reconcile state legislative measures, which have benefited breeders' groups in the past, preventing requests to use the term "meat" for alternative products.

3.2.1 European law on food safety

While the USDA and FDA announced a framework agreement to regulate the production of synthetic meat in early March 2020, as demanded by meat substitute producers in previous years, the European Novel Foods Regulation requires a technical assessment of meat analogues' safety for humans, animals, and the environment. As previously stated, Europe is now the largest market for the consumption of meat alternatives, with its world's largest share in 2017 (39%)¹⁰⁶. As a consequence, it is fundamental to develop a better understanding of its food regulatory framework and governmental rules on food products. Therefore, *how does European food law apply to alternative meat products?* Article 191(2) of the Treaty on the Functioning of the EU outlines the precautionary principle, which originally applied only to environmental protection, while now it includes all aspects of health and safety. The precautionary principle in food law applies where there are good reasons to believe there is an unacceptable degree of danger to health and the knowledge and data supporting those concerns are insufficiently complete to allow for a thorough risk assessment (Article 7 of the General Food Regulation). Genetically modified foods are among the novel and alternative foods that must be subjected to the above-mentioned EU's precautionary approach and need pre-market authorisation, which should be transparent and based on scientific risk assessment, as stated in the General Food Regulation EU/178/2002. Together with the promotion of a precautionary approach and permission of the free movement of food throughout the EU, the EU Food Law (Regulation EC No. 178/2002) establishes general principles and objectives for safeguarding consumer interests, and health as well as fair trade practices in the food industry. The EU has strictly controlled innovation in the food industry since it came into effect in 2002. The European Food Safety Agency (EFSA) was established by the 178/2002 Regulation, which was created in response to a number of food safety scares in the late 1990s and early 2000s, including the outbreak of bovine spongiform encephalopathy (BSE). This independent organisation is responsible for ensuring the safety of foods sold on the European market and providing guidance for the creation of EU-wide food policy. The legislation in

¹⁰⁶ Froggatt, A. Wellesley, L., *Meat Analogues. Considerations for the EU*. Chatham House The Royal Institute of International Affairs, 2019.

matter of genetically modified foods was subjected to various changes through time: firstly, the Novel Food Regulation was established in 1997 (EC/258/1997), then the Genetically Modified Food Regulation (EC/1823/2003), and finally the new and current Novel Food Regulation (EU/2015/2283) was issued in 2015. The latest Regulation is used to examine all non-GM novel foods and introduces a more simplified and straightforward notification process for all foods that were not consumed in Europe before to 1997 but were traditional in third countries (e.g., plants and fruit that were utilised in third world nations but not in Europe as well as insect and macro-algae species that have been employed for a long time, like in Asia). Furthermore, the Regulation assures that these Novel Food items are: (a) safe to consume; (b) correctly labeled so as not to deceive customers; and (c) not nutritionally inferior when compared to any current food they intend to replace. The European Commission, acting as the risk manager, makes authorisation decisions after the European Food Safety Authority (EFSA) has assessed the scientific data over alternative food and it has a central role in examining the supply and demand situation for plant proteins in the EU. Among the main objectives, the Novel Food Regulation identifies the protection of human health, consumer interests, and the efficient operation of the internal market, while the GM Food Regulation (EC/1823/2003) also states the free flow of products and the preservation of human health. Other objectives including climate change mitigation, environmental protection, circular economy, provision of rural livelihoods, realisation of human rights, or transformation towards sustainable diets are only acknowledged in the Farm to Fork Strategy. As consequence, the EU's present regulation and policy can be mostly supportive of investments and research in alternative proteins. In 2012, the European Commission launched a flagship strategy called *Innovating for Sustainable Growth: A Bioeconomy for Europe*¹⁰⁷, in which it vowed to create new markets, technologies, and procedures to promote a resource-effective, low-emissions food system. Furthermore, the European Commission announced its "EU Protein Plan"¹⁰⁸ in late 2018 and states that a number of current EU policy instruments "offer alternatives for increasing the development of EU-grown plant proteins." This plan promotes the production of alternative proteins for human consumption. According to a 2018 expert assessment commissioned by the Directorate-General of Research and Innovation, creating novel meat substitutes is a critical step in realizing the European Commission's Food 2030 Initiative, which aims to create a climate-smart, sustainable food system in Europe¹⁰⁹. One one hand, as was already established, cultured meat technology offers the potential to provide safer, healthier meals without the risk of zoonotic disease and without the use of growth hormones or antibiotic residues. Due to the unique manufacturing method, all varieties of meals made from cultured animal tissue are regarded

¹⁰⁷ *Innovating for Sustainable Growth: A Bioeconomy for Europe*. Directorate-General for Research and Innovation (European Commission), 2012.

¹⁰⁸ Report from the Commission to the Council and the European Parliament on the development of plant proteins in the European Union. European Commission, 2018.

¹⁰⁹ *Recipe for change: An agenda for a climate-smart and sustainable food system for a healthy Europe*. European Commission Directorate-General for Research and Innovation, 2018.

as novel foods in Europe. To date cultured meat was legally approved only in Singapore (late 2020), while in Europe tastings of CBM can only be done in Germany and France. The GMO food regulation is applicable if the cell lines employed in the bioreactor are genetically modified¹¹⁰. According to Petetin¹¹¹ (2014), the EU Novel Food Regulation must be further developed in order to address cultured meat. Furthermore, the precautionary approach used by the EU with cultured meat may result in strict requirements that farmers are unable to achieve¹¹². On the other side, regulating cultured meat as a natural science problem is inherently undemocratic, non-transparent, and exclusive¹¹³. Regulators may use science as a cover and advance just one set of moral standards, the technocratic one. Therefore, the endorsement of cultured meat could represent a confirmation of the demand for meat and the inevitability of meat consumption. On the other hand, we have plant-based meat. Since this group of alternative proteins is not regarded as a novel food in the EU, they have unquestionably the simplest entry to EU markets of all the meat substitutes¹¹⁴. Although the product itself is not firstly conceived as a GMO, it is still unclear whether using genetically modified ingredients in the production process will cause the final product to be subject to the EU GMO regulation. Protein extraction and unique techniques of processing may change the nutritional impact of the final product, which might result in a novel food and influence the regulatory pathway in the EU¹¹⁵. One first example is the scientific breakthrough of leghaemoglobin, an oxygen-carrying phytohemoglobin found in the nitrogen-fixing root nodules of leguminous plants. Considering structure, which is similar to hemoglobin, it can be used in plant-based products to imitate the colour, flavour, and texture of meat. Impossible Foods received FDA clearance in the US in 2019 to utilise soy haemoglobin in foods, with Asia serving as the firm's primary market. The company has also made an attempt to influence the EU market about the usage of genetically modified yeast in the process of making soy haemoglobin, by submitting the request for the end-authorisation products in the Netherlands in September 2019. Mung bean protein, created by the US start-up JUST, is another illustration of a revolutionary plant-based protein-rich food component. At least in the US, the protein extraction method is protected by patents, however, to access the EU markets the company had to file an application for consultation to ascertain the status of a novel food, following Article 4 (2) of the Novel Food Regulation. The product's existence outside of the EU since November 2017 and the absence of any recorded negative effects were irrelevant for its position (UK Food Standards Agency) and in 2019 the protein isolate was categorised as a novel food because it has never been consumed in the EU area before. Consequently, the company JUST must submit a permission request and

¹¹⁰ Stephens et al., 2018.

¹¹¹ Petetin, L., Senior Lecturer in Law, Cardiff University,

¹¹² Norton, 2015, p. 178.

¹¹³ Lee, 2018.

¹¹⁴ An der Weele et al., 2019.

¹¹⁵ Stephens et al., 2018.

support its claims with data on nutrition and safety. A third and final example is the 3D printing technology used by the Nova Meat company to create plant-based “beef” steaks and “pork” skewers, allowing for complete control over the texture and look of the final product. They use a variety of plant-based ingredients to create their meat-imitating goods, including brown seaweed extract, olive oil, pea isolate, and rice isolate. However, regardless of whether the ingredients are unique, the production process of 3D printed foods in Europe qualifies them as novel foods¹¹⁶.

3.2.2 European law on food marketing and labelling issues

All food products must adhere to the basic marketing and food marketing standards identified in the Food Information to Consumers Regulation (FIC)¹¹⁷, which specifies labelling requirements for all foods. The protection of consumers, the internal market, and the elimination of trade barriers are all connected to the goals of the regulation¹¹⁸: food product’s ingredients must be disclosed in decreasing order by weight, GMO foods must be labelled (if they include at least 0.9 percent GM materials), allergies must be clearly identified, and nutritional data must be supplied. Labels, flyers, and advertising cannot make any false or deceptive marketing claims¹¹⁹. It is unclear at this time if the production technique for cultured meat products, or 3D-printed food, needs to be labelled: if a label is necessary, it shouldn’t seem like a warning, but information on the production process should be provided. Together with the FIC¹²⁰, the European regulation on the food labels is based on other two main sources: specific standards on specific foods and the Quality Schemes for protecting products of specific geographical location and traditional specialties. As a rule, it is mandatory for the food name to be visible on the package and the name should differentiate the product from its similars to make its nature more understandable to costumers. There are three types of food names defined in EU law. Firstly, if a name has a legal definition, it should be utilised (e.g., honey). However, only a small number of food names have legal definitions inside EU rules; in those cases where there is not one at the European level, the member state’s legal definitions must be applied. If neither of these exist, a common name ought to be chosen. Secondly, the customary name is accepted by customers in the Member State where the product is sold without more explanation. Finally, the descriptive name is used if there is no customary name. The EU food standards include broad labelling requirements as well as limitations and guidelines for the content and quality of goods. These deal with the protection of particular words, including milk, cheese, hops, milk, pig meat, beef, pig meat, chicken, and so on¹²¹, which are protected from substitution by similar ingredients. The growing market for synthetic and plant-based “substitute” goods does not easily fit inside the

¹¹⁶ Baiano, 2020.

¹¹⁷ EU Regulation No. 1169/2011.

¹¹⁸ Ohm Rrdam, 2013.

¹¹⁹ Food Information Regulation, Article 7.

¹²⁰ EU Regulation No. 1169/2011.

¹²¹ European Commission 2008; Case C-1 95/14, Tee- Kanne, 2015.

parameters of current EU food regulation, since it mainly aims at protecting economic interests of important agricultural sectors and customers from food fraud and unintentionally purchasing inferior replacement items was also deemed crucial. However, as above mentioned, the emerging vegan and vegetarian “substitute” business is geared toward customers who are particularly looking for products with alternative qualities, for reasons like health, the environment, or animal welfare. The European Court of Justice has declared in the 2017 “TofuTown” ruling that reserved dairy names cannot be used even when paired with clarifying designators like “vegan” or “plant-based,” which is relevant to the naming of vegan dairy replacements. The judgement was justified by the fact that the EU treaties grant the Union broad discretion to achieve the CAP’s goals in areas pertaining to the Common Agricultural Policy (CAP). However, there is a deep level of uncertainty for companies that are on the vegetarian/vegan market differences in national rulings and unclear legal directives. Companies have resorted to customary names in the lack of legally specified “meaty” names at the EU level, while Court cases are now pending in several Member States, and this will ultimately be determined on a case-by-case basis by national or EU level courts¹²². For example, new French food labelling regulation went into effect at the beginning of 2021, banning “meaty” designations for plant-based goods. For instance, France ought to rebrand Beyond Burger. In addition, the Finnish business Pouttu tried to market their product as “plant meat,” but this was considered as illegal¹²³. Further disputes and lawsuits developed over the use of the name “meat” to denote cell-based alternatives in the United States, where the two largest plant-based alternatives firms, Impossible Food and Beyond Meat, are located. Some operators have argued that cultured meat should be referred to as “clean meat” in order to appeal to customers and draw emphasis to the fact that it is “clean” rather than “cultivated.”¹²⁴. Breeders’ organisations, on the other hand, object to this classification since meat derived through animal husbandry is seen as “dirty” meat. The cultured meat business also rejects terms like “synthetic” or “artificial” meat since they indicate a negative association with the synthetic biology industry. As a result, Memphis Meats’ more neutral phrase “cell-based meat” is preferred. These naming difficulties and controversies reflect the uncertainty about what this product is, as well as the diverse political sensitivities of the many stakeholders surrounding its stance. Names and labels are crucial in determining whether a customer feels alienated or engaged in their eating behaviour. In the United States, for example, the Cattlemen’s Association (USCA) has previously asked that the Department of Agriculture (USDA) restrict the use of the term “meat” for products that do not derive from animals, filling a legislative gap that alternative meat companies exploit in some states. In the absence of a federal law, a dozen US states have passed laws in recent months requiring the use of the term “meat” on labels only if the meat comes from a “animal born, raised, and slaughtered in the

¹²² Carreno & Dolle 2018.

¹²³ Raeste, 2019.

¹²⁴ Friedrich, B., *Clean meat consumer survey: Public is hungry for clean meat!*. Good Food Institute, 2018.

traditional way”); some associations and companies that produce alternative meat and use the term “meat” on their packaging have sued.

3.3 Special case: the Netherlands

The Netherlands, which ranks second globally despite its small size and is renowned for its fresh products, such as potatoes and onions, which account for more than 13 percent of its total agricultural exports each year, has consistently maintained its position as one of the world’s top agricultural exporters. However, it’s also building a reputation as an innovative pioneer in the plant-based industry, since it is currently home to over 60 businesses and research institutions that are especially dedicated to creating cutting-edge sustainable vegan meat substitutes. As we’ve already seen, some of the meat-free brands that are available include The Vegetarian Butcher, the plant-based cheese startup Violife, and Vivera, the nation’s largest manufacturer of plant-based meat substitutes, which is still working to expand its product line and offerings as demand rises. It is also important to mention the food technology startup The Protein Brewery: this company uses microbial fermentation to create substitute protein ingredients that require 5% less water, 1% less land, and 3% less carbon emissions than conventional beef. In this country meat substitutes were part of the diet of many consumers already in the late ‘00s. As part of a Sustainable Technology Development (STD) programme established by the Dutch government, Dutch researchers had already identified meat substitutes as a food category with enormous potential to reduce the country’s greenhouse gas emissions when they were looking into effective ways to meet the Kyoto protocol’s mitigation targets. However, at the time, rather from being used for environmental reasons, meat substitutes were mostly consumed for reasons related to animal welfare and livestock diseases¹²⁵, and mainly focused on plant-based alternatives. Even though the topic was first purely academic, by late 2006, scientific understanding had begun to spread quickly to the public. The realisation that current meat consumption is unsustainable occurred between about 2007 and 2010, steadily transforming the Dutch connection with meat and opening the door for innovative solutions to minimise this consumption. The publication of *Livestock’s Long Shadow* was the most significant event that contributed to the growth of increasing consumer awareness. According to this analysis, one of the top three sources of greenhouse gas emissions is the bio-industry, whose emissions are more than those from all forms of transportation combined¹²⁶. Inspired by the report, new attempts of governmental research on meat alternatives were conducted and a new series of reports was formulated to better understand the real environmental impact of meat and its possible substitutions in ordinary diets. For instance, a report published in 2011 found that a diet in which most proteins are provided by plants can be sufficient in

¹²⁵ Quist, 2007.

¹²⁶ United Nations Food and Agriculture Organization, 2006.

terms of protein, vitamins, and minerals¹²⁷, confirming that meat is not necessary for maintaining a balanced and healthy diet. While the European market for plant-based foods was exponentially increasing due to growing consumer demand, the Netherlands still consisted in one of the fastest-growing markets. However, the idea of cultivated meat must be further implemented. The Dutch government has been funding research into cultured meat since 2005, making it the first national government to do so. “The cultured meat project” operated until 2009 under the direction of Dr. Henk Haagsman of Utrecht University was a collaboration of numerous Dutch Universities, each specialised in one pillar of cultured meat production: tissue engineering, stem cell biology, and culture medium. However, only recently the Dutch House of Representatives approved a motion to legalise the sampling of cell-cultured meat products (123 votes in favour out of 150), which was proposed by the D66 and VVD parties¹²⁸. According to national producers, the legal development might open the way for retail sales of farm-raised beef within a few years. After having developed the first produced beef burger in 2013, Dutch cultured meat pioneer Mosa Meat recently secured a €2 million grant to expand cellular agriculture and provide cultivated beef to the EU market. What is particularly noteworthy is how the majority of Dutch people are calling for further government action to cut down on meat consumption and promote other proteins, from enacting a meat tax to outlawing industrial farming. The typical Dutch voter supports a decrease in animal protein consumption by at least a third over the next five years, according to a ProVeg Netherlands study done by Amsterdam-based electoral research firm Kieskompas. Overall, 63% of Dutch respondents agreed with the ProVeg aim of reducing the world’s use of animal protein by 2040. Many stated that reducing meat consumption will improve health, particularly to lower the likelihood of escalating zoonotic pandemics, a recommendation made recently by worldwide experts and scientists. By significantly reducing meat consumption, the Netherlands as well as entire Europe would surely achieve its climate goals in a shorter period of time. Some data show how 72% of Dutch citizens would change their diet in favour of vegan alternatives, while 80% of them firmly support the policy to broaden the selection of plant-based foods available in shops, using both dedicated and integrated aisles. Surprisingly, 52% of voters are in favour of introducing a higher meat tax and 70% of them supported the idea of an “intelligent meat tax” that would raise the price of meat while lowering the price of fresh vegetables as part of the EU’s “Farm to Fork” initiative to improve the sustainability of the bloc’s food chain. The Dutch Government promotes sustainable food production, by encouraging its producers to take account of the impact of food production on the environment and climate change. It also offers great support, by funding research and removing obstacles in legislation, to single companies to opt for the most sustainable production method. The founding of the Dutch Alliance for Sustainable Food represents

¹²⁷ Tijhuis, 2012.

¹²⁸ House of Representatives of the States General, 08/03/2022 <https://zoek.officielebekendmakingen.nl/kst-32627-38.html>

a significant and concrete accomplishment for the food sector, which include different partners such as the Dutch Food Retail Association, the Dutch Food Industry Federation (FNLI), the Association of Dutch Catering Organisations (VENECA), and the Dutch Federation of Agricultural and Horticultural Organisations (LTO). The government is also pushing in making livestock farming more sustainable by using alternative protein sources (insects, micro-algae, seaweed, pulses, mushrooms, or nuts) both for human food and animal feed. The Dutch phenomenon is the result of a combination between citizens' openness in reducing their meat consumption individually and their trust in the government to lead on the issue. The country has been a leader in food systems innovation and, along with its neighbours Belgium and Luxembourg, the Netherlands is therefore recognised as one of the major European “hubs” driving alternative protein innovation in the Benelux area¹²⁹.

3.4 Marketing of meat substitutes: some examples

Now that we have adequate information of this rapidly changing new reality, it is crucial to comprehend how customers really perceive it and how businesses are attempting to advertise it. As mentioned above, it is important to concentrate mainly on social media because it is where most firms are active and they strongly influence consumer behaviour, such as on Facebook, Instagram, and TikTok¹³⁰. Even though worldwide ad expenditure decreased by \$63 billion in 2020, spending on internet media climbed by \$29 billion (or 9.4%) over the same year¹³¹. Since the visual sense is typically the first to be exposed to food, a fundamental aspect in food marketing is the the imagery of meat substitutes, which also contributes significantly to consumer perceptions, as already presented in the first two chapters. For example, research supported by Australian Research Council found that warm hue, vertical symmetry, and horizontal symmetry in social media posts of meat substitutes result in a larger number of likes and a more favourable perception by customers. In particular, the combination of warm hue and vertical symmetry further enhances the appealing of the picture of the meat alternatives¹³². Some advertising campaigns for plant-based meat showed the presence of three meat myths, also referred to as “the three N’s of justification: eating meat is normal, natural, and necessary”¹³³, underling society’s unnecessary and unconscious reliance on meat. Firstly, an advert (1993) for a meat-



Figure 7. Advertisement for Quorn products

¹²⁹ Ho, S., *European Food Techs Raised €2.7 Billion In 2020, Propelled By Alternative Protein Funding*. Green Queen, 2021 <https://www.greenqueen.com.hk/european-food-techs-raised-e2-7-billion-in-2020-propelled-by-alternative-protein-funding/>

¹³⁰ Voorveld, 2019.

¹³¹ WARC, 2021.

¹³² Septianto, F. Kemper, J. A. Quang, H. P. Li, S. & Kwon, J, 2022.

¹³³ Joy, 2009, p. 96

free “*Toad in the Hole*”¹³⁴ from *Haldane Foods Group’s Vegetable Feasts* (Figure 7) replicates meat normality by using only potatoes and vegetables instead of sausages; secondly, a commercial for Morningstar Farms’ meat-free Streaky Strips and Back Bacon present meat alternatives as a new technology to save nature by keeping the same pleasurable and tasty experience, without making this process unnatural; lastly, an advertisement by *Linda McCartney Foods* (1992, figure 8) constants meat necessity by showing how dishes with Textured Vegetable Protein as the main ingredient can have the same amount of proteins in addition to less fat, no cholesterol and less calories than most meats.



Figure 8. Advertisement for Morningstar Farm’s bacon substitutes.

¹³⁴ a typical British dish that bakes sausages in batter

Discussion and Conclusion

The UN Food and Agricultural Organisation¹³⁵ states that *“sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy, while optimizing natural and human resources”*. According to predictions, there will be a rise in demand for meat when the world’s population approaches 10 billion in 2050. However, as consumers are constantly impacted by concerns about the environment, ethics, and animal welfare, 60% will either be CBM or replaced by PBM, according to the global firm AT Kearney, even if a recent US survey found that 95% of those who order a vegetarian hamburger at a fast-food restaurant are regular meat eaters. The debate on meat alternatives keeps evolving since meat consumption is widespread in Western culture and is intricately entwined with our society’s structure and culture¹³⁶, however there are some critiques centre on the effects of meat eating on personal health, the environmental effects of animal agriculture, and animal welfare. If for some consumers, meat substitutes, or commercial items aimed to replace meat, are suggested as an easy solution to these problems, others prefer dishes that don’t contain any mention of meat. The future of this new business will depend on factors such as more or less favourable regulations regarding labelling and food legislation, supportive financing policies, public investment, and communication campaigns to persuade meat consumers to switch to alternatives. However, the market share of such meat substitutes remains low despite the rising demand for them due to the environmental and health problems linked to excessive meat eating¹³⁷. Therefore, even if there is a higher overall awareness and understanding regarding the consumption of meat – for the entire process – people still search and consume meat substitutes if they are similar to the original meat (familiarity principle). Starting from meat substitutes, it is possible to state and generalize that marketing strategies are able to spread information among people and, thus, informing them about the possible existing alternatives when it comes to sustainability issues. It is therefore an essential process for the final implementation of consumer’s decisions. The digital media system is erasing the distinctions between content and marketing that have existed in the past. By seamlessly combining content, advertising, marketing, and direct transactions, online media may provide unmatched access to individual consumer data in addition to a variety of direct-response and brand-marketing alternatives. Instead, rather than disrupting programming, marketing strategies are now often woven into the fundamental structure of digital communications and everyday social interactions; they are frequently purposefully hidden. Although traditionally identifying the “green consumer” segment has

¹³⁵ FAO, 2016.

¹³⁶ Leroy & Praet, 2015.

¹³⁷ Godfray et al., 2018; González et al., 2020; McAfee et al., 2010.

been a focus of the interaction between marketing and sustainable consumption¹³⁸, academics now promote study on the variables that affect sustainable consumption¹³⁹. To eventually benefit their business and the environment, marketers might expand their target audience rather than merely targeting eco-aware consumers. Businesses may concurrently want customers to recognise, support, and reward their sustainable principles and behaviours to maximise both the firm's sustainability and strategic economic advantages. This is due to the possibility that customers may act in a similarly sustainable manner as businesses function and provide goods and services. Therefore, being sustainable is not only a consumers' concern, but also a business strategic approach: companies that adapt to the pressing need for sustainability that comes with our changing world are more likely to prosper over the long run and reap strategic benefits¹⁴⁰. Finding new goods and markets, using emerging technologies, encouraging creativity, boosting organisational efficiency, and inspiring and keeping personnel are all benefits of a sustainable business approach¹⁴¹. Additionally, studies show that adopting socially and ecologically responsible practices may boost a company's revenue as well as its reputation with customers¹⁴². However, there are some complications in fostering a more sustainable lifestyle among people.

First of all, it is important to make consumers aware of their biases by letting them know why, for instance, they struggle with change. Therefore, the best strategy might be influencing the environment, which impacts our sustainability-related decisions and behaviour, such as environmental (informational) nudges that ought to work in the setting of the contemporary world. Behavioural economics plays a crucial role in helping marketers to understand consumers' perception about a specific product and to find counter-alternatives to their biases. In terms of behavioural targeting, there is a clear need to assure more ethical marketing practices and to enhance openness in industry research. As more information from semantics, artificial intelligence, neurology, and other scholarly domains is incorporated into interactive marketing, its capacity to influence customers will only increase. Moreover, the need for strong public policy to safeguard people from increasingly intrusive and deceptive marketing tactics has become critical considering these changes. It is central to coordinate worldwide research and policy effort given the growing interest in addressing the part food marketing plays in the world, also related to serious issues such as juvenile obesity.

Secondly, fostering sustainable innovation and safeguarding the environment and customers against conceivable unexpected threats brought on by breakthrough technology or goods are inherently in tension with one another. For example, the shift to more sustainable food sources shouldn't be

¹³⁸ Anderson and Cunningham 1972; Kilbourne and Beckmann 1998.

¹³⁹ Kotler 2011; Menon and Menon 1997; Mick 2006.

¹⁴⁰ Banerjee, Iyer, and Kashyap 2003.

¹⁴¹ Hopkins et al. 2009.

¹⁴² Brown and Dacin 1997; Luo and Bhattacharya 2006; Olsen, Slotegraaf, and Chandukala 2014; Sen and Bhattacharya 2001.

hampered by EU food regulation, which would and is making the shift to sustainability much slower, and with more inequality and injustice among marketers. In conclusion, consumers' awareness and marketing are strongly interconnected. Despite the existence of some exceptions and the possibility of external influence, the role of marketing and all its different strategies, tailored on a specific consumer segment and target, has a great and fundamental impact on consumer behaviour towards a more sustainable lifestyle and choices.

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Abstract

La sostenibilità, con tutte le sue sfumature, è diventata un argomento centrale negli ultimi anni che ha portato ad una transizione delle priorità e percezioni del consumatore moderno. Il costante aumento della domanda di beni e servizi sostenibili ha fortemente contribuito al cambiamento nelle abitudini di acquisto dei consumatori, influenzando il suo comportamento. Anche dal punto di vista imprenditoriale, sempre più aziende hanno iniziato ad abbracciare e promuovere i principi della tutela ambientale, un fattore divenuto cruciale per la soddisfazione del cliente, con lo scopo di poter fornire nuove soluzioni in modo da essere più competitivi sul mercato. Essere sostenibili, quindi, non è solo una preoccupazione dei consumatori, ma anche un approccio strategico aziendale: le aziende che si adattano a queste nuove esigenze moderne hanno maggiori probabilità di crescita nel lungo periodo e raccogliere benefici come l'aumento della produttività e, di conseguenza, una migliore reputazione nei confronti dei clienti. Nonostante tradizionalmente il segmento specifico del "consumatore verde" sia stato al centro dell'interazione tra marketing e consumo sostenibile, al giorno d'oggi è fondamentale lo studio delle numerose variabili che influenzano il consumo sostenibile e la percezione cognitiva dei singoli consumatori: in un contesto sempre più sostenibile, è necessario comprendere le motivazioni alla base delle scelte dei singoli individui ed il divario tra intenzione iniziale e azione finale effettiva. Secondo lo psicologo e premio Nobel Daniel Kahneman, il cambiamento climatico è il fenomeno psicologico cognitivo più difficile da individuare: nonostante i consumatori affermino di essere propositivi nei confronti della sostenibilità, spesso non riescono a comportarsi di conseguenza. Un approccio generale per correggere il sopracitato divario intenzione-comportamento è la teoria del nudge (Thaler e Sunstein), basata sul creare piccoli incentivi o stimoli che incoraggino gli individui a intraprendere le azioni previste, alterando il loro comportamento in modo prevedibile, ma senza vietare alcuna. Per quanto riguarda la sostenibilità, questa teoria è stata utilizzata per supportare le questioni ambientali nel consumo di cibo, come la riduzione del consumo di carne (e di conseguenza il cambiamento climatico) e lo spreco alimentare. Tuttavia, c'è una bassa soglia di successo effettivo del nudging, dovuto al fatto può essere efficace solo in contesti con scarso controllo esterno, come luoghi privati, o con molta concorrenza, come il marketing. Inoltre, esso richiede una conoscenza approfondita del target. Per questo è importante focalizzarsi preliminarmente sull'educazione ed informazione del consumatore per poi stabilire o migliorare eventuali norme sociali. Nell'ambito della psicologia ambientale, non è ancora possibile identificare un modello specifico per descrivere il comportamento del consumatore nel suo processo decisionale sostenibile a causa di molte variabili che interferiscono come l'idea di giustizia (teoria della giustificazione del sistema, SJT), la complessità e l'incertezza della questione, a causa dei suoi effetti a lungo termine e dei suoi potenziali rischi, e la forte pressione sociale. Tra i tanti modelli, per affrontare il divario atteggiamento-comportamento, può essere utilizzato il framework SHIFT, un acronimo che si riferisce a cinque fattori che influenzano le abitudini di consumo sostenibile: influenza sociale (*Social influence*); abitudine (*Habit formation*); Sé individuale (*Individual self*); sentimenti e cognizione (*Feelings and cognition*); e tangibilità (*Tangibility*). Recentemente, si è sviluppato un nuovo ramo del marketing, chiamato green marketing, che, grazie a nuove strategie e obiettivi, mira a trasformare le attività sostenibili in una nuova cultura e modo di vivere, sottolineando il forte

cambiamento socioeconomico tra l'azienda e i suoi stakeholder e rendendo il consumatore finale, non più una personalità passiva, ma attiva e consapevole delle sue scelte all'interno della società. Trovare nuovi beni e mercati, utilizzare tecnologie emergenti, incoraggiare la creatività ed aumentare l'efficienza organizzativa sono tutti vantaggi di un approccio aziendale sostenibile. Tuttavia, ci sono alcune complicazioni nel promuovere questo nuovo stile di vita tra gli individui: l'intrinseca tensione tra promozione dell'innovazione sostenibile e salvaguardia dell'ambiente insieme all'inconsapevolezza del consumatore nei confronti delle sue scelte. Per questo motivo è fondamentale rendere i consumatori coscienti dei loro bias cognitivi. Sotto questo aspetto, l'economia comportamentale svolge un ruolo cruciale nell'aiutare i marketer a comprendere la percezione dei consumatori e a trovare contro-alternative ai loro pregiudizi iniziali nei confronti di un prodotto specifico. Alla fine degli anni '50, è diventato chiaro che, per avere successo, un'azienda deve comprendere il comportamento del consumatore. Questa riflessione ha contribuito allo sviluppo del marketing moderno, con i marketer sempre più interessati a conoscere ed analizzare il comportamento dei consumatori al fine di soddisfare i loro bisogni e desideri. Lo studio dei processi cognitivi dei consumatori e del loro effetto associato al processo decisionale è diventato una componente cruciale, comprendendo come una decisione possa essere influenzata sia a livello esplicito (controllato e cosciente), sia a livello implicito (automatico ed irrazionale). A questo proposito, l'economista e psicologo cognitivo Herbert A. Simon ha introdotto negli anni '50 specifici modelli euristici, consistenti in semplici strategie implicite in grado di persuadere in maniera irrazionale le decisioni adottate dall'uomo. Più tardi, negli anni '70, Amos Tversky e Daniel Kahneman aggiunsero il termine bias cognitivo che descrive schemi sistematici di deviazione della razionalità e come un individuo crea e usa la propria costruzione della realtà per prendere decisioni che a volte possono portare a distorsioni percettive, giudizi imprecisi, interpretazioni illogiche, o ciò che, in generale, viene chiamato irrazionalità dell'azione. Tra i numerosi bias identificati dai due studiosi, alcuni in particolare possono essere analizzati per definire meglio l'irrazionalità dietro le scelte sostenibili: l'effetto ancoraggio (*anchoring effect*); l'euristica della disponibilità (*availability heuristic*); la paralisi dell'analisi (*analysis paralysis*) e l'effetto struzzo (*ostrich effect*); l'effetto framing (*framing effect*); l'effetto esposizione (*mere-exposure effect*); e bias dell'avversione alle perdite (*loss-aversion bias*). Lo sviluppo del digitale ha portato numerose aziende, in particolare del settore alimentare, ad affidarsi a strategie di marketing – principalmente indirette - per indirizzare il proprio business verso una produzione più efficiente ed efficace, comprendendo e seguendo le esigenze dei consumatori, dal momento che esse operano attraverso tecniche di persuasione implicita nei confronti del consumatore. Il food marketing è l'insieme delle strategie, offline e online, volte al posizionamento, distribuzione e comunicazione di un prodotto nel settore gastronomico, in grado di creare questo solido rapporto produttore-consumatore e di aggiungere valore al prodotto offerto in un convincere il consumatore ad acquistarlo. Recentemente, c'è stata una particolare espansione del marketing digitale di alimenti e bevande, con l'industria alimentare sempre più legata alla ricerca e all'innovazione digitale con l'obiettivo finale di incrementare il coinvolgimento delle persone attraverso nuove piattaforme come social network, giochi interattivi, telefoni cellulari, online video e mondi virtuali. Secondo le indagini DOXA (2017), l'80% dei giovani tra i 18 e i 24 anni è propenso a condividere la propria opinione sull'esperienza vissuta, di cui il 49% utilizza piattaforme dedicate al mondo del food. Di conseguenza, per influenzare e competere efficientemente sul mercato, è necessaria solida

comprensione del comportamento del target e del consumatore. Il targeting comportamentale è, quindi, diventato la strategia principale nel business. In particolare, attraverso l'utilizzo un'ampia gamma di metodi digitali (ad esempio cookie) per tracciare i comportamenti online delle persone è possibile stabilire un collegamento più diretto con i consumatori (Customer Relationship Management, CRM). Due efficaci tecniche di marketing possono essere il neuromarketing, una strategia che studia le reazioni cognitive dei consumatori da un punto di vista neurologico, ed il re-targeting, che mira a costruire un'associazione positiva nella mente del pubblico, garantendo affidabilità dell'azienda. Nel contesto sostenibile, vi è inoltre una chiara necessità di assicurare pratiche di marketing più etiche e di rafforzare l'apertura nella ricerca industriale. Il comportamento dei consumatori è cambiato nel tempo, principalmente a causa di problemi di etica ambientale, l'effetto delle norme sociali e dei fattori ambientali sul comportamento umano. A questo proposito, Schwartz (1973, 1977) ha scoperto che le norme sociali e le preoccupazioni ambientali hanno sviluppato un senso di obbligo morale e hanno creato un atteggiamento positivo tra i consumatori nei confronti dell'ambiente. Grazie ai nuovi media digitali e social network, che forniscono un maggiore accesso ai dati, le strategie di marketing moderne sono ora parte integrante e fondamentale della struttura delle comunicazioni digitali e delle interazioni sociali quotidiane. Domini accademici come la semantica, l'intelligenza artificiale, la neurologia e altri vengono sempre più incorporati nel marketing interattivo rendendolo ancora più influente. Tuttavia, è sempre più necessario un maggiore coordinamento tra la ricerca e la politica pubblica per salvaguardare le persone da eventuali tattiche di marketing invadenti e ingannevoli che possano distaccarsi dall'obiettivo principale di informare ed indirizzare positivamente i consumatori. Tra le numerose tecniche esistenti alcune possono rivelarsi molto utili per superare i bias sopra elencati come ad esempio: digital marketing; social media marketing, per contrastare l'effetto framing; real time e instant marketing, per contrastare la paralisi dell'analisi ed il bias della normalità; e marketing emozionale ed esperienziale, per contrastare il bias della disponibilità. Per quanto riguarda l'ambito dell'alimentazione sostenibile, la produzione e il consumo globali di carne sono in aumento, principalmente trainati dalla crescita della popolazione, dal guadagno economico individuale e dall'urbanizzazione. Secondo l'Organizzazione delle Nazioni Unite per l'alimentazione e l'agricoltura (FAO), la domanda globale di carne raggiungerà i 455 milioni di tonnellate entro il 2050 (un aumento del 76% rispetto al 2005). Questo aumento esponenziale ha delle conseguenze negative a livello etico, salutare ed ambientale che spinge le persone ad orientarsi verso scelte di vita più sostenibili, come la ricerca di alternative al consumo di carne ad esempio carne di origine vegetale (PBM) e carne di origine cellulare (CBM). L'adozione da parte dei consumatori dei sostituti della carne si basa su un processo decisionale innovativo diviso in cinque fasi: conoscenza; persuasione; decisione; implementazione; e conferma. Al giorno d'oggi, sono molteplici le barriere che limitano i consumatori, come il gusto, l'aspetto e le abitudini, ma esistono anche fattori positivi come il benessere degli animali, le preoccupazioni per l'ambiente e la salute. Il dibattito sulle alternative alla carne continua ad evolversi dal momento che il consumo di carne è strettamente intrinseco con la struttura e la cultura della nostra società. Il futuro di questa nuova realtà dipenderà da fattori quali normative più o meno favorevoli in materia di etichettatura e legislazione alimentare, politiche di finanziamento di sostegno, investimenti pubblici e campagne di comunicazione per convincere i consumatori di carne a passare ad alternative. Tuttavia, la quota di mercato di tali succedanei della carne rimane bassa nonostante la loro

crescente domanda a causa dei problemi ambientali e sanitari legati al suo eccessivo consumo. Pertanto, anche se c'è una maggiore consapevolezza le persone continuano a cercare e consumare sostituti della carne principalmente se sono simili alla carne originale (principio di familiarità). Esiste, quindi, davvero una relazione tra marketing e scelte sostenibili dei consumatori moderni? Quanto le strategie di marketing riescono ad influenzare il loro comportamento? Siccome il marketing ha il grande potere di diffondere informazioni tra individui e, quindi, informarli sulle possibili alternative esistenti in materia di sostenibilità, è possibile affermare che consapevolezza dei consumatori e strategie di marketing sono fortemente interconnessi. Nonostante l'esistenza di alcune eccezioni e la possibilità di influenze esterne, il ruolo del marketing e tutte le sue diverse tecniche, personalizzabili per uno specifico segmento e target, ha sicuramente un grande e fondamentale impatto sul comportamento del consumatore in grado di influenzarlo ed indirizzarlo verso uno stile di vita più sostenibili.