



Norwegian University
of Life Sciences

Master's Thesis 2020 30 ECTS
School of Economics and Business

When consumers fumble in the dark - A study of choice architecture in online markets

Mats Eng Grønbekk
Master of Science in Economics

When consumers fumble in the dark – A study of choice architecture in online markets

Mats Eng Grønbekk

May 29. 2020

Abstract

Nudging has in recent years established itself as a useful tool for influencing people's behaviour and is today widely used by governments around the world. Although the use of government nudging has grown sharply in recent times, nudging as a measure has long been used by commercial agents. The most significant difference between government and commercial agents when it comes to nudging, is their underlying intentions. While the government wants to improve the lives of its citizens, the commercial agent usually put profits before other factors. Considering that commercial agents who now operate digitally have more tools available than ever before which they can use to nudge, implies that they have more opportunities to influence consumers.

The purpose of this study is to examine how online retailers use choice architecture and knowledge about consumer behaviour to nudge their customers. The problem is mainly answered through a qualitative content analysis of three large Norwegian webstores conducted in real time. The qualitative content analysis is complemented by a quantitative analysis of the results. The literature for the study is based on theories of purchase behaviour, limited rationality, and choice architecture.

The results show that webstores' use of choice architecture is complex. Some types of choice architecture are more common than others, such as measures that simplify product information and the choice structure. Other measures however are less common, such as e.g. the use of decision-making tools in the form of comparison tools. On a general basis, the study found that webstores where the products have a greater degree of complexity also use more choice architecture. This suggests that these webstores are doing more to simplify the decision process for their customers. In addition, the results showed that two types of choice architecture are mainly used: the one that aims to simplify the decision process (good nudges) and the one whose purpose is only to increase the profits of the webstores (bad nudges).

Essentially, the webstores make use of good nudges which aim to simplify the decision process for the customers, while at the same time leading to increased profits for the retailer. Nevertheless, there is also a significant use of bad nudges, which only benefits the retailer. Considering that digital tools are becoming more and more sophisticated as time goes on, my recommendation is that consumer authorities should keep a close eye on online markets in the future. In doing so, they can ensure that marketing legislation keeps pace with changes in the market and ensure that consumers are not exploited excessively.

Sammendrag

«Dulding» har de senere årene etablert seg som et nyttig hjelpemiddel for å påvirke folks atferd, og benyttes i dag flittig av myndigheter verden over. På tross av at bruken blant myndigheter har vokst kraftig i nyere tid, har dulding lenge vært anvendt av kommersielle aktører. Den største forskjellen på myndigheter og kommersielle aktører når det kommer til dulding, er de bakenforliggende intensjonene. Mens myndighetene ønsker å forbedre folks liv, setter de kommersielle aktørene som regel profitt foran andre faktorer. Gitt at kommersielle aktører som i dag opererer digitalt har flere verktøy tilgjengelig enn tidligere som de kan bruke til dulding, åpner dette for enda flere muligheter til kundepåvirkning.

Formålet med denne studien er å kartlegge hvordan nettbutikker bruker valgarkitektur og kunnskap om forbrukeratferd til å dulte kundene sine. Problemstillingen er i hovedsak besvart gjennom en kvalitativ innholdsanalyse av tre store norske nettbutikker utført i sanntid. Den kvalitative innholdsanalysen suppleres av en kvantitativ analyse av resultatene. Litteraturgrunnlaget for studien baserer seg på teorier om kjøpsatferd, begrenset rasjonalitet og valgarkitektur.

Resultatene viser at nettbutikkens bruk av valgarkitektur er sammensatt. Noen typer valgarkitektur er vanligere enn andre, som f.eks. tiltak som omhandler forenkling av produktinformasjon og valgstrukturen. Andre tiltak derimot er mindre vanlig, som f.eks. bruk av beslutningsverktøy i form av sammenligningsverktøy. På generelt grunnlag fant studien at nettbutikker hvor produktene har en større grad av kompleksitet, også anvender mer valgarkitektur. Dette tyder på at disse nettbutikkene gjør mer for å forenkle valgsituasjonen for sine kunder. I tillegg viste resultatene at det i hovedsak anvendes to hovedtyper valgarkitektur: den som har som mål å forenkle valgsituasjonen (good nudges) og den som har som formål kun å øke nettbutikkens profitt (bad nudges).

I hovedsak benytter nettbutikkene seg av «good nudges», som har som formål å forenkle valgsituasjonen for kundene, samtidig som den fører til økt profitt for nettbutikken. Allikevel er det også en betydelig bruk av «bad nudges», som utelukkende gagnar nettbutikken. Tatt i betraktning at de digitale verktøyene blir mer og mer sofistikerte ettersom tiden går, er min anbefaling at forbrukermyndighetene bør holde et godt øye med nettmarkedene i framtiden. Dermed kan de sørge for at markedsføringslovgivningen holder tritt med nye vendinger i markedet, og sørge for at forbrukerne ikke blir utnyttet.

Acknowledgements

This thesis marks the end of my master's degree in economics at the Norwegian University of Life Sciences (NMBU). It feels unreal to think of that my five years spent at NMBU will come to an end in just a few days from now. These have been five great and interesting years which I would not have been without.

First, I would like to thank my supervisor, professor Frode Alfnes at NMBU for his support and guidance during the writing process. Thank you for sharing your knowledge about the field of behavioural economics and helping me with attaining the relevant literature required for the thesis. Second, I want to thank my brother Marius Eng Grønbekk, and Henning Berg Schmidt for proofreading and for providing me with useful feedback. Last, I would like to thank my parents for supporting me through all these years as a student, but especially the support I received during the work with this thesis.

Mats Eng Grønbekk

Ås, May 29. 2020

Content

- 1.0 Introduction** 8
 - 1.1 Background 8
 - 1.2 Purpose and problem statement..... 9
 - 1.3 Delimitation of the thesis 10
 - 1.4 The choice of theory 10
 - 1.5 The choice of method 11
 - 1.6 The choice of retailers 11
- 2.0 Literature and theories** 12
 - 2.1 The buying decision process and purchasing behaviour 12
 - 2.1.1 The buying decision process 12
 - 2.1.2 Buying behaviour 15
 - 2.2 Behavioural economics and bounded rationality 16
 - 2.2.1 Information overload and choice overload..... 21
 - 2.2.2 Decision makers and risk 23
 - 2.2.3 Biases and Fallacies 26
 - 2.3 Choice architecture and nudging 31
 - 2.3.1 The taxonomy of choice architecture 31
- 3.0 Research methodology** 42
 - 3.1 Research design..... 42
 - 3.2 Data gathering 43
 - 3.3.1 Selection 43
 - 3.3.2 Content analysis 44
 - 3.3.3 Data processing 45
 - 3.3 The quality of the research 48
 - 3.3.1 Reliability 48

3.3.2 Validity	49
4.0 Results	51
4.1. The Content analysis	51
4.1.1 The qualitative search.....	51
4.1.2 Quantification of findings	70
5.0 Discussion of findings.....	72
5.1 Empirical findings	72
5.1.1 Similarities between retailers	72
5.1.2 Differences between retailers	76
5.1.3 Good and bad nudges	78
5.2 Beyond empirical findings	80
5.2.1 Single option aversion and the decoy effect.....	80
5.2.3 Other sources to product information.....	81
6.0 Conclusion.....	83
6.1 Implications	83
6.2. Limitations of the study.....	84
6.3. Further research.....	84
References	85

List of Figures

Figure 1: The Buying Decision Process (Kotler and Armstrong, 2016).....	13
Figure 2: The quadrant model of buying behaviour (Kotler and Armstrong 2016).....	15
Figure 3: Simon’s model for decision making	21
Figure 4: Risk attitudes	24
Figure 5: Loss aversion	25
Figure 6: Reframing in Ekjøp.no and Power.no.....	52
Figure 7: Information labels in Power.no and Ekjøp.no	54
Figure 8: Listing as simplification, XXL.no and Power.no	55
Figure 10 : Grading system for games, Elkjøp.no.....	56
Figure 9: Energy label, Elkjøp.no	56
Figure 11: Listing as information made visible, XXL.no	57
Figure 12: Social norms, Elkjøp.no.....	59
Figure 13: Reference to opinion leader, Elkjøp.no	60
Figure 14: Reference to opinion leaders, Elkjøp.no and Power.no	61
Figure 15: Psychological pricing, Elkjøp.no, Power.no and XXL.no.....	64

List of Tables

Table 1: The choice architecture taxonomy, Münscher et al. 2016	32
Table 2: Quantified measures.....	46
Table 3: Overview of examined product categories.....	47
Table 4: Results of the qualitative content analysis (decision information)	68
Table 5: Results of the qualitative content analysis (Decision structure)	69
Table 6: Results of the qualitative content analysis (Decision assistance)	70
Table 7: Results of the quantitative content analysis by retailer.....	70
Table 8: Results of the quantitative content analysis for overall sample.	71

List of Equations

Equation 1: The max-min rule.....	18
Equation 2: The probabilistic rule.....	18
Equation 3: The certainty rule.....	19

1.0 Introduction

In the Oxford dictionary the word architecture is defined as “*the art and study of designing buildings*” (Oxford, 2020). In the same way as layout and design are essential when constructing buildings, it is also important when constructing the environment in which choices are made. This is where choice architecture enters the picture. Choice architecture concerns the structure and organization of choice situations, and how different choice alternatives are presented to the decision maker (Balz et al., 2014). Choice architecture is present in several arenas in society, from the product layout in your local supermarket, to the choice list from which you select your retirement savings plan. One key element with choice architecture is that it cannot have a neutral design, hence the presentations of the options available will affect the person choosing in one way or another. This implies that the choice architect, the individual responsible for constructing the choice architecture, is given significant influential power. There are several ways a choice architect can apply this influential power to alter the behaviour of decision makers. One method coined by Richard Thaler and Cass Sunstein, is called “nudging”.

1.1 Background

The concept of nudging has grown increasingly popular over the past few years. A nudge is defined as “*any aspect of choice architecture that alters people’s behaviour in a predictable way without forbidding any options or significantly changing their economic incentives.*” (Thaler and Sunstein, 2008, p. 6). The result of this is that nudging has been adopted by several institutions in society, as a tool to influence people's behaviour. Examples of this is government-initiated nudges to make their citizens healthier and to reduce the rise of obesity (Hawkes et al., 2015). The reason nudges have become such popular tools, is because they are easy and cheap to implement, while at the same time they intervene minimally in people’s lives. Despite the relatively new adoption of nudging policies among governments around the world, the concept has been around for a long time. A group that has long been aware of the power of the nudge, is the private sector.

Back in the days when the bulk of the total purchases were still conducted in physical stores, store owners used nudging to influence customers to buy certain products. A classic example of this is the altering of a store’s layout. This is particularly evident in the layout of supermarkets, where the candy and goodies are placed at the end of the shopping round. This nudge is a form of *suggestion impulse buying*, a phenomenon described by the economist Hawkins Stern (1962). Here, the retailer exploits the case that many shoppers are tired and

hungry after walking around in a store, and therefore are tempted more easily as they approach the register. Today, the fact that a substantial share of all purchases are done online (Elisenberg, 2019) increases the nudging possibilities of private businesses. Now the retailers have their own digital environment, the webstore, which they can design just as they wish. This, in addition to many digital aids, have given the retailers even more influence on the consumers.

The main distinction between the government as a nudger, and a private business, is the intentions behind the nudging. When the government nudges, it is based on good intentions and the desire to improve people's life. However, when a private business uses nudging, it is generally to increase its profits. This distinction is important to be aware of because it determines the design of the nudges and how they affect people. Despite nudging by private businesses being very common, the amount of literature that reviews the methods and techniques applied to nudge customers in online markets, is poor. Therefore, this thesis wants to take a close look at how nudging is used by retailers in online markets.

1.2 Purpose and problem statement

The purpose of this thesis is to uncover how commercial actors use nudging, in form of choice architecture, on their digital platforms to influence consumers. This objective will mainly be achieved through a behavioural economic approach, with some minor contributions from marketing theory. Based on this, the main objective of the thesis is as follows:

Main objective: *To study how commercial actors utilize choice architecture and their knowledge of consumer behaviour to nudge customers in online markets.*

In order to make it clearer which methods have been applied to achieve the main objective it has been divided into three sub-objectives. Together, these sub-objectives will solve the main objective. The three sub-objectives are:

Sub-objective 1: *Conduct a literature review that includes an overview of relevant theories concerning purchasing behaviour, as well as the main aspects of bounded rationality and choice architecture.*

Sub-objective 2: *Perform an exploratory search on the use of choice architecture for different products in the webstores of some selected retailers.*

Sub-objective 3: *Discuss the empirical findings with regards to the already existing literature on choice architecture and bounded rationality.*

1.3 Delimitation of the thesis

The topics of nudging and choice architecture do not belong inside a single academic discipline, but is rather composed of concepts from economics, marketing, and psychology. To solve the main objective as effectively as possible, I have chosen to take an approach mainly based on behavioural economics. For the examination of choice architecture in actual webstores, I have chosen to examine three major retailers operating inside the Norwegian market. The exploration will be carried out in real time, i.e. the information will be extracted directly from the webstores and will be performed in several turns over a period of time. Thus, the dates for when the different information is extracted will be clearly stated. To ensure that the amount of information gathered is not overwhelming, the exploration will be limited to two product categories per retailer.

1.4 The choice of theory

This thesis will mainly be based on behavioural economic concepts, with some minor contributions from marketing theory. Here, the emphasis will be placed on complex buying behaviour. The first part of the theory chapter will include theories on the purchasing process and purchase behaviour, based on the models of Kotler & Armstrong. This is included because it provides insight into the purchasing process, and how consumers behave when dealing with different types of products. In the consecutive section, there will be presented a model on decision making based on the work of Herbert Simon, which is supplemented by a more general part on bounded rationality. This will expand on the buying decision process and provide an explanation for the underlying factors of individual behaviour. The last part of the theory chapter will deal with nudging and choice architecture and will include a taxonomy that classify the different types of choice architecture techniques available to commercial actors. This part is relevant for the content analysis that will be applied later.

1.5 The choice of method

This thesis will make use of several different methods to accomplish the main objective. First, the thesis will apply a literature review to provide an overview of the current literature on bounded rationality and choice architecture. Second, the thesis will make use of an exploratory search to examine the use of choice architecture first-hand, in the webstores of some selected retailers. The exploratory search will take the form of a content analysis and consist of one qualitative and one quantitative part. The qualitative part will illustrate and describe the uncovered choice architecture in detail, while the quantitative part will try to determine the frequency at which the different cases appear.

1.6 The choice of retailers

Given that the thesis's main objective is to study the use of choice architecture in online markets, an important decision that had to be made was which webstores that were going to be examined, and for which products. Thus, I set four criteria that had to be fulfilled by the webstores that were examined. First, the retailers had to be one of the major actors in their respective markets. This implies that they are well known to most people, and that they serve many customers on a regular basis. Second, the product categories chosen from the retailer's webstore would have to be intricate and with a lot of information attached to the products. Third, the chosen product categories will have to include a variety of models, so that the decision maker will have an adequate amount of decision alternatives to choose from. Fourth, the chosen retailers should be somewhat diverse, meaning that they are operating inside different markets. Based on this, I sorted out retailers that fulfilled all the criteria, and from this group, I ended up choosing three retailers: Elkjøp, Power and XXL. Elkjøp and Power are both large retailers inside the Norwegian market of consumer electronics, while XXL is a large sporting goods retailer.

2.0 Literature and theories

Sub-objective 1: *Conduct a literature review that includes an overview of relevant theories concerning purchasing behaviour, as well as the main aspects of bounded rationality and choice architecture.*

This chapter will be a presentation of the literature and theories that are relevant for the thesis's main objective and will fulfil sub-objective 1. The chapter will be organized into three main sections, where the first part will include theories on the buying decision process and purchasing behaviour. The second section will include literature and theories on bounded rationality and human limitations contributing to the complication of the decision process. In the third part, there will be presented a taxonomy of choice architecture that will be relevant for the exploratory search.

2.1 The buying decision process and purchasing behaviour

Options are something we as humans face on a regular basis, options which forces us to make decisions. In a single day we make hundreds of different decisions of varying importance, from what to wear for work, to the act of becoming a blood donor. Regardless of the importance of the decision, all decisions have in common that they initiate a decision process. The decision process is a general description of the cognitive process which the decision maker, who are facing several options, must undergo to be able to reach a decision. There exist many different theories about decision making, all of which have different explanations of how people proceed when faced with choices. The following sections will include a presentation of the buyer decision model, as well as theory concerning purchasing behaviour.

2.1.1 The buying decision process

Kotler and Armstrong (2016, p. 174-178) present what they call the *buying decision process*. The buying decision process is a decision model dealing with the cognitive process conducted by individuals who are conducting a purchase of some various item. This process consists of five phases: *need recognition, information search, evaluation of alternatives, the purchase decision and postpurchase behaviour*. Even though Kotler and Armstrong state that this model is the basis for all purchase decisions and purchase behaviour, they emphasize that the amount of time spent by the consumer in each phase, will vary depending on the product in question.

Also, if the purchase concerns a product bought routinely by the consumer, some phases of the model might be skipped. As an example, Kotler and Armstrong refer to a woman buying her regular brand of toothpaste. In such an instance, the consumer will experience *need recognition*, and then jump straight to the *purchase decision* without passing through the other stages. On the other hand, if we are talking about a highly involved purchase, the consumer will go through all the phases and spend more time in each phase. In the following paragraphs, the buying decision process will be expanded upon and each stage will be described in more detail.

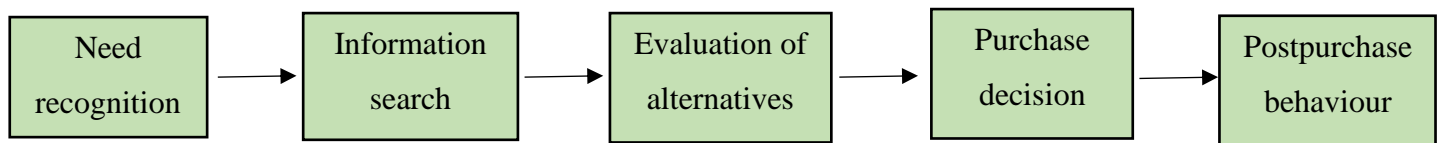


Figure 1: The Buying Decision Process (Kotler and Armstrong, 2016)

The buyer decision process begins with the consumer experiencing a problem or a need. This phase is called *need recognition*. Problems or needs can be triggered both by internal and external stimuli, where internal stimuli can appear in the form of hunger or thirst, while external stimuli can be an advertisement for a product, or a recommendation from a friend. It is important to emphasise that not all instances of need recognition will culminate in a purchase. In some instances, the consumer may recognize he has a need, but this need is not large enough for the consumer to act on it. If this is the case, we will not see the development of a decision process. On the other hand, if the recognised need is large or urgent, the consumer proceed to the next phase in the decision process, namely the *information search*. In this phase, the consumer commences to actively look for information about the product or service in question. Both to acquire more knowledge about the specific product, but also to get an overview of the market in general. In the search for information, the consumer can utilize several sources to obtain the information desired. These are *personal sources* (family, friends, neighbours etc.), *commercial sources* (advertising, salespeople, dealer and manufacturer, packaging, displays etc.), *public sources* (mass media, consumer rating organizations, social media, online searches peer review etc.), and *experimental sources* (examining and using the product). Which of these information sources the consumer will utilize is both dependent on the consumer, and the product in question.

When the consumer has gathered the necessary information about the product and the overall market, he usually ends up with a selection of brands he deems as relevant. The consumer is now in the phase called *evaluation of alternatives*, where he will process all the information he has gathered in the previous phase and apply this to rank brands and form purchase intentions. In most instances, the decision maker will evaluate each alternative according to some attributes he finds important, like price, appearance, usability etc. The amount of time spent by the consumer in this stage, varies greatly. In some cases, the evaluation process will be tedious, and the consumer will take his time to weigh the pros and cons of each alternative against the others. Other times, there will be no evaluation process, and the decision to purchase will be made on impulse or pure intuition.

After the consumer has gone through the evaluation process, he finally arrives at the *purchase decision*. This is the moment when he, based on the experience he received in the prior phases, is going to decide which of the previously selected brands he is going to purchase. Although the individual evaluation process usually lays the foundation for the purchase decision, external factors can also influence the evaluation. Examples of this can be the consumer experiencing sudden changes in his economic situation, that there is a special offer on one of the products the consumer is considering buying, or feedback from a friend that has bought one of the products that our consumer is considering (Kotler and Armstrong, 2016, p. 174-178). These external factors can all affect the consumer's evaluation done in the previous phase, and in turn this will affect his purchase intentions.

Subsequently, the consumer will enter the phase which Kotler and Armstrong calls *postpurchase behaviour*. It is in this phase the consumer gets to know if the product he purchased lives up to the expectations and requirements he had to it, and he will usually experience one of three states: He will be disappointed if the product falls short of his expectations, he will be satisfied if the product meets his expectations, and he will be delighted if the product exceeds the expectations he had for it. Depending on which of these three states the consumer finds himself in, determines the likelihood for the consumer repurchasing the specific product. In general, the larger the negative gap is between a consumer's expectations and the product's actual performance, it becomes less likely that the consumer will purchase the product again. On the other hand, if the product performs very well and greatly exceeds the consumer's expectations, he is more likely to repurchase the product.

2.1.2 Buying behaviour

As already pointed out, a person’s buying behaviour depends on the product in question, and he will not go through all the phases of the buying decision process for every single item he purchases. Based on this notion, Kotler and Armstrong (2016, p. 174-175) identified what they saw as four main types of purchase behaviour, which they displayed in a quadrant model as seen in figure 1 below. In this model, the horizontal axis displays the consumer’s grade of involvement, that is how much time and effort the consumer invests in the process of purchasing a specific product. The vertical axis on the other hand depicts the inward differences between brands in the same market, that is how diverse the various products are relative to each other. To illustrate their point, they refer to the difference in buying behaviour displayed by a person shopping for toothpaste and a person shopping for a smartphone. For most people, buying a tube of toothpaste is a rather simple affair which is carried out relatively quickly. Buying a smartphone on the other hand is more complicated, and hence it will require more of a person’s time. When the degree of complexity concerning a product category increases, the decision maker will consequently devote more time on the information search and evaluation of alternatives. It is in these two stages where choice architecture is usually applied. Hence, the following section will describe what characterizes the *complex buying behaviour*.

Complex buying behavior	Variety-seeking buying behavior
Dissonance-reducing buying behavior	Habitual buying behavior

Figure 2: The quadrant model of buying behaviour (Kotler and Armstrong 2016)

The Y-axis denotes the degree of inward difference between the products in the market, while the X-axis denotes the degree of consumer involvement.

According to Kotler and Armstrong, the complex buying behaviour occurs when consumers are “highly involved in a purchase and perceive significant differences among brands” (2016, p. 174). What characterizes the products that require consumers to get highly involved, they state, is if the product is expensive, if it is purchased infrequently, or if the purchase is viewed as risky. Another significant aspect with this group of products is that they have a high amount of information attached to them. This results in the purchasing process becoming a learning process, where the consumer will have to gather all the essential information about the relevant

brands before he or she can decide on what to purchase. Now, going back to the example of buying toothpaste and buying a smartphone, we see the contrasts between these two purchases much more clearly. The complexity of the smartphone as a product, all its different functions, the different models available and the technical specifications, makes it very time intensive for the consumer to get an overview of this market. In comparison, the market for toothpaste is much less complicated regarding within-market diversity and overall product information. Also, the relatively low price of a tube of toothpaste contra a smartphone allows consumers to do mistakes, hence they can always afford another tube.

Although the complex buying behaviour in most cases require more time and effort from the consumer to end in a purchase, this is not the case for all consumers. An important factor which determines the time a consumer will spend on a purchase of complex character, is his *product familiarity*. Product familiarity or product knowledge, is the knowledge held by an individual about a certain product which he has acquired through usage and product experience (Marks and Olson, 1981). In other words, product familiarity describes a person's product knowledge. Through the study King & Balasubramanian (1994) found that consumers with a high level of product knowledge tend to base their purchase decisions to a larger extent on objective information, i.e. technical specifications regarding the product. Consumers with lower levels of product knowledge on the other hand, are more likely to base their purchase decisions to a larger extent on subjective information, i.e. recommendation from friends or "the most familiar brand is the best" strategy.

2.2 Behavioural economics and bounded rationality

Behavioural economics is a subfield of economics, that focuses on the psychological, social and emotional factors that influence decision making, and thus seeks to provide theories about economic decision-making which to a greater extent represents the true behaviour of economic agents (*Berg, 2010*). Behavioural economics stands in contrast to the theories provided by classical economics, which presumes economic agents to be perfectly rational beings that seek to maximize their personal utility, given some fixed preferences. Despite the distinctions between behavioural economics and classical economics, the two fields have become increasingly submerged over the years. After facing several decades of criticism for applying models that did not portray human behaviour in a realistic way, classical economic theory has with time adopted some of the concepts used in behavioural economics. This is also evident

when observing the award of the Nobel prize in Economics, which in later years increasingly has been awarded to economists whose work primarily concerns behavioural economic issues.

Although behavioural economics as a field has gained traction first in recent years, knowledge about irrational human behaviour is not something new. In *The General Theory of Employment, Interest and Money* from 1936, John Maynard Keynes used the term *Animal spirits* to describe the factors of human behaviour that was not accounted for by classical economic theory. He believed all human behaviour that did not have its origin in logical or rational thinking had to be based on human instincts, hence the name Animal spirits (Keynes, 1964, p. 161-162). Despite Keynes referring to elements of irrational behaviour already in 1936, the first framework on irrational behaviour was presented by Herbert A. Simon, in his 1947 book *Administrative Behaviour*. An American psychologist and economist, Simon was aware of the shortcomings of classical economic theory with respect to human behaviour and decision making. Thus, he desired to create a model for decision making that was more in line with the observed human behaviour. The result of this was his model on decision making called bounded rationality.

For rational decision making to occur, Simon (1955) found that six basic elements had to be present:

1. The existence of a selection of decision alternatives. This is the total number of decision alternatives available. In his mathematical model, Simon denoted this with an A .
2. Within the total selection of decision alternatives, there will have to be a subset of decision alternatives that the decision maker deem as relevant, and that will limit the total selection of decision alternatives to a narrower sample. In Simon's mathematical model, this subset was denoted with A^* .
3. Every decision alternative have several outcomes, where some are more desirable than others. Simon denoted these different outcomes as S in his model.
4. The decision maker must, in his mind, create pay-off functions for the different decision alternatives to compare the different options regarding the utility he receives from them. Thus, the decision maker can rank the different decision options from lowest to highest utility received. In his mathematical model, Simon displayed the utility received by the different decision alternatives as a function $V(s)$, where s denotes the outcome of the decision alternatives.

5. The decision maker will have to know which of the decision alternatives that will lead to the various future states he perceived. Simon denoted this as S_a in his model.

6. The decision maker must know the probability of the occurrence of the different outcomes regarding the different decision alternatives. This is denoted as $P_a(s)$ in Simon's model.

With all these elements in place, the decision maker can proceed to act rational according to what Simon calls "classical concepts of rationality" (Simon, 1955, p. 103). Here Simon brings forward three concepts of rationality called *max-min rule*, *probabilistic rule* and *the certainty rule*. The *max-min rule* assumes that for every decision alternative that is chosen, the worst possible outcome will occur, i.e. the outcome with the lowest pay-off. Hence, the decision maker should always choose the decision alternative where the worst outcome (pay-off), is as large as possible. According to the *probabilistic rule* of rational behaviour, the decision maker should maximize the expected value of $V(s)$ with respect to the probability distribution $P_a(s)$. Lastly, the *certainty rule* states that the decision maker should select the decision alternative that includes the outcome with the highest pay-off. All of the three rules are presented mathematically in equations 1-3 on the following page.

$$\hat{V}(\hat{a}) = \min_{s \in S_{\hat{a}}} V(s) = \max_{a \in A} \min_{s \in S_a} V(s)$$

Equation 1: The max-min rule

This is the mathematical presentation of the max-min rule, where $V^{\wedge}(a^{\wedge})$ denotes the utility received from decision alternative a , and $V(s)$ denotes the utility received from the outcome s of a . The rule says that the utility of a is equal the outcome s of a that provides the lowest utility. Therefore, the decision maker should choose an alternative a where the minimum utility received from outcome s , is as high as possible.

$$\hat{V}(\hat{a}) = \sum_{s \in S_{\hat{a}}} V(s) P_{\hat{a}}(s) = \max_{a \in A} \sum_{s \in S_a} V(s) P_a(s)$$

Equation 2: The probabilistic rule

This is the mathematical presentation of the probabilistic rule, where $V^{\wedge}(a^{\wedge})$ denotes the utility received from decision alternative a , and $V(s)$ denotes the utility received from the outcome s of a . $P_a(s)$ denotes the known probability of the different outcomes, s , of decision alternative a . Since the value of a is the sum of the value of s , given the probability of these outcomes, the decision maker should maximize $V(s)$ for the known probabilities of $P_a(s)$.

$$\hat{V}(\hat{a}) = V(S_{\hat{a}}) = \max_{a \in A} V(S_a)$$

Equation 3: The certainty rule

This is the mathematical presentation of the certainty rule, where $V^(a^*)$ denotes the utility received from decision alternative a , and $V(S_a)$ denotes the value received from all the outcomes S in a . According to this rule, the value of a equals the value of the outcomes S of a . Hence, the decision maker should pick the decision alternative which includes the outcome with the highest pay-off.*

Simon (1955) states that this model of rational behaviour put very harsh requirements on the decision maker, considering it demands the decision maker to calculate the exact utility pay-off from each decision alternative, in order to be able to rank the alternatives he is presented with. Simon also points out that with uncertain probabilities regarding outcomes as a result of erratic future events, it becomes almost impossible for the decision maker to conduct reliable calculations he can utilize in the decision process. In addition to this, Simon argued that there exists no empirical evidence that rational behaviour like this takes place in any real-world choice situation. Given these considerations, Simon wanted to improve this model so that it portrayed human behaviour in a more realistic way.

The first step he took regarding this was to simplify the model's assumptions regarding pay-off functions. Simon assumed that decision makers were not so sophisticated that they were able to ascribe an exact utility value to every decision alternative they face. Thus, he presumed that decision makers would perceive an outcome as either satisfactory, acceptable, or unsatisfactory, represented in numerical values as 1, 0 and -1. As an example, Simon used an individual selling a house. This individual regards \$15 000 as an acceptable price for the house. Offers that are below \$15 000 will be regarded as unsatisfactory, while offers above \$15 000 will be regarded as satisfactory. A critique of this simplification, Simon points out, is that every outcome with a value above or below the acceptable value, will be regarded equally by the decision maker. Simon then makes the argument that in a decision process, the decision maker often views alternatives in sequences, hence the decision maker will be able to extract all the satisfactory alternatives from each sequence and compare these with each other.

Another important modification Simon did, was to simplify the decision process down to three simple steps: *intelligence gathering*, *ordering of alternatives* and *choice*. In the initial phase, intelligence gathering, the decision maker attempts to narrow down the number of decision alternatives from A (all existing decision alternatives). Simon assumed that the decision maker

will filter out decision alternatives from \mathbf{A} , based on the outcomes, \mathbf{S} . When doing this, Simon imagined that the decision maker does a coarse filtering of the \mathbf{A} based on \mathbf{S} . Then, the decision maker will look for all \mathbf{a} 's in \mathbf{A} that have a \mathbf{S}' . where \mathbf{S}' is defined as $V(s) = 1$, i.e. acceptable. Subsequently, the decision maker will delimit the part of \mathbf{A} that have the outcome \mathbf{S}' . Last, the decision maker will create a subset of \mathbf{A} , i.e. \mathbf{A}^* , where all \mathbf{a} 's have the outcome \mathbf{S}' .

In the second phase, the decision maker will conduct an ordering of all the alternatives in the subset, \mathbf{A}^* , which he established in the previous phase. Here, Simon (1955) expands on his simplified pay-off function, and imagines that the decision maker regards all pay-offs as satisfactory if $V_i \geq k_i$ for all \mathbf{I} , where \mathbf{k} denotes the threshold for acceptable utility. Thus, the decision maker should create a subset \mathbf{S}' of \mathbf{S} , where all \mathbf{s} in \mathbf{S}' have a $V(\mathbf{s}) \geq \mathbf{k}$, for $\mathbf{s} \in \mathbf{S}$. Then, the decision maker should find an \mathbf{a} in \mathbf{A} so that \mathbf{S}_a is a part of the subset \mathbf{S}' . According to Simon, the time used by the decision maker on both the process of gathering information and ordering the alternatives, varies considerably depending on the complexity of the decision process, i.e. the size of \mathbf{A} and \mathbf{S} . When the first two phases are completed, the choice will be made consecutively.

Simon (1955) underlines that the initial simplifications made to the rational decision model in order to present it as more realistic, has complicated the possibilities of obtaining a unique solution. Still, Simon argues that it is possible to obtain unique solutions if a psychological foundation is included in the model. Simon then introduces what he calls the *aspiration level*, which is a determining factor for which alternatives the decision maker will define as satisfactory. If we still assume that a decision maker is facing alternatives in sequences instead of in one static choice situation, Simon argues that a decision maker's aspiration level will fluctuate as he discovers new sequences of alternatives. Simon then makes the argument that the more satisfactory alternatives the decision maker will discover, the more his aspiration level will increase. And opposite, if he discovers few satisfactory alternatives, his aspiration level will fall. When the decision maker's aspiration has fallen below a certain point, his standards for what is a satisfactory alternative have been lowered, hence satisfactory solutions will begin to appear. According to Simon, this will eventually lead to a near-unique solution. Simon (1955) states that this element can be implemented into the model as a cost function regarding the procurement of \mathbf{A} and \mathbf{S} .

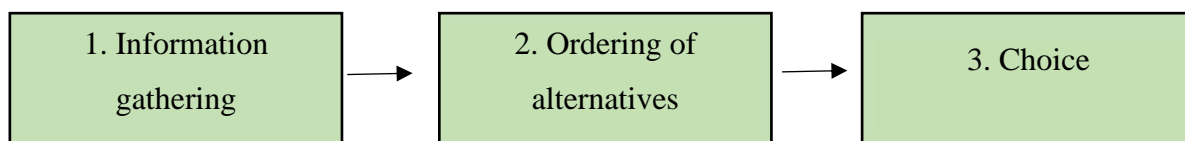


Figure 3: Simon's model for decision making

Until now we have discussed how the models of decision making applied in classical economic literature, often portrays the process of decision making in an overly simplified way. Not only do these models portray humans as cold and calculating actors capable of obtaining perfect information, the empirical evidence to support the existence of such sophisticated rational behaviour, is in many cases lacking. However, more restrictive models regarding decision making, like Simon's model of bounded rationality, seem to give a more realistic representation of how decision making is conducted in the real world. Hence, in the next section, we will examine the essential features of individual decision making that prevent humans from acting as rationally as assumed by classical economic theory.

2.2.1 Information overload and choice overload

An important assumption of rational behaviour, as defined in classical economic theory, is the idea that individual decision makers possess perfect information. A decision maker that possesses perfect information have knowledge about all possible decision alternatives, the utility and costs attached to them, as well as the ability to foresee all possible outcomes that can occur from choosing any of these alternatives. In his book, *Thinking fast and slow* (2011), Daniel Kahneman argues that this is not the case in real life, and that humans cognitive abilities are limited. To support his argument, Kahneman presents something he calls the "add-1 task". This is a task where participants are supposed to read out loud numerical strings containing 4 digits, at a given rhythm. After they have read the string as it appears, they should repeat the task, but this time they should increment each number in the string by 1, while still maintaining the given rhythm. Kahneman discovered after conducting several experiments with the add-1 task, that many of the participants found the task to be challenging. When Kahneman increased the difficulty further and asked the participants to increment each number by 3, most participants did not manage to complete the task. On the other hand, those who did had to give the task their full concentration. These findings suggested for Kahneman that the cognitive capacity possessed by humans are limited, and that these limits can be reached relatively easy.

However, Kahneman was by no means the first to discover that human's cognitive capacity in some cases are very limited. In his book, *The managing of organizations*, Bertram Gross (1964)

introduced the term *information overload*. According to Gross, information overload occurs when a system receives an amount of input that exceeds the system's processing capacity. As an example, Gross then refers to the cognitive processing capacity of decision makers, and how occurrence of information overload in most cases lead to reduced decision quality (1964). Information overload was also discussed by Mitchell et al, who described it as "*a lack of understanding caused by the consumer being confronted with an information-rich environment that cannot be processed in the time available.*"(2005). To demonstrate how information overload affects everyday decision makers, Jacoby et al. (1974) conducted an experiment where participants were to choose one brand from an assortment of detergents. The number of brands and the amount of information received, varied between the participants. Before the experiment started, all participants stated what they thought was the most important attributes of a detergent, and this answer was later compared with the choice they made. The results indicated that when the number of information items increased, the participants had a harder time selecting a brand that included the attributes they stated earlier as important. Despite this, most of the participants reported to be more satisfied when they received more information, than less information.

In classical economic theory, the indisputable dogma is that the more choices that are available, the more people will manage to maximize their utility. In *The Paradox of choice* from 2004, Barry Schwartz challenges this narrative, and provides arguments that an abundance of choices can overload decision makers cognitive processing capacity, which consequently leads to poorer decisions (2004). This phenomenon is known as choice overload. The presence of choice overload was shown in a now well-known experiment conducted by Lyengar & Lepper (2000). In this experiment, shoppers at a San Francisco supermarket got tastings of different types of jams. The first group of shoppers were presented with 6 different types of jams, while the second group of shoppers could taste up to 24 different types. After the shoppers had tasted, they got a \$1 discount off the purchase if they decided to buy a jar of jam. The result of the experiment showed that in the group who had tasted 24 types of jam, only 3% decided to purchase jam. In comparison, as many as 30% of those who tasted only 6 types, decided to buy jam.

So far, we have seen that decision makers are unable to obtain perfect information because of limitations in their cognitive processing capacity. When faced with this constraint, decision makers can only process a given amount of information at a time. If we also consider the matter that the timeframe for a decision process is limited, as pointed out by Mitchell et al. (2005), the

decision maker is faced with yet another constraint. This implies that the decision maker will have to prioritize the information he deems as relevant, since he does not have time or capacity to process it all. However, if the decision maker decides that he will gather more information, he will have to allocate and use more time on this activity. Hence, the retrieval of new information will inflict a cost on the decision maker in the form of time. If this cost grows too large, it may end up affecting the final amount of utility the decision maker is receiving from his final decision.

2.2.2 Decision makers and risk

According to classical economic theory, decision makers have some fixed universal preferences, and based on these they will maximize their utility at the lowest cost possible. When faced with risky or uncertain outcomes, the behaviour of the decision maker will be determined by his attitude towards risk. In general, individuals' attitude towards risk can be divided into three categories, as seen in figure 6 below. These categories are: risk averse, risk neutral and risk seeker. A person who is risk averse has a distaste for all risk, with his utility function being concave with increasing risk. Hence, a risk averse person will seek to minimize the amount of risk he is exposed to and is willing to accept a certainty equivalent (a guaranteed amount of utility he receives instant) that is lower than the expected utility. A person that is risk neutral will have a utility function that is linear, implying that the person is indifferent to risk. A risk neutral person will accept a certainty equivalent that is equal to the expected value. If a person is a risk seeker, he will have a convex utility function for increasing risk, implying that his utility will increase when risk is increasing. A risk seeking person will only accept a certainty equivalent that is higher than the expected utility.

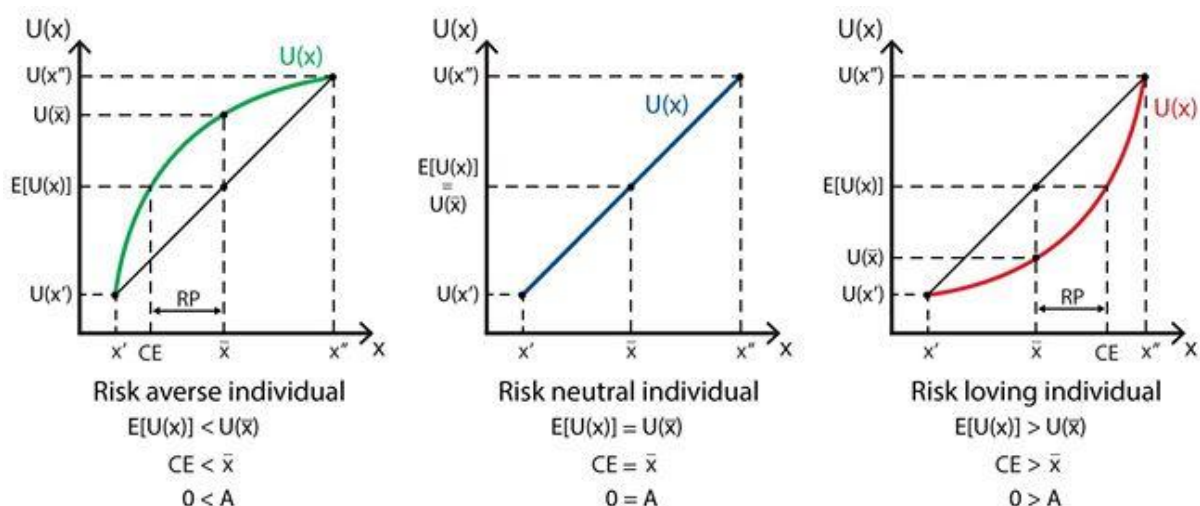


Figure 4: Risk attitudes

This is a graphical display of the three risk attitudes, where the shape of the utility function tells us the individual's attitude toward risk. We can observe that the risk averse individual has a concave utility function, that the risk neutral individual has a linear utility function, and that the utility function of the risk seeking person is convex. Source: <https://policonomics.com/lp-risk-and-uncertainty2-risk-aversion/> (read 14.03.20)

However, the expected utility theory has been challenged by the prospect theory, which was developed by Kahneman and Tversky in 1979. After conducting several experiments where they presented participants with different gambles, Kahneman & Tversky discovered that decision makers did not act as rational under risk and uncertainty as expected utility theory might suggest. In *Thinking Fast and Slow* (2011), Kahneman discusses how he and Tversky examined people's attitude towards risk through a series of experiments. In the most prominent, the participants were given two gambles, A and B.

Gamble A: Which of the two lotteries would you play?

1: Get \$900 for sure. or 2: 90% chance to get \$1000

Gamble B: Which of the two lotteries would you play?

1: Lose \$900 for sure. or 2: 90% chance of losing \$1000

In gamble A, most of the participants decided to play lottery 1, which is the safe option with no risk. The result implies that most people are risk averse, and when they have the opportunity, they choose the least risky alternative. This result is also consistent with expected utility theory, given that the expected utility theory is \$900 for both lotteries. Hence, there is no reason for the decision maker to take on unnecessary risk. In gamble B on the other hand, most of the participants decided to play lottery 2, which is the risky option. This is not consistent with expected utility theory, which states that people have fixed preferences. Hence, if an individual is risk averse in one instance, he should be risk averse in all situations. Here, prospect theory differs from expected utility theory, stating that an individual's attitude towards risk is not fixed, but differs whether the risk concerns gaining or losing. Based on this, Kahneman & Tversky presented the concept of loss aversion, which state that the reduction in an individual's utility is greater when experiencing a loss, than the increase in utility when experiencing a gain of the same size. Thus, an individual's value function is steeper for losses than for gains (Tversky and Kahneman, 1991). Loss aversion is shown graphically in figure 5 below.

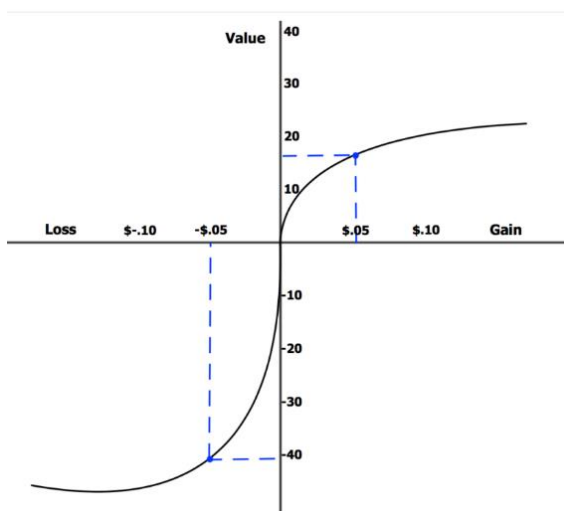


Figure 5: Loss aversion

Loss aversion displayed graphically, with a steeper value function for losses than for gains. Source:

https://commons.wikimedia.org/wiki/File:Loss_Aversion.png (read 14.03.20)

Another disparity between expected utility theory and prospect theory, is the emphasis on the decision maker's point of reference. In expected utility theory, any gain will give the same amount of utility to a person, regardless of his initial situation. Hence, a gain of \$1 million will give the same amount of utility to a person who just have lost \$ 10 million, as to a person which initial wealth was \$100 000. Kahneman & Tversky (1991) argues that this notion makes little sense with real decision makers, and claim that the perception of gains and losses is dependent on the decision makers initial situation. Therefore, they introduce the concept of reference points, such that all gains and losses are defined relative to the decision makers initial state.

This entails the principle of diminishing sensitivity, i.e. diminishing marginal value of gains and losses as these grow (Tversky and Kahneman, 1991).

2.2.3 Biases and Fallacies

In his book, *Thinking Fast and Slow*, Daniel Kahneman writes about what he calls the two cognitive systems which is the basis of human behaviour: system 1 and system 2. System 1 is applied to solve tasks fast and automatic without the need of conscious effort. System 2 on the other hand, is the rational system that enables us to do deeper reasoning and logical thinking. System 1 is at work when we for example locate the source of a loud noise, when we give the answer to 2+2, or when we detect that some people are angry just from listening to their voice. Common for all these tasks is that they are not the product of any logical reasoning, rather on the contrary, they are all performed in a very short amount of time without any form of reasoning involved (Kahneman, 2011). Originally a survival mechanism developed through evolution, the automatic system was meant to protect us against imminent threats. If you are out walking in the forest and you see a poisonous snake and hear its hissing sound, you will impulsively get an uncomfortable feeling and the urge to leave the area. In a situation like this, there is no reasoning necessary to understand that the snake is dangerous, you just know it because system 1 automatically recognize the snake as a threat. In such instances, system 1 is very useful because it enables us to act instantly and take immediate action to protect ourselves from danger. If we were to apply reasoning and logical thinking every time we were facing danger, it could in the worst case end in fatality.

Although system 1 is necessary and vital in some instances, it also has some problematic sides. If you find yourself out in the forest again, and you see something on the ground you perceive to be a snake, you can experience the same feeling of fear and urge to get away. However, at closer examination, what you believed to be a snake, turned out to be a piece of coloured rubber. Hence, system 1 jumped to a conclusion that was not correct. This example provides a good illustration of the major flaw of system 1, that is system 1 urging us to act on information that is false or inadequate. In *Thinking Fast and Slow*, Kahneman discusses several instances where system 1 falls short, and in the following sections these will be elaborated on.

In an experiment conducted by Kahneman and Tversky with students from the university of Oregon, they rigged a wheel of fortune displaying the numbers from 0 to 100, such that it would only stop on the numbers 10 and 65. After the wheel was spun, each of the participants were to

write down the number they had landed on. Subsequently, the participants were asked to guess the percentage of African countries which were members of the UN. The result of the experiment showed that the participants who had landed on 10 gave an average guess of 25%, while the participants who had landed on 65 gave an average guess of 45%. Seemingly, the participants had been influenced by the number they landed on when spinning the wheel of fortune, although this event by no means was related to the question they received. Kahneman and Tversky then argued that the participants had fell victim of the *anchoring effect*. The anchoring effect occurs when people rely too extensively on an initial piece of information when making a decision (Kahneman, 2011, p. 111-112). In the experiment above, the number from the wheel of fortune became the anchor when answering the question about African UN membership, since this was the only available piece of information. Another feature of the anchoring effect is how it affects individuals' perception of an items value. If you are going to buy a house and have little knowledge about the housing market, the asking price will become an anchor. Hence, prices lower than the reference point will be perceived as cheap, while prices higher than the reference point will be perceived as relatively expensive.

Another flaw with system 1, is how it makes us vulnerable to *framing*. According to Kahneman (2011p. 87), framing effects concerns how the same information presented in different ways can change our perception of the information content. The reason for this is that system 1 associates some keywords closely with positive or negative emotions. As an example, Kahneman presents two statements concerning the risk of complications after surgery. The first statement informs that “*the odds of survival one month after surgery are 90%*”, while the other statement says that “*mortality within one month of surgery is 10%*”. (Kahneman, 2011p. 87). Although the content in these two statements are the same, the focus of the statements is widely different. In the first statement the focus is on *survival*, which is a positively charged word that evokes positive feelings in the recipient. The second statement on the other hand focuses on mortality. Mortality is a negative word that gives the recipient associations to death and that evokes negative feelings. Hence, individuals presented with these two statements would arguably perceive the risk related to complications very differently. Kahneman argues that individuals often are incapable of looki at framed information objectively, and thus framing can be very influential on decision makers.

Closely related to framing, is the concept of *psychological pricing*. Psychological pricing describes the marketing strategy of setting prices just below round numbers, for instance having the price \$2.99 instead of \$3. A study published in the Marketing Bulletin in 1997, found that

as many as 60% of the prices that were examined in the study, ended with the digit 9 (Holdershaw et al., 1997). The idea behind psychological pricing is, because individuals have limited cognitive capacity, that they will mainly concentrate on the first digits in a price and overlook the digits that follows. Consequently, individuals perceive prices as lower than they really are, and retailers have incentives to make the last digits of the price as high as possible (Basu, 1997) .

Two other fallacies that is also interesting to look at, is *single option aversion* and the *decoy effect*. Despite the initial similarities of these two concepts, it is important to emphasize that they are distinctive from each other and have some significant differences.

Single-option aversion is a term used to describe how decision makers, when faced with a single option, tend to defer from making a choice. To get a deeper understanding of single-option aversion, professor in marketing, Daniel Mochon, conducted a series of internet-based experiments where participants should imagine they were out shopping for a specific product. From the results, Mochon got some important insights about the concept. First, he found that participants choosing between two brands, A and B, were more prone to make a purchase when they were presented collectively. When presented one and one, most participants decided to defer the decision. Second, Mochon found that if he first presented brands A and B collectively, and then presented just the brand the participant had chosen, with the opportunity to confirm the decision, or defer and continue the search, most participants decided to defer and continue the search. Third, Mochon found that if he changed the participants defer option, such that it explicitly stated “*defer and stop the search for other products*”, more participants made a decision both when presented with one single option, and when presented with both options collectively (Mochon, 2013). These results show that individuals dislike to be given only one option, even when this option is appealing to them, especially when they have the opportunity to see more options. On the other hand, if individuals do not have the opportunity to explore further options, they are more incline to choose the option in front of them, regardless of this is a single option or several options.

In his book, *Predictably Irrational* from 2008, Dan Ariely writes about an interesting observation he did while browsing the internet. He came across an ad for the Economist, displaying various types of subscription alternatives. The alternatives displayed were as follows:

- **Economist.com subscription** - US \$59.00
One-year subscription to Economist.com, including access to all articles from The Economist since 1997.
- **Print subscription** – US \$125.00
One-year subscription to the print edition of the Economist.
- **Print & web subscription** – US \$125.00
One-year subscription to the print edition of The Economist and online access to all articles from The Economist since 1997

Looking at the ad more closely, Ariely noticed that the second and the third option were priced the same, although the third option offered both the web and printed edition, while the second option only offered the web edition. Why would someone want to buy just the printed edition when they could get both the printed and the web edition for the exact same price? Ariely therefor suspected that the Economist had taken advantage of the *decoy effect* (Ariely, 2008, p. 1-5).

According to bounded rationality, individuals are usually bad at ascribing values to specific items and rank them accordingly. However, this becomes easier when they are presented with similar items that can be compared to each other. As put by Ariely: “... *we don't know how much a six-cylinder car is worth, but we can assume it's more expensive than the four-cylinder model.*” (Ariely, 2008, p. 2). With this in mind, we can return to the add from the Economist. A person reading the ad is not able to say if \$59 for the web-only subscription is a better deal than \$125 for the print-only subscription, but he do know that \$125 dollar for both print and web-subscription is a better deal than \$125 just for the print-subscription. By displaying an option which is clearly inferior, the web + printed subscription now appears as a more appealing alternative. To test if the presence of an inferior option had any effect, Ariely gave the same ad to a group of 100 MIT students, and asked them to pick a subscription. The result was as follows:

- Web-only subscription for \$59 – **16 students**
- Print-only subscription for \$125 – **0 students**
- Print and web-subscription for \$125 – **84 students**

From these results we see that most of the students picked the third option. In addition to this, we see that none of the participants picked the second option, which should indicate that this is

an irrelevant alternative. Ariely then removed the irrelevant alternative and presented the ad for the students again. This time he got the following results:

- Web-only subscription for \$59 – **68 students**
- Print and web-subscription \$125 – **32 students**

Now, most of the students suddenly went for the first option, which few of them found interesting the first time. How can this be? When faced with the option of print + web subscription and the option of web-only subscription, none of the two alternatives seemed particularly appealing. However, adding the obviously inferior option of print-subscription, the option of print + web-subscription suddenly appears as a relatively better option, both compared with the inferior option, but also compared to the web-only option. Hence, the students fell for the *decoy effect*, which describes the phenomenon that the introduction of an irrelevant alternative can boost the appeal of other alternatives. (Ariely, 2008, p. 5-21)

Considering all the restrictions that affects individual's cognitive capacity and prevents them from behaving rationally, that has been presented in sub-chapter 2.2 it is apparent that many consumers are vulnerable when they find themselves in decision situations. Thus, they are more receptive from external influences. An example of such an influence is nudging done through choice architecture.

2.3 Choice architecture and nudging

As stated previously, choice architecture can never have a neutral design. Thus, the choice architect must decide which purpose he wants the applied choice architecture to achieve. A movement that has gained popularity in the later years, is that of Libertarian Paternalism. Libertarian paternalism is the idea that choice architecture can be constructed in such a way that it preserves the individual's freedom of choice, while at the same time guiding the decision maker in a direction that will make him better off, as judged by himself (Thaler and Sunstein, 2008). More explicit, people shall not be restricted from picking the option of their own wish, even if this option is objectively bad for them. Meanwhile, it shall become easier and more convenient to pick the good choices, i.e. choices that leads to a longer, healthier, and better life. This is done through nudging (see previous definition). On the front cover of their book "Nudge", Thaler & Sunstein had a silhouette of two elephants, presumably a mother and a child. The silhouette depicts the mother elephant giving her child a gentle push in the rear. Though simple, this illustration explains the concept of libertarian paternalism in a brilliant way, a gentle push in the right direction.

2.3.1 The taxonomy of choice architecture

Now that the concept of choice architecture and libertarian paternalism is explained, the next step is to describe which tools the choice architect has available to him when he seeks to construct a choice environment. In an effort to display the different types of choice architecture and how they can be organized, Münscher et. al (2016) created a framework over different types of choice architecture techniques. Given that this framework deals with choice architecture in general, not all the concepts are relevant for the main objective of this thesis. Thus, some minor adjustments are done to the taxonomy so that the focus is primarily on techniques applied by commercial actors. While the taxonomy of Münscher et al. contained nine choice architecture techniques divided between three main categories, the taxonomy used in this thesis will merge two of these techniques into one, so that there will be eight techniques divided on three categories. The three categories that makes up the taxonomy are *decision information*, *decision structure* and *decision assistance*. In the following paragraphs, the different techniques will be explained in detail and exemplified through real life examples. Table 1 below contains an overview of the taxonomy. We will begin with decision information and the associated techniques.

<u>Category</u>	<u>Technique</u>
Decision Information (A)	<i>A1: Translation of information</i>
	<i>A2: Make information visible</i>
	<i>A3: Provide social reference point</i>
Decision Structure (B)	<i>B1: Change choice defaults</i>
	<i>B2: Change option-related effort</i>
	<i>B3: Change range or composition of options</i>
	<i>B4: Change option consequences</i>
Decision Assistance (C)	<i>C1: Decision tools</i>

Table 1: The choice architecture taxonomy, Münscher et al. 2016

Decision information

Decision information is the component of choice architecture that is related to the presentation of information which is relevant for the decision process. When making a choice, decision makers usually base their decisions on available information about the different decision alternatives they are presented with. Hence, it is very important for a choice architect to consider carefully which information he chooses to present to the decision maker, and how he chooses to present it. To be considered a choice architecture technique, the choice architect must alter the information presented without changing the content encased in each decision alternative, i.e. he can only rearrange already existing information, or highlight certain parts of information to shift decision makers' focus. In their framework, Münscher et al. have divided this category into three choice architecture techniques: *Translate information, making information visible*

and *provide social reference points*, where each technique covers several methods (Münscher et al., 2016).

The first technique associated with decision information is *translation of information*. Translation of information concerns every choice architecture technique that regards modification of the information format and the presentation, without altering the content of the information itself. One way to translate information, is through *reframing*. When information is reframed, the perspective of the decision maker is shifted in ways that change their subjective evaluations of the decision alternatives (Münscher et al., 2016). Reframing can be done on formal, logical, and mathematical information. One example of reframing was shown by Chou & Murnighan (2013), when they examined the effect of framing on blood donations. Chou & Murnighan discovered that the rate of blood donations increased when giving blood was framed as a measure to “prevent death”, rather than a mean to “save life”. To be deemed as reframing, new information cannot be added to the frame, hence it must be a rearrangement of the already existing information.

Another way to translate information is by *simplifying* it. When information is simplified, the cognitive effort necessary to process the information available, is reduced. Hence, complicated information will become more accessible, and the decision maker will get a better overview of the information presented to him. Consequently, this will benefit the decision maker and bolster his chances of making a choice he is satisfied with. There are numerous ways of simplifying information, but in general it is about converting highly technical information into a more simple and plain language or use frameworks that are easier to understand. Larrick & Soll (2008) found that the usage of miles per gallon (MPG) regarding the fuel economy of cars, was strongly misleading when people were to rank cars according to fuel consumption and fuel savings. In their study, most participants chose the least fuel-efficient options when the unit of measurement was given as MPG, but when the unit of measurement was given as gallons per 100. mile (GPM), most people went for the most fuel-efficient option. To reduce the amount of the available options is not seen as simplification of information, since this changes the overall decision structure and hence is not deemed as information translation (Münscher et al., 2016).

The second technique related to decision information, is *making information visible*. This kind of choice architecture is about making information which is otherwise hidden or not available to the decision maker, evident. Thus, this information can also be taken into consideration when making the decision. In general, there are two types of information that can be made visible: the decision maker’s own behaviour (feedback) and external information about the options.

Given the idea that most people have a bounded rationality, a lot of information, although it exists, is practically inaccessible. Receiving feedback on their own behaviour can assist people in offsetting the constraints in attention span and processing capacity, which prevent them from accessing this information (Münscher et al., 2016). Examples of such feedback that is shown to change behaviour, is information about electricity consumption. In their study, Jessoe & Rapson (2014) found that households which were given both information about the electricity price and their own electricity usage, did reduce their consumption more than those households who were only given information about the electricity price. Unlike feedback information, which does exist but is difficult to obtain, much of the external information is impossible for people to access, unless it is made visible through choice architecture. One example of external information made visible, is the grading of restaurants' hygiene level through the use of smileys, as done by the Norwegian food safety authority (Mattilsynet, 2019).

The third and last technique belonging to decision information is the use of *social reference points*. Münscher et al. emphasises that people's behaviour does not occur in isolation, but rather in a social environment. The exposure to other people's behaviour will therefore become a point of reference from which one's own behaviour is consciously or unconsciously influenced by, and compared to. According to Münscher et al., choice architects mainly make use of two types of reference points, they refer to a *descriptive norm*, or they refer to an *opinion leader*. When choice architects apply descriptive norms, they display the actual behaviour of other people to the decision maker. The reason why this technique is an effective influential tool, is because of people's need for social approval and the fear of becoming an outcast in terms of behaviour (Cialdini and Goldstein, 2004). In their study on how social media affects travel habits among millennials, Siegel & Wang found that a majority of the subjects participating made decisions concerning travel destinations based on social media posts from friends and online influencers. Several of the subjects also noted through one on one interviews that destination promotions by tourist companies and travel agencies was less important regarding the choice of destination (2019). This is an indication that social proofs play an important role in influencing people's behaviour.

The other type of social reference applied by choice architects, is reference to opinion leaders. Opinion leaders are messengers with a high level of knowledge within a field, or a special social status which enables them to influence people's opinions and behaviour. Examples of opinion leaders are celebrities, experts and consumer journalists among others. When choice architects refer to opinion leaders, it is a mean to enhance the appearance of certain options or to ensure

decision makers that a product is of a certain quality. The empirical evidence on the effects of referring to opinion leaders is somewhat divided. When examining the effect of product embracement by Norwegian bloggers, Schjøll et al. (2018) found no significant impact in purchase intentions when subjects were given a product commercial without any social reference points, and a commercial where the same product were recommended by a blogger. Another study conducted by Valente & Pumpuang (2007) found several cases where the use of opinion leaders to promote various health programs have been successful. They found that opinion leaders were able to both change people's attitude and behaviour, and that opinion leaders with a higher credibility among people had a greater influence.

Decision structure

The second main category of choice architecture and choice architecture techniques put forward by Münscher et al., is *decision structure*. While decision information was dealing with the presentation of the information concerning the different options, the decision structure involves the arrangement of options and the structure of the decision making format. Choice architecture techniques regarding decision structure includes all aspects which affect the available options in the decision situation, like setting default options, repositioning the different options presented in relation to each other, adjust the effort required to select the options and alter the consequences of choosing the different options (Münscher et al., 2016). The decision structure category is divided into four techniques: *change choice defaults*, *change option related effort*, *change range or composition of options* and *change option consequences*.

In general there are two types of choice defaults that choice architects can apply when altering the decision structure, namely *no-action defaults* and *prompted choice*. No-action defaults are choices and options that are selected in advance by the choice architect, so that the decision maker don't have to make a choice. The default options are not binding, and the decision maker is free to change the pre-selected options if he likes to. Despite this, the empirical evidence suggests that people more often than not go with the default option. Bemused by the substantial gap between people's positive attitude towards green energy and how few who actually buys it from their energy supplier, Pichert & Katsikopoulos looked at the use of default options in the energy market (2008). Pichert & Katsikopoulos hypothesised that the reason why so many consume non-renewable electricity, even though their electricity provider offer renewable alternatives, is because the non-renewable alternatives are the default options. To test this hypothesis, Pichert & Katsikopoulos did two natural experiments. The first experiment was conducted in the German town of Schönau, one of the few towns where renewable electricity

was offered as the default option. The second experiment was conducted in the south of Germany, where an incumbent energy supplier was about to diversify its services by offering three new energy deals. Out of these three deals, the renewable alternative was the default option. In both the experiments, over 90% of the customers remained with the default option (Pichert and Katsikopoulos, 2008).

The second method under the choice default technique, is prompted choice. With prompted choice, the choice architect has not pre-selected any options in advance, hence all options are left to the decision maker to decide on. As mentioned in the previous section, if the decision maker encounter pre-selected options, he is inclined to go with the options already selected for him, rather than changing them (Münscher et al., 2016). Prompted choice is therefore adopted in situations where the choice architect wants to give the decision maker full freedom and autonomy to make the choice all by himself, without any sort of interference. However, this may not always get the intended result. As presented by Sunstein (2014), many people find the act of making a choice challenging, both because it requires a considerable use of their cognitive ability, but also because of the fear of making a choice that is not optimal. As a result of this, many people avoid making a choice when this is possible, i.e. they choose not to choose. Because of this, choice architects must consider carefully when to apply this method to choice architecture.

The second choice architectural technique associated with decision structure, is *changing option related effort*. As mentioned above, many people often find it hard to make a choice when they are asked to pick one out of several options. The result of this is that people often avoid choosing at all, and this behaviour happens more frequently if the effort related to the decision process is deemed as high (Münscher et al., 2016). To counter the effect of choice aversion, choice architects can alter the effort related to choosing the different options, and hence simplify the decision process. Like decision information, not all changes done to option related efforts meet the requirements for choice architecture. To be deemed as a choice architecture technique, the change in effort should be marginal, and not involve immense altering of economic or behavioural incentives. Münscher et al. identifies two ways in which choice architects can alter the option-related effort: *Increase/decrease physical effort* and *increase/decrease financial effort*.

There are several aspects which can affect the physical effort involved in making a choice, including the accessibility of the different options and how visible they are to the person making the decision. If the process of choosing option A is easier than the process of choosing option

B, the effort of choosing option A will be lower than that of option B. Also, if some options have low visibility, so that the decision maker must actively search to find them, is also an aspect that require the decision maker to increase his physical effort (Münscher et al., 2016). Empirical evidence suggests that the physical effort plays an important role in consumer decisions. Thorndike et al. conducted a field experiment in Chelsea, Massachusetts where they improved the presentation of the fruit and vegetable departments of 6 local stores. Among other things, they installed new shelves for the fruit and vegetables to become more visible, applied new labels and gave the fruits and vegetables new packaging. The improvements done to the fruit and vegetables departments was in place for five months, from December 2013 to April 2014. As a point of comparison, all the stores that underwent the intervention got their fruit and vegetable sales monitored prior to the intervention, in the period of December 2012, to April of 2014. The results from the experiment indicated that visibility and improved presentation had a positive effect on fruit and vegetable sales (Thorndike et al., 2017).

Financial effort concerns the amount of effort the decision maker must allocate to deal with the financial transaction. It is important to emphasize that the altering of the financial effort has nothing to do with altering of the transaction cost itself, but how the decision maker perceive the transaction cost associated with the different options. One way that choice architects can change decision makers perception of the transaction cost, is by postponing costs regarding an option to the future. Because people have a tendency to give a higher discount rate to costs and benefits occurring in the future, the same cost occurring at a later point in time is therefore perceived as less expensive. Another method choice architects can apply to alter the financial effort, is to spread out the costs associated with an option over a longer period of time. When a cost is split in this way, the cost itself is perceived as smaller (Münscher et al., 2016). This effect was coined as the “peanuts effect” by Prelec & Lowenstein (1991), and describe the phenomenon that people are more willing to take risk when dealing with smaller costs.

The third choice architecture technique related to decision structure, is *changing the range or composition of options*. We have already explored how choice architects can alter the information presented with each option, but in addition to this, they can also alter the presentation of each option and how they are displayed in relation to each other. This technique is based on the notion that decisions do not always originate from an individual’s fixed preferences, but rather from preferences that are created during the decision process. Thus, the alternatives of options being offered and the composition of them are important and should therefore be taken into account by choice architects (Münscher et al., 2016). In their taxonomy,

Münscher et al. identify one method that is associated with changing the range or composition of options, i.e. *change categories/grouping*.

To simplify the decision process and aid the decision maker, choice architects very often organize the different options into several categories and groups, to give the decision maker a better overview of the selection. Even though this is intended as a supportive mean, the means of categorizing option alternatives in this manner can in fact affect the decision process. Evidence of this was provided by Fox et al. (2005) when they, among other things, conducted an experiment where novices were to choose among different types of white wine. The result of the study revealed that the novices were more likely to diversify the wines according to the category subject, independent of the subject type. When the Wines were categorised by grape type, the test subjects diversified according to the type of grape, and similarly when the wines were categorized by country of origin. This pattern was not found when the experiment was repeated with experienced wine tasters as the participants, which indicate that this choice architecture technique has greater impact on decision makers which are not familiar with the topic.

The last technique belonging in the category of decision structure, is *changing of option consequences*. Economists have always had a weak spot for incentives because it is an effective tool for altering people's behaviour in predictable ways, and hence promote desired behaviour. Choice architects have also understood the power of incentives, but their approach differs from that of the economists. When choice architects apply incentives, they use what is called "micro-incentives". Micro-incentives are incentives that are deemed insignificant from a rational choice perspective and therefore should not be considered in a decision maker's cost/benefit accounting. Nevertheless, micro-incentives are shown to influence the decision process (Münscher et al., 2016). In their taxonomy, Münscher et al. distinguish between two types of option consequences, i.e. *connect decisions to benefits or costs* and *change social consequences* (2016).

According to the "*pay enough or don't pay at all*" theory, presented by Gneezy & Rustichini (2000), the economic incentives in themselves is not enough to affect behaviour, the size of the incentives also play an important role. Through a series of experiments, the first involving university students taking an IQ-test and the second involving high school children collecting money for charities, Gneezy & Rustichini found that the groups which were given small monetary payments for performing these tasks, did worse than the group who got a larger monetary payment, but also worse than the group who got no payment. Despite this, there also

exists empirical evidence that small monetary incentives have an effect on behaviour. When examining the introduction of a 5-cent tax on shopping bags in the Washington DC area, Homonoff (2013) discovered the small monetary cost to be negatively correlated with the sales of grocery bags. In stores that offered no incentives, 84 percent of the consumers were shown to use at least one disposable bag, compared to only 39 percent in the stores which imposed the 5-cent tax. In addition to this, some stores also offered a 5-cent bonus to customers which used reusable grocery bags instead of disposables. In these stores, 82 percent of the customers were still shown to use disposable bags, which suggests that a benefit of 5-cents is perceived differently than a cost of 5-cent. This can be argued to be a sign of loss aversion.

The other option consequence choice architects can alter to change decision makers' behaviour, is the social consequences of choosing an option. Unlike the prior method, altering the social consequence of an option do not utilize economic incentives, but rather social incentives. A social consequence is a positive or negative aspect attached to an option that concerns peoples' social integrity, and hence affects how the decision maker is viewed by other people (Münscher et al., 2016). It is argued that the effectiveness of social consequence is due to its exploitation of people's need to show prosocial behaviour, i.e. the desire to be liked by others. This theory was explored by Griskevicius et al. (2010), when they studied to what degree a choice is motivated by the desire of the decision maker to appear prosocial. They hypothesized that people deliberately choose altruistic options because this promote their personal status. This hypothesis was tested through three experiments which was conducted on university students. In the first experiment, where the subjects were to select between green and more luxurious non-green options, those students who had got their status motives elicited, was more inclined to go with the green option. In the other groups, where status motives were not elicited, the clear majority went with the non-green option.

The second experiment was to study if altruistic options were selected more often if the decision process were done in a public rather than in a private setting, where individuals' behaviour were not observed by others. The experiment was conducted in the same manner as the first, the only difference between the two groups was the framing. For the first group, subjects should imagine the decision was made in public, while the second group should imagine the choice decision was being made in private through an online retailer. The results showed a clear tendency among the public group to go with the green options, while in the private group, most of the participants went with the more luxurious non-green option. In the third and last experiment, the subjects were again going to choose between different products, with one green alternative

and one non-green alternative for each product. As in the first experiment, one group of subjects also here got their status motives elicited. The way this experiment differed from the previous, was that the price between the green and non-green alternatives varied. In this way, Griskevicius et al. were able to assess if the price has any effect on a product's perceived status. The results found that when subjects did not get their status motives elicited, the green options were more attractive when they were relatively cheaper to the non-green option. On the other hand, when status motives were elicited, the green products were more attractive when they were more expensive, relative to the non-green option. These findings indicate that when decision makers are motivated by status, the price is crucial because it can be a signal of the decision maker's affluence.

Decision assistance

The choice architecture techniques presented until now have concerned how choice architects can alter the information aspect of the different decision alternatives and how they can organize the decision structure, and thus affect the decision process. Besides this, choice architects can also influence the decision maker through what is known as *decision assistance*. Münscher et al. do not have a clear definition of decision assistance, but they describe it as further assistance given to the decision makers from the choice architect, that goes beyond altering the decision information and structure (2016) . What the choice architecture techniques that have been presented have in common, is that they are passive. This means that the decision maker does not have to make an active effort for these techniques to have an influence. However, there exists some choice architecture techniques that requires decision makers to make an active effort for them to work. These techniques are called decision tools.

Häubl & Trifts define decision tools as: “*sophisticated tools to assist shoppers in their purchase decision by customizing the electronic shopping environment to their individual preferences*”(2000). Hence, decision tools are means or aids provided to the decision maker by the choice architect, which the decision maker can utilize to simplify the decision process. Decision tools differ from standard choice architecture techniques in the way that it is an active technique, which implies that the decision maker must actively use them for the technique to have any effect. Decision tools can come in many shapes and forms. Examples of an interactive decision tool is technology-based tools like search engines and product comparison tools. Häubl & Trifts (2000) did a study where they examined the effect of two decision tools: a recommendation agent and a comparison matrix. The recommendation agent will, based on

information provided by the decision maker about attributes and willingness to pay, narrow the selection to only the relevant options. A comparison matrix is used to assist the consumer making an in-depth comparison of selected items. Häubl & Trifts findings suggests that the use of decision tools not only allow the decision makers to make better decisions, it does also save them a lot of effort.

3.0 Research methodology

In this chapter, the methods applied to achieve the main objective of the thesis will be presented. First, I will outline the research design and provide a justification for why these methods were chosen to complete the main objective. Then I will proceed to describe the process of how the data was collected and the treatment that followed. Finally, I will evaluate the methods used and comment on their reliability and validity.

3.1 Research design

The main objective of this thesis is to study how commercial actors utilize choice architecture and their knowledge of consumer behaviour to nudge customers in online markets. This objective will be realized through three sub-objectives:

Sub-objective 1: *Conduct a literature review that includes an overview of relevant theories concerning purchasing behaviour, as well as the main aspects of bounded rationality and choice architecture.*

Sub-objective 2: *Perform an exploratory search on the use of choice architecture for different products in the webstores of some selected retailers.*

Sub-objective 3: *Discuss the empirical findings with regards to the already existing literature on choice architecture and bounded rationality.*

Sub-objective 1 regarding the review of relevant models and theories, was achieved in the literature review conducted in chapter 2. Thus, sub-objectives 2 and 3 are left to be realized. The next section will therefore deal with how these sub-objectives are to be carried out, which is leading us to the research design.

The research design is the blueprint of how the research questions are going to be answered (Saunders et al., 2016, p. 163). In general, we distinguish between three different approaches to the research design: *exploratory*, *descriptive*, or *explanatory*. Regarding the implementation of sub-objective 2, I decided to apply an exploratory approach. According to Saunders et. al an exploratory study is a helpful measure when dealing with open questions there is little available literature on, as well as when one seeks to acquire in depth information (2016, p. 174-175). Since the literature regarding the use of choice architecture in webstores is inadequate, and there is a need for in-depth knowledge concerning the subject, I found the exploratory study to be the

best approach. In addition to this, the results obtained from the exploratory study will be quantified so that the results are also presented statistically. Thus, sub-objective 2 will consist of both a qualitative and quantitative content analysis.

3.2 Data gathering

This chapter will describe the process of collecting the data. First there will be a section describing the selection from which the data was obtained, as well as an explanation for why the selection was composed in exactly this way. After that follows sub-chapters describing the qualitative and quantitative content analysis.

3.3.1 Selection

This thesis seeks to study the use of choice architecture in webstores. The largest contribution in fulfilling the thesis' main objective is a qualitative content analysis, which in addition will be supplemented by a quantitative content analysis. In the content analysis, three retailers operating in the Norwegian market have been examined. For these three retailers, two product categories have been examined for each retailer. The selection of retailers was determined from several criteria. First, the retailers had to be one of the major agents in their respective markets. This implies that they are well known to most people, and that they serve many customers on a regular basis. Second, the retailer's assortment had to include products that bring about a complex buying behaviour, as described by Kotler and Armstrong. Hence, the product categories examined will have to include intricate products with a lot of information attached to them and will also have to be relatively expensive. Third, the chosen product categories will have to include a variety of models, so that the decision maker will have an adequate amount of decision alternatives to choose from. Fourth, the chosen retailers should be somewhat diverse, meaning that they are operating inside different markets.

Based on these criteria, the retailers chosen to have their webstores examined was Elkjøp, Power and XXL. Elkjøp and Power are major operators in the Norwegian market for consumer electronics, while XXL is one of Norway's largest retailers of sports equipment. Hence, all the three retailers meet the first criterion. For both Elkjøp and Power, the product categories examined were dishwashers and laptops, while the product categories examined for XXL being sleeping bags and tents. These product categories do all include information-heavy products

that require the decision maker to process large amounts of information (many technical specifications, high within-market difference etc.). The product categories will therefore fall into the complex buying behaviour. Thus, the second criterion is achieved for all the chosen product categories. Next, all product categories included at least 40 decision alternatives, which implies that the third criterion is also fulfilled for all the four product categories. Last, two of the chosen retailers operate inside the same market, while one is operating in a different market. This provides the opportunity to compare two retailers in the same market, while it also allows for a comparison of choice architecture between the two markets. Thus, the fourth criterion is also met.

3.3.2 Content analysis

The content analysis will be a review of the choice architecture applied in the three selected webstores, and its objective will be to uncover and categorize the different types of choice architecture. The content analysis will be based on Münscher et al. taxonomy of choice architecture techniques. I would like to point out that I have only used the parts of the taxonomy that I believe is relevant for a commercial actor. Hence, the content analysis will consist of 8 questions. These questions will be divided between the three categories described in Münscher et al.'s taxonomy, that is *decision information*, *decision structure* and *decision assistance*, where each category contains a distinct group of choice architecture tools.

An important aspect of the content analysis as a method, is that different individuals should be able to conduct the same content analysis and arrive at the same results (Saunders et al., 2016, p. 608). Thus, it is important that the procedure of the analysis is well described. Displayed below is the questions that make up the content analysis:

Decision information

1. *Are there taken measures to reframe any information regarding the different products?*
2. *Are there taken measures to simplify product information?*
3. *Is information which otherwise would be unavailable, made visible by the retailers?*
4. *Are social norms used as reference points in the advertising of the products?*
5. *Are references to opinion leaders used in the marketing of the products?*

Decision structure

6. *What is done to reduce physical and financial effort?*
7. *How are the different product categories arranged?*

Decision assistance

8. *What decision tools do the retailers offer to the decision makers?*

Questions 1-5 belongs to the category named decision information, which concerns choice architecture techniques regarding the presentation of information, i.e. the information that is relevant for the decision maker. Further, questions 6 and 7 falls into the category named decision structure and deals with aspects concerning the decision itself. Question 8 concerns choice architecture techniques regarding decision assistance, which is direct or indirect assistance provided to the decision maker, that does not fall into the previous categories.

The results of the content analysis will be qualitative data about the choice architecture in the selected webstores. This data will give an overview of the applied choice architectonic measures, as well as detailed descriptions of each measure.

3.3.3 Data processing

With this qualitative data, we are able say which webstores applied the different types of choice architecture, as well as detailed information about how it was applied. What this qualitative data does not tell us, however, is the frequency at which the different types of choice architecture occur in the three webstores. If we know the frequency of occurrence regarding the different choice architecture techniques, we can compare the three webstores and determine which of the retailers apply the most or the least amount of choice architecture. Hence, the

results from the content analysis must be processed so that it can also be presented quantitatively. The following section will describe how the data processing was performed.

To be able to say something about the frequency of different choice architecture techniques, I had to count how often they occurred inside the various webstores. Not all the findings from the content analysis was quantifiable, so the first thing I did was to disregard the findings that were not quantifiable. Further, I excluded all the findings which did occur in just one of the three webstores, since these did not provide a basis for comparison. When this process was finished, I was left with five choice architecture techniques that were going to be quantified. These are displayed in table 2 below.

Decision information	Decision structure
Reframing Lists displaying key product features Information labels Referring to opinion leaders	Psychological pricing

Table 2: Quantified measures

The five techniques that were going to be counted were divided between the two categories decision information and decision structure. In the category of decision information, the techniques that were going to be counted was *reframing*, *lists displaying key features*, *information labels* and *reference to opinion leaders*. From the category of decision structure, the only technique that were to be counted was *psychological pricing*. To make it clear what each of these techniques entail and what is to be counted, all the techniques will be defined below.

Reframing – *All measures that are taken to change the decision maker’s perception concerning the product. To be counted as a case of reframing, the reframing had to be clearly visible without the need of the decision maker searching for it.*

Lists displaying key product features – *All cases where key features or key information about a product is listed to make the information easier to obtain, will be counted as a list.*

Information labels – All measures where information is simplified and displayed with a picture or a simple figure, will be counted as an information labelling. Note: I will not count energy labelling as an information label in the quantification part, since energy labelling is an information label required by the EU, and hence are present on all household appliances.

Referring to opinion leaders – All cases where the retailers have referred to an opinion leader, i.e. influential person or organization, to accentuate the product, will be counted as a reference to an opinion leader.

Psychological pricing – To be counted as psychological pricing, the price would have to be 10 or less away from a round number (e.g. 1590 is 10 away from 1600 and would qualify as psychological pricing based on this rule).

To make sure that the results from the quantification were valid, the sample of products that were counted had to be representative. When the content analysis was conducted, the total number of products in all the examined product categories was 1129. The distribution between the different products and retailers is displayed in table 3 below.

Elkjøp	Power	XXL
Dishwashers: 166	Dishwashers: 129	Sleeping bags: 53
Laptops: 350	Laptops: 382	Tents: 49

Table 3: Overview of examined product categories

Based on this, I found that a sample of around 50 observations from each product category for each of the three retailers, was an acceptable sample size. Since the number of sleeping bags and tents was relatively low, 53 and 49 products respectively, I decided to include all these observations in the sample. Hence, for dishwashers and laptops there will be 50 observations for both Elkjøp and Power, while there will be 53 for sleeping bags and 49 observations for tents found in XXL’s webstore. This means that the total number of products included in the quantitative sample, was 302. To ensure random sampling for the observations of dishwashers and laptops from Elkjøp and Power, I decided to create two numerical strings of random numbers containing 50 digits each. These strings were created by throwing a dice 50 times. Since Elkjøp and Power both display their products in rows of four and three products respectively, the string intended for Elkjøp had numbers between 1 and 4, while the string

intended for Power had numbers between 1 and 3. Starting from the top row of each product category, I then examined the model that was indicated by the first number in the string, and continued down the rows until I had been through all the digits in the string.

The quantification itself was conducted in Microsoft Excel. Here two lists were created for each retailer, containing the two product categories that were examined for each of them. This resulted in the total of six lists. The top row of each list contained the name of the choice architectonic measures that were to be counted. When counting the occurrence of the different choice architectonic measures, the number 1 was applied if the measure was present in the given observation, and 0 if the measure was not present in the given observation. Thus, when the applied measures were counted for all observations in the sample, the result was columns containing 0 and 1. Next, all columns were summarized to get the total number of observations of each measure for the four product categories. Finally, the total number of observations of each measure was divided on the total number of observations in each product category, so that the occurrence of each measure inside the different product categories were displayed in percentage values. In addition to this, all the observations for each separate measure was added together across the product categories and divided on the total number of observations in the sample, providing the occurrence of each measure as a percentage of the whole sample.

3.3 The quality of the research

In this chapter the quality of the research will be discussed. Here, both the research reliability and validity will be examined and evaluated.

3.3.1 Reliability

Reliability deals with the degree to which a research result can be replicated as well as its consistency, and is an important indicator of the research's quality. (Saunders et al., 2016, p. 202). If an independent researcher manages to achieve the same results as a previous study, by replicating its research design, the research will be deemed reliable. In general, we distinguish between *internal* and *external reliability*. Internal reliability concerns the consistency of the research, that is, are the methods used applied equally for all the items that have been studied (Saunders et al., 2016, p. 202). As stated by Saunders et al., the four threats to reliability are *participant error*, *participant bias*, *research error*, and *research bias*. Since this study do not include contributions from participants, the only errors or biases that can occur, are research related. A study can never be protected 100% from human errors, so this can never be ruled

out. Nevertheless, I would point out that the gathering and processing of the data were both conducted according to explicitly stated frameworks and methods. Hence, my impression is that this study has high internal validity.

External reliability deals with to what degree the research can be replicated. That is, can the results of the study be replicated by using the same research design on new data. Although there exists a substantial amount of literature both on bounded rationality and choice architecture, the literature is deficient on the topic of choice architecture in online markets. Hence, when conducting the content analysis, I leaned on the existing literature to the extent it was possible, but the analysis also had an element of subjective interpretation. For instance, the categorisation of the different choice architectonic measures found in the content analysis was based upon my interpretation of the measures. Several of the findings could fit in more than one category. An example of this is the sorting and filtering tools, which I chose to categorise as a form of decision structure, although these measures could also have been put into the decision assistance category. Hence, I cannot say with great certainty that other researchers would manage to replicate my results using this research design. Another aspect that may affect the results in a replicated study, is if the study is conducted in the distant future. Given the case that the internet and how we use it is in constant change, a future study which applies the same methods may get widely different results, because the choice architecture applied in the future is not similar to the choice architecture we know today. Nevertheless, this does not necessarily weaken the external validity of this thesis. Taken into consideration that this thesis is conducted with basis in the choice architecture applied in 2020, the results can still be an indication of how choice architecture was applied during this period.

Initially, I had planned for a focus group where the participants were to analyse the same webstores as I did, by applying the same eight questions. If the results of this focus group had been similar to my findings, this could have contributed to strengthen the thesis external validity. Unfortunately, because of the situation brought on by Covid-19, the implementation of a focus group was not feasible.

3.3.2 Validity

In addition to reliability, validity is also an important factor to determine the research's quality. Validity concerns the appropriateness of the methods applied, i.e. were the methods useful in achieving the thesis' main objective, and the degree to which the findings can be generalized (Saunders et al., 2016, p. 203). Like reliability, validity is also divided into internal and external validity. Internal validity is achieved when the results are dependable for the sample that was

studied, while external validity is achieved when the findings of the research can be generalized to all observations, also outside the initial sample. First, I believe that the collecting of both qualitative and quantitative data in the content analysis helps to strengthen the internal validity of the research. Regarding the external validity however, the exploratory approach and the use of the quantitative content analysis are elements that weaken the thesis' external validity. Despite this, I think the thesis still manages to shed light on some general aspects about the use of choice architecture in webstores.

4.0 Results

Sub-objective 2: *Perform an exploratory search on the use of choice architecture for different products in the webstores of some selected retailers*

This chapter will display the results from the exploratory search conducted in the webstores of the four online retailers that were examined, and thus will fulfil sub-objective 2. Given that the exploratory search consists both of a qualitative and quantitative part, the results will be divided accordingly. The first section of this chapter will be a general description of the three webstores, while the following sections will display the qualitative and quantitative results

4.1. The Content analysis

The Content analysis was conducted as an examination of the use of choice architecture in some selected webstores, in order to answer the overarching question of how commercial actors utilize choice architecture to nudge consumers in online markets. The analysis consists of two parts, one qualitative and one quantitative. The qualitative part aims to give an overview of the different choice architecture techniques found in the webstores that were examined, while the quantitative part tries to say something about the frequency at which they occur. In total, three webstores were examined in the analysis. These were Elkjøp.no, Power.no and XXL.no. Elkjøp and Power are both operating inside the market of consumer electronics, while XXL is a retailer of sporting goods. The search was delimited to four distinct products categories: dishwashers, laptops, tents and sleeping bags. For both Elkjøp.no and Power.no, the two product categories examined were dishwashers and laptops, while for XXL.no, the two product categories examined were tents and sleeping bags.

4.1.1 The qualitative search

The results were gathered over a period time, starting on the 04.03.20, and ending on the 06.05.20.

Decision Information

1. Are there taken measures to reframe any information regarding the different products?

From the choice architecture taxonomy of Münscher et al., we remember that reframing is the act of altering the product information such that the decision maker's perception of the information changes. This can in turn change the decision maker's subjective evaluation of the option. The most common type of reframing found through my search, was reframing regarding the price information, where the most common kind was the display of the before-price. Seeing the before-price, the decision maker's perception of the products value will change. This is because he is now made aware that the product at one point in time has had a higher price, but currently it is offered at a more affordable price. Another type of reframing regarding the price information, was the display of the difference between the old price and the new price. This has the same effect as displaying the before-price. Both these cases of reframing were applied by Elkjøp.no and Power.no for both dishwashers and laptops, as seen in figure 6 below. XXL.no on the other hand only displayed the before price on a couple of sleeping bag models.



Figure 6: Reframing in Ekjøp.no and Power.no

The blue circles denote the display of the before-price, while the red circles denote the display of the difference in price between some old price and the new price. The two screenshots in the orange square are obtained from the webstore of Power (<https://www.power.no/hvitevarer/oppvaskmaskin/pl-1578/> and <https://www.power.no/data-og-tilbehoer/pc/baerbar-pc/pl-4923/>, read 01.05.2020), while the two screenshots in the green square were obtained from the webstore of Elkjøp (https://www.elkjop.no/catalog/hvitevarer/no_oppvaskmaskin/oppvaskmaskin and <https://www.elkjop.no/catalog/data/barbar-pc/no-windows-pc/windows-barbar-pc>, read 01.05.2020).

Another type of reframing found during my examination, which was less frequent, was reframing regarding the product information. An example of this was how Elkjøp wrote the following in the information section of a Bosh dishwasher: “*save money, electricity and time with this practical dishwasher from Bosh.*”. Here, the focus is shifted away from the product’s functional abilities in favour of economic and simplicity arguments. This type of reframing seeks to widen the decision maker’s perspective of what the product can bring to his life. Not only is this model of dishwasher capable of cleaning the dishes, it will also save him time and money. Hence, reframing like this intend to make the product appeal to a larger group of potential customers. Elkjøp used a similar reframing when describing some of their other models of dishwashers and was, as far as the search could uncover, the only of the three retailers that used this type of reframing in their marketing.

2. Are there taken measures to simplify product information?

According to Münscher et al., simplification as a choice architecture technique aims at transforming information to make it more understandable and transparent, as this makes the information more accessible to decision makers. My search of the three webstores uncovered many types of information simplifications. The first type of simplification uncovered, was the way in which the three retailers presented the various products in their webstores. All three retailers presented the products in rectangular squares, containing a picture of the product, as well as a short product description. This allows the decision maker to obtain key information about the products in a quick manner, without having to use a lot of effort and time.

The second type of simplification uncovered was the use information labels. Information labels are small tags or symbols that through illustrations or keywords, communicates a considerable amount of information to the decision maker. Both Elkjøp and Power had an extensive use of information labels in their webstores. In figure 7 below, there is displayed a selection of the information labels that was uncovered in the webstores of Elkjøp and Power, where the information labels are marked with red and blue circles. The red circles denote information labels that inform the decision maker of special features of the product. If we take the “Flexfit” label on the dishwasher to the right for instance, this label informs the decision maker that the dishwasher comes with an adjustable front, which makes it possible to adjust the dishwasher’s height so it fits the rest of the kitchen interior. The blue circles on the other hand denote energy labels. Energy labels are a type of information labelling that communicates information about

the products' energy efficiency. We can see that both dishwashers are labelled with an A⁺⁺⁺, which is the highest grade of energy efficiency, the worst being D. As mentioned earlier, energy labelling are required for all major household appliances by EU regulation (Comission, 2020), and hence were displayed for all models of dishwashers both in the webstores of Elkjøp and Power In the webstore of XXL, there was not discovered any usage of information labels, neither in the product category for tents nor in the category for sleeping bags.

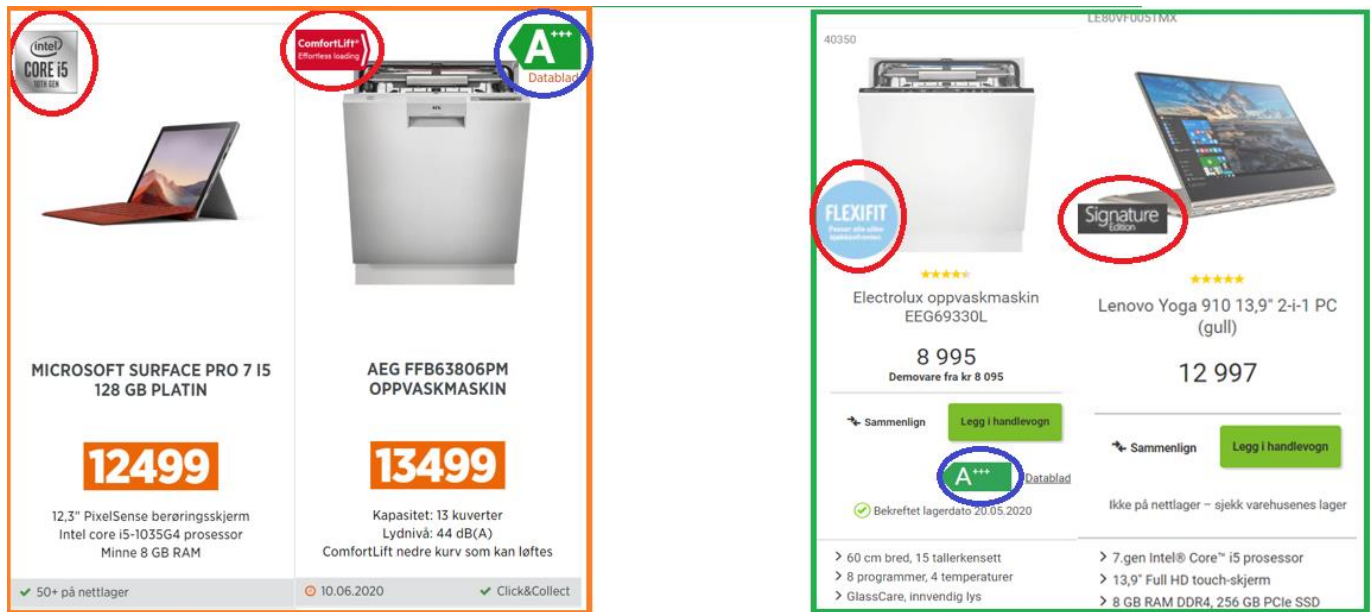


Figure 7: Information labels in Power.no and Elkjøp.no

All the encircled elements are examples of labelling, where the red circles denote information labelling about the products features, while the blue circles denote energy labels, that says something about the product's energy efficiency. The orange square to the left displays two screenshots taken from the webstore of Power (<https://www.power.no/data-og-tilbehoer/pc/baerbar-pc/pl-4923/> and <https://www.power.no/hvitevarer/oppvaskmaskin/pl-1578/>, read 1.05.2020.). The green square to the right displays two screenshots taken from Elkjøp (https://www.elkjop.no/catalog/hvitevarer/no_oppvaskmaskin/oppvaskmaskin and <https://www.elkjop.no/cms/sistesiansse-data/ryddesalg-outlet-data/>, read 01.05.2020) .

A third type of simplification discovered, was the use of lists to display product key product information and other important features. The use of lists as means to simplify product information and was applied by all the three retailers. The information displayed in the lists differed between the different product categories. While the lists displayed for tents and sleeping bags in general contained more information concerning the usage of these products,

the listing applied for laptops and dishwashers in general applied information concerning the products technical specifications. In figure 8 below, we see two examples of listing obtained from the webstores of XXL and Power, that demonstrates this difference.

**Bozeman™ -9C Reg, sovepose,
Turquoise**

- Sovepose Temp: 0 -10 °C
- Sleeping bag material: Synthetic
- Sesong: Vår, Sommer, Høst
- Bruker: Herre

**Kompakt og stilig 14" bærbar datamaskin med
kraftig AMD R7-processor**

- AMD Ryzen R7-3700U
- AMD Radeon™ Vega 10 Graphics
- 16 GB RAM + 1 024 GB SSD
- 14" full HD-skjerm (1920 x 1080)
- Moderne og bærbar pc
- Lett og kraftig

Figure 8: Listing as simplification, XXL.no and Power.no

Here we see two examples of how listing of key features is used to simplify information. The screenshot to the left is taken from XXL's webstore (<https://www.xxl.no/jakt-og-friluft/soveposer-og-underlag/soveposer/c/201010?sort=expensive>, read 03.05.2020), while the screenshot to the right is taken from the webstore of Power (<https://www.power.no/data-og-tilbehoer/pc/baerbar-pc/pl-4923/>, read 03.05.2020).

A type of information simplification that was found exclusively in the webstores of Elkjøp and Power, was the use of information videos to communicate product information. These videos were found both in the product presentation of laptops as well as for dishwashers. These videos contained presentations of product information in informative ways, with demonstrations of key product features or assembly instructions in the case of dishwashers. Although most of the videos were intended to be informative, some of the videos were exclusively meant for advertising, providing little useful product information other than the display of some buzzwords.

3. Is information which otherwise would be unavailable, made visible by the retailers?

Making information visible was another measure described by Münscher et al. in their taxonomy. This is a choice architecture technique where the choice architect makes information, which is difficult to obtain but still relevant for the decision, available to the decision maker. Thus, the search was focusing on information that would not be available to the decision maker, unless the retailer made it available. For Elkjøp and Power, information regarding a product's capacity, energy consumption and effectiveness are aspects of the product

that decision makers cannot have knowledge about unless they are presented with it. For their dishwashers, both Elkjøp.no and Power.no display the energy label, which is a label containing information about annual energy consumption, annual water usage, drying capabilities, loading capacity and noise level while running. For their laptops, both Elkjøp.no and Power.no provide a detailed list of model specification, which includes information about memory capabilities and the processor capacity. For some models of laptops that are intended for gaming, Elkjøp applies a grading system that inform the customers of how well it runs different game. With this grading system, one can see how smooth different games will run on the computer (frames per second), and how long the battery life is. This is all information that would have been unobtainable for the decision maker if not made available by the retailers. In figure 9 and figure 10 below, the energy labelling of dishwashers and the grading system that determines some laptops performance, are displayed.



Figure 10: Energy label, Elkjøp.no

Here we can see the energy label, with information about annual energy consumption, water consumption, drying capacity, loading capacity and noise level. This label is present for all dishwashers, both in the webstore of Elkjøp and Power. This screenshot is taken from the webstore of Elkjøp (<https://www.elkjop.no/product/hvitevarer/oppvaskmaskin/27821/asko-oppvaskmaskin-dbi8237w-hvit>, read 03.05.2020).

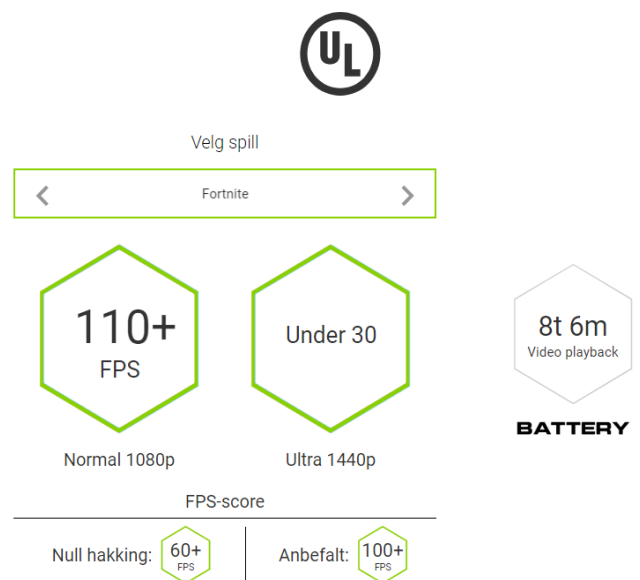


Figure 9 : Grading system for games, Elkjøp.no.

This grading system was applied for some of the laptops that were intended for gaming. With this, customers can see how well different games run on the laptop, as well as the battery life. This screenshot was taken from Elkjøp's webstore (<https://www.elkjop.no/product/gaming/gaming-pc-laptop/50825/hp-pavilion-gaming-15-dk0918no-15-6-barbar-gaming-pc>, read 03.05.2020).

As for the tents and sleeping bags marketed by XXL.no, the decision maker has little chance of knowing the exact product specifications if these are not revealed to him. XXL.no therefore lists the information concerning dimensions, weight, material type etc. for both sleeping bags and tents. Distinct for sleeping bags are the listing of the minimum and maximum temperatures the model of sleeping bag is suited for. In the case of the tents, XXL provide information about how much rainfall the tent will endure. Examples of such listing is displayed in figure 11 below.

Spesifikasjoner:

- Vekt: 1442 g
- T-Lim: -9 °C
- T-Comf: -3 °C
- T-Ext: -28 °C
- Personlengde: 182 cm
- Størrelse nedpakket: 23 x 43 cm
- Utvendig lengde: 218 cm
- Omkrets hofteparti: 147 cm
- Omkrets skulderparti: 157 cm
- Loft: 15 cm
- Materiale ytterstoff: 75D Plain Weave
- Isolasjon: Thermal.Q™ 150 g/m²
- Fyll: Syntetisk

Spesifikasjoner:

- Sesonger: 3
- Antall personer: 2
- Min vekt: 1,37 kg
- Vekt pakket: 1,44 kg
- Høyeste punkt under taket: 105 cm
- Pakket størrelse: 58 x 18 cm
- Gulvmål: 223,5 x 127/114 cm – i innerteltet
- Materiale ytterduk: 15 D Sil/PU nylon ripstop
- Materiale innerstoff: No-see-Um-Mesh
- Materiale bunnduk: 68 D PU polyester
- Vannsøyle ytterduk: 1200 mm
- Vannsøyle bunnduk: 1200 mm
- Stenger: DAC Featherlite™, aluminium 1stk. delt 8,5 mm

Figure 11: Listing as information made visible, XXL.no

Here we see an example of how listing can be applied to reveal hidden information. To the left we see the product specifications for a sleeping bag, while to the right, we see the product specifications for a tent. These two screenshots are taken from the webstore of XXL (<https://www.xxl.no/jakt-og-friluft/soveposer-og-underlag/soveposer/c/201010?sort=expensive> and <https://www.xxl.no/jakt-og-friluft/telt-og-lavvo/telt/c/200202>, read 03.05.2020).

4. Are social norms used as reference points in the advertising of the products?

Münscher et al. emphasized that people's actions do not occur as isolated incidents, but rather as part of a greater social environment. Hence, people compare their own behaviour to that of others and are thereby affected by how other people around them act. Based on this, the search looked for anything that could indicate a product's popularity or lack thereof. Something that was present in the webstores of both Power and Elkjøp, where the ability to rank all the products by popularity, and by numbers sold. This could be done through the filtering tool, which when selected will sort the products by popularity (number of clicks) or sales numbers, and hence the products which are viewed the most or have the highest sales numbers, will be displayed first. In addition to this, both Power and Elkjøp have a rating system, which gives customers and visitors the opportunity to rate all the products with stars from one to five, where five is the highest score and 1 is the lowest. The rating system also gives customers the opportunity to leave comments and feedback about the products. Hence, consumer can determine a product's popularity, based on the reviews. In figure 12 below, we can see the layout of the grading system as displayed by Elkjøp. In XXL's webstore, neither the sorting of products by popularity nor the rating function were available to customers.

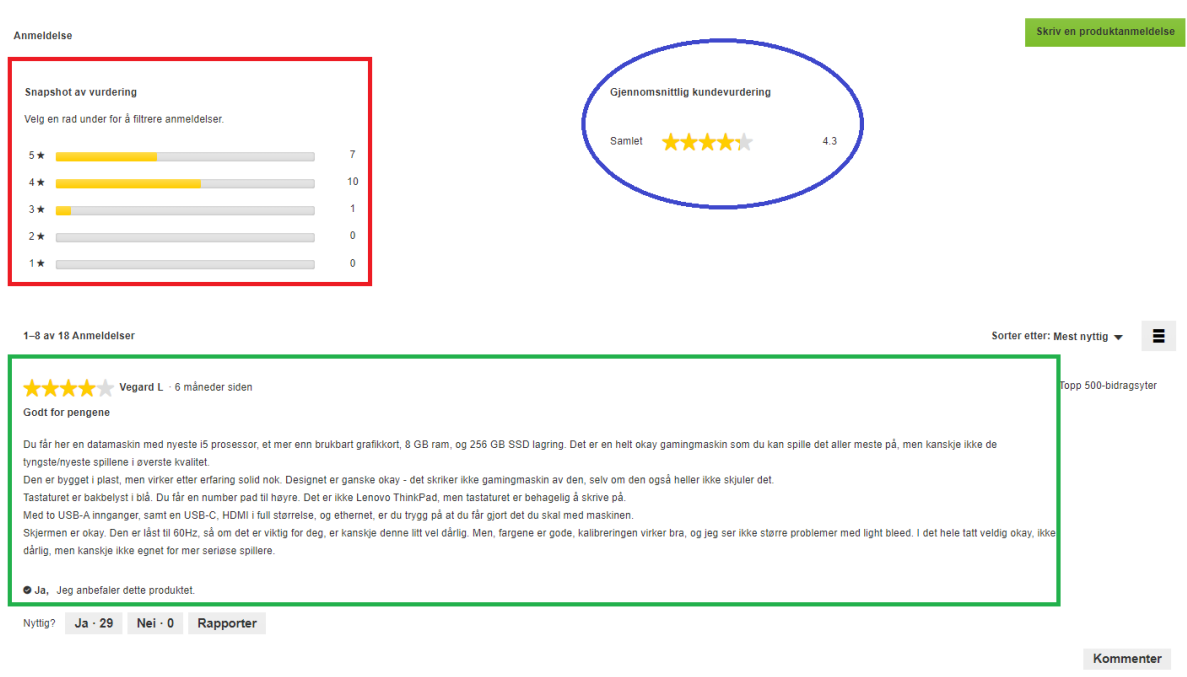


Figure 12: Social norms, Elkjøp.no

Here is a display of Elkjøp's rating system, where customers can rate the various products with stars from 1-5, and leave comments. In the red square, there is displayed an overview of how many reviews the specific product has, and which score the different reviews gave it. In the blue circle, the average score/grade of the product is displayed, which in this case is 4.3 stars. In the green square at the bottom, we see example of a consumer review, with a score and a comment. This screenshot was obtained from the webstore of Elkjøp (https://www.elkjop.no/catalog/hvitevarer/no_oppvaskmaskin/oppvaskmaskin, read 03.05.2020).

While there was no way for decision makers' to rate models by popularity in XXL's webstore, it was indicated in the product information of some specific products for both tents and sleeping bags, that these models are popular among customer. Although this is a sort of social reference, it was not very easy to spot, hence one can question if this will qualify as a choice architecture measure.

5. Are references to opinion leaders used in the marketing of the products?

In addition to social norms, Münscher et al. describes another form of social reference that can be applied by choice architects, namely references to opinion leaders. Both Elkjøp and Power displayed products of both laptops and dishwashers that they themselves recommended to the customer, either based on a good price, or because the product apparently was of good quality. They then assume the role of opinion leaders themselves. Further, both Elkjøp and Power refer to reviews conducted by consumer magazines, provided that the review is good and gives the product a high score. Examples of such references are shown in figure 14 below. Another type of reference that I saw only one case of, was how Elkjøp pointed out that one of the models of dishwasher they were marketing, had been featured on a Norwegian interior renovation tv show. This example is displayed in figure 13 below. On the aspect of referring to opinion leaders, I found no cases of this being used in XXL's webstore neither for sleeping bags nor for tents.



Figure 13: Reference to opinion leader, Elkjøp.no

Here we can see how Elkjøp uses the Norwegian interior renovation show "Tid For Hjem", as an opinion leader in the marketing of this model of dishwasher. This screenshot was taken from the webstore of Elkjøp

(https://www.elkjop.no/catalog/hvitevarer/no_oppvaskmaskin/oppvaskmaskin, read 03.05.2020).



Figure 14: Reference to opinion leaders, Elkjøp.no and Power.no

In these screenshots we see two examples of references to opinion leaders. For laptops, both Elkjøp and Power refers to consumer magazines as opinion leaders. For the dishwashers on the other hand, both Elkjøp and Power refers to themselves as opinion leaders. The green square to the left display two screenshots taken from the webstore of Elkjøp (https://www.elkjop.no/catalog/hvitevarer/no_oppvaskmaskin/oppvaskmaskin and <https://www.elkjop.no/catalog/data/barbar-pc/no-windows-pc/windows-barbar-pc>, read 03.05.2020.), while the orange square to the right contains to screenshots obtained from the webstore of Power (<https://www.power.no/hvitevarer/oppvaskmaskin/pl-1578/> and <https://www.power.no/data-og-tilbehoer/pc/baerbar-pc/pl-4923/>, read 03.05.2020.).

Decision structure

6. What is done by the retailers to reduce physical and financial effort?

Financial and physical effort is described by Münscher et al. as the amount of time and resources the decision maker will have to allocate to succeed with the decision process. It is important to emphasize that to be defined as choice architecture and as a nudge, the changes made to alter the effort needed, must be simple without restricting certain options or greatly change the decision maker's economic incentives. Thus, the search focused on finding any choice architectonic measures taken by the retailers to reduce these efforts.

The first example of measures applied to decrease the physical effort associated with the decision process, was the way the retailers presented the products. As I have already mentioned in the section about simplification, all the products were presented in rectangular boxes

containing a picture of the product accompanied by key product information. These boxes were arranged in rows of three (four in the case of Elkjøp), and by scrolling down the page, new rows of products will load in as a result of the continuous scrolling function. With this arrangement, the decision maker will never see more than three (four in the case of Elkjøp) products at a time when he is scrolling down the product selection, given that he uses the default zoom of 100% in his browser. Hence, this measure reduces the chance of the decision maker experiencing choice overload. A measure that was used solely by Elkjøp in the category for dishwashers to reduce the physical effort, was a hyperlink reading “Our bestselling dishwashers”, which directs visitors to a list over the top 10 bestselling dishwashers. A measure like this is intended to reduce choice overload, and hence simplifying the decision process.

Another measure taken by the retailers to decrease the physical effort, was to give the decision maker several options of how he will collect the product. For instance, both Elkjøp and Power gave customers the option to either reserve the product and come to a nearby store and collect, or the option of getting it delivered to their home address. The option of home delivery is free for most dishwashers if they are just left on the porch, but costs extra if the customer want to have it installed. For the laptops on the other hands, there is a small fee of less than NOK 100 when choosing the delivery at home option. XXL also offers both in-store pick up, and home delivery at a fixed shipping cost of NOK 59 to their customers. In addition to this, all the three retailers had a recommendation software in their webstore, meaning that when a visitor clicked a product to access the product information, the visitor were presented with a selection of other products and the message “*People who viewed this product did also find these products interesting*”.

Further, the retailers had also taken measures to decrease the financial efforts regarding decision making. Initially, all the retailers offered return policies for their products. Normally, Elkjøp and Power offers customers to return the product within 50-60 days at no costs regardless of the reason. However, given the circumstances brought on by covid-19, both Elkjøp and Power currently abstain from this policy, and will now only take products in return if they are broken (Lindvoll, 2020). XXL on the other hand offers a return limit of 100 days and is still taking all products in return, no matter the reason, as part of their 100% satisfied guarantee. Another measure taken by Elkjøp and Power to reduce the financial effort, is the offering of postponing payments. By creating a shopping account at Santander, customers get the opportunity to defer their payments for a limited period of time, in exchange for a small fee which increases alongside the length of the payment deferral. If the payment is conducted within the deadline,

no additional costs will occur. As an example, both Elkjøp and Power charges you NOK 275 if you delay the payment by four months, and considering that we are dealing with products that are in the range of thousands of Norwegian kroner (NOK), I regard the additional transaction cost as so small, that I deem this as a choice architectonic measure. XXL also offers their customers payment deferrals, and this service is similar to the one offered by Power and Elkjøp.

Another measure intended to reduce financial effort that was uncovered in all the three webstores and for all products, was psychological pricing. Going back to the literature section, we remember that psychological pricing involves pricing goods and products at prices which were close to or just below a round number. In the screenshots displayed in figure 15 below are just some of the cases that the search uncovered.

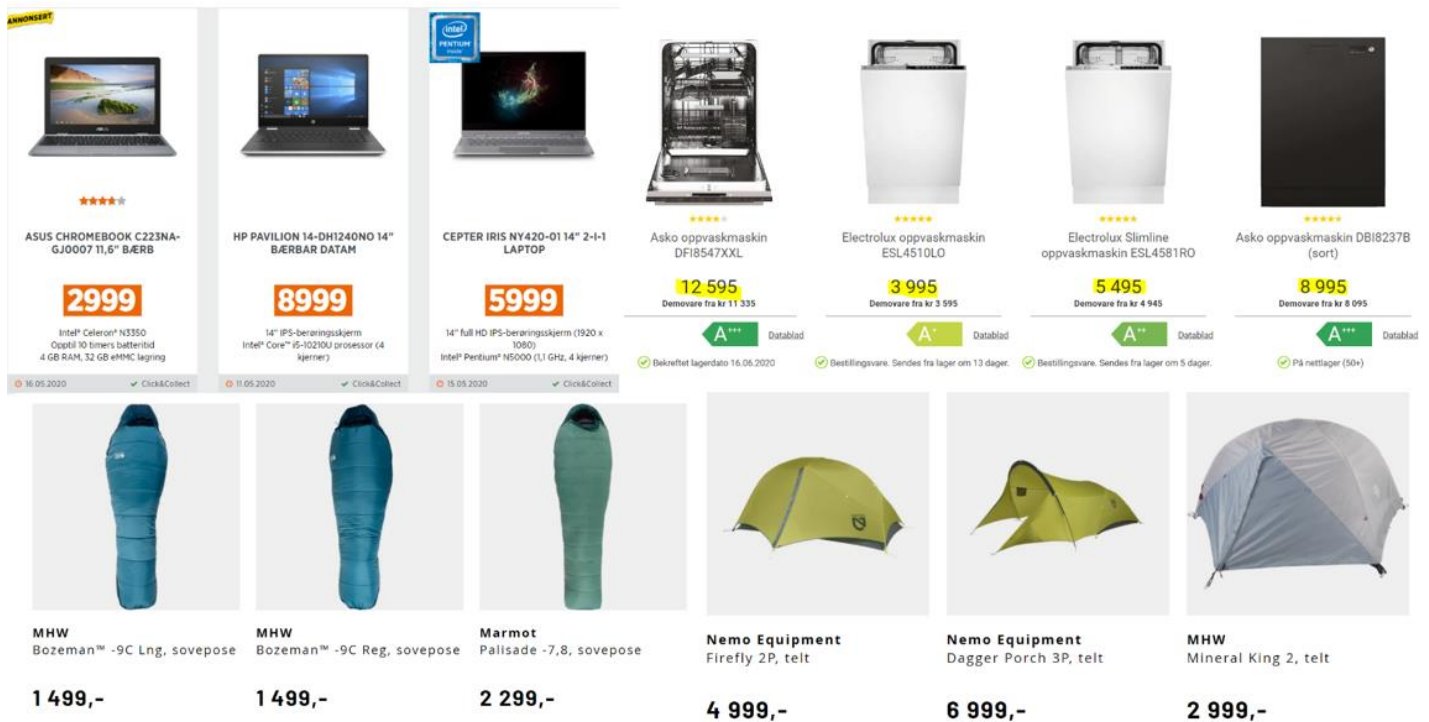


Figure 15: Psychological pricing, Elkjøp.no, Power.no and XXL.no

Here we see four screenshots that demonstrates the use of psychological pricing in the three webstores. Notice how all the prices are just below a round number. Clockwise from the top, the screenshots are taken from <https://www.power.no/data-og-tilbehoer/pc/baerbar-pc/pl-4923/>, https://www.elkjop.no/catalog/hvitevarer/no_oppvaskmaskin/oppvaskmaskin, <https://www.xxl.no/jakt-og-friluft/telt-og-lavvo/telt/c/200202?pages=1> and <https://www.xxl.no/jakt-og-friluft/soveposer-og-underlag/soveposer/c/201010?pages=1>. All the screenshots were taken on 06.05.2020.

7. How are the different product categories arranged?

Another important aspect of the decision structure as pointed out by Münscher et al. is how the decision alternatives are organized. Hence, when searching through the webstores, I tried to look for differences among the retailers with respect to organizing and arrangement of the different products.

If we start by taking a general look at the arrangement of the products in the three webstores, all of them have a default setting regarding presentation. In the webstores of Elkjøp and Power, all the products are arranged by popularity, with the most popular products being presented first. In XXL's webstore however, the default setting regarding presentation is latest first, i.e. the newest products being displayed first. Despite every retailer having a default setting, all the

three retailers give their customers the freedom to choose how they want the products arranged. This can be done through the sorting tool, where visitors can change the arrangement of the products from a set of alternatives. Here there are some individual variations between the different retailers in how many alternatives they offer. Both Elkjøp and Power offers their visitors an array of arrangements and sorting options. For instance, visitors can choose to arrange the products by best-sellers, most viewed, customer reviews, increasing and decreasing price, alphabetical order or by date of release. In addition to this, visitors are also given the opportunity to filter out products that are not of interest. By checking off boxes, they can decide to only see products that meet certain criteria, like brand, price class, specific functions etc.

XXL's webstore also provides customers with alternatives regarding the arrangement and altering of the way products are presented. Here, customers get the opportunity to sort products by date of release, increasing and decreasing price and alphabetic order. XXL also provides its visitors with a filtering tool to reduce the number of products viewed by excluding products that do not meet some specific criteria. Compared to Power and Elkjøp's filtering tools, XXL provides fewer specific criteria to select from, but the criteria provided by XXL differs from those provided by Power and XXL, when these are customized for tents and sleeping bags. As an example, XXL enables visitors to filter out sleeping bags suited for different seasons, temperatures, by material and by gender and age.

Decision Assistance

8. What decision tools do the retailers offer to the decision makers?

Münscher et al. describes decision assistance as measures that goes beyond altering the decision information and structure. Thus, this part of the search focused on uncover measures that was not covered by previous parts of the search. One such measure is decision tools.

In the webstores of Elkjøp and Power, I found several cases of decision tools. The first decision tool I came across, was the comparison tool. This is a tool that enables customers to compare products with each other based on the price and technical specifications. Both the comparison tool provided by Power and the one provided by Elkjøp have a maximum limit of three products they can compare simultaneously. In addition to the comparison tool, both Elkjøp and Power offer a chat service. Here, customers can ask every question they have concerning the products and the retailer's service in general. In the case of Elkjøp, visitors posting questions in the chat

function will first receive guidance from a chat bot. The chat bot will, based on key words in the question, direct the customers to a link where he might get his question answered. If this is not the answer he was looking for, he can be put in contact with a service employee, which will answer his questions in a direct chat. The direct chat is normally available during weekdays from 08.00 to 19.30, but because of the covid-19 situation, the opening hours have been reduced with some hours each day. The services of the chat bot, however, are available every day around the clock.

On a closer inspection of the chat function provided by Power, we can see that it has some differences to the chat function provided by Elkjøp. First, when writing a question in the chat function of Power, the customer will be put in direct contact with a service employee, hence there is no chat bot to answer customers questions. When it comes to opening hours, the chat function at Power.no is open in weekdays from 08.00 to 22.00 and on Saturday from 09.00 to 17.00. By offering this chat service to visitors, the retailers can provide guidance and support which will ease the decision process and increase the chance of visitors going through with a purchase.

The webstore of XXL provided no comparison tool for their visitors, nor do they offer any chat service. On the other hand, XXL do provide information that is intended to aid decision makers in deciding on which products to choose. Under a section named “tips and advice”, visitors can read about how to proceed when choosing the right sleeping bag with regards to temperature, size, and other specification. There are also tips and advices regarding the choice of tents, as well as many other products.

Summary of content analysis

Decision Information			
	Elkjøp	Power	XXL
<i>Are there taken measures to reframe any information regarding the different products?</i>	<ul style="list-style-type: none"> • The before-price is displayed for some products. • Some cases of reframing in the information section of certain products. • Displays informative videos for certain products. 	<ul style="list-style-type: none"> • The before-price is displayed for some products. • Displays informative videos for certain products. 	<ul style="list-style-type: none"> • Displayed the before-price for some sleeping bags but did not do so with tents.
<i>Are there taken measures to simplify product information?</i>	<ul style="list-style-type: none"> • Simplifies information by using information labels. • Lists key product features to ensure easy access to information. 	<ul style="list-style-type: none"> • Simplifying information by using information labels. • Lists key product features to ensure easy access to information. 	<ul style="list-style-type: none"> • Lists key product features to ensure easy access to information
<i>Is information which otherwise would be unavailable, made visible by the retailers?</i>	<ul style="list-style-type: none"> • Reveals hidden information through energy labels and grading systems. • Reveals hidden information by listing of technical specifications 	<ul style="list-style-type: none"> • Reveals hidden information through energy labels. • Reveals hidden information by listing of technical specifications 	<ul style="list-style-type: none"> • Reveals hidden information by listing of technical specifications
<i>Are social norms used as reference points in the advertising of the products?</i>	<ul style="list-style-type: none"> • Displays consumer reviews for all products, with a grading system and the possibility to leave comments. 	<ul style="list-style-type: none"> • Displays consumer reviews for all products, with a grading system and the possibility to leave comments. 	<ul style="list-style-type: none"> • Found no usage of reference to social norms in this webstore.

<p><i>Are references to opinion leaders used in the marketing of the products?</i></p>	<ul style="list-style-type: none"> • Acts as an opinion leader by recommending products to visitors. • Displays reviews from consumer magazines if they are good. 	<ul style="list-style-type: none"> • Acts as an opinion leader by recommending products to visitors. • Displays reviews from consumer magazines if they are good. 	<ul style="list-style-type: none"> • Found no usage of references to opinion leaders in the webstores marketing.
--	---	---	---

Table 4: Results of the qualitative content analysis (decision information)

Decision Structure

	Elkjøp	Power	XXL
<i>What is done to reduce physical and financial effort?</i>	<ul style="list-style-type: none"> • Applies a layout of the product selection that prevents choice overload. • Offers customers several alternatives of collecting the products. • Applies recommendation software which recommends products to visitors • Have a return policy of 50 days. • Offers customers the opportunity of postponing payment • Applies psychological pricing 	<ul style="list-style-type: none"> • Applies a layout of the product selection that prevents choice overload. • Offers customers several alternatives of collecting the products. • Applies recommendation software which recommends products to visitors • Have a return policy of 60 days • Offers customers the opportunity of postponing payment • Applies psychological pricing. 	<ul style="list-style-type: none"> • Applies a layout of the product selection that prevents choice overload. • Offers customers several alternatives of collecting the products • Applies recommendation software which recommends products to visitors • Have a return policy of 100 days • Offers customers the opportunity of postponing payment • Applies psychological pricing.
<i>How are the different product categories arranged?</i>	<ul style="list-style-type: none"> • Offers their customers a sorting tool, so they can decide the arrangement of the product selection • Gives their visitors access to a complex filtering tool, which enables them to only view products that meet a set of custom criteria. 	<ul style="list-style-type: none"> • Offers their customers a sorting tool, so they can decide the arrangement of the product selection • Gives their visitors access to a complex filtering tool, which enables them to only view products that meet a set of custom criteria. 	<ul style="list-style-type: none"> • Offers their customers a sorting tool, so they can decide the arrangement of the product selection • Gives visitors access to a simple filtering tool, which enables them to only view the products that meet a set of criteria.

Table 5: Results of the qualitative content analysis (Decision structure)

Decision Assistance			
	Elkjøp	Power	XXL
<i>What decision tools do the retailers offer to the decision makers?</i>	<ul style="list-style-type: none"> Provides visitors with a comparison tool, which enables them to compare up to three different models within a product category, with regards to price and technical specifications. Provides a chat service to their visitors where they can post questions and receive direct guidance from service employees. 	<ul style="list-style-type: none"> Provides visitors with a comparison tool, which enables them to compare up to three different models within a product category, with regards to price and technical specifications. Provides a chat service to their visitors where they can post questions and receive direct guidance from service employees. 	<ul style="list-style-type: none"> Has a section named tips & advice, where visitors can get information about the different product categories, and how they should proceed to pick a model that meets their criteria.

Table 6: Results of the qualitative content analysis (Decision assistance)

4.1.2 Quantification of findings

After the qualitative part of the content analysis was concluded, the process of retrieving the numerical data started. By applying the method of quantification described in the method chapter, numerical data containing the frequency of the studied choice architectonic measures was obtained. The results are displayed in tables 7 and 8 below.

	Elkjøp		Power		XXL	
	Dishwasher	Laptop	Dishwasher	Laptop	Sleeping bag	Tent
Reframing	8%	2%	12%	4%	7.5%	0
Listing	100%	100%	100%	100%	96.2%	61%
Labels	12%	14%	20%	68%	0	0
Opinion Leader	6%	6%	14%	0	0	0
Psych. Pricing	92%	100%	92%	100%	90%	95%

Table 7: Results of the quantitative content analysis by retailer

Frequency of measures in total sample	
Reframing	6 %
Listing	93 %
Labelling	20 %
Opinion leaders	4 %
Psychological pricing	95 %

Table 8: Results of the quantitative content analysis for overall sample.

As we can see from the tables, there are some values that are worth noticing. Starting with reframing, we can see that this measure is not very popular among any of the retailers, with some cases found in both Elkjøp's and Power's webstores. In XXL's webstore, this measure was only present for some models of tents. Further, we can notice that listing of key features was applied for all the examined products of Elkjøp and Power, while it was somewhat less prominent for the products examined for XXL. Next, we can see that labelling was applied to some degree for all the products examined in the webstores of Elkjøp and Power, while it was not present for any products marketed by XXL. As we can observe from the table, references to opinion leaders was applied in the webstores of Elkjøp and Power to some extent, while it was totally absent from XXL's webstore. If we look at the table 8 displaying frequency of the measure in total sample, this was the least used measure of all. The most applied measure of all, was psychological pricing. This measure was applied to a high extent in all the webstores and for all products.

5.0 Discussion of findings

Sub-objective 3: *Discuss the empirical findings with regards to the already existing literature on choice architecture and bounded rationality.*

In this chapter, the findings of the thesis will be discussed, which will fulfil the 3. sub-objective. The first part of the discussion will deal with the empirical findings and discuss these with basis in the theory. The second part of the discussion will concern some aspects that were not investigated in the content analysis, but that can still contribute to the main objective. Note that I in this section will use the terms *decision process* and *purchasing process* to describe the same thing. Note also that the terms decision maker and customer/consumer will be used interchangeably.

5.1 Empirical findings

The results obtained through the content analysis gave an insight into which choice architectonic measures the three webstores apply. The qualitative part provided a more careful description of each measure, while the quantitative part showed to what extent the different measures were used. Beyond this, the empirical data also revealed that some choice architectonic measures are more widely used across different markets. To understand why some measures are more used than others, we will have to look at the measures that were applied in all three webstores and determine what characterizes them.

5.1.1 Similarities between retailers

By looking at the results, eight measures were found in all the three webstores. These were the following:

- Reframing
- Listing of key features
- Simple page layout
- Offering the customer several alternatives for collecting the products
- Appliance of recommendation software
- Providing sorting and filtering tools
- Return policy
- Providing the opportunity of postponing payment
- Appliance of psychological prices

Reframing of prices were found to some extent in all the three webstores. The intention of this measure is to change the decision maker's perception of a product's price, with the help of the anchoring effect, as described by Kahneman (2011). By giving the decision maker information about an old price, this becomes a point of reference that can be compared with the new price. Given that the old price in all cases are higher than the new price, the decision maker will perceive the product as cheaper, since all prices which are lower than the reference point (the anchor), will be perceived as cheap. This measure is not particularly helpful to the decision maker since it does not reveal any vital product information or aid the decision maker in any way. On the contrary, this measure can in certain instances be misused by the retailers to mislead the customer into perceiving a product as cheaper than it really is. An example of several cases where this measure has been exploited, is in association with large sales like black Friday, where retailers are found to have increased prices prior to the sales, to make products appear cheaper (Vollan, 2018).

The act of listing key features is a measure intended to compress technical and difficult information, and hence make the information easier for the decision maker to obtain. All the examined product categories are, as stated earlier, heavy on information and are therefore characterized by the complex buying behaviour described by Kotler and Armstrong (2016). From both the work of Simon (1955) and Kahneman (2011), we know that individuals have limited cognitive capacity, and if they are overloaded with information, decision makers will lose track and be unable to make useful decisions. The worst-case scenario for the retailer, is if the decision maker is discouraged from deciding, and the whole decision process is cancelled. Retailers cannot afford this to happen, and hence they will make the information concerning the different products as simple and easily obtainable as possible.

The focus on simplification is not only prominent in the presentation of the product information, it is also evident in the overall page layout of the three webstores. By applying a simple page layout where the products are presented in rectangular boxes organised in rows, the webstores appear transparent and well organized. Although the pages are full of information, the layout makes navigating the pages easier. By presenting the products in rows of 3 or 4, the decision maker's instant focus will only be on this limited number of products, and hence, choice overload as pointed out by Schwartz (2004) and Lyengar & Lepper (2000) will be reduced. If we see this measure regarding Kotler & Armstrong's buying decision process, the page layout will mainly affect the decision maker while he is in the *information search* stage, by reducing

the effort required to obtain information about the different products. Thus, all retailers operating a webstore benefit from having an orderly page layout.

Providing customers with several options when it comes to collecting the product is a way to reduce the physical effort associated with decision making. If for instance a retailer only gave customers the option of collecting the products they bought online in a physical store, people that do not have a store in close proximity to where they are living, will have a harder time collecting the products. This is because they will have to allocate more of their time and resources, meaning the physical effort concerning the purchase will be higher for them. As seen from the study of Thorndike et al. (2017), when a high physical effort is required to obtain a product, less people are found to buy it. Thus, by offering the option of home delivery, the physical effort of acquiring the product is drastically reduced. This results in the product becoming more available to customers, and the group of potential buyers will grow.

The recommendation software is another measure intended to reduce the physical effort associated with the decision making. As already mentioned, the information search is a critical stage in the purchasing process. During this stage, the decision maker is supposed to gather information that will become the foundation for the whole purchasing process. If the decision maker encounters too many hardships during this stage, he may end up cancelling the whole process. It is here the recommendation software comes into play. By continuously recommending new products to the decision maker while he is browsing other products, he is saved a lot of effort because he does not have to search for the products himself. This will keep the information search going and increase the probability that the decision maker will come across a product he likes. Like the recommendation software, the sorting and filtering tools do also contribute to reducing the physical effort associated with the decision process. With these tools, the decision maker can sort and filter out uninteresting products, while only keeping the products he deems as relevant. Hence, the information search will require much less effort, and the decision process overall will become easier.

Another measure that was applied in all the examined webstores, was a return policy. A return policy is an internal rule adopted by the retailer concerning the return of purchased products, which enables customers to return a product they have purchased and get their money back. The only requirement for returning a purchased product, is that the return must happen within the time limit set by the individual store. The reasoning behind this measure is to reduce the risk associated with purchases. All purchases involve risk, but the risk is especially high for online shopping. Contrary to people shopping in physical stores, most online shoppers have

never seen or demonstrated the product they are buying. Thus, they can only utilize the product information they receive from the webstore and will have to make the purchase decision based on less information. Considering the findings of Kahneman (2011), which indicates that most people are risk averse, a measure like this will benefit both the retailer and the customers. Risk averse individuals who wish to avoid taking on unnecessary risk, will find it easier to purchase a product from a webstore if they can cancel the purchase and get their money back. This will also benefit the retailer, who will sell more to risk averse customers.

The possibility of postponing the payment was an option that was offered by all the three retailers. This implies that customers can, in exchange for a relatively small fee, delay the payment when purchasing a product so they will not have to pay immediately. By offering their customers this service, the retailer takes advantage of the fact that individuals tend to discount the future at a higher rate. This means that a cost occurring in the future will be perceived as lower than if the same cost had to be paid today. Another measure found in all the examined webstores, that takes advantage of individuals' bounded rationality, is psychological pricing. As the cognitive capacity of individuals are limited, this will also affect the way they read and understand prices. As demonstrated by Basu (1997), individuals seem to put the most emphasize on the first digits of a price, and less so on the following digits. Hence, prices that ends with high digits will be perceived as lower than they really are, tricking decision makers into believing they get better prices.

In general, most of the choice architectonic measures that were found in large numbers in all the three webstores where measures intended to simplify the decision information and the decision structure, in order to simplify the overall decision process. In addition to this, the three retailers also applied measures that were not aimed at simplifying the decision process, but these will be discussed later in this chapter. Now that we have seen the similarities, we should also look at the differences between the three webstores.

5.1.2 Differences between retailers

Even though there were differences between all of the three webstores with regards to choice architecture, the largest distinction was between XXL and the two electronic retailers Elkjøp and Power. Choice architectonic measures exclusively used by Elkjøp and Power were the following:

- Labelling
- Displaying informative videos
- Social references
- References to opinion leaders
- Comparison tools
- Chat service

The labelling found in the webstores of Elkjøp and Power was a measure intended to simplify product information in order to make it easily processible for decision makers. Compared to other simplification measures, such as listing, labelling communicates information on a much simpler level. Just by displaying a symbol or one keyword, the label can give away a lot of information to the decision maker. Although this requires that the decision maker already knows the meaning of the symbols and keywords for the measure to have any effect, as soon as he does, he can retrieve information about the different products much more efficiently.

Displaying informative videos was a different type of simplification that was applied only in the webstores of Elkjøp and Power. While the other simplification measures to a large extent is verbal and require the decision maker to read, this simplification is more visual, implying that it communicates information through pictures and images. Informative videos therefore require less effort from the decision maker when it comes to obtaining information, because he will only have to pay attention at what is being presented. This type of simplification can be especially be helpful for those decision makers that are not fond of obtaining information through reading, while it at the same time adds an dimension of visual information that cannot be communicated through text.

Another measure that was only applied by Elkjøp and Power, was the use of social references, in the forms of consumer ratings and sorting products according to popularity. As stated by Cialdini & Goldstein (2004), people are social beings that have the need for social approval

from their fellow peers. One way of receiving this approval, is by doing what most people do. Thus, the appliance of social references has two effects. First, it acts as a social proof to decision makers, so they can fulfil their need for social approval. Second, getting information about the popularity and the consumer ratings of products also provides decision makers with important information about other people's experiences with the products, which they can utilize in their own decision process.

A measure which is similar to social references, is referring to opinion leaders. Unlike social references, which aims at revealing the behaviour of the majority, referring to opinion leaders is an attempt to display the behaviour or opinions of influential people or organizations. In the same way as people often mimic the behaviour of others when they find themselves in unfamiliar settings, people are also found to follow the advices of opinion leaders. Although the empirical evidence is somewhat inconclusive on whether referring to opinion leaders strengthens a product's reputation or not, as shown by Schjøll et al. (2018), the empirical evidence suggests that opinion leaders who have a high credibility, either because of their knowledge or status, have a greater chance of influencing people (Valente and Pumpuang, 2007). The references to opinion leaders found in the webstores of Elkjøp and Power, were mostly referring to reviews done by consumer magazines. These are opinion leaders with much information about the products they are reviewing, indicating that they hold more credibility among people, and hence exert a higher degree of influence. In addition to this, both Power and Elkjøp had several instances where they referred to themselves as opinion leaders. While the retailers may have some influence on the opinions of some customer, most of them will see the obvious conflict of interest with the retailers holding both the role of seller, and opinion leader at the same time. Hence, these opinions will be less influential on the decision makers than the opinions of the consumer magazines.

The last two measures which were found exclusively in the webstores of Elkjøp and Power, were the comparison tool and the chat service. Both these measures are what Münscher et al. term as decision tools, meaning that they are measures provided by retailers intended to simplify the decision process for the decision maker. According to the study conducted by Häubl & Trifts (2000), where they among other things examined a comparison tool, they found that decision tools in many cases save decision makers a lot of effort during the decision process. In addition to this, they also found evidence suggesting that decision tools enable decision makers to make better decisions which they are more pleased with. While the comparison tool is especially useful when evaluating the different decision alternatives, the chat service can aid

the decision maker both in the searching stage and the evaluation stage. As stated previously, simplification of the decision process increases the probability of decision makers going through with a purchase, hence these tools are also beneficial for the retailers.

By comparing the choice architecture uncovered in the webstores of Elkjøp and Power, with the one found in the webstore of XXL, we can see that the main difference is that Elkjøp and Power applies more choice architectonic measures than XXL. In other words, Elkjøp and Power do more to simplify the decision process than XXL do. An explanation for this is the difference between the products marketed by XXL and the ones marketed by Elkjøp and Power. Although all the product categories examined in the three webstores included products that bring about a complex buying behaviour, the product categories which were examined for Elkjøp and Power had a higher degree of complexity to them, than the products examined for XXL. This becomes evident when looking at the filtering tools in the webstores of Elkjøp and Power, contra the filtering tool provided by XXL. The filtering tools provided by Elkjøp and Power are much more advanced than the one provided by XXL, and decision makers can filter the products by many more variables. This implies that the within difference in the categories of dishwashers and laptops, are greater than the within differences in the categories of sleeping bags and tents. When the within difference in a product category is large, both the search process and the evaluation of decision alternatives will be more difficult. Thus, this can explain the difference in the amount of choice architecture between the stores.

Another explanation for the high amount of choice architectonic measures in the webstores of Elkjøp and Power, could be that the competition in the market of consumer electronics are much fiercer than the competition in the market of sports and hiking equipment. However, this study has examined no variables which addresses this aspect; hence this claim cannot be verified.

5.1.3 Good and bad nudges

By the definition of libertarian paternalism, a nudge is at its core fundamentally positive. The focus on preserving individual's freedom of choice, while at the same time guiding them towards making objectively better decisions that will make them better off, cannot be understood otherwise. Despite this, there is nothing preventing a choice architect to apply nudges that does not meet this definition. In an article in New York Times from (2015), Richard Thaler writes about how he has observed what he sees as "bad nudges". Bad nudges are described by Thaler as nudges that guide individuals toward choices which are less favourable concerning their own well-being, thus they are not in line with the idea of libertarian paternalism. Based on this, I want to make the distinction between two categories of nudges:

nudges that are in line with the idea of libertarian paternalism, which will be denoted *good nudges*, and nudges that are not fulfilling this criteria, which will be denoted *bad nudges*.

Most of the choice architectonic measures found in the examination of the three webstores, fall into the category of good nudges. Examples of such measures are *listing of key features, simple page layout, providence of filtering and sorting tools, labelling* etc. These measures do all have in common that they help to simplify the decision process, which in turn enables decision makers to make better decisions. Hence, they fulfil the requirements of libertarian paternalism. In addition to being beneficial to the decision makers, these measures do also benefit the retailers, by increasing the probability of decision makers going through with a purchase, which in turn will lead to higher profits. Thus, these measures have a positive effect on both parts of the commercial interaction.

However, there was also uncovered some choice architectonic measures that did not live up to the requirements of libertarian paternalism. These were: *the opportunity to postpone payments* and *the appliance of psychological prices*. None of these measures did anything to reduce the effort required by the decision maker to complete the decision process, nor did it simplify any of the steps in the process itself. What these measures do, is that they exploit individuals' bounded rationality and changes their perception of the decision alternatives, in such a way that the alternatives seem like better deals than they really are. Unlike the good nudges, which benefits both the decision maker and the retailer equally, the bad nudges only benefit the retailer, who increases his chances of making a sale. Bad nudges are especially harmful to those decision makers that possesses a low degree of product familiarity, as these are more inclined to base their decision on subjective information, while decision maker with a high degree of product familiarity are focusing on the objective information. Because of this unequal distribution of benefits inflicted from bad nudge, it is more a tool of manipulation applied to influence vulnerable consumers, than it is a tool of choice architecture.

It is important to emphasize that, at the time of writing this thesis, both these so-called bad nudges are perfectly legal for the retailers to apply. However, it is important to be aware of the distinction between good and bad nudges, and the effect they have on the decision process. Also, as online marketing continues to become more sophisticated as new technology becomes available, retailers will always look for new measures that can give them the competitive edge in their market. This also involves the adoption of bad nudges. Therefore, consumer authorities should keep a close eye at webstores in the future, and make sure that the legislation regarding marketing laws keeps up with the choice architecture practice of retailers.

5.2 Beyond empirical findings

This sub-chapter aims at discussing those aspects that was not addressed directly in the course of the content analysis, but that is still important because they can provide meaningful insights that will contribute in answering the main objective. The first part of this sub-chapter will discuss two types of bounded rationality which were not investigated directly in the content analysis, while the second part will discuss other sources of information which the decision makers' can utilize to obtain more knowledge about the various decision alternatives. It is important to emphasize that since these elements are not supported directly by empirical findings, they will be given less weight when concluding on the results of the thesis.

5.2.1 Single option aversion and the decoy effect

Two aspects that were presented in the literature section but that was not investigated in the content analysis, was single option aversion and the decoy effect. Given that the content analysis was based on the work of Münscher et al., none of the questions did address choice architecture linked to these aspects directly. However, observations from the content analysis can still shed light on these aspects. Hence, the following section will discuss these phenomena in relation to the empirical findings and determine if they are considered by the retailers when designing the choice environments of the webstores.

Single option aversion describes the trend that consumers dislike making choices when they are presented with singular options. All the three webstores that were examined offered several models of the different product categories to their customers, indicating that customers never are put in a situation where they only have one option regarding the product selection. All the three retailers continue the practice with providing their customers with several options also when it comes to the choice of how the product is to be collected after purchase. Hence, customers do not encounter a single option in this situation either. As pointed out by Mochon (2013), the practise of providing decision makers with several decision alternatives increases the likelihood of a product being chosen. This suggests that the act of providing several options is a measure put in place by the retailers to make a purchase more likely, and consequently increase profits.

However, the findings of Mochon also suggests that single option aversion arises because people have an urge to search for a better option than the one they are currently considering. This implies that consumers who are presented with a higher number of potential decision alternatives, will have a higher urge to search for better options. This can also be a part of the

explanation of why Elkjøp and Power, which had the highest number of product models, in general applied a higher number of choice architectonic measures in their webstores. Because their consumers are at a higher risk of experiencing an urge for searching after a “better” product, they will have to provide their consumers with more aids, so that they more easily can manage to rank the different products they are presented with.

The decoy effect concerns how the presence of an inferior option can enhance the view one has of another option. The content analysis made no attempt to uncover the presence of decoys in any of the examined webstores, hence there is no clear evidence that this method was applied by any of the retailers. However, a discovery that might can be deemed a decoy, was the price range found in some of the product categories. This was especially evident in the product categories of laptops and dishwashers, found in the webstores of Elkjøp and Power, where the price difference between the cheapest and the most expensive products were tens of thousands of NOK. In these cases, the most expensive and the cheapest products acts as decoy options for those customers with low product familiarity. Because they have little knowledge about the product and the market, they also have little knowledge about the price range in which the product places in. Hence, customers will converge the highest prices and the lowest prices, until they reach a price level the customer think is acceptable to pay. Hence, this measure can be utilized to shift the focus of customer over on certain products that the retailer wishes to sell more of. The same argument can also explain why some products have a higher degree of product specific choice architecture attached to them.

5.2.3 Other sources to product information

While the decision process mainly takes place in the webstores and the retailers are providing the information about the products, this does not prevent the decision maker from obtaining information concerning the products from other sources. Just with a few clicks on the mouse, the decision maker can access in-depth consumer reviews conducted by serious consumer magazines, product reviews videos on YouTube, or blogs concerning the specific product group. These are just some examples of sources to external information that the decision maker can utilize to obtain more information about the various products he is considering.

The main difference in the information obtained from external sources and information provided by the retailer through the webstore, is that the external information is often more objective. While the product information provided to customers through the webstore is intended to portray the product in an exclusively positive way in order to encourage sales, the information found in external sources are often showing both the good and the bad side of the

product. For some products, this does not necessarily change the decision maker's perception of it, while in many cases this will enable the decision maker to view the product more critically. Another aspect of searching through external sources for additional product information, is that the decision maker can pick up some tips and tricks of what he should focus on when considering a specific product category. Hence, the decision maker will focus more on the objective information (specifications, features etc.) when he considers the products, while the subjective information (choice architecture) will become less important, as described by King & Balasubramanian (1994). In this way, searching for information through other sources, can increase the decision maker's product familiarity to some extent, which will make him less vulnerable to nudging from choice architecture, and especially the bad one.

6.0 Conclusion

The main objective of this thesis has been: *To study how commercial actors utilize choice architecture and their knowledge of consumer behaviour to nudge customers in online markets.*

This objective has been realized through three sub-objectives:

Sub-objective 1: *Conduct a literature review that includes an overview of relevant theories concerning purchasing behaviour, as well as the main aspects of bounded rationality and choice architecture.*

Sub-objective 2: *Perform an exploratory search on the use of choice architecture for different products in the webstores of some selected retailers.*

Sub-objective 3: *Discuss the empirical findings with regards to the already existing literature on choice architecture and bounded rationality.*

After completing the sub-objectives, three main findings were drawn from the results. First, the findings suggest that retailers mainly apply choice architectonic measures which aims at simplifying the decision information and decision structure. Second, the findings also indicate that the amount of applied choice architecture are higher for product categories which have a higher degree of complexity, and that these retailers also employ decision tools to a larger extent. Third, the results uncovered a significant use of *bad nudges*, i.e. nudges that are not aimed at preserving the customer's self-interest.

6.1 Implications

Retailers as choice architects of their own digital platforms exercise a large amount of influence on customers. Although most of the choice architecture uncovered was of the good kind, i.e. *good nudges*, there was also uncovered widespread use of *bad nudges*. Given the knowledge we have about individuals bounded rationality, we know that some individuals are more exposed to the influence of nudges than others. A group that is especially vulnerable is those individuals that have a low product familiarity, thus they are prone to base their decisions to a larger extent on subjective information. Considering this, it is important that precautions are taken to prevent retailers from adopting choice architecture which have the sole purpose of misleading customers. As time progresses, the choice architecture applied by retailers become more and more sophisticated, and if kept ignored, authorities could soon lose track of the field. Therefore, my advice to consumer authorities is to monitor digital markets closely in the future,

and make sure that legislation on marketing laws is keeping up with the practice of the retailers. By doing this, it is possible to prevent misleading and exploitative uses of choice architecture.

6.2. Limitations of the study

Given the relatively small sample of examined webstores, the findings are not taken from a representative selection. This makes it hard to generalize the findings to apply for all existing webstores. On the other hand, the content analysis used to examine the webstores did a good job at obtaining qualitative data concerning the uncovered choice architecture. Thus, the results provide an overview of the different types of choice architectonic measures online retailers have available to them, as well as a detailed description of how the different measures influence consumers. In addition to this, the quantification of the qualitative data provided the study with a statistical dimension, that supplements the main findings.

Another aspect is the selection of theory and literature used to achieve the main objective. The subject of choice architecture cannot be placed exclusively within one discipline, since it draws concepts from the fields of economics, marketing, and psychology. However, to delimit the scope of this thesis I decided to apply an approach mainly based on behavioural economics, with some minor influences of marketing theory. The selected approach has undoubtedly had an effect on the findings of this thesis, and with a different approach, the results could look different.

6.3. Further research

The findings of this thesis cannot give a definitive answer to the main objective, but it can provide a clue of how retailers apply choice architecture, and what intentions are behind the different measures. For future research on this topic, I suggest there be looked at larger and more diverse sample sets of retailers. By diverse, I mean both with regards to markets types and retailer size. In this way, it is possible to conduct comparisons across markets and retailers, and thus be able to generalise the findings. Another aspect that would be interesting to look at is how effective the different choice architectonic measures are at nudging the customers in an online decision environment, and to what extent customers make use of external sources to gather product information.

References

- ARIELY, D. 2008. *Predictably irrational*, Harper Audio New York, NY.
- BALZ, J., SUNSTEIN, C. & THALER, R. 2014. Choice architecture. *E. Shafir, The behavioral foundations of public policy*, 428-439.
- BASU, K. 1997. Why are so many goods priced to end in nine? And why this practice hurts the producers. *Economics Letters*, 54, 41-44.
- BERG, N. 2010. *Behavioral Economics*, Sage Publications, Inc.
- CHOU, E. Y. & MURNIGHAN, J. K. 2013. Life or death decisions: Framing the call for help. *PloS one*, 8.
- CIALDINI, R. B. & GOLDSTEIN, N. J. 2004. Social influence: Compliance and conformity. *Annu. Rev. Psychol.*, 55, 591-621.
- COMMISSION, E. 2020. *About the energy label and ecodesign* [Online]. <https://ec.europa.eu/>. [Accessed 10.05 2020].
- ELISENBERG, S. 2019. *Økt omsetning i netthandel i 2018* [Online]. <https://www.ssb.no/varehandel-og-tjenesteyting>: Statistisk Sentralbyrå Available: <https://www.ssb.no/varehandel-og-tjenesteyting/artikler-og-publikasjoner/okt-omsetning-i-netthandel-i-2018> [Accessed 05.02.2020 2020].
- FOX, C. R., RATNER, R. K. & LIEB, D. S. 2005. How subjective grouping of options influences choice and allocation: diversification bias and the phenomenon of partition dependence. *Journal of Experimental Psychology: General*, 134, 538.
- GNEEZY, U. & RUSTICHINI, A. 2000. Pay enough or don't pay at all. *The Quarterly journal of economics*, 115, 791-810.
- GRISKEVICIUS, V., TYBUR, J. M. & VAN DEN BERGH, B. 2010. Going green to be seen: status, reputation, and conspicuous conservation. *Journal of personality and social psychology*, 98, 392.
- GROSS, B. M. 1964. *The managing of organizations: The administrative struggle*, [New York]: Free Press of Glencoe.
- HAWKES, C., SMITH, T. G., JEWELL, J., WARDLE, J., HAMMOND, R. A., FRIEL, S., THOW, A. M. & KAIN, J. 2015. Smart food policies for obesity prevention. *The Lancet*, 385, 2410-2421.
- HOLDERSHAW, J., GENDALL, P. & GARLAND, R. 1997. The widespread use of odd pricing in the retail sector. *Marketing Bulletin-Department Of Marketing Massey University*, 8, 53-58.
- HOMONOFF, T. A. 2013. *Can Small Incentives Have Large Effects?: The Impact of Taxes Versus Bonuses on Disposable Bag Use*, JSTOR.
- HÄUBL, G. & TRIFTS, V. 2000. Consumer decision making in online shopping environments: The effects of interactive decision aids. *Marketing science*, 19, 4-21.

- IYENGAR, S. S. & LEPPER, M. R. 2000. When choice is demotivating: Can one desire too much of a good thing? *Journal of personality and social psychology*, 79, 995.
- JACOBY, J., SPELLER, D. E. & KOHN, C. A. 1974. Brand choice behavior as a function of information load. *Journal of marketing research*, 11, 63-69.
- JESSOE, K. & RAPSON, D. 2014. Knowledge is (less) power: Experimental evidence from residential energy use. *American Economic Review*, 104, 1417-38.
- KAHNEMAN, D. 2011. *Thinking, fast and slow*, Macmillan.
- KEYNES, J. M. 1964. The general theory of employment, interest and money (1936). *The Collected Writings of John Maynard Keynes*, 7, 1971-9.
- KING, M. F. & BALASUBRAMANIAN, S. K. 1994. The effects of expertise, end goal, and product type on adoption of preference formation strategy. *Journal of the academy of marketing science*, 22, 146-159.
- KOTLER, P. & ARMSTRONG, G. 2016. *Principles of Marketing*, Pearson Education Limited.
- LARRICK, R. P. & SOLL, J. B. 2008. The MPG illusion. American Association for the Advancement of Science.
- LINDVOLL, E. 2020. Ekstraordinære retur-regler for butikkjøp. *Dagbladet*, 01.04.2020.
- MARKS, L. J. & OLSON, J. C. 1981. Toward a Cognitive Structure Conceptualization of Product Familiarity. *Advances in Consumer Research*, 8, 145-150.
- MATTILSYNET. 2019. *Smilefjes på kafeer og restauranter* [Online]. <https://www.mattilsynet.no/>: Mattilsynet. Available: https://www.mattilsynet.no/mat_og_vann/matservering/smilefjes/ [Accessed 08.02 2020].
- MITCHELL, V.-W., WALSH, G. & YAMIN, M. 2005. Towards a conceptual model of consumer confusion. *ACR North American Advances*.
- MOCHON, D. 2013. Single-option aversion. *Journal of Consumer Research*, 40, 555-566.
- MÜNSCHER, R., VETTER, M. & SCHEUERLE, T. 2016. A review and taxonomy of choice architecture techniques. *Journal of Behavioral Decision Making*, 29, 511-524.
- OXFORD. 2020. *architecture noun* [Online]. [oxfordlearnersdictionaries.com](https://www.oxfordlearnersdictionaries.com/): Oxford Learner's Dictionary. Available: <https://www.oxfordlearnersdictionaries.com/definition/english/architecture> [Accessed 15.02.2020 2020].
- PICHERT, D. & KATSIKOPOULOS, K. V. 2008. Green defaults: Information presentation and pro-environmental behaviour. *Journal of Environmental Psychology*, 28, 63-73.
- PRELEC, D. & LOEWENSTEIN, G. 1991. Decision making over time and under uncertainty: A common approach. *Management science*, 37, 770-786.

- SAUNDERS, M., LEWIS, P. & THORNHILL, A. 2016. *Research methods for business students*, Pearson.
- SCHJØLL, A., ALFNES, F. & LANSENG, E. J. 2018. Reklame i blogger - forbrukeres holdninger og reaksjoner *In: HELLE-VALLE, J. (ed.) Markedsføring og forbrukerne - samfunnsvitenskapelige blikk*. Universitetsforlaget.
- SCHWARTZ, B. The paradox of choice: Why more is less. 2004. Ecco New York.
- SIEGEL, L. A. & WANG, D. 2019. Keeping up with the joneses: emergence of travel as a form of social comparison among millennials. *Journal of Travel & Tourism Marketing*, 36, 159-175.
- SIMON, H. A. 1955. A behavioral model of rational choice. *The quarterly journal of economics*, 69, 99-118.
- STERN, H. 1962. The significance of impulse buying today. *Journal of marketing*, 26, 59-62.
- SUNSTEIN, C. R. 2014. Choosing not to choose. *Duke LJ*, 64, 1.
- THALER, R. & SUNSTEIN, C. 2008. *Nudge*, Yale University Press.
- THALER, R. H. 2015. The Power of Nudges, for Good and Bad. *The New York Times*, 31.10.15.
- THORNDIKE, A. N., BRIGHT, O.-J. M., DIMOND, M. A., FISHMAN, R. & LEVY, D. E. 2017. Choice architecture to promote fruit and vegetable purchases by families participating in the Special Supplemental Program for Women, Infants, and Children (WIC): randomized corner store pilot study. *Public health nutrition*, 20, 1297-1305.
- TVERSKY, A. & KAHNEMAN, D. 1991. Loss aversion in riskless choice: A reference-dependent model. *The quarterly journal of economics*, 106, 1039-1061.
- VALENTE, T. W. & PUMPUANG, P. 2007. Identifying opinion leaders to promote behavior change. *Health education & behavior*, 34, 881-896.
- VOLLAN, M. 2018. Butikker setter opp prisene før Black Friday og julehandelen: – Forbrukere føler seg lurt. *NRK*.



Norges miljø- og biovitenskapelige universitet
Noregs miljø- og biovitenskapelige universitet
Norwegian University of Life Sciences

Postboks 5003
NO-1432 Ås
Norway