



UNIVERSITÀ
DI PAVIA

Department of Economics and Management

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HOW NUDGES CAN BRIDGE THE INTENTION- ACTION GAP IN FOOD WASTAGE

Supervisor:

Prof. Zucchella Antonella

Student:

**Losio Arianna
Matr. n. 501671**

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Introduction

"I have learned you are never too small to make a difference." The young activist, Greta Thunberg has said before and she was completely right. Nowadays human beings are facing a big challenge, climate change, and every single one of us should be ready to act. However, this is not what is happening. The scope of this research is to investigate the reason why not everyone is acting against global climate change and how it is possible to intervene in order to make those people act more sustainably. In particular, the research has been focusing on the field of food waste and how it can be tackled with behavioural science and nudging. These strategies have been proven to be one of the most effective ways to change one's behaviour. Food waste represents one of the biggest problems for society, increasing year after year and not many Governments are acting upon it. According to the UN Environment Programme's (UNEP) Food Waste Index Report of 2021, 61% of food waste comes from households, 26% from food service and 13% from retail. There has always been a general misconception that supermarkets and restaurants, in general, are producing a lot of food waste. However, it has been proven differently. The main reason behind this is the fact that the quantity of food wasted by every single one of us in our own house may be smaller but it is repeated daily in comparison with retailers. This impedes us from realizing how much damage everyone is doing to the environment every single day. There have been many different firms that have tried to tackle the problem in their way, but sometimes it gets hard to find the target since there are not many people who are willing to act sustainably, even if they state to care about the environment. This is happening due to the so-called, intention-action gap, closing such a gap could be one of the ways to make more people aware of the problem and, consequently, act more sustainably. The first chapter will deal with the intention-action gap and behavioural

science as a way to close the gap. The second chapter will deal with the food waste problems in society and the consequences of it. After analysing in-depth, the literature about both problems, the following chapters will deal with the experiment, which aim is to prove the main idea of the research. The fact that nudges can help people to act more sustainably and realize their impact on the environment. In particular, firstly it is presented a research methodology to describe the main parts of the research. Secondly, it is presented the company that has collaborated in the research, its business model and competitive scenario. Thirdly, it has been described in detail the experiment that has been carried out focusing on every aspect. Starting from the general study of the consumers conducted with focus groups and surveys, continuing with the explanation of the nudge and its functionality. Finally, the results of the nudge and the future plan for the company to continuously apply the nudge strategy. To verify the effectiveness of the experiment, consumers have been asked to fill out the same survey twice, once before the nudge and once two weeks after the introduction of the nudge. The nudge that has been introduced was aimed at proving to the consumers that they are already doing a great job and making them realize how much they are contributing to the planet. At the same time, the nudge helped to increase the awareness and interest of consumers transforming acting sustainable into something funnier and easily comprehensible. Different studies in different fields with different experiments have already proven the effectiveness of nudging, this study is among them, trying to prove that if someone wants to change it is possible to find an easy and affordable way. Even if, it is hard to act in favour of sustainability due to the changes in behaviour and the few interventions from Governments all over the world, nudging could make it easier for every single one of us.

CHAPTER 1: THE INTENTION ACTION GAP

1.1. Environmental concern

Nowadays human beings are facing many different environmental challenges, which can affect both behaviour, physical and mental health profoundly. In fact, more and more people are starting to become concerned about the current environmental situation, as it is proven by the different movements started all over the world, that brought together many people from many different countries. All these people came together to ask for the change that is needed. At the basis of such there is an important shift that need to be made, from the anthropocentric view to the non-anthropocentric one. The environment has always been considered as something exogenous, according to the anthropocentric view, humans were seen as dominant with respect to other species and they needed to exploit all the resources in order to increase their richness. This view of the world fuelled capitalism and built the current reality on this idea which affected us for generations. However, things are starting to change for the better and people have started to feel a stronger connection with the environment, developing a sort of attachment towards the issue and an increasing sense of responsibility for the environmental situation. The main reasons that developed the current environmental situation are different. One of the main reasons is the belief that resources are unlimited. Typically, in an advanced economy, people tend to think that everything they need will always be available. Another reason is the necessity of continued growth dictated by capitalistic thinking deeply rooted in countries. Moreover, there was the faith that these problems will be solved automatically by science and the advancement of technology. In this way, people did not worry about their daily actions, because a superior force would have helped in solving every problem. Finally, there was a strong conviction that the laissez-faire principle was the best way to have a strong functioning

economy, as a consequence, every Government let firms free of doing whatever they want (James A. Roberts, Donald R. Bacon, 1997).

As the years were passing by, the situation was getting worse and worse. At a certain point, people started to worry about the environment and the crisis that was going on, developing the so-called "environmental concern". This phenomenon started already in the 90s and it is still growing today. Environmental concern can be defined as an evaluation of one's behaviour, or others' behaviour, taking into consideration the consequences for the environment. Studies have shown that environmental concern can refer both to an attitude, but also to a set of values. Four different sets of values, to which environmental concern can be linked, have been identified:

- (1) Environmental concern represents a new way of thinking, the so-called New Environmental Paradigm (NEP);
- (2) Environmental concern is tied to the anthropocentric altruism. In this case people feel responsible for other people degrading the environment;
- (3) Environmental concern expresses as a self-interest. People perceive environmental deterioration as a threat;
- (4) Environmental concern is a function of some deeper and more important values, such as religious beliefs (Niklas Fransson and Tommy Gärling, 1999).

Environmental concerns can reach different extents of worry according to the values of the person that is experiencing it. If people only worry about themselves it is the so-called egoistic concern. Otherwise, it can be an altruistic concern when they also worry about other people. At last, people can worry about the whole biosphere and it is the broadest sense of environmental concern (Theresa Maria Rausch, Cristopher Siegfried Kopplin, 2021).

Studies have also found a correlation between environmental concerns and socio-

demographic factors. The factors that have been taken into consideration are numerous. Firstly, age, younger people seem to be more concerned than older people. Secondly, the social class, people with a higher education and income seem to be more concerned. Thirdly, the residence, urban residents are assumed to be more environmentally concerned than rural residents, since they can see the effect of environmental pollution more. Finally, the gender, results in this case are controversial. Some studies identified that men are more concerned than women. However, women expressed stronger pro-environmental action and stronger beliefs. Nevertheless, it must be kept in mind that these studies have shown a pattern, but this does not mean that people outside these ranges cannot experience environmental concerns in some way. Moreover, it must be taken into consideration the fact that people change over time and this could affect the results of new studies (Niklas Fransson and Tommy Gärling, 1999).

As the environmental situation worsened, the consciousness about it started to increase and so did awareness of consumers and eco-friendly purchases. There is different extent of pro-environmental behaviour that can be identified in three different class of environmentally active consumers. First of all, the "true-blue greens", which are the most committed to such a cause. Then, the "green-black", which are committed but haven't been able to change their behaviour yet. Finally, the "sprouts", which are at the beginning of their journey towards the environmentally friendly purchase. These types of consumers tend to adopt many different behaviours that show their care for the environment, for example reading labels or avoiding products from specific companies or buying products of recycled materials. However, it must be mentioned that there are consumers that are not ready to start their journey toward sustainability yet, they have been divided into two groups. One is the "grouser", which thinks that solving the

environmental problems is not a concern of consumers but rather of companies. The other one is the "basic brown" which is not concerned about environmental problems (Ann P. Minton, Randall L. Rose, 1997).

1.2. The intention-action gap

From the logical point of view, the basic assumption is that the more one is concerned about the environmental situation the more their purchase will be eco-friendly. However, this is not always happening, because every choice consumer make is affected by both the affective and cognitive parts of the human brain. As a result, actions are not always the perfect reflection of intentions and here lies the so-called intention-action gap. The intention-action gap was initially used for entrepreneurial behaviour but later on, was applied to many other different fields. More recently it has also been applied in the field of environmental psychology and many publications have been realised since the 90s. In the 80s Ajzen & Fishbein studied the relationship between intention and behaviour and according to their findings, intention was the best predictor for behaviour. However, more recent studies have proven that the relationship between action and intention is not as linear as predicted in previous models. Mainly because several factors can interfere with the decision-making process and hinder the smooth implementation of an action, leading to the so-called "intention-action gap" or "intention-behaviour gap." (Gieure et al., 2020; Godin et al., 2005) (Schepers J., Voordeckers W., Steijvers T., 2021). As a consequence, it is possible to define the intention-action gap as the difference between what people are intended to do and what they do. There are many different models and studies that try to explain this phenomenon and try to find some kind of solution to it.

1.3. TRA and TPB

There is a strong connection between intentions and behaviours. Many different

academics have tried to build models to explain such correlation and have a better understanding of the intention-action gap. Among all the different models that have been proposed the most significant one is the Theory of Reasoned Action (TRA) of 1980 designed by Azjen and Fishbein and its updated version, the Theory of Planned Behaviour (TPB) of 1991. An impulse for the creation of such models was the previous model built by LaPiere (1934) and Wicker (1969). The Theory of Reasoned Action was developed to predict volitional behaviour, the one over which individuals have control or that does not require particular skills or abilities or the cooperation of others. The TRA identified two constructs to overcome the inconsistencies between intention and action:

- (1) The lack of social pressure; meaning that one may have a positive attitude towards a specific behaviour but not behave in that way due to the lack of social pressure from the individual's closest persons;
- (2) The willingness to perform such behaviour; intention and subjective norm affect behaviour via a cognitive link, which is the intention to perform the behaviour.

According to the model, behavioural intention captures both motivational factors and the amount of effort an individual is willing to use to perform such behaviour. The model concludes that the most plausible indicator of behaviour is intention, which is determined by attitude and subjective norms. Attitude is the behavioural belief, which can be defined as what the individual recognizes as a consequence of such behaviour. On the other hand, the subjective norm is determined by normative beliefs, what relevant others think about such behaviour. However, the TRA over the years was proven to be not entirely correct, mainly due to the creation of false dichotomy. Since most behaviour is neither entirely volitional nor involitional, but somewhere in

between. To address the issues some modifications have been made to the model and the Theory of Planned Behaviour was brought forth (Theresa Maria Rausch, Cristopher Siegfried Kopplin, 2021).

The Theory of Planned Behaviour (TPB) started from the basis of the Theory of Reasoned Action to which was added a measure of control perceived by individuals. This modification was necessary to make the model more realistic since people do not have control of all the variables. Moreover, such modification enabled the extension of the basic structure of the TRA. In fact, the TPB also takes into consideration behaviour that is not totally under the control of people (Sparks, Paul, & Richard Shepherd, 1992). Both theories have been widely applied in different studies and experiments in different contexts of sustainability, such as recycling and sustainable food consumption.

1.4. From the intention to the action

When people have to perform a decision, they go through different steps to process an intention and transform it into an action or behaviour, this is the so-called decision-making process. This procedure can be different for each person and require a different amount of time. Sociologists tend to distinguish between intention formation and intention implementation. According to such division, a 4-step model for the decision-making process was presented. In particular, there are four different phases that can be distinguished:

- (1) Pre-decisional: involving expressing a strong wish or desire to accomplish a goal. There is the so-called goal intention, in which the wish is highly desirable and feasible;
- (2) Post-decisional but pre-actional: the person has decided to achieve the goal but not to act yet. An effective plan to achieve the goal is formed, the so-

called implementation intention. This plan is designed according to a specific set of environmental conditions, which enable the behaviour and have a significant influence on it;

- (3) Actional: all the relevant actions are initiated and people start to act upon their desire to achieve the goal they were aiming for;
- (4) Evaluative: the individual compares what has been achieved and what they wanted to achieve.

The more a person is committed to the goal the more they are likely to achieve such a goal. Commitment is the measure of the importance the achievement of the goal has for a person. As a consequence, the urgency of achieving a goal depends on the amount of commitment associated with the single person, which may vary. According to commitment, people can create a hierarchy of the goals they want to achieve. However, the desire for the goal should always be there aside from the results and the feasibility of the implementation. People may end up choosing a harder goal due to their stronger commitment to it (Peter M. Gollwitzer, 1993).

It may happen that, during the decision-making process, people encounter some obstacles impeding the successful realization of the behaviour. In general, there is a positive correlation between knowledge and actual behaviour, meaning the more consumers are aware the more they are likely to act upon something. This information appears to be particularly significant in the sustainability context. Since the more consumers are aware of the environmental problem, the more they will be likely to adopt eco-friendly behaviour. The reasoning behind this is to make the consumer aware of their impact, so they will be more careful in their purchasing patterns and perceive a sort of responsibility in their choices (Theresa Maria Rausch, Cristopher Siegfried Kopplin, 2021).

Theories of decision-making can be divided into two different fields. The first one is the economic decision-making. It is prescriptive in nature and focuses on maximizing a decision outcome subject to constraints to reach an equilibrium in some form. The second one is the behavioural decision theory. It is descriptive in nature and has a focus on understanding how and why people make decisions. Over time, behavioural decision theory has evolved into the field of behavioural economics. Herbert Simon, one of the fathers of behavioural economics, elaborated the phase theory or theorem in decision-making with the aim of presenting a model to describe the decision-making journey. The phase model described every stage that humans go through in order to make a decision. The first step was called intelligence, which involves looking for the environment with the right conditions for the decision. The second phase is design, which entails developing and analysing all the possible scenarios. Finally, the third phase is the choice, when humans choose a particular course of action among those available. Simon's model is characterized by a stage model of decision-making and it has been widely accepted even if now it has become outdated with the new studies of contemporary behavioural economics (David Arnott, Shijia Gao, 2019).

1.5. How to close the intention-action gap

The intentions of consumers are a decisive factor when it comes to sustainable purchases. So, also small changes can make a very important difference. Even if, most consumers have a positive attitude towards sustainable products, this is hardly reflected in their actual behaviour and consumption. Such distance from the intention-action gap (Renz E., & Böhm K. L., 2020). Over the years, many different studies have been used to explain the reason for such a gap, proposing a way to close it. In particular, for what concern sustainability many experiments have applied the above-mentioned theories, the Theory of Reasoned Action and the Theory of Planned Behaviour. Others

tried with different reasoning, making clients aware. The more the clients are aware of environmental problems the more is probable that they will make green decisions, so they tried to provide them with more information. New ideas on how to close the intention-action gap, in particular in the field of sustainability, have been brought forward using behavioural economics and nudges.

1.5.1. Behavioural economics

The essence of behavioural economics is to apply notions of psychology to understand in a better way economic behaviour. Behavioural economics started to develop in the '50s getting useful in multiple fields trying to close the intention-action gap, mainly for green purchases (Leiser, D., & Azar, O. H., 2008).

At the basis of any assumption of behavioural economics, there is the study of how humans make economic decisions. In particular, contemporary behavioural economics is based on the so-called dual system, according to which the decision-making process occurs within two cognitive processes or systems. System 1 is used for fast and automatic decisions and uses an intuitive approach, so to take routine decisions. System 2, on the other hand, is used for more important decisions when an analytical approach is required (David Arnott, Shijia Gao, 2019).

Behavioural economics tried to find the reasoning behind the intention-action gap. In particular, Blake in 1999 identified a conflict between environmental concern and action. The gap, according to his opinion, is the result of practical, social or institutional constraints that prevent people to adopt pro-environmental actions. These include a lack of time, money and physical space, but also a lack of information, encouragement and pro-environmental infrastructures. Another important reason is the hierarchy of interests for people. The environmental concern may appear relevant for a person, however, there may be other interests that have priority, setting aside needs

dictated by environmental concerns. Even if, people try to stay loyal to their concerns, they can face some hardship, in particular, one of the most common causes is the so-called tragedy of the commons. This is a social dilemma in which people feel powerless and as if their effort is not useful in any way. This brings them to think that everything they do is a wasted effort, the so-called drop-in-the-ocean effect. In this sense, consumers do not have the confidence that their purchase will actually make a difference in the environment. Another important contribution of behavioural economics is given by Thaler who identified that most of the time short-term needs are in conflict with long-term interests (Renz, E., & Böhm, K. L., 2020).

Most importantly behavioural economics argues that the basic economic model was not consistent and proved it wrong. The basic economic model assumed that the homo oeconomicus was rational and well-informed with the unlimited capacity to process all the information. However, real people do not act only in a rational way (Simon 1957), otherwise, inconsistencies between value and action would not be present (Ariely 2008). Thanks to behavioural economics it is possible to know that human behaviour is way more characterized by mental shortcuts, cognitive biases and errors (Dobelli 2011) than rational behaviour. This happens for different reasons, such as lack of self-control (Thaler/Shefrin 1981); status quo bias (Samuelson/Zeckhauser 1988) and orientation to rules of thumb; meaning a high reliance on experience and common sense (Evans 2003; Shah/Oppenheimer 2008). Another reason why the basic economic model was wrong is the so-called cognitive effort. People do not process all the information they are given, everyone has a certain amount of cognitive power and people are trying to use the minimum effort to make a decision (Kahneman 2011). Nowadays, there is too much exposure to different types of information, and it is almost impossible for people to process all of them every time, due to the limitation in

cognitive power (Renz, E., & Böhm, K. L., 2020).

Thanks to the knowledge provided by behavioural economics it is possible to promote green consumption to close the intention-action gap, solving partially some of the environmental problems the Earth is facing right now. This could also imply a bigger request for green products from the consumer side and an increasing number of green measures adopted on the firm side, amplifying the impact. The basis for improving people's green behaviour is behavioural intention. Before researchers tended to focus on consumer behaviour taking into consideration the intention and behaviour, which were assumed to be the same or at least highly correlated. However, such an assumption would make it difficult to explain why consumers have a positive attitude toward green consumption but do not behave accordingly. In fact, the relationship between intention and behaviour can vary considerably sometimes, and this is where the intention-action gap is formed. Behavioural economics has found some solutions that can facilitate the relationship between green intention and behaviour. The first idea is the availability of green products. Those that decide to purchase green products suffer higher costs in favour of the positive externalities. So, making green products more easily available would compensate for their effort. Moreover, availability can help in another way, the intention can be converted into an actual behaviour depending on whether the consumer can recall their intention. In this case, availability may trigger such intention establishing a link in the memory of consumers, and enabling pro-environmental behaviour. Another idea provided by behavioural economics is that consumers usually act with a goal in mind. In the case of green purchases, the goal is not only to satisfy their need but also to do something positive for society. So, if consumers perceive that their effort is really useful they may be more prone to green behaviour (Nguyen, H. V., Nguyen, C. H., & Hoang, T. T. B., 2019). Another final

contribution of behavioural economics is the understanding that people need both the intention and the tools to boost the adoption of green behaviour. Motivation can be both intrinsic or extrinsic. It can be defined as intrinsic when rewards or costs are purely personal and subjective. Otherwise, is extrinsic when costs and rewards derive from the outside person, such as money or prestige. Behavioural economics also highlights that it may be harder to change the behaviour of people if it has an ethical reason behind it. The solution to such an obstacle, still provided by behavioural economics, is to change the frame behind it. Changing the perspective from a reflection of the decision of the person to a reflection of the same decision on other things that people consider essential, such as money. A simple example is the sign to pick up the trash otherwise you will receive a fine, and people will change their behaviour to not receive a fine and lose money. Thanks to the knowledge provided by behavioural economics, in the understanding of the human decision-making process, it may appear easier to try to close the intention-action gap than it was before, in this way diminishing the resistance of individuals to more sustainable behaviour (ibidem).

1.5.2. Nudges

There are different ways to influence human behaviour you can manipulate it or inspire it. These strategies may be effective from the rational point of view, but this is not really how people change behaviour towards a subject. They could function for a specific moment and specific acts, but you do not change the behaviour of people in the long-run. In this sense, another more effective strategy is represented by the so-called nudge or gentle push. It was presented by Thaler and Sunstein in 2008 in a book called “Nudge: improving decision about health, wealth and happiness”. In their book Thaler and Sunstein define nudges:

“(…) Any aspect of the choice architecture that alters people’s

behaviour in a predictable way, without forbidding any options or significantly changing their economic incentives. To count as a mere nudge, the intervention must be cheap and easy to avoid. Nudges are not mandate. (...)”¹

Nudges are a top-down regulatory strategy which has risen in popularity over recent years. While conventional policies targeting behavioural change focus on information and incentive, nudging drives behavioural change through changes in the choice environment (Schubert, 2017). Humans are often biased by the context in which they make their decisions, falling into predictable suboptimal decisions (Thaler & Sunstein, 2009) (Zaneva, M., & Dumbalska, T., 2020). With nudges humans are gently steered towards a desired action. Thanks to nudges, it is possible to increase the possibility of individuals making certain choices. To do that, it is necessary to modify the environment. In this way, the cognitive processes of automatic thinking or behaviour are activated to obtain the desired outcome (Saghai 2013; Parkinson et al. 2014). Nudges do that without excluding any option, so people keep their freedom of option. Another characteristic of nudges is that there is no alteration in the economic situation of the people who are being nudged. Therefore, nudges can be used to close the intention-action gap by making the behaviour of people more in line with their intentions (Momsen/Stoerk 2014; Vigors 2018)(Renz, E., & Böhm, K. L., 2020). Thaler and Sunstein in their book argue when it is appropriate to use a nudge. The first occasion is represented by decisions that require self-control. In this case, the benefits are seen in the long term, while in the short term, the individual has to face costs. An example of green behaviour is establishing a programme of ecological behaviour to

¹ RENZ, E., & BÖHM, K. L. (2020). Using Behavioral Economics to Reduce the Value-Action Gap. *Ökologisches Wirtschaften - Fachzeitschrift*, 33(4), 45–50. <https://doi.org/10.14512/OEW350445> .

follow daily, such as A-World, at the beginning, an effort may be borne but in the long term, it is possible to see an impact on both the community and the individual. The second scenario is identified by decisions that are difficult and rare. When someone has to perform a difficult decision, a lot of brain power is used in order to understand what is the best situation for us. In this case, nudges can be used to make such decisions as easy as possible. An example of green behaviour is the use of public transportation or purchasing a car, the process can be simplified thanks to an efficient public transport network people will most likely use it to avoid traffic jams and stress. A third moment that can be suitable is when people do not get immediate feedback on their behaviour. Many times, people do not receive feedback on their behaviour and do not know if something is right or wrong. So, it can be useful to get feedback on behaviour to evaluate it and, if necessary, change it accordingly. People may think that they are doing something good for the planet, but their actions are not doing any help. This is the main reason why people should be informed and updated. A final case to use nudges is when people have difficulty translating the situation into easily understandable terms. For example, when concluding a contract or agreeing to some terms of it. Standard settings can benefit consumers, for instance, green electricity as a default for new citizens in cities (Sunstein 2014; Thorun et al. 2016) (Renz, E., & Böhm, K. L., 2020).

When designing a nudge 4 dimensions must be taken into consideration:

- (1) The first dimension looks at whether a nudge is designed to boost self-control or designed to activate a desired behaviour. With certain behaviours, there is a discrepancy between what people would like to do and what people end up doing. Nudges that help boost self-control will correct this difference. On the other hand, individuals might not always actively

consider the right behaviour. In this case, these behaviours are not at the top of mind for the majority of people and nudges help to impose conditions that make these behaviours more obvious.

- (2) The second dimension considers whether a nudge will be voluntarily adopted or imposed externally. Self-imposed nudges are voluntarily adopted by people. Externally-imposed nudges do not require people to voluntarily seek them out. Rather they passively shape behaviour because of the way they present available options without constraining people.
- (3) The third dimension takes into consideration mindful and mindless nudges. The first guides people towards a more controlled state and helps them meet a behavioural standard they would like to achieve but have difficulty implementing it. The second one includes the use of emotion, framing, or anchoring to influence the decisions that people make.
- (4) The fourth and last dimension considers whether a nudge encourages or discourages behaviour. Encouraging nudges facilitate the implementation or continuation of a particular behaviour. Discouraging nudges, on the other hand, hinder or prevent behaviour that is believed to be undesirable.

Outside these four dimensions, other factors should be taken into consideration to understand when it is possible to nudge someone. Firstly, it must be taken into consideration the values both of the person and the culture, which can influence the decisions of someone (Rokeach 1973; IfD Allensbach 2019). Secondly, the type of mental activity the nudge should trigger must be clear and simple. This together with the frequency or the duration of the intervention must be taken into consideration, since some nudges are more effective for repetition and others have a diminishing effect over time. Then, it has to be taken into account the barrier individuals have to face to

carry out certain green behaviour. Finally, the medium to reach the receivers of the nudge, a verbal address suits some groups, while others can be better reached with digital media (Hummel/Maedche 2019). It is possible to distinguish different types of nudges that trigger different types of behaviour. The cognitively oriented nudges influence what people know. In this case, it may use descriptive and evaluative labels to provide more information to consumers and make them understand which is the green product. Another type of nudge is represented by the affectively oriented ones, which influence how people feel and their sentiments and emotions. These types of nudges are based on the usage of pictures or phrases that activate a sentiment that suggests the desired behaviour. Finally, there are also behaviourally oriented nudges that influence what people do. This type of nudge is the most appropriate to close the intention-action gap. Choice architects are in charge of designing a nudge that should pursue both an individual and societal goal (Halpern 2016). Once the nudge has been implemented there is also the possibility of verifying the results of it. In particular, Van Kleef and van Trijp in 2018 suggested a tripartite method of validating the nudge effectiveness. First, there is the proof of principle, that is obtained in a lab experiment to study the effectiveness at an individual level. The second step is a proof of concept, which is obtained in a field experiment to study the effectiveness of the nudge in situation-related scenarios. Finally, the last step is the proof of implementation, that is a further implementation to study the applicability in specific settings and groups (Renz, E., & Böhm, K. L., 2020).

Nudges have a strong application in the ecological field already to boost green behaviour. In this case, human rationality is disadvantaged for the fact that climate change is a complex and uncertain phenomenon whose effects can be temporary and geographically distant. In fact, there are different psychological mechanisms and

biases that prevent humans from taking effective ecological actions (Shu & Bazerman, 2010; Gifford, 2011). Thanks to green nudges it is possible to optimize the path to ecological action by removing the obstacles or helping people to overcome them. For what concern green nudges different approaches have been detected. First of all, there are green defaults, they are based on exploiting the power of green defaults. Usually, humans tend to respect and choose according to the status quo. For these nudges setting a target option has been effective in attracting choice towards it, in fact, they are one of the top suggested nudge interventions (Shu & Bazerman, 2010). The second type of nudge is represented by green social incentives. This approach relies on the fact that people are influenced by social norms and comparisons. This method has already been applied in the reduction of the use of water (Brick, De Martino, & Visser, 2018). The third stream of green nudges is green feedback. It highlights the environmental costs to consumers with vivid eco-labelling, smart technologies or creative feedback solutions. However, strict regulation for eco-labelling must be taken into consideration to prevent greenwashing (Sörqvist & Langeborg, 2019). The fourth and final cluster of green nudges consists of removing barriers to green actions. The main goal is to make the action easier or more straightforward, such as by providing bigger recycling bins to induce an increase in recycling (Cosic, Cosic, & Ille, 2018). Even if this approach seems to be effective, it has higher costs (Zaneva, M., & Dumbalska, T., 2020). The framework to design green nudges is composed of three steps. Firstly, there is a need of understanding which human behaviours impact the most on climate change. Prioritizing impactful behaviours will produce the highest possible effect in the shortest amount of time. In addition, when very impactful behaviours are scaled on more populations, their effect increases considerably. Secondly, an understanding of which behaviours are the easiest or most susceptible to change. Targeting the

behaviours that are most susceptible to modification will ensure that intended outcomes and goals are achieved. So, the feasibility of the targeted behavioural change should be taken into consideration taking into account both costs and benefits. Thus, resources should be allocated to the nudges which would be more effective. Thirdly, it is necessary to understand how individual-level characteristics can influence outcomes. The success of a given nudge may be influenced by individual-level characteristics, including culture (Gifford, 2011). When designing a nudge, individual variables should be taken into consideration otherwise it may backfire. Thus, a personalized nudging approach may increase the impact (Zaneva, M., & Dumbalska, T., 2020).

Even if, the field of green nudging is still emerging, empirical evidence has already shown that it can be a very effective method for closing the intention-action gap and fostering greener behaviour. Differently from other regulatory tools, green nudges are particularly flexible and easy to implement across various levels of governance, as well as at the private level and allow for further changes to find new and better ways to implement the general nudging methods (Zaneva, M., & Dumbalska, T., 2020).

CHAPTER 2: FOOD WASTE

2.1. What is food waste?

Food waste is one of the main problems today's society is facing in the current climate crisis. In fact, reducing food waste is one of the main goals of the United Nations for different reasons. Firstly, it is important because there is a waste of tons of food, but at the same time there are millions of people affected by hunger and the number is increasing every year since 2014, according to the UN. Moreover, food waste has also implications for the climate situation, it increases the amount of CO₂ emitted contributing to the Earth's rising temperature. Finally, another problem is represented

by the number of resources devolved to produce products that are going to be thrown away. Such resources could have been saved up for the future and not wasted to generate food that was going to be thrown away. There is also to take into consideration the waste of money from the family side. Every time someone throws away food there is a loss to bare in terms of money spent to buy that food. Both food loss and waste affect negatively the ecosystem because the resources used to produce such food are wasted, resources such as water, land, energy, labour and capital. Moreover, the food waste ends up in landfills which leads to greenhouse gas (GHG) emissions, which affect climate change. All of this can also lead to a negative impact on the price from the consumer's point of view. This system has proven not to be so efficient and sustainable, so there is a need to design a new and more efficient system to reduce food loss and waste. To do that the new technologies provide us new ways to enable good practice in the management of food resulting in transformative change. Food waste is becoming a relevant problem for society, because of many different reasons. In fact, the United Nations (UN) established the International Day of Awareness of Food Loss and Waste. This represents an important opportunity to grasp the attention and call to action of both the public and private sectors, to reduce food loss and food waste. According to the UN at a global level around 14% of food produced is lost and 17% is wasted. This 17% is divided as 11% wasted in households, 5% in food service and the remaining 2% is wasted in retail. It is clearly understandable that the biggest problem is represented by the food waste every person produces every day at their home. Due to its negative effect food waste and food loss have been included in Sustainable Development Goal 12 (SDG), in particular, it is one of the targets of Objective 2, Zero Hunger. As a result, there is a particular urgency in trying to diminish as much as possible both food waste and food loss (United Nations).

According to the FAO, food waste and food loss have a significant impact not just on the environmental point of view, but also on the economic one. The reduction of both food loss and food waste is one of the most important means to reduce the pressure on different natural resources and, at the same time, improve the economic situation of both families and firms.

2.1.1. Food loss and food waste: the differences

There is a distinction between food waste and food loss. The FAO in 2011 defined food loss as follows:

“Food loss refers to the decrease in edible food mass at the production, post-harvest and processing stages of the food chain, mostly in developing countries.²”

While food waste is defined by the FAO as follows:

“Food waste refers to the discard of edible foods at the retail and consumer levels (...).³”

However, there is not a single definition accepted universally. There are different definitions that must be considered and that change according to the organization and its scope. The definitions diverge when it comes to the terminology used, criteria considered, perspectives adopted, and type of food waste considered. Furthermore, it must be taken into consideration that different terms have different meanings for different organizations. Moreover, time has also an impact on the definitions, since over time knowledge evolves and there are more means available to get to a more precise definition. Due to all these differences, a gap in the definition has been formed

² FAO <https://www.fao.org/nr/sustainability/food-loss-and-waste/en/#:~:text=Food%20loss%20refers%20to%20the,levels%2C%20mostly%20in%20developed%20countries.>

³ ibidem

and this is the reason why there is not a universally accepted definition. The perfect example behind this reasoning is represented by the FAO and the European Community. Taking into consideration the first institution, according to the FAO's 2011 definition food loss occurs in the first stages of the Food Supply Chain (FSC). However, as time went by the definition has been reviewed. In fact, in 2014 FAO declared that the difference between loss and waste is not determined by the stage of the Food Supply Chain and reviewed their definitions. Defining food loss as follow:

“Food losses (FL) refers to a decrease, at all stages of the food chain prior to the consumer level, in mass, of food that was originally intended for human consumption, regardless of the cause.”⁴

The definition of food waste was reviewed as well and it was defined as:

“Food waste (FW) refers to food appropriate for human consumption being discarded or left to spoil at consumer level – regardless of the cause.”⁵

On the other hand, the European Commission has proposed a different definition through the Fusion project. In particular, the Commission decided not to differentiate between food loss and waste, but to use just the word food waste not making any difference between edible and inedible food. The reasoning behind such a choice is the action plan adopted by the EU itself. These two examples highlight perfectly how the definition and the distinction between food loss and food waste can vary across both time and organizations, according to the main goal of the organization itself. Resuming the definition itself depend on the organization that is taken into consideration and their policy in defining, measuring and reporting food waste and food loss (Géraldine Chaboud, Benoit Daviron, 2017).

⁴ FAO - <https://www.fao.org/3/i3901e/i3901e.pdf> pag. 22

⁵ ibidem

Due to the multiple definitions of FWL, it is difficult to have a common agreement and a clear comprehension of all the definitions. Food waste can be defined according to different variables. First of all, it can be defined according to the timing, in this case, it is defined as:

“FLW is only taken into account from the moment crops are ready for harvest (Fusions, 2014) or after harvest (FAO, 1981). Non-yields from pre-harvest stages are not taken into consideration, i.e., FLW from resources used in agricultural production are excluded.”⁶

Another dimension according to which food waste can be defined is represented by the scope, which is:

“Only agricultural products originally and directly intended for human consumption are considered (FAO, 2014; Fusions, 2014). Agricultural products intended for animal feed or non-food use (bioenergy, biomaterial and industrial systems, etc.) are over-looked.”⁷

These two definitions appear to be similar and have points in common, however, the definitions diverge in four different cases:

- (1) Terminology used
- (2) Criteria considered
- (3) Perspective adopted
- (4) Type of FWL considered

For what concerns the terminology used, different terms used have different meanings for different organizations and this led to different definitions. For example, the European Commission with the fusion project does not differentiate between food

⁶ GÉRALDINE CHABOUD, BENOIT DAVIRON, (2017) Food losses and waste: Navigating the inconsistencies, Global Food Security, Volume 12, Pages 1-7, ISSN 2211-9124, <https://doi.org/10.1016/j.gfs.2016.11.004>.

⁷ *ibidem*

waste and food loss but considers everything a food waste. However, other organizations, such as the FAO, use the term food waste just in relation to the distribution and consumption stages. Furthermore, taking into consideration the criteria considered the definitions can be interpreted according to three different criteria:

- (1) The use and destination of food products: some definitions take into consideration all the products intended for human consumption and not effectively consumed, even if they have a different final use, while other definitions tend to take into consideration the final destination of the product;
- (2) The edible aspect of food products: some definitions consider just the edible part of food products, while others consider both the edible and inedible parts;
- (3) The nutritional value of food waste: some definitions take into consideration the nutritional value leading to considering in the definitions also the over-consumption of food as a form of food waste.

Moreover, the definitions reflect the problems that the institution is associated with. As a result, different definitions take into consideration different aspects of food waste, for example, some definitions are based on the environmental perspective and others are based on the social perspective of the FLW. Finally, definitions can change whether is taken into consideration the qualitative or quantitative side of food waste, where quantitative refers to the volume and qualitative, according to the FAO (2014) refers to:

“(...) An alteration in the physical-chemical and/or organoleptic characteristics of a product. (...)”⁸

⁸ GÉRALDINE CHABOUD, BENOIT DAVIRON, (2017) Food losses and waste: Navigating the inconsistencies, *Global Food Security*, Volume 12, Pages 1-7, ISSN 2211-9124, <https://doi.org/10.1016/j.gfs.2016.11.004>.

Both qualitative and quantitative food waste can lead to an economic loss and a possible nutritional loss, in particular in the case of qualitative food waste (Géraldine Chaboud, Benoit Daviron, 2017).

As time goes by, the definitions have evolved, and the FAO itself has developed new definitions over time. In 1977, the objective of the institution was to promote policies to improve and guarantee food security. In those years the definition was different from the one of 2014, mentioned before. The main three changes that were introduced over time are:

- (1) A new concept of waste;
 - (2) Food waste is considered from the moment products are ready for harvest, and
 - (3) Food not consumed and redirected to alternative uses is included as food waste
- (Gustavsson et al., 2011).

All these changes and multiple definitions have led to different inconsistencies and ambiguities. In particular, Koester in 2014 pointed out that the FAO's definition was not in line with their scope of food security and efficiency. There are 4 different inconsistencies that have been identified in the FAO definition. First of all, the definition includes agricultural products originally intended for human consumption and redirected for animal feed but excludes agricultural products grown for animal feed. This shows an inconsistency between what is not considered food waste in the scope of the definition and what is considered food waste on the basis of food products not consumed but redirected. A second inconsistency that has been detected is the difference among edible, potentially edible and inedible parts of food, such difference is not compatible with the goal of the FAO institution of proposing a universal definition, since such division can vary over time across cultures and countries. Thirdly, there is an inconsistency regarding the wording, mainly because using the

term waste just for consumers can picture them as the “guilty party”; while using the term loss for a higher part of the food supply chain, there is the implication of a non-intended outcome. Finally, the last inconsistency that has been detected is represented by the fact that FAO’s definition includes food redirected for animal feed due to the main goal being food security. However, by doing so they are giving priority to a specific dimension of sustainability, which could result detrimental to the system in general (Géraldine Chaboud, Benoit Daviron, 2017).

However, inconsistencies are also present in the EC definition, 2 main inconsistencies have been identified. First of all, the definition includes composted food products but does not include composted food used in animal feed, even if the two belong to the same category of waste treatment. As a result, the hierarchy of waste proposed by the EU remains too vague and flexible. The second inconsistency that has been identified is regarding the objective of the European Commission, which is to promote efficient natural resource use. However, the Commission in its definition just takes into consideration food waste from the moment products are ready for harvest (*ibidem*).

Both definitions result ambiguous in different fields as mentioned before, but there is also one common field that results ambiguous both to the FAO and the European Commission. In particular, it is represented by the difference between agricultural production intended for human consumption and intended for animal feed or non-food uses. The “non-human” part is excluded from both definitions. However, the difference between these two agricultural productions is not always clear, since a product's destination may change depending on its quality (*ibidem*).

2.2. The impact of food waste

As mentioned previously, food waste has a significant impact on the Earth, being one of the biggest causes of climate change. In fact, it is one of the priorities to reduce it

and mitigate its effect. This is also proven by the FAO itself and the fact that reducing food waste is one of the SDG's goals. In 2011 the FAO estimated the effect of food waste and its correlation to climate change. The report highlights how one-third of all the food produced each year is wasted or lost throughout the food supply chain, this represents a waste of all the natural resources, not just used for the food itself, but also for packaging, transporting, processing and marketing. Thanks to the estimate of the institution a pattern can be derived at a global level, while in high-income countries, the higher volume of food waste is in the processing, distribution and consumption stage. In low-income countries food waste occurs the most during the production and post-harvesting phases. There are two different reasons underlying such a pattern, in the first case, it is the aesthetic preferences and the arbitrary sell-by-dates, while in the second case is the lack of infrastructure and knowledge on storage and food handling (FAO REPORT - Food wastage footprint & Climate Change).

The FAO estimated different indicators that can help everyone in understanding the side effect of food waste. Starting with one of the biggest problems nowadays, carbon emissions. A product emits GHGs throughout its life cycle and they are expressed as kg of CO₂. The results have shown that:

“(...) The global carbon footprint, excluding land use change, has been estimated at 3.3 GTonnes of CO₂ equivalent in 2007. (...)”⁹

To compare the amount of CO₂ emitted with those of the countries, food wastage was third overall, after China and the US. Another indicator that was estimated by the FAO was the water footprint. The results have shown that the water footprint of food waste in 2007 is equal to 250 km³. To make a comparison this amount is equal to 3.6 times the water footprint of total USA consumption, making food waste rank first among

⁹ FAO REPORT - Food wastage footprint - Impacts on natural resources
<https://www.fao.org/3/i3347e/i3347e.pdf>

nations' water footprint, before India and China. The third indicator that the institution has developed is land use. It represents the amount of land used to produce that type of food that could have been saved. In particular, the amount of land used in 2007 to produce food waste was equal to 1.4 billion hectares, which is equal to 28% of the world's agricultural land area. This area is larger than every country in the world except for the Russian Federation. Finally, at last, the FAO estimated how much food waste is affecting biodiversity. Biodiversity includes the diversity of life on Earth, across genes, species and ecosystems. Food waste also affects biodiversity indirectly, since it is necessary to have land in order to produce more food, and to do that deforestation for the human being has been the solution over the past few years. However, this has incredibly affected the biodiversity that is populating the Earth. This phenomenon is affecting the low-income region more, in particular Latin America and Sub-Saharan Africa. In fact, threats to biodiversity are considerably higher in such countries rather than in developed ones (FAO REPORT - Food wastage footprint - Impacts on natural resources).

All those mentioned above are the so-called "hidden costs" of food waste, meaning that they are not actual costs that people face and pay for with money, but people pay for them by ruining their own Earth.

There are also more recent data developed by the UN that can help us to understand the amount of food waste generated worldwide divided among Households, Retail and Foodservice, this is the so-called Food Waste Index. In the report is stated a clear difference between food waste produced in households, in food service and retail. Thanks to the studies conducted by the UN there is clear evidence of how household food waste in high-income country represent the biggest portion with 79kg/per capita/per year, similar data are also presented for upper middle-income countries and

lower-middle-income countries respectively with 76 and 91kg/per capita/per year. However, a comparison with the other sector is available, just for the high-income countries, in the food service sector the waste is equal to 26kg/per capita/per year, while in the retail sector is equal to 13kg/per capita/per year (UN FOOD WASTE INDEX REPORT, 2021).

Thanks to all the data gathered by the different organizations mentioned there is a clearer idea of the impact of food waste on the Earth and how much this phenomenon impact on climate change, mainly due to household food waste.

2.2.1 The impact of food waste in Italy

Focusing on Italy, the UN has estimated that household food waste is equal to 67kg/per capita/year in the country. This amount is equal to 4 tonnes per year of household food waste only in Italy (UN FOOD WASTE INDEX REPORT, 2021).

Aside from international sources, there are also national sources that have estimated the amount of food waste produced in Italy. In particular, Waste Watcher International Observatory has studied food waste in Italy. In particular, in 2022 food waste per person on average in a week is equal to 595,3 gr. In particular, the type of food that is wasted most often is fruit, which represents 27% of the waste, followed by onion, garlic and tubers with 17%, then there are bread and salad both with 26%, finally, there are vegetables with a waste equal to 15%. The report also provides geographical data about food waste. Such data may be particularly significant since the North of Italy has 12% less than the national average with 522,4 gr, while similar data is also provided for the centre of Italy, which has 10% less of production of food waste with respect to the national average equal to 537,8 gr. However, what is particularly different is the South of Italy, which produces 18% more food waste more than the national average with 705,3 gr. Aside from the statistical data the report provide also

data about the reason why Italian families waste so much. In particular, 47% of people say that the reason why they waste so much is because they forget about the food they have and it expires. Another 46% of people say that fresh fruit and vegetables become rotten. While for 35% of people happens that the food sold is already expired. Finally, 33% of people tend to buy too much food because they think they need more food at home, but in the end, it goes thrown away. Italians tend to recognize the negative effect of food waste more as a waste of money for families, they also recognize how impactful is in the education of young people. After these two main negative effects, they recognize the waste of resources and the increase of waste. In fact, Italians think that one of the best ways to reduce food waste in the future is being able to educate and make people aware of the impact of food waste both on the environment and the economic situation (Waste Watcher International Observatory-Università di Bologna-Last Minute Market su dati IPSOS).

2.3. Why do people waste so much?

There are many different possible answers to the question: “Why do people waste so much?”. When answering such a question, it is impossible to find just one reason why. Since different variables interfere and come into play when considering pro-environmental behaviour, food waste in particular. Firstly, there are some socio-demographic considerations, such as the composition of the family, smaller families tend to generate more food waste than bigger ones. Another significant variable is represented by an economic variable, the income, households with a higher income tend to waste more, especially in developed countries. The final example is represented by culture, which has a crucial role in food waste. Each culture has different habits and attitudes, which can lead to more or less food waste (Ishangulyyev R., Kim S., Lee Sh., 2019).

Moreover, another variable that plays a significant role is represented by the distribution and packaging or labelling of food. Both the factor just mentioned do not help at all when it comes to the reduction of food waste. First of all because in shops sometimes there is not the desired size, which leads consumers to be forced to buy a larger size, that may be wasted later on. A second important consideration that must be done is that consumers, most of the time, do not have easily accessible shops. If people do not have an easily accessible shop they tend to buy in bulk to be sure to have everything at home, but this could lead to an over-buying of food that will eventually be wasted (Van Geffen, L., Van Herpen, E., Van Trijp, H., 2020) .

For what concern data labels, they tend to create confusion in the mind of consumers. Even if, there are very precise guidelines for food security, people are still not aware of how some information must be understood. This is a relevant variable because misinformation can lead to an increase in food waste (Marie Hebrok, Casper Boks, 2017).

Understandably, there are many different drivers of food waste. It is impossible to find just one compelling reason behind food waste. Aside from the above-mentioned reasons why there are many others. In order to understand the majority of the drivers behind food waste three questions must be answered, which represent the basic problems that lead to food waste. The first question is “Why do people buy food they never use?” The general public tends to find the solution to such questions in marketing because it is able to influence people to buy things they do not really need. This situation can easily lead to over-purchasing or regretful purchases which will become waste. It is common thinking that marketing is the enemy in this field because the scope of marketing is selling more and more, which is a sharp contrast to reducing food waste policy. However, with the correct data, there is a clear understanding that

the real culprit of such a situation is not marketing itself, but the optimistic mind of people. Consumers tend to purchase food with the mindset of “I will use this one day”, but the occasion eventually never comes, meaning that the product will expire and be thrown away due to health reasons. In this sense, people can also be influenced, because if the expiration date is farthest in time more people will be tempted to buy it, due to the positive mindset. This positive mindset arises mainly for two reasons: one is to replicate the memorable moment consumers have seen in advertising, and the other one is the ideal of a family dinner that consumers have pictured in their minds. (Brian Wansink, 2018) The second question is “Why do people prepare food that is never served?” This type of waste is increasing with respect to the past while family sizes have reduced. The main reason why such waste is a built-in bias to avoid losses more than strive for gains is the so-called Prospect Theory. Such a theory was conceived for investments, but it can be easily applied to food as well. People tend to over-prepare food to avoid the loss of embarrassment of a hungry guest (*ibidem*).

However, answering these two questions is not enough, since many other drivers of food waste do not fall into these two categories. In particular, it is also relevant the value that people give to food, which is really low or even not valued at all. This is one of the main problems of food waste. The abundance of food available at a very low price brought us to the actual situation, the scarcity of food or an increase in price would actually reduce food waste in households. However, this would not be the right solution to the problem, it is definitely more important to try to increase the value people give to food. Another factor that is relevant for food waste production is guilt, people feel guilty for throwing food away. As a consequence, what people tend to do is to manipulate food in some way that throwing it away remains the only choice possible. Nowadays the creation of excess of food has been normalized and has

become part of everyone's daily life. Moreover, what makes it harder is that people are not aware of the amount of food they are wasting, since people perceive it as a mere routine that is part of their daily life and is unavoidable, making it acceptable. On one hand, some people think that increasing awareness is the first step to reduce food waste, in order to cause a sense of responsibility and guilt. On the other hand, others are against such an idea due to two different reasons. The first one is represented by the intention-action gap and the second one is the paradoxical consequence that persuading people to do something makes them feel like they are doing enough already so they won't act upon the desired action, in this case, the reduction of food waste. Another important reason is represented by the lifestyle of people. Nowadays people lived rushed life and buy food compulsively leading to an increasing trend in food waste. This causes a mismatch between the time slot in which fresh food can be consumed and other activities. Moreover, a busy lifestyle makes it harder to plan for food provisioning. In fact, this is one of the most significant drivers of food waste, just a few consumers have a clear plan in their mind when they go shopping. Consumers tend to value more flexibility and choice. Planning meals for a week can be difficult and lead to a sense of inflexibility, but not doing so can lead to food waste. Since it becomes hard to understand when the food will be consumed. As a consequence, the lack of planning will most likely lead to overstocking and overpreparing of food. Another significant reason for food waste is represented by leftovers, which is an even bigger problem because consumers are even less aware of it. There is a general sense of disgust, lack of safety and laziness behind leftovers, and this is the main reason why in the end they are not eaten. Usually, people tend to prepare too much food because they do not know or care about being well-portioned, mainly during special occasions with guests or relatives. This is how leftovers are generated and then people tend to

conserve them because they feel guilty for throwing them away. As a consequence, people tend to wait for them to be bad in order to be thrown away, this was defined by Porpino as “maturation time”, which reduces the feel of guiltiness (Marie Hebrok, Casper Boks, 2017).

Another reason why people waste so much has been identified by Wansink and van Ittersum, the so-called plates, bowls, and spoons bias consumption volume. In general, people overestimate how much food they will eat and underestimate how much food fits a large plate. This leads to food being wasted because people cannot portion food well and tend to fit too much on one plate (Marie Hebrok, Casper Boks, 2017).

A final significant problem is the fact that people do not realize the influence of their behaviour. In general, this has been a significant problem for all types of pro-environmental behaviours because to see results the solutions must be adopted collectively. As a consequence, people tend to think that their help will not be significant, the so-called drop-in-the-ocean bias. Moreover, there is a general lack of responsibility for which people are not motivated to act. People in general will act later on in time because they will be able to spot their results in an easier way, but this could represent a big issue for pro-environmental behaviour (Van Geffen, L., Van Herpen, E., Van Trijp, H., 2020).

As mentioned, there are many different reasons that lead to food waste, so to decrease the food waste level it is necessary to respond with multiple answers to all these different and linked problems.

2.4. How it is possible to fight food waste

There are different ways in which it is possible to fight against food waste. Reducing food waste would contribute to addressing interconnected sustainability challenges. Therefore, developing an appropriate strategy is one of the most important issues. In

order to achieve such a result, different institutions and organizations tried to propose their solution to the problem. In fact, the UN identified food waste and loss as one of the key challenges to achieve the Sustainable Development Goals.

The FAO proposed a toolkit to reduce the food wastage footprint. The scheme proposed is based on the model reduce-reuse-recycle/recover and as a last option there are landfills. First of all, food purchases must be reduced. As a second step, there is the reuse of things instead of throwing them away. This can be done without altering significantly the physical form of the object, otherwise, it would be recycling. This led us to the final stage which is recycling and recovering. In the first case, there is the transformation of waste into a new product, while in the second one the production of energy thanks to waste (FAO REPORT – Toolkit Reducing the Food Wastage Footprint, 2013).

Moreover, in 2011 the FAO and Messe Dusseldorf started the “SAVE FOOD: Global Initiative on Food Loss and Waste Reduction” program. Thanks to such a program they collaborate with donors, level agencies, financial institutions, and private sector partners to enhance and implement the FLW reduction program (Ishangulyyev R., Kim S., Lee Sh., 2019).

Also, the European Union tried to act upon the problem with the Fusions project. The main objectives of Fusions are to harmonize food waste monitoring, examine the feasibility of social innovative measurements for optimized food use in the FSC, and finally create a Common Food Waste Policy for the EU (*ibidem*).

Aside from the interventions of the institutions, there are many other methods to implement behaviour against food waste. One of the best ways to achieve important results in retaining food waste is through marketing. Even if, some think of it as the devil it could be a really helpful means. Marketing has the power to influence people’s

choices, in particular, marketers can increase awareness thanks to awareness campaigns. Marketing can help also more on a practical side, providing new packaging or new usage of the product that can stimulate the mind of consumers and help them use the food in another way, instead of throwing it away (Brian Wansink, 2018).

At the basis of the change, there can be the action provided by marketing, however, this action alone cannot make it work. There are different behaviours that people need to adopt in order to see improvement. First of all, planning, having clear in mind what is needed and in which quantity helps to increase the accuracy of food shopping and, as a consequence, to reduce food waste. Usually, people who are price-oriented tend to waste less than those who tend to buy more impulsively. Another important factor that must be taken into consideration is storing, how food is stored affect consumers' view of what they are missing, so adequate storage method can help to reduce food waste (Van Geffen, L., Van Herpen, E., Van Trijp, H., 2020). In this case of storing food at home, there have been important innovations that can exponentially help people to improve food handling at home. In particular, affordable intelligent fridge solutions have been growing a lot, such as ZmartFri, which is an intelligent fridge concept, that includes an expiration date alert via SMS or email. Another example is Colour Coding, where each colour represents a food group, increasing the awareness of what there is in the fridge. A final example is represented by FridgeCam, which is a camera attached to the fridge that users are free to use when shopping to understand the stock present in the fridge. Moreover, other factors are currently being studied. In particular, packaging, since consumers are not fully aware of the properties of food packaging they can do something wrong without realizing it. One of the ways to avoid such mistakes has been overcome by new emerging technologies, such as the Keep-it label which continuously monitors temperature and time left to expiration through a

line. Another problem, mentioned before, is represented by big pack sizes which can be solved easily with portioned or divisible packaging. Moreover, to overcome the bias of the plate size, little changes can help a lot. In particular, the redesign of simple aspects of plates such as the diameter of the verge ring, the diameter band on the lip of a bowl or plate, and patterns and colours. There are for instance plates on the market with patterns that show how to portion correctly in order to avoid over-eating, which are usually used for dieting but could also help in case of food waste (Marie Hebrok, Casper Boks, 2017).

Due to the increase in the problem of food waste, many new possible solutions have been arising, the most successful one has been represented by nudges and behavioural science. Since it is necessary to change people's mindset towards food waste and behavioural science has been one of the most important ways to do that. People must have reducing food waste as a goal in their mind, but they usually have multiple goals they act upon, with a limited amount of time, money and cognitive capabilities. Therefore, to make people act upon reducing food waste it is necessary to provide them with the abilities, represented by skills, and the opportunities, which on the other hand are represented by situations in the environment. If one of the two is lacking then the probability of people acting upon food waste will be reduced. The importance of both abilities and opportunities is highlighted by two different factors. Firstly, they are vital to perform food waste-preventing behaviours effectively and secondly, they can facilitate acting upon multiple food-related goals at once. Abilities and opportunities can support or sabotage the waste of food because they can make it easier or harder for people to act upon their goals. As a consequence, in order to make it easier for people to act upon food waste reduction it is important to implement the right intervention design. In fact, choice architects can use different types of interventions:

- (1) Emotional appeal, which can manipulate people's feelings towards food waste;
- (2) Social influences, the social norms surrounding food waste;
- (3) Commitment, that makes the issue appear more relevant;
- (4) Prevention, changing the costs and benefits related to food waste.

One of the most significant interventions that have been used a lot during the previous years is represented by information campaigns, which are often matched with emotional appeal campaigns. The goal of such campaigns is to inform people about the consequences of food waste and the benefits of saving food. This information can help to increase awareness and concern in order to decrease their food waste level. However, these two factors alone are not sufficient to make people act. In order to be more effective campaigns, need to be combined with some sort of Call-To-Action (CTA) for consumers. To increase even more the effectiveness of the campaign there is the possibility of tailoring it for each type of target audience. For example, for people with biospheric values, it is important to highlight the environmental benefits instead of financial ones, differently from those with egocentric values. Another way to achieve similar results is represented by emotional appeal campaigns, which instead of spreading information tend to target emotions. The relationship between emotions and behavioural change appears to be complex, but people that tend to feel guilty will try to produce less food waste. In particular, guilt, hope and pride can all lead to a behavioural change, even if guilt is the one that seems to work the best for people concerned about something. The only case in which guilt does not work is when people dislike being confronted with negative emotions and have little concern about the topic. However, it is important not to blame the consumer, otherwise, the effect may be the opposite of the desired one. The second type of intervention mentioned is represented by social influences. They are proven to work correctly in influencing

social norms and steer people towards pro-environmental behaviour. Social norms can be used in many different ways, one is to emphasise the normality of food waste prevention when communicating, which can happen through a variety of means. The third type of intervention is commitment. This intervention has been shown to be successful in changing behaviour, but it can be costly since every person needs to be approached individually to increase the concern. Finally, to help the prevention of food waste Public Institutions can act with regulations directed at reducing the level of food waste. However, such intervention has been proven not to be the best option. In fact, they must be used very carefully because regulations are external motivation. Therefore, people might go back to the previous behaviour if penalties can be avoided or are dropped (Van Geffen, L., Van Herpen, E., Van Trijp, H., 2020). However, there are other types of strategies that choice architects can adopt to implement nudges. In particular, these types of interventions focus more on reminding people of their intention and making it easier for them to act upon such intentions motivating them. These types of interventions are:

- (1) Prompts, which are reminders of intentions;
- (2) Implementation intention setting, which are ways to make intention more specific;
- (3) Instructions, which teach people how to reduce food waste effectively;
- (4) Making it easy, which helps people by making it easier to perform such behaviours;
- (5) Feedback, which helps to monitor the effect of their behaviours.

First of all, prompts, are reminders for people to perform a certain type of behaviour to prevent food waste. They can be both signs or written messages, which usually works better when they are written politely and address easily the type of behaviour to

implement. However, they are not the most effective because they do not change people's beliefs. So, they work just with those that are intended to reduce food waste (Van Geffen, L., Van Herpen, E., Van Trijp, H., 2020). A successful example of a written message has been reported by Whitehair et al. in 2013. In the experiment, the messages urge University students in the USA to eat what they took and not waste food providing some information about how much food is wasted at the university and how many meals that food could have provided (Marie Hebrok, Casper Boks, 2017). The second type of intervention are implementations, which are a sort of commitment but more detailed. In this case, people specify when, where and how they will implement their intentions. Thirdly, there are instructions, which aim at increasing people's knowledge. In this case, the instructions focus on increasing the knowledge of people by telling them how to improve their behaviour to reduce food waste with tips and tricks. The fourth type of implementation is represented by making it easier for people to perform a type of behaviour. The idea is to change the situation in order to make it easier for people to prevent food waste. However, it can be challenging to perform such a type of intervention in people's homes, but it can be done with apps or smart fridges, otherwise through little changes, such as making something more accessible. These types of intervention, are the most appropriate for nudges, because there is no significant alteration of the choice structure, so there is the possibility to steer people into performing such behaviour even if they do not have any type of motivation. Finally, the last option is represented by feedback, which can provide people with information about the amount of food wasted or saved. There are different types of feedback, they can be daily or weekly feedback and they can be given in different variables, which can affect the effectiveness of the feedback. A way to increase the effectiveness of such an intervention is competition or comparative

feedback. In this case, people do not receive information just about their own behaviour but also about other users. The competition encourages people to compete against each other in favour of performing the desired behaviour (Van Geffen, L., Van Herpen, E., Van Trijp, H., 2020).

2.5. Firms and initiatives against food waste

Many different firms have started to act with the aim of trying to contribute in some way to resolve the issue. There are firms that have been acting in the sector of retail food waste, one of the most important and famous has become Too Good To Go, which is proposing to their user's food at a cheaper price to save it. They already improved a lot, even if such part of food waste is the smaller part, with respect to the food waste happening every day at home. In fact, many other firms are trying to work in this sense, one example is Cortilia, which is delivering to people their own food expenses at a lower price made with products that otherwise would have been thrown away (Cortilia website). Finally, another meaningful and successful project has been promoted by Coop, which decided to give their spare food to volunteers saving over 5400 tons of food. Moreover, they are also promoting another initiative, which consists of selling products close to the expiration date at a discount of 50% (COOP website). There are also big firms that are trying to educate the public, a perfect example in this case is Barilla, which has its own foundation, which produces reports about food waste. Thanks to the institution they are also able to promote initiatives that help to reduce food waste (Fondazione Barilla). This is a perfect example of reducing food waste in the retail sector and along the supply chain. Finally, it is possible to focus more on household food waste, the majority of firms working against household food waste are trying to educate their users and proposing them a new way of conceiving the food expenditure. A perfect example, in this case, is represented by Planeat, which is

delivering to their user the food necessary to cook the desired number of serving for the meal they prefer in order to reduce the waste. Moreover, Planeat offers their users a free and easy tool to use to plan and organize in a better way their weekly meals. Also, bigger distributors are trying to contribute in a similar but less effective way. For example, now distributors such as Esselunga and Carrefour are delivering at-home food shopping, in this way people may be able to control better what they have at home and what they really need, without the temptation of buying products they do not need.

CHAPTER 3: RESEARCH METHODOLOGY

This chapter presents the methods and procedures applied in researching for this thesis. The case that has been studied is using nudges in a green company. In this case, the company is represented by the firm Planeat, which works to reduce household food waste. The main goal of the research was to implement a nudge for the company and see consumers' reactions to it. The expected reaction is to see consumers that are more motivated to waste less food and more aware of their impact on the environment. The nudge that has been implemented is represented by different equivalences introduced on the website to make consumers understand how much they are helping the planet by using Planeat, instead of wasting their food.

3.1. The procedure

The procedure that has been followed for this research is divided as follows. At first, thanks to the data published by the FAO and other institutions different indicators have been calculated. Each indicator states how much CO₂, water, land and economic resources have been saved by saving an exact amount of food. Before implementing the indicators on the website of the company, a survey was sent to the users via mail. The goal was to understand both the socio-demographic characteristic of users and

their level of comprehension in terms of how much they are contributing to the environment and how much care about knowing more about their positive impact. Afterwards, the indicators have been implemented and the users have been adapting to them for some time. Then, as a final step, another survey has been sent to the same users to understand how their perception has changed after two weeks.

3.2. The collection of data

The data used to calculate the indicators are collected thanks to the previous report completed by the FAO institution in 2013, and the missing ones have been adjusted thanks to data from other institutions, such as WWF, which prepares different reports about the effect of food waste, in particular, it was used to adjust the quantity of water saved. On the other hand, the data referred to consumers are collected through surveys, which have been sent by the company to their own users via e-mail. The first survey has been sent in March and another one has been sent in July. After the nudge publication, it was given consumers some time to adapt to the new introduction, in particular 2 weeks. The two surveys were sent via email with the same format, Google Form, and both of them have been filled in a week by 125 users. Moreover, it has also been decided to interview some users who are external to the company and do not know anything about it. In particular, to interview them a focus group online has been organised. The participants were asked to discuss about food waste, its effects and how to try to fight against it. This interview could be helpful to understand the general thinking and have an idea of how to make people engage more in trying to act more sustainably. Since these people could represent a portion of potential users for Planeat, it could be useful for the company and the research to know what they would do and what would have made them act in a desired way. This could represent a benchmark for the company in order to attract external users with the nudge and let them become

Planeat users too.

3.3. The reason why

All the choices made during the research have a clear reasoning behind them. In order to be able to explain the reasoning behind the choices of the research is necessary to understand firstly the goal of the research itself. The goal was to reduce the drop-in-the-ocean effect, making people understand that their effort is important, with the aim of attracting new potential users. Moreover, the second aim was to increase the awareness of the already existing consumers and let them engage even more with the company and food waste reduction. However, this is just the beginning for the company, since this could represent a very effective method to make them grow, bringing benefits not just to the company but also to the environment. Thanks to this first implementation, the company in the future could bring their nudge strategy to another level by introducing competition among users. This could help in decreasing even more the amount of food waste. The decision of using nudges instead of other methods is also based on the fact that nudges have been proven to be one of the most effective ways to make people act upon something closing the intention-action gap. The result expected from this research is to increase the awareness of users and their interests in being more aware of their impact giving them an increasing sense of responsibility and consequently, in the future, reduce their food waste level.

CHAPTER 4: PLANEAT CASE STUDY

To start the research in this chapter there is a general presentation of the firm and the internal and external environment in which it is inserted. This study is necessary to understand where to start and in which market the company is operating, its strength and weaknesses with respect to the competitors and where to improve. Starting from a

general overview of the company, followed by a description of the internal environment describing the business model of the company. Finally, some observations about the competitors and the relative market will be made.

4.1. The company

Planeat is a company that offers an innovative and personalised way to perceive meals without wasting any type of food or packaging. The service that the company is offering is innovative and to make it even more special and unique they are collaborating with other companies. This allows them to improve their service and enlarge their offering. Thanks to the service of Planeat users will be able to make a difference together and help in improving the environmental situation everyone is facing. At the same time, owners of other firms will be able to generate a shift in the lunch break of their employees, who will feel more taken care of and at the same time they will be helping to waste less food. The story of Planeat draws back to the beginning of 2019. At that time, they had just the desire of contributing in some way to improve the current environmental situation. They observed how food waste was one of the biggest problems for the planet and came to the solution of combining technology and food together. Their desire of helping and leaving a better world for future generations was what moved them at that time and still now. A year later, at the beginning of 2020, they started their journey founding Alimentiamoci S.R.L. whose aim was to guide the project of Planeat. The project started to grow and in August of the same year, they reached 1.000 orders. Despite the pandemic hitting everyone's daily lives, they were growing rapidly and in August 2021 they reached 10.000 orders. In September 2021 Planeat.eco was created in order to improve even more as a firm and contribute more to the environmental cause they were representing. Just three months later, they acquire the start-up Zero Impack with the aim of improving the

quality of their packaging starting to use reusable containers. As they continue to grow they started to see the results of their hard work, in January 2022 the amount of food saved from waste reached 10.000 kgs. and the number of orders also increased to 10.000. As time goes by, in July of the same year the company decided to improve their services to do that it opened the first physical pickup point together with an inclusive and sustainable refreshment point. However, their growth did not stop here, on the other hand, they continued to grow more and more and in November of 2022 they reached over 100.000 orders. Since the beginning of the company all the people that contributed to its establishment had a clear mission and vision for it. In particular, the vision of the company is to promote a sustainable lifestyle providing a useful daily tool to consumers to achieve such results. On the other hand, the mission of the company is to offer to their clients, the so-called Planeater, a new way of doing food shopping, which is more reasoned and conscious about eating habits. Thanks to Planeat they can save time and spend more time living their life more freely, at the same time they can decrease almost to zero their food waste at a cheap price. To be able to offer the best service to their clients Planeat aims at creating a strong network tiles with other reality operating in the same field. In this way, they are able to generate a shared value among everyone, since being part of the same ecosystem is a remarkable factor. In this sense, there is the need for everyone be more aware of their impact both in terms of nutritional awareness and sustainability and Planeat is aiming to increase both types of awareness (Planeat website).

4.2. The business model of the company

In this second part, the business model of Planeat will be analysed more in-depth. There are different types of pains that the potentially targeted users of Planeat can feel. First of all, the environmental concern, some people feel like the current environmental

situation represents a burden for them and they want to help in some way and reduce their footprint. Another different type of pain is represented by time, people feel like they lack time and they do not have enough time to worry about their meals. Moreover, people sometimes can have difficulties in planning their food shopping, which can lead to a generation of food waste, or users may have difficulties in planning what to eat and ending up not doing a correct diet. These are all the pains that targeted consumers of Planeat may feel. Thanks to the activity of the company they will be able to relieve such pains and transform them into gains. In the first case of environmental concern, the company aim itself shows how it can be helped, by using Planeat users will be able to worry less about their impact on the environment, thanks to the reduction of food waste. Also, regarding time, the company is literally giving more time to their users, who won't need to spend time doing the food shop and preparing it, thanks to Planeat they will be able to enjoy their free time and cooking could become something funny to do together, instead of a kind of obligation. Time is precious for consumers because it is limited and every single one of us needs to do many different things in such a limited amount of time. Thanks to the company consumers will be able to save time that they usually give up for food shopping and will be able to enjoy more of their free time with their families. Moreover, users will be able to plan their food shopping and weekly meals, which can lead to having a healthier diet and a decrease in their food waste or food costs. These are the pains and gains when referring to the B2C market, however, Planeat also refers to the B2B market, which has completely different pains and needs. In particular, firms are now more inclined to improve their green behaviour due to market conditions. However, those firms need to give their employees a lunch service, while trying to keep the costs as low as possible. Thanks to Planeat they could do that, they could offer their employee a very personalised meal while improving their

environmental footprint. At the same time, companies will be able to reduce their costs because they will not have any type of fixed and mandatory contribution to make to Planeat since they can decide if and how much to contribute to their employees' expenses without any kind of obligation. As a consequence, three different target groups have been identified for Planeat: families, firms and schools. First and foremost, families, thanks to Planeat, will be able to plan in advance and enjoy more their free time. Sometimes planning meals for a whole family with different tastes can be tiring and stressful, thanks to Planeat everyone in the family will be able to eat what they prefer and at the same time families will be able to save time and effort. The second target group is represented by schools. Thanks to the company schools could be able to reduce the costs of the school canteen while reducing the amount of food wasted. At the same time, the quality of the foods and the diets of students could improve significantly. Finally, the last target group is represented by firms, that can provide highly personalised meals to their employees with the help of Planeat. The firms are free to decide if they want to pay for their employee's meals or not with a free contribution. This system has a lot of advantages for the planet, the firm and the employees. The benefits for the planet are clear because there is a reduction in food waste and plastic packaging. On the other hand, there are different benefits for the firms. First of all, there is an economic advantage, since there is not any type of economic obligation and neither it is fixed, so firms can decide if and how much they want to contribute. Moreover, there is also a fiscal advantage because the service is 100% tax-deductible. Finally, there is another important benefit because users can get both the lunch at work and the food shopping for their own meals at home. There are also advantages for the employees because they can enjoy a fresh lunch prepared with high-quality ingredients. Moreover, the lunch is also personalised, meaning that they

can choose what to eat among the receipts they prefer. They can also benefit from the cheap price of Planeat or use food stamps according to the contribution of the firm. All of these benefits and they are also reducing the amount of food they are wasting. To solve the problem of their target the company created Planeat back in 2019 (Internal document).

The value proposition of the company was to provide a platform that enables their users to plan their meals and receive at home the perfect food shopping without waste and later on they will be able to understand how much kilograms of food they have saved. In particular, the platform of the company works according to four different steps that users must go through:

- (1) Plan: there is a calendar where users can plan weekly meals with more than 200 receipts that can be adjusted in terms of portion and amount needed;
- (2) Choose the ingredients: all the ingredients used by Planeat are fresh and bought on the same day of the delivery according to the number of orders registered;
- (3) Preparation: the ingredients are chopped, washed and weighed in order to be divided into the boxes;
- (4) Delivery: the food is delivered to the users thanks to an organization that aims at reducing the impact of transport.

To go more in-depth, Planeat's offering gives the users the possibility to decide what to order between a kit with ingredients to prepare the receipt or also prepared meals. Consumers will receive their orders in 100% compostable packaging with a label that describes the meal ordered and a QR code to read the receipt online in order to avoid waste of paper. Everything in the packaging can be thrown away as organic waste, decreasing the amount of plastic produced. This helps us to understand the importance of sustainability for Planeat. In fact, the values on which the company is grounded are

the following:

- (1) Social responsibility: in their everyday working day Planeat has the main goal of managing efficiently all their working activities. In order to generate value for every single stakeholder that comes across Planeat in some way;
- (2) Health protection: thanks to their high-quality fresh products and the planning of the weekly diet Planeat allow their users to improve their eating habits and as a consequence their health;
- (3) Environment protection: Planeat is trying its best to reduce drastically the environmental impact of food waste and its relative activities. The firm is able to do that thanks to different actions: a short supply chain with fewer emissions, packaging 100% compostable and portioned ingredients to diminish food waste.

To ensure that their values are respected and applied in each step of their value chain they have four main pillars on which they base each of their activity, which are:

- (1) Quality;
- (2) Freshness;
- (3) Transparency;
- (4) Sustainability.

The company is selecting their suppliers and raw materials according to strict criteria because it is important to keep the quality and freshness of the food delivered to the users in order to provide their customers with healthy and good food. Trust from the people that choose to use Planeat is important and they are working hard to gain and maintain such trust also thanks to their effort in keeping the standards high in quality and freshness. Moreover, to keep the trust of their consumers they also have a clear transparency policy. Every step of the supply chain is carefully controlled by the

employees to assure the freshness and the quality of the food. Finally, sustainability is also one of the main pillars of the company. The main goal of the company is not just profit but giving value back to the people by combining social responsibility, sustainability and economic profits. In fact, Planeat is a benefit corporation that contributes to society and the environment in three different ways:

- (1) The promotion and diffusion of sustainable economic and social systems capable of generating widespread value. They do not generate value just for the company or for themselves, but they try to contribute in generating value for everyone on the planet and in society.
- (2) Introduction of practices and models that innovates taking also in consideration the sustainability both for firms and institutions. Innovation goes hand in hand with sustainability, there is no innovation without sustainability and vice versa – this is the reason why nowadays experts talk a lot about innovability.
- (3) Collaboration and synergy among no-profit organizations with a scope that is in line with the one of Planeat to amplify the positive impact on the planet. In order to succeed as a company one of the most important things are the strong network ties the firm can generate with other firms. This is even more important when it comes to sustainability and benefit corporations, in fact, it represents one of the main values of Planeat.

Since the company is a benefit corporation, they are based on the scheme of Profit, People and Planet. Planeat is born thanks to the desire of having a positive impact on the ecosystem, aside from aiming for profit, as a natural reason for a company. However, they do not want just to create profit but, they also want to give back what they have earned so far with effort, responsibility and transparency. To do that they take into consideration both their social and environmental responsibility. Their entire

business model is based on environmental responsibility and helping to improve the current environmental situation, and as a consequence, the Planet. However, they try also to give back to people since they feel a strong social responsibility. This is proven internally in the company by the fact that they rely a lot on people to create a bigger network of trusted people since they represent the true value added to a company. It is important that everyone feels involved in the activity of the firm and can contribute proactively. To enable the employees Planeat has decided to adopt an agile and flexible method following the principle of “holacracy”, in order to overcome the limits of the normal hierarchy. Everyone needs to have a precise role to be autonomous and other people need to trust each other in the decision-making process according to the job they have. However, Planeat as a company also act externally in a proactive way mainly thanks to the suspended meal, or “Pasto sospeso” in Italian. Thanks to such initiative they can maximize the good in the society and helps those that are in need. They are proud of their initiative because thanks to it they can bring more solidarity into society. They have donated already more than 3.000 meals to homeless people and they keep going in order to increase the number of meals donated. This is a perfect example to show the social commitment they have towards society and people (Internal document, Planeat website).

To resume, there is a clear definition of the problem and the solution provided by Planeat to their target, with a strong and clear identity of the company. Such identity drives them in trying to accomplish their objectives both in terms of economic results and in terms of sustainability.

4.3. The competitors

The company has to face different competitors in different sectors, due to their business model. The main market of Planeat is represented by Online Food Delivery.

It refers to the intersection of ordering groceries and prepared meals online. The orders are typically placed through an app or website and delivered at home. The market contains two different delivery service segments: Meal Delivery and Grocery Delivery. The Meal Delivery segment represents the services that deliver prepared meals and food ordered online for direct consumption. On the other hand, Grocery Delivery include the order and delivery of non-prepared food and beverage products, household, and personal care products (STATISTA ONLINE FOOD DELIVERY WORLDWIDE). The Meal Delivery segment includes different services:

- (1) Restaurant Delivery: the delivery of meals carried out directly by restaurants; and
- (2) Platform Delivery: the online delivery services that provide customers with meals from partner restaurants that do not necessarily have to offer food delivery themselves.

Grocery Delivery consists of three different sub-segments:

- (1) Retail Delivery: fresh, nonprepared products delivered from supermarkets or retailers where delivery is scheduled.
- (2) Quick Commerce: the delivery that is under 3 hours and operates dark stores or own warehouses.
- (3) Meal-kit Delivery: prepared fresh ingredients to be prepared at home, typically offered through a subscription service (STATISTA ONLINE FOOD DELIVERY WORLDWIDE).

In particular, different competitors in three different sectors have been identified. First of all, the Meal-kit Delivery competitors, for which were identified four different main competitors, Hello Fresh, Second Chef, Quomi and Maiocookingbox. The second sector that was taken into consideration is represented by the Meal Delivery

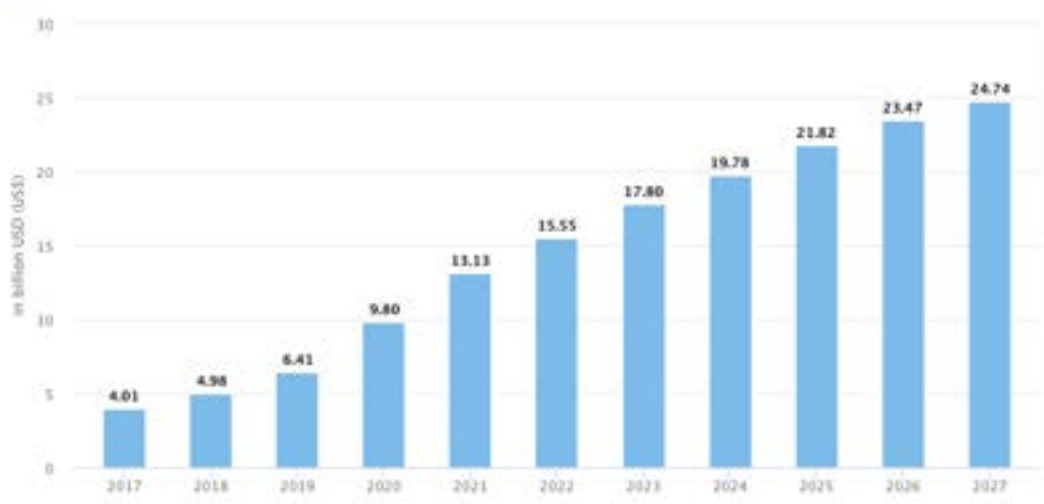
competitors, in particular Platform Delivery competitors, in which another four different competitors have been identified, NutriBees, Vita Meals, Pranzoalvolo and Mammtfood. Finally, the last sector that was taken into consideration is represented by the Grocery Delivery competitors, in particular the Retail Delivery competitors, which are bigger competitors with respect to Planeat, but that must be taken into consideration as well. In particular, the competitors that were taken into consideration are Esselunga, Cortilia, Carrefour and Too Good to Go. The variables according to which each competitor has been analysed are represented by the activity in common with the company and their help to the environmental situation, so their care for sustainability. The company also has to face different competitors from those identified in the research, these represent just a portion of the competitors that need to be faced by the company. Moreover, there are also other competitors that must be taken into consideration, the so-called indirect competitors, which satisfy the same need but not in the same way, so there may be consumers that are taking care of their environmental concern in a different way and not by reducing their food waste level. However, being so different from the scope of the research they have not been deeply analysed as the other three categories mentioned before.

4.3.1. Meal-kit Delivery competitors

The first category of competitors is represented by meal-kit-producing companies. In particular, the market is characterized as a subscription-based service which delivers consumers fresh ingredients to their homes directly. They are usually portioned and they need just to be cooked before serving. The main target of such a market is workers and parents who are too busy to cook fresh food during the week. The Revenue in the Meal-kit Delivery segment is projected to reach US\$17.80bn in 2023 and grow at an annual rate of 8.58%, resulting in a projected market volume of US\$24.74bn by 2027.

Also, the number of users is expected to grow amount to 40.00m users by 2027 with a user penetration will be 0.4% in 2023 and is expected to hit 0.5% by 2027 with an average revenue per user (ARPU) expected to amount to US\$0.58k. In global comparison, most revenue will be generated in the United States (US\$8,792.00m in 2023). The leaders of the meal-kit market are represented by HelloFresh and Blue Apron, but other competitors were taken into consideration in the following analysis, which are Second Chef, Quomi and Maiocookingbox (Statista, 2018).

Figure 1: Revenues of the meal-kit service market Worldwide from 2021 to 2030 (in US dollars)

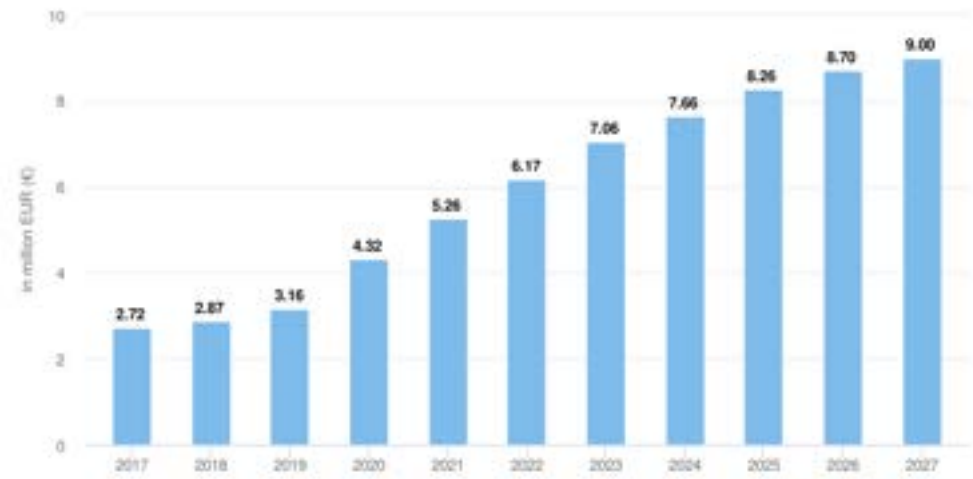


Source: Statista, 2018

To focus on the Italian market, where Planeat operates the revenues are projected to reach €7.06m in 2023, which corresponds to US\$7.20m. The market is expected to grow at a rate of 6.26%, expecting a projected market volume of €9.00m by 2027, corresponding to US\$9.07. The users are also expected to increase reaching the amount of 28.61k users by 2027. The average revenue per user (ARPU) is expected to amount to €286.10, equal to US\$293.20. In Italy, the main player in the market is also represented by HelloFresh, which holds 95% of the share market. South Korea had the strongest growth in the market, but in Europe, the growth seems to be promising, even if it is a little bit slower in comparison to other countries. In general, sustainability is a big trend that is expected to grow in the next years and meal-kits can benefit from it.

In particular, due to the fact that they have less of a carbon footprint with respect to grocery stores (Statista, Meal-kit Delivery – Italy, 2023).

Figure 2: Meal-kit Revenues in Italy from 2017 to 2027 (million EUR)



Source: Statista, Meal-kit Delivery – Italy, 2023

Following a general market introduction, different competitors were analysed and taken into consideration to understand the positioning of Planeat. The first competitor that has been taken into consideration is represented by the biggest one, HelloFresh. It was founded back in 2011 in Berlin and then it has expanded in many different countries becoming one of the leaders of the meal-kit market. They deliver to their users pre-measured ingredients to avoid food waste, moreover, they started to shorten their supply chain to avoid waste of packaging along the way and reduce CO₂ emissions. As a result, the meals consumed with HelloFresh reduce 25% of carbon emissions. Their effort in the field of sustainability is highlighted by all their actions, in fact, they have also a B Corp certification, joining more than 4000 companies around the world who are focused not just on profit alone (Hello Fresh UK website). Their success is undebatable and they are growing at a very high rate, in fact, according to their balance sheet, in 2022 their global net revenue reached 7.6 billion Euros, which is twice the revenues of 2020 and five times the revenues of 2018 (Hello Fresh Press

Release Q4, 2022). The second leader in the market is represented by Blue Apron, which was founded in 2012 in New York. Their revenue peaked in 2017 at 881 million Dollars and started to decrease with a net revenue of 458 million Dollars in 2022 (Statista, 2022). However, the competitor has not been analysed in deep due to the difference in the geographic market with Planeat.

The other competitors that were taken into consideration are Second Chef, Quomi and Maiocookingbox. Starting from Second Chef is an Italian company operating in the whole country. By registering on the website there is the possibility of choosing among 6 different receipts that change every week according to the seasonality of the products. Consumers will be able to receive a box full of all the ingredients needed to prepare their meals. Boxes can be delivered at home or at the offices in order to let people manage at their best their work-life balance. Thanks to their value proposition they contribute to decreasing the food waste level of people, just as Planeat does. This is one of the main reasons why it was selected as one of the competitors, even if Second Chef is operating also in the South of Italy where the situation of food waste seems to be more relevant. Moreover, they are collaborating with different firms all over Italy in order to create a solid network to satisfy all the needs of consumers, for example, a recent company that has joined the Second Chef family is represented by NutriBees. To make a comparison with respect to Planeat, they have a different type of pricing, which is an equal price for all the receipts, which is higher than the one of Planeat. Even if, they have a higher reach in terms of delivery, they do not directly refer to the B2B target (Secondchef website).

The second competitor that has been taken into consideration is represented by Quomi. The company offers their users a service of online delivery with selected products to prepare the receipt they have selected. The receipts are different every week in order

to offer a great variety of meals to the consumers. Users can decide to pay for a subscription, which grants them free shipping for their order, otherwise, they can decide to pay for each single order. Users can adapt their personal box to their needs and change it whenever it is convenient or needed. The ingredients are high-quality fresh ingredients that are delivered directly from the producer to the user to reduce the length of the supply chain. In fact, the priority of the company is to give their consumers high-quality and fresh ingredients that are secure and free of GMOs. Sustainability is at the core of the service with less food waste, seasonal ingredients and compostable packaging and the company is also planting one tree for each order delivered. For what concerns the packaging the boxes are completely biodegradable or recyclable. Moreover, they are trying to reduce more and more the amount of packaging used for their boxes or rethinking the usage of packaging in general in order to become more sustainable. Their commitment towards sustainability can be identified by the fact that they are trying to help by planting trees in order to fight against deforestation. For each order, they plant one tree mainly in Ad Haiti, Nepal, Madagascar, Indonesia and Kenya thanks to the “Eden Reforestation Projects” association. This is really important because deforestation is one of the main causes of climate change and it is also making people become poorer and poorer. To make a comparison between Planeat and the company in terms of target and price. Planeat has cheaper prices and at the same time, the company also refers to the B2B target, differently from Quomi, which has a focus on the B2C target (Quomi website).

The last competitor to be analysed is Maiocookingbox. Differently from the other competitors, Maio Cooking Box is a project that was born inside an already existing group, the Maio group. They launched this practice and innovative service to make gourmet cooking available at home for everyone. Consumers will be able to receive

directly at their homes high-quality ingredients selected by chefs. Their offering is inspired by the gastronomic tradition of Lombardy and Piedmont, two regions of Northern Italy. The group is active in the catering industry for over 50 years and thanks to such experience they have gained various types of know-how. This is helpful for them to carry on the daily activity of the firm, but also to select the ingredients, which are high-quality ingredients. Thanks to the Maio Cooking Box consumers will be able to have the perfect solutions for a dinner with guests and have fun with them while preparing the dishes almost as a real chef. Consumers can order their own Cooking Box online and receive it at home in 24 hours, thanks to sophisticated trucks that control the temperature. Once they receive the order they just need 15 minutes to cook rapidly the ingredients and consumers will be able to have their meals ready to serve. Moreover, the company gives the possibility to their consumers to interact with the Maio Group chefs to get tips in order to prepare the perfect dish for their guests. Otherwise, in case consumers want something even more special they can book their personal chef at home. Despite the many advantages of the higher quality of the food and the premium offering, they do not take into consideration sustainability as much as the other competitors listed. Moreover, being their offering premium, differently from other competitors, it is understandable that they have higher prices and a different target to which they refer. While other firms may refer to a bigger target, they can narrow it down, because not everyone appreciate the type of offering and not everyone is able to afford such prices (MAIO Cooking Box website).

4.3.2. Meal Delivery competitors

The meal delivery competitors represent the second category of competitor that has been analysed. Meal delivery consists of the online ordering of prepared meals by a restaurant or a platform and delivered to the users for direct consumption. The orders

can be placed through an app or a website, while the delivery can be handled internally by the firm or restaurant or externally by another enterprise. The meal delivery market is divided into two different segments:

- (1) Restaurant Delivery;
- (2) Platform Delivery.

The first one includes the delivery of meals carried out directly by the restaurants. However, the orders can be placed both via an external platform or directly with the restaurant website, app or phone number. On the other hand, the second segment refers to the firms that provide consumers with ready-made meals from their own firms or from partner restaurants. The market has shown in the past growth and according to some recent statistics it is expected to grow even more in the future. In particular, the revenue of the meal delivery segment worldwide is projected to reach US\$394.40bn in 2023. The revenues are expected to grow in the future of 6.49% leading to projected market revenues of US\$507.10bn in 2027. Moreover, also the number of users is expected to increase reaching 2.45bn users by 2027. In particular, the market that will generate more revenue is represented by the Chinese market (Statista, Delivery Meal Worldwide Market).

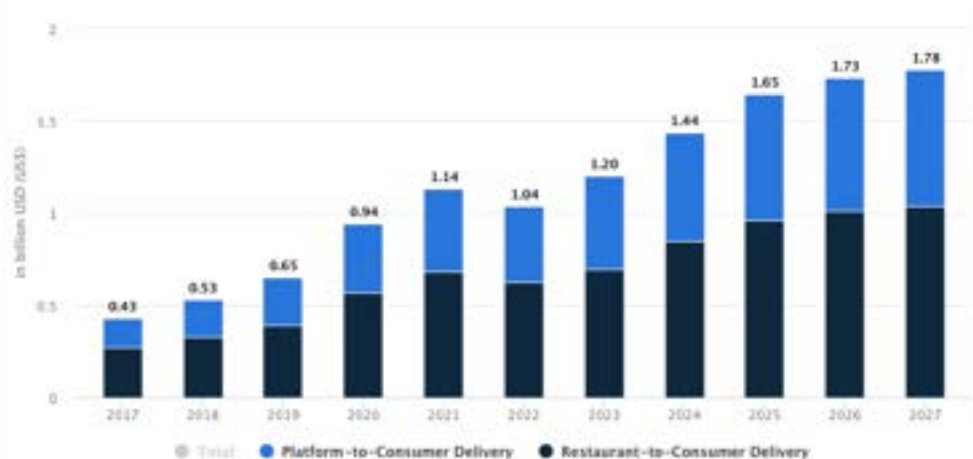
Figure 3: Revenues of the meal delivery market Worldwide from 2017 to 2027 (in US dollars)



Source: Statista Delivery Meal Worldwide Market

In order to verify the potential of the market also in the country of Planeat some results for Italy have been reported. In particular, the market in Italy is expected to reach €1.17bn in revenues in 2023, equal to US\$1.20bn. The market is expected to grow continuously till reaching €1.70bn by 2027, corresponding to US\$1.77bn. As well as the revenues, also the number of users is expected to increase to 19.91m users by 2027 with a user penetration of 25.0% in 2023 which is expected to hit 33.0% by 2027. As a result, the average revenue per user (ARPU) is expected to amount to €77.43, which is equal to US\$79.37 (Statista, Delivery Meal Italian Market).

Figure 4: Revenues of the meal delivery market in Italy from 2017 to 2027 (in US dollars)



Source: Statista Delivery Meal Italian Market

In particular, this type of market in Italy seems to be more fragmented with respect to the previous one. Even if, there are big firms that are holding the majority of the shares of the market, such as Glovo and Deliveroo, which are holding more than 70% of the market together. However, it must be taken into consideration that such companies have different values and aim with respect to Planeat and their closest competitors (Statista, Delivery Meal Italian Market).

The first competitor that has been analysed is represented by Vita Meals. In this case, the company is trying to satisfy a different need of consumers with a similar business model, they refer to consumers who have the need of finding out the perfect diet for themselves. Thanks to a test online where consumers can indicate the goal they want to achieve with the diet and the company will suggest to them the perfect dishes to achieve such goal. Moreover, differently from the company listed as a meal-kit competitor, they just offer ready-made meals for which consumers have to make a subscription. In fact, they can be considered competitors of the company because they still deliver at home the food, even if they satisfy the need in a completely different way. Another difference between Planeat and Vita Meals is represented by the fact that Vita Meals does not take into consideration sustainability at all. Their business model is surely more sustainable than others, but this is not one of their core values and not their aim. They are just trying to propose the perfect diet to consumers according to their physical characteristics and goals. Their idea is that everyone has different needs in terms of what they need to eat to be healthy, which perfectly spots the difference. However, they are still satisfying part of the target of Planeat thanks to the food delivered to home and this is the reason why they have been taken into consideration (Vitameals website).

The second competitor that has been taken into consideration is represented by Pranzoalvolo. Pranzoalvolo.co is the first online store in Italy for home sales of Fresh, Long-Shelf and Preservative-Free Ready Meals. The idea of the company was born from the need to provide a practical and convenient meal to all those who do not have the opportunity to cook. They are actually serving both the consumer segment and the business segment, such as Bars, Hotels and B&B. They are active in the province of Milan, Turin and Aosta for what concerns the private segment, for the business one, instead, they are active throughout Italy. In the latest years, many similar food delivery services were born. Another trend in the market is represented by the so-called dark kitchens, which are restaurants that work only with delivery food. Moreover, many services are trying to jump on the trend of healthy food. However, what differentiates Pranzoalvolo from its competitors because they are bringing together high quality and practicality with a low price and without any type of constraint in terms of subscription. They are using high-quality genuine ingredients of Italian origin. Moreover, their technology allows them to keep the dishes fresh for up to 4 weeks in the fridge. Finally, one last important factor is represented by the fact that they collaborate with Agri-food couriers specialized in temperature-controlled transport and they are paid according to law. To continue over the years with their idea they developed a strong network with other companies that cook for them as suppliers. This has enabled them to have economies of scale based on fewer ingredients but of high quality and they also have full control of the supply chain, which grants them the best ingredients at a cheaper price. They want to help those that do not have enough time to enjoy their lunch. In fact, the meals are ready in 2 minutes and anyone can enjoy them from children to elders. Thanks to their long-lasting food people can now be able to enjoy their time and save money without too many worries (Pranzoalvolo website).

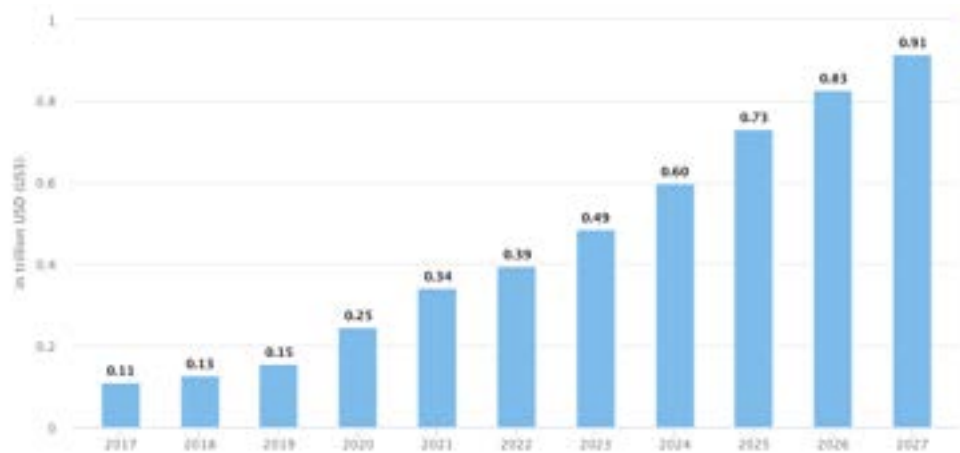
Finally, as the last competitor analysed there is Mammtfood. Mammt is the only food service where the consumer is not the one that is choosing the meal. On the other hand, consumers should fill out a form saying what they like and do not like and Mammt will choose for them the perfect lunch in line with their taste. Every day they will bring the client a different meal, according to the habits and the taste of the client. Once the client has expressed their wants and needs a professional chef will prepare the lunch for them. In particular, the company is collaborating with restaurants that are close to the client and that use high-quality and seasonal ingredients. In this way, they are trying to improve the food waste and the usage of high-quality food, but at the same time, they are also supporting local restaurants, that thanks to their service can also reduce food waste by knowing in advance what they have to prepare. Moreover, also their packaging is recyclable and compostable and to reduce even more waste they are also giving options to select cutlery or not. They are committed to the environment, as it is noticeable, but they also have a social commitment and this is proven by the fact that they are granting to their rider a fixed compensation and using the closest rider to the client in order to have a hot meal and at the same time reducing the environmental impact of deliveries. They are trying to work both with private and businesses, in particular, firms could ask for a convention and they will have their food ready every day. Finally, they are also working with private to organise special events such as conferences or work lunches (Mammtfood website).

The conclusions about the delivery competitor are: there are competitors that are more focused on other aspects aside environment, but there are others that do take that more into consideration. Among these there, are different solutions that have been offered that can satisfy a wide amount of different needs.

4.3.3. Retail delivery competitors

The last category of competitor that has been analysed is represented by the Retail Delivery competitors. In particular, the Retail Delivery segment includes the delivery of food and non-food products that people regularly buy from a grocery store, carried out directly by supermarkets, brick-and-mortar shops, or grocery stores. The market has shown incredible growth during the COVID-19 lockdowns to meet the exponential rise in customer demand. However, the growth rate has slowed down a bit in 2022 in comparison to 2020 and 2021, due to the uncertainty of macroeconomic factors. In fact, retailers still need to look for ways to attract more customers to keep up with the competition. Going more in-depth with some numbers the revenue in the Retail Delivery segment is projected to reach US\$0.49tn in 2023 with an annual growth rate of 17.08%, resulting in a projected market volume of US\$0.91tn by 2027. Also, the number of users is expected to increase, in particular, it is expected to amount to 1.55bn users by 2027. As a result, the average revenue per user (ARPU) is expected to amount to US\$0.43k. The market will be carried by China, in fact, most of the revenues will be generated there, according to the forecast (US\$158,900.00m in 2023). However, also the U.S. has shown a strong signal of growth, due to the high demand and rapid rise of grocery spending per capita (Statista Retail Delivery Worldwide).

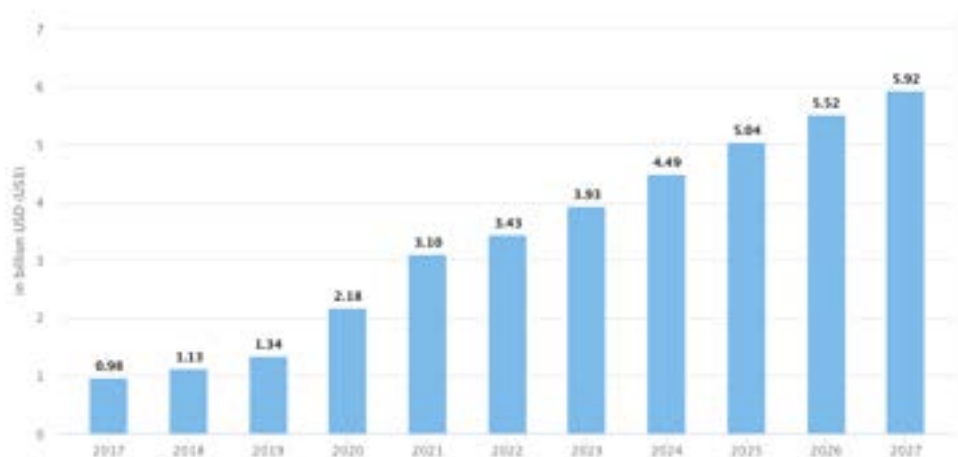
Figure 5: Revenues of the retail delivery market Worldwide from 2017 to 2027 (in US dollars)



Source: Statista Retail Delivery Worldwide

The market of Retail Delivery is expected to grow also in Italy and has shown potential in the country. In particular, the revenue in the Retail Delivery segment is projected to reach €3.83bn in 2023, equal to US\$3.93bn. The revenues are expected to grow at an annual growth rate of 10.21%, resulting in a projected market volume of €5.66bn by 2027, which can be converted into US\$5.92bn. The number of users is also expected to increase reaching 14.46m users by 2027 with a user penetration that will be 19.0% in 2023 and is expected to hit 24.0% by 2027. As a result, the average revenue per user (ARPU) is expected to amount to €338.70, equal to US\$347.10 (Statista Retail Delivery Italy).

Figure 6: Revenues of the retail delivery market in Italy from 2017 to 2027 (in US dollars)



Source: Statista Retail Delivery Italy

The market is fragmented since there are different GDO competitors that are now offering also the service of home delivery of grocery, in particular, Esselunga and Carrefour have been taken into consideration as competitors. Moreover, there are also other firms that are delivering groceries without being GDO operators, but were born directly as sustainable companies. In fact, they have also been taken into consideration as competitors, in particular, the cases of Cortilia and Too Good to Go have been analysed. All of them represent a competitor to Planeat because they can satisfy the same need of Planeat, but in a different way, as the previous category of competitors. The difference, in this case, is represented by the benefits these services offer. The GDO competitors reflect more on the benefit of staying at home and saving time instead of going to the supermarket to buy the food you need. On the other hand, the other competitors are more focused on the environmental impact and food waste. In fact, they offer food that would be thrown away in the supermarket and in this way, consumers are able to save some food from being wasted. In this sense, these types of competitors tend to offer a solution closer to the one of Planeat satisfying a similar need of consumers. The first competitor that has been analysed is represented by Esselunga. Esselunga is one of the biggest GDO competitors in Italy. Moreover, they are offering a service that is called “Esselunga a Casa”, which allows consumer to receive at home their shopping. The online supermarket offers consumer a vast selection of products with more than 15.000 products of different categories to grant them everything they need. The offering does not comprehend just food but also other different categories, however, the main focus is on food. It works exactly as any other e-commerce platform, but thanks to it consumers can plan their food shopping better and they are not that tempted by other purchases that they do not really need. At the same time, consumers are able to save time and do something they like more than food

shopping (Esselunga a casa website). Moreover, the company is also trying to become more sustainable by reducing its impact on the environment by using more sustainable packaging, renewable energy and more efficient management of the supply chain, thanks to their action they have already reduced their emissions by 39% with respect to 2018. However, they do not stop here because they also have a social commitment, in particular, they are trying to improve the gender gap and inclusion in their firm trying to value every single person that works for them. They are also considering their clients because they have to grant them security and high-quality food. To improve in all these different aspects, they are also promoting such values to their suppliers with a policy of zero tolerance for anyone that is not in line with their policies and values. Thanks to all these actions they can actively contribute to the social and economic development of the local community and help those in need, in fact, they have donated more than 3 million meals to homeless people. These prove a strong commitment to sustainability taking into consideration all the three dimensions of value: economic, environmental and social value (Essenlunga Sustainability Report).

The second competitor that was taken into consideration is Carrefour. The company has French origins, but it is now also well-established in Italy and they offer different services, one of them being the possibility of shopping online. Once a consumer is registered they can shop on the website and order everything they need and decide to have their shopping delivered at home or going to a pick-up store. Moreover, they offer different promotions and discounts to those that are using this type of service in order to make it more convenient for consumers. They are also offering a subscription to reduce the retention rate; which benefit is free shipping with a discount (Carrefour website). The group is also acting in a more socially and environmentally responsible way. They have different strategies to promote numerous initiatives in line with the

SDGs. Their main objective is to do their job in an ethical and transparent way in respect of the law and international legislation. Moreover, the group has created the CSR and Food Transition Index to measure the transition of the firm towards a completely sustainable firm including 17 objectives and 4 strategic assets (products, shops, consumers and suppliers). In particular, the Carrefour Group is committed to offering safe and high-quality products; reducing food and energy waste; implementing action programmes to protect the environment; reduce the environmental impact of packaging; building sustainable partnerships while respecting human rights; increasing the purchase of sustainable local products; ensuring safety, inclusion and equality in the workplace; promoting solidarity and charitable initiatives and many other initiatives. Thanks to this scheme they are able to influence as much as they can the environment in which they are working with a positive attitude towards economic, environmental and social commitment (Carrefour website for CSR; Carrefour sustainability report).

These two competitors are based more on an economic view and are trying to adapt their business model in doing this they may have a similar offering to the one of Planeat, even if they are satisfying the needs of consumers in a different way, they address a similar audience. This is the reason why they were taken into consideration. Differently from the two next competitors which are born sustainable and address similar needs and problems. In particular, Cortilia and Too Good To Go are the competitor that were taken into consideration. While Cortilia delivers the food shopping directly from the producers, Too Good To Go is trying to save food waste from the supermarket and retailers.

Starting from Cortilia is an Italian company operating in different regions of the country. Thanks to Cortilia consumers can shop like in the countryside, they personally

select the individual producers in full transparency and bring to the table their clients only authentic and genuine products of which whose traceability is supported and valued. Cortilia is trying to promote local producers in order to enhance sustainability and follow the seasonality of the products. They do not have any intermediate between the company and the producers this can shorten the value chain and the emission but it can also increase the trust in the company. Also, their packaging is plastic-free, sustainable and compostable to grant the reduction of the emission and always fresh products to the consumers in the respect of the food security and the environment. To order is sufficient to register on the website and select the product needed among more than 2.500 products as a normal e-commerce website and plan the delivery. The values of the company are:

- (1) Freshness: they bring products from the field to the table in the shortest possible time, preserving them during all stages of transport with fully refrigerated logistics;
- (2) Authenticity: their producers do not take shortcuts to increase productivity, thus obtaining a natural and good product;
- (3) Territory: They enhance local excellence and promote a short-chain model, deeply Italian, to safeguard the landscape and food culture;
- (4) Seasonality: They select only what nature offers respecting its times, to offer a sustainable and nutritionally more valid product;
- (5) Sustainability: They promote a sustainable consumption and spending model to reduce the impact of transport, packaging and waste;
- (6) Traceability: For each product, consumers know the producers, the places from which they come, their production processes etc.

These values work for them as a trace to do better both for the community and the

planet. In fact, they are now certified BCorp (Cortilia website). It is clearly understandable how Cortilia can be considered one of the main competitors of Planeat even with a different offering they are satisfying very close needs of consumers, who can relieve their sense of environmental concern and at the same time have their sustainable food shopping delivered at home. The only difference is in the fight against food waste that is less communicated.

The final competitor that was analysed is represented by Too Good To Go. The company was born with the realization that food waste is a problem and they wanted to help in some way by proposing a solution. Too Good To Go is an app that allows consumers to save food by being thrown away thanks to the application users can search for restaurants and shops and order good food that was going to be thrown away at a very cheap price. They are trying to make consumers more aware of the impact that food waste has on the environment, society and the economy. Consumers can save the food from restaurants and shops they like the most paying just 1/3 of the original price. The company is also useful to the firms because they can decide to transform the surplus of food into earnings by simply subscribing their activity to Too Good To Go. This will also enable firms to increase their visibility while reducing food waste and helping the environment (Too Good To Go website). The company has a strong commitment in different areas they have an impact on different factors; business partners, consumers, governments and the Planet. For what concern business partners, they are partnering with different brands to make long-term collaborations bringing a positive impact on a global scale. Consumers in the sense that they are trying to increase awareness and introduce new types of labels that can help consumers. Moreover, they are trying to fight food waste and also trying to convince different leaders to act in a proactive way against food waste. As a result of all these actions

combined the environmental footprint is decreasing and improving a bit the current situation (Too Good To Go Sustainability Report).

4.4 Positioning and conclusions

Since all the competitors have been analysed it is possible to understand the positioning of Planeat differentiating it from the competitors. In particular, the variables taken into consideration to divide the competitor are sustainability and quality of the products or services. The reasoning of such variables is simple and clear, in the case of sustainability it represents the basis of the values of the company and it is the basis of the research. On the other hand, for what concerns about the quality of the product, it has resulted as one of the most important factors for the customers thanks to the survey proposed. With the variable chosen it has been possible to divide the competition into 4 different scenarios:

- (1) High care for sustainability and high-quality products;
- (2) High care for sustainability and low-quality products;
- (3) Low care for sustainability and high-quality products;
- (4) Low care for sustainability and low-quality products.

In particular, it is clear that there are companies that have a more sustainable business model but they do not have sustainability as one of their core values. There are also companies that are taking action to improve their commitment towards sustainability, but this is not enough if compared with respect to other companies that are certified Bcorp or born sustainable. For these reasons, they have been allocated to the lowest part of the map. With concern to quality it has been privileged those that offer selected products with high standards. The majority of the company included have already high standard for what concern the market in general, however a distinction among them is still possible.

In the top-right dial, there are HelloFresh, Cortilia, Quomi and Planeat. All companies have a strong sense of responsibility both towards the environment and society. There are still some differences among them even if they are not so significant. For what concern quality, they all have high-quality selected products by their suppliers which are local farmers or producers.

In the top-left dial, there are Second Chef and Too Good To Go. Both of them have a strong sense and responsibility towards the environment and the company. However, in this case, it appears that there is less quality in their product with respect to the previous category of competitors.

In the down-right dial, there are Maiocookingbox, Vitameals, Mammtfood and Pranzoalvolo. In particular, these companies pay attention to the selection of products, but they do not put sustainability as one of their goals. Even if, they are more sustainable of other companies this is not one of their principal characteristics.

In the down-left dial, there are the GDO distributors Esselunga and Carrefour. Both companies are trying to increase their commitment towards both social and environmental responsibility. However, their effort is not comparable to the ones made by an environmental company that is also B-corp certified. Moreover, they have also lower attention to the quality of the products with respect to the other companies considered. This happens due to their mass distribution which cannot be controlled as much as with a short supply chain.

Figure 7: Positioning of Planeat



Source: Companies websites

Thanks to the positioning there is a clearer understanding of the closest competitors of Planeat. In particular, the closest competitors are all direct competitors; that satisfy the same needs with the same or a similar business model. Moreover, they are small-medium companies in the market, except for HelloFresh, which is recognised as one of the leaders in the market.

CHAPTER 5: THE USE OF NUDGE IN PLANEAT

After analysing the company, its business model and the competitive scenario the nudges for Planeat have been structured and designed. The journey of the creation of the nudges can be divided into different phases:

- (1) The first phase: the journey started with a general understanding of what the company wanted to achieve thanks to the nudge. Followed by a general understanding of the consumers, their habits and their values and mindset, both for clients from the company and external consumers.
- (2) The second phase: together with the company the perfect nudge has been created and implemented.
- (3) The third and final phase: After testing the nudge implemented the last step has

been the evaluation of changes in the consumer's mind and their behaviours. This helped to detect the main differences in the consumer's behaviours and mindset. The ultimate goal of the experiment has been to change the behaviour of consumers inducing them to waste less food and to do that is necessary to change consumer's attitudes and perspectives. After seeing the results of the nudge, the company in the future can decide to change their actions and strategies accordingly to the results obtained. The adjustments are necessary in order to have consistent results that can improve over time and continue the journey started with this research.

5.1. Data gathering

5.1.1 The company's idea and goals

The process started with a general understanding of the goal of the experiment and the idea that there was behind it. The idea is to prove that knowledge can be used as a form of power for consumers and that makes them act in a more responsible and sustainable way. In particular, the main goal was to make consumers more aware of the problems' food waste is generating and how much every single one of us can contribute by saving food. In fact, the company's idea was more directed towards the fact that many consumers are not aware of the problem of household food waste and those that are aware need to be encouraged to do even better. To achieve such results, the idea was to provide those consumers with knowledge about their positive impact on the environment.

5.1.2. The study of consumers

After understanding the goal of the company, it was necessary to study both the market and the consumers. In particular, for what concern the markets the competitors have been analysed in the previous chapter. This analysis was useful to understand the strategy of the competitor in order to implement something innovative and new.

However, every implementation needs to be in line with the consumers' needs and desires, this is the reason why an in-depth study of the consumers has been carried on. It was necessary to divide consumers into two different categories to proceed with the study:

- (1) Customers of Planeat
- (2) Consumers that are not customers of Planeat

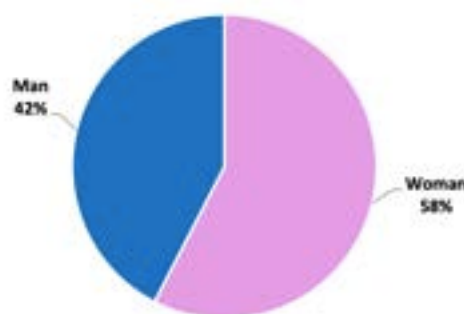
The objectives for the two categories were slightly different. In the first case, the study helped to understand the design of the nudge and its effectiveness. For what concern the second category, the goal was to try to understand what would have helped them to act and their level of awareness about the problem.

5.1.2.1. Customers of Planeat

First and foremost, the category of consumers that are clients of Planeat. In particular, it has been carried on a general study in order to understand the socio-economic-demographics characteristics of Planeat's consumers. To do that, a sample of 125 clients filled out a survey, which was the base of the project.

The first variable is represented by gender, in particular, it is noticeable that among the users that responded to the questionnaire, there is no particular predominance of one gender. Women tend to have a slightly higher number, in particular, the difference between the two is equal to 19.

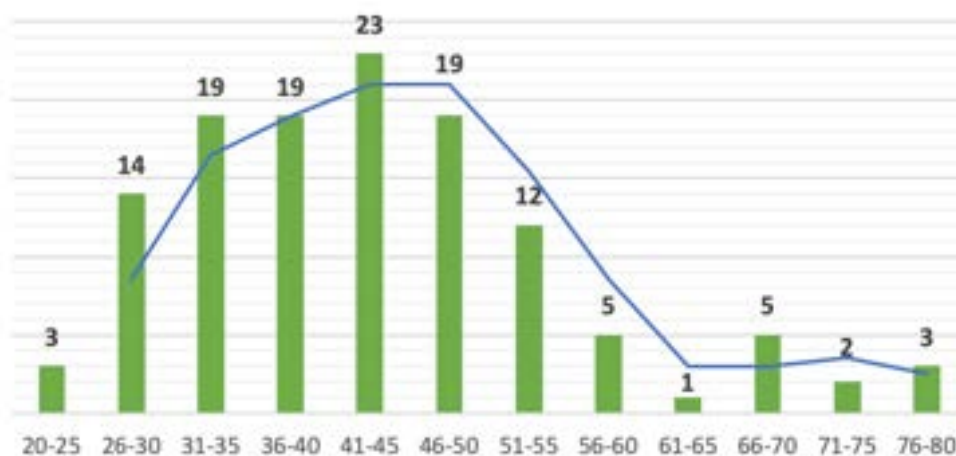
Graph 1: Gender of the respondents



Source: Survey

The next variable that has been taken into consideration is represented by the age of the respondents. In particular, among the 125 participants in the survey, the age has been divided into 12 groups of 5 years each. The results highlight the fact that younger people tend to use more the service offered by the company. In particular, it is easily detectable that the majority of consumers lays in between 31 and 50 years old. The reasoning behind such predominance is represented by the fact that these segments of consumers are those that have stronger economic independence and a stronger interest in sustainability. However, there is still potential for younger segments, which are increasing more with respect to the older ones. This is mainly due to the fact that for younger consumers sustainability represents a bigger value with respect to the older generation and at the same they are gaining more economic independence as time goes by. While older consumers may have more resistance towards innovation and it may become harder for them to adapt and use technology more and more.

Graph 2: Age of the respondents

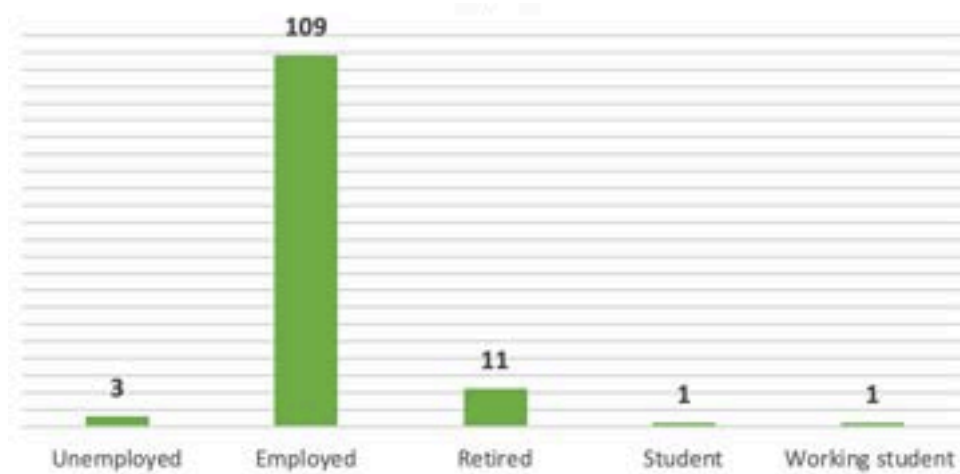


Source: Survey

The third variable is represented by the occupation of the respondents. In particular, the results have shown that the vast majority of consumers are employed, thanks to their purchasing power. They are followed by the retired segment, which also has the

income to pay for the service. While, just a little minority is represented by students and unemployed people, which more likely do not have the financial and economic stability to continuously support the cost of the service.

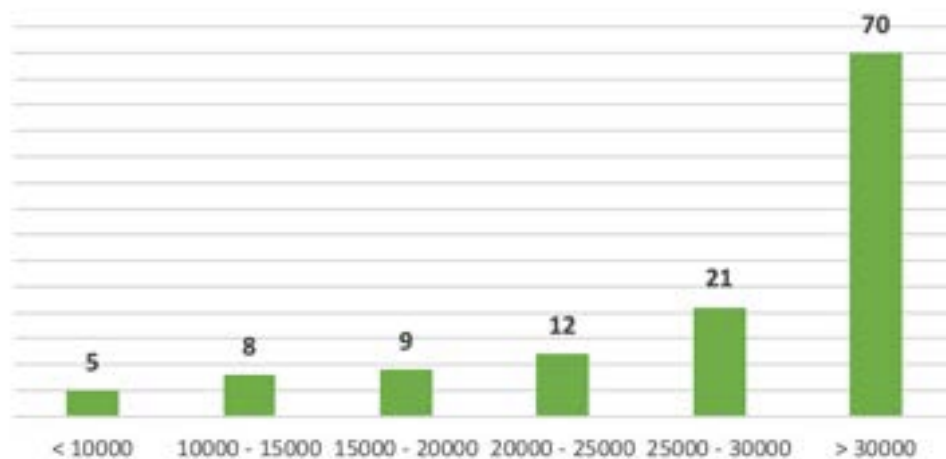
Graph 3: Occupation of the respondents



Source: Survey

The fourth variable is represented by income, considering an average annual wage of €31.4 thousand in Lombardy (Statista, Average Annual Nominal wage of employees in Italy region by region). It is noticeable that the vast majority of consumers have an above-average income, while there are many with an average or lower average income. As the income lowers, also the number of users lowers. However, the presence of lower-income consumers signifies that the service of Planeat is affordable for everyone.

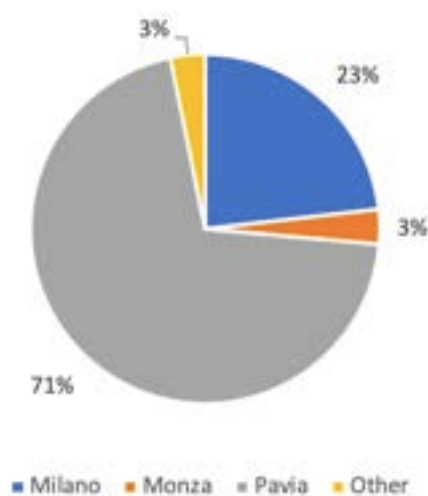
Graphs 4: Income of the respondents



Source: Survey

The fifth variable that has been analysed is represented by the residency of the consumers. However, being the service of Planeat limited from the geographical point of view the results were exactly those expected. Pavia is the dominant province of residency of the consumers, even if Milan represents a big opportunity for expansion for the company.

Graph 5: Residence of the respondents



Source: Survey

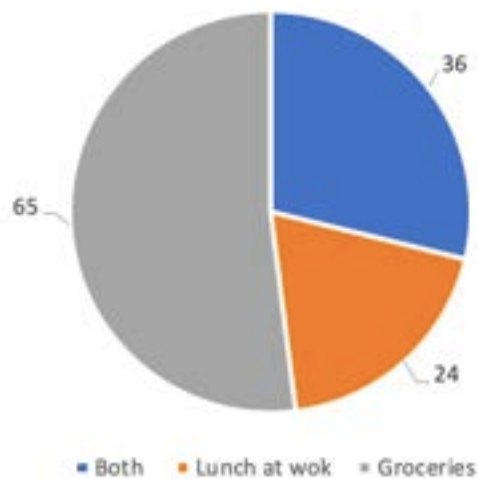
Thanks to the first set of variables it is easier to understand the target of Planeat from the demographics point of view. To resume, the perfect target can be represented by working men and women whose age falls between 30 and 50 years old. They have an average income and they are also living in Pavia or Milan.

The second set of variables is more focused on the service and the habits of using it. In particular, consumers have been asked what they use the service for, the frequency of usage, the reason why they are using Planeat and how they discovered the company. The first variable that has been analysed is represented by the type of usage of the service. Planeat can be used for two main different services:

- (1) Lunch at work;
- (2) Groceries to prepare meals at home.

The two services can even be used together if desired by the consumers. The results have shown that the majority of consumers use Planeat for meals at home, or both, while just a small part of consumers use it just for work. Considering that the main goal of Planeat is to reduce household food waste and these results are in line with the goal of the company.

Graph 6: Type of usage of Planeat

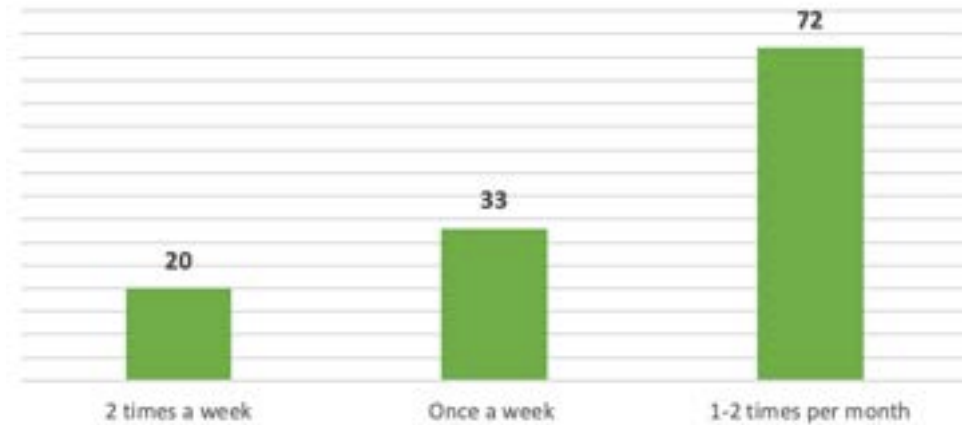


Source: Survey

The second variable is represented by the frequency of usage of Planeat. In particular, it is possible to detect different patterns: those that buy from Planeat very frequently to do their food shopping; those that buy from Planeat weekly and finally those that buy less frequently from the company, just once or twice a month. The majority of the users tend to plan their food shopping on Planeat on a monthly basis, while a large number of users tend to use it on a weekly basis. To investigate more on this pattern, the habit has been analysed by age. The results can be significant because those using it the most on a weekly basis are represented by those in between 40 and 50 years old. On the other hand, those using it twice a week are deeply concentrated in the age range of 41 and 45 years old. Finally, those using it the most once or twice a month are distributed on a wider range of age, from 26 to 40 years old. This shows that there are some differences in different age range, but also similarity that are common to a wider

range of users. However, in general younger consumers tend to use Planeat service on a monthly basis, while older ones tend to use the service more frequently.

Graph 7: Frequency of usage

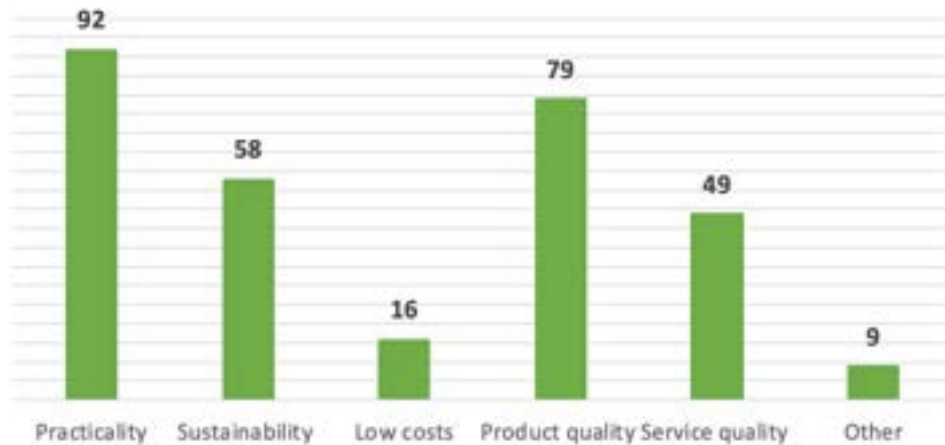


Source: Survey

The third variable that has been analysed is represented by the reason why the clients are using Planeat services. To understand what they consider Planeat the best at and what motivates them to continue using the services. Users were allowed to choose different options in the survey, for this reason, there are more responses with respect to the number of participants. In particular, the most popular factor has been the practicality, Planeat for consumers is convenient. Right after, the second most popular reason why consumers are using Planeat is represented by the product quality. They can clearly identify the effort the company is making to select high-quality food and perceive it as a very important factor. In the third place, the most voted reason why is represented by sustainability, which appears a little bit underrated. The company is born sustainable to fight against one of the major problems of climate change, but its consumers are not very inclined into using it for being more sustainable. There are then, some consumers that are using Planeat for the quality of the service, even if the number of people choosing such an option can be lower, they recognize the potential of the service offered and the company could underline it more to make it reach a wider range. Finally, just a very small portion of the customers is price-oriented, it can be

due to not taking too much into consideration price when making choices, so they are willing to pay even more because they recognize the value in the service offered by the company.

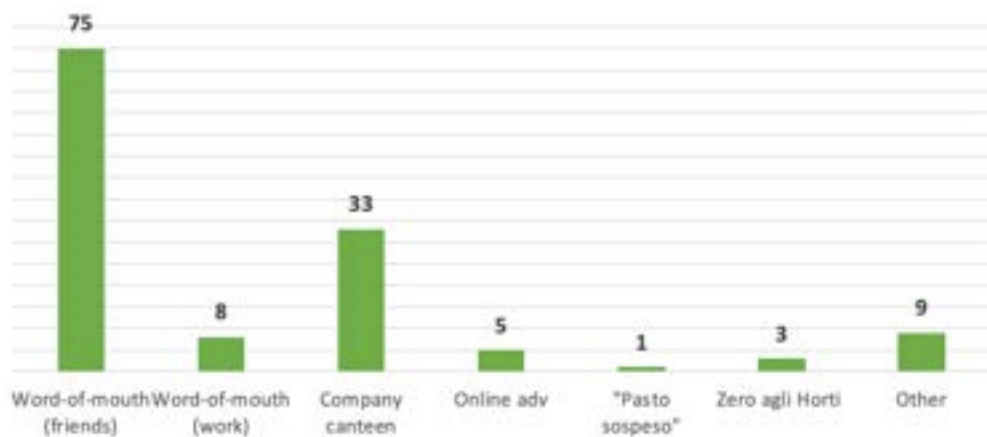
Graph 8: Reason why consumers are using Planeat



Source: Survey

The final variable is represented by how consumers have discovered Planeat. From the results there is a clear predominance of word-of-mouth between friends, this seems to be the most effective promotion strategy for the company. This is relevant because it implies that they are doing good enough for friends to suggest to others about Planeat. Another significant strategy to attract more clients for the company is represented by the company canteens, consumers start to use Planeat's service at their workplace and then they also try it at home for themselves. However, there is a result that is particularly significant in a negative way and it is represented by online advertising. The strategy under this point of view is not giving much, considering the fact that there are young consumers and now it is the era of digital marketing. It is clear that the company has the opportunity to improve on the online side of marketing, while it is doing good enough already on the offline side. This could represent a very significant strategy and improvement for Planeat.

Graph 9: How consumers have discovered Planeat



Source: Survey

This study of the consumer was necessary to understand the target of the company and its characteristics and to understand the best nudging strategy for the company. Since nudges to work at their best have to be extremely tailored to the consumers to which it is referred. This was the first step of the research in terms of studying consumers, which was useful to understand the idea of already existing consumers.

5.1.2.2. Consumers not aware of Planeat

The second step of the study of consumers has been represented by those consumers that are external and unaware of the company. They could represent potential users of Planeat so understanding their point of view is significant. Moreover, hearing such different opinions could improve the nudging strategy of the company and help in the future development of such a strategy by introducing different types of nudges to attract more people. This is the main reason why the focus group has been carried out and included in the research. The focus group has been carried out with 5 different people with very different backgrounds. The first person is a guy, he is 21 years old. He is a university student and he comes from Lombardy and he is working in a supermarket. The second one is a girl of 24 years old. She is studying at the university and she comes from Veneto but she moved to Lombardy later on. The third one is a

girl, she is 20 years old. She comes from Apulia and she is working during the summer for a seasonal job. The fourth one is a woman, she is 57 years old. She had a South Italian origin but she moved to the Northern part of Italy and she is now working and in her free time, she is also a volunteer. The last one is a man who is 45 years old. He comes from Lombardy and he is an active worker with two children who are 15 and 6 years old. The decision of having such different people with such different backgrounds comes from the fact that in this way it was possible to understand a greater variety of opinions leading to an actual debate and a real exchange of ideas. In particular, the focus group has been organised as follows. Firstly, a video about food waste, its effects and the way to fight it has been showed to the participants. After showing the video, the discussion started, following 3 main topics:

- (1) Their view about food waste and their experience: their thoughts about the video, if they were aware of the problems of food waste and most importantly if they thought the blame was more on the consumers or on the retailers. Moving on to their experience with food waste, if these numbers for them represents reality or not, according to their own story and backgrounds.
- (2) The fight against food waste: how it is possible to fight against it and what type of measures would they use to do that.
- (3) The changes: what they would have changed if they had this information before, how they would have acted.

In particular, what has emerged from the focus group is what follows. For what concern the first part of the discussion it has been highlighted how according to the majority the responsibility should be divided equally between individuals and retailers. As a consequence, both consumers and supermarkets could work to make things better, but they should collaborate in some way in order to maximize the effect. This must be

achieved since there are millions of people that do not have enough food for themselves every day and these people would need such food that is wasted to survive. This change must be done in synergy, in fact, the participants have recognised the importance of acting as a community. For what concern supermarkets it has been highlighted their practices to impress consumers but that actually do not help in food waste and sustainability. Moreover, it has also been recognised the power the media and marketing can have in this situation, because sometimes due to their actions, consumers are pushed to overbuy food and then waste. This is a topic that has been discussed due to the presence of kids in the family that can be easily influenced. However, the opinion has been contradicted by another participant, who sustained the idea that the advertising was not as present for food products as it is for other products. The same participant also argued that in his opinion people were not the problem and could not do much in order to improve the situation of food waste. Even if, there was a bit of positiveness in the fact that something could change if more sustainable solutions get more exposure. Finally, as a last point it was also opinionated that some habits are wrong and sometimes people prefer to go outside to eat, instead of eating what there is already in the fridge and, as a result, food expires. For what concern the fight against food waste, there was a general agreement on the fact that first of all consumers need to be more aware of what is happening. In general, information and knowledge have been recognised as the biggest weapon to fight food waste. However, it has also been mentioned that knowledge alone cannot be enough, because there are many people that are not willing to listen to the information. It has also been highlighted that there may be people that are willing to listen and learn, but they are not willing to change their habits. It has been described by the participants as very hard or almost impossible to change one's habits, but to improve them the solution proposed

was to start to educate the youngest at school. According to everyone, some projects at school involving young people could be one of the best ways to start the change, because in this way children can start to have the right habits since when they are young and they will act probably in that way for the rest of their life. It has also been mentioned marketing and advertising as one of the tools to give such information to consumers, even if it can still have some downsides, such as skipping the advertising. Some also highlighted the possibility of individuals starting to adopt some simple behaviours such as making a list of what is needed and trying to be more careful of the expiring date. Moving on to the final topic it has been asked if they would have actually changed their habits if they had before the information provided with the focus group. The results were different: two people strongly affirmed that they wouldn't have changed their habits and behaviours, one said that if she had the information before she would have changed her habits and the other two stated that they have already started to change their behaviours in favour of reduction of food waste. It is interesting to notice that such a division does not have any type of pattern in terms of age and gender, since the twos that would have not changed their behaviours are the older female and the younger male and the twos that have changed their habit already are the older male and one of the younger females. In particular, the last two have admitted that they have changed the way they are buying food, not relying anymore on the GDO but buying from local shops more regularly and trying new shops that are selling already portioned food. This has changed their habits because before maybe they were over-buying due to offerings of supermarkets, but now they have the right amount of food in their houses and they try to eat more and more leftovers or cook with them to diminish food waste.

The results are clear, there are still people who do not perceive food waste as it should

be perceived and there are people who are not completely ready to act. However, this represents one of the reasons why nudges should be implemented. Since, thanks to them people do not perceive the change in their behaviour but act differently just due to the change in their options. The focus group could represent one of the ways for Planeat to expand their offering taking more into consideration school and trying to organize something to engage consumers that feels like they could not change their behaviour.

5.2. Nudge creation and implementation

After gathering all the necessary data, the experiment entered in a new phase: the design and implementation of the nudge. In particular, considering the foundational idea that more aware consumers tend to act more sustainably. It has been decided to implement a nudge with the aim of increasing consumers' awareness in terms of environmental impact. With an eye on future opportunities of the strategy, in fact, the nudge implemented represent the basis for the implementation of a gamification strategy. Thanks to gamification users feel more involved and they will more likely act upon something. The effectiveness of the nudge has been mentioned in the previous chapter, but in particular gamification and nudging have been strongly linked together. Nudging is a way of altering people's behaviour without significantly changing their set of choices, while gamification is the adoption of a strategy that is linked to games. If used together these tools can become really powerful in trying to change the behaviours of consumers in a very innovative way, and this is the main reason why it has been the right selection for this research. However, the view of gamification has not been implemented yet, but it will be the final goal after introducing the consumers to the nudge. To start, together with the company, it has been decided to implement as a nudge some different equivalences to make it easier for consumers to understand

their positive impact on the environment. Specifically, the addition includes a counter that specify the amount of kilograms of food saved along with the equivalents for:

- (1) CO₂ saved;
- (2) Liters of water saved;
- (3) Km of land saved;
- (4) Number of Euros saved.

These four different indicators can create more consciousness in consumers, enabling them to identify more clearly the impact they have by saving food. In particular, thanks to the FAO and the WWF it has been easier to identify the number of resources wasted with 1 kg of food waste starting from the total amount of food wasted. For what concern the CO₂, it has been detected that 1 kg of food waste is equal to 2.54 kg of emissions. Moving on to the next indicator, the liters of water used, 1 kg of food waste is equal to wasting 584,62 liters of water. Then, also the indicator of land used has revealed that 1 kg of food waste is equal to wasting 0.001 hectares of land. Finally, for what concern the economic consequences of food waste, 1 kg of food waste is equal to wasting 0,54€ (FAO, 2019; FAO 2013; WWF 2021).

Although these equivalences could have been directly utilized as a nudge to enhance consumers' environmental consciousness, it has been decided to refine the nudge. The goal was to provide a clearer explanation of consumers' environmental impact. So that they could grasp in a very clear way how much they were benefiting society. To achieve this, the equivalences have been converted into daily actions accordingly to the category, except for what concerns money, which is already enough self-explanatory. In particular, for what concern CO₂, it has been taken into consideration the amount of emissions from cars and appliances or heating. Differently, for water, it has been considered the usage of appliances such as washing machines and

dishwashers or the amount of water needed to fill an Olympic-sized pool or even daily actions such as taking showers or tooth brushing. Finally, for the land used it has been taken into consideration different surfaces, such as parking lots and football fields. These indicators have been implemented by the IT and graphics department of Planeat. The ones applicable to everyone are available on the website homepage while personalized indicators for each consumer are available in the same location when the user is logged in, following their first purchase. The outcomes of this process are illustrated in the following image.

Figure 8: View of the nudge on Planeat website



Source: Internal source

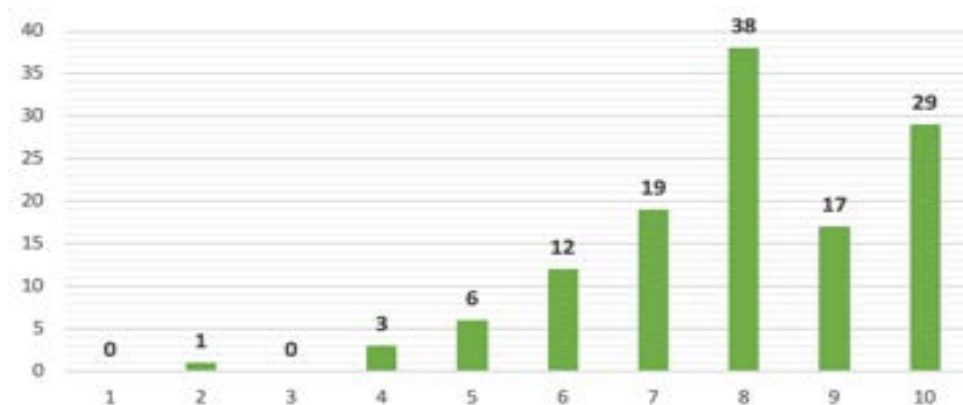
The strategy can be promising and can be further developed in the future by implementing, as mentioned before, gamification. In particular, it can be used to create communities of users and count their saved resources and make them compete against each other. Otherwise, Planeat can decide to make consumers compete against each other singularly. This strategy can be implemented in the near future by the company and could increase the possibility of success of the nudge. As a result, it will help to increase the amount of food waste saved, achieving faster the goal of the company, and potentially it could increase the number of users of Planeat.

5.3. The evaluation

The last phase of the experiment is represented by the evaluation of the nudge that it has been carried on. To do that the consumers have filled a survey with the same questions in order to evaluate the difference between the responses and their perception before and after the implementation of the nudge. In particular, the consumers needed to identify on a scale from 1 to 10 how much they agreed with an affirmation.

The first affirmation was represented by “I perceive Planeat’s positive impact on the society.” The responses to such questions were positive, the vast majority of participants have responded over 5, so almost everyone is aware of the impact of Planeat on society. In particular, 84 respondents have answered with a grade equal to or higher than 8, as a result, the conclusion is that the company is communicating well their positive impact on society.

Graph 10: Responses to the question “I perceive Planeat’s positive impact on the society.”

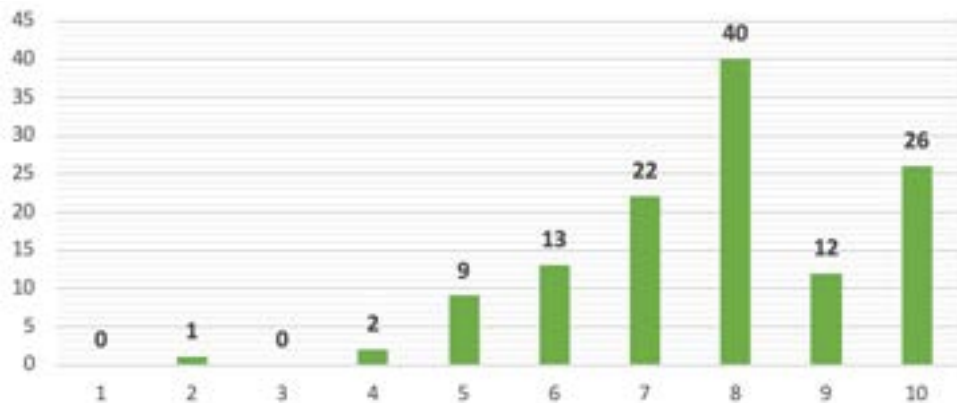


Source: Survey

The second affirmation that was asked to the consumers is “I perceive my positive impact on the society by using Planeat.” The results appear to be similar to the previous question, even if it is noticeable that the consumers appear to be less secure. There are small drops in the grades after 8 and a slightly increase in the grades lower or equal to 8. However, in general, consumers seem to be sufficiently aware of their positive

impact on society thanks to Planeat.

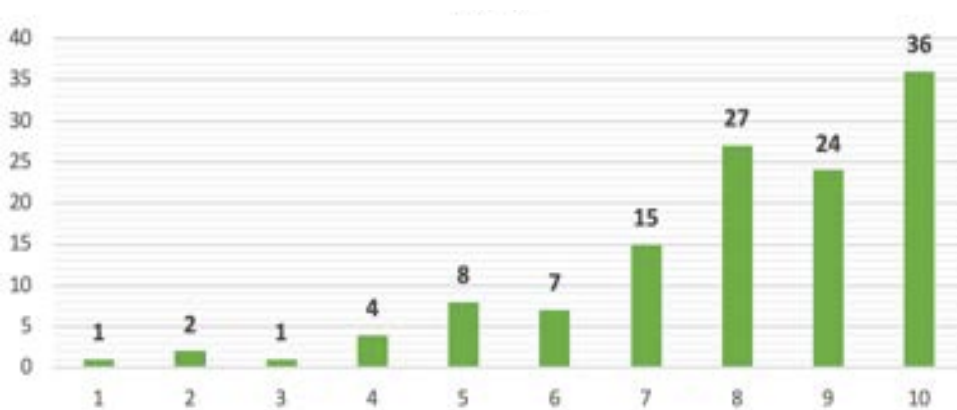
Graph 11: Responses to the question “I perceive my positive impact on the society by using Planeat.”



Source: Survey

The third affirmation is represented by “I clearly understand how much food I am saving by using Planeat.” In this case, people feel more confident and it is possible to notice that the majority of the consumers are responding with a 10 out of 10 and another majority is located between the grades of 9 and 8. A small minority do not feel confident enough or not confident at all. This result indicates that there is still a bit of lacking in terms of knowledge among participants.

Graph 12: Responses to the question “I clearly understand how much food I am saving by using Planeat.”

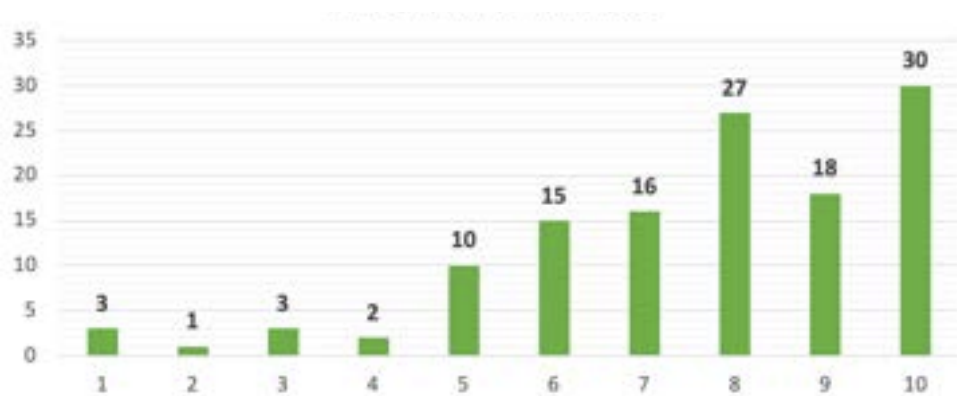


Source: Survey

The fourth affirmation that was asked to respondents is “I clearly understand the amount of food that all the users are saving by using Planeat.” In this case, it appears to be slightly less clear to consumers the amount of food saved as a whole community rather than the amount of the single individual. Moreover, it is possible to notice that

there is an increase in those that are not sufficiently aware, changing slightly the distribution with a little bit more consumers not enough aware. This could be given by the fact that for people is easier to spot their own decrease in food waste, but they cannot be completely aware of the amount of food waste of others. As a consequence, making consumers more aware of it too, could represent an opportunity to make them realize the impact of Planeaters as a whole.

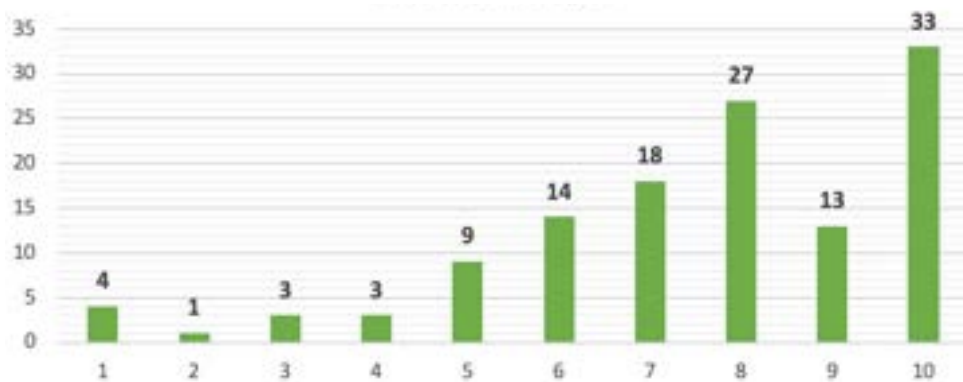
Graph 13: Responses to the question “I clearly understand the amount of food that all the users are saving by using Planeat.”



Source: Survey

The fifth affirmation is represented by “I am interested in always knowing how much food I am saving.” The responses have shown a particular interest in being informed about the number of kgs. of food saved. In particular, more than half of the participants voted with the top 3 grades (10,9 and 8). These results can show an initial potential opportunity for the company in implementing the nudge that has been developed. However, a small portion seems to be not really interested in having such information, even if it represents just a small minority of the consumers.

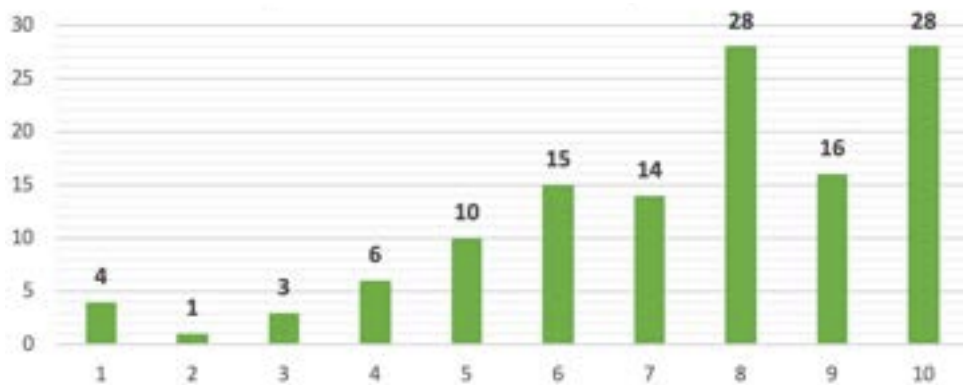
Graph 14: Responses to the question “I am interested in always knowing how much food I am saving.”



Source: Survey

The final affirmation asked to the participants is “I am interested in always knowing how much food all the users are saving.” In this case, it is possible to observe a slightly different distribution with respect to the previous statement. It seems like some users are more interested in knowing the general amount of food rather than the amount of single users. However, the results have shown that there are two opposite sides of consumers: those that are not particularly interested in both and those that are strongly interested in both. This proves once again the potential opportunity that the company is facing with the introduction of the nudge.

Graph 15: Responses to the question: “I am interested in always knowing how much food all the users are saving.”



Source: Survey

In particular, a cross-variable analysis has been conducted, combining the questions and the following variables:

- (1) Age;

(2) Gender;

(3) Occupation.

For what concern age the results have shown that younger people are those that seem to understand about less the quantity of food saved, but at the same time they are the most interested in knowing more. This shows a positive sign for the company and leaves space for improvements. Analysing the results according to gender has shown that women are those that are more interested in knowing more, for example to the last question 20 out of 28 “10” responses have been flagged by women. Moreover, they seem to be those that have a clearer understanding of the amount of food saved. Finally, the analysis according to the occupation didn’t show any particular or significant pattern in the results. The reasoning for such a result is given by the fact that the vast majority of the consumers are in the same category, employed, and just a few of them are distributed in the other remaining ones.

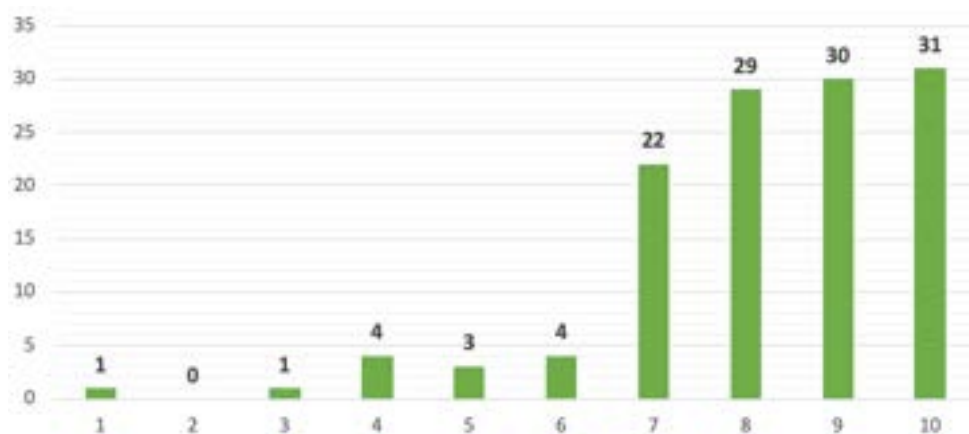
This first survey highlighted the starting situation of the research before the nudge implementation. This was necessary to monitor the results and the changes in consumers’ behaviours and perceptions in order to understand if changes were required or if it was the right path.

In the second survey, the questions were the same ones, with a small addition to have a clearer understanding and the results have shown what follows. The reasoning behind was the same as the first survey so the respondents had to indicate from 1 to 10 how much they relate to an affirmation. The first six affirmations are the same ones presented in the first survey, in order to detect how the responses have changed after the nudge was introduced. As a consequence, these six questions were the main detectors of changes in consumers’ behaviours and perceptions.

The first affirmation is represented by “I perceive Planeat’s positive impact on the

society.” In particular, the results have shown that the perception of consumers has changed in a positive way. It is noticeable that there has been an improvement in the perception of the positive impact the company has on the environment. In fact, it is possible to see the different distribution of the grades attributed by the participants with an increase in responses in the higher grades and a decrease in responses in the lower ones.

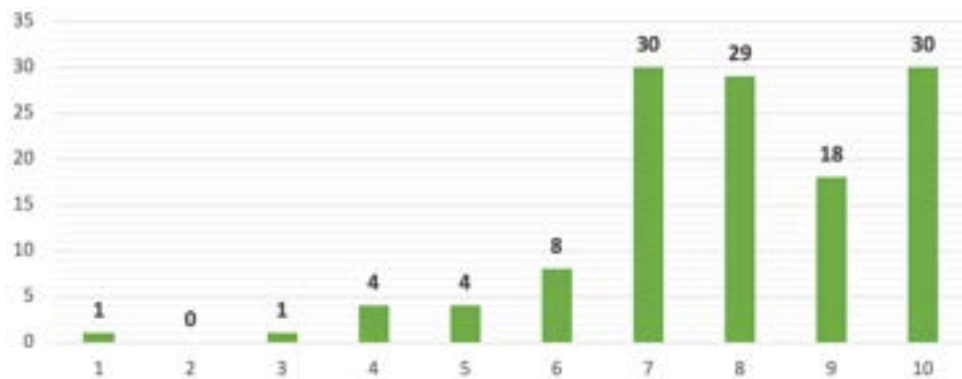
Graph 16: Responses to the question “I perceive Planeat’s positive impact on the society.”



Source: Survey

The second affirmation is “I perceive my positive impact on the society by using Planeat.” Also, in this case, the changes in the perception have shown a positive increase. In particular, it is detectable there is an increase in the answer “7” and “10” which proves that there has been a shift in consumers’ minds. Thanks to the nudge they now perceive their positive impact on the environment more than before. This represents a good initial beginning for the journey the company has started, in fact from these results it is possible to detect that consumers are already setting down the drop-in-the-ocean bias and they are starting to value themselves more and understand their impact. However, it must be taken into consideration that the effect of the nudge is not yet so big due to time constraints, but in a small amount of time is already possible to perceive a change.

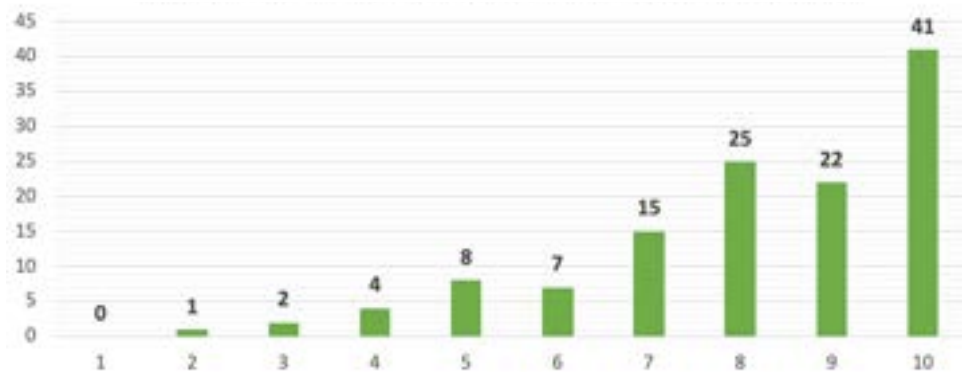
Graph 17: Responses to the question “I perceive my positive impact on the society by using Planeat.”



Source: Survey

The third affirmation to which participants responded is “I clearly understand how much food I am saving by using Planeat.” In this case, it is easy to spot the positive impact of the nudge thanks to the increase of responses in the 10 option. Even if, the other responses were not subject to a big change, this represents a very good start for the company’s journey towards the usage of nudge. Since consumers seem to be more aware of the amount of food they are saving thanks to the company.

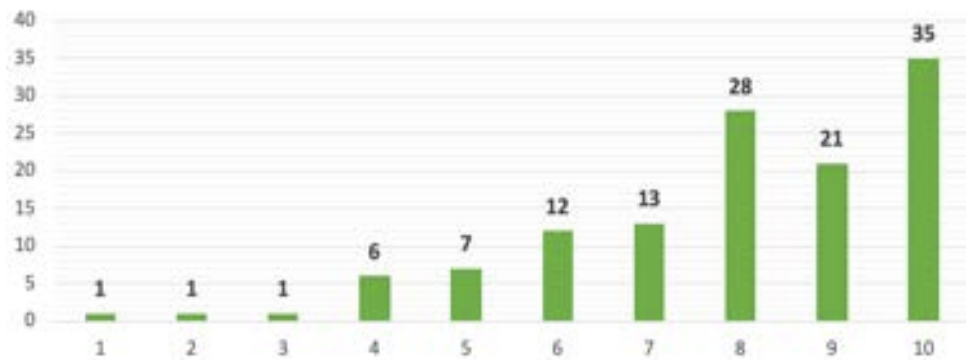
Graph 18: Responses to the question “I clearly understand how much food I am saving by using Planeat.”



Source: Survey

The fourth affirmation of the survey is “I clearly understand the amount of food that all the users are saving by using Planeat.” In particular, it is noticeable the increase in awareness of the participants, which appears to be more certain of their understanding. This means that the nudge has been working in the exact way that was desired, making consumers more aware of both their impact as a community and as a single user.

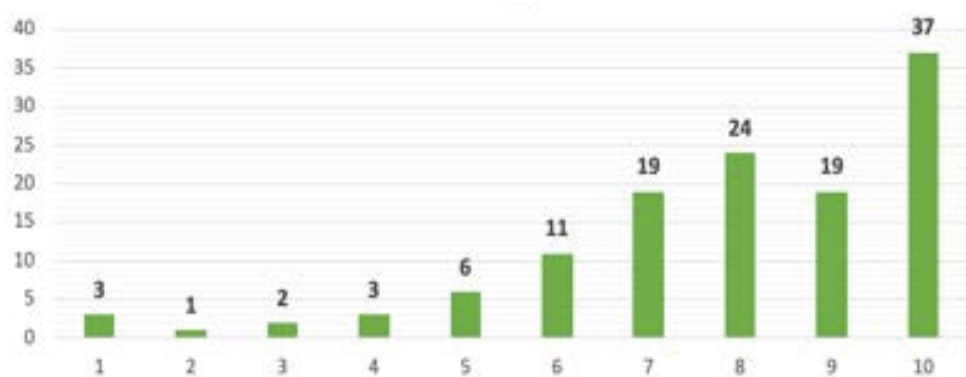
Graph 19: Responses to the question “I clearly understand the amount of food that all the users are saving by using Planeat.”



Source: Survey

The fifth affirmation is represented by “I am interested in always knowing how much food I am saving.” Also, in this case, it is possible to detect how well the nudge has been working. As predicted, it is making people feel more interested and engaged and this can be observed by the general increase in the very high score responses. Increasing the interest of consumers could potentially increase also their engagement and this could be useful to make them participate more easily now in saving more food and in future in gamification nudges.

Graph 20: Responses to the question “I am interested in always knowing how much food I am saving.”

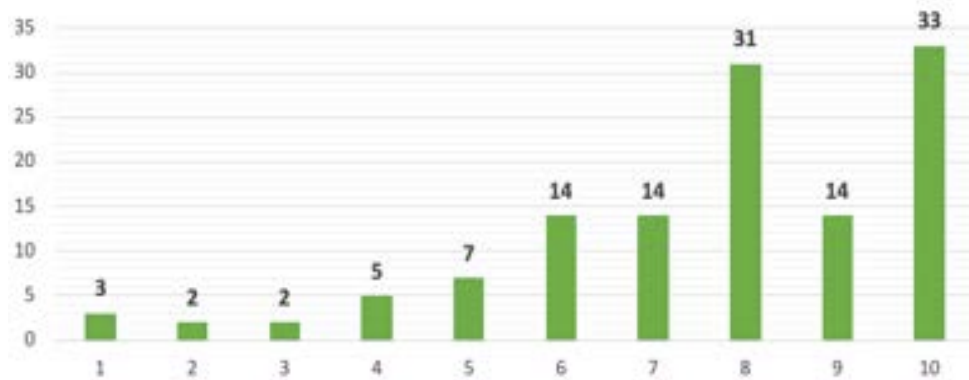


Source: Survey

The last affirmation among those that were already included in the previous survey is “I am interested in always knowing how much food all the users are saving.” It is clear, also in this case, that the consumers are more interested than before in knowing how much they are saving as a community. However, it is noticeable that there is a slightly

different distribution between the interest in knowing how much they are saving as a community and how much they are saving as a single. In particular, there is a stronger interest in knowing how much they are saving as a single user comparing the top three grades.

Graph 21: Responses to the question “I am interested in always knowing how much food all the users are saving.”



Source: Survey

In particular, thanks to this second survey it is possible to notice the changes with respect to the first one. To be more specific, now consumers seem to be more engaged, interested and active as predicted thanks to the nudge. Even if, the time of adaption is short and not all the consumers may feel already familiar with the nudge. As time goes by, it is predictable that consumers will improve even more their perception and behaviour, also thanks to the necessary changes that the company should put in place in the future according to the changes in consumers' behaviour and perception. To conclude a cross-variable analysis has been conducted to detect particular changes both in this and in the second part. In order to detect particular trends and to have a better understanding of the changes. In particular, also in this case the answers have been analysed by dividing the users by:

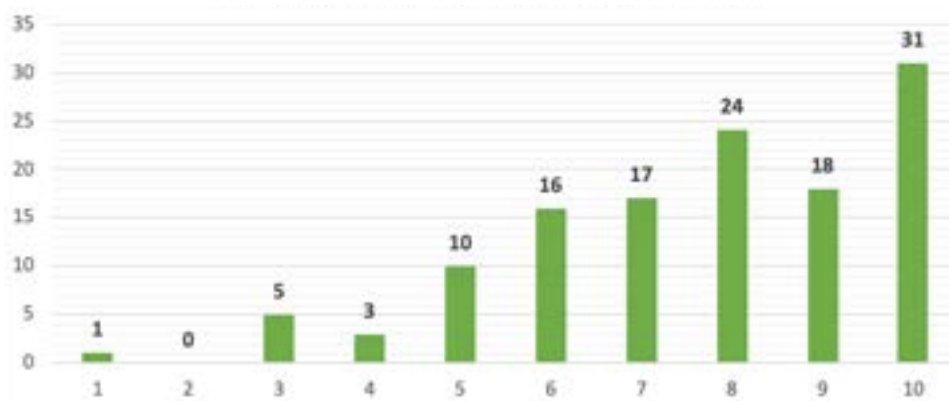
- (1) Age;
- (2) Gender;
- (3) Occupation.

For what concern age the results have shown that those between 30 and 40 years old seem to have a clearer understanding and engagement. However, it must be kept in mind that these categories were dominant in the survey, so in comparison to other age ranges the number of responses was slightly higher. In fact, taking into consideration the number of people in each category the younger ones seem to dominate both in terms of interest and engagement. On the other hand, regarding genders, the analysis has shown that women appear to be more interested and engaged than men. Finally, the analysis according to the occupation has not given any significant trend also in this case due to the vast majority of consumers pertaining to the same category, “Employee”.

With respect to the previous questionnaire, some additional affirmations have been added in order to better understand the behaviour and mindset of consumers. The logic behind such questions was the same as the other ones in the survey.

The first affirmation is “After the inclusion of equivalences I feel more aware and informed about the impact I have on the planet.” In particular, it is noticeable that consumers were feeling positive about their change in feeling more responsible and aware of their impact. In fact, the majority of the answers were included in the top four grades, from 7 to 10.

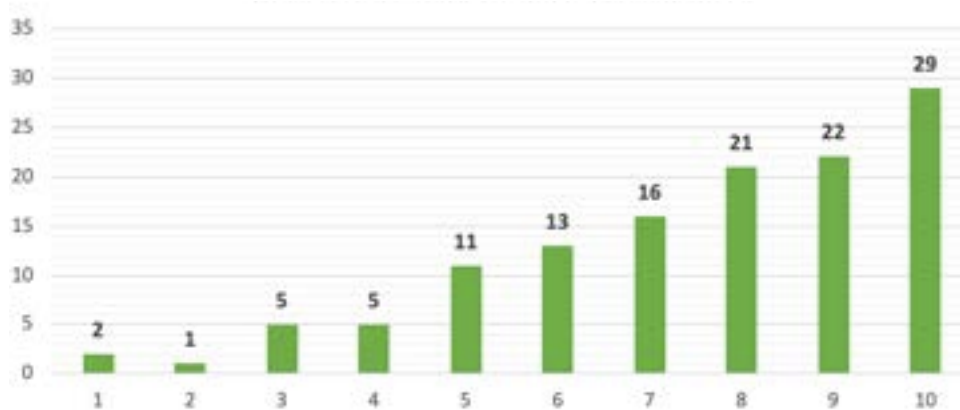
Graph 22: Responses to the question “After the inclusion of equivalences I feel more aware and informed about the impact I have on the planet.”



Source: Survey

The second affirmation that has been added is “After the inclusion of the equivalences I feel more aware and informed about the amount of CO₂ saved thanks to my contribution.” It is clear that consumers have been impacted by the equivalence, in particular, the CO₂ has been one of the best performing, probably due to the familiarity with the topic, with respect to other equivalences. As a consequence, it may be easier for consumers to empathize with this one with respect to other indicators.

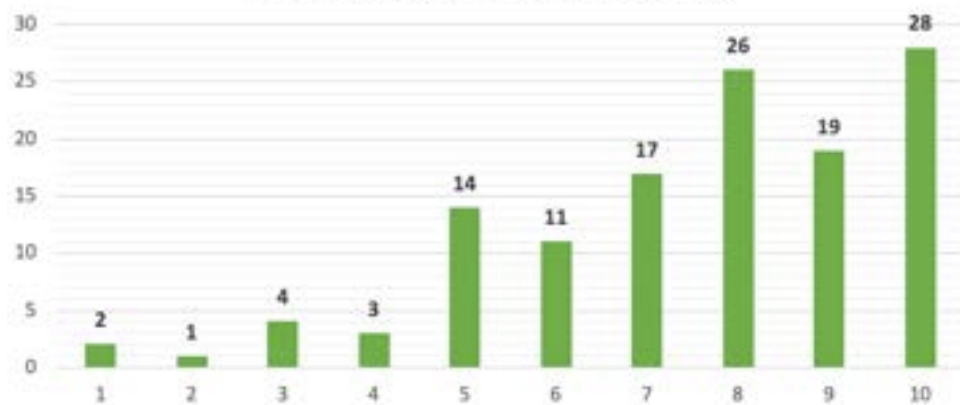
Graph 23: Responses to the question “After the inclusion of the equivalences I feel more aware and informed about the amount of CO₂ saved thanks to my contribution.”



Source: Survey

The third one is “After the inclusion of equivalences I feel more aware and informed about the amount of water saved thanks to my contribution.” It can be noted that this type of equivalence performed a bit worse than the previous one. However, the performance of the indicator was still good, maybe some changes could improve it in order to give consumers a better understanding of it and increase their awareness.

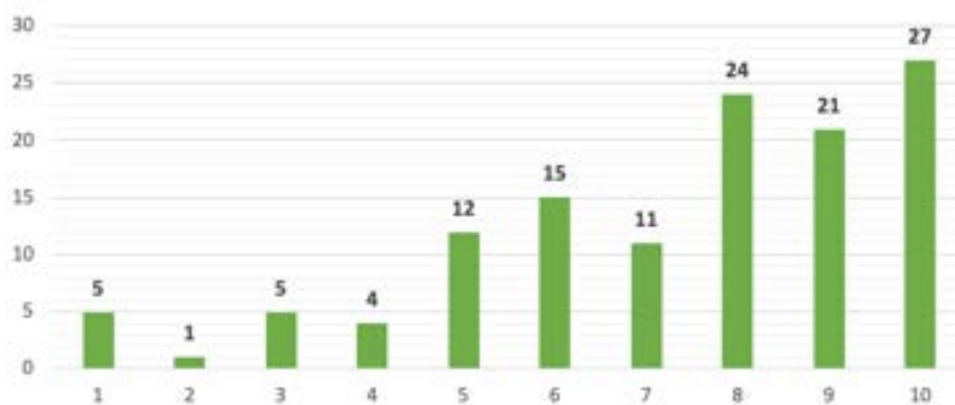
Graph 24: Responses to the question “After the inclusion of equivalences I feel more aware and informed about the amount of water saved thanks to my contribution.”



Source: Survey

The fourth affirmation to which consumers responded is “After the inclusion of equivalences I feel more aware and informed about the amount of land saved thanks to my contribution.” In this case, it can be easily spotted that it has been the worst-performing equivalence that was introduced. The reasoning could be the fact that it may be harder to easily comprehend the amount of land saved since it is a concept that it is still too far and it is harder for consumers to empathize with. The suggestion would be to insert it maybe later on, in order to be sure that consumers have a different and improved level of understanding or to insert it with a more specific indicator or a more detailed explanation. This could improve the performance of the equivalence, nonetheless a good start taking into consideration all the variables of this research.

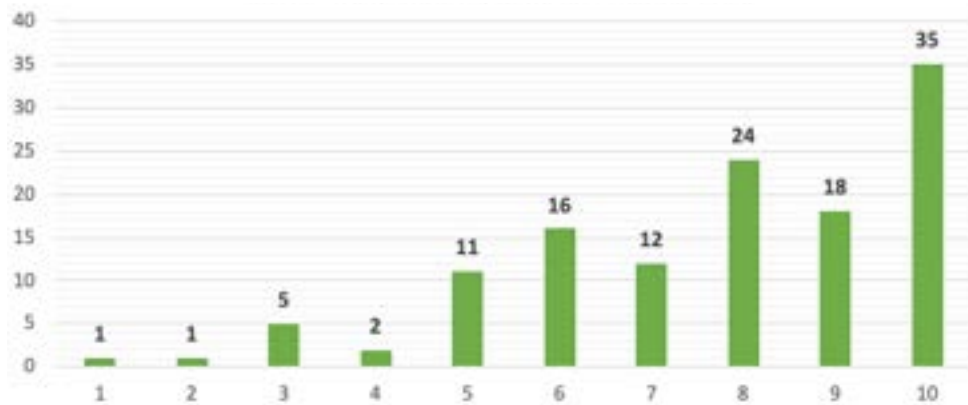
Graph 25: Responses to the question “After the inclusion of equivalences I feel more aware and informed about the amount of land saved thanks to my contribution.”



Source: Survey

The fifth affirmation in the survey is “After the inclusion of equivalences I feel more aware and informed about how much I am saving thanks to my decreases in food waste.” In particular, it is noticeable that this equivalence has been the best-performing one. This is clearly understandable since money is one of the most important factors for humans and as a consequence could be the most impacting equivalence among those added as a nudge. Since it could be the best-performing equivalence the company should leverage more on it at the beginning to capture more of the interest of consumers.

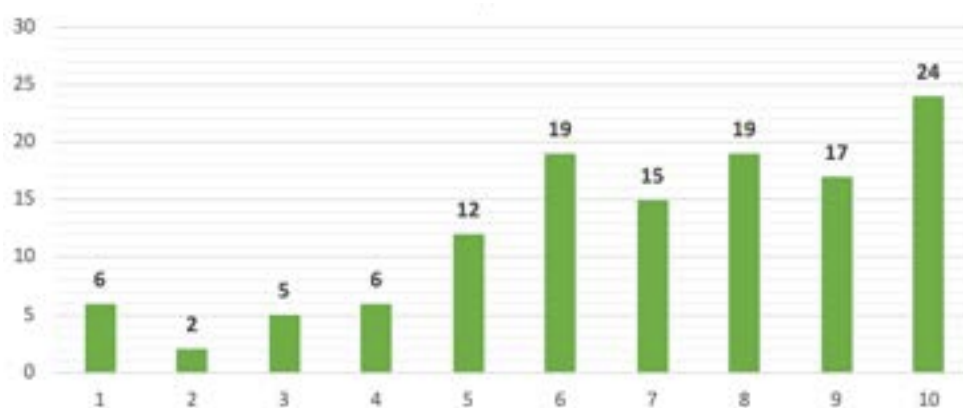
Graph 26: Responses to the question “After the inclusion of equivalences I feel more aware and informed about how much I am saving thanks to my decrease in food waste.”



Source: Survey

The sixth affirmation is represented by “After the inclusion of the equivalences I have been more careful of my waste.” It is noticeable thanks to the responses that the participants feel more aware of their impact on the environment now. This is the first step to make them understand that their effort has value and that even just one of them can make a difference, leaving the drop-in-the-ocean bias. The results of such questions highlight that the company is moving in the right direction and that this is just the beginning of its nudge journey.

Graph 27: Responses to the question “After the inclusion of the equivalences I have been more careful of my waste.”

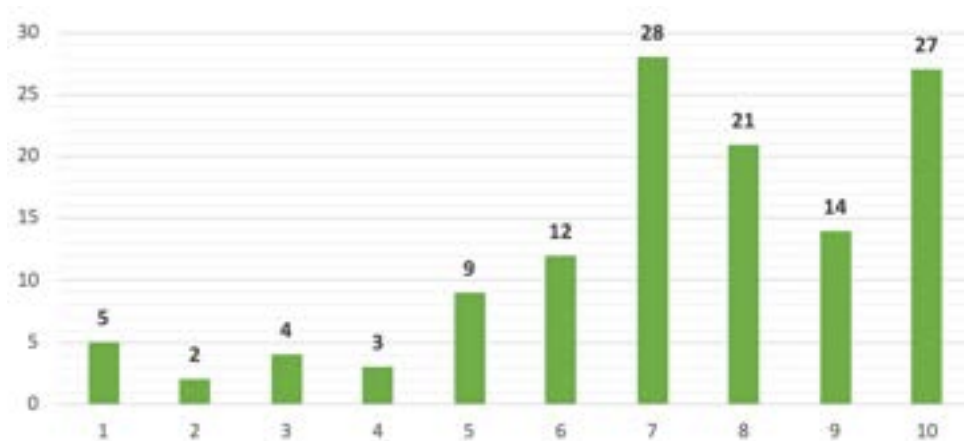


Source: Survey

The final affirmation is “After the inclusion of the equivalences area I was pushed to use Planeat even more.” It can be noted that consumers do not feel like the equivalence has affected that much their purchasing patterns on the platform. In particular, there

are very positive responses to the question meaning that some consumers were actually influenced by the nudge. However, at the same time, there is another part of them that has not been deeply affected or has not been affected at all in terms of buying more from Planeat. The reasoning behind such results could be due to the fact that it is too early for consumers to change already their habits in terms of consumption. Another reason could be that consumers are not that involved and they need a bigger trigger in order to change their consuming habits, which could potentially be one of the next steps for the company.

Graph 28: Responses to the question “After the inclusion of the equivalences area I was pushed to use Planeat even more”



Source: Survey

Also, for the new questions, a cross-variable analysis has been performed. In particular, taking into consideration:

- (1) Age;
- (2) Gender;
- (3) Occupation.

For what concern age the nudge seem to have more effect on people between 40 and 55 years old, which seems to feel more aware and careful of their food waste. Moreover, it is noticeable that the equivalence referring to money has been more effective on older people, while for younger people there is not a particular equivalence that stands out, but they seem to have similar performance. On the other hand, for what

concerns gender, women appear to be more sensitive to the changes and they seem to have understood and adapted better to the nudge. More women than men stated that they also started to use Planeat more than they used to and they were also more observant of their food waste. Also, in this case, the results of the cross-variable analysis by occupation have not shown any particular pattern. Since the vast majority of the consumers were allocated to the category “Employed” this deeply influenced the analysis because there is not any particular variance in the responses.

Moreover, as a final question, it has been asked to the consumers: “If you could choose an equivalence to use for the amount of food saved which one would you like to add?” The reasoning behind such a question was mainly to give further direction to the company in order to understand which equivalence could be added in the future according to the interests of their consumers. The results of the question have shown that consumers are very interested in knowing the amount of plastic or packaging, in general, saved thanks to the usage of Planeat. Also, the amount of meat saved by ordering vegetarian meals has been mentioned by a user. This could represent an opportunity for the company but not in the near future, since it has been mentioned just by one user, while packaging was way more popular among the responses.

To conclude it is possible to indicate that the questions about the equivalences helped in detecting the future steps for the company and which indicator should be prioritised among the four equivalences. In particular, the results have shown the order from the best performing to the worst performing indicator is the following: economic savings, CO₂, water and land. These questions together with the last question of the survey had the aim of giving ideas to the company for their future decisions. While other questions helped in having a clearer understanding of the effectiveness of the nudge. In particular, the first six questions have relevance in detecting the efficiency of the nudge

thanks to the comparison that it is possible to make with the first survey and there are other questions that make it possible to understand how well the nudge has been performing. The first question that can be taken into consideration is represented by “After the inclusion of equivalences I feel more aware and informed about how much I am saving thanks to my decreases in food waste.” The reason why such a question highlights the performance of the nudge is the fact that it represents the main goal of the research, making consumers more aware in order to make them act in a certain way. The result represents a good start for the company, since the vast majority of consumers feel already sufficiently aware and informed, just after two weeks since the introduction of the nudge. The second question that helps in detecting the well-functioning of the nudge is represented by “After the inclusion of the equivalences area I was pushed to use Planeat even more.” This question is relevant in order to detect the changes in the behaviour of the consumers since it is the final goal of the research and the nudge. Another helpful question to detect the well-functioning of the nudge is represented by “After the inclusion of the equivalences I have been more careful of my waste.” Aside from using Planeat the scope of the nudge should be that people feel more valued and act even more in favour of sustainability and thanks to the responses to such a question it is possible to evaluate it. To resume thanks to all these insights is possible to conclude that despite the short amount of time the nudge has been working already in changing the consumer perception and behaviour. In particular, the change in the perception is more pronounced than the behavioural changes mainly due to the fact that behavioural changes require far more time than a shift in consumers’ perception. In general, it is possible to say that this represents a good strategy for the company and they could continue on this path to improve the consumers’ engagement and interest with a lot of future opportunities.

CHAPTER 6: THE RESULTS

In this chapter, a general view will be provided with concluding remarks about what has been discussed throughout the whole thesis. Two main problems of society have been linked together with this research:

- (1) The intention-action gap;
- (2) Food waste.

This experiment aims at closing the intention-action gap in particular in the field of food waste. Previous researches have proven the effectiveness of nudging as a strategy to achieve such results. In fact, also for this research it has been implemented a nudge that was tested on the consumer thanks to the collaboration of the company Planeat. To monitor the results of the nudge implemented two different surveys have been filled out by consumers at different points in time. The first one before the nudge introduction and the second one after two weeks since the introduction.

6.1. The change in the consumer's perception

Before the introduction of the nudge, the consumers' perception has been detected with the first survey filled by the users. Thanks to the responses of the participants it has been possible to understand and give some kind of measure to:

- (1) The awareness of the environmental impact of both the company and their own;
- (2) The interest in knowing more about both the company and their impact on the environment;
- (3) The understanding of both the environmental impact of the company and the single users.

The results revealed that in general consumers had a very positive view for what concern the company's environmental impact and they also seems to be aware of the amount of food saved by the company. However, from the individual point of view,

the positive view and the awareness seem to drop slightly. In particular, the participants seem to perceive their impact on the environment less and they also seem to be less aware of their contribution as a single user. Finally, consumers seem to be interested in knowing more about the amount of food saved both by them as a single and the company. The interest of the users has set the basis to develop and the design the strategy and boost the nudge implemented. The initial perception of the consumer can be perceived as a good initial result, but a change is needed in order to make users realize their own effort and let them eliminate the so-called drop-in-the-ocean bias stored in their minds. From the results of the survey is clear that there is a general improvement of the consumers' perception in every dimension that is considered on an individual level and this represents the change that the nudge is aimed at starting. In particular, it is noticeable that users tend to think they do not have enough power to change a situation and as a consequence, they do not act at all or they act just in communities. While it is true that communities are able to reach better results and have more impact on the environment, the community is made of individuals that act together to improve the situation. These individuals need to feel empowered in order to realize their impact and be prone to act more and more in favour of sustainability. This is what the nudge implemented, during the research, was aiming at: empowering Planeat consumers in order to make them realize their positive impact on society, not just as a whole, but also as a single person, with the ultimate goal of improving their sustainable purchasing patterns and make them comprehend their worth.

The changes in the perception of consumers were detected thanks to the second survey that has been filled out by the users after two weeks since the implementation of the nudge in the website. In particular, the results of the second survey have shown that the nudge has been working as predicted towards achieving the goal of making people

understand their importance. As a result, thanks to the responses to the second survey it is possible to affirm that consumers seem to feel more aware of their impact on the environment and as a consequence, they appear to be more empowered and more likely to act sustainably than they were before the introduction of the nudge. In particular, it is possible to comprehend that the nudge has started to change the perception of the consumers, but it didn't act already much in the behaviour. The journey towards the change of a bias, such as the drop-in-the-ocean, is long and made of different trials and errors. This is the main reason why the company should start from these results and always continue to improve its nudging strategy for the future. Moreover, thanks to the structure of the questionnaire it was also possible to analyse the performance of each equivalence part of the nudge in order to understand which one had a bigger effect. In particular, the sequence from the best-performing one to the worst one is represented by the following one:

- (1) Monetary saving;
- (2) CO₂;
- (3) Water;
- (4) Land.

It has been also possible to detect the reasoning behind such results with some hypotheses. In particular, the reason why could be the fact that some of these indicators are more easily comprehensible than others. Even if all of them were translated into easier equivalence for consumers, some of them still appear too far for consumer to realize fully the impact they have on each single one of them. In particular, it appears easier to empathize and comprehend economic saving rather than the amount of land saved, thanks to the food each consumer has saved from waste. In general, the effects of food waste are far from the consumers of Planeat and this makes it harder to realize

and fully empathize with them. This is the reason why land has been the worst performing indicator, in particular, it appears to be the furthest one from the consumers, since it refers to deforestation and usage of land for agricultural purposes. On the other hand, the results of water and CO₂ may appear more similar, maybe because even if water is an easier concept to understand, usually consumers appear to be more aware of consumes of CO₂ due to the amount of exposure it has been given to it by the media. Finally, economic saving seems to be the best performing one, the hypothesis behind it is that it is easier for people to understand that they can save money by saving food and money is also one of the most important factors for humans. To conclude, it is possible to say that the nudge has been working at its best for the initial star. Since the nudge has created more awareness among consumers who have started to realise a bit their impact on the environment. In order to make consumers change their drop-in-the-ocean bias a longer and more tailored journey is necessary, however, this states the beginning of a such journey.

6.2. The future opportunities and the limits

Pursuing this path will enable the company to face different opportunities for its own business model. In particular, they could be able to achieve a circular business model reducing not just waste and pollution but also, they will have a positive impact on biodiversity. The Ellen Macarthur Foundation studied profoundly the effect of having a food circular business model. As mentioned before, food waste has a significant impact on climate change, it is possible to say that it is one of the main contributors. However, switching from a linear business model to a circular one could mitigate the effects of food waste. In order to catch this opportunity food retailers, need to move now and act proactively, this will give them a great growth opportunity (Ellen Macarthur Foundation Report, 2021). In particular, Planeat to achieve such results

could create new collaboration with farmers and help them in growing food in a different way. Rather than bending nature to produce food, food can be designed for nature to thrive, this is the basis of the positive change that is needed and how farmers should produce food. Planeat could favour partnerships with farmers that are already trying to implement this type of product that follows nature. By offering them to their clients Planeat will be able to give them more exposure and as a consequence increase even more its positive impact on climate change. The full potential of food design is reached when all these different factors are combined:

- (1) Diverse: diverse ingredients are those that come from a broad range of plant species and varieties within those species.
- (2) Lower impact: lower impacts ingredients are those that are conventionally produced but at the same time they have a low environmental impact.
- (3) Upcycled: upcycled ingredients are those that are made from food by-products that otherwise will not be dedicated to human consumption.
- (4) Regeneratively produced: regeneratively produced ingredients are those produced in a way that there is always a positive outcome for nature.

The company that decides to apply such competitive advantage are exposed to an increase in profits. By increasing the collaboration with farmers that apply such principles to their business model Planeat will be able to build a strong network combining innovation, sustainability and economic return. Moreover, this will also increase the number of farmers applying food design to their business model, since they will see new opportunities that give them both more exposure and profits (Ellen Macarthur Foundation Report, 2021). However, even such opportunities have some limits that impede the full realization as of now. In particular, the main limit is the fact that there are not many farmers that are already implementing such a business model,

as a consequence, it may be hard to form a network initially. Moreover, it is also relevant that such farmers in order to survive need to have some help from the Government in terms of financial incentives and know-how (Ellen Macarthur Foundation Report, 2021). Despite the limits, Planeat could be one of the initial advocates of this campaign and help to increase awareness and, as a consequence, start to change farmers' business model for the better.

Aside from the external opportunities that could arise with such a strategy, the company has the opportunity to develop and implement some interesting paths for its future activity. This has also been shown both by the potential expressed in the literature review and the interest of the consumers expressed in the survey. First of all, the company will be able to modify the inserted nudge in order to find the one that fits their customer the best making them feel even more engaged and aware of their contribution, always according to the goal of fighting against the drop-in-the-ocean bias. Secondly, once the perfect equivalence for the company has been found and the best ones have been implemented, Planeat could take the strategy to another level. In particular, the company could use the strategy of gamification to make the consumers feel more engaged. This strategy will also potentially increase the users' interest and attract younger and new consumers. Moreover, from the strategy point of view, Planeat will gain a competitive advantage over competitors. This is a consequence of the first mover advantage since the companies will be one of the first companies to implement such type of strategy among their closest competitors. This could potentially give the company an advantage and attract some new customers, however, the company must protect their uniqueness and keep reinventing itself in order to evolve and continuously be one step in front of its competitors. This is also necessary as the strategy per se since the nudge has to be tailored to the consumers and they continuously evolve and change,

as their knowledge and perceptions. Finally, it is important to keep innovating also because these types of strategies do not have any type of strong barriers so, as a consequence, it is easy and cheap to implement them. This could be an advantage because it is easier for firms to try them and implement new different types of nudges. However, at the same time, this could represent also a disadvantage for Planeat, because it makes it easier for competitors to copy the strategy and use it to their own advantage. This is the main reason why the company should always reinvent their strategy and their nudges, but there is also another reason. In particular, it is necessary to keep the interest of consumers high and avoid retention and Planeat must also keep using different nudges to adjust to consumers' changes in perception and knowledge. However, these results must be interpreted with several limitations that should be borne in mind. First of all, it must be taken into consideration that consumers hadn't too much time to adapt due to the limited amount of time available. Moreover, the time constraints also excluded the possibility of corrections or changes to the nudge implemented. As a result, it will be possible for the company to adjust their strategy in the future and implement different types of nudges, but this was not proven in the research. Trying to identify the perfect nudge for the consumer is a never-ending journey, so a larger amount of time is necessary in order to make the changes needed and improve the initial strategy implemented. Another significant limit of the experiment is represented by sampling. The survey has been filled out by a portion of the consumers of the company, so it represents just the opinion and the results given by that portion of consumers. This could be significant because maybe other consumers had a different view of the questions and would have answered differently. As a consequence, this could have significantly changed the course of the research both in a positive way, giving better results, or in a negative way, with worst results.

Moreover, another limitation that could be mentioned is the possibility of different questions in the survey that could help in detecting more easily the change in consumers' behaviour. Finally, in order to verify the change in consumers' behaviour it is necessary to make them more and more familiar with the nudge implemented, which was not possible in this case due to time constraints. All these constraints if changed in some way could lead to better results and more precise conclusions.

To solve such limitations, it could be useful to take into consideration some pieces of advice as a solution. First of all, it could be necessary to take into consideration a larger sample in order to have more statistically significant results that can be representative of a larger number of users and, as a consequence, more in line with the general pattern of the consumers of Planeat. Secondly, to solve the limitation of the limited question, it could be possible to enlarge the number of questions or think about a different method to check the changes in consumers' perception and behaviour, such as a focus group or installing automatic questions in the application that will be soon launched on the market. However, for what concern the time constraints, this has represented a limit for the research, but it should not represent a problem for the company. This is because the company is based on an ongoing principle and as time goes forwards Planeat should be able to adjust its nudge strategy to the future development of the market and changes of the consumers' perception and behaviour. As a result, by solving the previous limits and taking into consideration that the time constraints should not impact the company, the research could become an improved benchmark for future implementation of Planeat.

Conclusion

The main question of the research has been “Is it possible to use nudges to fight food waste?” and the results have been clear enough throughout the whole thesis. It has been observed and stated by different research that there is a significant problem in society, the intention-action gap. In particular, it impedes people to commit fully to sustainable behaviour. This happens because of different biases transmitted over time which are intrinsic in the decision-making process. Many times, every single one of us thinks of doing something but decides not to act upon such intention, this is where the intention-action gap is formed and this concerns significantly the sustainability field. People appear to be more and more interested in sustainability but they do not act in such a way for many different reasons. In this sense, behavioural science and nudging can be helpful to close the gap and the strategies already have been proven to work in the past, not just in sustainability but in many other different fields. In particular, the focus of this research has been on food waste, which represents one of the biggest problems for climate change nowadays and Government seems not to care. As a result, many firms are trying to tackle the problem on their own as born sustainable firms. One of the firms is represented by Planeat which is offering to their consumer portioned meals in order to reduce the food waste of the users. Thanks to external studies, it has been proved that the market in which the company is working is expected to grow, showing the potential for the future of the company. However, more consumers need to engage with sustainability activities and those already engaging need to feel more empowered and motivated to do that even more. To achieve such a goal nudging can be one of the most important solutions. In particular, after studying the company, the consumers and the market it has been decided to implement some indicators in the website of the company. The main aim is to provide consumers with

a clearer understanding of how much they are contributing to the environment and improving the current situation. To monitor the results of such nudge the users were asked to fill the same questionnaire twice, once before the nudge implementation and once after two weeks since the implementation of the nudge. The results of the surveys have proven the positive results of the strategy, with consumers being more aware of their impact and more interested in knowing more about the effect of their behaviour. In particular, the nudge has not affected the behaviour of people yet, but it has already started to change their perception. Among the different equivalences that have been introduced as part of the nudge the most effective one has been economic savings, followed by the amount of CO₂ saved, at the third place the water saved and the worst performing one it has been the land saved. However, this represents just the beginning for the company, which needs to implement and adjust its nudging strategy and its equivalence according to the results of the survey and the opinion of consumers. Despite the initial success of the results, they must be interpreted keeping in mind that the research has some limits, which are mostly linked to time and sample restriction. Even if, there are some limits to the research also future opportunities for the company can arise. In particular, it is possible for the company to furtherly develop this strategy and analyse better their consumers in order to identify the best nudge to introduce. Moreover, a future opportunity for the company is represented by gamification, which could be introduced once the consumers seem to be more adapted to the nudges. In particular, this represents one of the best solutions for the company in view of future implementations, since the strategy aims at combining positive environmental behaviour and games and it has already been proven to be successful. This research proves once again the effectiveness of nudges in the field of sustainability, and more in general in changing consumers' behaviours. In particular, it proves that if boosted

and used diligently nudges could represent one of the most powerful means to contribute to climate change. This research, among the many others published in the last decade, is one of the proofs that it is possible to do something about the current environmental situation. In particular, nudges have not been introduced in the policy of many firms and Governments or Public Institutions, if taken to another level they could help redesign the whole society and start to change for the better in every single aspect. In this sense, future researchers will be able to implement and navigate the topic with a better general understanding and more examples of nudges applied in everyone's daily activities. However, not many know about nudges and are not aware of these powerful means, so it is really important to increase the number of choice-architect and increase the awareness to implement them more and more. Since nudges could represent one of the biggest ways to make people change their behaviour, not just regarding sustainability, but also on any other level. This research contributes to the open debate on the use of nudges in sustainability. Moreover, from the managerial point of view, it provides useful input for green firms in finding and enlarging their customer base, with the final aim of potentially improving their economic and financial performance.

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With this, a chapter of my life closes and a new one opens up. I started this journey thinking that changes were something negative and to be scared of. However, now I am more aware that changes are opportunities that can help you grow up. There are different people whom I want to thank for helping me through the journey of my master's degree that led me to the person I am today and where I am today.

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