

LUISS



**Department of Business Management
Master's in International Management
Course: Managerial Decision Making**

The Influence On The Decision-Making Process: The Nudge

SUPERVISOR:
Prof. Luigi Marengo

*ASSISTANT
SUPERVISOR:*
Prof. Andrea Filippetti

CANDIDATE:
Andrea Berardesca
708461

Academic Year 2019/2020

TABLE OF CONTENTS

INTRODUCTION.....3

CHAPTER 1: THE NUDGE

1. Historical background.....5

 1.1. The development of the Nudge.....7

2. What is a nudge.....8

 2.1 The characteristics of a Nudge: The Three Principles.....10

 2.2 Ten Important Nudges.....11

3. The Implementation of a Nudge.....14

4. Libertarian Paternalism.....15

5. Humans and Econs.....19

6. The prisoner dilemma.....22

7. The Ultimatum Game.....25

8. The need of a Nudge.....26

 8.1 The Choice Architecture.....27

 8.2 Effective tools for nudging.....30

 8.2.1. The Default Option.....30

 8.2.2. Expect Error.....32

 8.2.3. Feedback.....34

 8.2.4. Strategies and Complexity.....35

 8.2.5. Mapping.....37

 8.2.6. Incentives.....38

CHAPTER 2: INFLEUNCES IN THE DECISION-MAKING PROCESS

1. Cognitive Bias and Heuristics.....40

2. System 1 and 2.....	41
3. Drivers of the assessment process.....	45
4. Framing.....	48
5. The Endowment Effect, Status Quo and Loss Aversion.....	50
6. The Habit Loop.....	53
7. Self-Control.....	55
8. Preferring A to B and B to A: Preference Reversal.....	58
 CHAPTER 3: APPLICATIONS OF THE NUDGE	
1. Marketing.....	62
2. Health.....	65
3. Finance.....	68
4. Politics.....	70
 CHAPTER 4: CASE STUDY	
1. CASE A: How Google Nudges his employees.....	74
2. CASE B: The World Bank and the eMBeD.....	78
 CHAPTER 5: LIMITATIONS	
1. Objections to Nudging.....	82
2. When a Nudge Fails.....	84
3. Why Nudges are rejected.....	86
4. Autonomy.....	89
 CONCLUSIONS.....	 91
SUMMARY.....	94
References.....	109

Introduction

The traditional view of economics has always been influenced by the concept of homo-economicus. This concept can be explained as the tendency of rational individuals to maximise their utility and benefits, while minimizing their costs with relatively stable preferences. This means that the only way to manipulate someone's behaviour, will be through wrong information or by offering some benefits (Rehman, 2016). During the last decades an increasing number of theories have been reflecting on the reliability of this conception about humans, and how this could resemble the reality. More specifically, around 50 years ago, two psychologists, Daniel Kahneman and Tversky, studied how humans actually behave, discovering that is completely different from the homo economicus concepts used in a wide range of settings. From their work, there has been a path of collusion between economics and psychology, that allowed to explain why humans behave in a certain manner in specific settings. Indeed, Thaler and Sunstein, in their book "Nudge: Improving Decision About Health, Wealth, and Happiness", differentiated between "Econs" and "Humans", where the first can be described as analytical, reflective, effortful, deliberate and patient, while the latter as emotional, reflective, effortless, impulsive and short sighted. Therefore, Humans are bounded rational individuals that lack computing power respect to Econs, consequently they would benefit from a little "Nudge" that would lead them to the right decision to take.

Thaler and Sustain developed the so called "Nudge Theory", that tries to explain how individuals can be "gently pushed" toward more efficient solutions by influencing the choice architecture and the external factors that affects the decision making process. This theory can be applied in a wide range of fields, such as marketing, politics, health choices and finance. It's a relatively new concept, but this technique has been largely used by governments in the past in order to lead citizens towards more efficient solutions for themselves and the entire community. An example is the UK, where they developed and entire departments in the Government called Behavioural Insight Team, that generate and applies behavioural insights in order to improve citizens' life and the society as a whole. Another example is the Nudge Marketing, a tool used by companies that consist in deliberate manipulations of how choices are presented to the consumer in order to manipulate its final choice, either to orient them toward options that the marketer believes are good for them or simply to stimulate purchases and increase sales. This tool is extremely efficient especially if put in practice by those in a

higher position, being at the same time a double edged sword if hypothetical conflict of interests arise. The aim of this thesis is to investigate whether it is actually possible to manipulate the decision-making process of an individual without restricting his freedom of choices and what kind of tools can be used. Moreover, it aims at analyzing if various applications of the Nudge Theory can be effective in different domains through the analysis of two different real-life cases that are able to provide some useful insights.

CHAPTER 1

THE NUDGE

1. Historical background

Around 50 years ago, two psychologists Daniel Kahneman and Amos Tversky, challenged the mainstream approach that was being used at the time in economics. Humans were believed to be Bayesian agents, meaning that they are not seen anymore as unbiased agents, but rather as individuals that ignore base points, fail to evaluate correctly scenarios, have strong preferences suffer from a biased decision-making process. Their work during these last decades led to the now so famous field called Behavioural economics, that is the merge between Psychology and Economics, and tries to explain why individuals do not behave in their own best interest. It tries to provide a framework with all the tools that allow to recognize all the errors that people make during the decision-making process, such as systematic errors or biases.

Nonetheless this field was already explored before, in particular from Adam Smith in his Theory of Moral Sentiments, first published in 1759, where he is believed to propose what now is known as the dual-process cognitive model. He anticipates some concepts such as loss aversion, willpower and fairness, suggesting new directions for research to be followed in the future of this field. It is important to outline, that behavioural economics emerged against the traditional economics approach at the time, known as the rational choice model. The normal rational person is assumed to calculate the weight of pros and cons in order to take the best choice for himself. It is assumed to know perfectly his preferences and never being trickled between contradictory choices and desires. This traditional approach supposes that these assumptions are at the base of real human behaviour. This means that the standard policy advice that is in line with this way of thinking would suggest giving people as many choices as possible and give them the freedom to choose the best one for themselves.

This separation between these two different approaches started with John Stuart Mill's (1806-1873), that used a deductive and a priori methodology and some neoclassical theoretical innovations such as marginal utility theory, revealed preferences and indifference curve analysis. This gave the possibility to economists to change their methodology as well, because they were able to model the agent's behaviour in terms of preferences and satisfaction, without

using the utility concept with psychological valence, that was used instead as a representation method for preference orderings as defined by preference theory (Nagatsu, 2015).

The next development in this field was made by the British philosopher Frank Ramsey, that lived between 1903 and 1930. A course of action, in broad terms, can be classified in terms of desirability. More specifically, his desirability will be influenced not only on the result that the action tries to reach, but also on the external influences that the outside world can produce. Ramsey wanted to quantify and operationalize different degrees of belief and desires, observing the agent's decision making process respect lotteries, adopting a scheme where "we act in the way we think most likely to realize the object of our desires, so that a person's actions are completely determined by his desires and opinions" (Ramsey, 1931: 173).

Other milestones in this field were reached from some younger economist of the time, such as Richard Thaler, that demonstrated how the endowment effect can influence the Coase Theorem and Gathered evidence against the efficient Market Hypothesis. Moreover, Ernst Fehr studied and showed how humans care more about their fellow men than the homo economicus does.

Behavioural economics attempts to integrate the understanding of human behaviour developed by psychologist into economics analysis. It parallels cognitive psychology, that tries to guide individuals toward healthier behaviours and correct cognitive emotional barriers to the pursuit of genuine self-interest (Lowenstein & Heisley, 2008).

The first line of experiments conducted by Tversky and Kahneman (1974) focused on how humans make judgments that are systematically biased. This means that it is possible to predict these errors just basing our reasoning on a theory of human cognition (Thaler, 2016). Their hypothesis was that people rely on some kind of rule of thumb or heuristic when making decisions. A basic example is the "availability heuristic", where people tend to estimate the probability of an event just basing their reasoning just on the ease with which they can recall instances of that event. This process is totally normal since exist a positive correlation between frequency and ease of recall, however heuristics produce predictable errors where these two elements diverge from each other. An example is the probability given to earthquakes from people, that base their reasoning just by thinking at recent similar events.

The second line of research on which Tversky and Kahneman worked is their famous Prospect Theory, published in 1979, that focuses on the decision making process of individuals under uncertainty. They were able to show that many times decisions that are taken in such circumstances and look rational, in reality they are completely the opposite. The two main findings from their work were that first, people tend to be influenced in the decision making process by how the problem is worded or "framed"; and second that just by using some framing

structure to affect the choice architecture people can be induced to take choices that are not optimal or completely irrational. Thus, what they wanted to outline, is that this kind of behaviour is not consistent with the main assumption that most economical model take into account, that is the idea where people choose as if they are rational (Thaler, 2016). The main assumption of this theory is that losses and gains are valued differently, meaning that individuals will make their decisions basing their choice on perceived gains and perceived losses. Humans will evaluate possible scenarios with respect to some reference point rather than evaluating its desirability on a stand-alone basis where humans are loss averse and that probabilities are calculated according to heuristic. This theory was initially formulated in 1979 but then further analysed and developed by Kahneman and Tversky in 1992, as they compared it to the expected utility theory.

1.1. The Development of the “Nudge”

The developments in this field have been able to provide us with more information about how human reasoning works during the decision-making process. In particular, we know that humans are bounded rationally, systematically biased and strongly habitual due the interplay of the different psychological forces that influence this process and are usually considered as a small fraction of a big and complex system.

This led us to get a deeper look in the contextual factors in this process and how changing them could lead to a different result. The insights provided by behavioural economics teach us that people tend to fail to act on well-informed preferences and thus fail to achieve their best choice according to the satisfaction of their self-interest. Especially in public policy, where the neglectation of these insights can explain the failure of such policies and how a greater focus on them could provide us some new simple and breakthrough tools to deal more effectively with some of the main challenges in organizations and modern societies.

In particular this phenomenon was analysed by two american economists, Richard Thaler and Cass Sunstein in their popular book: “Nudge – Improving Decision about Health, Wealth and Happiness (2008)”. They showed how the decision-making process of an individual is the result of cognitive boundaries, biases, or habits, and how this pattern may be “nudged” toward a better option just by integrating insights about the very same kind of boundaries, biases, and habits into the choice architecture surrounding the behaviour. This means that the physical and

psychological aspects of the contexts that influence our choices can be manipulated in order to reach a more preferred behaviour rather than obstructing it. They suggest that applying nudges, people's everyday choices can be influenced in a cheaper and more effective way. Nudging offers an effective tool for influencing individuals without further restricting freedom of choice or imposing mandatory obligations.

2. What is a Nudge?

There is a lack of a universal definition of what a nudge is, but according to Thaler and Sunstein:” A nudge is 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 interventions must be easy and cheap to avoid. Nudges are not mandated. Putting fruit at eye level counts as a nudge. Banning junk food does not.” (Thaler & Sunstein 2008, p.6). They focus on the concept of libertarian paternalism, that is the regulation paradigm that emerges out of the nudge strategy to behavioural change in public policy making, when its purpose is to work for citizens' interest as these are judged by themselves. Their definition of nudging that relies on libertarian paternalism, if analysed from a critical point of view, can be interpreted as a blend of two different concept: the behavioural science and the political doctrine of libertarian paternalism. Another possible definition for nudge is :” A nudge is a function of any attempt an influencing people's judgment, choice or behaviour in a predictable way that is motivated because of cognitive boundaries, biases, routines, and habits in individual and social decision-making posing barriers for people to perform rationally in their own self-declared interests, and which works by making use of those boundaries, biases, routines, and habits as integral parts of such attempts” (Hansen, 2016).

According to Schubert, he suggests defining a nudge as interventions that aim at altering people's behavior by either (i) harnessing cognitive biases or (ii) responding to them (Schubert, 2015).

In summary, we can interpret a nudge as a way to influence people by altering the external factors in order to induce them toward a specific decision, that in theory, would be the most beneficial for them and for the whole community.

Analyzing all the definition that have been given, we can observe a transparency principle as a common factor between all of them. Specifically, Thaler and Sunstein's definition is based on Rawlsian publicity principle, which suggests that the government should be banned "from selecting a policy that it would not be willing or able to defend publicly to its own citizens".

It is important also to consider an "escape clause" within the nudge, and supposing that public nudging is somewhat genuine, we can refer to what Bovens (2009: 217) call the principle of token transparency. This means that is not enough the presence of an escape clause within the nudge, but this escape clause has to be available, possibly at some cognitive cost.

Some of the most common examples of nudging are:

- Calories count: many times, on the menus or on the product packaging itself, it is indicated the amount of calories that a specific meal contains, in order to make consumer think more consciously and push them toward healthier choices.
- Display of social trust: manufactures tend to show positive feedbacks next to their products from other consumers in order to push other people to buy it.
- Default option: a desirable way to push toward a socially accepted end is to set default option as the wanted result. This practice has been used to automatically enroll people in organ donation schemes and have to opt out if they don't want to. Usually a small percentage between 10 and 15% percent decide to opt out, while the rest stick with the opt in.
- Piano Stairs: the idea was first introduced in Sweden and then adopted in cities all around the world, stairs in the metro or other public places, painted as the keys of a piano. This is not purely an artistic choice, but it's a creative way to push people to ditch the escalator and go for and "healthier" choice.
- Social norms: in the UK, people in arrears with their taxes were sent reminders with strong social normative messages. The most common one was: "9 out of 10 people in your area are up to date with their tax payments". By making them feel like outliers, 15% of the receiver of such letter were pushed to repay their debt.
- The Decoy Effect: On the restaurant's menu you will always see an item that is always much more expensive than the others. The restaurants don't expect you to buy that item, but rather the second more expensive, which will be used as a comparison variable in the final choice.

Nowadays there are countless forms of nudges, but in general terms we can conclude that all the measures that involve the re-design of people's choice architecture on the basis of psychological insights, may be alternatively intended as behavioral policies or behavioral interventions (Schubert, 2015).

2.1 The Characteristics of a Nudge: The Three Principles

Speaking in general terms we can see that policies usually can take the form of mandates or bans, as for example criminal law that forbids theft and assault. Instead other policies take the form of economic incentives, as fees for engaging in specific activities or subsidies for renewable fuels. Another form that can be adopted by a policy is the form of a nudge, where the liberty is preserved and people are guided toward a particular direction but letting them the final decision about the path that will be taken.

In our everyday life, the GPS on our smartphones is a nudge, it indicates the optimal way that has to be taken in order to reach our destination as fast as possible, but it will actually be our decision which and how to reach our destination. Overall, we can define Three Principles that characterize a nudge (Sunstein, 2014). First of all, a Nudge will always and at all costs, maintain the *Freedom of Choice*. It is important to outline that the final objective of a nudge is to make life simpler for the individual being nudged. They will provide some kind of support for people that is somehow not informed about a specific field or simply reduce their burdens. Even if they can be categorized as "soft paternalism" because of their effects, it is important to keep in mind that they are specifically designed to maintain the freedom of choice of individuals. New nudges typically replace preexisting ones, they do not introduce nudging where it did not exist before.

The second principle about nudging is *Transparency*. Any kind of nudge should be as transparent as possible to the public, rather than hidden and difficult to understand. The relevant action that is promoted in every nudge should be clear and visible, especially when this action is promoted by the Government and should be scrutinized and reviewed by the public. The main advantage of nudges is that they avoid coercion, as instead mandates and bans do. Moreover, they never have to take the form of manipulation or trickery.

Due their particularities, nudges have grown an interest form many governments around the world, as the UK and the Unites Stated, where proper Behavioral Units have been created in order to steer people toward specific ends through the Government actions.

The final principle that characterize nudges is the *Need for Evidence and Testing*. Usually the most effective nudges are a valuable source of information for the development of this fields, specifically for behavioral science, hence reflecting information about how people will respond to government initiatives (Sunstein, 2014). Obviously, not all nudges are a success, it can happen that they seem promising in theory but the turn out as a fail in practice. Nudges are structured on experimentation and empirical test, including randomized controlled trials that are of vital importance in order to understand how it has to be properly used. The fortune of many experiments about nudges is that they can be done at a very low cost and very rapidly, in a fashion that allows for a continuous measurement and improvement. The reason behind is that they usually involve just some little changes to already existing programs or communications, and those changes can be incorporated into current initiatives with relatively little expense or effort. For example, officials that send out letters to the public in order to incentives to the repayment or their debt, they cast test different kind of communication with different structures and observe which one is the more effective.

2.2. Ten Important Nudges

Nudges can be made in very different forms and with very different objectives, covering a wide range of time and space. According to Sunstein (2014), we can identify the 10 most important ones basing our criteria for selection of relevancy for purposes of policy. The nudges are the followings:

- 1) *Default rule*: preselected choice made by the institutions, policy makers or choice architect, as for example the automatic enrollment in programs related to savings, health and education.

From many experts, default rules are considered to be the most effective nudges as they can have major effects in terms of people participation to the plan. Unless that some kind of active choosing is involved, that is also a nudge itself, some kind of default rule will be inevitable, hence it is an error to reject them as such. It can be argued that a default rule can restrict people's active freedom of choice or a mere deception, but in

some cases a default rules is inevitable and essential. Sometimes letting the freedom of an active choice to individuals is too much time-consuming and would require an extra effort, therefore a premade choice by someone more expert is the optimal outcome.

2) *Simplification*: the incentive to participate and take-up of existing programs. One of the major causes of unsuccess of many programs, is their excessive complexity that does not allow individuals to fully understand their benefits and therefore involving a higher probability of opt out. As a general rule, all programs should be intuitive, navigable and easy to understand. Nations should prioritize simplifications of forms of regulation over the excessive promotions of programs that majority of people is not even able to understand. Very often this does not happen because the effects of simplifications are underestimated, and a proper cost benefit analysis is not properly done.

3) *Uses of social norms*: the emphasis on what most people do (e.g. “most people in your area pay their taxes regularly” or “nine out of ten hotel guests reuse their towels”).

One of the most effective nudges is the information given to individuals about the desirable behavior that most other people are already engaged in. The effectiveness of this nudges will be more powerful especially when the information that is given is as local and specific as possible (e.g. “98% or people in your area plan to vote”). The emphasis and use of social norms can help to the reduction of criminal behavior and also behavior that is harmful whether or not is criminal. In case people engage in undesirable behavior, it will be very effective to highlight not what most people actually do, but instead what most people actually think should do (e.g. “99% of people in Italy think that people should vote at the next elections”).

4) *Increase in ease and convenience*: people will be incentivized to opt for “better” option (e.g. the creation of low-cost options or increase the visibility of healthier food).

Many times, the choices that are made by people are just taken because they are the simplest ones. Keeping in mind our point number 3 in the list explained before, a good rule for a nudge is: “Make it simple!”. If the goal is to encourage a certain behavior, it will be necessary to eliminate all the barriers that make it difficult to understand and to follow. Resistance to change, is many times a result not of disagreement, but rather the outcome of perceived difficulty or ambiguity (Sunstein, 2014). Moreover, if the incentive to go for the easy choice is also fun, the likelihood that people will take that choice will be higher.

- 5) *Disclosure*: divulging of important information to the public (e.g. the economic or environmental costs associated with the energy use). The disclosure of information can be very efficient especially if the information is made both comprehensible and accessible. Simplicity is still a key factor, but more detailed information about the specific topic or policy might be made available to those who are more interested. In some settings disclosure can be a check on private and public inattention, negligence, incompetence, wrongdoing and corruption.
- 6) *Warnings, graphic or otherwise*: (e.g. the pictures on cigarettes about possible illnesses that smoke could produce). This practice is used especially when some kind of risk is involved, and therefore it is accompanied by a warning by private or public institutions. To make the message more effective, large fonts with bright colors are used in order to trigger people's attention. It is important to remember that attention, especially nowadays, is a scarce resource and warnings can help to counteract the natural tendency of human beings toward unrealistic optimism and simultaneously increase the likelihood that people will pay attention to the long-term desired behavior. However, there is the possibility that people will underestimate or discount these warnings ("I will be fine"), in this case it might be effective to experiment opposite messages, that for example might reward for the preferred behavior. There is also some evidence that shows that people are less likely to discount a warning when this is accompanied by a complete description of the steps that need to be taken in order to reduce the possibility of the relevant risk (e.g. "You can do X and Y to reduce your risk").
- 7) *Precommitment strategies*: the commitment of people to a certain course of action in advance. Many times, people fail to reach their goals because they fail to maintain a consistent desired behavior (e.g. quit smoking or losing weight). Instead, it is shown that if people precommit to a certain action (such as subscribe to a gym or a smoking cessation program) is far more likely that they will follow the desired behavior for reaching their goals. Especially, the commitment of an action at a *specific* time in the future increases the likelihood that we will actually follow that behavior and reduces procrastination.
- 8) *Reminders*: a note given in order to remember an action that has to be taken in the near future (e.g. an email for overdue bills). One of the reasons why sometimes actions are not taken at all is simple forgetfulness by people, and in this case a reminder can have a great effectiveness. Timing has a great importance, as it is critical in order to make sure that people will actually take action immediately after the information is given.

Another approach is called “prompted choice”, where people will not be asked to choose something, but rather asked if they want to choose or not at all. (e.g. this practice is used in organ donation settings, where people can be automatically enrolled but they can choose to opt out).

- 9) *Eliciting implementation intentions*: evoke, ask or draw out an action that will be taken in the future. People is more likely to engage in a certain action if someone asks and investigate about their implementation intentions. This is very useful in health-related settings, as for example asking people when they are planning to engage in a diet or to take their medicine. In these cases, the emphasis on people’s identity has a great impact as well (e.g. “You are a voter as your past practices suggest)
- 10) *Informing people of the nature and consequences of their own past choices*: also called “smart disclosure”. Private and public institutions have great amounts of information about people’s past choices that can be strategically analyzed and disclosed to them in a smart and effective way. For example, they can show their past expenditures on their bills related to their effective need of that service. The main problem is that individuals lack that information, they don’t know where to take it or simply are too lazy to go look for it. After the disclosure, there is the possibility that there could be a shift in people’s behavior, hopefully improving their choices, health and savings (Sunstein, 2014).

3. The implementation of a Nudge

The question that arises after all these definitions and explanations is: “How a nudge should be properly implemented?”. The underlying assumption is that they will be implemented by the policymakers or those in a higher position in relevant institutions or organizations, therefore not by “common” people that will be rather the target of the nudge. Ideally, we could imagine a system where nudges are used by current officials and leaders at the highest level, where research and information could be procured by those individuals that are involved in promoting competitiveness, environmental protection, public safety and all the relevant fields needed. According to Sunstein (2014), two different approaches can be taken regarding the institutionalization of nudges. The first one, officials are those in charge and have both knowledge and genuine authority in order to produce significant policies, reforms and impact. In this model, officials would not engage in new research, but rather they would work with

what is already known and keep building on it. They might create partnerships with other private and public institutions in order to share this knowledge and keep improving it. This approach is considered the simplest one, as it does not require a complete revolution (and related funding) from an administrative point of view, but instead the need to focus on the actual issues and find the right solutions. This is largely used in the United States, where it has been very successful until now.

The second approach suggested by Sunstein is quite different, and more similar to the one adopted by the UK. It consists in the creation of a separate new institution (e.g. the Behavioral Insight Unit) that is organized in a completely different way and has different form and sizes. The more modest approach to this model, would require a small number of people dedicated to bringing new information and engaging in new research (let's say 4 to 5). A more ambitious approach would require a bigger team (around 30 people), that are dedicated to different activities and research. This new institution could either be part of the government itself, or it can have an advisory function.

The main advantage of the second approach over the first, is the possibility to focus all the dedicated and specialized resources in a specific setting, with expertise in the design of experiments and highly informed. Nonetheless, the main drawback is that this highly specialized team could assume almost an academic role, losing its original focus and function. Authority will be vital, as the case of The United Kingdom, where it has revealed to be highly successful due to the high-level support and access.

It is important to outline, that does not exist one single model that is able to adjust to the all the different necessities and nation/organizations. However, it is noteworthy that many have realized the effectiveness of a dedicated team, or sometimes using both approaches as complementary to each other.

4. Libertarian Paternalism

Thaler and Sunstein are the promoters of a concepts that represent the ground basis for their Nudge theory. This concept is called Libertarian Paternalism. These two words taken together have way more a greater meaning then when taken alone, as they have been captured from dogmatist. They think that, when properly understood, these two terms are way more attractive, and they believe that the anti-paternalistic way of thinking that influences many economists, is

based on a false assumption and at least two misconceptions (Sunstein & Thaler, 2003). Their thinking is probably twisted by the false assumption that people will always make choices that are in their best interest or at very least are better than the choices that would be made by someone else. This claim is either tautological, and therefore uninteresting or testable. The authors, Thaler and Sustain, claim that this is not true and that it is instead testable and false and that anyone believes it on reflection. When they use the term *libertarian* together with the word *paternalism* they simply intend “liberty-preserving”. The paternalistic aspect can be identified in the claim that is legitimate for choice architects to try to influence people’s behavior in order to improve and make their lives longer, healthier and better. A policy is paternalistic if it tries to influence choices in a way that will make individuals better off, as judged by themselves.

The first misconception that they focus on is the presence of other possible alternatives to paternalism, where paternalism can be defines as : ”A system under which an authority undertakes to supply needs or regulate conduct of those under its control in matters affecting them as individuals as well as in their relations to authority and to each other” (Thaler & Sunstein, 2008). In other words, the possibility to avoid influencing people’s choices. In many situations, agents in organizations will have to take decisions that probably will affect also some other people that is inevitably involved. The authors present an example of a cafeteria, where the director discovers that changing the different arrangements of how the food is displayed can influence people’s final choice. Basically, changing the possible choice architecture presented, can change the final choice of the individuals. In this case the director will have three different choices: the first would be to arrange the alternatives in a way that would maximize the customer’s interest and make them best off; the second option could be a random selection of the alternatives arranged, and the third and last one he can induce people toward “bad” choices for themselves and make them as “obese” as possible. In our reasoning, the first option would be more paternalistic, which indeed is, but would anyone advocate options 2 or 3? Obviously can also happen that sometimes nudges are unintentional. For example, employers may decide to pay their employees biweekly rather than monthly and discover that people will tend to save more when paid biweekly as they get three paychecks in a month twice a year.

The second misconception is that paternalism always involves coercion. Referring back to the cafeteria example, the choice architecture of how the food is displayed can lead people toward a specific choice rather than another. This obviously does not coerce anyone into doing anything, but one might prefer some order to others on some paternalistic grounds. Putting the

fruit before the dessert would boost the fruit consumption of fruit rather than sugars bad for your health, would make the objection against coercion arise anyway? Would the different age of the customers influence the choice and objectivity of the choice architecture and the involved paternalism? Probably not, and some types of paternalism should be accepted even from those who embrace freedom of choice in every aspect life.

It is important to outline that a policy counts as paternalistic if is selected with the aim of influencing the choice of the parties involved and make those parties better off, where this measure can be traced in a scientific and objective way, without equating revealed preference with welfare. Individuals many times will make choices that can be considered as “inferior” because they are not optimal given the circumstances, instead they would be probably very different in a case where there is not asymmetric information, unlimited cognitive abilities and no lack of willpower.

In the example of the cafeteria made before, the director of the cafeteria would be considered as the choice architect. A choice architect has the responsibility for organizing the context in which people make decisions (Thaler & Sunstein, 2008). Being a choice architect doesn't presuppose being in a powerful position, as everyone can be considered as such. If you are a doctor you will describe the different cures and treatments to your patients, if you are a parent you will describe the possible educational options for you children, if you are a salesperson you will present different alternatives of you product and so on. Everybody can be considered as a choice architect, but the real power will rest in the self-consciousness of such position and a responsible “nudging” toward the best direction. Small and apparently insignificant details can have a major impact on individuals' choices especially when you make someone focus on something. A really basic example is the men bathroom in many airports, where you can see a small image of a black housefly into each urinal. Studies showed that making people focus on something “improved” the aim and helped to reduce the spillage by 80 percent. The idea that “everything matters” can be a bit misleading, because it will be impossible to control every single variable in the decision making process, but a good choice architect should be able to understand that even if they can build the perfect choice architecture, they can make some important choices that have beneficial effects for the final outcome.

As said before, sometimes planners are forced to make a decision. A simple and important example is the selection of a “default option” if a planner fails to choose for himself. In a fully rational world, agents would choose the best option available regardless of the presence of such default option, but in the real the status quo bias will push people toward remain in the present state. Planners, in order to choose among different possible systems for choice architecture,

should start by doing a cost benefit analysis, and in doing so they would be able to measure the full ramifications of any design choice. What people choose; many times, depend on their starting point. Libertarian paternalism can offer three different methods that allow to test which one of the different choice architecture alternatives is welfare promoting and which one is not. The first method requires to select the approach that the majority would choose if explicit choices were required and revealed. Also called the market mimicking approach, raises some questions and related problems. Perhaps the majority's choices would be insufficiently informed and would not promote the majority's welfare. This method would be rational to be followed if the planners knows what those choices would be. But a problem of circularity would arise in case the majority's choices would be themselves a function of the starting point. Only in case the majority is likely to go toward one way or another regardless of their starting point, this marketing-mimicking approach would be suitable.

The second method requires the selection by the planner of an approach that would force people to make their choices explicit. This method is appropriate in case the market mimicking approach fails because of the circularity problem or because the planner does not know which direction the majority will take. But in this case, another problem arises. The choices that sometimes are "forced choices" will not promote welfare. Some studies however have shown that in many cases, as for example in retirement planes, forced choices promote the participation rates than requiring opt-ins, but lower rates than requiring opt put.

If automatic enrollment is supposed to be welfare promoting, perhaps it should be preferred over forced choices. If the planner is not sure about which strategy choose, he should devise a plan that requires people to choose.

The third and last method requires the planner to adopt an approach that minimizes the number of optouts. Going back to the retirement plan example, very few employees opt-out of these retirement plans when they are automatically enrolled. This approach is considered to be ex-post regarding the inquiry that is done about people's preferences, in contrast to the ex-ante approach taken by the market-mimicking approach.

In summary, libertarian paternalism is a powerful tool that preserves freedom of choice but that authorizes both private and public institutions to take initiatives into guiding people toward choice that will maximize and promote welfare. Some kind of paternalism will be likely when such institution makes arrangements that will prevail unless people affirmatively choose otherwise. In such cases, the aim would be to do not consider random, arbitrary or harmful effects but rather stimulate the production of a situation that will benefit people's wellness, suitably defined.

5. Humans and Econs

Humans have to take decisions many times per day. This is a process that is triggered every time by a different element in the real world. People will have to choose “something” from the moment they wake up, till the moment they lay in bed for sleeping. They have to choose which shoes to wear, what kind of food they want to eat and how they will go to work. All this kind of choices many times are done in an instinctive way, because most of the times people will not have to think about them. But what happens when individuals will have to take more important decisions that will affect not only their life, but also the life of other people surrounding them?

In this case, very often rather than taking the optimal decision, people can choose what is considered to be “fair”, because humans have emotions, and emotions affect our behavior.

Indeed, the basic assumption of libertarian paternalism is that people many times do a terrific job at taking decision, and this is a consequence of the asymmetric information problem or just because of the influence of external factors.

This concept is in contrast with the assumption made by economist when they refer to individuals, also called homo economicus: the notion that each of us thinks and chooses unfailingly well, always looking for the so called pareto efficient solution. As said before, this concept does not fit with the reality. Making a very simple example, consider the food choices that we make every day. If we were homo economicus, we would do only healthy and nutritious choices and we all would be very healthy and in shape. Nonetheless, in reality obesity is a very big problem in the world. Only in America, more than 60 % percent of the population is considered to be either obese or overweight (Thaler & Sunstein, 2008). Health choices is just one of the few areas that nudging would produce massive results and improve people’s life.

When we talk about diet choices, we can see a trade-off between taste and health. This does not necessarily mean that overweight people fail to act rationally, but rather that they are not taking optimal choices that could be between the extremes of good tasting/fat food and bad tasting/health food. Diet related behavior is just one simple example of many other self-destructing actions that are carried out by individuals, as for example drinking and smoking. What is interesting, is the fact that most of the times, people are aware of the damage that that action is doing to them, but the pleasure in the short term is higher than the preoccupation of possible future issues in the long term. Indeed, with respect to diet, smoking and drinking, people’s current choices cannot be considered means of promoting their self being. What is fascinating, is the different propension of people to put in practice self-control behaviors, many

times with the help of third parties' individuals to help them make better decisions. Self-control behaviors will be analyzed more in depth further in this work.

As we use empirical research and facts in order to conduct our research, we can propose an experiment that has been done, called "The Ultimatum Game". Imagine a room full of people, where half of the room are supposed to be the "proposers", and the other half assigned as "responders". The proposers are randomly assigned with a responder. The options for the proposer are to offer an even split of the entire amount (meaning 50 € each) or any other combination that he/she wants. After the offer from the proposer, the responder may decide to accept or reject such offer. In the case the responder does not accept, both the proposer and the responder get nothing. This game has been replicated many times by different researchers, but the results tend to be always the same. People's most common offer will be an even division of the entire amount, a 50/50 where both parties get 50 € each. In the case where proposers offer less than a 50/50 split, such for example 60€ for the proposer and 40€ for the responder, about 20% percent of such offers are rejected by the counterpart. From a rational point of view, these choices are far away from being optimal. Even in the case the responders would get less than 50% of the entire amount, a rejection of the offer would mean a rejection of free money, thus being completely illogical. The conclusion that this experiment suggests, is that there are external factors that influence people's choices. Specifically, people will care much more about "fairness" even when it might not be rational.

People, in order to be qualified as Econs, they are not required to make perfect forecast (that would require omniscience), but rather make unbiased forecast. This means that the forecast can be wrong, but they can't be systematically wrong in a predictable direction. One typical example of Humans is the "planning fallacy", first proposed by Daniel Kahneman and Amos Tversky in 1979, that is the systematic tendency toward unrealistic optimism about the time it takes to complete projects. This kind of Cognitive Bias can occur regardless of your knowledge that past tasks of a similar nature have taken longer to complete than generally planned. According to research, small sized task and interruptions can affect concentration for up to half an hour, so it is important to distinguish between what is considered urgent to less critical in order to be efficient and successful. But many times, what happens is that we put important task aside, and we first deal with the "urgent" tasks, just because the completion will provide us with a sense of accomplishment that does not affect the advance of the long-term goals.

Again, just to make another example of cognitive bias that affect our decisions, take the so-called status quo bias, that is the tendency to remain with the actual state (meaning not taking any decision) or the default option. Imagine the case when you buy a new smartphone, when

you turn it on you will have to take some decision about the configurations. But many times, you will not have enough information at the moment in order to make the optimal decision, but the producer/manufacturer will have already picked up default option that would fit with majority of people's necessities. This is really important in case we want to nudge someone into doing something. You can simply decide a basic default option that people will follow simply because they prefer to do nothing and go along with that decision rather than looking for information and take an alternative choice.

We can conclude two important lessons. First, we should acknowledge the power of inertia, and how many times in our life we decide to just follow a default option made by someone else rather than make an effort and look for the information that we needed in order to make an optimal choice. And second, how this default option can be exploited by the authorities in order to nudge people into better behavior for themselves and the entire society. If the government thinks that one policy can produce better results than another, they can simply decide to use it as a default, and majority of people will just follow along. This can produce great effects in many areas, as health care, savings, environment and so on. The main drawback of the difference between Humans and Econs, is that people is made by emotions that affect our behavior. From an economical point of view can be seen as something "bad", as many times fairness will prevail and affect individual self-satisfaction, but this does not entail the distinction between "good" and "bad" emotion, as love and hate can lead to completely different actions and outcomes. We can conclude saying that humans will have to find the right balance between being "Humans" and "Econs", as it is important to consider one's emotions before taking a decision but also important to not get too much involved from these emotions. Given the definition of a nudge by Thaler and Sunstein, where a nudge is any factor that significantly alters the behavior of Humans, even though it would be ignored by Econs, the default option is just one example of the results and effects that nudges can produce. Econs respond to incentives as Humans, but Humans are also influenced by nudges. This means that just by deploying incentives and nudges properly, we can increase and reinforce our ability to improve people's life and help them to solve major problems in today's society without limiting freedom of choice.

6. The Prisoner Dilemma

As we said before, many times people will take decision that affect other people lives or in the opposite case, they can be affected by someone else decision. The Prisoner's Dilemma is the perfect example in this case. This is an imaginary case used in Game Theory, and it can have many versions, but we are going to stick with the most common one. It shows how two completely rational individuals might decide to not cooperate, even if this appears to be in their best interest in doing so. It was originally presented by Merrill Flood and Melvin Dresher in 1950, but Albert W. Tucker formalized it. It is presented as follows:

Two robbers have been arrested and they are accused of a crime. They are being interrogated in separate rooms. The authorities have no witnesses, and they can only prove their involvement in the crime only if one or both of them confesses. Each prisoner is faced with the choice to cooperate with is accomplice and remain silent, or to defect and testify for the prosecution. If they both cooperate and decide to do not talk, then the authorities will be able to convict them only with smaller charges, which is 1 year in jail for each. If one decides to testify against the other and the other does not, then the one who testifies will be released and the other will get 3 years in jail. In the case where both testify against the other, each of them will be charged with 2 years in jail. It can be presented as in the image below:

Figure 1

		P2		<i>C: COOPERATE</i> <i>D: DEFECT</i>
		<i>C</i>	<i>D</i>	
P1	<i>C</i>	1,1	3,0	
	<i>D</i>	0,3	2,2	

In this case, the incentive of each robber will be the to defect, independently of the choice of the other prisoner. From the first player point of view (P1), if the second player (P2) decides to do not talk and remain silent (C), at this point P1 will have the opportunity to decide to either cooperate too (C), and spend a year in jail, or decide to Defect (D) and go free. This means that the best move for each player would be to Defect, as the payoffs would be better in every case.

Knowing that the other player will Defect, P2 choices will be restricted between remaining silent and deciding to cooperate (C), spending 3 years in jail, or either Defect as well (D) and both would spend 2 years in jail.

As we have seen, the Prisoner Dilemma presents a paradox, where both robbers can minimize the total jail time that the two of them will spend only in case they decide to cooperate (C), doing 2 years in total, but both of them face incentives that will drive them toward different choices and they will end up with the worst total result of jail time, that is D;D (4 Years in total).

This game, and more in general Game Theory, is based on the concept of Rationalizability, that embodies some assumptions about how players act according to their beliefs and what players know about each other. The assumptions are:

- 1) People form beliefs about others' behavior
- 2) People best respond to their beliefs
- 3) These facts are common knowledge between the players

Considering these few assumptions about players' behavior, we can say that this concept is quite weak and far from reality. Specifically, we do not assume that each player's beliefs are consistent with the strategies actually used by the other players.

But rationalizability can be considered the appropriate behavior in many settings, especially when people have previously met, and they can coordinate their beliefs. However, in the opposite case when the parties have not met previously, the players do not know which strategies will be adopted by the other player. The players are both rational and sophisticated thinkers, leading to strategic uncertainty that will inevitably affect the final outcome.

In other settings such strategic uncertainty can be avoided through social institutions, such as norms, rules or communication between the players. A typical example is the "avoiding people on the streets game", that we inevitably play every day when we walk outside. From an historical point of view, at a certain point people in the United States wanted to organize sidewalks in the same way as streets are organized for automobiles. This was translated in the expectation of people knowing that they will move to the right in order to avoid someone else on the streets. This shows us how an historical precedent helped to align our beliefs through social norms.

Another point for reflection, is the belief and correspondent behavior put in practice by the individuals that are guided by how other individuals have acted in the past. This means that, many time behaviors are coordinated by social norms, and said to be congruous. Congruity can refer to consistent and regular behavior that is constantly put in practice in society or by the

same parties who interact repeatedly. It can also be referred to the behavior that is played in a one-shot game, where the strategy put in practice by the players is the consequence of the alignment between beliefs and actions by communications and social norms (Watson, 2001).

These concepts of congruity can have three different versions:

- 1) A game is repeatedly played in a society or by a group of agents. The behavior of the players “settles down” in that the same strategies are used each time the game is played.
- 2) The players meet before playing a game and reach an agreement on the strategy that each player will put in practice. Subsequently, all the players follow the agreement
- 3) An outside intermediary suggests to the players a specific strategy to be adopted in the game. Each player knows that the other will follow the advice of the third party and they will follow along.

The simplest notion of congruity is the setting of a strategic certainty, meaning that the players will be coordinated along a single strategy profile. In such case, the players beliefs and behaviors will be consistent with each other, and they will possess specific knowledge on how to act to each possible action by the other player. This will lead to actions that are considered to be the players’ mutual best responses, leading to a result that is called Nash Equilibrium.

The formal definition of a Nash Equilibrium is:” A strategy profile $s \in BR_i$ is a Nash Equilibrium if and only if $s_i \in BR_i(s_{-i})$ for each player i . That is, $u_i(s_i, s_{-i}) \geq u_i(s'_i ; s_{-i})$ for every $s'_i \in S_i$ and each player i ” .

Going back to the Prisoners’ Dilemma made before, we can see that each player has an individual incentive to abide the agreement only if each player prescribed strategy is a best response to the prescription of the other. It can be seen than that the Nash Equilibrium in this case is D; D.

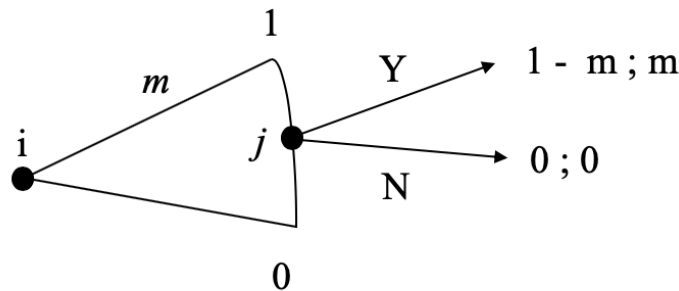
A real-life example of how the Prisoners’ Dilemma work is Cartels. In most case all the members in a cartel if they cooperate can enrich themselves by restricting output according to previous decisions and set the market price and obtain a higher surplus. Nonetheless, each member of the cartel can be incentivized to cheat and do not cooperate with the other members, increasing personal output and obtaining higher profits.

7. The Ultimatum Game

Also, the Ultimatum Game is analyzed by game theory, as it can be considered the simplest case of bargaining problems. The classical frame for this problem is as follows:

A buyer and a seller negotiate over the price of a painting. The process starts with an offer from the seller and then the buyer accepts or rejects it, ending the game. The painting is worth 100€ to the buyer and nothing to the seller, so the transaction would produce an eventual surplus of 100€. In order to understand this game, we can concentrate on the share of monetary surplus between the players. If player 1 (P1) obtains $\frac{1}{4}$ then it means 25% of the entire amount. Transferable utility is assumed, this means that the price divides the price in linearly. Therefore, for this reason if one player gets m as a surplus, the other player will get $1 - m$. This game can be pictured as in the image below:

Figure 2



Where i is player 1 and j player 2, and Y is Yes, and N is No. It is important to notice that if the painting is not traded, both parties obtain nothing. In the opposite case, the seller will obtain the price, while the buyer will obtain the full value of the trade minus the price paid. The strategy that will be used by the seller that has to make the first offer, consist simply in choosing a number m between 0 and 100 that will be the price. Player 2, the buyer, has an infinite number of information sets, where an information set specifies the payers' information at decision nodes in the game. P2 has infinite number of information sets because there is one of the feasible offers of player 1, as for example there is one information sets for price = 25, another for price = 34 and so on. Because there is an infinite interval points between 0 and 100, also P1 has an infinite number of moves.

In this case, Player 2 strategy can be described as a function that considers Player's 1 offer m to the set (YES; NO). Taking into consideration the subgame following any particular offer m from Player 1 where $m > 0$. If P2 accepts he gets m , if he rejects, he gets nothing. This means

that P2 best action is always to accept, only if $m = 0$ either rejection or acceptance is an optimal response. Therefore, we can observe that P2 has only 2 strategies, accept all offers (s^*_j), or accept all offers where $m > 0$ and reject the offer of $m = 0$ (s°_j). These are the only two strategies that specify a Nash Equilibrium for each of the proper subgames. If we want to identify the equilibrium of the subgame, we can see that if P1 picks $m = 0$ and P2 plays (s^*_j), this is a Nash Equilibrium of the Game. P1 has no incentive to deviate from a price equal to 0 knowing that the other player will accept all the offers. Although, it is important to notice that there is no equilibrium with P1 picking a price = 0 and P2 playing (s°_j), because P1 has no well-defined strategy and would like to select the smallest possible m , but $m = 0$ will produce a payoff of 0 for both of them. This means that there is only a single subgame perfect equilibrium of the ultimatum game, that is Player 1 selects $m = 0$ and Player 2 accept all offers, producing a payoff of 1 for the seller and 0 for the buyer (Watson, 2001).

The Ultimatum Game presented in a Game Theory setting, helps us to show how a great deal of bargaining power is wielded by a person in the position of making a take it or leave offer, in terms of the standard bargaining solution with P1 with the maximum payoff. All the players in this position will have an advantage over the other player.

Nonetheless, we can observe here that the result predicted by an economic model is far distant from a real-life setting, where other influences will affect the decision process of the two individuals involved. These influences will be further analyzed in the next chapter.

8. The need of a Nudge

Many times, this question is asked in order to understand the degree of autonomy that nudges can allow us. The concept of “being nudged” can be scary from a passive point of view as it can be intended as a decrease of self-empowerment and liberty of decision making. However, it is important to understand that in a behavioral world agent require some nudging. This is because the quantity and quality of mental resources is usually limited, and in order to choose and create their preferences need to rely on a contextual support (Schubert, 2015). We can say then that humans will inevitably engage with their surroundings and external choice architecture in order to obtain the best possible outcome given the scarce resources that they possess. This process will include some (intentional) nudging, especially when the confrontation is with new and more complex problems (Schubert, 2014). According to

Sunstein (2014), all the choices that are made by human beings are implicitly made for us by private and public institutions, making us better off and increasing our autonomy. Without the interventions by these institutions in all the relevant decisions for humans and without assistance, we would be far less free. Only through these interventions we are able to concentrate on what really concern us and increase our efficiency without compromising ourselves by our own autonomy.

In order to reinforce the link between nudging and autonomy, Valdman (2010) compared nudging to the partial outsourcing of self-government to an agent's context. Inevitably, all nudges involve some degree of outsourcing to an external agent more competent, that is beneficial and convenient for the individual being nudged.

Camerer et al. (2003) define what is called "asymmetric paternalism" as taking steps to help the least sophisticated people while imposing minimal harm on everyone else. This represents the spirit of the golden rule for Thaler and Sunstein, which they think that people need nudges for decision that do not take frequently and find difficult and complex, for which they do not get prompt feedback, and when they have problem with the elaboration of the issue with more comprehensible terms.

8.1 Choice Architecture

Given the fact that people will rely on their external environment, how choice architects can make and organize the best possible and supportive choice architecture?

First of all, it is important to remember that the real world is lived by Humans, and not by Econs, thus both nudges and environments should be designed with Human in mind. Nonetheless, we won't know what kind of choices they will make, but rather we can try to predict and consider the possible outcomes. This means that the first step that the choice architect has to do is an analysis in terms of benefits and cost. Choice architect do not always have the interest in trying to find the best possible choice for people, but rather they could push the people toward the best choice for the choice architect interest. Imagine for example a person that has to design and structure a menu in a restaurant, he will try to guide people toward the more expensive choices in order to gain a profit. But imagine instead a choice architect that has a higher level of power, as the possibility to influence people to choose a mortgage rather than another, having devastating effects just for their personal interests.

In order to establish a proper choice architecture, the choice architect has to take into account the fact that individuals will have self-control problems, that will be increased when the consequences to the choices are made are in two different times. At this point, the distinction can be made between two kind of choices. The first one, is related to the so-called *Investment Goods*, that are those goods where the costs arise immediately meanwhile the benefits are delayed in time. A typical example is exercising, where you feel the pain of the activity immediately, but you will actually get in shape and obtain the benefits only after repeating in for a long time and with constancy.

Another related example is dieting, that requires commitment and immediate effort for the long-term goal. The major problem in this case is that most people do not want to engage in short term pain/effort in order to obtain the benefits only in the future, and the result is poor effort or not effort at all. At the opposite extreme of this distinction there are the *Sinful Goods*, where the benefits will be immediate are the costs are delayed in time. In this case an example is smoking or drinking. People tend to feel the immediate benefits and wellbeing from cigarettes or drinks, without taking into account the possible damages that the usage could provoke in the long term. Both Investment goods and Sinful goods stimulate cognitive biases, representing a perfect fit for nudging (Thaler & Sunstein, 2008, p 75). People with dietary problems can be stimulated to abandon Sinful goods habits (ex. junk food) and being pushed toward healthier choices represented by Investment good (ex. Sports).

Another element that the choice architect has to bear in mind is the degree of difficulty that that specific choice will involve. This metric can be intended in a certain way as something subjective, as everybody will have a different talent or ability in doing something. Since we are young, some are better at school than other, or playing chess or playing basketball just at the first try. But another metric will come along, that is frequency. Obviously, people after having already experienced the same choice path before they will be more prepared and meticulous the next time they will face it. Nonetheless, when the stakes are really high, we don't have to many opportunities for practice. How many choices do we have when we decide at which college to apply? How many times can we decide which retirement plan we want to follow? Moreover, when the stakes are higher it does not necessarily mean an increase in performance with practice, because some emotional and external factors will affect individuals. If we further analyze this concept, we might even realize that many times practice could be totally worthless without a direct and immediate feedback. Learning will be way higher and more effective only if people will have the opportunity to have a feedback that is prompt and clear. Imagine that you are trying to learn how to shoot a ball, but you don't know the result of

your action and where the ball actually ends. Every try will be worthless, because you won't know if what you are doing or trying to do is the proper way or not. Most of the times feedbacks are given only to the options that we select, not on the ones where we are rejected. How many times people are excluded in a recruiting process after an interview without even knowing why? Only in case feedback does not work and learning is not enhanced, a nudge would be beneficial.

People tend to be pretty sure about the choices that they will make when they know what they like and what are their preferences. But what would be the result if they do not actually know what they like and their preference? Imagine the case where you are in a foreign country, and you decide to try a local restaurant. You will be uncomfortable trying to read the menu in a language that you don't know or trying a dish that you never have heard or seen before. In particular, people tend to have serious troubles to make good decisions when they have problems translating the choice that they face to take into the experience they will have.

As we have seen, people can have difficulties in their choices in many occasions. But, as we know, we live in a world where markets face free competition (or almost). Shouldn't the free market itself guide people toward better choices? The answer to this question is partially true but not always. Just imagine the case where people choose a specific insurance. The benefits will be delayed, the probability to having a claim is hard to analyze, they do not get proper feedback on their returns, and even if they do could be biased as it is directly from the insurance company. Nonetheless, the market should indicate which are the best insurances and if the individual is making a good choice sticking with their decision or not. Usually the price can be used as an indicator of quality, but sometimes consumers rely on it too much. People can buy one product or another just because the price is higher, and thus better. For irrational consumers to be protected there has to be competition, but sometimes this does not exist. Companies can have a strong incentive to exploit people's asymmetric information to gain profits. Especially if consumers have a less than fully rational belief, higher will be the incentive of the companies (Thaler & Sunstein, 2008). There could be the case where companies compete for the same consumers, trying to sell products that are not just different but directly opposed to each other and in terms of benefits for the consumer. Consider for example the case of companies that sell cigarettes and companies that sell product that help to quit smoking. Obviously, the final choice will be left to Humans (not Econs), and as we know, Humans tend to make errors.

8.2 Effective Tools for Nudging

Consider the big exit doors that you find in restaurants, cinemas or pubs. How many times did you try to push them even if there was a big sign “PULL” hanging on the door? This is a typical example of a violation of a simple psychological system called “*Stimulus Response Compatibility*”. This principle states that the signal received, the stimulus, must be consistent with the individual’s desired action to that stimulus. When these two elements are in opposition, performance suffers, and people make mistakes. Let’s consider another example, imagine that you are in your car and you see a big, red, octagonal sign that says GO. Again, this would produce a psychological incompatibility between desired action and stimulus received. One of the tests that are used to measure this effect, is the Stroop test (1935). This experiment requires people to push the right button if they see a word displayed in red, and the right one if they see a word displayed in green. The real effect of this experiment is triggered when people see the word GREEN displayed in red or the exact opposite. Due this incompatible signal, people tend to slow down and the degree of errors increases. The key reason behind is that our Automatic System reads the words faster than our capability to recognize the color of the word. These two examples represent a failure of choice architecture, where human psychology is challenged and not accommodated, increasing the possibility of mistakes by individuals.

There are numerous effective tools that can be used in order to optimize choice architecture and reach the desired end just by making some simple adjustments and in a cost-effective way.

8.2.1. The Default Option

In many times people tend to take decisions with a passive approach. This means that for reasons such as laziness, distraction or fear, individuals decide to go along the option that requires the least effort or the path of least resistance (Thaler, Sunstein & Balz, 2010). The underlying assumption is that in all the cases there will be a default option that was previously made by someone else. This kind of option is the result if the chooser decides to do literally nothing, as it is already thought by the choice architect. This happens because a large portion of people tend to follow this path, whether this is good for them or not, creating the prerequisites for the default option to be one of the most powerful tools for nudging toward a

specific direction. Especially if the default option is considered to be the recommended or the normal course of action for the individual, the behavioural tendency toward doing nothing will be reinforced.

One of the reasons why default options are very powerful nudging tools is because most of the times they are unavoidable. For any node of a choice architecture system, there must be an associated rule that determines the outcome in case the chooser does nothing. Imagine for example a computer left on without using it, after a specific time it will lock itself. This time is usually a default time and in most of the cases people do not even bother trying to change it, as it was already predetermined by the manufacturer.

Otherwise just imagine when you buy a new phone and you have to set it up for the first time. The majority of people will choose to follow a default configuration process, because in case they decide to go along a customization process, this would take time, effort, and would cause problems if the individual is not enough experienced.

Many organizations nowadays have been smart enough to exploit this default option for their personal interests. Consider the subscriptions required for a specific magazine or a service. If the renewal is automatic the chances are that people will remain as such, even if they do not even read that magazine or use that service. Moreover, the process for cancelling the subscription might not be very intuitive for most people, requiring some extra effort, increasing the tendency toward the status quo.

We have emphasized the “inevitability” of default options, but in some cases the choice architect requires an active choice by the decision maker, therefore he uses an approach that is called “*required choice*” or “*mandated choice*”. In the example of the new smartphone made before, a required choice would be to not leave some boxes unchecked, as when you have to agree to the terms and policies of the company.

As we said before, a good use for mandated choice would be in fields such as organ donation, where some countries have adopted an opt out policy. However, some of the critics have been that people tend to feel oppressed and governments don't have the right to presume anything about their organs. Therefore, an effective compromise is mandated choice. A good example is the procedure applied in many states in the US, where before you can get your driving licence you have to agree whether you want to be an organ donor or not.

Required choice can be considered the best approach, but the main critics that can arise are that sometime people tend to feel the mandated choice as a restriction of freedom or just an inconvenience, therefore preferring the presence of a good default option. Moreover, this

approach is better when the required choice is just a simple yes-or-no decision, as for complex ones required choice might not even be feasible.

8.2.2. Expect Error

A good choice architect know that individuals will make mistakes, especially humans make errors, and this is unavoidable. Therefore, a good choice architect has to be smart enough in order to make the system as much forgiving as possible to these mistakes (Thaler, Sunstein, Balz, 2010). In order to better understand this concept, we can use some real-life examples:

The Paris subway system, called Le Métro, individuals have to insert their ticket, that is very small and with a magnetic band on a side, into the machine reader. Hypothetically, there are four possible ways to insert the ticket, but only one is right. In this case the choice architect knows that most of the people will fail at their first attempt to insert the ticket in the right position, taking more time and creating long lines of people. Hence, the machine has a special mechanism that allows to read the ticket in any position is inserted and elaborate the information on the magnetic strip, saving more time and effort for everybody. This system is also used in parking garages, where the driver has to reach out the machine from his car's window and insert the credit card into the slot. Also in this case, over the four possible combination just one is the correct, but the machine is smart enough to read the information on the credit card in any position is inserted.

One of the most common mistakes made by humans is a special kind of predictable error that psychologists call a "*postcompletion error*" (Byrne and Bovair 1997). This concept states that once the main task is finished, people tend to forget things related to the previous steps. One typical example is forgetting the gas cap behind at the gas station when you go to refill. The solution has been attaching this gas cap with a little piece of plastic, so is was impossible driving off without it. Another classical example of postcompletion error is the case of an individual that forgets the credit card at the ATM machine after withdrawing the cash. In this case we can introduce the concept of what Norman calls "*forcing function*", where in order to accomplish a desire, another step must first be taken. If the individual wants to withdraw the money, he first has to take the credit card (after inserting the pin) in order to take the cash.

Another interesting example related to gas station is the mistake that is made due the confusion of different varieties of gasoline. Cars that are powered by gasoline might be mistakenly filled with diesel or vice versa. In order to avoid these mistakes, the nozzle that deliver diesel are too

large to fit into the slot of gasoline powered cars. This same principle has been applied in healthcare, more specifically anaesthesia, where studies found that 82% of the critical incidents are because of human mistakes. In order to avoid this possibility, the equipment was re-designed so that nozzles and connectors were different for each drug, being physically impossible to make this same kind of mistakes (Vicente, 2006).

One of the main problems in health care related to possible human error is called “drug compliance” and costs billions of dollars each year. The most common problem on medicine, is that many times the patients forget to take them, especially if it has to be taken once every other day if the patients are elderly. In order to solve this problem a smart drug designer (the choice architect) should take into account two main variables: frequency and regularity. When an immediate single dosage given by the doctor is not possible, the optimal solution for a medicine that has to be taken regularly is one a day, specifically in the morning. This is because reducing the daily dosages per day will reduce the possibilities that the individual could forget about the medicine. Moreover, if the dosage is regular, will activate the Automatic System in our brain, therefore will become a habit and easier to remember. On the contrary, if the medicine has to be taken every other day will be more probable of a human error. Indeed, many doctors recommend taking the medicine (if it has a weekly dosage) on Sundays, as it is not a workday and then easier to remember. This is a principle that could be applied in many different settings, just imagine that every schedule, meeting or action is easier to be remembered if it something that is done regularly rather than occasionally.

Another useful tool that is used in order to avoid possible human errors is check lists. Especially used in health care and doctors, check list can be used to improve memory recall, which is critical in a hospital, and broke down the whole complex problem into smaller steps that allows to have a better general picture and better understand the standards for high performance. The checklist, that contain just simple, small routine actions, that doctors have executed thousands of times in the pasts but that simply might forget to do just because of stress, time constraints or distraction. This same principle in the checklist can recall the principle of how habits works. When an action becomes a habit, it activates our Automatic System and therefore it can be remembered more easily. This is what great CEO try to do in their organization, they try to fix some habits within the culture of their organizations, in order to divide the bigger objective in smaller steps and better understanding what are the necessary actions and standards for reaching success.

But a habit does not always necessarily mean something good for use, as we know good and bad habits exist. Just imagine people visiting the UK, where we know they drive on the left

side, therefore pedestrians expect cars coming from their right. Even if we know that, when we (Europeans e.g.) will cross the street our Automatic System will be triggered and we will automatically look at our right, therefore risking being invested from a car. For this reason, the government decide to help with a good design. On many corners, especially in the most tourist ones, the pavement has signs that say, “Look RIGHT!”.

8.2.3. Feedback

The best way to know that an individual has to know if his performance has been good or not, is just through feedback. This feedback has to be relatively close to the end of the action/performance and has to be specific. If the individual does not receive a feedback, he won't know if he did a poor or a good job. In order to better understand this concept, we can use some examples. Just consider a digital camera. In the moment you take the picture, you automatically receive the feedback as you can see if the shot taken is good or not. Moreover, the camera also reproduces a little “shutter click” that indicates that the shot is taken. This little helps can avoid small problems due human error, from forgetting to remove the lens cap to not even pressing the button correctly for taking the picture.

A very smart nudge that is used on the streets in order to reduce cars speed and increase general safety, is the progressive narrowing of the lines as the drivers approach the sharpest point of the curve, giving the illusion of speeding up and nudging them to tap the brakes and slow down. A recent study conducted in Chicago, USA, showed how incidents on the famous panoramic but also dangerous Lake Shore Drive, showed how the use of these lines helped to reduce crasher by 36% in just 6 months between 2005 and 2006. The drivers, as they approaches the curve, automatically received the feedback that they were going too fast and they had to slow down in order to properly follow the rules and stay safe.

One of the most powerful tools while giving feedback, is giving it through a warning. Nonetheless, the warning doesn't need to be too many, otherwise they will fall in the “boy who cried wolf” problem, where if they are too many for not important concerns for the individual, they will be just ignored with the risk of ignoring also the important ones. The warning is usually given if something is being done incorrectly or things are about to go wrong. Just imagine for example the warning that a laptop gives to the user of “low battery”, inviting to plug it in to the charger.

Feedbacks can be given in order to improve welfare not just for the individual, but also for the environment. Some utility companies have started experimenting sending electricity bills to their customer informing them how much energy they are using compared to their neighbours. Customer can at the same time know if they are using too much energy compared to the others and can also adjust their consumption in order to save money and help the environment.

Companies are now starting to modify their products because they are more environmental aware and at the same time, they want to push their customers to do the same. Nissan has developed an acceleration pedal for their cars that automatically is harder to push when the driver has a “lead foot”, trying to improve their bad habits and reduce pollution. As the narrowing of the street lines, the driver will receive the feedback that is going too fast and he has to slow down.

As we said before, timing is very important when feedback is given. It is always better if is given immediately after the performance, otherwise there is the risk to forget about it or not having an accurate picture. Consider the simple task of painting a ceiling. It is usually very hard as they are usually painted in white paint and the result can be seen only after few hours if not even days. In order to solve this problem, they invented a special paint that is pink when wet on the ceiling, but becomes white once is dried.

Feedback, if given in a proper way and with the proper timing, it can only improve humans through their future decisions and reflect on their past mistakes.

8.2.4. Strategies and Complexity

As people face different kind of problems, they might decide to use different strategies depending on the level of complexity of the decision-making process. When the alternatives are just few are well understood from the individual, there is a tendency toward the examination of all the attributes of these alternatives and then making a choice based on a trade-off compromise. Obviously, problems arise when this examination process is not possible as the number of alternatives is elevated, therefore substitutes strategies must be employed.

One of the most common strategies that is used when there is a high number of alternatives is called “*compensatory strategy*”. According to this strategy, a high value for one attribute can compensate the low value of another one. Just imagine for example someone that has to decide

where to rent an apartment. A high value could be the proximity to the work office, that is able to compensate the higher rent that has to be paid.

Of course, the same strategy can be applied in every kind of setting. Another strategy, according to Amos Tversky (1972), is called “*elimination by aspects*”. According to this strategy the individual will first what aspects he considers the most important, then he establishes a cut-off level or a standard, thus eliminating all the possible alternative that do not reach this standard. This process is repeated until, attribute by attribute, a choice is made, or the alternatives are narrowed to a smaller number where a compensatory strategy is possible to be employed. Consider the example made before of an individual that is looking for an apartment. He can decide first, what are the as most important aspects for him (proximity to the office), then decide the cut-off level (no more distant than 10 minutes by walk), therefore eliminating all the alternatives that do not reach this level (apartments more distant than 10 minutes). Once he reaches his “finalist”, he will apply a compensatory strategy and obtain his final choice.

Understanding this process choice architects know that as choices become more complex, they have more work to do, but at the same time they are able to influence the final outcome. Imagine an ice cream shop with an elevated number of flavours and alternatives for the decision maker. He will have trouble in the process of deciding which ice cream he wants because it is unlikely that he tried all the flavours, therefore deciding to choose the ones that he considers more “familiar”. If the ice cream shop has just a small number of flavours, this problem would not arise, or otherwise, could be easily solved by offering sample tastes to the customers.

A great impact on the final choice has the structure, that can help the consumer to have a better general picture and therefore optimize his decision. Thanks to modern computer technology and the World Wide Web many problems nowadays have been solved or simplified. One of the practices more used, especially in companies that are “virtual” without physical stores, is called “*collaborative filtering*”. People rely on the judgment of other people who have the same common interests or tastes in order to filter through the different options there are facing (Thaler, Sunstein & Balz, 2010). Collaborative filtering can be considered as an extra effort directed to providing major support in the decision-making process of the individual. If the consumer knows what other consumer who share the same interest liked, he might be pushed toward a decision that he might not have even considered because totally unfamiliar to him. This practice is largely used by companies such Amazon and Netflix, and they are able to succeed because of their great choice architecture. The customer could be directed toward a specific product or film just because he saw that other customers liked it too, creating a cycle

that is self-powered. Moreover, this practice is useful also for knowing not only what other consumers liked, but also what they did not like, and maybe try it out and learn something new. Creating a proper structure for the decision-making process sometimes means pushing people toward learning something that they might not even consider without this little “help”.

8.2.5. Mapping

As we have seen before, depending on the complexity of the choice people will adopt different strategies, but sometimes this process won't be so easy as it looks. A good system of choice architecture can help people to have a better “mapping” of the different options, hence the selection of the final choice will make them better off. The best possible way to do this is to make the information available as more comprehensible as possible to the decision maker, by transforming complex and numerical information into units of knowledge that are more easily transferable and understandable. Sometimes is as simple as having a rule of thumb, sometimes is a more complex process that the choice architect has to elaborate.

Mapping is a common problem for consumers that decide to buy a specific product when the characteristics of a product are difficult to understand and to compare with other products, but especially when it is difficult to map the product into money. Is it worth paying an extra 100 € for a computer that has a i5 rather than an i3 processor? For most people this information it is not easily understandable, and most of the times they will rely on the manufacturer or sellers' advice (that obviously will suggest spending the extra money). Most of the times mapping products into money is a simple task, as the daily cost for a coffee, but sometimes the price schemes are very complex. Just imagine that the real cost of a credit card is divided in 6 different part: 1. An annual fee for using the card; 2. The interest rate for borrowing money; 3. A fee for making a payment late; 4. An interest on purchases during the month if your actual balance can't cover it; 5. An extra charge for purchases in different currencies; 6. The extra fee applied from the retailer in order to cover the transaction cost of the credit card usage.

According to Thaler, Sunstein and Balz (2010), in order to solve the mapping problem for domain difficult to understand for individuals, they propose a model called RECAP: Record, Evaluate, and Compare Alternatives Prices.

This system in the case used before for credit cards, would produce a major control by the government on manufacturers not on their price scheme but rather on the information that is

disclosed to the public. This information has to be easy to understand and easily accessible. The central goal would be to inform customer for every kind of possible fees that they would encounter. Moreover, they would require producers to send to the customer a document containing all the ways that specific product has been used and all the fees encountered. This production of information would cost relatively nothing for the producers, but would be extremely helpful for the customer, as they would be able to compare their usage to an optimal one.

8.2.6. Incentives

Standard economic theory states that if the demand for a product increases, manufacturers will increase their production adjusting their supply, that will go up as well, setting the market price. Choice architects must be able to design their structure keeping in mind possible movements that the market can follow and the different incentives that producers and consumers have. According to Thaler, Sunstein and Balz (2010), the four basic questions that have to be answered in order to have a clear choice structure are:

- 1) Who uses?
- 2) Who chooses?
- 3) Who pays?
- 4) Who profits?

In theory, the principle of Free Market should be able to align the incentives of the agents involved, pushing producers to make good products consumers to buy them at the right price. If a market works well, competition will drive out of the marketplace and set the price in accordance of people's tastes. The problem arises when the incentives of the agents involved are not aligned. Thaler, Sunstein and Balz sustain that the most important modification that has to be made when conducting a standard analysis of incentives is salience. More specifically, the problems could arise in the moment choosers are not aware of their own incentives that are facing. Let's consider for example a family that wants to buy a family car or not. They have two options. The first one would be buying the car with an upfront payment of the entire price of a car, let's say 10.000 €. Otherwise the second option would be taking the public transportation system or using a taxi when needed. The cost associated with owning the car would be the gasoline, occasional repair bills and annual insurance. The interesting point here is that most of the times the opportunity cost, meaning the loss of benefits from other alternatives when one alternative is chosen, is most likely to be neglected. This means that

people usually, once made the *una tantum* payment, they tend to forget about that initial expenditure, meanwhile if the cost are more frequent, they tend to be considered more and will be more salient in people's mind. In our example, the family would soon forget about the 10.000 € spent for the car, meanwhile they frequent use of the taxi would be perceived as a greater expense as they would need to pay the ticket for every usage. Concluding, a behavioural analysis of incentives in this domain, would see people preferring the ownership of the car (with all the related costs) and neglect the frequent use of a taxi, as the expense will be considered as more salient.

Knowing this, the ability of a good choice architect will be to smartly direct the focus on the saliency of a cost respect to another, therefore being able to affect the final outcome of the decision by the individual.

The saliency of a cost could be a smart strategy to be used in order to push citizens toward a more conscious use of their resources and protect the environment. Just imagine if the bills for gas and electricity would be paid on a daily basis if not even on usage. The cost would directly affect the consumer behaviour toward being more responsible and push him toward other options. But of course, this is a double-edged sword, as producers might push consumers toward an increase in consumption, therefore increasing their profits and their own personal interests.

CHAPTER 2

INFLUENCES IN THE DECISION-MAKING PROCESS

1. Cognitive Bias & Heuristics

A systematic error that affects our decision-making process is called a “*cognitive bias*”. These errors are able to influence individuals’ decisions and the judgments, guiding them toward possible irrational outcomes. The majority of these errors are related to memory, because most of the times a “biased” reasoning will lead to a “biased” outcome. Another kind of cognitive biases is related to attention, and as this is a limited resource to people, they have to allocate it in the best way possible just by focusing on the most important things for them. Because of this process, biases can influence how individuals see the world around them and produce outcomes that would not be considered in other settings. This type of error in thinking occur because people sometimes are not able to process information that comes from the world around them in the proper way, therefore they can make mistakes. The human brain has the tendency to simplify complex problem in order to easily understand them, but this process rely on rules of thumb that are not appropriate for every situation, possibly leading to wrong outcomes. Therefore, these rules of thumb are the reason behind the existence of cognitive bias and are called *heuristics*, as many times people can’t consider every possible option when making a decision, they tend to focus on the most important ones using their own judgment and potentially choosing not optimally.

During the 1950’ the Nobel-prize winning psychologist Herbert Simon thought that while people have problems making rational choices, at the same time human judgment is subject to some limitations. When taking decisions people would have to conduct a cost-benefit analysis, weighing possible pros and cons of every decision. Nonetheless, such process would require a considerable amount of time, and as people have limited resources as well as the information at their disposal. Moreover, other factors such as overall intelligence and accuracy of perception could influence the decision-making process. Due these limitations, individuals have to rely on these mental shortcuts that help them to better understand the world and without

consuming too many resources. The first introduction to this field, that shows the limitation of human brain when taking decision was given from Simon, but the major developments were made by Kahneman and Tversky's work, where they showed specific ways of how people think and rely on these rules (Cherry, 2020).

Ideally, if people would behave on logic or statistics, they would produce optimal outcomes. Nonetheless, the rule behind this reasoning is that it is correct only if the individual is in a situation of risk, not of uncertainty (Binmore 2008; Knight 1921). In this case, the term *risk* is referred to a situation in the real world where anything can happen in any moment without being able to predict it, and there is no way to determine the optimal behaviour. In such situations reaching optimal choices could be made only through optimal heuristics that can help to aim at robustness of the decision making process rather than optimal outcomes (Gigerenzer, 2015).

There are different theories that try to explain why we rely on heuristics. The first one is Effort reduction, where people tend to rely on heuristics because there is a tendency toward cognitive laziness, meaning that heuristics can help to reduce mental effort and take decision faster and more easily. Another one is called Attribute Substitution and is based on the concept explained before where people tend to break down complex problems into simpler ones. More specifically, there is a substitution of simpler but related questions with more complex and difficult ones. Still other theories, as Fast and frugal, argue that in reality heuristics are not biased but rather a very accurate tool that can improve our ability to take decision in the correct way and in less time that would be needed (Cherry, 2020).

However, given the fact that heuristics make people look just for the relevant information and categorize it, heuristics can also contribute to things such as stereotypes and prejudice as this classification might not be in line with the reality.

Being aware of how cognitive biases and heuristics work can be a powerful tool to help people to make optimal decision and help them to acknowledge when their decision-making process is being biased or not.

2. System 1 and 2

Daniel Kahneman has proposed a model of how the human brain works during the decision-making process that is based on the interaction of two different Systems within our brain, in particular:

System 1: Operates automatically and very quickly, as individuals don't have control and no sense of it. It is the base of most of people's thinking and has the role of assessing the situation and delivering updates, make quick decision and produce fast results. An example is: "How much is $2 + 2$?". We are able to give a fast response, 4, without even thinking about it and is something made completely automatically.

System 2: Allocates attentions to the effortful demand activities that demands it, including complex computations. The activities that are carried by this system could be associated with the subjective experience of agency, choice and concentration. There is self-awareness and control of the process, has a role of seeking new information and making more complex decision. It usually represents a small percentage of the overall decision made by individuals. For example: "How much is 18×27 ?". This is a complex computation most people can't do it automatically, they need some more time for doing it mentally or they need to write it down on a paper. The thinking process is slow, and it takes more time and effort.

These two systems cooperate between them in a unique ecosystem depending on the stimulus received from the outside world. Indeed, the automatic operations that are produced by System 1 can generate complex patterns of ideas, but the System 2, that is slower and more rational, can construct thoughts in a well-ordered series of steps. Some of the actions that are carried by System 1 are for example: compute elementary operations, understand simple sentences, drive a car on an empty road or orientate automatically toward a loud noise. All the capabilities that System 1 involves, are usually innate and that the majority of us could do without any problem. Other mental activities instead are improved over time through practice and automatism. At the beginning, requires some effort memorizing new information, such the most important European capitals or the learn a new language, but once that is done the association is quite immediate and automatic. We don't have control over it, and you cannot desist from understanding simple sentences, orientate toward a loud noise or knowing what the capital of Spain is. Nonetheless, there are other activities that can actually be controlled, such as chewing a gum, that normally are carried on without even the need of thinking about it. The control of the attention is shared by the two Systems. Orienting toward a loud noise is produced by System 1, which immediately activates System 2. You can try to do not turn toward the noise through the use of System 2, but your attention will be inevitably focused on that noise. The underlying

conclusion is that, even if we are able to move away our attention from an unwanted focus, this could be done only by focusing intentionally toward something else.

On the other side, all the operations that are carried by System 2 have one important thing in common, that is that they all require attention and if that does not happen, they are all disrupted, especially when attention is suddenly focused on something else. Some examples of the activities carried by System 2 are: focus on the voice of a particular person in a crowded and loud room; computing complicated operations; park in a narrow space or filling out a tax form. In all these situations a high level of attention is required in order to perform correctly, otherwise there will be a high probability of making mistakes.

One characteristic of System 2 is the possibility of altering how System 1 works by altering the automatic function that are normally carried, deciding how properly use memory and where to focus. More specifically, for all the activities that are not done naturally, there is the need of the intervention of System 2 to help System 1. Everybody, after some practice, is able to drive properly, however when we are required to follow different rules (as driving on the different side of the road as in the UK) some more effort and attention will be required. Usually you dispose a limited amount of attention that you can distribute to different activities that are carried, but if you try to go beyond the limit, you will fail. This is the consequence of effortful activities that interfere with each other, making it impossible to be carried all together at the same time.

This limit is subjective, as everyone has his own awareness of attentions that could be allocated to different activities at the same time, and sometimes social behaviour can push our focus on specific elements. For example, when the driver has to do a complex parking in a narrow space, the passenger usually stops talking, because he knows that distracting him would reduce his possibilities of success. At the same time the driver will converge all the attention and focus on that specific action, without being properly aware of what is happening around him or what the passenger might be saying. This means that the intense focus on a task, can make people effectively blind even to those stimuli that normally could attract attention. However, when people are very focused, it might happen that they do not notice important things (e.g. in the case of the parking made before, the driver might not notice the long line of cars that he produced behind him), as we can be blind to the obvious but we are also blind to our blindness (Kahneman, 2011).

The interaction between the two Systems is a continuous process that can't be interrupted. System 1 produces all the stimulus and suggestions for System 2, such as impressions, intuitions and feelings. All these stimuli are elaborated by System 2, and if he decides to

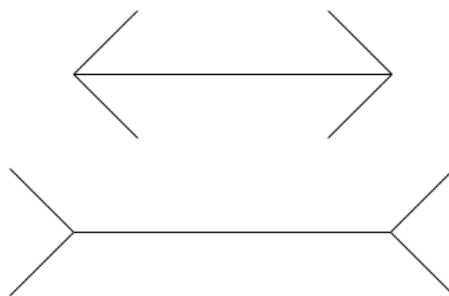
elaborate them, impressions tend to become beliefs and impulses turn into voluntary actions. Usually this process is a natural process and does not contain any kind of interruption, as you generally believe what you see and your impressions and therefore you decide to act on it.

System 1 may require the intervention of System 2 for some help, especially when an event is detected at it does not fit into the structure of the word that System 1 has. In this case you will feel surprise, therefore increasing your attention toward that specific event. At this moment System 2 will intervene and will try to elaborate events in the past inside your memory that try to explain that surprising event. System 2 has also the role of continuous monitoring of your own behaviour. You will put more attention on how you speak and how you act in a formal setting rather than in a informal one.

Summarizing, it can be observed that all the actions that are produced by System 2 are originated from System 1, and if System 1 has some difficulties, System 2 intervenes for more support and for a deeper level of analysis. However, System 1 is subject to some systematic errors that is prone to make, due his low level of analytical capabilities. Moreover, another limitation of System 1 is that it cannot be turned off, meaning that you can control yourself from understanding a basic sentence in your own language or the result of a basic computation, unless your attention is focused somewhere else.

We always tend to follow our Systems and the stimulus that we receive from the outside world. However, these stimuli can be interpreted in the wrong way. An example is the image below:

Figure 3



They are two horizontal lines of different length with fins appended pointing toward opposing directions. Just by looking at them, we can see that the bottom horizontal line is longer than the upper one. However, this is a famous illusion created by Müller – Lyer. It can easily confirm through a simple measuring that the two lines are identical. At this point System 2 intervenes and decides to believe the evidence from the measuring, therefore that the two lines are identical. Nonetheless, looking at them you still see the second one longer the first one. This is

because System 1 cannot be controlled, and the stimulus received is the first impression, even if we know the truth. Illusions are not only visual as in this case, but very often are also illusion of thought, also called *cognitive illusions*. The only thing that can be done in order to avoid illusions, is to understand to mistrust your proper impressions. Obviously, this can't be done in every situation as it would take too much time and effort, but a good compromise would be to learn to recognize situations where mistakes are more likely to happen and increase our attention in order to avoid these mistakes (Kahneman, 2011).

3. Drivers of the assessment process

During the decision-making process of an individual that has to assess the probability of an event that will consequently determine the outcome of his actions, there are several biases or influences that can guide the path toward a specific decision rather than another. Sometimes these biases are obvious and easily recognizable but sometimes they are not. Some of the most important and recurrent ones are:

Anchoring: Anchoring bias occurs when people tend to rely too much on pre-existing information or the first information they find when they have to make a decision. When an individual has to take a decision, but he does not know the answer, he will start with some "anchor", meaning a relatable example, and then adjust the answer toward the direction that he thinks is more correct based on the thought process (Thaler & Sunstein, 2008). This tool is particularly powerful because from the answer that is provoked, relatable actions can follow. This can be seen by the fact that just by giving a starting point for the thought process, individuals can be influenced the final figure that will be chosen. An example, charities that ask for donations can influence the final choice of the individual just by presenting him some preselected choices for donations, such as 100€, 250€, 500€, 2000€ and so on. If the options would be lower, as 25€, 50€, 75€, there would be a higher probability that the final donation of the individual will be lower as well. Generally, in many domains the more is asked, the more is given. For example, lawyers who sue cigarettes companies tend to ask for very high amounts of money, this is because they give the starting point for the thought process to the judge, who will satisfy them even if he decides to give them one third of what they initially asked. Moreover, the anchoring effect is particularly effective also in negotiation settings, where the

negotiator can influence his counterpart and therefore the final outcome, just by setting the starting point of the whole process.

Availability: most of the times people tend to assess the probability of a particular event just by trying to remember recent and relatable example that comes to mind (Tversky & Khaneman,1974). This process is called Availability effect and is a useful clue for assessing frequency or probability. However, this judgmental heuristic is affected by other external factor than probability. Indeed, relying on availability too much will produce some inevitable cognitive bias. These biases could be due the *retrievability of instances*, meaning that the size of a class is judged by the availability of its instances, a class whose instances are easily retrieved will appear more numerous than a class of equal frequency whose instances are less retrievable (Tversky & Khaneman,1974). Other than familiarity, more factors will contribute to the availability effects such as salience. In particular, experiencing a particular event in first person will be remembered more than reading it somewhere. The impact given from experiencing an earthquake is way greater than reading about it on a newspaper, therefore the availability effect will produce an increase in the perceived likelihood that a particular event might happen. There are biases due the *effectiveness of a search set*, where the likelihood of an event is given from the capability of the single individual to find for a relatable example. People when asked if in there are probabilities that there are more words that start with the letter “r” or more words that have the letter “r” in the third position in a given text, they approach this task by trying to find words that satisfy both characteristics. However, looking for words that start whit “r” is easier than looking for word with “r” in the third position; therefore, the most common answer is always the first option.

Biases of *imaginability* are produced when individuals have to assess the frequency of a class whose instances are not stored in a memory but generated according to a given rule. In this case the general approach is to generate different instances. As we said before, the subjective capacity of constructing such instances, does not reflect their actual likelihood, as imaginability plays an important role in the evaluation of probabilities in real life situations. Another bias that is associated with availability is called *Illusory Effect*: the judgment of the probability that two events could occur at the same time is based on the strength of the associative bond between them. If the bond is strong, there is the tendency to conclude that the probability is high, conversely, if the bond is weak the probability is low (Tversky & Khaneman,1974).

The perception of the probability of a particular event might produce different reactions in individuals depending on the relative evaluation. Whether people buy insurance for a natural

disaster is greatly influenced by recent experiences. This means that a biased assessment affects our actions and how we prepare for possible situations of risk. Obviously, a good way to lead people toward the real perception of a particular event is nudging them back toward the truth of the likelihood of that event. A good way for increasing people's fear is making them recall an incident or experience that they had in the past and the outcome was bad; conversely, in order to increase their confidence is making them recall a situation that they experienced and the outcome was positive (Thaler & Sunstein, 2008). The problems will arise in the moment individuals are not able to recall a relatable example, therefore their judgment about the likelihood of a particular event might not be adequate.

Representativeness: people have to rely on this heuristic when they have to answer question such as: "What is the probability that A belongs to B?" (Tversky & Kahneman, 1974). The concept behind is that people when they have to answer to this question, their System 2 is stimulated in order to evaluate how similar is A to their image or stereotype of B is. In particular, when A is very representative of B, the probability that A belongs to B is very high and vice versa. In order to understand how this heuristic works, we can consider as an example of a man that is shy, withdrawn, invariably helpful but without having interest in people or the real world. What is the probability that this man, is a librarian? People will approach this question by asking themselves how much this man resembles the image of a typical librarian and based on this evaluation they will give their answer. One of the factors that have no effect on this heuristic but that have a major impact on probability is the prior probability, or the base rate frequency of the outcomes. This means that people, will not take into account the probability in assessing that A belongs to B or C just by considering that the population of B is higher than C. The result is that this consideration does not affect the concept of stereotypes that people have in their mind, meaning that if people relies on representativeness for assessing probability, prior probabilities will not be taken into account. In this case for example, they will respond that he is a librarian even if they know that the probabilities of that particular event are very low.

People tend to rely on representativeness also when evaluating statistics related to a sample size. Kahneman and Tversky called this *Insensitivity to sample size*, and in particular people assesses the likelihood of a particular result from that sample just by comparing the similarity of that result to a particular parameter. For example, when assessing the average height of a sample of 20 men, people will evaluate their result just taking as a parameter the general average height population, let's say 180 cm. However, this process does not take into account

the fact that the similarity of a sample statistic to a whole population from which the comparison parameter is taken, does not depend on the size of the sample itself. Therefore, the assessed probability through representativeness will not be influenced by the size of the sample. An interesting process that people tend to follow when they evaluate a sequence of events generated randomly, is called *Misconception of chance*, where they tend to consider those events as essential characteristics of the process itself even when it's very short. This means that an individual will consider more likely the probability that a sequence from tossing a coin would result in H-T-T-H-H-T (where H means Head and T mean Tail) rather than H-H-H-T-T-T just because the second option does not appear as a result of a random event. Thus, people will project their thought process not only on the entire process, but also on the single event within the process, generating then systematically deviations from chance expectation every time the random events happens. This effect can be seen in the *gambler's fallacy*, where after observing a long run of red on the roulette wheel, most people will mistakenly expect that the next result would be black just because this would be more representative of a random event. As we said before, people when assessing the probability of A belonging to B, greater will be the fit between the description of A and the stereotypes of the subjects that pertains to B, greater will be the confidence that this is true. This unwanted confidence, that is produced from the fit between the predicted outcome and the input information that is given is called the *Illusion of validity*, and it persists even when the decision maker is aware of other information that might affect the accuracy of the final outcome. When the inputs that are given are independent between each other, there will be a higher probability that the accuracy of the prediction made through representativeness will be higher. This means that if the information that is given is composed by inputs that are redundant, accuracy will decrease but conversely confidence will increase, as people are often too confident in prediction that don't have a basis to rely on.

Framing

The framing effect occurs whenever the final decision made by an individual can be influenced by how two “logically equivalent” statements are framed. In particular, whenever there is a violation of the *description invariance*, that is an “essential condition for a theory of choice that claims normative status” (Tversky and Kahneman, 1986).

This effect taken from the libertarian paternalism point of view, shows how some decisions can't be avoided and therefore someone must take responsibility to decide for others. Moreover, this justifies why paternalists try to find out what are the hidden preferences of people, that is because most of the times people are unreliable as they depend on how the question is framed (Thaler & Sunstein 2003).

Consider the following example:

- The glass is half full
- The glass is half empty

In order to assess if the description of the possible choices really influences the final outcome or not, an experiment was conducted by Sher and McKenzie (2006). They put two glasses on a table, one full of water and the other empty, and they asked the participants to pour half of the water into the other glass, and then put the "half empty" one at the centre of the table. What they observed, was that most of the participant decided to put at the centre the glass that was initially completely full of water. This experiment showed how in some situation just how a request is framed can include a surplus of information (as in this case, the past state of the glass), that can induce the individual to take a reference point and influence the final outcome (McKenzie and Sher, 2003). Therefore, it will be important for the final outcome the interaction between the listener and the speaker, and how the listener will process the information that he receives. More specifically, the analysis between the relationship between the mind and the environment is called the study of *ecological rationality* (Gigerenzer & Selten, 2001). In order to further analyse this concept, we can take into account the example made by Sunstein (2013, p 61) and Thaler (2008, p.39). This example is based on the setting where, after discovering that you have a very bad illness, your doctor suggests you proceed with a complicated surgery giving you two possible alternatives, that have two different possibilities to be framed:

- a) Five years after surgery, 90% patients are alive
- b) Five years after surgery, 10% patients are dead

People tend to react differently depending on which of the two statements the doctor decides to use. More specifically, Moxey (2003) studied 40 different cases of framing effect on individuals that had to make hypothetical choices. In particular he showed how individuals were more prone to go through surgery in the survival frame rather than the mortality one. According to Thaler and Sunstein (2008) they suggest that a rational individual should not pay attention to what the doctor says as the results of the two different statements is exactly the same, but what it changes is just the perspective. Most of the times, this cognitive bias works because people tend to be passive decision makers, without analysing rationally the different

alternatives, showing how the human brain can live under his expectations. Indeed, in order to make a rational decision the individual should know that these two statements do not provide sufficient information, as what he would need to know would be the survival rate in case he decides to not go through surgery (Gigerenzer, 2015).

The framing effect has a similar process as to the anchoring effect, where the choice architect (in this case the doctor) can influence the final outcome just by conveying information to a reference point that the decision maker will take into account in the thought process.

Kühberger and Gradl (2013), showed through an ecological analysis how the framing effect is usually driven by riskless options, not the risky ones. More specifically, people have the tendency to think that the choice of frame has some implicit information that should be some sort of recommendation for the listener, but if the unspoken alternative is added to the sentence, then the framing effect is null.

In summary, the framing effect is a powerful tool that can allow the choice architect to nudge people toward a specific direction, giving an implicit recommendation within the statements. Nonetheless, if the decision maker acts rationally, he will not rely on social intelligence, but he will look for some relevant information and evidence in order to make the best choice possible.

6. The Endowment Effect, Status Quo and Loss Aversion

According to Standard Economic Theory, our Willingness to Pay (WTP), meaning the maximum amount that we are willing to pay for a unit of a good, should be equal to our Willingness to Accept (WTA), the maximum amount that we are willing to accept in order to sell a unit of a good that we possess. More specifically, given the fact that WTA and WTP are equal, ideally a good with a specific value should not generate problems in taking the decision whether to buy or sell it. However, in real life this does not happen almost never in general economic settings, especially when the subjects involved in the transaction are exposed to a marked environment with ample learning opportunities.

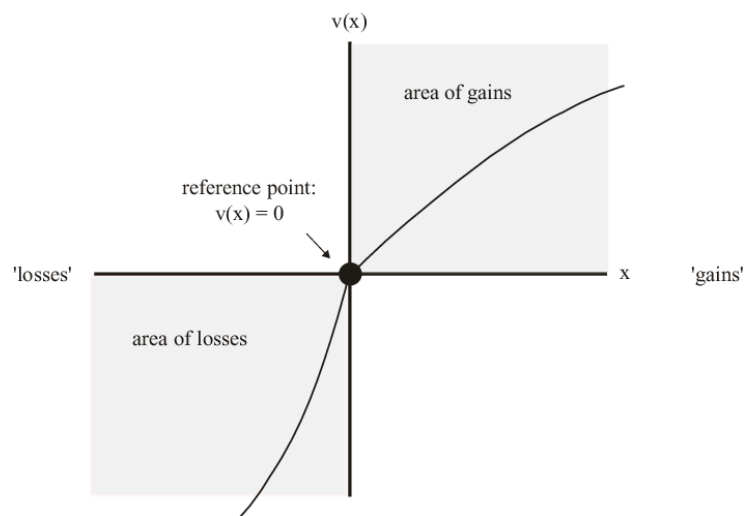
Thaler called this pattern, where people tend to demand much more to give up an object than they would be willing to pay for acquire it, the *Endowment Effect* (Kahneman, Knetsch, Thaler, 1991).

The most famous experiment that shows this effect was conducted by Kahneman, Knetsch and Thaler (1990), in order to study how the endowment effect survives when subject face market

discipline and have a chance to learn. They divided a group of subjects in 2 subgroups, and then showed to all of them mugs that were all the same. Afterwards, these mugs were randomly gifted to individuals between members of the two groups, and then asked to identify the minimum amount at which they would sell their mug (their Willingness To Sell), meanwhile to the others was asked to identify the maximum amount that they would pay for buying one of those mugs (their Willingness To Pay).

Hypothetically, considering the fact that the mugs were just gifted, and that people are more or less similar between them, WTP and WTA should coincide. Nonetheless, they discovered that this does not happen, and that on average the WTA is between 1,5 and 2 higher than the WTP, therefore not producing any exchange between the two groups. This effect shows how people tend to value an object that they possess more than their real value just because of their emotional attachment, and at the same time they tend to value less what they do not possess. From their research, Kahneman, Knetsch and Thaler were able to understand that the main effect of the endowment effect is not to enhance the appeal of the good one owns, but only the pain of giving it up. This is because when loss aversion is involved in the process, an individual will have a greater pain from his losses than the benefits from his gains. More specifically, given two different alternatives, a given difference between these two options will have a greater impact if it is viewed as a difference between two advantages. The underlying assumption is that the attributes of options in trades and other transactions are evaluated in terms of gains and losses given a specific neutral reference point. This effect can be represented by a value function as in the picture below:

Figure 4



As we can observe, the reference point with $v(x)=0$ is the reference point and the status quo at the same time. The area of losses is represented by the downward function, much deeper than the area of losses represented by the upward function.

The main implication of loss aversion is that individuals have the incentive to remain in their actual situation, their status quo, because the disadvantages of leaving might be greater than the advantages of the new situation. This effect was called the *Status Quo Bias* by Samuelson and Zeckhauser (1988).

Loss aversion can also influence our behaviour in the immediate future. In particular, our behaviour will be driven by two different strengths: the first one is that we are driven more to avoid losses rather than achieving gains. An the second, is that sometimes the reference point, intended as the status quo, can become a specific goal in the future where not achieving it is a loss and exceeding it is a gain (Kahneman, 2011). These two motives are not equally strong, therefore our behaviour will be affected much more from the aversion to failure of not reaching the goal rather than to the desire of the gain by exceeding it. People have the tendency to set short-term goals, committing themselves in order to achieve them but not necessarily exceed them. Indeed, once they have reached a “sufficient” goal that is immediate, they tend to reduce their effort against any rational logic.

This asymmetric strength that is produced by these two motives, creates repercussions in many situations in our life. Taking into consideration a bargaining situation, loss aversion creates difficulties for reaching an agreement as the parties involved will have contradictory and opposite incentives. The concessions that an individual makes to the other party involved will be his losses and the others' gains, creating to the first much more pain to the first individual than the pleasure that the other side receives. One of the techniques that are used from negotiators is sending a message to the other side in order to give a reference point, that will be used as an anchor thought the whole process. Obviously, these messages are not always sincere, because as we have seen, the endowment effect pushes people tend to demand much more to give up an object than they would be willing to pay for acquire it. Negotiators are usually driven by a reciprocity principle, therefore in order to give up their object, meaning producing a loss for them, it is necessary an equally painful (and sometimes unproportioned) concession from the other side. Another example is reform plans, especially within organization. Initially, these plans produce gains and losses for different individuals, generating some winners and losers, while achieving an overall improvement. However, if the parties

involved have some kind of political power, the losers will be more motivated to try to restore the initial situation and cut their losses, producing a biased outcome and generating a final situation that is much more expensive and less effective of what was initially planned.

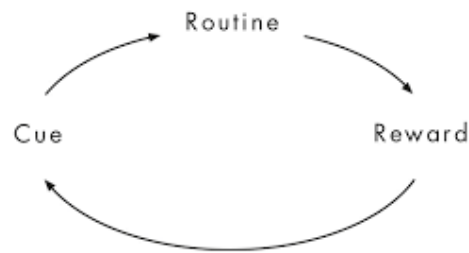
Summarizing, we can conclude that loss aversion is a concentric tool that incentivize and pushes people to produce minimal changes respect to their actual situation and therefore a big influence in the decision making process. This produces some sort of conservatism that keeps our lives stable into our jobs, marriage, institution, house and so one, creating a gravitational force that keeps us stable to the reference point. On the other side, a major awareness would be beneficial as sometimes an initial change would make us feel the greater pain from our losses without considering properly the benefits from the gains, but after a while these losses will be forgotten in order to fully enjoy the new situation and create an overall improvement.

6. The Habit Loop

Sometimes people tend to do some actions without being aware of the whole process. How many times do we forget what we have just done? This is because the process involved has been done so many times that has become a habit and we don't even need to think about it anymore. The habit, even if it looks something automatic and simple, comprehends different steps within our brain, more specifically is a three-step loop. First of all, the process starts with a *cue*, an external trigger from the outside world that gives to our brain the information elaborated from the automatic system and which specific habit to use. The second step is the *routine*, that is the physical action or just emotional or mental. The final step is the *reward*, that our brain perceives as the outcome and then decides if it is worth to remember this whole process again in the future (Duhigg, 2012) .

This process was initially studied into labs, using lab rats as subjects for the experiments. They were positioned into a maze and let free to go look for the cheese that was at the end of it. Surprisingly, scientist discovered that after few tries the rats were able to remember the exact turn to take into the maze in order to achieve their reward, the cheese. This Habit Loop can be represented as below:

Figure 5



Over time this process of cue - routine – reward becomes more and more automatic, until a powerful sense of anticipation arises in your brain even before the cue triggers the whole process.

Habits are encoded within our self and our brain, so once learned we can't forget them. This is good, otherwise we should spend a lot of time re-learning all the basic actions that we do every day and take part of our routine. But the bad part is that our brain is not able to differentiate a good habit from a bad one. Indeed, once a bad habit is encoded in our routine is extremely difficult to get rid of it. That is because, as we said before, habits can't be forgotten, so in order to change our habit we should try to substitute it with another way (Duhigg, 2012). That's way smokers have so many difficulties to quit this bad habit, or why people prefer to sit on the couch rather go running. In such cases the best solution would be to substitute these bad habits with good ones, or at least healthier ones. Once this new pattern is created, studies have demonstrated that going for a jog and conducting a healthy lifestyle will become almost completely automatic.

In order to understand how a habit works, it is essential to understand its different components. Once the habit loop of a particular behaviour has been analysed, it is possible to start looking for different ways to substitute these elements with new routines.

Let's consider the example of an individual that has the habit of going to the cafeteria during his break at work, and every time that he buys coffee, he also likes to buy a cookie while chatting with his friends. This behaviour, made him gain some extra weight over the time, making him to want to stop this bad habit. In order to do that, he has to analyse the whole loop. The routine is the most obvious element to analyse, that is the action that is repeated over time. In this case, is the action of getting up from his desk, going to the cafeteria and buying the cookie. The cue and the reward are the elements not always easily recognizable, because the individual itself might not be even aware of them. In this case the cue could be hunger, low blood sugar, the need from a break from work and so on. At the same time the reward could be

the cookie itself, the chat with his friends or the relieve of taking a break from a stressful activity. In order to identify these elements, if they are not explicit, the individual could try to experiment different cues and rewards, being able to isolate what is the actual crave and then redesign the whole habit. Once this is done, the planning of the new behaviour can be set by choosing a different action that is able to deliver the same rewards that the individual was craving for.

Obviously, the change of a habit that has been repeated for a very long time is not easy and of course not immediate, as it requires repeated experimentation and efforts. However, the possibility to know better how your own actions work and understand the reasons behind, enables us to empower ourselves and commit to create new beneficial behaviours. At the same time, this process can be exploited by companies in order to affect consumer's behaviour. Let's take as example the case of Pepsodent, a famous producer of toothpaste. Originally, when the toothpaste was launched on the market, unlike other products from other competitors, Pepsodent contained some specific chemicals that made the toothpaste taste fresh and a cool tingling sensation of mint. In order to become successful, the company did not actually sell a product, but rather they sold a craving in their consumers. Originally, the toothpaste is a tasteless product, and the mint is added only in order to deliver that specific feeling of cleanliness into the consumers' mind. Once the consumer craved for that sensation of mint in their mouth, they equated it with cleanliness, therefore brushing their teeth with that specific toothpaste become a habit.

This example shows how, once the elements of the Habit loop have been analysed, is possible to influence the whole process just by changing the variables involved, that are the cue and the reward.

7. Self-Control

One of the main problems in decision making that most people struggle with is related to self-control. Once a temptation is in front of their eyes, they face serious problems into making decision that could be considered "bad" or "good" respect their initial plan and commitment. This is why many people that are on a diet have problems with resisting the temptation of eating the chips in front on them or any other unhealthy snack in their fridge. However, the good news is that people do recognize the existence of this problems and they try to take self-

correcting actions in order to overcome it. More specifically, these problems arise because we tend to underestimate the power of external influences and how they can affect our future behaviour. This effect is called the *hot-cold empathy gap* (Lowenstein, 1996), and it says that when we are in a cold state, we do not really comprehend how much our desires and behaviours will be affected under a “hot state” and the influence of arousals.

Thaler wanted to propose a model that tries to explain why this process happens, and if we know that we are going to change our future preferences over time, why and when individuals will put into practice strategies in order to influence their future behaviour. The only circumstance where an individual commits to a particular course of action is because he believes in a particular end that he wants to achieve, and any possible deviation from the initial plan is considered as an error (Thaler, 2015). That is why he came up with the *Planner and the Doer Mechanism*. He based his model on the idea that an individual at any point in time will be composed by the interaction between two different agents: the Planner, that has good intentions and cares about the action that will be taken in the future, and the Doer, who has short term goals and seeks for immediate satisfaction. In particular, this interaction is based on the principal-agents model. According to this model, the principal is the boss, usually identifies as the owner of the firm, and the agent is the individual to which the power is delegated (e.g. The CEO). In this kind of context, tensions tend to arise because there is asymmetry between the information that the agent has respect to the principal, therefore the principal has to take action in order to monitor all the possible activities that the agent engages with. The agent in this model tries to make as much money as possible while minimizing effort at the same time. The response of the firm will be a series of rules and procedures that are designed to monitor and minimize possible conflict of interests between the principal and the agents.

In the framework presented by Thaler, the agents are short-term doers that are present in every period of reference (e.g. each day). Every doer wants to maximize his short-term utility and enjoy the present without considering possible repercussion on the future doers. Conversely, the Planner, that is the principal, is completely altruistic and wants to safeguard the utility of the future doers. The problem is that the Planner has a limited control over the doers, that are aroused by all the external influences. In order to try to mitigate their actions, the planner has some tools that he can use, in particular, he can try to influence their actions through rewards or penalties that allow for discretion, or can impose rules, as commitment strategies that can limit the doer’s options. Therefore, the question is, why the planner does not always apply these rules? The answer is that these rules might not always be easily available and possible to

enforce. Moreover, even if these rules are available, there is still the chance that they will not be followed. Obviously, a detailed tracking of the possible risks with their relative rules and cost could be beneficial, but at the same time really expensive. These techniques are enforced by companies through their accounting methods, trying to represent on their balance sheet a true and accurate representation of all the inflows and the outflows of the company. This same principle can be applied by individuals, and it's called *mental accounting*. This mechanism is put in practice especially when monetary transactions are involved, in particular these transactions can sometimes be vague and confusing, leading to multiple different representations. Research in this field showed that a slight variation in the naming, allocation, or organization of different accounts, can have an impact on the decisions that are not in line with fundamental normative assumptions, such as the extensionality of outcomes or the fungibility of money (Thaler, 1999).

This phenomenon is amplified when the act of the purchase and the consumption are in two different moments in time. Due to this intertemporal difference, the value that is attributed to things is different between when they are acquired and when they are consumed due to a series of factors such as depreciation, appreciation, market valuation and so on. Due to these factors, the process of assessment of the value can be difficult and confusing. As we said before, also depending on when the cost and benefits of that specific good we can have two different accounting methods: the first one, is related to the so-called *Investment Goods*, that are those goods where the costs arise immediately meanwhile the benefits are delayed in time. A typical example is exercising, where you feel the pain of the activity immediately, but you will actually get in shape and obtain the benefits only after repeating it for a long time and with constancy. The second accounting method is instead related to the *Sinful Goods*, where the benefits will be immediate, and the costs are delayed in time. In this case an example is smoking or drinking. When the purchase and the consumption of a particular good coincide, there is not much space for mental accounting more than the possible transaction utility, as the result of a good or bad deal (Thaler, 1985). Instead, when consumption and purchase are separated in time there are more possibilities for the individual to apply mental accounting strategies. In particular, if a good is purchased much earlier in the past, it will be considered as "free" or a money saving event. Those goods that allow for a future consumption respect their purchase, involve a different assessment process of mental accounting respect to those goods where consumption is immediate. The value post purchase is fully retained, therefore the individual will not have the perception of having incurred in a cost but rather an investment to be liquidated in the future. Moreover, when an item is not consumed as planned, that account that was "dormant"

is now resuscitated with all the relative costs of the replacement of the good. Finally, the utilization of a durable good as it was initially planned, will not be perceived as a depreciation process, but rather as a “free” item.

As we said before, monetary transactions involve an assessment process where multiple schemes are given. The assessment of the value of a good will be relatively easy in some circumstances, as for example if I have to return a good that I just bought I know that his value is the price that I paid for it. However, assessing the value of a good can be done by analysing how much people would pay for it, but when one person is willing to pay a certain amount does not mean that there are also other people to do the same, therefore that price does not reflect the real value. This is because people can be motivated by other factors such as personal and affective motives or consideration that are not market based, leading them to pay an extra just to satisfy their utility. In this cases, rationality does not necessarily means happiness, while irrationality does (Shafir & Thaler, 2006).

8. Preferring B to A and A to B: Preference Reversal

People tend to make different decisions when they evaluate their options separately or in isolation. This effect is called *preference reversal*, and happens when they tend to prefer A to B if evaluated singularly, but when they evaluate the two of them jointly, they prefer B to A. When making decisions, people follow a system with different evaluation methods. They can voluntarily decide to assess a specific option in isolation (e.g. a book, a movie, an idea), or decide to use a joint evaluation (e.g. two books at the same time). When using this last methodology, the evaluation is made according one or few dimensions, focusing on the most important ones in order to take a final decision. However, these two different processes can lead to totally different results.

Many times, consumers when they have to choose between two different products, let's say Product A and Product B, may decide to choose A when evaluated in isolation, and B when evaluated jointly. One possible explanation is given by Hsee (1996, 2000), and it's called *evaluability bias*. This term is used in psychology literature and indicates a lack of adequate information which might be costly to obtain and at the same time people do not make an effort for seeking it even if free. Especially during separate evaluation, insufficient evaluation due lack of information could be the main reason behind a biased result. One of the most difficult

characteristics and information to evaluate is related to numbers, especially if the consumer does not have a proper knowledge about that specific field and those numbers are not very significant for him in that specific background. Let's consider the example of a consumer that has to decide between two laptops, option A that has 6 Gb of RAM and option B that has 8 Gb RAM, and which obviously costs more. An ordinary customer does not know the difference between these two laptops and those numbers does not make any specific sense to him. However, he could take into consideration other characteristics that are more general and easier to understand, such as battery life and overall design. But even with those numbers, separate evaluation complicates decisions between more or less impressive numbers taken into consideration. In order to avoid this problem of evaluability, the solution would be in an extra effort of the consumer to actively seek for some information, but most of the times this task is declined (Kling et al., 2012). Indeed, what most of the times happens, is that they will rely on the advice of an external individual (the producer or the reseller), that could be able to nudge them toward the wrong decision and gains in terms of personal interest.

People's intentions of buying a specific product might be influenced if their attention is focused on the opportunity cost of that particular decision. More specifically, joint evaluation is related to the concept of *opportunity cost neglect*, where people might be willing to pay a certain amount X€ for a certain product, but not if they are focused on other things for which they would pay that same amount X€ (Fredrick et al., 2009). For consumers goods evaluability presents a major challenge that producers, but also consumers, have to face in order to lead to the optimal outcome. However, when this decision will be taken, the characteristics that are more easily understandable and evaluated will prevail over the more technical information difficult to understand and elaborate.

Another related concept is called *present bias* (O'Donoghue and Rabin, 1999), where the present is easier to evaluate, meanwhile the future is full of unknown events and information. Evaluability could bias also the decision basing the fact that the short-term development of public and personal events is more predictable, meanwhile in the long run is not. This effect is reflected in politics, where people are asked to make a decision that will affect their future, and therefore they will go along the decision that looks more stable especially if this is in the short term. Let's consider the following case, where people are asked to choose between two candidates: Candidate A, that would create 5000 new jobs and has been convicted for misdemeanor, and Candidate B, that would create 1000 new jobs and has no criminal conviction. When evaluated singularly, people tend to prefer Candidate B, but in joint evaluation A is the most preferred. This is because it is difficult to know whether 5000 or 1000

are a good number of new jobs or not, but their personal life, in particular the misdemeanor conviction is a strong and negative factor that can influence the final decision. In this particular case of joint evaluation, people tend to give more weight to the possibility of creating new jobs rather than having a candidate with a misdemeanor conviction.

It is important to outline that joint evaluation is not the same as global evaluation, that means the evaluation of all the relevant options with all the possible relevant characteristics (Sunstein, 2018). The examples just presented has just 2 alternatives and 2 single dimensions for evaluation, but in real life any alternative has a large assortment of characteristics that can be analyzed in separate and single evaluation. Indeed, people in some cases evaluate an option only in isolation without even considering other possible alternatives. People can go to the store having a clear sense of all the possible products, but their intention is buying just a specific one. In some other cases, the joint evaluation allows also for a simultaneous visual comparison, facilitating the final decision. Obviously this is not always possible, therefore the individual will have to make an effort in order to have a clear general picture. What is important to outline, is that there is a very thin line between joint and separate evaluation as other external factors might influence the whole process that could be already biased.

Considering the possible scenarios and the choice architecture, allows to predict when preference reversal will happen and how it will affect the final choice (Sunstein, 2018). More specifically, if an option has some characteristics X that are: 1) difficult to evaluate in separate evaluation 2) easier to evaluate in joint evaluation 3) dominated by some other dimension Y especially when evaluated in isolation 4) considered to be more important than the dimension Y in joint evaluation, then preference reversal will be highly probable . In particular, the first and the third condition could arise either because of the natural development of the setting, or because there is a conscious choice by the marketer or the seller or from those whose interests are at stake.

Another interesting bias happens when people have to decide between two options that are completely opposite in terms of quantifiable characteristics. The so-called *compromise effect* will happen in case instead of two alternatives, there will be a third one that will be an average between these two, and most probably the final choice of the individual. In consumption behavior, but also in political choices, people might use to decide the average decision in order to avoid the extremes, meaning a possible change from the status quo and a complete set of new information and unawareness in the future.

Concluding, joint and single evaluation can lead to completely different results, but this doesn't mean that one producer is better than the other. Joint evaluation might make salient a

characteristic that might be not in actual experience, and single evaluation could narrow too much the perspective without having a background and a comparison for the final choice. This means that hypothetically, these two procedures represent tools that a choice architect can use in order to influence the final choice of the individual. A seller could use the separate valuation method, where he would be able to present an appealing characteristic that is easy to be evaluated, meanwhile showing also those not appealing but in a way that is difficult to understand for the customer. Using this technique, he would make appealing also those characteristics that in reality are not, being able to influence the final choice. At the same time the seller could either decide to use joint evaluation, allowing an easy comparison for the customer with other options along those characteristics that are more important for him, even if the difference along those dimensions has no impact on the customers' experience with that product. The key idea behind, is to highlight those characteristics that makes the product look better compared to other or more appealing to the customer.

Consider the example of a new laptop just launched to the market. The producer, in order to boost sales, might want to focus the customer's attention on the fact that it's much lighter and has a better resolution respect to other products. However, the producer had to sacrifice other characteristics, such as performance and battery life. Assume that people have no problem with the weight and resolution of their actual laptops, however it's easy to imagine that the producer will make these characteristics more appealing and important for the customers' experience. Therefore, is more likely that they will choose to buy this new laptop in joint evaluation, but in separate evaluation it might not be their final decision.

From the consumer's perspective, the central question is which one of these approaches is the best one for an optimal choice and for its own welfare. Sellers are able to manipulate the consumer's final choice, but this does not presuppose that he will have as only purpose his own interest. Indeed, a good choice architect should be able to design a structure that does not contain this kind of flaws for the proper good of all the agents involved.

CHAPTER 3

APPLICATIONS OF THE NUDGE

One of the main characteristics of the nudge is the possibility to obtain his benefits in a wide range of domains. In order to be obtain these benefits, of course, it should be applied from someone in a higher position or that could be seen as an external agent that people could trust in order to take their decisions. But as we have seen, the assumption that the choice architect is a benevolent agent is not always true, as he might use the efficacy of the nudge in order to push people toward decision that might increase only his personal interest and in the worst cases inflict damages to the decision maker. However, given the fact that we are Humans and not Econs, we make mistakes, and these mistakes could represent a possible opportunity of extra benefits for someone else.

1. MARKETING

As we have seen, the nudge can be one of the main reasons behind the choices that we make in everyday life. This is reflected for all the choices that we make since we wake up in the morning and we decide what to eat for breakfast, till we go out and we have to take all those decisions that sometimes we are not even aware of them. One of these, could be to buy some specific product rather than another, just because we are being gently pushed toward that decision. Indeed, companies have learned through the time the power of the nudge and how to reflect his effects into consumer behavior. This is also called Nudge Marketing, and it consist into the process of communicating messages that encourage desired behavior by appealing to the psychology of the individual. All the stimulus presented to the consumer, are intended as possibilities to be exploited especially if it involves the possibility to save money. The key idea behind, is that through nudge marketing the producer wants to trigger the emotions of the consumer, which will guide actions through the System 1, that is the Automatic System in our brain as we have seen before. This is done through creating conditions in the environment that

favors certain behaviors that do not need to be rationalized by the individual in order to be executed.

In order to obtain results, it is necessary to conduct a preliminary study of the target population, but also a constant analysis of the results from different experimentations. This is because the nudge could be done only through a process of experimentation, trial and continuous improvements that can lead to an effective end. However, there is the risk of giving too many signals to the customer, which he will feel overwhelmed, and the final result will be the complete opposite of the desired one. Too much information and too many stimuli, could become so annoying to the customer that he will associate that emotion of frustration to that specific product or brand, resulting in a complete aversion behavior. This is why the post-phase analysis after the nudge has been implemented is so important, because in case the effects are not what was initially planned, some changes have to be made quickly before this whole process will be irreversible. The efficacy of the Nudge in a Marketing context derives from the fact that this tool used in the right way would produce slight changes in the decision-making context of the consumers that will be translated in a different perspective and a new behavior dictated by their emotions and their automatic system.

The nudge, used as a marketing tool, can help brands to improve their performance in terms of branding and sales, changing their approach to the market in a less invasive and more impactful way.

Nudge marketing can be very effective both in physical stores and online websites for boosting sales. An example could be seen in many cafeterias, but one of the most famous one is Starbucks. For almost all of their drinks they have three different sizes, the big, the medium and the small cup. Using this system, the majority of their customers will decide to take the middle size because of the decoy or compromise effect that we have seen before. Our brain has the tendency to avoid extremes and will be more comfortable with a decision that is in the middle. Nudge marketing not only is a useful tool for seller, but at the same time helps customer to make the whole customer experience more fluent and less stressful. It's not about tricking the customers into making a specific decision, but rather help them to make a choice that reflect most of their needs. In a context like the internet world, a nudge approach would be consistent of dynamic product labels, browsers notification, interactive overlays and so on. But the most important feature of these nudges, is that they do not need to be spam messages, manipulative or repetitive, otherwise they will affect the customer perception of the brand with negative emotions. The effectiveness of the nudge in such contexts relies on the fact the human brain prefers convenience and speed over rationality, which is perceived as more effort expending.

The capabilities of the nudge are able to make the decision-making process more automatic, which will be felt as a natural process without requiring almost any effort and resources. Given this assumption, it is fundamental to understand the customer's psychology in order to create an effective choice architecture. It is important to know the customer's habits, interests, values, psychological inclinations and how the whole customer journey is perceived. For example, if you know that your target customer responds well to messages that are authoritarian, this means that the use experts and influencers can help change their purchasing behavior.

A great way to create an effective nudge is labelling products, in particular giving some specific information to the customer that could be either a functional benefit or a psychological trigger. These are implicit nudges that either boost the credibility of a product or simplify the research of the customer for finding what they want. Indeed, we can see that sellers tend to add near the name of the product another feature, such as "Bestseller, Best Rated, Few Left" or an information that is purely related to the suitability of the product itself, as "Family price". This tool can be useful not only for catching the focus of the customer, but also giving him more chances to filter his search. Another useful tool is notifications, as we have seen sometimes people needs a reminder or simply a trigger that can help to focus their attention somewhere. In this case notifications are used to focus the customer's attention in a moment that he might be distracted doing something else or at any point in the future, usually pointing out products that are limited or scarce. The nudge will create a sense of urgency in the customer's mind that will lead to a consequent action. Obviously, this process will be amplified if the marketing of the company has been good enough to create a certain brand equity in the customer's mind, making him desire the product. One of the great companies that uses this technique is Nike, as after announcing the launch of a new desired sneaker, they are able to create the desire within the minds of their customers and notify them just before the launch is going to happen, creating long lines both in their physical and online stores. These notification can be used not only for alerting the customers for a new launch, but also for reminding them about a transaction that they did not complete, offer discounts for incentivize sales or any loyalty promotions that would help to the customer to stick with the products that he is using and the company.

Another great tool that is used by almost all companies nowadays is showing review from other customers that have already bought and tried that specific product. These reviews help the shopper to better evaluate the product and enhance the buying experience. People sometimes feel the need to know how other peers have experienced that product and they might need their approval in order to proceed. A great example is Amazon, that shows near the product all the

reviews from other customers, the good and the bad ones, and more are the review more popular is the product, the more popular the better the customer will think it is.

The final process if the checkout, and the nudge can be useful in order to avoid the possibility that the customer do not actually proceed with the purchase of the product. It is important that this stage has to transmit reliability to the customer, giving him different options for delivery and loyalty programs. Again, Amazon has introduced the “Buy with one click” button, alleviating the possible “pain” that paying would produce into the customer’s mind. Moreover, they were able to reduce the time required for completing the whole process, making it instantaneous, reducing the likelihood that the customer will change his mind in the meanwhile. The speedier checkouts will create higher conversion rates, making happy both the seller and customer.

Summarizing, shoppers nowadays are bombarded with and extremely big amount of information that could disorient them in their purchasing process. The nudge can be a useful implicit prompt that will drive them toward the choices and the products that they actually need or want, creating win-win situations for all the agents involved.

2. HEALTH

One of the most common decisions that we have to take into our every life is deciding what to eat. Most of the times, people tend to commit themselves to follow healthy dietary behaviors, but once a temptation is front of their eyes, they fail to resist. This is one of the most common problems in decision making that people struggle with, that is their related to food habits. This is because the “food environment” that we live in has a major influence on our food choices and therefore our health. In this domain, behavioral economics, and therefore nudging, could be beneficial as it could not only impact people current behavior, but also creating healthy habits that will stick over time. Although some policy interventions made in the past relied on some behavioral economics basis, the area related to food-related intervention is still under development. Most of our dietary habits are the direct consequence of our actions and decisions that create our routines and habits, meaning based on our Automatic System, which requires almost no effort and rationality. In this domain, the choice architecture will reflect the choices that will be made under possible influences from the external environment, such as food positioning and impact that could trigger some specific behavior in the individual’s mind.

We can intend the food environment as the room, the people and the actual food that is present in that moment and that can influence the dietary choices. This means that changing the elements within the food environment can lead to an improvement of these overall dietary choices, leading to weight changes and promotion of a healthier lifestyle (Bucher, T., Collins, C., Rollo, M., McCaffrey, T., De Vlieger, N., Van der Bend, D., Perez-Cueto, F. ; 2016). Those changes in choice architecture can mean a provision of information (e.g. stimulating our Rational System), changes in the physical environment (e.g. light, placement etc.), change in the default option (e.g. serving sizes) or focus on social norms and comparison with other peers. In particular, the study conducted by Bucher, T., Collins, C., Rollo, M., McCaffrey, T., De Vlieger, N., Van der Bend, D., Perez-Cueto, F., (2016), showed how a simple nudge consisting in just changing the food positioning can have effects on the final food choice. Indeed, studies have shown that people tend to eat healthier foods especially when these are in their proximity. Obviously, these effects produced by changing the location of the food be accompanied by an effort from the individual, which will be incentivized toward the healthier options. The effects from food positioning varies in their strength depending on the type of positional manipulation that has been made as well as the magnitude of the change. This means that people in charge of organizing the choice architecture within the food environment are able to influence the customer's choice just by changing how the food is displayed. In order to promote the wellbeing of the public, the healthier food, such as fruit and vegetables, should be placed in a more visible point respect to the unhealthy ones. This is particularly applicable in large self-serving settings such as schools, companies' cafeterias and so on. On a major scale, also the government itself could introduce practices that promote good dietary behaviors, as it's already happening in the US, UK or France in order to reduce the overall level of obesity. In general terms, nudges in this field can be divided in three broad areas: cognitive, affective and behavioral (Cadario & Chandon, 2019). Cognitive nudges are characterized by the fact that they provide information to the consumer that can help him to make better choices. Techniques such as labelling, where information about that specific food is given in terms of nutrients and calories, the healthy options are made more visible and therefore more probable of being chosen by the customer. Moreover, Cadario & Chandon (2019) have showed that just by adding evaluative labelling, meaning an interpretative cue like a smiley face or a color, is much more effective than just by giving calorie and fat information. Affective nudges have the objective to impact on the consumer emotions that could make the healthy food look more exciting and appealing and the unhealthy ones as the "bad choice". Healthy instructions or advices can direct consumers toward better choices. Moreover, the labelling also in this case could play a major

role into making it look more tasteful and make the customer focus on the taste experience itself. Finally, behavioral nudges try to change people's behavior without trying to change what they actually think or what they want. They do not rely on the willingness of the consumer to actually change his tastes, but rather they make healthier options as more convenient and easier to select. In particular convenience enhancements, as putting the healthy foods as the default option within the menu, requiring the customer to actually ask for a replacement in their meal. Also, pre-cutting the vegetables or the fruit will increase the likelihood of the consumer to choose the healthier option respect to the unhealthy ones. Size enhancement aim to modify the amount of food that is consumed by modifying the size of either the container (e.g. the plate or the meal-packaging) or the amount of the food served. These nudges are the best to reduce the calories consumed per day, reducing the sense of hunger and replacing it with healthier options. In general, possible interventions of the government would require either to increase the level of information that is disclosed to the public, or increase the cost of the "bad" behavior (Abdukadirov & L. Marlow, 2012). With respect to the first approach, government in some countries, like in the US, require that food producers and serves to disclose all the nutritional information related to the food that they produce or serve or other information that might influence the decision of the consumer toward other options. The main assumption behind is that consumers suffer a situation of information asymmetry, that will be resolved only with the full disclosure of the information that they need. Relating to the second approach that the government should decide to take, it would for example require to ban some particular products that contain nutrients particularly bad for the consumers, thus increasing the cost of "bad" behavior with policies similar to the ones used to eliminate externalities such pollution. But the key question is: "Is there really a lack of information for the customers?". Regarding this question, studies have showed that adults recognize the possible health risks associated with their behavior, even without being able to stop that behavior. Therefore, it is not surprising that many interventions have been very poor effective if not completely ineffective, as they simply provide information to customers that they already know. At the same time, policies that increase the bad behavior by increasing costs, therefore increasing taxes, as for example for alcohol and tobacco, tend to reduce consumption only for those consumers that have a light use and that they can actually control rationally their actions and behaviors. This means that an eventual increase in taxes, will not affect the heavy users on that specific product, which will simply pay higher taxes. Taxes tend to affect more elastic consumers to the price of the product, meanwhile the inelastic ones will just stick with their bad behavior, such as obese citizens targeted by the government.

On the other side an increasing number of companies have been focusing on dietary products during last decades, creating a proper private market for weight reduction. Nowadays, we can see dozens of products that are “zero sugar” or “zero calories”, as companies had to adapt to the changing need of the consumers. This effect has been of course highly beneficial, as people will have the tendency to be more motivated being surrounded by good examples and more possibilities for making “good choices”. Indeed, these companies tend to be far more effective in disclosing information to the public than the actual interventions by the government.

Overall, we can conclude that the nudge in dietary and healthy promotion behavior is a tool that can work as a support to the willingness of the individual, that is already committed to eat healthier options. Indeed, the desired effect will be reached only if there is a ground basis for the behavior that will consist in the motivation and incentive of the consumer that will drive “good choices”. The nudge in this case will serve as boost, increasing at the same time the incentive for healthy choices and reducing the likelihood of unhealthy ones. If there is an inconsistency between the motivation of the individual and the nudge, the individual will stick with his bad behavior even if he is completely aware of all the possible consequences.

3. FINANCE

The main objective of the nudge is to guide people toward decision that would result in an overall better situation in terms of welfare. Obviously, this welfare could be in terms of money, and this is why the nudge is a particularly fascinating concepts in the finance world. According to Johnson (2012), there two different categories of tools that can be used for planning the choice architecture, that are structuring the choice task and describing the choice options. Structuring the choice task means deciding what alternatives are presented to the individual, and this could comprehend reducing the number of possible options, default options, time required and so on. Meanwhile, describing the choice options means how these options are presented, in terms of attributes and design. In financial markets, these nudging tools be applied in two different ways: First, it can be used for adjusting how different investment choices are presented to investors, and Second to provide information in a specific and selective way. Regarding how different choices are presented to the investors, an example is the use of default options for Systematic Investment Plans (SIP), where systematic equal payments are made into a fund with a positive interest rate in the long term, giving the possibility to save and making

some gains without requiring any kind of action. Instead, regarding the nudges used for presenting information in a specific way, an example is the information that is provided to the investors when they have to decide between different options. Let's say for example, that a specific investment return could be presented in two different ways: 1. There is the possibility of the 60% that the investment X will produce gains after 5 years; 2. There is the possibility of 40% that this investment X will produce losses (or equal the costs) after 5 years. These two sentences are semantically equal, however depending on which of these two statements will be presented to the investors, will change also the possibility if he will take the investment or not. Moreover, there is a positive correlation between nudges received in a digital way with the individuals' finances. In particular, Bernatzi (2017) showed how an improvement in the communication with direct emails could produce an increase the percentage on enrollment into saving programs, the efficacy of apps that promotes saving behaviors and better control over finances.

In general, financial markets present some structural characteristics that enhance behaviors driven by heuristics and biases. This is because markets are made by many financial instruments that are very difficult to understand for people that does not possess technical knowledge. These products also involve a trade-off between the present and the future, challenging the self-control of people, which will make short term decisions prevail over the long-term ones. Finally, some of these financial decisions do not allow people to learn from their past mistakes, as they are taken very infrequently (e.g. retirement plans). As every domain where nudges are applied, the question whether the choice architects could have a possible conflict of interest is always recurrent. In financial settings, the choice architect are intermediaries, which should nudge people into decision that would produce gains for them. However, the gains for the investors does not presuppose also gains for the intermediary, that could even suffer a loss. That's why, people that sometimes rely on their financial advisors when deciding which decision to take, might later discover that it wasn't the optimal investment decision, but it was for their banks' interest. The financial advisor could use his technical knowledge and skills to further nudge the clients toward a specific direction by presenting the different option in some specific and preplanned ways. However, as we said before, there could be the case where a decision that is better for the investor might lead lower income for the financial intermediary, thus an outcome that is biased could be promoted.

The financial market, especially the stock market, is characterized by the fact that every transaction requires an agreement between the parties involved. These agents decide to conduct the transaction or not depending on the information at their disposal. According to rational

expectation models, differences in the sets of private information might cause disagreement among investors (De Bondt & Thaler, 1994). However, if the agents involved are rational and the information available to each of them is different, the transaction should not be done. But in reality, agents that have different interpretations of the same set of information, decide to “agree to disagree”, actively betting on their information and their proper abilities. This is called the Groucho Marx Theorem, and as Groucho did not want to join any other club that would want him as a member, at the same time a rational trader should buy something that another trader is trying to sell. On the other side a countless number of transactions happen every day, and this reflect the idea that every participant believes that he can do better than the other participants in the market. The key behavioral idea behind is overconfidence, that tries to explain why every agent involved in the market could be the potential “winner”. In particular overconfidence produces an overestimation of the knowledge possessed, and people tend to be more confident about their predictions in fields where they are self-declared expertise, with their predictive ability stable over time (Heath & Tversky, 1991). Therefore, high volumes of trades and active investment strategies are inconsistent with common rationality.

4. POLITICS

Since the early 2000s governments all around the world have started to implement psychological and behavioral factors to increase the efficacy of their policies and regulations. This is also due the fact that the nudge is a tool particularly suitable for policymakers, in line with their ethical interests of improving people lives and their technical capabilities for the implementation process. The publication of the book in 2008 by Richard Thaler and Cass Sunstein had a major impact on increasing the awareness of this tool, therefore various governments decided to give always more space to behavioral economics within their practices. Cass Sunstein obtained an influential position within the White House in 2009, being the direct personal consultant of the president Barack Obama and intervening on a range of regulatory issues through the use of executive orders. Soon also the UK decided to follow this model, creating in 2010 the Behavioral Inside Team (BIT), that used small-scale trials to test the efficacy of possible policy interventions.

In several cases it could happen that the outcome of a nudge is not the one that was initially planned or desired. This can happen when the desired result is the consequence of a series of

decisions made in contexts different from the one where the nudge was initially implemented. Nudges tend to be more effective when the desired outcome is the result of just one decision, that reduces the possibilities of different results and possible external influences. This is one of the major problems that face policy makers when they implement a new strategy, where the desired outcome behavior of the target is not the result initially planned. Moreover, it is important to keep in mind that what works in one context, does not necessary work in a different one, and this explains why some nudges could work really well in some specific area but produce a complete disaster in another one. However, if the planned desired behavior is reached, the benefits will be not only for the single individual but for the whole population. Indeed, nudge used in politics, is characterized from a much broader scope and sometimes the interests of the whole community prevail over the interest of the single for reaching the benefits desired. A great way that governments use nudges is to create partnerships with academia, universities and institutions different purposes and trying to find possible solutions. The World's Bank Mind, Behavior, and Development Unit works together with governments in order to evaluate social and economic problems in different countries analyzing behavioral patterns and designing appropriate interventions. Some governments have taken the concept of nudge and adapted to the digital world of today through machine learning. Indeed, they were able to apply design thinking, data and predictive analytics within political programs as never done before. These model that are able to analyze enormous amounts of data and analyze it highlighting the areas that need major focus in order to find possible solutions. By leveraging this data, governments and institutions can design appropriate and customized nudges maximizing result at the minimum cost.

Even if the application of behavioral approaches in politics has been highly effective, the application of nudges from the government obviously can involve some risk, as someone can claim that a specific approach might not feel comfortable, because it would be perceived as overly paternalistic if not manipulative. At the same time, the assumption that the choice architect is by guided ethic principles is not always true, as he could have a conflict of interests. But as the same authors Thaler and Sunstein say in their books, framing is an inevitable process, and there is always someone that has to take a decision for someone else, of course always trying to look for the good of the whole society.

At the moment around 200 public entities worldwide have embraced the Nudge Theory and apply behavioral insight, and the nudge has been largely approved by the same governments and the public itself. A study analyzed how people from different countries all around the world reacted with respect the nudges applied from their own governments. It showed how countries

in Asia, such South Korea and China, have greater approval rates as in Northern Europe countries as Denmark. There is not a proper conclusion on why of these results, but a possible explanation would be that countries where citizen is directly concerned about the issues addressed, tend to have higher approval rates. Moreover, another relevant factors that helped to boost this index was the level of trust of the people in their own government, that directly affected the perception about the ethical scope of the policy applied.

Even if governments have showed a particular interest for behavioral policies over the last decade, it does not necessarily translate into impact. Moreover, the policies applied have to be constantly monitored and renovated, as people behaviors and preferences will change over time.

According to Hood's NATO Model (1986) there are four different means that a government has in order to change societal behavior, that are nodality, authority, treasure and organization. The first tool, that is nodality, assumes that the government can exploit the information gained through his network in order to influence citizen's behavior. This concept is particularly close to the concept of nudge, that aims to guiding people toward some specific policy goals, but while Hoods focuses on the use of rational choices by people based on the information provided, the nudge can reach such result through heuristics and biases that drives people's actions. The second and third concept are authority and treasure, that respectively represent the legal powers that the government has, and the financial instruments. Thinking about the possible similarities with a nudge, it is evident that also in this case the legal power is represented by the technical behavioral policies that could be implemented by the government, that could reinforce regulation and law for the promotion of a desired behavior, and the financial instruments intended as the incentives that are given to the citizens in order to regularly pay their taxes and loans. Finally, the fourth category is organization, where according to Hoods, is the direct provision of good and services, public enterprises and the organization of the whole community. Governments are able to nudge their citizens in changing their behavior just by modifying the how cities are structured, as for example roads and public provisions. The key idea behind is that, altering the organizational structure, nudges can achieve change in social behaviors without a restriction of the freedom of their own citizens.

Summarizing we can conclude that the nudge, even if requires continuous research, is an extremely versatile tool that can produce highly effective result with extremely low costs in a variety of domains. Although the different applications, the effectiveness in a domain does not presuppose the same level of efficacy or success in another area. Moreover, it can be considered double-edged sword, because if the choice architect is not "benevolent" and driven by ethical

purposes, there is a high risk that major damages could be produced impacting an elevated number of people just for the purpose of few individual's interests. Therefore, the cost of continuous monitoring of the policies applied and the purposes that are behind should be taken into account. But, if the choice architecture is well designed and has a clear purpose that will serve for the good of the community, there are no limits to the possible applications for this simple but extremely powerful tool.

CHAPTER 4

CASE STUDY

5.1. CASE A: How Google nudges his employees

Google is one of the most recognized companies all over the world, famous for its web search engine, that is the most used on the World Wide Web. The headquarters are in California, but they have strategic offices in many different countries over the globe, with 98.771 employees. Google is famous for its innovative practices that are applied within the same company and outside through the products and services delivered to their customers. In particular, Google has a special care for his employees, as they think that the human capital is one of their most valuable assets. They try to help them in simple and low-cost ways, especially regarding choices that might affect their health. In countries like the U.S. the effects of poor health and obesity costs \$225 billion every year according to the Centers for Disease Control, and this number increases over time. This is why, many companies nowadays are trying to engage their employees in wellness initiatives, but with scarce results. The reason behind is that most of the times these initiatives fail because their engagement method is outdated or they provide too much information to the target employees that cannot be properly analyzed, understood or simply ignored. As we have seen, when people are told how to improve their own behavior, the final outcome won't be the desired one if their behavior is not aligned with their intentions, especially when related to their food choices. Companies that are able to have a clear understanding of their employees' behaviors and in particular, how to influence their choices, can design a proper choice architecture that can promote healthier food and outcomes, saving lives and reducing costs at the same time.

For this reason, the Google Food Team and the Yale Center for Customer Insight decided to work together in order to study how to improve the health choice of their employees through behavioral economics. After a series of small experiments, they identified a series of findings that can help to nudge their employees toward the desired behaviors. In particular, they based their policy implementation through four Ps of behavioral change, that are: Process, Persuasion, Possibilities, Person. Their approach identified a portfolio of strategies that aimed at promoting healthier choices by making them more appealing, and the unhealthy ones harder to reach and less tempting.

Regarding the Process that they decided to apply, they based their approach on small nudges within the choice architecture, represented by the presentation of the different available options. First of all, they focused on the order, as the sequence of the alternatives presented can have a great influence on the final outcome. The privilege position in a visual set (that could be the buffet line or the menu) is most of the times the first item in a pair or the middle one if the set is composed by three elements. If the set of items presented is not written down, but rather communicated orally (e.g. the recited list of daily specials), the privileged position in this case will be the first and the last item. Secondly, they focused on the Default Option, matching the easiest choice with the healthiest one. And last, on the level of Accessibility to the item, will influence the choice of the decision maker. Therefore, the healthier choice is those that are both more visible and easier to reach, meanwhile the unhealthy ones will be less visible and harder to reach. In order to understand which policy to implement, they observed the behavior of their employees within the corporate kitchen during breaks from work, in particular those that grabbed a drink and a snack at the same time. Within the kitchen, there were two different beverage stations, and one of the two was some meters closer to the snack bar. Observing more than 1.000 people, they found out that those who used the drink station near the snack bar, were 50% more likely to grab a snack with their drink. They calculated that the calories consumption, only related to their unhealthy snacks in that context due his proximity to the refrigerator, produced more than a 1 kilo of fat per year per employee.

In terms of persuasion, the main objective of the policies implemented was to make healthy options more appealing than unhealthy ones, through disclosure of information and message delivery. In particular, the tools that were used were framing and the leveraging of social norms, that has the aim to be as less invasive as possible at the lowest cost. The key was communicating the right message at the right time and in the right way, in order to maximize the possibilities that the target will receive elaborate this information. The key for success is the vividness of the message, in order to catch the attention of the recipient and trigger is emotions, guiding him toward the best option. Second, the message needs to be able to make Comparison, allowing a greater level of understanding for the target individual that will be able to quantify his choices in terms of real actions (e.g. the calories in a cookie can be burned in two hours of walk). Finally, the message has to be delivered when the target has more chances to be receptive and being persuaded at the same time, increasing the chances of the desired behavior. Google studied the effectiveness of advertising in order to make vegetables more appealing to his employees. They promoted in their cafeterias an unpopular vegetable (beets, parsnips, squash, Brussel sprouts, or cauliflower) as the “Vegetable of the day”, accompanied

by colorful images and trivial facts next to the dish that contained that vegetable as main ingredient. The posters were positioned next to the dish, where the employees were more probable to be influenced in their choices, helping to increasing the number of people that tried that dish by 74% and the average amount each person served themselves by 64%.

Regarding the third factor that is Possibilities, is referred to the set of option that are presented to the decision maker. The key underlying assumption is that freedom of choice always needs to be maintained thought the whole process, otherwise the decision maker could experience negative reactions against any kind of restrictions that could outweigh the possible benefits. Therefore, eliminating all the unhealthy options would not be convenient as the employees could put in practice compensating behaviors or either deciding to bring their own food. The best solution would be reducing the number of unhealthy options or rather make them less available and difficult to reach. The different solutions would comprehend a change in the assortment, as more options generally mean more consumption, since people have the tendency to eat what is in front of their eyes. The resulting behavior will be affected by the perception of the external elements, not the actual reality. An example would be that people tend to eat less M&Ms from a bowl that contains the same color of M&Ms rather than many, even they all have the same flavor. Hence, a valuable option that allows to reduce consumption and at the same time keep the freedom of choice, is to rotate the variety of the option presented to the decision maker over time, the servings and meal for each day of the week. Moreover, in order to promote healthy behavior, healthy options can be appositely paired with other healthy options in order to make the meal more appealing. Finally, changing the quantity that is served can also contribute to the individual perception of the necessary portion of food needed in order to be satisfied.

Google studied the consumption within their kitchens of the most popular snacks that was consumed, M&Ms. Usually they were served in big cups there were regularly filled by other employees. They decided to substitute these big bowls were people self-served themselves, without having the perception of an adequate portion, with small packages, that helped to reduce the average serving by 58%, and calories consumption from 308 calories to 130.

Finally, their last factor was Person, and in particular how you can influence behavior across different contexts and over time, meaning promoting the same behavior not only in the work environment but also at home. An important element is being able to align people intentions with the desired behavior, and this could be done through setting and tracking goals, that will be maintained over time and will guarantee a sort of anchor for the individual's behavior. These

goals should be customized to each individual, therefore personal, motivational, measurable in order to observe the improvement over time, and supported through other tools along the way. The people need to pre commit to that specific goal, meaning that it will be required some planning (as preparing meals in advance) and constancy. This method will help to avoid “mistakes” during harder time, as when they will be hungry and tired, and therefore more likely that they will unhealthy snacks as they tend to more appealing. It is important to translate the desired behavior into a habit, which will be processed by our Automatic System and kept over time without even requiring effort or self-control. Google’s employees picked some volunteers to whom was designed their personal diet and body goals and then assigned randomly to one of three groups. The first group received information about the link between the blood glucose and weight gain. The second group instead, received not only the information but also the tools necessary to use that information, and in particular blood glucose monitoring devices, data sheets, advices on how to take the measures, weight, BMI and body composition. Finally, the third group did not receive any kind of information or tool. The experiment was conducted over a prolonged period of time, and showed that the second group, that received the information and the tools, was the one that made most progress in reaching their goals. After a period of three months, 10% more people of the second group made more progress in reaching their body goals, meanwhile 27% more on achieving their diet goals. But the most important fact was that by the end of the study, the individuals in the second group developed the desired behavior of making healthy choices into a habit, that helped them to maintain this behavior over time also after the end of the study. Information is not enough if the target behavior does not know how to use it, but if given the proper tools, is more likely that the desired end will be reached.

Google based their approach on the 4Ps, that revealed to be a very successful strategy, allowing them to reach a greater understating of their employee’s behavior, and for Yale Center for Customer Insight gain valuable findings to help people maintain the same choices that they do in the work environment also at home. This approach can be summarized as in the table below:

Figure 6:

PROCESS	Manipulation of the choice architecture
PERSUASION	Disclosure of information and message delivery
POSSIBILITIES:	Manipulation of the options presented to the decision- maker
PERSON	Promotion of desired behavior not only in the work environment

Applying behavior insight in the corporate context, allowed Google not only to reduce their cost and increase their efficiency, but especially to take care of their most valuable asset, their own employees, resulting in an overall increase of welfare for all the agents involved.

5.2 CASE B: The World Bank and the eMBed

The World Bank is one of the most important international organization that decided to adopt an approach based on behavioral economics and the nudge. More specifically, they decided to release in December 2014, a report called “Mind, Society and Behavior”, that represented the manifesto for the new policy of action that they were about to embrace in terms of research and intervention for the whole institution. The World Bank decided to use large amounts of data gathered through the years and create a new radical approach that served as a base for the development of the organization based on behavioral insights. This report has been an incentive for all the professionals to take a different perspective in their work, in particular analyzing how people really think and behave in response to the external stimulus from the outside world. Indeed Jim Yong Kim, the President of the World Bank, asked for help from David Halpern, that already had experience for the creation of the Behavioral Insight Team in the UK Government. Policies that are based on behavioral economics are able to emphasize the important of the decision-making context, analyzing all the possible influences as the social, economic and psychological factors that affects how people think and act. They can be specifically tailored to bureaucracies, technologies and service delivery that sometimes are overlooked in standard policies design, but that could be extremely beneficial in the development of programs and projects, especially in those countries affected by low-income contexts. Moreover, this approach would provide a new set of tools able to find solutions while keeping cost at the minimum, and at the same time correct possible mistakes that policy makers could make because of cognitive and behavioral biases.

Varun Gauri was the head of the report, had the objective to increase the awareness of behavioral polices within the same organization, and this led to the creation of The Global Insight Initiative (GINI) in 2015, an independent behavioral unit that was inspired to the BIT in the UK. The Mind, Behavior, and Development Unit (eMBed), that is the actual World Bank’s behavioral science team, has the objective to work in collaboration with other projects teams, governments and other possible partners in order to find possible methodologies for

interventions based on behavioral approaches. They can exploit their worldwide network that has been created over the years, with scientists and practitioners from all over the world, allowing them to gather enormous quantities of data and evidence that supports the global effort to eliminate poverty and increase equity. As of today, the team has implemented more than eighty behaviorally informed policies across more than sixty-five countries, covering issues such as Health and Wellbeing, Financial Inclusion and Taxation, Gender Equality, Unemployment and many more.

Much effort has been given to the Education area, as in the case of Peru, where thanks to a collaboration of the World Bank and the Peruvian government, they reframed the beliefs of middle-school students by showing them that intelligence is malleable. In particular, messages that promote the idea that intelligence is a skill that can be improved over time rather than being born with it, significantly increased student's achievements. This problem arises because teenagers often have pre-conceived ideas about their own intelligence, which can influence their approach in the academic setting. This issue was particularly accentuated in the low-income areas, and the standard approach adopted has been an increase in the investments in teacher training and learning materials. However, from this collaboration was created a project called "Growth Your Mind", which had the objective to motivate and inspire students from all over the country. Teacher and students from 800 different schools were asked to read an essay related to intelligence growth and development, and after putting into practice what they just learned through a series of activities. The intervention reached more than 50.000 students in only a few months, with a surprisingly cost of only 20 cents per student. Overall, the results showed an increase in 0.05 of standard deviation in math score in the whole country, reaching an increase on 0.14 in some regions. This intervention demonstrated how the power of a low-cost and high-impact policy, based on a behavioral approach, can improve the outcome in a relatively short time. After seeing the successful results in Peru, eMBED decided to take this approach to other countries that face this same issue, implementing new trials and tests in order to improve his scalability and efficiency.

Another major area of intervention is related to Health and Wellbeing. A project conducted in Haiti, demonstrated how behavioral economics can be used in order to nudge pregnant women to attend prenatal care. This project aimed at solving one of the major problems related to neonatal mortality rate, as Haiti presented the highest rate in the Caribbean Region and Latin. One of the major contributing factors to this elevated rate behind is the low rate of prenatal and postnatal care. They observed that just 67% of women of the entire population tend to go to the four recommended prenatal visits and only 33% to the postnatal after 48 hours from the birth

of the child (IHE and ICF 2018). In order to understand the reasons behind this behavior, the World Bank aimed at identifying the structural and behavioral barriers that prevent women to attend these visits, with the objective of highlighting the drivers for an increase in safe birth delivery in Haiti. First of all, they identified the key behavioral biases behind this behavior, such as availability and optimism, that make pregnant women believe that they do not need special care by professionals but rather just the help from the matrons', and sometimes the practice required are beyond their capabilities. This happens because they can't think or recall someone close to them that required this special care, therefore they are less likely to pursue care themselves. Very often women are unaware of when they should require for such care treatments, and the structural conditions don't allow them to have access to this service very easily due to bad state of roads and the long trips required that are potentially dangerous. But most importantly, the main problem was that even those women which had the possibility to go to hospitals, they were unwilling to do that because of the fear of the hospital settings and how they will be treated. In this particular context, an awareness campaign that focuses on the importance of such prenatal checks and the required professional care would be insufficient in order to create a substantial behavioral change. Therefore, if those messages are specifically aimed to mothers and matrons, can help lessen the lack of knowledge about what are the necessities for reducing possible health risks. The information would require to be highly specific and aimed at reducing possible hesitation that women could have, helping them to understand what to expect during this health visits. In addition, some specific campaign should be aimed to the medical staff, that should be able to make them understand how to properly treat patients and the importance of the perception of care, and how to make them feel at ease. This is of course a very complex social issue but understanding the behavioral dynamics behind can have a great impact in order to break down those barriers and create welfare for the whole community. Nudging in order to solve health related issues could be extremely beneficial as it allows to just modify simple habits for the target individuals that could be very impactful on their wellness in the long run.

Another similar project was conducted in Brazil, in order to promote the treatment of tuberculosis in Rio de Janeiro's slums, where they created specific call centers that aimed at improving the travelling experience of the patients, provide important information, feedback showing them the results of their efforts and motivating them to continue their cures.

Another area where the World Bank is working on is Financial Inclusion, in particular a project has been conducted in Tanzania, where thanks to the partnership with a local wireless service provider, they encouraged low-income individuals to save more using mobile money products.

Since 2014, Tanzania applies interests' payments on mobile money wallet, that range from 7 up to 11%, four times greater than the average deposit in the US. However, mobile savings balances still remain very low, especially between low-income users.

In particular the projects studied 5 different groups, that received tailored SMS messages over a period of 14 days, that applied different behavioral concepts. The first group received generic SMS messages that reminded them to save, the second messages that increased their ability to take control of their actions, the third group messages that were specifically tailored to each individual's saving purpose, the fourth informative messages that showed how much the top savers had saved, and the last group did not receive messages at all. They found out that even if some behavioral practices might be very successful in some domain, it doesn't mean that they will have the same rate of success also in other areas. The messages that focused on social norms (the third group), revealed to be the most successful, and increased participants savings by 11%, meanwhile messages that increased fostered the ability to take control of their the receiver's actions saved even less than the group that did not receive messages at all. The findings were particularly beneficial for the company that partnered with the World Bank in this project, that helped them to have a better understanding of the behavioral insights that drive this market and how specifically tailor their messages. This project showed how policies that aim at a specific result could produce the opposite effect if not properly designed and priority tested. Again, conducting this kind of experiments allows to understand the behavioral drivers behind people's actions, and how they might be affected by structural barriers such lack of information or cultural factors.

A similar approach was taken by the World Bank in countries that struggle with their tax's payments, such as Poland, Costa Rica, Guatemala and Honduras. They designed specific letters that were after sent from the tax authorities to citizens and firms that failed to pay their taxes, that enhanced behavioral drivers through the use of social norms, like giving information about what other people in the same country are doing or how much they care about their taxes, and at the same time the bad perception of a person that does not comply with his obligations.

These few projects represent only a small summary of all the important and thoughtful activities that the World Bank is conducting, but they are able to show the impact of an approach based on a behavioral perspective. The Nudge Theory, since the publication of the book by Thaler and Sunstein, has been recognized as a powerful and low-cost effective tool that governments and policymakers all over the world have decided to incorporate in their everyday practices, with an elevated rate of success in many different domains.

CHAPTER 5

LIMITATIONS

6.1 OBJECTIONS TO NUDGING

Nudges are nowadays effective tools that are used by both public and private institutions all over the world in order to improve the choices that people make every day. But even if nudges are now widely popular and highly effective, there are still some objections that can be made because of some structural flaws that might affect how they are perceived by the public.

According to Sunstein (2017), the first objection that can be made is that the nudge is an insult to human agency. In particular, the nudge does not respect people as they are not treated as humans but rather as objects in a very distant and abstract way, without a letting people the possibility to control (Waldron, 2014). This objection does not find a proper validation, as the main foundation of the nudge is to preserve freedom of choice, meaning the respect of people's agency, giving them the possibility to choose what they prefer. Indeed, some nudges that works just giving some more information to the individual, can be considered as self-consciously educative, allowing people to reinforce their capacity to choose. At the same time, nudges that do not provide extra information but simply improve the choice architecture, still allowing people to choose what they prefer.

The second objection is that nudges are based on high trust on the government by their own citizens, and this is not always the case. It's not unusual to hear scandals about politicians and possible conflicts of interests. How can you control the authenticity ethical principles that drives the public officials? At the same time, how can we be sure that the government's actions are not driven by a small group that is only looking after their own interests? First of all, it is worth to consider that possible misconduct by politicians and lack of information disclosed to the public should not be the main concern, as people should be worried more about possible coercions and direct modification of the actual regulation rather than the supposed "manipulation" that a nudge could produce. Moreover, the fact that there could be possible conflicts of interest and subsequent misconduct by politicians has always been present in the past and probably will also be present in the future, and there is no reason to think that they are immune to behavioral biases. The only precaution that could be taken is a possible structural

safeguard, meaning tight controls on all the political implementation that have been taken with all their repercussions, obviously producing an increase of the costs for information and monitoring. Nudges always aim at keeping the freedom of choice, meaning that an individual that might feel coerced by a non-ethical political implementation can always decide to take another decision.

The third objection is that nudges, differently to mandates and bans, are not transparent as they might affect without people being even aware of it (Glaeser, 2006). This objection could be considered partially true, as sometimes people take decision without being aware of having been guided toward a specific direction. But in reality, what many nudges do, is that they simply provide more information to the decision maker allowing him to make a better decision. Moreover, nudges are not hidden, as most of the times they are right in front of people's eyes, but what happens is that people do not focus or think about them, or simply they are not aware of their effects (Rebonato, 2012). A cafeteria could be designed in a way that invites people making healthier choices by making fruits and vegetables more visible than the cookies, but this doesn't mean that there is a lack of transparency toward the customer, which they have the total freedom to choose whatever they want to eat.

The fourth objection is that nudges are manipulative. Barnhill (2014) and Sunstein (2016) define an action manipulative when subverts people's capacity for rational deliberation. If manipulation is intended from this perspective, nudges do not qualify as manipulative even if they influence people's decision-making process, as they simply provide all the possible tools for a better outcome for the decision maker which is always free to take the option that he prefers.

Nudges implicitly assume that people are irrational, which could be considered quite controversial and irreverent. This is partially true, but as traditional economic models have experienced, people tend to take decision that cannot be considered as rational, because not optimal and influenced by external factors that deviate toward other options. This is why nudges tend to be designed on specific behavioral biases that can be leveraged and supported in order to repair those structural decision-making flows that might affect the result. Indeed, those who embrace nudges tend to avoid the term irrationality, but rather express themselves in terms of "bounded rationality". Of course, not all nudges work, indeed is a process that is bases on trial and error and continuous improvement, and when they fail it means that freedom of choice worked or that the nudge wasn't properly structured.

The final objection that can be made about nudges is the limited kind of problems that they can embrace in order to find a solution. The main preoccupations of governments officials are

related to poverty, hunger, unemployment, corruption and other major social issues. This kind of problems can be alleviated only with a minimal impact using nudging if not at all. This shows how in some situation, the freedom of choice might not work properly and how mandates and bans could be more suitable. This is actually true, but it can be highlighted that nudges aims to solve those problems that can be solved through the application of behavioral economics, therefore issues that are broader in scope and related to socio-cultural-economic factors might require other tools. Nudges cannot eliminate poverty, unemployment or corruption, but any individual incentive that leads to an improvement could be considered as an achievement (Sunstein, 2017).

6.2 WHEN A NUDGE FAILS

Most of the times the nudge is the result of a trial and error process that tries to analyze possible alternatives for solving a problem. Obviously, this does not mean that the nudge is always successful, as in some case can be even counterproductive. The information that is given could be too difficult to understand, misinterpreted or not understood at all. If people receive information about how many calories the candy bar they are about to eat has, they might do not understand the information in term of macronutrients or have a comparison in real terms with another food or the effort required to burn those fats. At the same time, a reminder could be postponed and then forgotten, a warning ignored, and a suggestion totally misunderstood. In some cases what is the understanding of the human behavior in a particular setting, might be completely wrong if applied in another context.

When a nudge does not work the dilemma of what to do instead will arise, and the answer will depend on the context and necessities required, complicating the whole process in terms of predictability.

A specific nudge might turn completely ineffective or less effective that what was initially predicted, but it might be beneficial in order to understand what the real problem is and if other instruments might be suitable or not. Most of the times, when a nudge is less effective than predicted, it's because it has not been designed properly or simply it wasn't a good idea for the target population. But as we said, an eventual failure will be instructive as it will allow a better understand of the target's behavior, showing the reasoning behind their choices for an improved welfare. Of course, a possible solution in case of a failure would be to try applying

another kind of nudge, that would be carefully planned given the information that has been gathered. Most importantly, nudges do not address normative questions, as their objective is to promote behavior that will be completely in the interest of the decision maker. In case of the application of different kinds of nudges for trying to solve a single problem did not work, it might be effective considering other tools more impactful as economics incentives for the target population (a subsidy or tax) or even coercion through regulation. This approach is particularly successful when the choice architect knows the mistake that is done by the target, and at the same time the decision maker knows his errors and does not want to change his behavior.

The most famous and effective nudge is usually the default options, where people do not even have to take a decision in order to make an optimal choice. This nudge tends to be the most durable and to stick over time because people tend to gravitate toward the status quo, especially if there is a lack of attention and the tendency of procrastinate by the individual. People will also interpret the default option as an information that is given by an external advisor, that is the producer, and usually more expert, and therefore an implicit recommendation that should be followed. The last factors that determines why the default option is so successful is people's loss aversion. As we said, people tend to feel the pain of the losses way more than the benefits of gains of equal size, therefore they will try to remain in the status quo intended as the reference point. However, as all the nudges, it can happen that even the default rule fails. This is because strong preferences by the individual can influence the decision-making process and the default rule will not stick over time. In such cases, people won't take into consideration possible suggestions reflected in the nudge and won't even consider the effects produced by their loss aversion, as their reference point will change. When preferences are high the cost of actually making a decision will decrease, as people already know what they want, while the cost of following the suggested option by the choice architect will increase, as it will be considered the wrong direction. Another reason that might affect the outcome of the default rule could be the use of counternudges, especially by those individuals who have different interests or simply do not want to follow that behavior. A nudge can fail either because is based on an inaccurate understanding of the target's behavior, where the planned choice architecture is not adequate, or the understanding of the social norms have a greater effect that what was initially thought. The information that is provided by the nudge might be too difficult to understand for the target, therefore he might be totally unaffected or misinterpret it and decide for other options. There could be the case where people might feel uncomfortable by being subject of a nudge and therefore, they might show a proper effort in order to reject them. The

effects of the nudge could be only in the short term, if people receive information about health, risks and desired behavior they might pay attention and change their behavior only temporarily. On the long term they will tend to forget this information, and they will go back to their past behavior. In general, the default rule tends to have a greater impact in the long term, as people will need to make an actual effort in order to change it, but after a while the impact of the information that is given won't be the same. Finally, there could be also the case where the nudge is effective, as people will gravitate toward the desired behavior, but at the same time they will put in practice compensating behaviors that will neutralize the overall effect (Sunstein, 2016). If a cafeteria changes his choice architecture in order to push his customer to make healthier choices, this effort will be completely null if customer will eat unhealthy food at home or at other restaurants.

In general, every form of nudging will be completely null if people will put in practice compensating behaviors that neutralize the overall effect or if they have strong preferences that will heavily influence their decision-making process. The compensating behavior can be seen as a case of strong antecedent preferences, that reflect and illusionary success of the nudge in terms of the choice that is taken by the decision maker.

Overall, what should be considered is not the effectiveness of the single nudge, but rather the general welfare that is produced. It can happen that nudges could be reinforced by synergies, where weaknesses are compensated between each other or they might be in conflict which is the opposite case. But when the chooser makes some explicit errors that can be corrected, and when the effects of a third party influence the process, if the nudge reveals to be ineffective could provide the needed information required, where stronger measures might be more effective for the overall good.

6.3 WHY NUDGES ARE REJECTED

In order to better understand why some nudges work while others don't, it is useful to identify those factors that determine the success of a winning policy or those that determine the failure. Most of the times nudges do not work simply because they are rejected by the target population. And this could happen because people tend to reject those nudges that will be perceived as having an illegitimate goal. For example, all those nudges that can favor just the interests of a small group of individual or rather go against the interests of a large group (for legitimate or

illegitimate reasons) are more likely to be rejected. The key principle behind is very simple: whenever people will feel that the objective of the choice architect is illicit or unethical, they will completely disapprove the nudge. However, the interesting fact is that people will not be against for the single nudge, but rather they will be opposed against what this nudge represents and the individual that designed it. Of course, not all nudges will produce opposition from all the target population, and this is because some nudges can be interpreted in different ways. Instead, mandates do not have this problem of interpretation, as they will always produce opposition just for the simple fact of being mandates (Sunstein, 2017)

Secondly, people will reject those nudges that will be perceived as inconsistent with the interests or values of most of the decision-makers. In general, default rules but also other nudges, will favor the interest of the majority of the overall target population, and only a small percentage of people will want to opt out, for good reasons or not, but it does not necessarily mean that they will actually do it because of their tendency to gravitate toward the status quo. One important factor that affects the favorability of not of the nudge, is the size of the group that will be affected in negative terms. If a default rule goes against the majority, probably it won't have much appeal. The principle behind this process, might be considered as the fact that people before certain losses might occur, they must affirmatively express their wishes (Sunstein, 2017). At the same time, when a nudge is being perceived as directed just to the single individual, people is less likely to support it than when is perceived to be targeted to the whole population (Cornwell & Krantz, 2014). This is highly connected to the fact that most people will be uncomfortable being "manipulated" by someone else, therefore the decision that is suggested and that they are supposed to take, won't be considered as personal but rather the desire of a third individual. Therefore, another principle that explains when nudges are rejected, is that when people will perceive nudges as unacceptably manipulative, they will automatically project their negative emotions to the nudge itself, and automatically reject it.

An important element to take into account and that could influence the success of the nudge, is the level of transparency of the nudge itself. In particular, the question wherever if people being informed about the objective of the nudge and the fact that their decision-making process is being affected, could influence the whole process or not. Regarding this issue, there could be different perspectives. The first one, it might be argued that the success of the nudge might depend on some level on nontransparency, as people being unaware of the process could produce a better outcome. In case the customers are informed about the fact that the cafeteria's choice architecture has been designed in order to promote healthier choices, would this affect their behavior? Actually, the answer could not be known as there is not empirical evidence that

can demonstrate such facts, but another approach might claim that most nudges are fully transparent and all of them should try to be as such. Disclosures, reminders, warning and all those nudges that provide information to the decision maker are in front of their eyes, and at the same time public officials should try to be as transparent as possible about the policies that are about to be implemented. A study conducted by George Loewenstein, Cindy Bryce, and David Hagmann found out that people, when specifically informed, the likelihood of a change in their behavior is very low, even when this communication does not happen. More specifically, even if people are informed that they are being nudged, the effects of the nudge will not be reduced either because people do not care or because they do not want to put the effort to focus and elaborate that specific information (Sunstein, 2017). This does not mean that this finding will hold in every context, as it might happen that external influences might play a role in the decision-making process. Taking this perspective, nudges can be divided in two different categories: those that can affect the psychological mechanism with disclosure of information and perceived as innocuous by the target population, and those for which the disclosure would produce mistrust and suspicious of an unethical objective. A factor that will influence the fact that the individual's perception of the nudge as the first or second category, is the trust or not toward the choice architect. The concept of *reactance* might be appropriate, as it expresses the idea that people do not like being coerced or controlled, and if they realize that their decision is the result of a possible manipulation process, they will take compensatory actions in order to follow their own path.

Summarizing, it is undeniable that nudges have gained an unprecedented support in very different domains, and its success is based on actual evidence. However, this support might decrease in the moment there is a lack of trust toward the choice architects by the target population. In particular, if the outcomes of those nudges produce loss of money, health or affects their overall welfare, they will be considered against their own values and therefore rejected. Nudges can affect either our Automatic System than our Rational one (System 1 and 2), and in general people will support more the first category as less intrusive and because they are perceived just as a support for problems that they could otherwise resolve by themselves. People will be influenced by the political valence of a specific nudge in order to assess whether to accept or reject it. Finally, the transparency of a nudge should not be able to reduce the effectiveness of the nudge itself, as most nudges are already completely transparent and people should not perceive them as a threat to the control of their decision making process, but rather as a supportive mechanism for reaching an optimal decision. Even though reactance can't be ignored, it will affect only a small percentage of the overall target population and might

produce a deviation from the initial objective, but the overall effect will be compensated it will result in an overall increase in general welfare.

6.4 AUTONOMY

One of the main objections that can be made to Nudges is the fact that they limit the degree of autonomy of the individual. Regarding the concepts of autonomy, there are different interpretations that could lead to different paths and reasonings that could legitimate or not the Nudge Theory.

Hausman and Welch (2010: 128, FN 16) interpret autonomy as the control that an individual has over his own evaluations, deliberations and choices. Taking this point of view, the nudge would violate this principle and therefore would be totally unacceptable. Indeed, they harness the behavior of the decision maker by influencing and exploiting certain behavioral biases, rather than trying to leave the individual explore his own path. This means that theoretically, the nudge produces a circumvention of the deliberative faculties of the individual, as the control that he can exercise over his own decision-making abilities would be reduced or influenced without even being aware of it. For example, the simple use of the default option would produce a perception of “possession” of the option itself, exploiting his loss aversion bias (Smith et al. 2013). According to Bovens (2009), an individual will act according to reasons connected to principles that he is able to explain. In this context, an eventual framing effect would mean an influence or rather a cause of the alternation of the natural behavior of the individual, therefore it can't be considered as aligned to his principles. Bovens claims that the lack of strong preferences by the decision maker, might represent as an indicator of autonomy lost. If his preferences are fragmented, there is the possibility that the agent would not be able to recognize himself into his own actions.

An alternative approach regarding the concept of autonomy refers to the individual's subjective perception of autonomy. More specifically when people feel manipulated, they will suffer in terms of procedural utility (e.g. Frey et al. 2004). If the final objective an increase of the overall welfare, it should be taken into account the possibility of a loss in utility for a percentage of the target population, and therefore the overall effect will be less than what was actually predicted. At the same time, LeGrand and New (2015: ch. 7) argue that the debate should focus just around the perceived loss of autonomy that people suffers than their actual “legitimate” autonomy. Schubert (2015) summarized four different elements that are generally used in

literature in order to establish the level of autonomy of every individual: 1) the relationship between the decision maker's self and his control over his actions 2) his ability to autocorrect himself and processing the reasons behind his actions 3) the quality of his actions in terms of personal preferences or coherence 4) the agent's perception of the relationship between his control and the utility that he obtains from his actions.

Analyzing every single element individually some conclusions can be drawn. First of all, the notion of "autonomy as control" presupposes an elevated self-knowledge that the agent might not possess or that can't be even found in the behavioral world. A realistic model should take into account the human behavior as the result of external influences, that could be good or bad, and that partially affects our decision-making process. At the same time, the single individual could misinterpret himself, he could be convinced to have certain preferences but in reality, he does not. Second, relating to the concept of "autonomy as responsiveness to reasons or reasoning", assumes that there are a definite number of correct ways of reasoning, and it doesn't mean that the reasons behind the decision maker's actions are correct. Indeed, an external influence could be a guideline about how to conduct a specific produce or simply a suggestion on how to improve his current actions. It is important to take into account the concept of *ecological rationality* (Smith 2003, Berg 2014): every choice that is considered irrational, can be qualified as "ecological rational", meaning being the result of the fit between the agent's mind and his decision context. Third, the concept of "autonomy as coherence of the product of deliberation" can be considered as subjective measure, and moreover it cannot be even applied if the preferences are not clear. Finally, the concept of procedural utility is not a reliable measure used in order to assess the cost of nudging, because as any other subjective metrics it does not provide constant results in every context.

In conclusion, the objection that can be made to the Nudge Theory can be different and in many domains, but all will depend on the individual's perception of about the nudge and level of trust in the choice architect. If the choice architect is able enough to disclose the right level of information and provide a sufficient level of transparency to the public, an increase in the level of trust will follow up, decreasing the possible objection that could be made while increasing the likelihood of success.

CONCLUSIONS

The Nudge has revealed to be a powerful instrument that can be applied in a variety of domain. The possibility to influence the decision-making process for and individual by the choice architect, could help to guide him toward the best option that would not only affect the single target, but will generate welfare for the entire population. If the Nudge is incorporated within every aspect of the environment where people are required to make an actual choice, it might be beneficial because it could improve the outcomes without requiring any effort from the decision maker that might not even be aware of it. Most importantly, the nudge has been designed to influence individuals' behavior through intuitive and impulsive processes that affect their Automatic System, without affecting their knowledge, attitudes or values.

An approach that highlights not only motivation driven by economics factors but also the non-economic ones, is able to provide a better understanding of all the reasons that lie between the agent's behavior and every possible change.

The development of behavioral economics over the years, has been able to produce non-intrusive approaches that can be applied within the practices of organizations, politicians, private and public institutions of different sizes, that enables them to design the proper choice architectures in order to increase the utility that the decision maker will obtain from his choices. Nudges can be intended as a cheap and cost-effective alternative to restructuring policies that would require a limitation of the decision maker's freedom of choice. However, individual's choices are strongly affected by other people's values and beliefs. Indeed, the underlying social and cultural norms affects heavily the behavior of the individual in formal and informal settings. This means that if normative relationships, trust and shared values between individuals within the social group are aligned with the desired end promoted by the nudge, the rate of success will increase exponentially. At the same time, if there is a misalignment, the challenges that the nudge faces will be numerous and difficult to overcome.

These new approaches that focused on behavioral factors, gave more space to take into account what is the real perspective of the decision maker and what are the drivers behind his actions. Having a deeper understanding of how the human brain works and what structural flows might affect the decision-making process, it's beneficial in order to understand how to support the individuals through this process in order to give them all the possible tools for the best outcome possible. However, this influence on the decision-making process could be leveraged also

toward the opposite direction, meaning that the choice architect might be able to produce a biased result exploiting those structural flows (e.g. the cognitive biases) that affects people's reasoning. This is one of the main objections that can be made to the Nudge Theory, that is the lack assurance of a benevolent choice architect, therefore the whole process will be indented as manipulative rather that supportive.

Nudge approaches are characterized by the possibility to apply them for different issues that can be solved through a change in behavior. These issues can be related to economic incentive, personal motivation, persuasion, self-control and so on. As we have seen, Nudges can be applied in different fields. In marketing they are applied through the communication of messages that encourage desired behavior by appealing to the psychology of the individual, in Health Choices in order to influence the external environment that can foster our ability of self-control, in Finance in order to decide how and what investments alternatives are presented to the investor, and finally in Politics in order to implement practices that do not affect only the single individuals but aim at producing welfare for the overall population. These fours application represent only an small portion of the applicability of the nudge, showing that if a behavioral approach is taken in every aspect, there is the possibility to produce benefits that would affects not only one specific domain but also create compensating behaviors in other fields that would be optimal for the final result. If an individual fail to resist the temptation to eat a bag of chips in front of him, he might decide to change his mind after reading the calories that are contained written on the packaging.

The “gentle push” that is promoted by the Nudge, represents a philosophical basis on the libertarian paternalism that has its roots on the process of making people more responsible. Thus, it does not presuppose better choices, but rather an environment that will make people feel more at ease and more comfortable throughout the whole decision-making process.

Behavioral change occurs both because of the external influences that affect people's, and cognitive biases that can produced non-optimal outcomes. The change produced by an intervention based on the Nudge, should be a dynamic process that happens over time, recognizing the importance of habit, churn, context and all those elements that the individual might consider important to take into account when making a decision.

Through the analysis of the two different cases presented, Google and the World Bank, we can observe how the Nudge has become an attractive tool that is used more frequently by private and public institutions worldwide in different domains and for various purposes. This is because the Nudge allows some extraordinary advantages in terms of costs respects the results that is able to reach. Google was able to promote a healthier lifestyle for their employees not

only at work, but also at home, generating benefits for the single individuals and also for the company. A healthier employee will be more productive and the probability of representing a cost for the organization will be decreased. At the same time, the World Bank was able to implement nudges that were aimed at solving problems related to Education, Health, Finance and other major issues. This kind of problems usually requires substantial reforms and economical resources in order to be resolved. Of course, these nudges are not aimed at completely eliminate these issues, but rather alleviate them through the implementation of little policies that most of the times are not even perceived by the target population.

On the other side, even if the proportion between effects and costs produced by the nudge is highly advantageous, sometimes this tool can produce limited effects. This means that other tools can be more appealing, as bans and mandates, that would be able to generate a bigger impact. However, this kind of tools not only require major economical resources in order to be implemented, but at the same time they might produce a greater degree of opposition by the target population as they demand a restriction of their freedom of choice.

The main objective of this thesis is the understanding on how the nudge might be able a useful tool in order to influence people's decision-making process, showing what are the possible flaws behind biased choices and how it possible to implement behavioral approaches in different fields.

In conclusion, the Nudge has revealed to be undoubtedly very successful, and a further development of this field would be beneficial for many domains. It is based on giving people the maximum freedom of choice while guiding them toward the optimal choice, having just a role of a consultant for preserving their interests.

Nudges might not be the response to a major crisis, but nudges can be implemented in order to make a crisis less likely to occur and improve our everyday life.

SUMMARY

CHAPTER 1: THE NUDGE

The development of the work of psychologists such Daniel Kahneman and Amos Tversky, was able to revolutionize the traditional view of economics and lead to the spread of a new set of tools that public and private institutions implement nowadays in their everyday practices, called Behavioral Economics.

The traditional view of economics has always intended human beings as rational individuals that maximize their own utility and benefits, while minimizing their costs with relatively stable preferences. This means that the only way to manipulate human's behavior, is through wrong information or by offering some incentives. With the development of this new field that merges economics and psychology, a new theory was developed by Richard Thaler and Cass Sunstein called "The Nudge Theory". This theory became famous in 2008 with the publication of the book: "Nudge: Improving Decisions About Health, Wealth, and Happiness", and tries to explain how the decision-making process of the individual can be manipulated in order to guide the decision maker toward the most efficient choice. The Nudge Theory challenges the traditional view of economics of humans seen as Econs, meaning that they are completely rational and unbiased, but rather seen as Humans where emotions and biases can affect the final outcome of the decision-making process. In particular, Thaler and Sunstein showed how the decision-making process of an individual is the result of cognitive boundaries, biases, or habits, and how this pattern may be "nudged" toward a better option just by integrating behavioral insights in the choice architecture surrounding that behavior. This means that the physical and psychological aspects of the contexts that influence our choices can be manipulated in order to reach a preferred behavior rather than obstructing it. With the application of nudges, people's everyday choices can be influenced in a cheaper and more effective way. Nudging offers an effective tool for influencing individuals without further restricting freedom of choice or imposing mandatory obligations.

The aim of this thesis is to investigate whether it is actually possible to manipulate the decision-making process of an individual without restricting his freedom of choices and what kind of tools can be used. Moreover, it aims at analyzing if various applications of the Nudge Theory can be effective in different domains.

First of all is important to establish what is a Nudge, and as the same authors say: "A nudge is any aspect of the choice architecture that alters people's behavior in a predictable way without

forbidding any options or significantly changing their economic incentives. To count as a mere nudge, the interventions must be easy and cheap to avoid. Nudges are not mandated. Putting fruit at eye level counts as a nudge. Banning junk food does not.” (Thaler & Sunstein 2008, p.6). Moreover, it has some important structural characteristics that make him recognizable. First of all, a Nudge will always and at all costs, maintain the Freedom of Choice. It is important to outline that the final objective of a nudge is to make life simpler for the individual being nudged. They will provide some kind of support for people that is somehow not informed about a specific field or simply reduce their burdens. The second principle about nudging is Transparency. Any kind of nudge should be as transparent as possible to the public, rather than hidden and difficult to understand. The final principle that characterize nudges is the Need for Evidence and Testing. Usually the most effective nudges are a valuable source of information for the development of this fields, specifically for behavioral science, hence reflecting information about how people will respond to government initiatives (Sunstein, 2014).

Nudges can take different shapes and forms, but some of the most important ones are the default option, preselected choice made by the choice architect and considered one of the most effective tools in order to manipulate the final outcome. The nudge can consist in just a simplification process, aimed at incentivizing the participation in already existing programs. It can consist in delivering information to the decision maker that can be about social norms, in terms of what other people are doing or not, or general information about the different alternatives that he can choose. Finally, a nudge can be also a reminder, as a simple note given just to remember that an action has to be taken, or precommitment strategies.

In order to properly implement a nudge, Sunstein (2014) proposes two different approaches. Ideally, we could imagine a system where nudges are used by current officials and leaders at the highest level, where research and information could be procured by those individuals that are involved in promoting competitiveness, environmental protection, public safety and all the relevant fields needed. In the first approach proposed, officials are those in charge and have both knowledge and genuine authority in order to produce significant policies, reforms and impact. In this model, that is the one adopted in the US, officials would not engage in new research, but rather they would work with what is already known and keep building on it. The second approach suggested by Sunstein is quite different, and more similar to the one adopted by the UK. It consists in the creation of a separate new institution (e.g. the Behavioral Insight Unit) that is organized in a completely different way and has different form and sizes.

The more modest approach to this model, would require a small number of people dedicated to bringing new information and engaging in new research (let’s say 4 to 5). A more ambitious

approach would require a bigger team dedicated to different activities and research. This new institution could either be part of the government itself, or it can have an advisory function. However, even if the first approach has a higher degree of specialization, it does not exist one single model that is able to adjust to all the different necessities and nations/organizations. It is noteworthy that many have realized the effectiveness of a dedicated team, or sometimes using both approaches as complementary to each other.

The Nudge is based on the concept created by Thaler and Sunstein of Libertarian Paternalism. In particular, when they use the term Libertarian together with the word Paternalism they simply intend “liberty-preserving”. The paternalistic aspect can be identified in the claim that is legitimate for choice architects to try to influence people’s behavior in order to improve and make their lives longer, healthier and better. It is important to outline that a policy counts as paternalistic if it is selected with the aim of influencing the choice of the parties involved and make those parties better off, where this measure can be traced in a scientific and objective way, now equating revealed preference with welfare.

Game Theory can provide some useful insight on how people that are considered fully rational would behave in a bargaining situation. A famous example is the Prisoner Dilemma: Two robbers have been arrested and they are accused of a crime. They are being interrogated in separate rooms. The authorities have no witnesses, and they can only prove their involvement in the crime only if one or both of them confesses. Each prisoner is faced with the choice to cooperate with his accomplice and remain silent, or to defect and testify for the prosecution. If they both cooperate and decide to do not talk, then the authorities will be able to convict them only with smaller charges, which is 1 year in jail for each. If one decides to testify against the other and the other does not, then the one who testifies will be released and the other will get 3 years in jail. This example presents a paradox, where both robbers can minimize the total jail time that the two of them will spend only in case they decide to cooperate, doing 2 years in total, but both of them face incentives that will drive them toward different choices and they will end up with the worst total result of jail time, that is 4 Years in total.

This game, and more in general Game Theory, is based on the concept of Rationalizability, that embodies some assumptions about how players act according to their beliefs and what players know about each other. A real-life example of how the Prisoners’ Dilemma works is Cartels. In most cases all the members in a cartel if they cooperate can enrich themselves by restricting output according to previous decisions and set the market price and obtain a higher surplus. Nonetheless, each member of the cartel can be incentivized to cheat and do not cooperate with the other members, increasing personal output and obtaining higher profits.

We can observe here that the result predicted by an economic model is far distant from a real-life setting, where other influences will affect the decision-making process of the two individuals involved.

There are numerous effective tools that can be used in order to optimize choice architecture and reach the desired end just by making some simple adjustments and in a cost-effective way. As we said before, the default option is one of the most effective nudges as many times people tend to take decisions with a passive approach. This means that for reasons such as laziness, distraction or fear, individuals decide to go along the option that requires the least effort or the path of least resistance (Thaler, Sunstein & Balz, 2010). Their effectiveness is due the fact that they are unavoidable or require an active choice from the decision maker in order to proceed. A good choice architect know that individuals will make mistakes, especially humans make errors, and this is unavoidable. Therefore, a good choice architect has to be smart enough in order to make the system as much forgiving as possible to these mistakes. One of the most common mistakes made by humans is a special kind of predictable error that psychologists call a “postcompletion error” (Byrne and Bovair 1997). This concept states that once the main task is finished, people tend to forget things related to the previous steps. An example of postcompletion error is the case of an individual that forgets the credit card at the ATM machine after withdrawing the cash. The solution is called a “forcing function”, where in order to accomplish a desire, another step must first be taken. If the individual wants to withdraw the money, he first has to take the credit card (after inserting the pin) in order to take the cash.

The best way to know that an individual has to know if his performance has been good or not, is just through feedback. This feedback has to be relatively close to the end of the action/performance and has to be specific. If the individual does not receive a feedback, he won't know if he did a poor or a good job. The feedback tends to be more effective if it is given through warnings, Nonetheless, the warnings don't need to be too many, otherwise they will fall in the “boy who cried wolf” problem, where if they are too many for not important concerns for the individual, they will be just ignored with the risk of ignoring also the important ones. The warning is usually given if something is being done incorrectly or things are about to go wrong.

Depending on the complexity of the choice people will adopt different strategies, but sometimes this process won't be so easy as it looks. A good system of choice architecture can help people to have a better “mapping” of the different options, hence the selection of the final choice will make them better off. The best possible way to do this is to make the information available as more comprehensible as possible to the decision maker, by transforming complex

and numerical information into units of knowledge that are more easily transferable and understandable.

Standard economic theory states that if the demand for a product increases, manufacturers will increase their production adjusting their supply, that will go up as well, setting the market price. Choice architects must be able to design their structure keeping in mind possible movements that the market can follow and the different incentives that producers and consumers have. After making a *una tantum* payment, people tend to forget about that initial expenditure, meanwhile if the cost are more frequent, they tend to be considered more and more salient in people's mind. Knowing this, the ability of a good choice architect will be to smartly direct the focus on the saliency of a cost respect to another, therefore being able to affect the final outcome of the decision by the individual.

CHAPTER 2: INFLUENCES IN THE DECISION-MAKING PROCESS

A systematic error that affects our decision-making process is called a “cognitive bias”. These errors are able to influence individuals' decisions and judgments, guiding them toward possible irrational outcomes. Because of this process, biases can influence how individuals see the world around them and produce outcomes that would not be considered in other settings. This type of error in thinking occur because people sometimes are not able to process information that comes from the world around them in the proper way, therefore they can make mistakes. The human brain has the tendency to simplify complex problem in order to easily understand them, but this process rely on rules of thumb that are not appropriate for every situation, possibly leading to wrong outcomes. Therefore, these rules of thumb are the reason behind the existence of cognitive bias and are called heuristics, as many times people can't consider every possible option when making a decision, they tend to focus on the most important ones using their own judgment and potentially choosing not optimally.

In order to properly understand how the decision-making process can be possibly influenced, we first need to understand how it works. Daniel Kahneman has proposed a model of how the human brain works during the decision-making process that is based on the interaction of two different Systems within our brain. System 1, that operates automatically and very quickly, as individuals don't have control and no sense of it, and System 2, which allocates attentions to the effortful demand activities that demands it, including complex computations. The interaction between the two Systems is a continuous process that can't be interrupted. System 1 produces all the stimulus and suggestions for System 2, such as impressions, intuitions and feelings. All these stimuli are elaborated by System 2, and if he decides to elaborate them,

impressions tend to become beliefs and impulses turn into voluntary actions. All the actions that are produced by System 2 are originated from System 1, and if System 1 has some difficulties, System 2 intervenes for more support and for a deeper level of analysis. However, System 1 is subject to some systematic errors that is prone to make, due his low level of analytical capabilities. Moreover, another limitation of System 1 is that it cannot be turned off, meaning that you can control yourself from understanding a basic sentence in your own language or the result of a basic computation, unless your attention is focused somewhere else. During the decision-making process of an individual that has to assess the probability of an event that will consequently determine the outcome of his actions, there are several biases or influences that can guide the path toward a specific decision rather than another. The Anchoring bias occurs when people tend to rely too much on pre-existing information or the first information they find when they have to make a decision. When an individual has to take a decision, but he does not know the answer, he will start with some “anchor”, meaning a relatable example, and then adjust the answer toward the direction that he thinks is more correct based on the thought process (Thaler & Sunstein, 2008). Also, most of the time people tend to assess the probability of a particular event just by trying to remember recent and relatable example that comes to mind (Tversky & Kahneman, 1974). This process is called Availability effect and is a useful clue for assessing frequency or probability. Finally, another important bias is called Representativeness, and it happens when they have to assess the probability that a certain element A can belong to a certain group B. In particular, the System 2 is stimulated in order to evaluate how similar is A to their image or stereotype of B is. When A is very representative of B, the probability that A belongs to B is very high and vice versa.

These cognitive errors can be also stimulated actively by a third agent, that might be able to frame the sentence in a way that could lead the decision maker toward a specific direction. The Framing effect occurs whenever the final decision made by an individual can be influenced by how two “logically equivalent” statements are framed.

According to Standard Economic Theory, our Willingness to Pay (WTP), meaning the maximum amount that we are willing to pay for a unit of a good, should be equal to our Willingness to Accept (WTA), the maximum amount that we are willing to accept in order to sell a unit of a good that we possess. However, in real life this does not happen almost never. And Thaler called this pattern, where people tend to demand much more to give up an object than they would be willing to pay for acquire it, the Endowment Effect (Kahneman, Knetsch, Thaler, 1991). The Endowment effect does not enhance the appeal of the good, but rather increases the pain of giving it up. This is because when loss aversion is involved in the process,

an individual will have a greater pain from his losses than the benefits from his gains. Loss aversion can also influence our behavior in the immediate future. In particular, our behavior will be driven by two different strengths: the first one is that we are driven more to avoid losses rather than achieving gains. An the second, is that sometimes the reference point, intended as the status quo, can become a specific goal in the future where not achieving it is a loss and exceeding it is a gain (Kahneman, 2011).

Sometimes people tend to do some actions without being aware of the whole process, and this is because they incorporate them within their routine and they create habits. The habit, even if it looks something automatic and simple, comprehends different steps within our brain, more specifically is a three-step loop. First of all, the process starts with a cue, an external trigger from the outside world that gives to our brain the information elaborated from the automatic system and which specific habit to use. The second step is the routine, that is the physical action or just emotional and mental. The final step is the reward, that our brain perceives as the outcome and then decides if it is worth to remember this whole process again in the future (Duhigg, 2012) . Habits are encoded within our self and our brain, so once learned we can't forget them. That means that they can be leveraged in order to alter the outcome of the decision-making process just by changing the variables between the 3 steps.

One of the main problems in decision making that most people struggle with is related to self-control. Once a temptation is in front of their eyes, they face serious problems into making decision that could be considered "bad" or "good" respect their initial plan and commitment. More specifically, these problems arise because we tend to underestimate the power of external influences and how they can affect our future behavior. This effect is called the hot-cold empathy gap (Lowenstein, 1996), and it says that when we are in a cold state, we do not really comprehend how much our desires and behaviors will be affected under a "hot state" and the influence of arousals. Thaler proposed a model that tries to explain Self Control, and it's called the Planner and the Doer Mechanism. An individual at any point in time will be composed by the interaction between two different agents: the Planner, that has good intentions and cares about the action that will be taken in the future, and the Doer, who has short term goals and seeks for immediate satisfaction Every doer wants to maximize his short-term utility and enjoy the present without considering possible repercussion on the future doers. Conversely, the Planner, that is the principal, is completely altruistic and wants to safeguard the utility of the future doers. Self-control can also be attributed to the temporal asymmetry between cost and benefits. This phenomenon is called mental accounting and can create two different accounting methods: the first one, is related to the so-called Investment Goods, that are those goods where

the costs arise immediately meanwhile the benefits are delayed in time. The second accounting method is instead related to the Sinful Goods, where the benefits will be immediate, and the costs are delayed in time. Depending on which accounting method is used, different actions by the decision maker will follow.

People tend to make different decision when they evaluate their option separately or in isolation. This effect is called preference reversal, and happens when tend to prefer A to B if evaluated singularly, but when they evaluate the two of them jointly, they prefer B to A. One possible explanation is given by Hsee (1996, 2000), and it's called evaluability bias. This term is used in psychology literature and indicates a lack of adequate information which might be costly to obtain and at the same time people do not make an effort for seeking it even if free. People's intentions of buying a specific product might be influenced if their attention is focused on the opportunity cost of that particular decision. More specifically, joint evaluation is related to the concept of opportunity cost neglect, where people might be willing to pay a certain amount X€ for e certain product, but not if they are focused on other things for which they would pay that same amount X€ (Fredrick et al., 2009). Another related concept is called present bias (O'Donoghue and Rabin, 1999), where the present is easier to evaluate, meanwhile the future is full of unknown events and information. Concluding, joint and single evaluation can lead to completely different results, but this doesn't mean that one producer is better than the other. Joint evaluation might make salient a characteristic that might be not in actual experience, and single evaluation could narrow too much the perspective without having a background and a comparison for the final choice. This means that hypothetically, these two procedures represent tools that a choice architect can use in order to influence the final choice of the individual.

CHAPTER 3: APPLICATIONS OF THE NUDGE

One of the main characteristics of the nudge is the possibility to obtain his benefits in a wide range of domains. The assumption that the choice architect is a benevolent agent is not always true, as he might use the efficacy of the nudge in order to push people toward decision that might increase only his personal interest and in the worst cases inflict damages to the decision maker. However, given the fact that we are Humans and not Econs, we make mistakes, and these mistakes could represent a possible opportunity of extra benefits for someone else.

Companies have learned how to translate the effectiveness of the power of the Nudge within their practices in order to affect their consumer's behavior. Through Nudge Marketing,

companies communicate messages that encourage a specific desired behavior by appealing to the psychology of the individual. All the stimulus presented to the consumer, are intended as possibilities to be exploited especially if related to the possibility of savings. The key idea behind, is that through nudge marketing the producer wants to trigger the emotions of the consumer, which will guide actions through the System 1, which is the Automatic System in our brain. Nudge marketing can be very effective both in physical stores and online websites for boosting sales. It is not only is a useful tool for seller, but at the same time it helps customers to make the whole customer experience more fluent and less stressful. It's not about tricking the customer into making a specific decision, but rather help them to make a choice that reflect most their needs. The effectiveness of the nudge in such contexts relies on the fact the human brain prefers convenience and speed over rationality, which is perceived as more effort expending. A great way to create an effective nudge is labelling products, in particular giving some specific information to the customer that could be either a functional benefit or a psychological trigger. Another great tool that is used by almost all companies nowadays is showing review from other customers that have already bought and tried that specific product. These reviews help the shopper to better evaluate the product and enhance the buying experience. People sometimes feel the need to know how other peers have experienced that product and they might need their approval in order to proceed. The final process is the checkout, and the nudge can be useful in order to avoid the possibility that the customer do not actually proceed with the purchase of the product. It is important this stage has to transmit reliability to the customer, giving him different options for delivery and loyalty programs. An example is Amazon, that has introduced the "Buy with one click" button, alleviating the possible "pain" that paying would produce into the customer's mind.

One of the most common problems that people face related to their decision making, is about their food habits. Once a temptation is in front of their eyes, self-control issues might arise. This is why the application of the nudge in order to promote healthy behaviors might be beneficial. The "food environment" that we live in has a major influence on our food choices and therefore our health. Most of our dietary habits are the direct consequence of our actions and decisions that create our routines and habits, meaning based on our Automatic System, which requires almost no effort and rationality. In this domain, the choice architecture will reflect the choices that will be made under possible influences from the external environment, such as food positioning and impact that could trigger some specific behavior in the individual's mind. This means that an changing the elements within the food environment can lead to an improvement of these overall dietary choices, leading to weight changes and

promotion of a healthier lifestyle (Bucher, T., Collins, C., Rollo, M., McCaffrey, T., De Vlieger, N., Van der Bend, D., Perez-Cueto, F. ; 2016). Those changes in choice architecture can mean a provision of information (e.g. stimulating our Rational System), changes in the physical environment (e.g. light, placement etc.), change in the default option (e.g. serving sizes) or focus on social norms and comparison with other peers. In general terms, nudges in this field can be divided in three broad areas: cognitive, affective and behavioral (Cadario & Chandon, 2019). Cognitive nudges are characterized by the fact that they provide information to the consumer that can help him to make better choices. Affective nudges have the objective to impact on the consumer emotions that could make the healthy food look more exciting and appealing and the unhealthy ones as the “bad choice”. Finally, behavioral nudges try to change people’s behavior without trying to change what they actually think or what they want. However, the nudge in dietary and healthy promotion behaviors is a tool that can work as a support to the willingness of the individual, that is already committed to eat healthier options. Indeed, the desired effect will be reached only if there is a ground basis for the behavior that will consist in the motivation and incentive of the decision maker that will drive his “good choices”. The nudge in this case will serve as boost, increasing at the same time the incentive for healthy choices and reducing the likelihood of unhealthy ones.

The main objective of the nudge is to guide people toward decision that would result in an overall better situation in terms of welfare. Obviously, this welfare could be in terms of money, and this is why the nudge is a particularly fascinating concepts in the finance world. According to Johnson (2012), there two different categories of tools that can be used for planning the choice architecture, that are structuring the choice task and describing the choice options. Structuring the choice task means deciding what alternatives are presented to the individual investor, meanwhile describing the choice options means how these options are presented, in terms of attributes and design. In general, financial markets present some structural characteristics that enhance behaviors driven by heuristics and biases. This is because markets are made by many financial instruments that are very difficult to understand for people that does not possess technical knowledge. These products also involve a trade-off between the present and the future, challenging the self-control of people, which will make short term decisions prevail over the long-term ones. Finally, some of these financial decisions do not allow people to learn from their past mistakes, as they are taken very infrequently. The financial advisor could use his technical knowledge and skills to nudge the clients toward a specific direction by presenting the different option in some specific and preplanned ways. This is indeed one of the limitations of the nudge, that is the fact that the assumption of a benevolent

choice architect does not always hold. People in financial settings suffer from overconfidence bias, where they tend to be more confident about their predictions in fields where they are self-declared expertise, with their predictive ability stable over time (Heath & Tversky, 1991). Therefore, a good financial advisor would be able to nudge them toward a rational decision just by providing the right kind of information and investment options.

Since the early 2000s governments all around the world have started to implement psychological and behavioral factors to increase the efficacy of their policies and regulations. This is also due the fact that the nudge is a tool particularly suitable for policymakers, in line with their ethical interests of improving people lives and their technical capabilities for the implementation process. The publication of the book in 2008 by Richard Thaler and Cass Sunstein had a major impact on increasing the awareness of this tool, therefore various governments decided to give always more space to behavioral economics within their practices. Cass Sunstein obtained an influential position within the White House in 2009, being the direct personal consultant of the president Barack Obama and intervening on a range of regulatory issues through the use of executive orders. Soon also the UK decided to follow this model, creating in 2010 the Behavioral Inside Team (BIT), that used small-scale trials to test the efficacy of possible policy interventions. Even if the application of behavioral approaches in politics has been highly effective, the application of nudges from the government obviously can involve some risks, as someone can claim to feel uncomfortable with some specific approach, because perceived as overly paternalistic if not manipulative. Moreover as we said, the assumption that the choice architect is by guided ethic principles is not always true, as he could have a conflict of interests. But as the same authors Thaler and Sunstein say in their books, framing is an inevitable process, and there is always someone that has to take a decision for someone else, of course always trying to look for the good of the whole society.

Even if it requires continuous research, the Nudge is an extremely versatile tool that can produce highly effective result with extremely low costs in a variety of domains. Although the different applications, the effectiveness in a domain does not presuppose the same level of efficacy or success in another area. The costs of a continuous monitoring of the policies applied and the purposes that are behind should be taken into account. But, if the choice architecture is well designed and has a clear purpose that will serve for the good of the community, there are no limits to the possible applications for this simple but extremely powerful tool.

CHAPTER 4: CASE STUDY

CASE A: Google is one of the most recognized companies all over the world, famous for its web search engine, that is the most used on the World Wide Web and with more than 98 thousand employees all over the world. Google is famous for its innovative practices that are applied within the same company and outside through the products and services delivered to their customers. In particular, Google has a special care for his employees, as they think that the human capital is one of their most valuable assets. They try to help them in simple and low-cost ways, especially regarding choices that might affect their health. In countries like the U.S. the effects of poor health and obesity costs \$225 billion every year according to the Centers for Disease Control, and this number increases over time. The Google Food Team and the Yale Center for Customer Insight decided to work together in order to study how to improve the health choice of their employees through behavioral economics. After a series of small experiments, they identified a series of findings that can help to nudge their employees toward the desired behaviors. In particular, they based their policy implementation through four Ps of behavioral change, that are: Process, Persuasion, Possibilities, Person. Regarding the Process that they decided to apply, they based their approach on small nudges within the choice architecture, represented by the presentation of the different available options. The healthier choices were those that were both more visible and easier to reach, meanwhile the unhealthy ones were less visible and harder to reach. In terms of persuasion, the main objective of the policies implemented was to make healthy options more appealing than unhealthy ones, through disclosure of information and message delivery. In particular, the tools that were used were framing and the leveraging of social norms, that has the aim to be as less invasive as possible at the lowest cost. The key was communicating the right message at the right time and in the right way, in order to maximize the possibilities that the target will receive and elaborate this information. Regarding the third factor that is Possibilities, is referred to the set of option that are presented to the decision maker. The key underlying assumption is that freedom of choice always needs to be maintained thought the whole process, otherwise the decision maker could experience negative reactions against any kind of restrictions that could outweigh the possible benefits. Therefore, eliminating all the unhealthy options would not be convenient as the employees could put in practice compensating behaviors or either deciding to bring their own food. The best solution would be reducing the number of unhealthy options or rather make them less available and difficult to reach. Finally, their last factor was Person, and in particular how you can influence behavior across different contexts and over time, meaning promoting the same behavior not only in the work environment but also at home. Applying behavior insight in the corporate context, evidence showed how Google was able not only to reduce their

cost and increase their efficiency, but especially to take care of their most valuable asset, their own employees, resulting in an overall increase of welfare for all the agents involved.

CASE B: The World Bank is one of the most important international organization that decided to adopt an approach based on behavioral economics and the nudge. More specifically, they decided to release in December 2014, a report called “Mind, Society and Behavior”, that represented the manifesto for the new policy of action that they were about to embrace in terms of research and intervention for the whole institution. The World Bank decided to use large amounts of data gathered through the years and create a new radical approach that served as a base for the development of the organization based on behavioral insights. The Mind, Behavior, and Development Unit (eMBeD), that is the actual World Bank’s behavioral science team, has the objective to work in collaboration with other projects teams, governments and other possible partners in order to find possible methodologies for interventions based on behavioral approaches. Much effort has been given to the Education area, as in the case of Peru, where thanks to a collaboration of the World Bank and the Peruvian government, they reframed the beliefs of middle-school students by showing them that intelligence is malleable. Another major area of intervention is related to Health and Wellbeing. A project conducted in Haiti, demonstrated how behavioral economics can be used in order to nudge pregnant women to attend prenatal care. Another similar project was conducted in Brazil, in order to promote the treatment of tuberculosis in Rio de Janeiro’s slums with the creation of specific call centers aimed at providing support for the patients. Another area where the World Bank is working on is Financial Inclusion, in particular a project has been conducted in Tanzania, where thanks to the partnership with a local wireless service provider, they encouraged low-income individuals to save more using mobile money products. These few projects represent only a small summary of all the important and thoughtful activities that the World Bank is conducting, but they are able to show the high impact that an approach based on a behavioral perspective can produce at extremely low costs.

CHAPTER 5: LIMITATIONS

As Nudges tend to influence the decision-making process of the individual, some objections might arise in terms of ethical principles. In particular, according to Sunstein (2017) the first objection that can be made is that the nudge is an insult to human agency. In particular, the nudge does not respect people as they are not treated as humans but rather as objects in a very

distant and abstract way, without a letting people the possibility to control (Waldron, 2014). This objection does not find a proper validation, as the main foundation of the nudge is to preserve freedom of choice, meaning the respect of people's agency, giving them the possibility to choose what they prefer. The second objection is that nudges are based on high trust on the government by their own citizens, and this is not always the case as some conflict of interest might emerge. However, it is worth to consider that possible misconduct by politicians and lack of information disclosed to the public should not be the main concern, as people should be worried more about possible coercions and direct modification of the actual regulation rather than the supposed "manipulation" that a nudge could produce. The third objection is that nudges, differently to mandates and bans, are not transparent as they might affect people and they might not be even aware of it (Glaeser, 2006). This objection could be considered partially true, as sometimes people take decision without being aware of having been guided toward a specific direction. But in reality, what many nudges do, is that they simply provide more information to the decision maker allowing him to make a better decision. The fourth objection is that nudges are manipulative. Barnhill (2014) and Sunstein (2016) define an action manipulative when subverts people's capacity for rational deliberation. If manipulation is intended from this perspective, nudges do not qualify as manipulative even if they influence people's decision-making process, as they simply provide all the possible tools for a better outcome for the decision maker which is always free to take the option that he prefers. The final objection that can be made about nudges is the limited kind of problems that they can embrace in order to find a solution. The main preoccupations of governments officials are related to poverty, hunger, unemployment, corruption and so on. This kind of problems can be alleviated only with a minimal impact using nudging if not at all. This shows how in some situation, the freedom of choice might not work properly and how mandates and bans could be more suitable. Every form of nudging will be completely null if people will put in practice compensating behaviors that neutralize the overall effect or if they have strong preferences that will heavily influence their decision-making process. The compensating behavior can be seen as a case of strong antecedent preferences, that reflect and illusionary success of the nudge in terms of the choice that is taken by the decision maker. It is undeniable that nudges have gained an unprecedented support in very different domains, and its success is based on actual evidence. However, this support might decrease in the moment there is a lack of trust toward the choice architects by the target population. In particular, if the outcomes of those nudges produce loss of money, health or affects their overall welfare, they will be considered against their own values and therefore rejected.

CONCLUSIONS

In conclusion, the “gentle push” that is promoted by the Nudge, represents a philosophical basis on the libertarian paternalism that has its roots on the process of making people more responsible. Thus, it does not presuppose better choices, but rather an environment that will make people feel more at ease and more comfortable throughout the whole decision-making process. An approach that highlights not only motivation driven by economics factors but also the non-economic ones, is able to provide a better understanding of all the reasons that lie between agent’s behavior and every possible change. These new approaches that focused on behavioral factors, gave more space to take into account what is the real perspective of the decision maker and what are the drivers behind his actions. Through the analysis of the two different cases presented, Google and the World Bank, we can observe how the Nudge has become an attractive tool that is used more frequently by private and public institutions worldwide in different domains and for various purposes. This is because the Nudge allows some extraordinary advantages in terms of costs respects the results that is able to reach. Google was able to promote a healthier lifestyle for their employees not only at work, but also at home, generating benefits for the single individuals and also for the company. At the same time, the World Bank was able to implement nudges that were aimed at solving problems related to Education, Health, Finance and other major issues. This kind of problems usually requires substantial reforms and economical resources in order to be resolved. Of course, these nudges are not aimed at completely eliminate these issues, but rather alleviate them through the implementation of little policies that most of the times are not even perceived by the target population. On the other side, even if the proportion between effects and costs produced by the nudge is highly advantageous, sometimes this tool can produce limited effects. This means that other tools can be more appealing, as bans and mandates, that would be able to generate a bigger impact. However, this kind of tools not only require major economical resources in order to be implemented, but at the same time they might produce a greater degree of opposition by the target population as they demand a restriction of the freedom of choice.

The main objective of this thesis is the understanding on how the nudge might be able to influence people’s willingness, showing what are the possible flaws behind people biased choices, and how it possible to implement behavioral approaches in different fields. Nudges might not be the response to a major crisis, but nudges can be implemented in order to make a crisis less likely to occur and improve our everyday life.

References

- Abdukadirov, Sherzod and Marlow, Michael L., *Can Behavioral Economics Combat Obesity?* (July 9, 2012). *Regulation*, Vol. 35, No. 2, Summer 2012.
also how matters. Journal of Institutional and Theoretical Economics 160: 377-401.
- Arno A. & Thomas S. (2016). *The efficacy of nudge theory strategies in influencing adult dietary behaviour: a systematic review and meta-analysis. BMC Public Health*
- Barnhill, Anne. 2014. *What is Manipulation?* in *Manipulation: Theory and Practice* 50, 72 (Christian Coons and Michael Weber eds.).
- Benartzi, S., 2017, *How digital tools and behavioral economics will save retirement.*
Available at: <https://hbr.org/2017/12/how-digital-tools-and-behavioral-economics-will-save-retirement>.
- Berg, N. 2014. *The consistency and ecological rationality approaches to normative bounded*
- Binmore, K. 2008. *Rational decisions in large words. Annales d'Economie et de Statistique* 86: 25-41.
- Bovens, L. 2009. *The ethics of nudge. In Preference change: Approaches from philosophy,*
Bucher, T., Collins, C., Rollo, M., McCaffrey, T., De Vlieger, N., Van der Bend, D., . . .
- Perez-Cueto, F. (2016). *Nudging consumers towards healthier choices: A systematic review of positional influences on food choice. British Journal of Nutrition*, 115(12), 2252-2263
- Burgess, A. (2012). 'Nudging' Healthy Lifestyles: The UK Experiments with the Behavioural Alternative to Regulation and the Market. *European Journal of Risk Regulation*, 3(1), 3-16.
- Byrne, Michael & Org, Byrne@acm. (2008). *Preventing Postcompletion Errors: How Much Cue Is Enough?*.
- Cass R. Sunstein, 2018. "Misconceptions about nudges," *Journal of Behavioral Economics for Policy, Society for the Advancement of Behavioral Economics (SABE)*, vol. 2(1), pages 61-67, March.
- Cass R. Sunstein, *Nudging: A Very Short Guide*, 37 *J. Consumer Pol'y* 583 (2014).
- Cass Sunstein & Richard Thaler, *Libertarian Paternalism*, 93 *Am. Econ. Rev.* 175 (2003).
- Cornwell, J. F. M., & Krantz, D. H. (2014). *Public policy for thee, but not for me: Varying the grammatical person of public policy justifications influences their support. Judgment and Decision Making*, 9(5), 433-444.
- DeBondt, Werner F.M. and Thaler, Richard H., *Financial Decision-Making in Markets and Firms: A Behavioral Perspective* (June 1994). NBER Working Paper No. w4777.

Duhigg, Charles. (2012) *The power of habit :why we do what we do in life and business* New York : Random House, economics and psychology, ed. T. Grüne-Yanoff and S.O. Hansson, 207-220. Berlin:

Frederick S et al. (2009) *Opportunity cost neglect*. *Journal of Consumer Research* 36(4): 553– 561.

Frey, B.S., Benz, M. and A. Stutzer. 2004. *Introducing procedural utility: Not only what, but* Gigerenzer, G., and R. Selten (eds.). 2001. *Bounded rationality: the adaptive toolbox*. Cambridge, MA: MIT Press.

Glaeser, Edward. 2006. *Paternalism and Policy*. *University of Chicago Law Review* 73: 133-56.

Hausman, D.M. and B. Welsh. 2010. *Debate: to nudge or not to nudge?* *Journal of Political Hsee CK (1996) The evaluability hypothesis: an explanation for preference reversals between joint and separate evaluations of alternatives*. *Organizational Behavior & Human Decision Processes* 67(3): 247–257.

Hsee CK (2000) *Attribute evaluability: its implications for joint-separate evaluation reversals and beyond*. In: Kahneman D and Tversky A (eds) *Choices, Values, and Frames*. New York: Cambridge University Press, pp. 543–565.

IHE and ICF. 2018. *Enquête Mortalité, Morbidité et Utilisation des Services (EMMUS-VI 2016-2017)*. Pétion-Ville, Haïti, et Rockville, Maryland, USA: Institut Haïtien de l'Enfance (IHE) et ICF.

Investopedia. 2020. *Prisoner's Dilemma Definition*. [online] Available at: <<https://www.investopedia.com/terms/p/prisoners-dilemma.asp>>

Jhon P, Smith G., Stoker G. (2009). *Nudge Nudge, Think Think: Two Strategies for Changing Civic Behaviour*

Johnson, E., S. Shu, B. Dellaert, C. Fox, D. Goldstein, G. H€aubl, R. Larrick, J. Payne, E. Peters, D. Schkade, B. Wansink, and E. Weber, 2012, *Beyond nudges: tools of a choice architecture*, *Marketing Letters* 23, 487–504.

Journal of Behavioral Decision Making 26(2): 109–117. doi:10.1002/bdm.764.
Kahneman D., (2012). *Thinking, fast and slow*. London: Penguin.

Kahneman, Daniel, Jack L. Knetsch, and Richard H. Thaler. 1991. "Anomalies: The Endowment Effect, Loss Aversion, and Status Quo Bias." *Journal of Economic Perspectives*, 5 (1): 193-206.

Keating, S., 2020. *The Nation That Thrived By 'Nudging' Its Population*. [online] Bbc.com. Available at: <<https://www.bbc.com/future/article/20180220-the-nation-that-thrived-by-nudging-its-population>>

Kling JR et al. (2012) *Comparison friction: experimental evidence from Medicare drug plans*. *Quarterly Journal of Economics* 127(1): 199–236.

Kühberger, A., and P. Gragl. 2013. *Choice, rating, and ranking: framing effects with different response modes.*

Le Grand, J. and B. New. 2015. *Government Paternalism.* Princeton: Princeton University
Loewenstein, George, 1996. "Out of Control: Visceral Influences on Behavior,"
Organizational Behavior and Human Decision Processes, Elsevier, vol. 65(3), pages 272-292, March.

McKenzie, C.R.M., and J.D. Nelson. 2003. *What a speaker's choice of frame reveals: reference points, frame selection, and framing effects.* *Psychonomic Bulletin and Review* 10: 596–602. doi:10.3758/BF03196520.

McKenzie, C.R.M., M.J. Liersch, and S.R. Finkelstein. 2006. *Recommendations implicit in policy defaults.*

Moxey, A., D. O'Connell, P. McGettigan, and D. Henry. 2003. *Describing treatment effects to patients: how they are expressed makes a difference.* *Journal of General Internal Medicine* 18: 948–959. doi:10.1046/j.

O'Donoghue T and Rabin R (1999) *Doing it now or later.* *American Economic Review* 89(1): 103–124. *Philosophy* 18: 123-136. *Press. Psychological Science* 17: 414–420.

Raihani, Nichola. (2013). *Nudge politics: Efficacy and ethics.* *Frontiers in psychology rationality.* *Journal of Economic Methodology* 21: 375-395.

Rebonato, Riccardo (2012). *Taking Liberties.* London: Palgrave. *Review* 93: 465-508.

Roani, R., (2020). *Il Nudge Marketing Usa La Potenza Del Neuromarketing Con Gentilezza.* [online] ARvis.it Agenzia SEO e Web Marketing. Available at: <<https://www.arvis.it/nudge-marketing-gentile/>>

Romain Cadario, Pierre Chandon (2019) *Which Healthy Eating Nudges Work Best? A Meta-Analysis of Field Experiments.* *Marketing Science*

Samuelson, William, and Richard Zeckhauser, "Status Quo Bias in Decision Making," *Journal of Rzsk cind C'ncertaznt*, 1988, 1, 7-59.

Schubert, Christian, *On the Ethics of Public Nudging: Autonomy and Agency* (October 12, 2015).

Shafir, Eldar and Thaler, Richard H.,(2006) *Invest Now, Drink Later, Spend Never: The Mental Accounting of Delayed Consumption*

Smith, V. 2003. *Constructivist and ecological rationality in economics.* *American Economic Springer.*

Sunstein, C.R. 2013. *The Storrs lectures: behavioral economics and paternalism.* *Yale Law Journal* 122(7):

- Sunstein, Cass R. and Lucia Reisch (2016). *The Economics of Nudge* (four volumes). Routledge
- Sunstein, Cass R., *Misconceptions About Nudges* (September 6, 2017). Available at SSRN: <https://ssrn.com/abstract=3033101> or <http://dx.doi.org/10.2139/ssrn.3033101>
- Sunstein, Cass R., *On Preferring A to B, While Also Preferring B to A* (March 21, 2018). Forthcoming, *Rationality and Society*; Harvard Public Law Working Paper No. 18-13.
- Thaler, R. (1985). "Mental Accounting and Consumer Choice." *Marketing Science* 4(3): 199-214.
- Thaler, R., 1999. *Mental accounting matters*. *Journal of Behavioral Decision Making*, Vol. 12:183-206.
- Thaler, R.H. (2016). *Misbehaving*. Penguin Books.
- Thaler, R.H. and Sunstein, C.R. (2009). *Nudge: improving decisions about health, wealth, and happiness*. New York. N.Y.: Penguin Books.
- Thaler, R.H., and C.R. Sunstein. 2003. *Libertarian paternalism*. *American Economic Review* 93(2): 175–179.
- Thaler, Richard H. and Sunstein, Cass R. and Balz, John P., *Choice Architecture* (April 2, 2010).
- Tversky, A., and D. Kahneman. 1986. *Rational choice and the framing of decisions*. *The Journal of Business* 59(4): S251–S278.
- Tversky, Amos and Daniel Kahneman. "Judgment under Uncertainty: Heuristics and Biases." *Science* 185 4157 (1974): 1124-31 .
- Tversky, Amos. "Elimination by Aspects: A Theory of Choice." *Psychological Review*
- Verywell Mind. 2020. *How Cognitive Biases Influence How You Think And Act*. [online] Available at: <<https://www.verywellmind.com/what-is-a-cognitive-bias-2794963>> [Accessed 24 May 2020].
- Verywell Mind. 2020. *How Heuristics Help You Make Quick Decisions Or Biases*. [online] Available at: <<https://www.verywellmind.com/what-is-a-heuristic-2795235>>
- Vicente, Kim J. *The Human Factor: Revolutionizing the Way People Live with Technology*. New York: Routledge, 2006.
- Waldron, Jeremy. 2014. *It's All For Your Own Good*, *New York Review of Books*
- Watson, Joel. "Strategy: An Introduction to Game Theory." (2001).
- Weiyi Cai (2009). *Nudging the financial market? A review of the nudge theory*, Charles Sturt University Melbourne Study Group Centre, Melbourne, VIC, Australia

World Bank. 2017. Better spending, better care: A look at Haiti's health Financing. Washington D.C.: World Bank.

World Bank. 2018. How to Encourage People to Save Money (English). eMBeD brief. Washington, D.C. : World Bank Group.

World Bank. 2018. Improving Student Outcomes for Only Twenty Cents (English). eMBeD brief. Washington, D.C. : World Bank Group.

World Bank. 2019. How Behavioral Science can Nudge Pregnant Women to Attend Prenatal Care in Haiti (English). eMBeD brief. Washington, D.C. : World Bank Group.