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Product Line Extension in an Online Environment

Abstract

Previous research has shown that a more varied assortment does not only increase sales by satisfying consumer preferences but also by gaining more attention due to increased shelf space. Product line extensions are therefore not solely of importance when it comes to aiming for a high actual variety in the assortment, but also when aiming to increase the visual size of the assortment. As consumers form assortment perceptions differently in an online setting compared to in a physical store environment, the purpose of this thesis is to understand how the benefits and consequences of product line extensions are perceived when presented on an online category product page.

Through two studies, where a fictive web shop format was used, consumers were exposed to assortment variation designs where the absolute and relative variety of an assortment of a specific brand was manipulated. By controlling for a non-existing effect of the vertical placement of the assortment in the first study, we could examine the implications on consumer perceptions of variety, complexity and brand quality when extending the assortment of a brand in both absolute and relative terms in the second study. The results from this thesis show that there only are positive implications on selection quantities from offering an assortment with higher variety. However, the benefits of higher variety are only perceived when extending the assortment from a small (4 items) to a medium (12 items) or to a large (25 items) assortment but not when extending from a medium to a large assortment. The results also show that there is a positive causal relationship between perceived variety and brand quality perception, which has a positive effect on selection. On the other hand, an increased complexity of the assortment, because of more options to choose from, shows no negative impact on the selection.

Keywords: product line extension, assortment variety, assortment complexity, brand quality perception, online marketing

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Table of Contents

List of Definitions…….....5

1. INTRODUCTION……6
1.1 Background……6
1.2 Problem Area…….....7
1.3 Purpose and Research Question……..9
1.4 Delimitations……..9
1.5 Expected Contribution……10

2. THEORETICAL FRAMEWORK……..11
2.1 The S-O-R Model……11
2.2 Formation of Assortment Perceptions…….....11
2.2.1 Heuristics and Cues……11
2.2.2 Analytical and Holistic Processes…….....12
2.2.3 Dimensions of Variety……12
2.2.4 Availability of Favourite Product……13
2.3 Benefits of High-Variety Assortments…….....13
2.3.1 Benefits of Absolute Variety…….....13
2.3.2 Benefits of Relative Variety……14
2.3.3 Anticipated Consumption Utility and Variety……15
2.4 Consequences of High-Variety Assortments……15
2.4.1 Assortment Complexity……...……15
2.4.2 Anticipated Consumption Utility and Complexity……...16
2.5 The Relationship Between the Perceptions of Variety and Complexity……16
2.6 Brand Quality Perceptions……17
2.7 Placement Effects on Perceptions of the Assortment and Brand Quality……..18

3. METHODOLOGY……20
3.1 Object of Study.....……..……...…....20
3.2 Scientific Approach……..……...…...……...…..20
3.3 Study Design….……...……....…20
3.3.1 The Main Study (2)……21
3.3.1.1 The Marabou Assortment Design……21
3.3.1.2 The Background Assortment Design……22
3.3.1.3 The Arrangement of the Assortment……22
3.3.2 The Placement Study (1)……23
3.4 Measurements……..23
3.5 Sampling of Respondents……24
3.6 Data Analysis Tools and Tests……25
3.6.1 The Placement Study (1)……25
3.6.2 The Main Study (2)……25
3.7 Reliability……26
3.8 Validity……26
3.8.1 Measurement Validity……26

3.8.2 Internal and External Validity…….…27

4. RESULTS AND ANALYSIS…….29
4.1 The Placement Study (1) ……...….29
4.1.1 Conclusions from the Results of the Placement Study (1)……..…31
4.2 The Main Study (2)…….....……32
4.2.1 Summary of the Results & Revised Model……40

5. DISCUSSION AND CONCLUSIONS……...….41
5.1 Discussion of Results…….....41
5.1.1 The Relationships between Actual Variety, Perceived Variety and Perceived Complexity…….....…….....41
5.1.2 The Relationship between Actual Variety, Perceived Variety and Brand Quality Perception……...…….....…….……43
5.1.3 Implications on the Consumer's Selection Quantities……43
5.2 Conclusion……44
5.3 Limitations…….....45
5.4 Future Research…….....46

6. REFERENCES…….....47

7. APPENDIX……...52

LIST OF DEFINITIONS

The below list defines how the following concepts are used in this thesis

Assortment = More than one product offered within the same product category in a physical or online store

Absolute variety of a brand = The absolute variety of a brand as a part of a whole assortment, where an increased absolute variety of the assortment of the brand implies a simultaneous increase of the whole assortment, holding constant the share of the brand of the whole offered assortment

Relative variety of a brand = The relative variety of a brand as a part of a whole assortment, where an increased relative variety of the brand implies an increase in the number of items of the brand while holding constant the number of items of the whole offered assortment

SKU = Stock keeping unit, each unique item in an assortment

Organized assortment= Placement of products of similar name, colour and shape next to each other (Hoch et al. 1999)

Disorganized assortment = The opposite of an organized assortment (Hoch et al. 1999)

Symmetric assortment = A symmetric assortment contains roughly the same relative frequencies of all options (Kahn & Wansink 2004)

Asymmetric assortment = An asymmetric assortment contains a higher relative frequency of at least one option (Kahn & Wansink 2004)

1.INTRODUCTION

1.1 Background

When you enter a grocery store and start to think about the products you see, you will become aware that there are certain brands that dominate the store shelves. Previous research has shown that 80% of the customer's brand choice is influenced by the in-store environment, which could be a possible explanation to this. Consumers are more affected by what they come to think of in the moment or can remember from before, than by what they like the most (Nordfält 2007). On the other hand, there are several other factors beyond the specific attributes of the offered products that brands can consider when aiming to influence the choices of consumers. Some of these factors include how the products are exposed (Nordfält 2007) as well as the size of the assortment (Kahn & Wansink 2004).

The appearance of time-efficient grocery shopping alternatives can be explained by the time-consciousness of today's consumers. During the year 2016, online grocery shopping grew by 30% on the Swedish market (HUI Research 2017), making it one of the strongest growing online industries on the Swedish market (Svensk Digital Handel 2016). The fact that only a minor part of the total grocery shopping takes place online also speaks for further growth possibilities (HUI Research 2017). While the actor MatHem only specializes on grocery shopping online, large brick and mortar grocery actors such as Coop, Axfood and Ica have also entered the online grocery shopping market (Svensk Digital Handel 2016). This implies that as of today, relatively few actors control the online grocery shopping market. A continued growth within the industry can generate fiercer competition, implying that knowledge about effective online strategies should be relevant to retailers and brands. Again, considering the fact that 80% of the brand choices are made in the store (Nordfält 2007), directing attention to the brand becomes important. An appropriate strategy for achieving this is a product line extension strategy that increases the brand's shelf space.

Product line extension as a concept can be defined as "the introduction of a new product that is a variant of the firm's existing product in a given product category" (Kadiyali et al. 1999, pp.339-340). A successful line extension increases the retail shelf space, enables the brand to satisfy different customer segments and prevent the customers from switching brands (Quelch & Kenny 1994). However, even though a large amount of options initially can seem more appealing, it tends to result in less choosing effort and less commitment in trying to

satisfy the optimal choice preference among consumers (Iyengar & Lepper 2000). Altogether, this gives rise to the challenge of having an optimal product line length. Knowledge about how to offer an assortment large enough to enjoy the positive effects of a varied assortment, while keeping the customer's commitment when choosing, is therefore considered relevant for retailers aiming to pursue a successful product line extension strategy online.

1.2 Problem Area

Before further problematizing the search for the optimal product line length, we look at the concept of variety. The actual variety of an assortment can be defined as "the number of distinct options or the number of conceptually distinct subcategories" (Kahn & Wansink 2004, p. 520). A brand that offers an assortment with high actual variety within a product category is therefore considered equivalent to exerting an extensive product line extension strategy. However, it is interesting that the variety perceived by consumers is not always the same as the actual variety. Previous studies in physical environments have shown that the perceived variety is influenced by the organization of items as well as "the relative symmetry in the frequencies of items" (Kahn & Wansink 2004, p. 520). Going into even more detail, we also need to distinguish between absolute and relative variety of an assortment in relation to the whole offered assortment and what it means to increase these respectively. When defining absolute and relative variety, let us imagine a specific brand with a certain number of items within the product line. The items of this brand are part of a whole offered assortment containing items of several other brands. We define an increase in the absolute variety of the assortment of this specific brand as a simultaneous increase of the whole assortment, holding constant the share of this brand of the whole offered assortment. To the contrary, an increase in the relative variety of an assortment of this specific brand is defined as an increase in the number of items of the specific brand while holding constant the number of items of the whole offered assortment.

Studies in physical environments have shown that an increase in actual variety increases the perceived variety and that this increase is moderated by the assortment structure. Consequently, an increase in the perceived variety of an assortment increases the anticipated consumption utility of that assortment which in turn has a positive effect on the consumer's consumption quantities of that assortment (Kahn & Wansink 2004). This might be explained by the fact that brands and flavours are considered the most important assortment attributes

(Boatwright & Nunes 2001). Furthermore, looking at studies of an increased actual variety of an assortment in an online context reveals that not only the assortment size, but also each product's absolute and relative position on the product page has implications for its probability to be chosen (Breugelmans et al. 2007). In addition to this, an increased assortment variety has also been seen to communicate greater brand expertise, thereby influencing the consumer's brand quality perceptions positively (Berger et al. 2007). This additional aspect of variety implications makes brand quality perceptions another interesting factor to consider when aiming for an optimal product line length.

Elaborating on the concept of variety, negative effects have also been observed from increasing the actual variety of an assortment. Boatwright & Nunes (2001) showed that *reducing* a high variety assortment with low-selling stock keeping units (SKUs) in certain product categories *increased* sales in the same categories. It makes sense that an assortment with a higher density of items that satisfy the consumer's attribute preferences is given more attention and hence has positive results on sales. Consequently, research has shown that extending the product line with too many disoriented products can result in ambiguity about each item's strategic role. In addition to this, it has been shown to generate a decreased brand loyalty through encouragement of variety-seeking behaviour and a stagnation of the category demand through the introduction of disoriented items (Quelch & Kenny 1994). Furthermore, even though high actual variety increases the likelihood for people's preferences to be matched (Iyengar and Lepper 2000), it can also result in an increased inter-item complexity (Kahn et al. 2013).

What assortment to carry is also influenced by whether the products are displayed in a physical store, online or on a mobile phone (Kahn et al. 2013). As a matter of fact, the categories purchased as well as the effects of various marketing mix instruments differ when shopping online. When looking at the online grocer category in particular, it becomes relevant to examine this category separately, as it contains products with a low purchasing involvement for which consumers do not put in much searching effort (Campo & Breugelmans 2015).

Information about the effects of extending an assortment in absolute and relative terms in the online context seems, to the best of our knowledge, be scarce. This thesis therefore aims to examine this further. The majority of the studies analysing the effects of altering assortment

size have up until now been conducted in the offline context. Therefore, these form the basis for the theoretical framework in this thesis. Furthermore, online studies will also be applied to create a greater understanding of the effects that can be expected in the online environment.

1.3 Purpose and Research Question

Knowledge about how to determine the optimal product line length and how to present it in an online context is considered relevant for brands aiming to pursue an extensive product line extension strategy. The purpose of this thesis is to better understand the optimal amount of absolute and relative variety of a specific brand within a whole offered assortment on the product category page. To further understand how this affects the consumer's selection quantities in an online context, we will examine the consumer's perception of variety, complexity and brand quality. Therefore, our research questions are:

In an online context, how does the absolute and relative variety of an assortment of a brand, within a category product page, affect the consumer's perceptions of variety and complexity of that assortment as well as the perception of brand quality? Also, what implications do this have on the consumer's selection quantities of that assortment?

1.4 Delimitations

The studies and results in this research are delimited to the Swedish online grocery market. The research is also delimited by solely examining one low-involvement product category, more specifically the chocolate bar category. The results can therefore only be generalized to other similar low-involvement product categories. Furthermore, the studies are also delimited to examine a product line extension of one dominant brand, in both absolute and relative terms. The dominant brand selected for the research is the Swedish chocolate brand Marabou. As Marabou currently offers 25 different flavours in their iconic yellow packaged chocolate bar line (Marabou 2017), they are considered to carry out a product line extension strategy. In order to investigate to what extent a product line extension is successful in an online context, Marabou, constituting a real-life example of executing a product line extension strategy, was selected as the object brand to make the experiment as realistic as possible.

Furthermore, is important to keep in mind that the suggested model in this research is not a complete model for explaining the drivers of consumer selection quantities as there are other

factors such as price that also affect consumer selection. However, as we only wish to investigate the effects on selection quantities of the absolute and relative variety, price was not included. Instead, the price range of the products within the assortment was held constant to the widest possible extent throughout the research.

1.5 Expected Contribution

This thesis aims to increase the understanding of how brands within low-involvement product categories successfully can execute product line extension strategies. By examining product line extension in both an absolute and relative dimension, the studies wish to increase the knowledge about the optimal amount of variety in both dimensions. The knowledge can hopefully be useful to both retailers and brands, operating within the Swedish online grocery market, that are either currently executing or aim to execute a successful product line extension strategy online.

The results from the studies in this thesis will also add to the academic research about consumer assortment perceptions in the online environment. More specifically, it examines the differences in the perceptions of variety, complexity and brand quality when the actual variety is altered. The findings will expand the yet relatively scarce knowledge of these effects and their implications for consumer selection in an online context.

2.THEORETICAL FRAMEWORK

2.1 The S-O-R Model

An S-O-R framework is used as a psychological approach in this research and constitutes the basis for the relationships examined. S-O-R stands for stimuli, organism and response and originates from a model described by Mehrabian & Russell (1974). Mehrabian & Russell (1974) explained that our emotional states can be divided into the three feelings of pleasure, arousal and dominance. Meanwhile the meaning of pleasure and arousal can seem intuitive, dominance has been described as the extent to which the customers feel in control (Nordfält 2007). Later, the model was adapted by Donovan and Rossiter (1982) to fit a retail setting. Donovan and Rossiter (1982) showed how stimuli in the store atmosphere affected the consumer's emotions and thereby their response in the form of either approach or avoidance. The S-O-R model has also been studied in an online context, where the stimuli consisted of the online store environment and the organism consisted of the consumer's affective and cognitive responses to that environment (Manganari et al. 2009). The S-O-R framework is considered an important foundation in this research, as it aims to examine how different stimuli in an online store affect the cognitive and affective states of consumers and their subsequent response.

2.2 Formation of Assortment Perceptions

2.2.1 Heuristics and Cues

Understanding how consumers form perceptions and make decisions is an important part of being a preferred and purchased brand. Nordfält (2007) identifies two of the mechanisms affecting the purchasing behaviour of consumers; heuristics and cues. A heuristic can be described as a response that is pre-programmed and becomes activated in certain situations. When customers visit stores, they often choose brands which they have previously bought, unless affected by for instance the exposure of products in the store (Nordfält 2007). To attract the attention of consumers and become a top of mind brand is therefore considered crucial for a brand to be selected. Furthermore, Nordfält describes a cue as a decision signal, for instance a store sign signalling a price reduction. Both concepts are important when discussing human decision-making and they are also the basis for some of the recent research about assortment perceptions (Nordfält 2007). They are therefore considered important components of beneficial store strategies by brands.

2.2.2 Analytical and Holistic Processes

Looking at how consumers evaluate products, there are several different processes taking place that are relevant to consider in order to understand how consumers make choices. As described by Nordfält (2007), these processes can be divided into analytical and holistic processes. Analytical processes require focus and take place when two different products are compared to each other. The holistic processes, on the other hand, take place when consumers scan through the assortment to get an overview of it. While several holistic processes can take place simultaneously, analytical processes require an undivided attention from the consumer (Nordfält 2007). Which evaluation method that is used will have different implications on the perceptions of the assortment and subsequent choice making.

2.2.3 Dimensions of Variety

In addition to understanding some of the underlying mechanisms affecting consumer purchasing behaviour, it becomes relevant to consider the tools that brands can work with in order to be selected by consumers. Assortment variety is one of these tools. This was confirmed by Herpen & Pieters (2000), who showed an increasing importance of the effect of assortment variety on consumer store choice, considering the fact that the number of products offered online is increasing.

To better understand how assortment variety can be dealt with, we distinguish between actual and perceived variety. Townsend & Kahn (2013) showed that it is the perceived variety, rather than the actual, that influence consumer purchases. Several studies have investigated the effects of actual as well as perceived variety and the different factors affecting them. Kahn & Wansink (2004) examined how assortment variety and assortment structure in a brick and mortar context affected consumption quantities. Their studies revealed that depending on the organization of the assortment, the effect on consumption quantities differed. They saw that an increase in actual variety for an organized assortment led to a larger increase in perceived variety and consequently larger consumption quantities than for an increase in actual variety of a disorganized assortment. An organized assortment implies that products of similar name, colour and shape are placed next to each other, while a disorganized assortment implies the opposite (Hoch et al. 1999).

Returning to the importance of analytical and holistic processes, Hoch and his colleagues saw that the organization of the assortment on the shelf also affected variety perceptions differently depending on which of the processes that took place. For analytical processes, organized shelves offered the most variety, while disorganized shelves offered the most variety for holistic processes. Organized assortments perceived to offer high variety offered the greatest satisfaction to consumers and were the most likely to be chosen (Hoch et al. 1999). Another important finding for an online retailer aiming for a high variety perception of the offered assortment is that products depicted visually, rather than verbally, make variety perceptions increase (Kahn & Townsend 2013).

2.2.4 Availability of Favourite Product

A well-cited study by Broniarczyk et al. (1998) showed that there is an additional factor that influences how variety is perceived in an assortment. Whether consumers can find their favourite product in the assortment affects how they perceive the assortment and its variety. When low-preference SKUs are removed, consumers perceived the variety to be higher than when high-preference SKUs are removed (Broniarczyk et al. 1998). This is an important finding for brands and retailers, as it strengthens the importance for brands to be up to date with consumer product preferences.

2.3 Benefits of High-Variety Assortments

In this section, we will present some of the most prominent benefits that has been observed in previous studies from offering high-variety assortments. Since this thesis aims to investigate variety from both an absolute and relative perspective, these effects will be presented separately.

2.3.1 Benefits of Absolute Variety

Carrying an assortment with much perceived variety increases the likelihood to match consumer preferences (Kahn et al. 2013), and hence increases the customer satisfaction and choice likelihood (Hoch et al. 1999). These aspects should be important for brands and retailers to consider both short and long-term. While a high choice likelihood intuitively is a desired goal both short and long-term, customer satisfaction is of especially large importance when aiming for a long-term relationship with customers. The reasons behind the preference for high-variety assortments among consumers might also be related to several other different

aspects. Botti & Iyengar (2006) suggested that the feeling of having many options to choose from also can lead to an increased feeling of control and improved psychological health.

2.3.2 Benefits of Relative Variety

One of the benefits with a line extension strategy is that it can increase the brand's relative influence over the shelf space, which increases its attention relative to other brands (Quelch & Kenny 1994). A study conducted by Buchanan et al. (1999) discovered positive effects of giving a brand more exposure relative to other brands. They saw that giving an established brand precedence to other brands by displaying it separately could make consumers evaluate the established brand more positively than if it would have been displayed mixed together with other brands. Examining a related topic, Kahn & Wansink (2004) varied the relative distribution of options within an assortment, creating a so called asymmetric assortment, and noticed that an increase in actual variety for asymmetric assortments led to an increase in consumption quantities, via the mediating effect of perceived variety. In line with the benefits of relative variety, this effect was not seen to the same extent for symmetric assortments with a more equal distribution of options. In addition to their own research, Kahn and Wansink (2004) also refer to the findings of Young & Wasserman (2001) that showed the important effect of "the relative symmetry in the frequencies of items" on perceived variety (Kahn & Wansink 2004, p.520). While, in the study by Kahn & Wansink (2004), the relative frequency of options was varied within the assortment of one brand, we expect to see the same effect from varying the relative frequency of one brand in relation to a whole offered assortment with several brands.

Remembering from Kahn & Wansink (2004) that a higher actual variety of an organized assortment resulted in higher perceived variety, we also consider the effects from varying the actual variety in relative terms on perceived variety, attention and evaluation (Quelch & Kenny 1994; Buchanan et al. 1999; Kahn & Wansink 2004). In addition to this, we consider the importance of an available favourite product found in the assortment (Broniarczyk et al. 1998) and hypothesize that:

H1: The variety of an organized assortment of a brand will be perceived differently depending on the actual variety of that assortment, adjusted for availability of a favourite product found in that assortment.

2.3.3 Anticipated Consumption Utility and Variety

According to Huffman & Kahn (1998), a high-variety assortment increases the likelihood for each consumer to find their preferred option and thereby increases their satisfaction (Huffman & Kahn 1998). This result is in line with the findings of Kahn & Wansink (2004), even though they also consider an additional aspect by looking at the effects of the symmetry of the assortment. When comparing a high-variety asymmetric assortment to a high-variety symmetric one, they found that the former was rated more fun to eat, and hence had a higher anticipated consumption utility than the latter one. Taking this into account and remembering that they showed that an increase in actual variety of an organized assortment led to higher consumption quantities, by the mediating effect of perceived variety and anticipated consumption utility, we hypothesize, given that our research examines an organized, asymmetric assortment, that:

H2: There is a positive relationship between the perceived variety of an organized assortment of a brand and the anticipated consumption utility of that assortment.

H3: There is a positive relationship between the anticipated consumption utility of an assortment of a brand and the number of selected products of that assortment.

2.4 Consequences of High-Variety Assortments

2.4.1 Assortment Complexity

Previous research reveals that retailers should strive after presenting an assortment with as much perceived variety and as little perceived complexity as possible (Kahn et al. 2013), implying that there is a limit for when too much variety results in a high perceived complexity. Studies have shown that as the amount of information on a screen increases, it becomes harder for every new item added to receive attention (Rosenholtz et al. 2007). This knowledge needs to be considered by brands when aiming for a good balance between perceived variety and perceived complexity. To better understand how these concepts interact, we need to understand what drives customer perceptions of an assortment.

A study conducted by Shah & Wolford (2007) revealed that choosing from more than 10 options resulted in a decreased purchase likelihood. Trying to understand this, we return to the study by Broniarczyk et al. (1998) about the importance of the availability of a favourite item. Broniarczyk and his colleagues showed that unless the area devoted to the category was altered, low-selling items could be removed from the assortment without negatively affecting

store choice. On the same note, Boatwright and Nunes (2001) discovered that a reduction of the assortment with regards to low-selling SKUs across categories even increased sales in those categories. A possible explanation for this phenomenon can be found in a research by Iyengar & Lepper (2000). In their famous jam experiment, they exposed consumers to an assortment of either 6 or 24 jams of different flavours. The experiment was set up in a booth in a food store and they could see that 60% of the customers that passed by the booth stopped by when 24 jams were presented. The corresponding number when presenting 6 jams was 40%. However, only 3% of the customers that stopped by the booth with 24 jams purchased a jam. For the assortment with 6 jams, 30% of the customers purchased a jam. After conducting another experiment on the same topic, the authors could conclude that choosing from an extensive amount of choices results in more dissatisfaction and regret, as the choice process becomes more difficult to process. Based on this, we hypothesize that:

H4: The complexity of an organized assortment of a brand will be perceived differently depending on the actual variety of that assortment.

2.4.2 Anticipated Consumption Utility and Complexity

Furthermore, we also wish to apply our knowledge about complex assortments and their connection to anticipated consumption utility. In addition to the findings from Iyengar & Lepper (2000), where increased complexity from a wider choice set resulted in dissatisfaction, we look at some further research on how the complexity of an assortment is related to the anticipated consumption utility of that assortment. As a matter of fact, having a lot of options can decrease the well-being of consumers after they have made their choice (Botti & Iyengar 2006). Another research by Iyengar et al. (2006) further showed that students that looked through an extensive amount of options when searching for jobs, compared to students that did so to a lesser extent, felt more dissatisfied with their subsequent job. This further shows on the negative consequences of large choice sets. We therefore hypothesize that:

H5: There is a negative relationship between the perceived complexity of an organized assortment of a brand and the anticipated consumption utility of that assortment.

2.5 The Relationship Between the Perceptions of Variety and Complexity

To fully grasp the different effects of variety and complexity on assortment choices, we find it relevant to investigate how these are connected to each other in more detail. Research has

shown that consumer perceptions of variety and complexity are connected and formed during two separate stages. Once the variety is perceived in the first stage, perceptions of complexity will form in the second stage (Kahn et al. 2013). When choosing between different options in the second stage, variety that is perceived as being too high will result in an increased perceived complexity (Townsend & Kahn 2013). We therefore hypothesize that:

H6: There is a positive relationship between the perceived variety of an organized assortment of a brand and the perceived complexity of that assortment.

2.6 Brand Quality Perceptions

The perception of brand quality can be defined as "the consumer's judgement about a product's overall excellence or superiority" and is not necessarily the same as the actual quality (Zeithaml 1988, p.3). Finding efficient ways to affect the consumer's brand quality perception therefore become relevant for retailers. Research has shown that colour, packaging and size are important for how quality is perceived in an offline context (Jacoby et al. 1971). In an online context, brands cannot work with size the same way as they do offline, as the physical size of a product is translated into a smaller image on the screen. Degeratu et al. (2000) showed that for some product categories, brand name will also be more important online than offline. Earlier research from a physical environment has also shown that brands and flavours are assortment attributes of particular importance to consumers (Boatwright & Nunes 2001). Considering this, we imagine that attributes such as logotype and flavour information become especially important online.

Furthermore, Berger et al. (2007) showed how brands can work with attributes, such as flavour, to affect brand quality perceptions of the brand in an offline context. Their findings implied that increasing the variety of a brand with additional flavours signals that the brand has category expertise. They showed that this in turn increased the consumer's perception of brand quality and thereby its likelihood to be chosen. This effect was said to be especially strong for low-involvement products and when there was a lack of detailed attribute information, which is the reason why we consider this relevant to consider in our studies. Furthermore, the findings of Berger et al. (2007) also included that the effect of variety on quality perceptions remained the same when shopping on the website of a single brand, implying that the reasoning can be applied in an online context as well. However, for consumers to perceive the brand as having category expertise, they first need to perceive the

variety as large. We therefore believe that both the actual and perceived variety will affect brand quality perceptions as well as choice likelihood and hypothesize that:

H7: The perceived brand quality of an organized assortment of the brand will differ depending on the actual variety of that assortment, adjusted for perceived category expertise by that brand.

H8: There is a positive relationship between the perceived variety of an organized assortment of a brand and the quality perception of that brand, partially mediated through the perceived category expertise by that brand.

H9: There is a positive relationship between the quality perception of a brand and the number of selected products of that assortment of the brand.

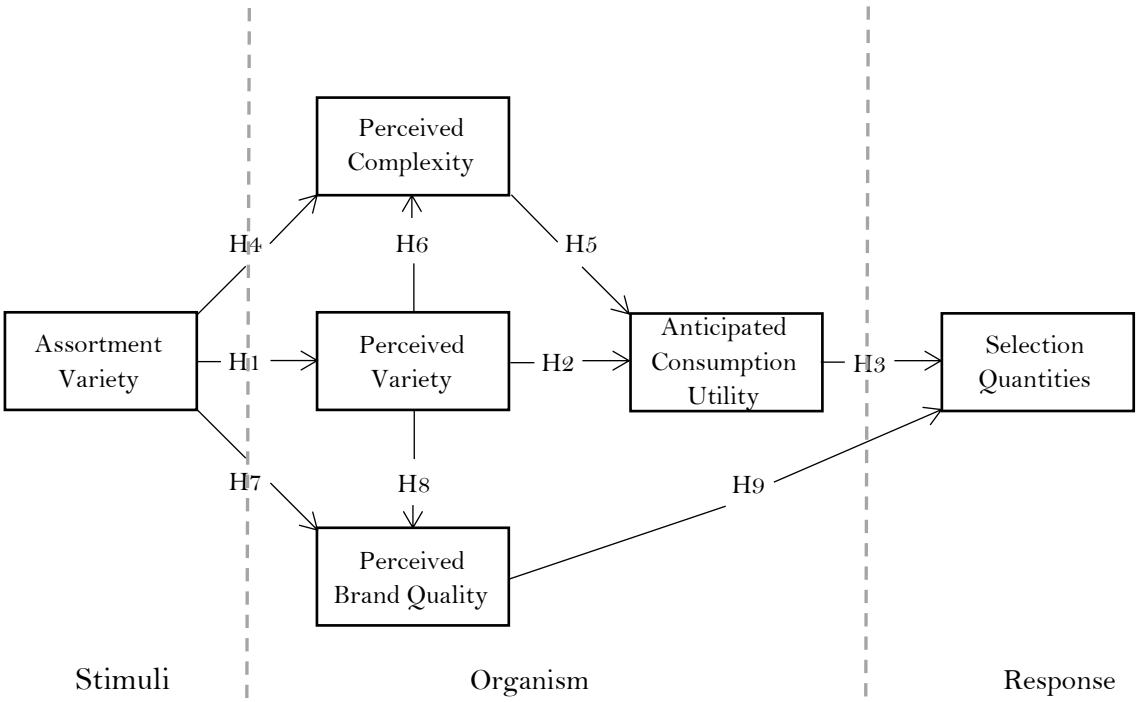


Figure 1. A visualization of the hypotheses

2.7 Placement Effects on Perceptions of the Assortment and Brand Quality

Before examining the effects in the hypotheses described above, we find it important to consider yet another factor that a critical reader will find important when examining assortment perceptions and selection. This factor concerns the absolute vertical placement of the products on the category product page. Since this factor is not intended to be investigated in detail in this thesis, we want to make sure that it does not have important implications on

our results. Hence, the effects of placement will be the key factor examined in the first study conducted in this thesis.

In physical grocery stores, vertical product placements a bit below eye-level are considered the best (Drèze et al. 1994). Research has however shown that the effects of product placements in an online store differs. Products placed on the very first screen when entering a category product page have a higher likelihood to be chosen (Breugelmans et al. 2007). Also, the absolute placement of products on the first screen affects the attention of consumers and their selection likelihood (Ahlbom & Gyllenhammar 2014). However, when there is a possibility to scroll through an assortment on a product page, implying that all offered products are not fitted on the first screen, consumers themselves change the view of the assortment on their screen to scan through the entire assortment. This online mechanism decreases the importance of shelf space as a director of customer attention (Breugelmans et al. 2007). While vertical positions a bit below eye level are the best placements for products in traditional grocery stores (Drèze et al. 1994), all products are displayed at the eye level in online stores and vertical shelf position therefore has little relevance in an online setting (Breugelmans et al. 2007). We therefore do not expect this to have implications for the perceptions of the assortment and brand quality examined in this thesis. We also consider the effect on variety perceptions by the availability of a favourite product as shown by Broniarczyk et al. (1998) as well as the influence of perceived brand category expertise on brand quality perceptions as shown by Berger et al. (2007) and hypothesize in the first study that:

H1: The variety of an organized assortment of a brand will be perceived differently depending on the actual variety of that assortment, adjusted for availability of a favourite product found in that assortment, but not depending on the absolute vertical placement of that assortment on the category product page.

H2: The complexity of an organized assortment of a brand will be perceived differently depending on the actual variety of that assortment, but not depending on the absolute vertical placement of that assortment.

H3: The perceived brand quality of an organized assortment of a brand will differ depending on the actual variety of that assortment, adjusted for perceived brand category expertise, but not depending on the absolute vertical placement of that assortment.

H4: The number of selected products of an organized assortment of a brand will differ depending on the actual variety of that assortment, but not depending on the absolute vertical placement of that assortment on the category product page.

3. METHODOLOGY

3.1 Object of Study

As the online grocery market is a rather broad market, and there are several brands within different product categories that execute a product line extension strategy, we limited our research to examine one of the most prominent brands executing this strategy in an online context; Marabou (MatHem 2017; Coop 2017, Mat 2017). The chosen product category for our research, chocolate bars, is a relatively evident category of where product line extension in the physical store shelf is common, resulting in a few actors dominating the shelf space. The target brand Marabou, which was the object brand in the experiment, is a popular brand within the chocolate category and the large majority of people in Sweden recognize the brand with their famous slogan "Mmm...Marabou". The limitation to only examine one brand within a specific category allowed for an in-depth analysis in our research. A fictive web shop was designed to execute the experiments. The design was inspired by the largest actors in the online grocery market in Sweden, such as MatHem.se, Coop.se, and Mat.se. The category shelf displayed in the web shop, which presented the whole offered chocolate bar assortment, was inspired by one of the current largest actors in the market; MatHem (Svensk Digital Handel 2016). The assortment of Marabou was limited to only offer the well-known iconic yellow packaged line, which is characterized by a yellow horizontal packaging and the classic red Marabou logotype.

3.2 Scientific Approach

The scientific approach in this study consists of two quantitative experiments, where the data was collected in the experiments using fictive web shops and sequential questionnaires. The participants in the experiments could enter the fictive web shop via a link on their individual computers. The data consists of the participants' selection within the fictive web shop and their responses to the questions in the questionnaire. In line with Bryman & Bell (2011), the theoretical approach in this paper follows a deductive study method where examining existing research on the subject from both the physical and online environment in a new context created our hypotheses.

3.3 Study Design

The research in this paper is divided into two separate studies, referred to as the Main Study (2) and the Placement Study (1), which were conducted in similar formats but at different

periods of time. The reason for conducting two separate studies was a requisite of being able to use a variation of assortment designs in the object of study. This will further be specified in section *3.3.2 The Placement Study (1)*. For clarity reasons, we begin this chapter by explaining the study design in the Main Study (2).

3.3.1 The Main Study (2)

The structures of the experiment in the Main Study (2) consisted of creating different scenarios of assortment variety designs in a web shop format and evenly distribute one of these scenarios to each respondent group. The difference between the scenarios was based on absolute and relative dimensions of variations of the Marabou products in relation to the background assortment. More specifically, the used scenarios of assortment variation sizes and relations were the following:

Table 1. Assortment Variation Designs in the Main Study (2)

Absolute Variety Design	Relative Variety Design
4/22	4/67
12/67	12/67
25/137	25/67

The above table presents the assortment variation designs, where the number of the Marabou products is presented in bold and the number of items in the whole assortment on the product category page is not.

Note that the middle assortment variation size naturally appeared the same in the experiment in both dimensions, hence the number of scenarios that was distributed equalled five in total.

3.3.1.1 The Marabou Assortment Design

The selected range size and flavours were based on Marabou's own categorization of the iconic yellow packaged line on their website (Marabou 2017). A total number of 25 Marabou items was used in the experiment in the two largest assortment scenarios in both dimensions. The specific flavours used in each of the three assortment sizes were based on a popularity scale measured from Mat.se's most sold products (Mat 2017). Furthermore, identical assortments were used in terms of specific flavours and product order in both the absolute and relative scenario.

3.3.1.2 The Background Assortment Design

The selection of brands and the length of the product lines in relation to other brands within the category of the background assortment was inspired by one of the most prominent online retailers in the market offering one of the widest assortments of items in the chocolate bar category; MatHem. When designing the assortment variation scenarios, we started with the largest assortment, constituting of 137 items adapted from the MatHem website. To ensure that Marabou was the only dominant brand within the whole assortments, the number of background brands and their flavours were adjusted manually. The used rule of thumb was that no other single brand should account for more than 40% of the Marabou selection presented on the product page. The adjustments resulted in a need to include two other brands and, in some cases, more flavours of an existing brand from another online retailer website than offered in the MatHem web shop. The proportion of the Marabou assortment in relation to the background assortment was held constant, to the widest extent possible, when reducing the largest assortment to create the other assortment size scenarios. The reductions were made both in relation to the total number of items and to the number of other offered brands besides Marabou.

3.3.1.3 The Arrangement of the Assortment

As there are numerous theories about how the organization of an assortment affects the consumer's perceptions and behaviours, the arrangement structure of the complete assortment was carefully selected to ensure that the executed experiment solely measured the absolute and relative variation of the Marabou assortment in relation to the whole background assortment. As the choice probability of products increases when placed on the first screen (Breugelmans et al. 2007), the first five positions times three rows, equalling fifteen positions, were held constant between the scenarios. The background assortment order of specific products was to the fullest possible extent held constant between all five scenarios even though their assortment sizes differed. The order was set in accordance with a disorganized alphabetical order. The arrangement of the Marabou assortment both in terms of organization and placement on the product category page was inspired by MatHem. It consisted of a block of Marabou presented in an organized matter in the center of the whole assortment offered on the category product page. Please view the assortment designs in Appendix C.

3.3.2 The Placement Study (1)

We wanted to make sure that the placement of products did not affect consumer perceptions of the assortment. Therefore, the Placement Study (1) was designed to control for that the difference in the absolute vertical placement of the organized Marabou assortment on the category product pages *did not* influence consumer perceptions of variety, complexity, and brand quality nor the number of selected Marabou products. The difference in the absolute vertical placement of the Marabou assortment was a consequence of the different number of offered items in the assortment designs. In terms of the general design of both the Marabou assortment and the background assortment on the category product pages, as well as the following questionnaire, the Placement Study (1) was identical to the scenarios presented in the Main Study (2) with one exception - the absolute vertical placement on the category product page in one of the scenarios. To control for this effect, three different scenarios of assortment variation designs were used.

Table 2. Assortment Variation Designs in The Placement Study (1)

Assortment Variation Design	Size Definition	Placement	Manipulation Number
Absolute 4/22	Small	Central	*Group 1*
Absolute & Relative 12/67	Medium	Central	*Group 2*
Absolute & Relative 12/67	Medium	Top	*Group 3*

The above table presents the assortment variation designs and the vertical placement of the Marabou assortment on the category product page. The number of the Marabou products is presented in bold and the number of items in the whole assortment on the product category page is not.

Note that two of the assortment variations are of the same size and that the only difference is the absolute vertical placement on the category product page, where *Group 2* was exposed to a centred placement and *Group 3* exposed to a top placement. The inclusion of the 4/22 assortment variation in *Group 1* ensured that there was a difference in perceptions between the groups in the experiment. Please view Appendix C to see the assortment designs.

3.4 Measurements

Most of the questions in the questionnaire sequencing the exposure of the web shop were adapted from a range of well-established questions. The questions regarding the concepts of Perceived Variety and Anticipated Consumption Utility were adapted from Kahn & Wansink (2004). The concept of Perceived Complexity was adapted from Kahn et al. (2013). Customer Satisfaction was measured using an adaptation from Fornell (1992). The questions regarding

the concept of Brand Quality Perception and Perceived Category Expertise by the brand were adapted from Berger et al. (2007). These concepts were all measured on a recommended Likert scale from 1 to 7 (Bryman & Bell 2011). Loyalty was measured using questions adapted from Baumgartner & Steenkamp (1996). Questions regarding Consumer Expertise were adapted from Nordfält (2005) that refers to Alba & Hutchinson (1987). The concept of the Availability of Favourite Product in the assortment was adapted from Broniarczyk et al. (1998). The questions regarding the respondent's current emotional state were adapted from the M-R model computed by the psychologists Mehrabian and Russell, used by among others Nordfält (2007). On other relatively simpler concepts, such as consumption habits and demographics, the questions were designed by ourselves.

3.5 Sampling of Respondents

Both surveys were distributed by sending anonymous links in private messages and emails to people in the professional and social network of the authors. The distribution followed a random selection of each scenario to the respondents and each sample group was made up by at least 30 respondents. As we had limited resources in this research, the method used followed a non-probability convenience sampling. The implications for not being able to target a perfect random sample from the population is that the data is a bit skewed and will not generate a definitive finding from our research, but more contribute with a valuable finding in the field. On the other hand, due to our sampling technique, our sample group is more homogeneous than heterogeneous, which is preferred when using a relatively small sample size (Bryman & Bell 2011).

In the Placement Study (1), the total number of fully recorded responses amounted to 92, meanwhile in total 131 respondents accessed and started participating in the survey. After excluding respondents which showed an obvious lack of attention when answering reversed questions, the final sample was made up of 84 respondents. In the Main Study (2), the total number of fully recorded responses amounted to 201, meanwhile in total 264 respondents accessed and started participating in the survey. After excluding respondents which showed an obvious lack of attention when answering reversed questions, the final sample was made up of 164 respondents. To avoid that respondents participating in the Placement Study (1) would act differently if participating in the Main Study (2) as well, because of an information

bias, the distribution of the surveys was carefully monitored and consisted of sending private emails and messages to maintain control of each respondent.

3.6 Data Analysis Tools and Tests

The statistical tool SPSS Statistics was used to analyse the data from the experiments.

3.6.1 The Placement Study (1)

In the Placement Study (1) an accepted significance level of 5% was used. Cronbach's alpha tests were computed to ensure a statistical relationship between the scales used in the intended measurements. All indexes were accepted, as all Cronbach's alpha tests were above the acceptance level of 0.6. (Malhotra 2010). The conducted tests include Assortment Complexity (α=0.915), Assortment Variety (α=0.814) and Brand Quality Perception (α=0.921). Please view Table 16 in Appendix E for the list of Cronbach's alphas. Analyses of variances, ANOVAs, were used to examine the different effects between the groups and our mediators. Analyses of covariate variances, ANCOVAs, were used to analyse the significance of confounding variables with our independent variables in the model as well as showing the variance significance between the groups. To be able to analyse the variance on group levels, Scheffe or Bonferroni post hoc tests were used.

3.6.2 The Main Study (2)

In Study 2 an accepted significance level of 5% was used. Cronbach's alpha tests were computed to ensure a statistical relationship between the scales used in the intended measurements. All indexes were accepted, as all Cronbach's alpha tests were above the acceptance level of 0.6 (Malhotra 2010). The conducted tests include Assortment Complexity (α=0.871), Assortment Variety (α=0.812), Anticipated Consumption Utility (α=0.841) and Brand Quality Perception (α=0.768). Please view Table 17 in Appendix E for the list of Cronbach's alphas. Analyses of variances, ANOVAs, were used to examine the different effects between the groups and our mediators. Analyses of covariate variances, ANCOVAs, were used to analyse the significance of confounding variables with our independent variables in the model as well as showing the variance significance between the groups. To be able to analyse the variance on group levels, Scheffe or Bonferroni post hoc tests were used. Furthermore, linear regression tests were used to conclude the causal relationships in the model with our independent, confounding and dependent variables. Regressions were also

used to check for partial mediation, using the proposed technique by Baron & Kenny (1986). In all regressions, we checked for heteroscedasticity using a Breusch Pagan test as well as multicollinearity.

3.7 Reliability

Reliability refers to the consistency of a measure of a concept, which according to Bryman & Bell (2011), can be determined by the two main components stability and internal reliability in a quantitative approach. The stability in our study is a measure of how similar the results will be in our research if tested at a different point in time. The internal reliability is a measure of the consistency between several different questions in our concept indexes (Bryman & Bell 2011).

In order to achieve a high internal reliability of our measures in the survey, our questions for the concepts tested were all adapted from well-established or previously tested scales. This implies that we can be sure that our measures are well understood by the respondents. As the survey was conducted entirely in English, these were all adapted without the risk of translation errors causing a reliable confusion. To further ensure that the respondents' understanding of the questions and their corresponding answers were matching the conceptual purpose of the questions, we executed Cronbach's alpha tests for all the variables before creating our concept indexes. In addition to controlling for respondents' understanding, this test also checks for consistency in our respondents' answers of the overall concept tested (Bryman & Bell 2011). The results from the Cronbach's alpha tests in both studies were all above 0.6, which is an accepted threshold for an existing inter-correlation between the variables (Malhotra 2010). To further check for the respondents' level of cognitive involvement when participating in the survey and consistency in their answers, several questions were intentionally reverse. A limitation of reliability in our research is that the same outcome could not fully be seen in all our results from both the Placement Study (1) and the Main Study (2). This is an indicator of some lack in the stability of our data.

3.8. Validity

3.8.1 Measurement Validity

Measurement validity can be divided into content validity, construct validity and criterion validity (Malhotra 2010). Content validity refers to the degree that a measure's content covers

the content in the measured variable. Construct validity refers to how the results compare to the theoretical variable intended to measure. Criterion validity is rarely used by marketing researchers (Söderlund 2005). It is therefore not discussed further.

The content validity in this study has been strengthened by using well-established questions used by experienced researchers within the specific areas, implying that the questions measure the concepts they intend to measure. In line with the reasoning from Söderlund (2005), the content validity was further strengthened by the fact that a 7 point Likert scale ranging from "strongly disagree" to "strongly agree", was used. Söderlund explains that the construct validity can be increased by measuring several variables within the framework for the same theory and observe how the variable intended to measure compares to these variables. This has been strengthened in our research by, in one case, using two different measurements from two different sources for a concept. This was conducted for anticipated consumption utility and customer satisfaction, and the correlation of these variables was tested to make sure that our measurements were valid (Söderlund 2005). Please see Table 15 in Appendix E.

3.8.2 Internal and External Validity

As our test-method is partly conducted by causal research, using an experiment of a fictive purchasing situation, it is relevant to look at the internal and external validity (Malhotra 2010). The internal validity concerns the causality between variables used in a conclusion whereas the external validity concerns the generalization beyond our research to a greater context (Bryman & Bell 2011).

The fictive web shop format, where the respondents were told to act as if they were in a real buying situation, is not entirely comparable with them being in a real buying situation. Therefore, the measurements of selected products and purchase quantities can be criticized from an internal validity perspective. This issue could have been avoided by performing the experiment and survey in a real online grocery retailer context where the buying situation took place naturally. However, due to the lack of resources and time, this was not possible and hence the fictive web shop served as our best option. We have intended to make sure that the fictive web shop looks real and that the assortment mixture on the page is realistic. There has been a consideration of including content in the web shop that could have increased the

validity, such as including price on the product page. However, as Malhotra (2010) explains, there is also a need to control for extraneous variables in an experiment to establish internal validity. By limiting the consumer to only base their selection on attribute preference across our manipulation scenarios, extraneous variables such as price and displayed order of the products were controlled for. Another weakness in terms of internal validity in this research is the fact that the theories about causality between the variables in this experiment are based on studies conducted in an offline context. This was considered appropriate because, as far as we are concerned, no corresponding studies have been conducted online. However, concepts and theories from the online environment are used when evaluating some of the concepts in our model in the new online context.

The external validity can be weakened by pre-testing effects and generalization of the sample, for instance in terms of ethnicity and social class as well as study specific characteristics (Bryman & Bell 2011) and the artificial interaction situation in our experiment (Söderlund 2010). The fact that we used different sample groups in the two studies can be criticized on the generalizability of making conclusions from the Placement Study (1) and apply these in conducting the Main Study (2), as our samples are non-probability convenience samples. However, the techniques for sampling respondents were the same in both studies, which lowers this critique. On the other hand, by using two different sample groups we avoided that the respondents behaviours and answers in the Main Study (2) would be biased from previous experience in the Placement Study (1). Also, the experiment examined the effects of a product line extension for a specific, well-known brand within a certain product category, which decreases the possibility to generalize the findings to other product categories and brands. In addition, the nature of the experimental design can be criticized from an external validity perspective. Even though the participants in the experiment engaged on their free will, the artificial buying situation was forced upon them when they needed to select at least one product to proceed in the experiment. However, this forced effect was partly mitigated by choosing a low involvement product category that the majority associates with positive emotions, which hence could increase their willingness to engage.

4. RESULTS AND ANALYSIS

4.1 The Placement Study (1)

In this section, we report and analyse the results from the Placement Study (1). For simplicity, the different groups are defined by assortment variation design, the absolute vertical placement of the Marabou assortment on the product category page and a number, clarified in the table below. The significance level was set to 5%.

Table 2. Assortment Variation Designs in The Placement Study (1)

Assortment Variation Design	Size Definition	Placement	Manipulation Number
Absolute 4/22	Small	Central	*Group 1*
Absolute & Relative 12/67	Medium	Central	*Group 2*
Absolute & Relative 12/67	Medium	Top	*Group 3*

The above table represents the 3 different randomly distributed assortment variation designs, where the Marabou assortment size is marked in bold and the total assortment size is not.

H1: The variety of an organized assortment of a brand will be perceived differently depending on the actual variety of that assortment, adjusted for availability of a favourite product found in that assortment, but not depending on the absolute vertical placement of that assortment on the category product page.

An ANCOVA was run to test H1. The covariate, availability of a favourite product found in the Marabou assortment, was significantly related to the perceived variety ($F_{2,80}$= 63.974, ρ=0.000, partial η2=0.447) in accordance with the results from Broniarczyk et al. (1998). Furthermore, the results showed a statistically significant difference in perceived variety between the groups, adjusted for the availability of a favourite product ($F_{2,80}$= 5.502, ρ=0.006, partial η2=0.112), in line with the results from Kahn & Wansink (2004) for organized assortments.

Table 3. Unadjusted and Adjusted Means of Perceived Variety for the Manipulations

Manipulation	Unadjusted Mean (uM)	Adjusted Mean (M)
Group 1	12.83	13.67
Group 2	16.83	16.18
Group 3	16.07	15.75

To further analyse the effect of the absolute vertical placement of the organized Marabou assortment on the product page, a Bonferroni post hoc analysis was performed. The multiple

group comparison showed that there was a statistically significant difference in perceived variety when comparing *Group 2* with *Group 1* (M_{diff}=2.515, 95% CI [0.483, 4.547], ρ=0.010) and *Group 3* with *Group 1* (M_{diff}=2.085, 95% CI [0.169, 4.000], ρ=0.028) respectively. However, in support of our hypothesis, there was no significance between *Group 2* and *3* (M_{diff}=0.430, 95% CI [-1.568, 2.428], ρ=1.000). Hence, we can accept H1.

H2: The complexity of an organized assortment of a brand will be perceived differently depending on the actual variety of that assortment, but not depending on the absolute vertical placement of that assortment.

An ANOVA was run to test H2. The results did not show a statistically significant difference in perceived complexity between the groups ($F_{2,80}$= 2.014, ρ=0.140). Hence, we can not accept H2. This result goes against the adapted reasoning from Iyengar & Lepper (2000) that a larger assortment increases the complexity of that assortment.

H3: The perceived brand quality of an organized assortment of a brand will differ depending on the actual variety of that assortment, adjusted for perceived brand category expertise, but not depending on the absolute vertical placement of that assortment.

An ANCOVA was run to test H3. The covariate, perceived brand category expertise, was significantly related to the perceived brand quality ($F_{2,80}$= 11.804, ρ=0.001, partial η2=0.130) in accordance with the adapted reasoning from Berger et al. (2007). However, the results did not show a statistically significant difference in perceived brand quality, adjusted for perceived category expertise by the brand, between the groups ($F_{2,80}$= 0.355, ρ=0.729, partial η2=0.009). This result goes against the adapted reasoning from Berger et al. (2007). Hence, we cannot accept H3.

H4: The number of selected products of an organized assortment of a brand will differ depending on the actual variety of that assortment, but not depending on the absolute vertical placement of that assortment on the category product page.

An ANOVA was run to test H4. The results showed a statistically significant difference in the number of selected Marabou products between the groups ($F_{2,78}$= 5.799, ρ=0.004).

Table 4. Means of Number of Selected Products for the Manipulations

Manipulation	Mean (M)
Group 1	0.467
Group 2	1.083
Group 3	0.629

To further analyse the effect of the absolute vertical placement of the organized Marabou assortment on the product page, a Scheffe post hoc analysis was performed. The multiple group comparison showed that there was a statistically significant difference in the number of selected Marabou products when comparing *Group 2* with *Group 1* (M_{diff}=0.617, 95% CI [0.1550, 1.0784], ρ=0.006). Furthermore, there was not a statistically significant difference in the number of selected Marabou products when comparing *Group 2* with *Group 3* (M_{diff}=0.454, 95% CI [-0.0192, 0.9267], ρ=0.063). However, our results also showed that there was not a statistically significant difference between *Group 3* and *Group 1* (M_{diff}=0.163, 95% CI [-0.2842, 0.6012], ρ=0.663), which weakens our results. Altogether, there was however a difference in the number of selected Marabou products between two of the groups of different actual variety and there was not a significant difference between the groups of equal variety but with different absolute vertical placements. Hence, we can accept H4. Our results are also in line with the adapted reasoning from Kahn & Wansink (2004), who showed that an increase in actual variety for an organized assortment led to increased consumption quantities.

4.1.1 Conclusions from the Results of the Placement Study (1)

In summary, the results from the Placement Study (1) showed that the absolute vertical placement of the organized Marabou assortment on the product category page did not affect the perceived variety, adjusted for the availability of a favourite product found in the Marabou assortment, nor the number of selected Marabou products. On the other hand, against our predictions, we did not find support for a non-existing effect of the absolute vertical placement of the organized Marabou assortment on the product page on the perceived complexity, nor on the perceived brand quality, adjusted for the perception of category expertise by the brand. The results are therefore partly in line with the reasoning that vertical placement is of smaller importance in an online context (Breugelmans et al. 2007). To conclude, even though we could not accept all hypotheses in the Placement Study (1), we still felt confident and intrigued to continue our research with the Main Study (2). One of the

reasons for this is that the perception of variety is considered one of the most important concepts in our model. In addition to this, the final response from the consumer, the number of selected products, is considered the most crucial step in the model.

4.2 The Main Study (2)

In this section, we report and analyse the results from the Main Study (2). For simplicity, the different groups are defined by assortment size, the absolute vertical placement of the Marabou assortment on the product category page and by a number, which is clarified in the table below. The significance level was set to 5%.

Table 5. Assortment Variation Designs in the Main Study (2)

Assortment Variation Design	Size Definition	Placement	Manipulation Number
Absolute 4/22	Small	Central	*Group 1*
Absolute & Relative 12/67	Medium	Central	*Group 2*
Absolute 25/137	Large	Central	*Group 3*
Relative 4/67	Small	Central	*Group 4*
Relative 25/67	Large	Central	*Group 5*

The above table represents the 5 different randomly distributed assortment variation designs, where the Marabou assortment size is marked in bold and the total assortment size is not.

H1: The variety of an organized assortment of a brand will be perceived differently depending on the actual variety of that assortment, adjusted for availability of a favourite product found in that assortment.

An ANCOVA was run to test H1. The covariate, availability of favourite chocolate bar in the Marabou assortment, was significantly related to the perceived variety ($F_{1,162}$=68.061, ρ=0.000, partial η2=0.296), in accordance with the results from Broniarczyk et al. (1998). After adjusting the means for availability of favourite chocolate bar found in the Marabou assortment, there was a statistically significant difference in perceived variety between the groups ($F_{4,162}$=14,856, ρ=0.000, partial η2=0.268). Further on, the report and analysis in H1 refer to the adjusted means.

Table 6. Unadjusted and Adjusted Means of Perceived Variety for the Manipulations

Manipulation	Unadjusted Mean (uM)	Adjusted Mean (M)
Group 1	13.08	13.70
Group 2	16.91	16.84

Group 3	17.74	16.87
Group 4	11.91	12.34
Group 5	17.26	16.99

The Bonferroni adjusted post hoc analysis showed that there was a significantly higher perceived variety in several assortments with a higher number of Marabou items than in ones with a lower number of items, adjusted for availability of favourite product. Thus, we can accept H1. The mean differences between the significant group comparisons are summarized in a descending order in a table below.

Table 7. Dependent Variable: Perceived Variety with 95% Confidence Interval

Manipulation I	Manipulation J	M_{diff} (I-J)*	Std. Error	Lower Bound	Upper Bound
Group 5	*Group 4*	4.642	0.803	2.356	6.928
Group 3	*Group 4*	4.530	0.814	2.213	6.847
Group 2	*Group 4*	4.493	0.777	2.280	6.705
Group 5	*Group 1*	3.284	0.780	1.062	5.505
Group 3	*Group 1*	3.172	0.794	0.913	5.431
Group 2	*Group 1*	3.134	0.753	0.991	5.277

*All accepted at a significance level of 0.1%.

Further supporting our hypothesis, there was no statistical significance between groups of equal sizes. What is interesting it that it was neither a statistical significance between the medium and large sized groups, *Group 3* and *2* (M_{diff}=0.037, 95% CI [-2.221, 2.295], ρ=1.000), nor between *Group 5* and *2* (M_{diff}=0.149, 95% CI [-2.093, 2.392], ρ=1.000). The results indicate that the only significant relationship between assortment size and perceived variety, after adjusting for the availability of favourite product, lies in the comparison between a small and medium assortment as well as a small and large assortment, on both an absolute and relative dimension.

The implication from this result is that there will be a difference in variety perception of an assortment when going from a small to a medium or to a large assortment. However, if there is a medium sized assortment, customers will not perceive the actual variety difference in extending this assortment to a large assortment size. The results are in line with the findings from Kahn & Wansink (2004), who showed that an increase in actual variety lead to an

increase in perceived variety when comparing an organized assortment of 6 versus 24 products, which can be compared to the small and large assortment in this study.

H2: There is a positive relationship between the perceived variety of an organized assortment of a brand and the anticipated consumption utility of that assortment.

A bivariate regression analysis was used to test H2. The independent variable was the perceived variety and the dependent variable was the anticipated consumption utility of that assortment. As shown in the table below we can see there is a statistically significant positive relationship in our model ($F_{1,166}$=61.053, ρ=0.000). Hence, we find support for H2 as predicted by the results from Kahn & Wansink (2004).

Table 8. Regression Model with Anticipated Consumption Utility as Dependent Variable

Variable	B	Std. Error	β	t	ρ
Constant	9.954	1.493		6.669	0.000
Perceived Variety	0.733	0.094	0.519	7.814	0.000

Notes: R^2=0.269. Adjusted R^2=0.264

The model has a relatively high explanatory power and the regression coefficient is relatively high (B=0.733), which indicates that there is a positive causal relationship between the consumer's perception of variety and the anticipated consumption utility. Furthermore, there was independence of residuals, supported by a Durbin Watson statistic of 1.828. There was no evidence of multicollinearity, as assessed by tolerance values greater than 0.1. However, a Breusch-Pagan test showed some heteroscedasticity with a value of 6.557, which somewhat lowers the statistical strength of the regression model.

H3: There is a positive relationship between the anticipated consumption utility of an assortment of a brand and the number of selected products of that assortment.

A bivariate regression analysis was used to test H3. The independent variable was the anticipated consumption utility of an assortment of a brand and the dependent variable was the number of selected products of the brand. As shown in the table below, we can see that there is a statistically significant positive relationship in our model ($F_{1,165}$=18.623, ρ=0.000). Hence, we find support for H3 in accordance with the results from Kahn & Wansink (2004).

Table 9. Regression Model with Number of Marabou Products Selected as Dependent Variable

Variable	B	Std. Error	β	t	ρ
Constant	-0.468	0.349		-1.340	0.091
Anticipated Consumption Utility	0.068	0.016	0.318	4.315	0.000

Notes: R^2=0.101. Adjusted R^2=0.096

The model has an intermediate explanatory power and the regression coefficient is relatively low (B=0.068), which indicates that the positive causal relationship between the consumer's perception of variety and the anticipated consumption utility exists even though it is relatively weak. Furthermore, there was independence of residuals, supported by a Durbin Watson statistic of 1.859. There was no evidence of multicollinearity, as assessed by tolerance values greater than 0.1. However, a Breusch-Pagan test showed heteroscedasticity with a value of 32.23, which further lowers the statistical strength of the model.

H4: The complexity of an organized assortment of a brand will be perceived differently depending on the actual variety of that assortment.

An ANOVA was run to test H4. The results showed a statistically significant difference in perceived complexity between the groups ($F_{4,163}$=5.422, ρ=0.000).

Table 10. Means of Perceived Complexity for the Manipulations

Manipulation	Mean (M)
Group 1	6.87
Group 2	8.37
Group 3	10.23
Group 4	8.91
Group 5	11.23

A Scheffe post hoc analysis was further performed, which showed that the perceived complexity was statistically significantly greater in *Group 5* compared with *Group 1* (M_{diff}=4.358, 95% CI [1.1722, 7.5426], ρ=0.002) and in *Group 3* compared with *Group 1* (M_{diff}=3.358, 95% CI [0.1722, 6.5426], ρ=0.033). Hence, we find support for H4. However, in all other group comparisons there were no significant results. This indicates that the customers will perceive a higher complexity of an assortment of a brand when extending the

assortment from a small assortment, of a total of 18% (4/22) of the whole assortment, to a large assortment in both absolute and relative terms. To the contrary, our results do not support that the same effect is attained when extending from a small assortment, of a relatively lower total proportion size of 6% (4/67) of the whole assortment to a large assortment. To understand these results, we look at the mean comparison. Looking at the means, we can see that the perceived complexity of the small assortments of equal sizes differ. There is a higher perceived complexity of the same assortment in the small relative scenario, *Group 4*, (M=8.91) compared to the small absolute scenario, *Group 1*, (M=6.87). Instead the perceived complexity in the small relative assortment (M=8.91) is almost the same as in the medium assortment (M=8.37). Even though this result might be confusing at first, it might be in line the overall adapted reasoning that a higher overall actual variety of an assortment leads to a higher overall perceived complexity of that assortment. The results in H4 are partly in line with the adapted reasoning from Iyengar & Lepper (2000), as we could see that an assortment with more items was perceived as more complex when comparing a small absolute assortment with a large assortment in both absolute and relative terms.

H5: There is a negative relationship between the perceived complexity of an organized assortment of a brand and the anticipated consumption utility of that assortment.

A bivariate regression analysis was used to test H5. The independent variable was the perceived complexity and the dependent variable was the anticipated consumption utility of that assortment. As shown in the table below, the result from the regression shows that the perceived complexity of an assortment could not statistically significantly predict the anticipated consumption utility of that assortment ($F_{1,166}$=0.397, ρ=0.265) and hence we cannot support H5.

Table 11. Regression Model with Anticipated Consumption Utility as Dependent Variable

Variable	B	Std. Error	β	t	ρ
Constant	20.532	1.102		18.633	0.000
Perceived Complexity	0.069	0.110	0.049	0.630	0.265

Notes: R^2=0.002. Adjusted R^2=-0.004

The results from H2 and H5 together show, in line with our belief from the adapted reasoning of Kahn & Wansink (2004) but against our belief from the adapted reasoning of Iyengar &

Lepper (2000), that the anticipated consumption utility of an assortment can only be explained by the perceived variety of an assortment and not by the perceived complexity of an assortment. This result indicates that the benefits of an increased perception of variety are more prominent when the consumer anticipates the consumption utility of that assortment than any negative consequences of an increase in the perception of complexity.

H6: There is a positive relationship between the perceived variety of an organized assortment of a brand and the perceived complexity of that assortment.

A bivariate regression analysis was used to test H6. The independent variable was the perceived variety of an assortment and the dependent variable was the perceived complexity of an assortment. As shown in the table below we can see there is not a statistically significant positive relationship in our model ($F_{1,166}$=2.635, ρ=0.053). Hence, we do not find support for H6.

Table 12. Regression Model with Perceived Complexity as Dependent Variable

Variable	B	Std. Error	β	t	ρ
Constant	7.099	1.223		5.806	0.000
Perceived Variety	0.125	0.077	0.125	1.623	0.053

Notes: R^2=0.016. Adjusted R^2=0.010.

These results go against the reasoning adapted from Kahn et al. (2013) and Townsend & Kahn (2013), of that an increase in perceived variety of an assortment implicates an increase in the perceived complexity of that assortment. A possible reason for our results, which indicates that we cannot support the predicted causal relationship between perceived variety and perceived complexity, might be the lack of strong perceived complexity differences between the groups reported in H4.

H7: The perceived brand quality of an organized assortment of the brand will differ depending on the actual variety of that assortment, adjusted for perceived category expertise by that brand.

An ANCOVA was run to test H7. The covariate, perception of the brand's category expertise, was significantly related to the brand quality perception ($F_{1,162}$=36.824, p=0.000, partial η2 =0.185), in accordance with the reasoning adapted from Berger et.al (2007). However, after adjusting the means for the covariate, there was not a statistically significant difference in

brand quality perception between the groups ($F_{4,162}$ =1.602, p=0.352, partial η2=0.038). Hence, we do not find support for H7. This result goes against the adapted reasoning from Berger et. al (2007). A possible explanation for the results in H7 is that the perception of brand quality was stronger than the visual display of products in each assortment. Therefore, our manipulations did not generate a significant difference between the groups, even after controlling for the covariate of perceived brand category expertise.

H8: There is a positive relationship between the perceived variety of an organized assortment of a brand and the quality perception of that brand, partially mediated through the perceived category expertise by that brand.

Both bivariate and multiple regressions were used to test H8. Fist, a partial mediating effect was shown in accordance with a four-step model provided by Baron & Kenny (1986). After testing for the partial mediating effect of the perceived brand category expertise as suggested by Berger et al. (2007), a multiple regression was used to analyse the relationship between the perceived variety and brand quality perceptions. The independent variables were the perceived variety as well as the perceived category expertise by the brand. The dependent variable was the perceived brand quality. As shown in the table below we can see there is a statistically significant positive relationship in our model ($F_{2,165}$=37.759, ρ=0.000). Hence, we find support for H8.

Table 13. Regression Model with Perceived Brand Quality as Dependent Variable

Variable	B	Std. Error	β	t	ρ
Constant	1.127	0.979		1.151	0.126
Perceived Variety (PV)	0.223	0.039	0.381	5.700	0.000
Perceived Category Expertise (PCE)	0.258	0.053	0.324	4.851	0.000

Notes: R^2=0.314. Adjusted R^2=0.306

The model has a relatively high explanatory power and both regression coefficients are of intermediate strength (B_{PV}=0.223, B_{PCE}=0.258), which indicates that there is a positive causal relationship between the consumer's total perception of variety as well as category expertise and the perception of brand quality. Furthermore, there was independence of residuals, supported by a Durbin Watson statistic of 1.883. There was no evidence of multicollinearity, as assessed by tolerance values greater than 0.1. A Breusch-Pagan test showed

homoscedasticity with a value of 0.085. Opposed to our results in H7, where our manipulation was not stronger than the consumer's perception of brand quality, our results in H8 show that there is a positive causal relationship between the perceived variety of an assortment of a brand and the brand quality perception, mediated by the perception of brand category expertise. This result is therefore in line with the reasoning adapted from Berger et al. (2007).

H9: There is a positive relationship between the quality perception of a brand and the number of selected products of that assortment of the brand.

A bivariate regression analysis was used to test H9. The independent variable was the perceived brand quality and the dependent variable was the number of selected products of the Marabou assortment. As shown in the table below we can see there is a statistically significant positive relationship in our model ($F_{1,165}$=16.906, ρ=0.000). Hence, we find support for H9.

Table 14. Regression Model with Number of Marabou Products Selected as Dependent Variable

Variable	B	Std. Error	β	t	ρ
Constant	-0.443	0.359		-1.234	0.110
Perceived Brand Quality	0.157	0.038	0.305	4.112	0.000

Notes: R^2=0.093. Adjusted R^2=0.087.

The results from the regression analysis are in line with the reasoning from Berger et al. (2007), which showed a causal relationship between brand quality perception and brand choice. The model has a relatively medium strong explanatory power and an intermediate regression coefficient (B=0.157), which indicates that there is a positive causal relationship between the consumer's perception of brand quality and the number of selected products of the brand in line with the results from Berger et al. (2007). Furthermore, there was independence of residuals, supported by a Durbin Watson statistic of 1.883. There was no evidence of multicollinearity, as assessed by tolerance values greater than 0.1. However, a Breusch-Pagan test showed a slight heteroscedasticity with a value of 4.845, which somewhat lowers the statistical strength of the regression model.

Note: Furthermore, all relationships in the model have been checked for control variables including age, gender, mood, consumption habits, consumer expertise and loyalty. None of these contributed to findings that were deemed to be of interest for the studies in this research.

4.2.1 The Main Study (2) - Summary of the Results & Revised Model

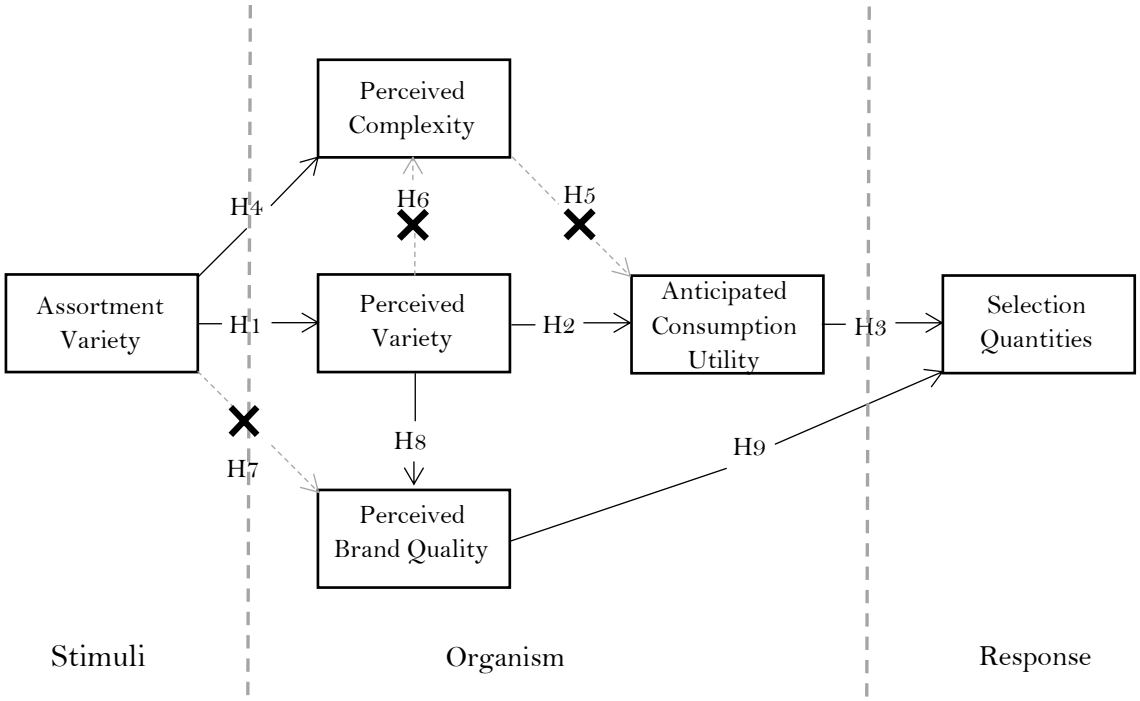


Figure 2. The Revised Model

5. DISCUSSION AND CONCLUSIONS

5.1 Discussion of Results

In the beginning of this research we discussed theories of how assortment variations of a brand influence consumer perceptions of that assortment and the brand as well as a consequential implication for the number of selected products of that assortment. More specifically, we asked ourselves how the absolute and relative variety of an assortment of a brand in an online context, within a category product page, affect consumer perceptions about variety and complexity of the assortment of that brand as well as the brand quality. In this section, we will try to answer these questions with support from a discussion of our results.

5.1.1 The Relationships between Actual Variety, Perceived Variety and Perceived Complexity

From a brand perspective, our results showed that there are positive effects on the perception of variety when extending from a small assortment to a medium or to a large assortment, adjusted for the availability of the consumer's favourite product found in the assortment. These results are in line with similar findings from the physical environment reported by Kahn & Wansink (2004) as well as Broniarczyk et al. (1998). The results show that the variety differences are perceived both in an absolute and relative dimension. However, the results also showed that an extension from a medium to a large assortment does not seem beneficial when looking at the perception of variety alone. A possible explanation for this result is a lower marginal utility to the consumer of an increased actual variety at this level. Hence, when extending an assortment from 12 to 25 products, there is no significant difference in the consumer's perceived variety due to a possible saturation effect in line with the reasoning of choice overload from Iyengar & Lepper (2000). What is interesting, is that the difference in variety perception is larger when there is a relative increase in the variation of the assortment, compared to an increase in an absolute variation of the assortment. The implication from this result is that the relative share of the whole offered assortment on the product category page plays an important role, which is in line with the benefits described from executing a line extension strategy from Quelch & Kenny (1994). It is also in accordance with the adapted reasoning from Kahn & Wansink (2004) that showed that an increase in actual variety led to larger increases in consumption quantities for asymmetric assortments than for symmetric ones. When offering a longer product line online, the perceptions of variety will be the largest if the brand increases more in relation to other

brands, than if the absolute variation of the whole assortment increases in the same proportion. The practical implication of this is that when a brand extends the product line offered online from a small to a medium or large assortment, the benefits of variety of that line extension will be higher if this implicates a relative dominance in the whole offered assortment. However, there are no significant variety perception benefits of extending the assortment offered online from a medium assortment to a large assortment.

As indicated by Iyengar & Lepper (2000), Kahn et al. (2013) and Shah & Wolford (2007), a high actual variety in an assortment does also, to some extent, correspond with a higher complexity to some extent. Our results show that the consumer only perceives differences of complexity between a small and large assortment and that this difference exclusively is perceived when comparing the absolute small assortment (4/22) to the large assortments in both dimensions (25/137 & 25/67). As our small and large Marabou assortments are similar in size to the sizes used by Iyengar & Lepper (2000), we can see that our findings are in line with their result. A possible reason for not seeing the same effect when comparing the large assortment sizes with the small relative assortment (4/67) can be explained by the fact that the consumer perceives the complexity in this assortment almost identical to the medium sized assortment (12/67). This implicates that the perception of complexity at these levels, including the small relative and medium assortment, is not solely influenced by the variety of the assortment of the brand itself, but might be affected by the total variety in the whole assortment offered on the product page. For a brand, this implies that when considering offering an assortment in an online context, there are consequences with regards to the disadvantages of the perception of complexity of the total variation of the whole assortment offered on the product page. Again, a larger relative dominance has benefits of a lower perceived complexity when the assortment size is small.

When problematizing the optimal variation level in regard to complexity, we proposed that there would also be a positive relationship between the perceived variety and the perceived complexity of an assortment, as intended by Kahn et al. (2013) and Townsend & Kahn (2013). Nevertheless, our results do not support a positive relationship between perceived variety and perceived complexity, even though there was a tendency towards a favourable outcome (ρ=0.053). The almost significant p-value indicates that we see a tendency towards a positive relationship, which might have been supported by a larger sample size in the study. We can however see that the assortment design that is perceived as containing the highest

amount of variety, the large relative assortment (25/67), also is perceived as containing the highest amount of complexity. Further strengthening a possible relationship, the assortment design with the second highest perceived variety, the large absolute assortment (25/137), is also perceived as containing the second highest complexity.

5.1.2 The Relationship between Actual Variety, Perceived Variety and Brand Quality Perception

Looking at the perceptions of the brand from an offered assortment, we could not find that the exposure of different assortment designs in regard to absolute and relative variety had an impact on the consumer's perception of the quality of the brand, after adjusting for their perceptions of the brand's category expertise. However, in line with the reasoning from Berger et. al. (2007), we found that when the consumer perceived the variety as high there was a positive causal relationship with the perception of the brand's quality, also mediated through a perception of a high brand category expertise. A possible explanation for the mixed message in these results is that the perception of brand quality was stronger than the visual display of the products in each assortment design. This indicates that there are factors other than actual variety that affect the perception of brand quality. The practical implication for the brand from these results is that the perceived variety in an offered assortment might have a positive impact on the consumer's perception of the quality of the brand. This could possibly indicate that if a brand pursues a product line extension that over time is perceived as more varied by the consumer, there can be a positive long term effect on the consumer's brand quality perception, partially because of a higher perceived brand category expertise.

5.1.3 Implications on the Consumer's Selection Quantities

For a brand to further understand the implications of the consumer's perceptions of variety and complexity in the assortment, we looked at the anticipated consumption utility of the assortment, as this is a mediator to the consumer's selection quantities as suggested by Kahn & Wansink (2004). The results from our research indicate that there is a positive relationship between the perceived variety, the anticipated consumption utility and the number of selected products in accordance with the reasoning adapted from Kahn & Wansink (2004) and Hoch et al. (1998). Furthermore, the same logic can also be adopted based on the findings of Huffman & Kahn (1998), as they mean that a higher variety increases the likelihood for each consumer to find his or her preferred option.

Adapted from the studies by Iyengar & Lepper (2000), Iyengar et al. (2006) and Botti & Iyengar (2006), we also proposed that there would be a negative effect of a higher perceived complexity of an assortment on the anticipated consumption utility of that assortment and consequently on the number of selected items. However, despite our belief, the perceived complexity did not have a significant effect on the anticipated consumption utility. As there therefore exists no causal relationship between the consumer's perceived complexity and any response in our model, through an indirect effect of anticipated consumption utility, the perception of complexity of an assortment does not play as an important role as we believed. The negative effects of complexity on the consumer's choice seen in the jam experiment conducted by Iyengar & Lepper (2000) were not the same, even though the assortment sizes in their study, 6 versus 24 flavours, can be considered equivalent to the assortment sizes in our experiment and even to the more extreme. This implies that there is a difference in how consumers analyse assortments in an online context compared to in a brick and mortar environment. A possible explanation for this is the difference of the visual aspect when processing an assortment online versus offline. As Breugelmans et al. (2007) argue, browsing online assortments does not require as much effort as searching through physical store shelves. Compared with the offline setting, the display of a screen in an online setting can fit more products into a visually easier scannable assortment due to the presentation of smaller product displays. In addition, due to the scrolling function, there is also a possibility to limit how much of the assortment that is displayed at the same time, which might decrease the complexity.

Furthermore, even though our results do not support that the actual variety of the assortment affected the consumer's perception of brand quality, we can still see that there is a positive causal relationship between the consumer's perception of brand quality and selection quantities. Together with the finding that there is a positive causal relationship between perceived variety and perceived brand quality, this indicates that there still can be a positive effect on selection quantities when extending the product line.

5.2 Conclusion

For a brand offering its products in an online setting, the practical learning from the results of perceptions of variety and complexity is that a product line extension that generates higher perceived variety will positively affect the consumer's selection quantities, through attaining

a higher anticipated consumption utility of the assortment. Also, even though there are negative consequences of a high actual variety assortment on the consumer's perception of complexity, we find no implications of this effect on the consumer's selection at these levels. In addition, we can see that the consumer's perception of high variety also had a positive causal relationship to the perception of brand quality and hence to the number of selected products. To conclude, when brands make decisions about the extent to which the product line is offered online, there should be a higher focus on attaining a higher perceived variety than on limiting the complexity of the assortment to positively affect the consumer's selection quantities.

5.3 Limitations

Partial weaknesses can be seen in the results from the Placement Study (1) where we looked at the effect of absolute vertical placement on the category product page. From the results, we could only support a non-significant effect on perceived variety and the number of selected products, but not on the perceptions of complexity and brand quality. However, as argued for in the conclusions from the Placement Study (1), the most crucial concepts in the model showed significant results, hence we were still intrigued to continue with our research. Yet another weakness is that the sample, after securing the quality of the data, constituted of 84 respondents, and can hence be criticized for being too small. Looking at the methodology, both of our studies were conducted in a fictive web shop setting and did not illustrate a real buying situation. This can have had implications for how people acted in the web shop and answered the subsequent questions. One could also criticize the choice to use well-known brands in the study as there is a risk that people have established brand preferences affecting how they acted in the web shop and answered the questions. We do however not perceive this to be a big problem. Since the web shop was inspired from the biggest actor on the market, MatHem, we believe it to present a realistic assortment that might have made it easier for consumers to act as if they were in a real web shop. A real brand with 25 different flavours will also, almost by definition, be a well-known brand. It would therefore have been very difficult to test the effect of pursuing a line extension strategy with an unknown brand. Furthermore, we also want to highlight the fact that some of the regression analyses showed heteroscedasticity. This lowers the statistical strength of our results and needs to be considered for future implications of the results. Some of our regressions also showed low explanatory values. However, since the use of regressions were not intended to provide the

best possible explanation for the measured variables, but rather show on causal relationships, this is not considered an issue. Our results show on relevant implications for how brands can work with absolute and relative variety to generate desired assortment perceptions and selection quantities. It is however important to bear in mind that today's technology enables online retailers to personalize information such as product placements and offers to influence the consumer's choice.

5.4 Future Research

Considering future areas of research, it would be highly interesting to see if the effects discovered in our experiments translate to a real world online grocery store and if the results hold in an experiment conducted during a longer period. Investigating whether the results could be generalized to other product categories of both high and low-involvement character would also be interesting to look into. The effects of varying the absolute and relative assortment size of a brand could also be examined in more detail by performing eye-tracking studies. This would allow for an in-depth understanding of how consumers scan and process assortments. It would be interesting to see to which extent they process each additional flavour and if the assortment of a brand is processed differently if its absolute or relative variety is increased. Eye-tracking could also reveal if there are any other consequences of a higher perceived complexity of the assortment besides selection quantities.

6. REFERENCES

Printed Sources

Alba, J.W & Hutchinson, J.W (1987). *Dimensions of Consumer Expertise*. Journal of Consumer Research. 13 (4), 411-454

Baron, R.M & Kenny, D.A (1986). *The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations.* Journal of Personality and Social Psychology. 51 (6), 1173-1182

Baumgartner, H & Steenkamp, J.-B.E.M (1996). *Exploratory Consumer Buying Behaviour Conceptualization and Measurement.* International Journal of Research in Marketing. 13, 121-137

Berger, J. Draganska, M. Simonson, I (2007). *The Influence of Product Variety on Brand Perception and Choice.* Marketing Science. 26 (4), 460-472

Boatwright, P & Nunes, J.C (2001). *Reducing Assortment: An Attribute-Based Approach*. Journal of Marketing. 65, 50-63

Botti, S & Iyengar, S.S (2006). *The Dark Side of Choice: When Choice Impairs Social Welfare.* Journal of Public Policy & Marketing. 25 (1), 24-38

Breugelmans, E. Campo, K. Gijsbrechts, E (2007). *Shelf sequence and proximity effects on online grocery choices*. Marketing Letters. 22 (1-2), 117-133

Broniarczyk, S.M. Hoyer, W.D. McAlister, L (1998). *Consumers' Perceptions of the Assortment Offered in a Grocery Category: The Impact of Item Reduction.* Journal of Marketing Research. 35, 166-76

Bryman, A & Bell, E (2011). *Business Research Methods*. 3rd Edition. United States: Oxford University Press

Buchanan, L. Simmons, C.J. Bickart, B.A (1999). *Brand Equity Dilution: Retailer Display and Context Brand Effects.* Journal of Marketing Research. 36, 345-355

Campo, K & Breugelmans, E (2015). *Buying Groceries in Brick and Click Stores: Category Allocation Decisions and the Moderating Effect of Online Buying Experience*. Journal of Interactive Marketing. 31, 63-78

Degeratu, A.M. Rangaswamy, A. Wu, Jianan (2000). *Consumer choice behavior in online and traditional supermarkets: The effects of brand name, price, and other search attributes.* International Journal of Research in Marketing. 17 (1), 55-78

Donovan, R.J & Rossiter, J.R (1982). *Store Atmosphere: An Environmental Psychology Approach*. Journal of Retailing. 58 (1), 34-57

Drèze, X. Hoch, S.J. M.E Purk (1994). *Shelf Management and Space Elasticity*. Journal of Retailing. 70 (4), 301-326

Fornell, C (1992). *A National Customer Satisfaction Barometer: The Swedish Experience*. Journal of Marketing. 56, 6-21.

Hoch, S.J. Bradlow, E.T. Wansink, B (1999). *The Variety of an Assortment.* Marketing Science. 18 (4), 527-546

Huffman, C & Kahn, B.E (1998). *Variety for Sale: Mass Customization or Mass Confusion?* Journal of Retailing. 74 (4), 491-513

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 (6), 995-1006

Iyengar, S.S. Wells, R.E. Schwartz, B (2006). *Doing Better but Feeling Worse: Looking for the "Best" Job Undermines Satisfaction*. Psychological Science. 17 (2), 143-150

Jacoby, J. Olson, J.C. Haddock, R.A (1971). *Price, brand name, and product composition characteristics as determinants of perceived quality.* Journal of Applied Psychology. 55 (6), 570-579

Kadiyali, V. Vilcassim, N. Chintagunta, P (1999). *Product line extensions and competitive market interactions: An empirical analysis.* Journal of Econometrics. 89, 339-363

Kahn, B & Wansink, B (2004). *The Influence of Assortment Structure on Perceived Variety and Consumption Quantities*. Journal of Consumer Research. 30 (4), 519-533

Kahn, B.E & Townsend, C (2013). *The "Visual Preference Heuristic": The Influence of Visual versus Verbal Depiction on Assortment Processing, Perceived Variety, and Choice Overload.* Journal of Consumer Research. 40, 993-1015

Kahn, B.E. Weingarten, E. Townsend, C (2013). *Assortment Variety: Too Much of A Good Thing?* Review of Marketing Research. 10, 1-23

Malhotra, N.K (2010). *Marketing Research: An Applied Orientation.* 6th Edition. Upper Saddle Riddle, New Jersey, Pearson Education Inc.

Manganari, E.E. Siomkos, G.J. Vrechopoulus, A.P (2009). *Store atmosphere in web retailing*. European Journal of Marketing. 43 (9-10), 1140-1153

Mehrabian, A & Russell, J.A (1974). *An approach to environmental psychology*. Cambridge, MA: MIT Press

Nordfält, J (2005). *Track to the Future? A Study of Individual Selection Mechanisms Preceding Ad Recognition and Their Consequences.* Journal of Current Issues and Research in Advertising, 27 (1), 19-29

Nordfält, J. (2007). *Marknadsföring i butik - Om forskning och branschkunskap i detaljhandeln.* 1:4 Edition. Malmö: Liber AB

Quelch, J.A & Kenny, D (1994). *Extend Profits, not product lines*. Harvard Business Review. 72, 153-160

Rosenholtz, R. Li, Y. Nakani, L (2007). *Measuring visual clutter.* Journal of Vision. 7 (2), 1-22

Shah, A.M & Wolford, G (2007). *Buying Behavior as a Function of Parametric Variation of Number of Choices.* Psychological Science. 18 (5), 369-370

Söderlund, M (2005). *Mätningar och mått i marknadsundersökarens värld*. 1:1 Edition. Malmö: Liber AB

Söderlund, M (2010). *Experiment med människor*. 1:1 Edition. Liber AB

Van Herpen, E & Pieters, R (2002). *The Variety of an Assortment: An Extension to the Attribute-Based Approach*. Marketing Science. 21 (3), 331-341

Young, M.E & Wasserman, E (2001). *Entropy and variability discrimination*. Journal of Experimental Psychology: Learning Memory and Cognition. 27 (1), 278-293

Zeithaml, V.A (1988). *Consumer Perceptions of Price, Quality, and Value: A Means-End Model and Synthesis of Evidence.* Journal of Marketing. 52, 2-22

Online Sources

Coop.se, https://www.coop.se/Handla-online/ (Accessed 2017-05-13)

HUI Research i samarbete med Postnord och Svensk Digital Handel (2017). *E-barometern 2016 årsrapport.* http://www.hui.se/statistik-rapporter/index-och-barometrar/e-barometern (Accessed 2017-05-14)

Marabou.se, http://www.marabou.se/produkter (Accessed 2017-05-14)

Mat.se, https://www.mat.se (Accessed 2017-05-13)

MatHem.se, https://www.mathem.se (Accessed 2017-05-13)

Svensk Digital Handel (2016). *Digital Mathandel Rapport 2016.* https://dhandel.se/rapporter/digital-mathandel/#tab-id-2 (Accessed 2017-05-14)

Other Sources

Ahlbom, C-P & Gyllenhammar, S (2014). *Lämna inte slumpen åt slumpen.* Bachelor Thesis in Retail Management, Stockholm School of Economics

7. APPENDIX

A. Assortment Arrangement Inspired by MatHem.se

Image from MatHem.se 2017-05-13

B. More Examples of Swedish Online Grocery Retailers

Image from Coop.se 2017-05-13

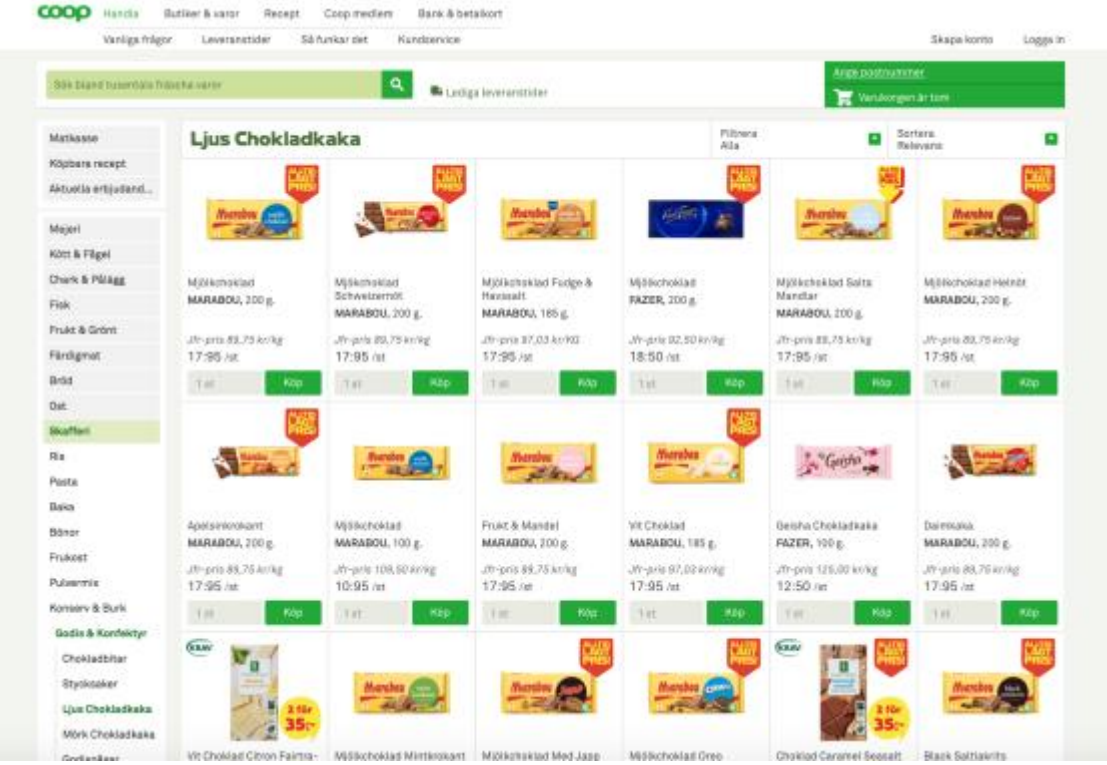
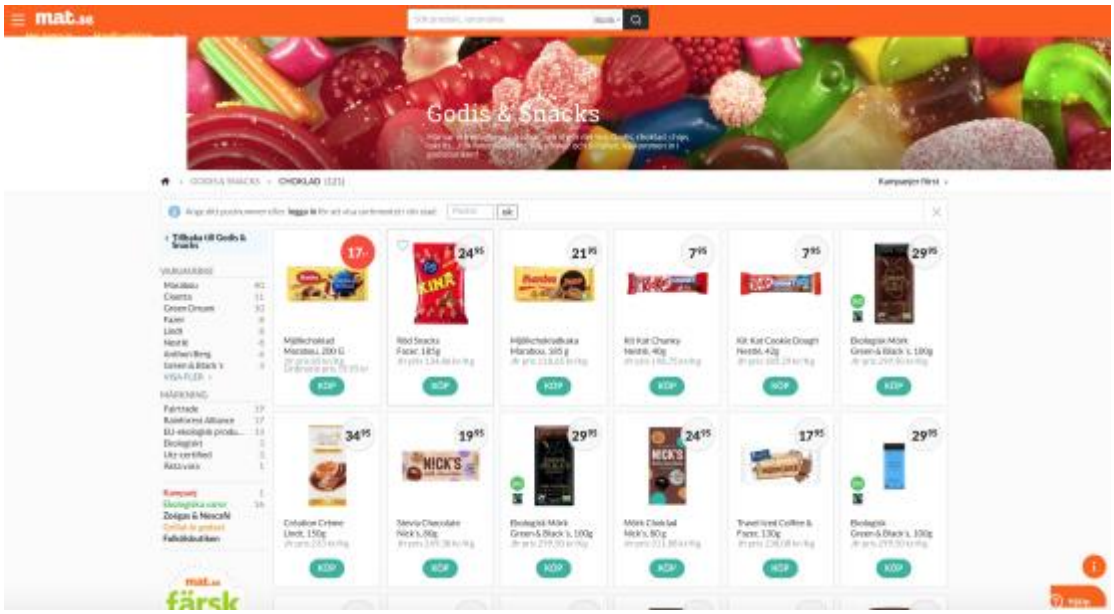


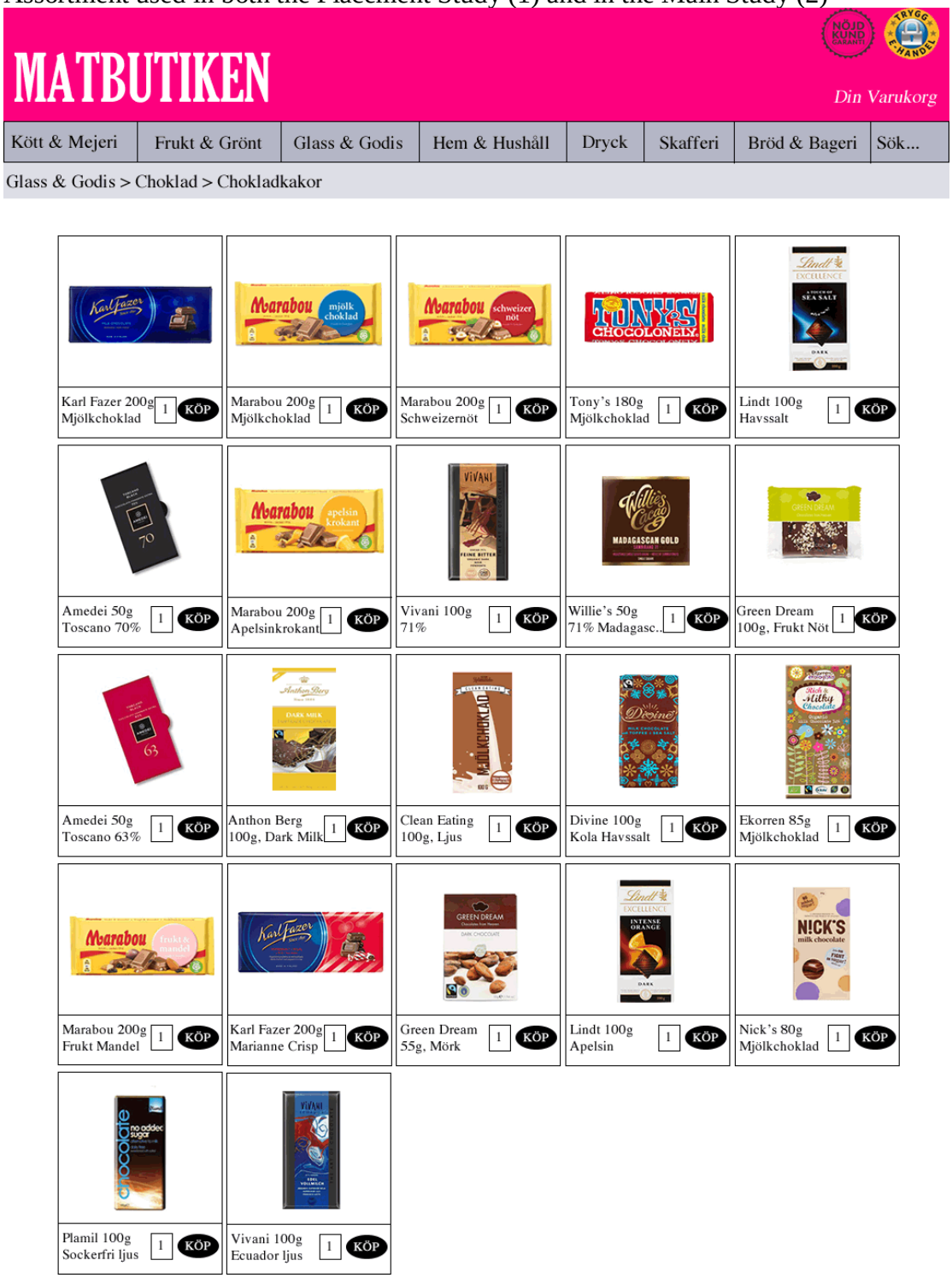
Image from Mat.se 2017-05-13



C. Assortment Variation Design Scenarios

Absolute Variation – Small assortment 4/22

Assortment used in both the Placement Study (1) and in the Main Study (2)



Absolute & Relative Variation –

Medium assortment 12/67 & Manipulated medium assortment 12/67

Medium assortment 12/67 used in both studies, Manipulated medium assortment used in the Placement Study (1)

Relative Variation – Small assortment 4/67 & Large assortment 25/67

Assortments used in the Main Study (2)

Absolute Variation – Large assortment 25/137

Assortment used in the Main Study (2)

D. Questionnaire in both the Placement Study (1) and the Main Study (2)

This question was asked before entering the web shop.

Please indicate how you feel right now on the scales below. Mark the concept that best describes you feeling.

a. **1.** Happy – Sad
2. Craving for chocolate – Not craving for chocolate
3. Stressed – Calm
4. Active – Dull
5. Distracted – Undistracted
Scale with the concepts ranging from 1-7

These questions were asked after being exposed to the web shop.

b. Below you will find your selected products. How many items of this product would you like to buy?
1-10

c. Are you familiar with the Marabou brand?
Yes/No

Please indicate how the following statements about the Marabou assortment presented in the web shop applies to you.

d. I found my favourite chocolate bar in the assortment
Likert Scale 1-7, Strongly Disagree – Strongly Agree

e. **1.** This Marabou assortment gives me a lot of variety for me to enjoy
2. This Marabou assortment gives me at least one flavour I like
3. I think that there is much variety in this Marabou assortment
Likert Scale 1-7, Strongly Disagree – Strongly Agree

f. **1.** This Marabou assortment is too complex to consider
2. It is difficult to keep track of all of the various options in the Marabou assortment
3. There are too many options in this Marabou assortment
Likert Scale 1-7, Strongly Disagree – Strongly Agree

g. **1.** Eating from this assortment would make me feel happy after eating from it
2. Eating from this assortment would make me feel enjoyable because of the wide variety
3. Eating from this assortment would make me feel excited while eating it
4. Eating from this assortment would make me feel negative while eating it
5. Eating from this assortment would make me feel satisfied while eating it
Likert Scale 1-7, Strongly Disagree – Strongly Agree

h. **1.** In general, I am satisfied with this Marabou assortment
2. This Marabou assortment meets my expectations

3. This Marabou assortment is close to my hypothetical ideal assortment
Likert Scale 1-7, Strongly Disagree – Strongly Agree

Based on the assortment presented in the web shop, please rate the…

i. Likely quality of the Marabou brand
Likert Scale, Very Low Quality – Very High Quality

j. Positivity of your perception of the Marabou brand
Likert Scale, Not at all Positive – Very Positive

Please answer the following questions based on the Marabou assortment presented in the web shop.

k. **1.** How much expertise do you think Marabou has in the chocolate category?
2. How committed do you think Marabou is to success in the Swedish chocolate market?
3. How committed do you think Marabou is to the chocolate category?
Likert Scale 1-7, Not at all – Very much

Please indicate how the following statements apply to you.

l. **1.** I think of myself as a brand loyal consumer
2. Even though certain food products are available in a number of different flavours, I tend to buy the same flavours
3. I would rather stick with a brand I usually buy, than try something I am not very sure of
4. When I see a new brand on the shelf, I am not afraid of giving it a try
5. I am very cautious in trying new or different products
Likert Scale 1-7, Strongly Disagree – Strongly Agree

Please specify which chocolate brand you perceive yourself as loyal to. If you are not loyal to a specific brand or do not know, please write "None".

m. [ ]

Please indicate how the following statements apply to you.

n. **1.** I can immediately identify my preferred brand even if it is located with other brands of chocolate bars
2. I consider myself knowledgeable about chocolate bars
3. My knowledge of chocolate bars help me understand new information about the product, such as ingredients
4. I can recall almost all existing brand of chocolate bars in the Swedish market from memory
5. I can recognize almost all brand names of chocolate bars in the Swedish market
Likert Scale 1-7, Strongly Disagree – Strongly Agree

o. How often do you buy food online? Choose the option that best describes you behaviour.
1. Never

2. A few times a year
3. Once a month
4. Once a week
5. More than once a week

p. How often do you usually buy chocolate bars? Choose the option that best describes you behaviour.

1. Never
2. A few times a year
3. Once a month
4. Once a week
5. More than once a week

q. How old are you?

r. Which gender do you identify yourself as?

1. Male
2. Female
3. Other

E. Additional Tables

Table 15. Correlation between Anticipated Consumption Utility & Customer Satisfaction

Variables	Study	Cronbach's alpha (α)
Anticipated Consumption Utility & Customer Satisfaction	The Placement Study (1)	0.718
Anticipated Consumption Utility & Customer Satisfaction	The Main Study (2)	0.617

Table 16. Cronbach's alphas used in the Placement Study (1) in order to compute index variables

Variable	Cronbach's alpha (α)
Assortment Complexity	0.915
Assortment Variety	0.814
Brand Quality Perception	0.921

Table 17. Cronbach's alphas used in the Main Study (2) in order to compute index variables

Variable	Cronbach's alpha (α)
Assortment Complexity	0.871
Assortment Variety	0.812
Anticipated Consumption Utility	0.841
Brand Quality Perception	0.768