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Brand Loyalty and Online Decision-Making

A study on the influence of online customer reviews on the purchase decision of brand loyal consumers

Name student: Richelle Booij

Student ID number: 481297

Supervisor: B.G.C. Dellaert

Second assessor: F.J.L. Van Maasakkers

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Abstract

For a company, having customers with brand loyalty comes with many advantages. These advantages are, for example, setting a premium price, being able to reduce costs, and having greater bargaining power. Nowadays, the rapid growth of E-commerce is becoming a challenge for marketers. New technologies are causing a change in consumer behaviour and with this growth in E-commerce, brand loyalty is impacted. An advantage of this growth is that the conversion rate can be increased by approximately 270% if online customer reviews (OCRs) are shown. However, besides the rapid growth and the thereby increasingly important OCRs, building and maintaining brand loyalty is still needed to sustain a competitive advantage, also on the internet. Therefore, this thesis aimed to examine the influence of online customer reviews on the purchase decision of brand loyal consumers. Thus, a survey was conducted by surveying 215 consumers. Text analyses were performed through a pre-study and choice-based analyses were employed to analyse the data. This study found that brand loyal consumers were less influenced by customer reviews and positive reviews have a smaller positive impact on their purchase intention compared to non-brand loyal consumers. It was also found that the ratio of positive/negative reviews matters when it comes to the influence of reviews since an inverted U-shape was found. This means that multiple positive reviews in combination with a few negative reviews have a greater positive impact on purchase intention compared to only positive reviews. Other product attributes, besides reviews, that are influenced by loyalty were brand and battery. The influence of reviews for normative consumers was significantly more negative compared to hedonic consumers. There was no significant effect found between consumers with a hedonic goal and consumers with a gain goal, implying that the effect of reviews is the same for consumers with these two goals. Additionally, it can be concluded that consumers that found brand, camera and positive reviews important in their decision for a new mobile phone were more impacted in their choice by the corresponding product attributes. The study is concluded with recommendations for marketers and firms in general. These recommendations could assist them in targeting consumers.

Keywords: brand loyalty, (online) customer reviews, purchase intention, decision-making, choice-based conjoint analysis, text analysis

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1. Introduction

1.1 Problem Statement

To achieve long-term success, customer satisfaction is essential (Pappu & Quester, 2006). When it comes to customer satisfaction, this mostly relates to the examination of a customer after a purchase is made, which could lead to brand loyalty (Nam, Ekinci, & Whyatt, 2011). For a company, having customers with brand loyalty comes with many advantages. These advantages are, for example, setting a premium price, being able to reduce costs, and having greater bargaining power. For brand loyalty, there are two aspects; behavioural loyalty and attitudinal loyalty. Behaviour loyalty refers to repeating a purchase, which makes it possible to obtain a greater market share, while attitudinal loyalty refers to a psychological commitment, which can lead to higher relatives prices for a brand (Chaudhuri & Holbrook, 2001; Nam, Ekinci, & Whyatt, 2011). Nowadays, the rapid growth of E-commerce is becoming a challenge for marketers. New technologies are causing a change in consumer behaviour (Danaher, Wilson, & Davis, 2003). Some challenging differences come with these new technologies, including different ways of being able to obtain product information, and a greater perceived risk since online products are not tangible. However, there are also advantages such as the ability for consumers to save products they like in their shopping list, or recommending consumers with products that are similar if something is out of stock. With this growth in E-commerce, brand loyalty is impacted (Danaher, Wilson, & Davis, 2003).

When it comes to the consumer decision-making process, this usually exists of five stages; problem/need recognition, information search, evaluation of alternatives, purchase, and post-purchase evaluation (Hoyer, Pieters, & MacInnis, Consumer Behavior, 2016). This process has evolved over the years, causing, amongst other things, a different information search stage for traditional and online shopping. This stage of searching for information is divided into price sensitivity and brand choice (Danaher, Wilson, & Davis, 2003). Previous research has shown that price sensitivity in the online environment is higher for some product classes (Burke, Harlam, Kahn, & Lodisch, 1992).

After shopping online, you often get asked to leave an online customer review (OCR) for the product (or service) you have recently bought, which is not without reason. It has been shown before by Askalidis and Malthouse (2016) that the conversion rate can be increased by approximately 270% if OCRs are shown, with the first five displayed reviews being the most important. One of the reasons for this is because reviews play an important role in gaining information for customers. A survey conducted by PowerReviews (2014) has shown that 86% of consumers find reviews essential to make a purchase decision. This is because they are seeking verification of the product quality they are considering buying, and by doing this, they are forming expectations. This implies that the quality of a product is, to an extent, determined by reviews.

Combining these findings, it seems that OCRs are beneficial for both retailers and consumers. However, besides the rapid growth and differences in the consumer decision-making process in online shopping, and the thereby increasingly important OCRs, research by Gommans, Krishman and Scheffold (2001) has shown that building and maintaining brand loyalty is still needed to sustain a competitive advantage, also on the internet. Therefore, it is interesting to combine these findings and study the impact of OCRs on brand loyalty. Hence, the following research question is answered throughout this paper:

"To what extent and how do online customer reviews (OCRs) have an influence on the purchase decision of brand loyal consumers?"

Previous literature has already uncovered many findings using OCRs as a research object. For instance, using reviews for product attributes and their (future) importance level, for product positioning maps, for new product design, and for information about product perception. This study will therefore take these factors into account, while also focussing on brand loyal consumers. Besides OCRs, brand loyalty has also been studied widely, even including "e-loyalty" and the differences with traditional brand loyalty (Gommans, Krishman, & Scheffold, 2001). Shopping in an online environment differs from shopping in an offline environment. Online, there are much more factors that could influence the purchase decision. For instance, there are reviews that can be easily accessed, and comparisons can be made easily. From previous literature, it is not yet clear what the effect is of these online factors on brand loyal people. There seems to exist a gap in the literature regarding the influence of brand loyalty on the perception of OCRs, and whether this will impact purchase decisions. This study aims to fill this gap by conducting surveys with a choice experiment amongst brand loyal and non-brand loyal consumers to gain insights on this matter.

How certain product attributes are displayed on a website or which reviews to show to consumers are important decisions to make. At the moment there are already some websites that have implemented pages where products are compared to each other based on certain features, and some companies have also implement recommender systems to guide consumers in their decision-making process. This research could add to that by including brand loyal people to see whether this also impacts them in a certain way, and how. The differences in outcomes of this research between brand loyal people and non-brand loyal people are interesting to look at since the right ways to target them could be completely different. This research could therefore be especially useful for (online) marketers.

1.2 Structure

This thesis consists of different chapters, each covering a different part of the research. First, a literature review is presented in which the main topics of the research will be covered. These topics include the consumer decision-making process, brand loyalty, online customer reviews, and consumer goals. In this literature review, hypotheses will be formulated to help answer the research question. After that, a conceptual model will be created in which the relationships between the hypotheses will become clear

in a framework that will represent the outlines of the research. Then, the research methodology is discussed, which will cover an explanation of the data collection and the different analyses that will be performed. After this, the outcomes of the analyses are represented, which will be followed by a summary of the most important findings of the research. Based on these findings, managerial implications, theory implications and method implications will be discussed. Lastly, the possible limitations to this research are mentioned followed by recommendations for further research.

2. Theory

2.1 Literature Review

It is important to study previous literature to find out what is already known about the topics of this research The themes that are most directly relevant will be discussed separately. First, the consumer decision-making process will be discussed, followed by brand loyalty, customer reviews, and lastly consumer goals.

2.1.1 Consumer Decision-Making Process

Everyone is a consumer, and purchase decisions are made every day. For marketers, it is important to know what influences these decisions, because "all marketing decisions are based on assumptions and knowledge of consumer behaviour" (Hawkins, Mothersbauch, & Best, 2007). Therefore, to be successful in the market and to attract more loyal customers, understanding the consumer decision-making process is important (Stankevich, 2016). This process consists of five stages, of which each stage will be discussed separately.

The consumer decision-making process begins when a person identifies a problem or need. Therefore, this stage is called *problem recognition* or *need recognition* and can be seen as the perceived difference between the ideal and actual state (Hoyer, Pieters, & MacInnis, Consumer Behavior, 2016). This is the stage that triggers the consumer decision-making process and is, therefore, an ideal stage for marketers to advertise and target consumers. However, to do this effectively, they must determine when these problems or needs are developed for their target group (Stankevich, 2016). The consumer decision-making process also has an internal psychological process that contains a relevant drive for each stage. In this first stage, *motivation* is a relevant driver to get from the actual state to the ideal state (Belch & Belch, 2009). When it comes to motivation, Maslow's hierarchy of needs is frequently mentioned (Maslow, 1954). This hierarchy, which is displayed in Figure 1, states that a person can only move on to the next stage when they have fulfilled the needs below that stage.
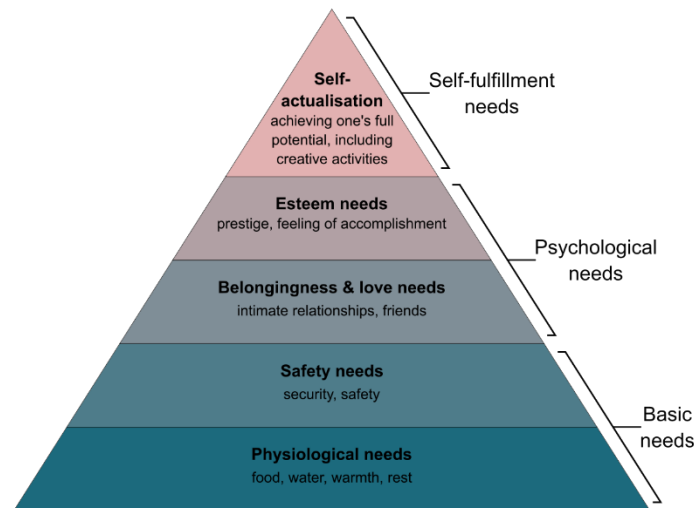
Figure 1. Maslow's hierarchy of needs

After a person recognizes their need, the next stage of the consumer decision-making process is started, *information search*. This stage consists of an internal and external search. The internal search is the process of recalling information from the past that is stored in your memory, and external search is the process of collecting information from outside sources, for example asking friends or watching an ad on television (Hoyer, Pieters, & MacInnis, Consumer Behavior, 2016). Then, the consumer considers an initial set of brands. This initial set is based on the perceptions and the exposure of the consumer to recent touch points of the brands. Brand awareness matters in this stage, since the brands that are in the initial set are three times more likely to be purchased compared to the brands that are not in this initial set (Court, Elzinga, Mulder, & Vetvik, 2009). Here, the internal psychological process touches upon the relevant driver *perception* (Belch & Belch, 2009). When it comes to frequently purchased goods, this stage of the consumer decision-making process is limited, since the consumer already knows the brand and products (Burke, Harlam, Kahn, & Lodisch, 1992). For this kind of goods, consumers will either use "buy what you bought last time" or "buy the cheapest brand" as a way to make a purchase decision (Hoyer, 1984). Therefore, brand recognition or brand loyalty plays an important role in this stage. Besides these frequently purchased goods and familiar brands, this stage may also result in new unfamiliar brands.

Now that the consumer has an initial set of brands to consider, the consumer starts his or her *alternative evaluation*. In this stage, the results of the information search can be categorized into four categories: an evoked set, which is the considered set of all brands that might meet the needs of the consumer before making a purchase; a consideration set, which includes the brands of the evoked set that the consumer considers purchasing from; an inert set, that includes brands that are considered as neutral by the consumer; and an inept set, which includes brands that are negatively perceived by the consumer (Szmigin & Piacentini, 2018). Therefore, it makes sense that the internal psychological process of this

stage is called *attitude formation* (Belch & Belch, 2009). Usually, there is one important attribute (e.g., price, quality) that consumers will base their final decision on, or will use as a cut-off method. For marketers, it is important to make consumers aware of their brand and its offers. Therefore, knowing the important attribute that consumers will base their purchase decision on, is ideal in this stage (Stankevich, 2016).

After evaluating the alternatives, the consumer switches to the buying process in the fourth stage called *purchase*. Even when all alternatives are evaluated, the consumer must still decide to actually purchase. This purchase decision involves several other decisions, such as when to buy, where to buy, and how much money to spend (Stankevich, 2016). Two factors could negatively impact this decision: negative opinions given by other consumers, and the level of motivation to accept these opinions (Kotler, Keller, Koshy, & Jha, 2009). Purchase decisions are made under involvement, which is a critical factor in the decision-making process. Low involvement decisions include mostly nondurable products, such as everyday goods. These low involvement decisions are usually based on routine. Therefore, there exists a short time delay between the decision and the actual purchase. For high involvement decisions, which consist of the more complex decisions, such as mobile telephones, or other consumer durables, this time delay is bigger than for low involvement decisions (Szmigin & Piacentini, 2018), which implies that high involvement decisions are more informed and thoughtful decisions compared to low involvement decisions. The relevant internal psychological process of this stage is *integration* (Belch & Belch, 2009).

The last stage of the consumer decision-making process is the *post-purchase evaluation*. In this stage, consumers will reflect on their purchase and compare it with the promises made and expectations they had beforehand. The relevant internal psychological process that comes with this stage is *learning*. Consumers that made decisions based on their feelings are more likely to be satisfied in the post-purchase evaluation stage compared to consumers that made decisions based on product attributes (Darke, Chattopadhyay, & Ashworth, 2006). When the needs of a customer are met or even exceeded, they will experience satisfaction. This means that the customer might influence other potential customers during their information search stage. Often, reviews and word-of-mouth are used as ways to express (dis)satisfaction toward a brand or specific product. This subject of post-purchase evaluation regarding reviews will be further discussed in Section 2.1.3.

The full consumer decision-making process is displayed as a cycle in Figure 2 (Court, Elzinga, Mulder, & Vetvik, 2009). When understanding the consumer decision-making process, customers can be effectively targeted and their wishes understood. This will result in customer satisfaction, which could result in brand loyalty (Nam, Ekinci, & Whyatt, 2011). When there is brand loyalty, the information search and alternative evaluation stages are often compressed or even eliminated completely (Altekar & Keskar, 2014). This is displayed in Figure 2 as the *loyalty loop*. Therefore, brand loyalty could be seen as the ultimate aim of many companies. Companies that can optimize the consumer decision-making

process and are therefore able to obtain brand loyalty, will assert a competitive advantage. Brand loyalty will be further discussed in detail in Section 2.1.2
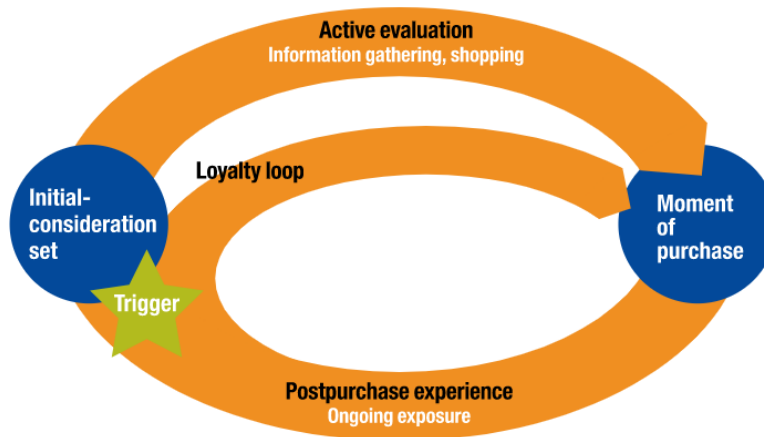

Figure 2. The consumer decision-making process

2.1.2 Brand Loyalty

Satisfied customers are less price sensitive, and are less likely to switch to competitors (Dimitriades, 2006). Therefore, it can be said that customer satisfaction is essential for achieving success in the long term. As mentioned in Section 2.1.1, brand loyalty can be achieved by obtaining satisfied customers through efficient use of the consumer decision-making process. Brand loyal customers are committed to a certain product or service, making them repeat their purchase despite alternative choices.

Brand loyalty is always "a biased response to some combination of characteristics" (Tucker, 1964). According to McKinsey & Co, loyalty comes in two forms; active loyalists, which are brand loyal people who stick to one brand and also recommend the brand to others, and passive loyalists, which are brand loyal people who stick to a brand, without commitment (Court, Elzinga, Mulder, & Vetvik, 2009). Passive loyalists can be seen as routine buyers, they buy the same products out of habit and/or laziness. This means that even though passive loyalists may be considered loyal customers, they are open to switching if competitors give them a reason to.

Brand loyalty has been studied widely, and much research has investigated brand loyalty by using two other perspectives than active and passive loyalty, namely behavioural loyalty and attitudinal loyalty. Behaviour loyalty refers to the frequency of repeat purchase, which makes it possible to obtain a greater market share, while attitudinal loyalty refers to a psychological commitment, which could lead to higher relatives prices for a brand (Chaudhuri & Holbrook, 2001; Nam, Ekinci, & Whyatt, 2011). Attitudinal loyalty could express itself through intentions, such as the intention to purchase or the intention to

recommend a purchase, without regard to actually making the repeat purchase (Jacoby, 1971). Even though behavioural loyalty is a perceptible outcome of loyalty, it will be difficult for marketers to design a marketing program that will lead to an increase in brand switching to a brand or from a brand, without knowing and understanding the attitudes towards the act of buying the brand (Bennett & Rundle-Thiele, 2002). Besides this, research of Bennett and Rundle-Thiele (2002) has shown that attitudinal loyalty toward a brand can be used for the prediction of purchase behaviour. Therefore, the focus of this research will lay on attitudinal loyalty.

Research by Danaher, Wilson, and Davis (2003) has shown that brands with a high market share sustain a greater-than-expected loyalty in the online environment compared to brands with a lower market share. This is partly because brands with a higher market share are better-known, making it important for brands to create online awareness. This also explains why some consumers are brand loyal even when there is no other difference between products of brands other than the brand name itself (Tucker, 1964).

New technologies are causing a change in consumer behaviour (Danaher, Wilson, & Davis, 2003). Traditional shopping environments differ from online shopping environments (Alba, et al., 1997). Obtaining product information is easier in an online environment, however, since products that are displayed online are not tangible yet, this comes with a greater perceived risk (Danaher, Wilson, & Davis, 2003). This implies that the information stage in the consumer decision-making process is affected by these new technologies in online environments. The information search stage could be split into price sensitivity and brand choice. Within the existing literature, there exist different findings regarding the impact of the information search stage in an online environment. For example, research of Burke et al. (1992) has shown that different computer screen graphics can cause differences in price sensitivity.

Price and promotions often get separated from the brand image in the consumer's mind, which could influence the consumer decision-making process in such a way that although the consumer is not likely to change their attitude toward a brand, it may have an impact on the evaluation of alternatives (Burke, Harlam, Kahn, & Lodisch, 1992). This refers mainly to attitudinal loyal people. Another important factor besides product attributes is peer pressure coming from family, friends, social media, etc. Peer pressure could change someone's mind and thoughts toward a brand. This is also known by companies, that make use of this information by creating word-of-mouth (WOM) through their customers because customers are perceived as the best source for advertising products to obtain more brand loyal customers (Hashmi, Khalid, Akram, Saeed, & Rizwan, 2014).

As mentioned before, the information search stage consists of an internal search and an external search. For a lack of information in the external environment, consumers are likely to rely more on their own internal information, which they have priorly obtained (Ratchford, 1982). Dick, Chakravarti, and Biehal (1990) have researched consumers' inference process when information is lacking or unavailable. They

have found that when information is limited or missing about certain attributes, the brand name becomes a replacement for those attributes. Price sensitivity could increase for undifferentiated products when more information exists about the price of a product, however, it may decrease when more information exists about non-price attributes (Burke, Harlam, Kahn, & Lodisch, 1992). Research by Degeratu, Rangaswany and Wu (2000) concludes that "brand loyalty and preference for particular product characteristics are quite different considerations that together makeup what is normally referred to as brand loyalty".

There exist two kinds of attributes; sensory attributes, which are attributes that can be established by making use of our senses, and non-sensory attributes, which are mostly search attributes expressed as information about a product (Degeratu, Rangaswamy, & Wu, 2000). In online environments, most information will fall in the latter category, non-sensory attributes. For some product categories, brand names in the online environment are more important compared to traditional shopping environments. However, research by Degeratu, Rangaswamy, and Wu (2000) has shown that this might also be dependent on available attribute information; when there exists little information about attributes online, brand names are more valuable. This leads to the following hypotheses:

H1: Non-loyal consumers are more likely to be positively impacted in their purchase intention by product information compared to attitudinal loyal consumers

2.1.3 (Online) Customer Reviews

The internet and fast-growing technologies have changed how we search for product information. Traditional word-of-mouth (WOM) is now also accessible in the online environment as electronic word-of-mouth (eWOM), making it easier for consumers to exchange knowledge and product-related information with each other (King, Racherla, & Bush, 2014). In previous research, eWOM has been defined as "any positive or negative statement made by potential, actual, or former customers about a product or company, which is made available to a multitude of people and institutions via the internet" (Hennig-Thurau, Gwinner, Walsh, & Gremler, 2004, p. 39).

The consumer decision-making process in a social environment such as the internet is not as linear as the consumer decision-making process in the traditional environment. This implies that the phases of the process may not follow each other in a particular predefined order (Yadav, De Valck, Hennig-Thurau, Hoffman, & Spann, 2013). Before making the actual purchase consumers are constructing their purchase intention by actively searching for information and/or evaluating alternative options. The intention to purchase has been demonstrated to be one of the psychological factors that drives the actual purchase behaviour of the consumer (Kim, Ferrin, & Rao, 2008). The purchase intention is being formed by selecting, organizing, interpreting and comparing information, which the consumer has collected from various shopping channels (Sheth, Mittal, & Newman, 2004). This information includes, amongst other things, the product's quality, variety, and price. Nowadays, this information can be easily accessed

by reading both positive and negative reviews. Research of Wang and Yu (2017) has shown that observing and learning from the reviews of other consumers could increase the intention to purchase, and thus increase the chances of the actual purchase.

There exist several types of eWOM communications, and product reviews written by customers is one of them. Research has shown that customer reviews are becoming increasingly important when it comes to purchasing decisions of consumers and obtaining product sales (Chen & Xie, 2008). Consumers have more opportunities to obtain relevant product information and user suggestions from other people's experiences with the product (Godes, et al., 2005). This type of information is also referred to as user-generated content (UGC) and previous research has shown that UGC is perceived as more credible than the information provided by sellers, which has to do with the reliability of the information source (Goh, Heng, & Lin, 2013).

In reviewing evaluations it has been demonstrated that more weight is placed on negativity rather than positivity, which is called the negativity effect (Skowronski & Carlston, 1989). This could be because negative information is more attention-grabbing compared to positive information. Previous research has shown that this also applies to WOM. A negative WOM will have a stronger impact on the brand perception and purchase intentions of potential customers than a positive WOM (Park & Lee, 2009). However, this is also dependent on the familiarity of the brand, which also explains the difference between brand loyal and non-brand loyal customers. Non-brand loyal people are less familiar with a brand than brand loyal people, and consumers that are less familiar with a brand will be more probable to change their brand evaluation based on WOM (Sundaram & Webster, 1999). This leads to the following hypothesis:

H2: Positive customer reviews have a greater positive impact on the purchase intention of non-loyal consumers compared to attitudinal loyal consumers

Other factors that influence the effect of WOM, is the involvement and prior knowledge of a consumer toward a product or brand (Richins & Root-Shaffer, 1988). When these two factors increase, the consumer is more likely to elaborate on their information processing (Doh & Hwang, 2009).

Research of Doh and Hwang (2009) have argued that only positive eWOM messages are not required for a positive attitude of the consumer toward a product or brand. They have demonstrated that a few negative messages next to a higher share of positive messages might be beneficial regarding the credibility of the positive eWOM messages. However, a negative message itself could be harmful standing on its own. This implies that, besides the content of the eWOM, the quantity of the shown eWOM messages per product is, just as much as the quality, an important factor in influencing the purchase intentions of a potential buyer (Cheung, Xiao, & Liu, 2014). This leads to the following hypotheses:

H3: Multiple positive reviews in combination with a few negative reviews will have a greater impact on the purchase intention compared to only positive reviews.

2.1.4 Consumer Goals

Behaviour is purposeful and goal-driven, which could be explained by having a means toward some end (Moskowitz & Grant, 2009). To be able to link consumers' values to behaviour, the means-end chain analysis was introduced. The objects or activities in which people engage are the means, and the ends are the valued states of being (Gutman, 1982). Examples of end states are happiness or accomplishment. Using the means-end chain analysis, marketers can gain insight into consumers' values which makes it easier to explain which attributes they find important in objects or activities (Hoyer, Pieters, & MacInnis, Consumer Behavior, 2016). This also works the other way around. With the means-end chain analysis, researchers can uncover the values that have driven consumers into making their decisions. Often, consumers strive to satisfy several goals at the same time by having multiple means (Kopetz, 2007). Within the goal framing theory, three "master" goals have been defined.

The first master goal is the *gain goal*, which could be phrased as "to guard or improve one's resources" (Barbopoulos & Johansson, 2016). Having this as a consumer goal, consumers are likely to react sensitively when it comes to price and perceived value, while emotions are not necessarily taken into account. Lindenberg and Steg (2007) have demonstrated that this goal could be related to other sub-goals. These sub-goals are related to improving one's financials or saving money. The second master goal is the *hedonic goal*, which could be phrased as "to feel better right now" (Barbopoulos & Johansson, 2016). With a hedonic goal in mind, consumers are more sensitive to pleasure and different mood levels, with economic utility and consumers' norms being not that important (Lindenberg & Steg, 2007). This reflects in their choice of goods; consumers with a hedonic goal are less price sensitive when it comes to hedonic goods, compared to utilitarian goods (Wakefield & Inman, 2003). The sub-goals that belong to having a hedonic goal as a master goal are mostly related to the increase of positive emotions or avoidance of negative emotions (Lindenberg & Steg, 2007). The third and last master goal is the *normative goal*, which could be phrased as "to act appropriately" (Barbopoulos & Johansson, 2016). Consumers with a normative goal are likely to be sensitive to the opinions of others, and the normative goal, therefore, has sub-goals that are related to social norms (Lindenberg & Steg, 2007). This goal can be linked to consuming pro-social or even pro-environmental (Barbopoulos & Johansson, 2016).

The three master goals could be linked to reasons why someone would read a review. People that have a gain goal are likely to read reviews to find out if there exists a fair price-quality ratio, people with a hedonic goal are likely to read reviews to find out whether the product will give them the comfort or excitement they are looking for, and consumers with a normative goal are likely to read reviews because they want to know whether the product will provide them with the social status or social approvement

they are hoping for. All in all, it is assumed that the master goals will impact how consumers will look at reviews, and this will thus influence their purchase intention. This leads to the last hypothesis:

H4: There exists a difference in the impact of product information, including reviews, on the purchase intention based on the master goal of the consumer

2.2 Conceptual Model

To get a better overview of the relationships between the variables of the hypotheses, a conceptual model was established, which can be found in Figure 3. As shown in this conceptual model, purchase intention is directly influenced by information about product attributes and customer reviews. Attitudinal loyalty indirectly influences purchase intention through information about product attributes (H1) and customer reviews (H2). The relation between customer reviews and purchase intention is in its turn also indirectly influenced by the ratio (positive/negative) of the reviews, with the expectation of an inverted U-shape (H3). Consumer goals indirectly influence purchase intention through information about product attributes (H4). The corresponding formula to each hypothesis is displayed in Table 1.
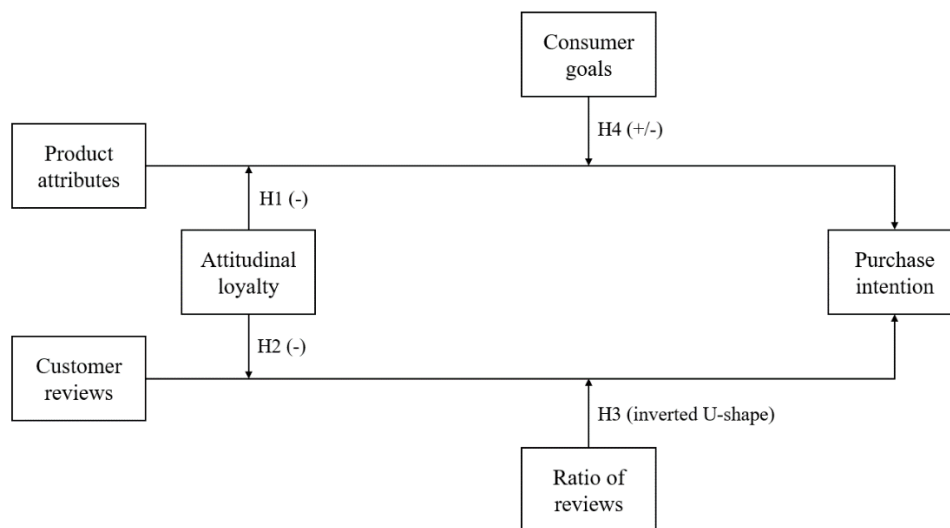
Figure 3. Conceptual research model

Table 1. Hypotheses with corresponding formulas

Hypothesis	Formula
H1: Non-loyal consumers are more likely to be positively impacted in their purchase intention by product information compared to attitudinal loyal consumers	Purchase intention = $\beta0 + \beta1$*product information + $\beta2$*attitudinal loyalty + $\beta3$*(product information * attitudinal loyalty) + ε
H2: Positive customer reviews have a greater positive impact on the purchase intention of non-loyal consumers compared to attitudinal loyal consumers	Purchase intention = $\beta0 + \beta1$*online customer reviews + $\beta2$*attitudinal loyalty

	+ β3*(online customer reviews * attitudinal loyalty) + ε
H3: Multiple positive reviews in combination with a few negative reviews will have a greater positive impact on the purchase intention compared to only positive reviews.	Purchase intention = β0 + β1*online customer reviews + β2*(online customer reviews * ratio of reviews) + ε
H4: There exists a difference in the impact of product information, including reviews, on the purchase intention based on the master goal of the consumer	Purchase intention = β0 + β1*product information + β2*(product information * master goal) + ε

3. Research Methodology

This part of the research will cover the data collection method, the dependent and independent variables for each hypothesis, how to measure them, and which type of analyses will be used.

3.1 Data Measures

The data that was used for this research was obtained using a survey component. In this survey, attitudinal loyalty and consumer goals were measured after which respondents were faced with a choice-based conjoint analysis, followed by a text element and multiple-choice question to elaborate on their choice.

3.1.1 Measuring Attitudinal Loyalty

There is not one explicit way of measuring attitudinal loyalty. Some researchers have suggested that measures of attitude toward a brand, or toward the act of purchasing a brand are good measures for attitudinal loyalty (Soloman, 1994). These are brand-related measures. However, others have suggested that capturing someone's propensity to be loyal is a better measure (Bennett & Rundle-Thiele, 2002). These are individual-level measures. According to Schiffman and Kanuk (1991), it can be deduced from attitudinal loyalty concepts that extensive problem-solving behaviour involving comparisons with both brands and attributes will lead to strong brand preferences. Research of Bennett and Rundle-Thiele (2002) have demonstrated that using both brand-related and individual-level measures is not an appropriate way to measure attitudinal loyalty. They have demonstrated that the attitude towards the act is a better explanatory factor of attitudinal loyalty and have shown that some of the variances in purchase behaviour is explained by this. Therefore, in this research, attitudinal loyalty is measured by the attitude towards a loyal act. This is done using 5-point Likert scale questions in the first part of the survey, after the demographic questions. These questions were tested and reviewed by Bennett and Rundle-Thiele (2002), and are thus considered as a valid measure of attitudinal loyalty. Whenever a respondent would

score an average of three or higher, the respondent was considered an attitudinal loyal consumer. The complete survey can be found in Appendix A.

3.1.2 Measuring Consumer Goals

As mentioned in the theoretical framework, there was also looked at consumer goals in this thesis. Within the goal framing theory, three "master" goals have been defined. The consumer goal was determined based on the survey question: "The main reason for me to replace my current mobile phone would be…". This was a multiple-choice question with as options three statements, each based on a consumer goal. The statements were created based on literature and translated into suitable statements regarding the subject of the survey, which was mobile phones. The outcome of this question determined which respondent had which goal in mind.

The first master goal is the *gain goal*, which could be phrased as "to guard or improve one's resources" (Barbopoulos & Johansson, 2016). Having this as a goal, consumers are likely to react sensitively when it comes to price and perceived value, while emotions are not necessarily taken into account. Lindenberg and Steg (2007) have demonstrated that this goal could be related to other sub-goals. These sub-goals are related to improving one's financials or saving money. This is why the first statement to the multiple-choice question was "because there is a discount or because prices are low".

The second master goal is the *hedonic goal*, which could be phrased as "to feel better right now" (Barbopoulos & Johansson, 2016). With a hedonic goal in mind, consumers are more sensitive to pleasure and different mood levels, with economic utility and consumers' norms being not that important (Lindenberg & Steg, 2007). This reflects in their choice of goods; consumers with a hedonic goal are less price sensitive when it comes to hedonic goods, compared to utilitarian goods (Wakefield & Inman, 2003). The sub-goals that belong to having a hedonic goal as a master goal are mostly related to the increase of positive emotions or avoidance of negative emotions (Lindenberg & Steg, 2007). Since consumers with a hedonic goal care about feeling better after making purchases, this was translated into the statement "because I want a new one to fulfil my needs".

The third and last master goal is the *normative goal*, which could be phrased as "to act appropriately" (Barbopoulos & Johansson, 2016). Consumers with a normative goal are likely to be sensitive to the opinions of others, and the normative goal, therefore, has sub-goals that are related to social norms (Lindenberg & Steg, 2007). This goal can be linked to consuming pro-social or pro-environmental (Barbopoulos & Johansson, 2016). Since consumers with a normative goal are sensitive to social pressure and wanting to fit in, this resulted in the following statement for the multiple-choice question: "because I want to have the latest version or follow the trend".

Based on what the respondents have chosen in this question, they were categorised into one of the three goals. For instance, if a respondent chose "because there is a discount or because prices are low", they were categorised as a consumer with a gain goal, etc.

3.1.3 Choice-Based Conjoint Analysis

To determine how people value different attributes and which combination of attributes is most influential in making their decision to go for a certain product or service, conjoint analysis can be used, which is a survey-based statistical technique. Within such a survey, people are faced with different combinations of attributes and are asked to either rank the choices (ranking-based conjoint analysis), rate the choices (rating-based conjoint analysis), or pick one of the choice profiles that appeals most to you (choice-based conjoint analysis) (Hauber, et al., 2016). In this research, the choice-based conjoint analysis (CBC) was performed, and the analyses were done in R. The reason for this, is that this type of conjoint analysis is more representative of real-life decision-making compared to rating- and ranking-based conjoint analysis since participants would have to make trade-offs as they would have to make in real life, such as willingness to pay, risk, or time (Elrod, Louviere, & Davey, 1992).

To be able to test the hypotheses and get an answer to the proposed research question, the CBC analysis in this research covered smartphones. The reason to go for smartphones is the fact that some smartphone brands have very loyal consumers. In Table 2 all attributes and their levels are displayed that were used in the survey.

Table 2. Attributes with their levels

Attributes	Levels
Brand	Samsung, Nokia, Sony, Apple
Storage capacity	32 GB, 64 GB, 128 GB
Camera	8 MP, 12 MP, 16 MP
Battery life	12 hours, 18 hours, 24 hours
Percentage of positive reviews	0%, 25%, 50%, 75%, 100%
Price	€499.99, €699.99, €899.99

The amount of attributes and levels indicated that almost 20 choices would have to be displayed to the respondents. Since this amount might have lowered the willingness of the respondents to complete the survey, the decision to make two versions of the survey was made. Both surveys contained the same demographic questions, the same amount of choice sets, and the questions at the end of the survey also remained the same. However, the choice sets differed in content so that enough choice combinations could be tested. The choice sets were created with JMP Software and the survey was made in Qualtrics using the two versions as described. It was made sure that both surveys would be evenly distributed to the respondents.

The choice-based conjoint analysis was conducted using logit models. This means that logistic regressions were performed to find out which variables influenced choice. In all logit models, choice (purchase intention) was used as the dependent variable. The models denote whether the outcome is the

choice (1) of the respondent or not the choice (0) of the respondent. The resulting output that follows from the logistic regression, is the predicted probability of the independent variables on the dependent variable (Wright, 1995). The following formula represents a logistic regression:

$$ln\left(\frac{P}{1-P}\right) = \beta_0 + \beta_1 x_1 + \cdots + \beta_n x_n$$

$$\rightarrow P = \frac{1}{1 + e^{-(\beta_0 + \beta_1 x_1 + \cdots + \beta_n x_n)}}$$

In which P denotes the probability that the outcome is a choice and $\frac{P}{1-P}$ denotes the odds ratio which shows the probability that the outcome is a choice divided by the probability that the outcome is not a choice. In addition, β_0 denotes the intercept, β_1 to β_n denotes the coefficients corresponding to x_1 to x_n, which are the independent variables.

The logit models had to be evaluated on their goodness of fit for the data. Deviance is a measure of the goodness of fit of a model. The null deviance shows how well the dependent variable (here: choice) is predicted by the model with only an intercept. The residual deviance shows how well the dependent variable is predicted by the model when the predictors are added (Döring, 2018). Whenever the residual deviance has increased as opposed to the null deviance, this increase in deviance is evidence of a significant lack of fit. Since multiple logit models were performed, there will also be looked at which of these logit models is the best fit for the data. The AIC is used to compare different possible models and determine which one is the best fit for the data. The model that explains the most variation using the fewest possible independent variable, is the best model according to the AIC, which means that the lower AIC, the better (Döring, 2018). AIC also penalizes models with more independent variables. This means that if two models are compared to each other with the same amount of variation explained, the model with the fewest independent variables has a lower AIC and is thus considered to be the best model of the two.

3.1.4 Text Component

Next to the choice-based conjoint analysis, the survey also contained a text component. In this text component, respondents were asked the questions: "Please explain in your own words what the main reason(s) was/were behind your decisions" and "What were you trying to achieve with making these decisions?". These questions were asked to find out what the main goal(s) of the respondent was/were. These questions were analysed using Latent Dirichlet Allocation (LDA). However, since this is a survey, it could be that these questions were not taken seriously. This is why this question was then followed by the following multiple-choice question: "Which aspect(s) has/have played a part in making your decisions?". The reason to ask these questions in this particular order was to make sure the respondent was not biased with the options in the multiple-choice question before writing about their decision. And

the reason to still ask this multiple choice question was to clearly identify the reasoning behind their decision. This will be discussed in the next section. The complete survey can be found in Appendix A.

3.1.5 Pre-Study

The survey ended with the multiple-choice question "Which aspect(s) has/have played a part in making your decisions? (Multiple answers possible)". The reason to ask this question was to find out if the aspects that a respondent was looking for were reflected in their choice. The options that could be chosen in this question were extracted from an existing dataset. This dataset was obtained from Kaggle and it contained customer reviews from Amazon on mobile phones (Kaggle, 2019). These reviews had a rating, a title, and a body that contains the text of the reviews. The body with the review text was cleaned by removing punctuations, stop words, and taking out the less frequent words. After cleaning the reviews, they were analysed using Latent Dirichlet Allocation (LDA) topic modelling in Python. The reason to go for topic modelling was to discover the abstract topics that were occurring in the reviews. It was done by classifying the text in a document to a particular topic. For this analysis, the number of topics chosen was 20. This was to make sure that the most important topics related to use cases of mobile phones would be discovered. In Table 3, a list of the most relevant topics related to use cases of mobile phones is presented.

Table 3. The most relevant topics of the Amazon dataset

Topic 1	Topic 2	Topic 3	Topic 4	Topic 5	Topic 6
Phone	Camera	Samsung	Battery	Phone	Phone
Android	Good	Note	Life	iPhone	Nice
Like	Quality	Galaxy	Phone	Better	Like
Apps	Phone	Sony	Day	Money	Really
Phones	Price	9	Use	One	Screen
Google	Screen	5	Charge	Price	Size
One	Fast	4	Last	Worth	Love
Get	Amazing	3	Days	Old	Camera
Im	Pictures	10	Fast	Much	Use
Pixel	Storage	Xperia	Long	Got	Big
Dont	Sd	Upgrade	Reader	Im	Features
App	Memory	Better	Charging	Get	Beautiful
Much	Face	S5	Lasts	Buy	Easy
Better	Sound	Ads	Hours	Bought	Recognition
Ive	Display	Model	2	Cost	Fast
Use	Xiaomi	Years	Huawei	Like	Still
Using	High	Phones	Time	200	Feels

Software	Clear	1000	Full	Liked	Hand
iPhone	Flagship	Earlier	Even	Could	Little
Really	Picture	Band	Really	Way	S9

Out of these topics, the following statements were formed to the question "which aspect(s) has/have played a part in making your decisions? (multiple answers possible)" in the order of topic 1 to topic 6: "the software of the phone", "the possibility to take good quality pictures/videos", "the brand of the phone", "whether the battery of the phone would last long enough", "the value received for the money spent", "the overall look of the phone". In addition, three statements were added, one being "whether the phone would meet the current trends" since this was not something that could be clearly extracted from the text analysis but could still be an important motive for people, one being "the amount of positive reviews the phone has" to make sure that the people who were looking at the reviews also had an option, and one being "other, namely…" to make sure that nothing important was being missed.

This analysis was, besides being useful for the survey, interesting because this provided more information about the content of written reviews about use cases of mobile phones. It could be interesting to find out if consumers that find certain aspects of use cases important, were also looking for these aspects in reviews.

3.2 Overview

An overview of the previously explained data measures, together with the dependent and independent variables of all hypotheses, including their formulas, is given in Table 4 and Table 5.

Table 4. Dependent and independent variables for each hypothesis and how to measure them

Hypothesis	Dependent variable	Independent variables	Data measures
H1	Purchase intention	Product information and attitudinal loyalty	Survey
H2	Purchase intention	Online customer reviews and attitudinal loyalty	Survey
H3	Purchase intention	The ratio of the reviews	Survey
H4	Purchase intention	Product information and consumer goals	Survey

Table 5. Planned analysis for each hypothesis

Hypothesis	Dependent variable	Independent variables	Type of analysis
H1	Purchase intention	Attitudinal loyalty	Conjoint based analysis: Purchase intention $= \beta_0 + \beta_1 *$product information $+ \beta_2 *$attitudinal loyalty

			$+ \beta 3*(\text{product information} * \text{attitudinal loyalty}) + \varepsilon$
H2	Purchase intention	Online customer reviews and attitudinal loyalty	Conjoint based analysis: Purchase intention = $\beta 0 + \beta 1*\text{online customer reviews} + \beta 2*\text{attitudinal loyalty} + \beta 3*(\text{online customer reviews} * \text{attitudinal loyalty}) + \varepsilon$
H3	Purchase intention	Online customer reviews and the ratio of the reviews	Conjoint based analysis: Purchase intention = $\beta 0 + \beta 1*\text{ratio of the reviews} + \varepsilon$
H4	Purchase intention	Product information and consumer goals	Conjoint based analysis: Purchase intention = $\beta 0 + \beta 1*\text{product information} + \beta 2*\text{master goal} + \beta 3*(\text{online customer reviews} * \text{master goal}) + \varepsilon$

4. Results

First, some statistics of the data was discussed, followed by the analyses of the hypotheses with their formulas, as presented in Table 4 of the previous chapter. After that, the text component of the survey was analysed, followed by some other findings that were worth mentioning regarding this research.

4.1 Statistics

As mentioned in the previous chapter, data was collected using a survey that was spread through Qualtrics Software. The survey got a total of 306 responses. Out of these 306 responses, 91 responses were not completed. Therefore the total amount of usable responses for this research was 215. The 215 respondents were evenly distributed between version 1 (108 responses) and version 2 (107 responses). Since every respondent was shown 12 choice sets where they had to choose between two options, the dataset contained 215*24 = 5,160 observations of choices. Furthermore, the data consists of 27 variables of which four contain demographic information; six are the statements regarding loyalty; one dummy variable that indicates whether the respondent was loyal; three contain information about reasons to buy a new phone, read reviews or which brand they think of when buying a new phone; eight variables about the choice experiment containing the question number, choice number and the attributes; one variable called "choice", representing which product alternative the respondent selected in each choice question; and four variables are about how they made their decision and which aspects they found important.

Out of the 215 respondents, 58.6% were women and 41.4% were men. The age of the respondents varied between 18 and 80 years old, with a mean of approximately 35 years old. When it comes to the highest

form of education of the respondents, 0% said elementary school, 5.6% said high school, 10.2% said vocational secondary education, 27.9% said higher professional education, 17.7% said university bachelor, 35.8% said university master and 2.8% said post-master/PhD/doctorate. The income of the respondents varied with 8.4% saying they have an average income, 36.3% with an income above average, 52.6% with an income below average and 2.8% preferred not to say their income.

A counts analysis was run for a quick exploration of the data. In this analysis, the number of times that certain attribute levels were selected by the respondent were counted. In Figure 4 below, the counts analyses are shown.
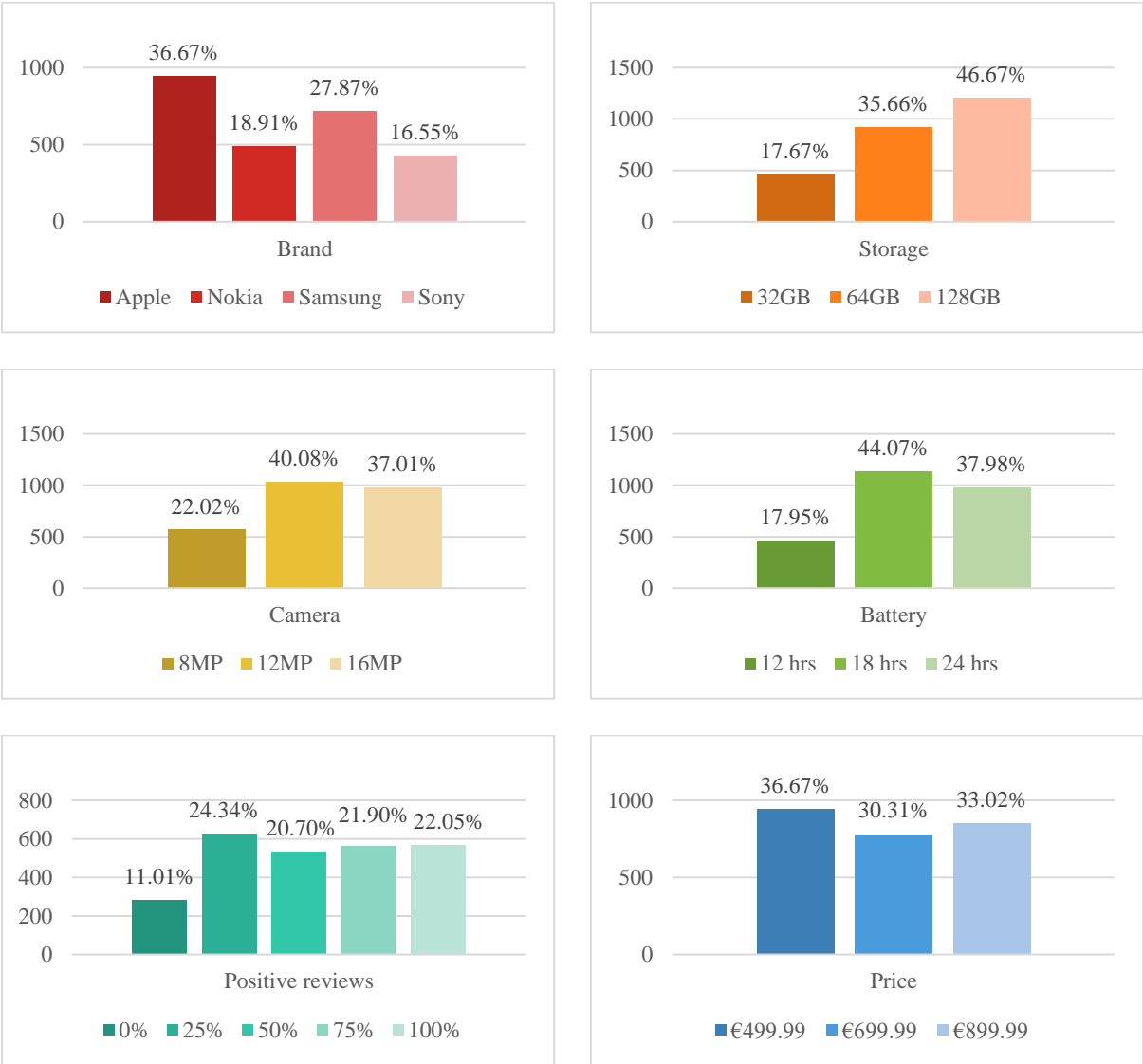

Figure 4. Counts analyses per attribute

This resulted in a few interesting findings. The levels Apple and Samsung within the attribute brand were the most popular brands in the choice experiment. This was expected due to the market share of both brands. When it comes to the attribute storage, it is clear that 32GB was not popular, most people

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would go for at least 64GB. The same applies to the attributes camera and battery, where most people would go for at least 12MP and 18 hours. For the positive reviews, it is clear to see that mobile phones with no positive reviews at all were chosen least often, most people would choose a mobile phone with at least 25% of all reviews being positive. It is interesting to see that the attribute price did not matter that much, as all prices were chosen almost equally often.

Based on the research of Bennett and Rundle-Thiele (2002) attitudinal loyalty was measured by the attitude towards a loyal act. This was done using 5-point Likert scale questions in the first part of the survey, after the demographic questions. Whenever a respondent would score an average of three or higher on the five statements, the respondent was considered an attitudinal loyal consumer. This information was used to split the data on loyalty. The same counts analyses that were done on the dataset as a whole were also done with the data split on loyalty. This is shown in Figures 5a and 5b below. On the left of the figures, the counts analyses of loyal consumers are presented. On the right of the figures, the counts analyses of the non-loyal consumers are presented.
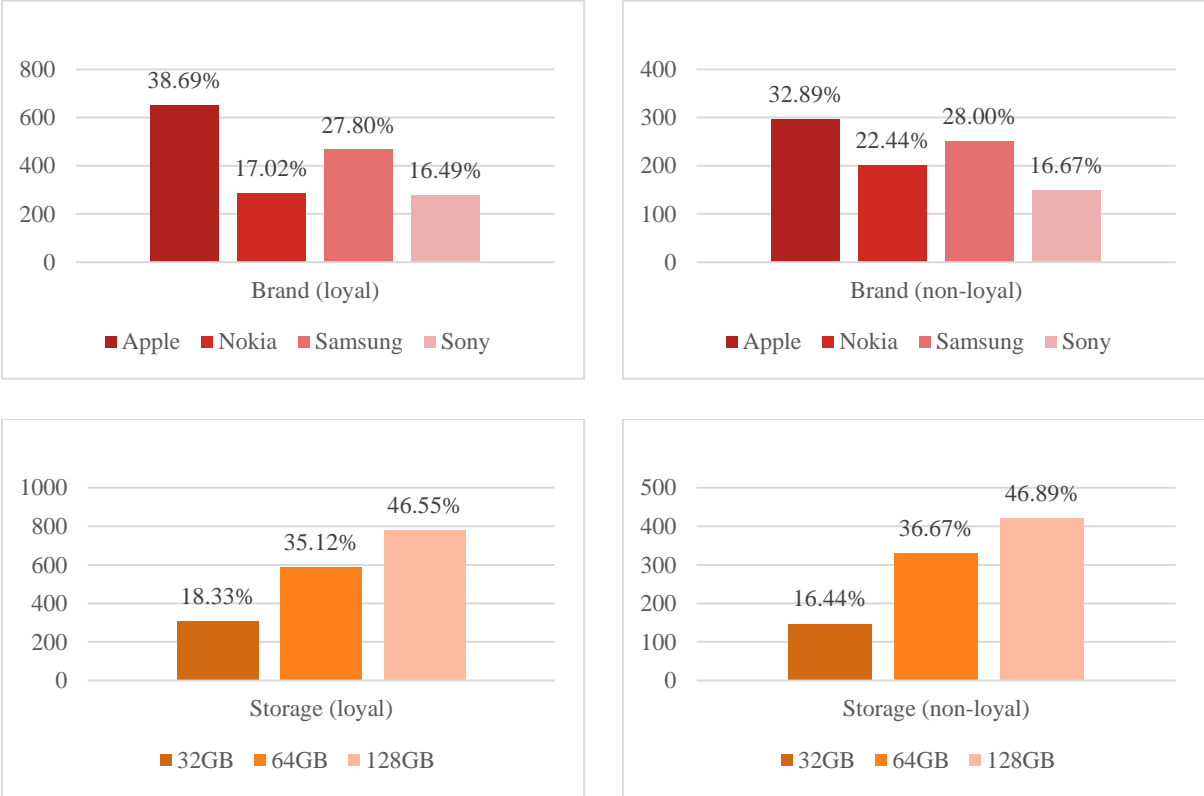

Figure 5a. Counts analyses per attribute with the data split on loyalty
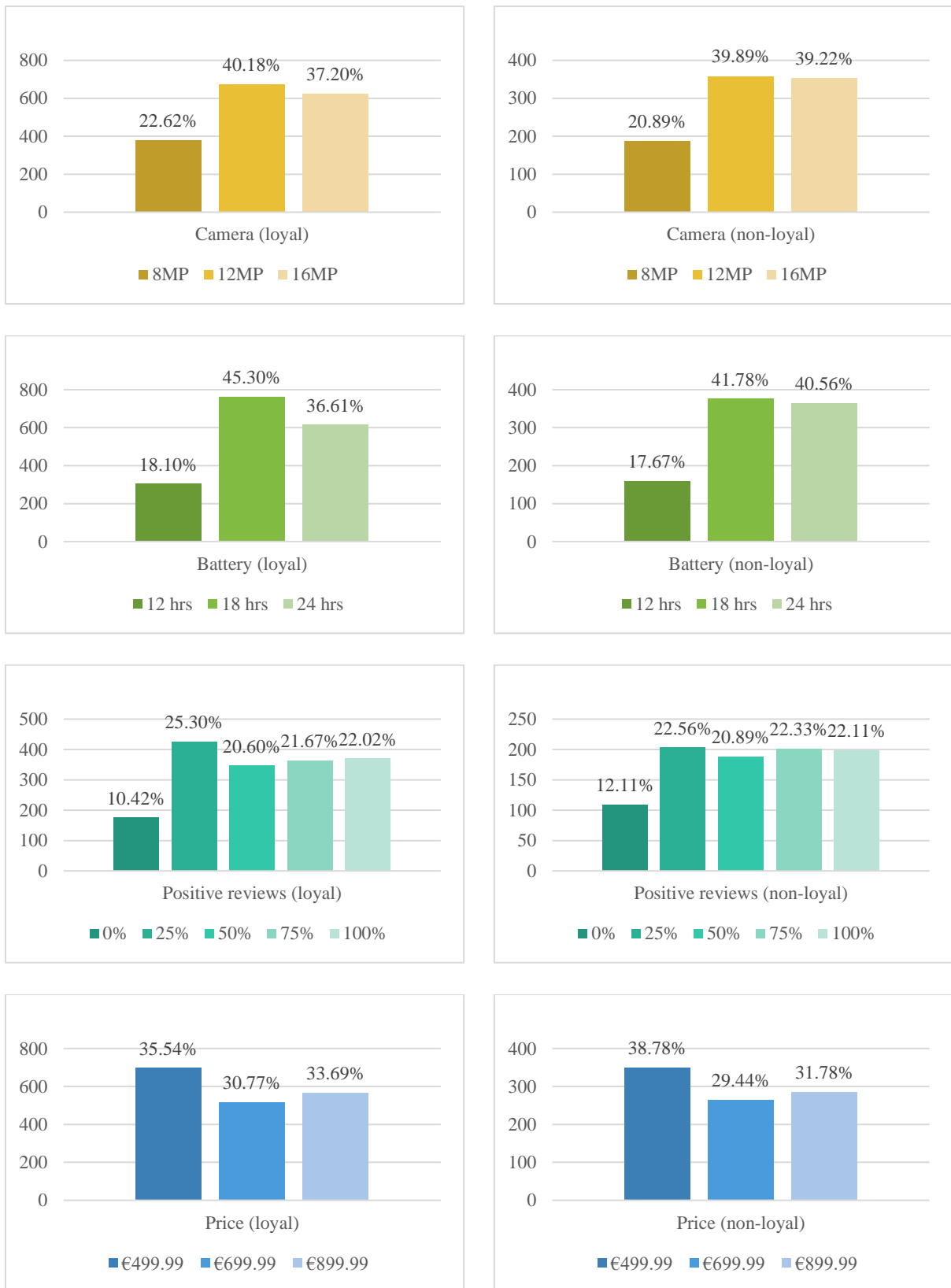
Figure 5b. Counts analyses per attribute with data split on loyalty

When it comes to the attributes of the counts analyses, there seems to be not much of a difference between loyal and non-loyal consumers. However, since two groups are compared here, loyal and non-

loyal consumers, a chi-squared analysis was needed to find out whether the differences were significant. In Table 6 below, the chi-squared analyses are presented.

Table 6. Test statistics of the Chi-Squared analysis for all attributes

	Brand	Storage	Camera	Battery	Positive reviews	Price
Chi-Square	0.14	0.14	0.65	0.36	0.59	0.69
Df	3	2	2	2	4	2
P-value	0.99	0.93	0.72	0.84	0.96	0.71

As can be seen from the table, none of the tests came out significant on a 10% significance level as the p-values were all larger than 0.10. This means that even though there were differences visible in the counts analyses, it cannot be said that there was indeed a difference in choice between loyal and non-loyal consumers. However, before drawing any conclusions, this was further analysed by performing the hypotheses.

Since this research is about brand loyalty, all respondents of the survey were asked which brand came first to mind when buying a new phone before the start of the choice experiment. The statistics of this are shown in Figure 6 below.

Figure 6. Statistics of which brand came to mind first

From these statistics, it can be seen that Apple was by far the most popular brand amongst all respondents. It is interesting to find out whether there exists a difference in mentioned brands between loyal and non-loyal consumers. These statistics are shown in Figure 7 below.
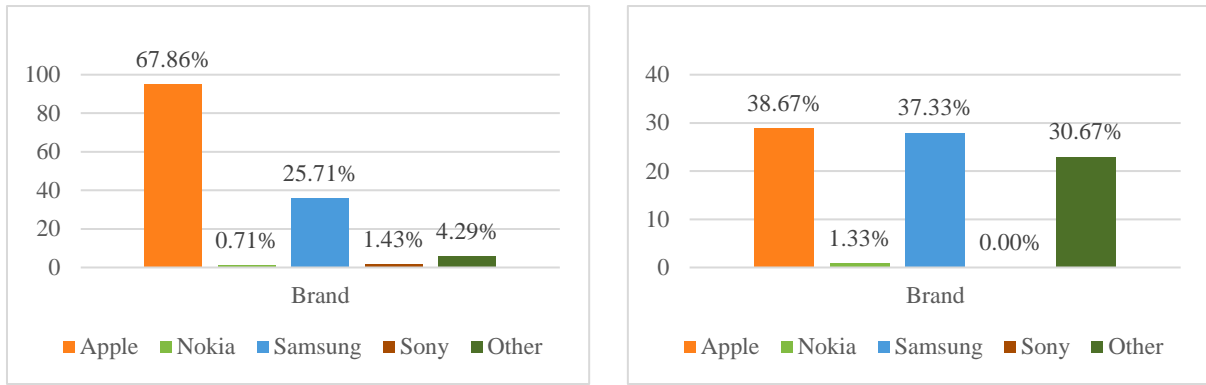
Figure 7. Statistics of which brand came to mind first between loyal and non-loyal consumers
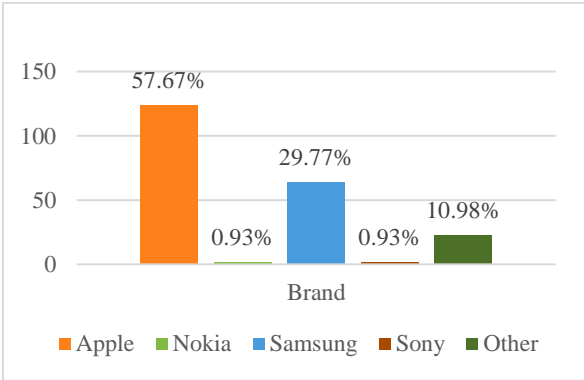
It becomes very clear that loyal consumers had a preference for Apple, while for the non-loyal consumers, Apple and Samsung were chosen almost equally often. Even other brands were chosen almost as much. However, since two groups were compared here, loyal and non-loyal consumers, a chi-squared analysis was needed to find out whether the differences are significant. In Table 7 below, the chi-squared analyses are presented.

Table 7. Test statistics of the Chi-Squared analysis for which brand came to mind between loyal and non-loyal consumers

	Which brand came to mind
Chi-Square	627.04
Df	4
P-value	$< 2.2*10^{-16}$

As can be seen from the table, all of the tests came out significant on a 10% significance level as the p-values are all smaller than 0.10. This means that it can be said that there was indeed a difference in which brand comes to mind first between loyal and non-loyal consumers. In this research, most loyal consumers were brand loyal to Apple.

4.2 Base Model

Before jumping to the hypothesis testing, a base model was achieved. This model will be used throughout this chapter to compare to. The base model consists of the dependent variable choice and all attributes as independent variables. A significance level of 10% was chosen. The results of the base model are presented in Table 8.

Table 8. Results of the logit of the base model

Variable	Estimate	P-value
Intercept	1.75	$< 2*10^{-16}$ ***
Brandnokia	-1.45	$< 2*10^{-16}$ ***

Brandsamsung	-0.53	$7.58*10^{-11}$ ***
Brandsony	-0.65	$4.13*10^{-11}$ ***
Storage32GB	-0.78	$< 2 *10^{-16}$ ***
Storage64GB	-0.74	$< 2 *10^{-16}$ ***
Camera16MP	0.41	$4.70*10^{-9}$ ***
Camera8MP	0.40	$7.08*10^{-7}$ **
Battery18hrs	-0.43	$1.32*10^{-6}$ **
Battery24hrs	-0.23	$8.78*10^{-3}$ **
Pos_reviews	0.63	$7.97*10^{-12}$ ***
Price	$-1.23*10^{-3}$	$8.46*10^{-11}$ ***

. $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

As can be seen from the table, all variables are significant on a 10% significance level. This indicates that all variables have an explanatory effect on choice. The model fit indicators of the above model are shown below in Table 9.

Table 9. Model fit indicators base model

Model fit indicator	Value
Null deviance	7153.30 on 5159 degrees of freedom
Residual deviance	6479.00 on 5148 degrees of freedom
AIC	6503

In Table 9 it can be seen that the residual deviance has decreased as opposed to the null deviance, which indicates that the model is a better fit as opposed to a model with only an intercept. The AIC of this model is 6503.

4.3 Hypotheses testing

This paragraph covers the testing of all five hypotheses. Each was dealt with separately. The formulas presented in Table 5 of the methodology chapter were used and a significance level of 10% was chosen.

4.3.1 Hypothesis 1

The first hypothesis stated that non-loyal consumers are more likely to be impacted in their purchase intention by product information compared to attitudinal loyal consumers. This was tested using conjoint based analysis, which resulted in a logit model, displayed in Table 10 below. The variables are all variables regarding product information, loyal and the interaction terms between all variables regarding product information and loyal.

Table 10. Logit model of hypothesis 1

Variable	Estimate	P-value
Intercept	1.40	$< 3.79*10^{-6}$ ***
Brandnokia	-0.82	$< 3.10*10^{-9}$ ***
Brandsamsung	-0.20	0.15
Brandsony	-0.23	0.16
Storage32GB	-0.86	$1.07*10^{-9}$ ***
Storage64GB	-0.70	$7.15*10^{-10}$ ***
Camera16MP	0.51	$1.50*10^{-5}$ ***
Camera8MP	0.37	$6.30*10^{-3}$ **
Battery18hrs	-0.40	$7.22*10^{-3}$ **
Battery24hrs	$-1.95*10^{-2}$	0.90
Pos_reviews	0.90	$7.95*10^{-9}$ ***
Price	$-1.58*10^{-3}$	$6.70*10^{-7}$ ***
Loyal	0.56	0.14
Loyal*brandnokia	-1.00	$1.11*10^{-8}$ ***
Loyal*brandsamsung	-0.52	$2.29*10^{-3}$ **
Loyal*brandsony	-0.63	$2.15*10^{-3}$ **
Loyal*storage32GB	0.11	0.55
Loyal*storage64GB	$-7.06*10^{-2}$	0.62
Loyal*camera16MP	-0.14	0.35
Loyal*camera8MP	$5.56*10^{-2}$	0.74
Loyal*battery18hrs	$-4.99*10^{-2}$	0.79
Loyal*battery24hrs	-0.33	$7.64*10^{-2}$.
Loyal*pos_reviews	-0.41	$3.28*10^{-2}$ *
Loyal*price	$5.26*10^{-4}$	0.19

. $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Not all variables are significant on a 10% significance level, which means that not all variables have an explanatory effect on choice. Therefore, these variables were not interpreted. The variables that are of interest are the variable loyal and the interaction terms of the product attributes with loyal. The variable loyal is not significant, meaning that loyalty itself does not have an explanatory effect on choice. However, when looking at the interaction term between loyal and all levels of the product attribute brand, these are all significant. A mobile phone of Nokia and being loyal leads to a change of choice with $e^{-1.00*1} = 0.37$ compared to a mobile phone of Apple. This means that, compared to a mobile phone of Apple, a mobile phone of Nokia decreases choice by 63% for a loyal consumer. A mobile phone of Samsung and being loyal leads to a change of choice with $e^{-0.52*1} = 0.59$ compared to a

mobile phone of Apple and not being loyal. This means that, compared to a mobile phone of Apple, a mobile phone of Samsung decreases choice by 41% for a loyal consumer. A mobile phone of Sony and being loyal leads to a change of choice with $e^{-0.63*1} = 0.53$ compared to a mobile phone of Apple and not being loyal. This means that, compared to a mobile phone of Apple, a mobile phone of Sony decreases choice by 47% for a loyal consumer. Another significant interaction term is the one with loyal and a battery of 24 hours. A mobile phone with a battery of 24 hours and being loyal leads to a change of choice with $e^{-0.33*1} = 0.72$ compared to a mobile phone with a battery of 12 hours and not being loyal. This means that compared to a mobile phone with a battery of 12 hours, a mobile phone with a battery of 24 hours decreases choice by 28% for a loyal consumer. The interaction term of loyal and positive reviews is also significant. An increase in positive reviews of 1% and being loyal leads to a change of choice with $e^{0.41*0.01} = 0.99$ compared to not being loyal. This means that, compared to not being loyal, an increase of positive reviews with 1% decreases choice by 1%.

From these findings, it can be concluded that there is indeed an effect of being loyal on the impact of purchase intention. However, this effect only exists for the brand, a battery of 24 hours and positive reviews. It is noticeable that all significant effects regarding being loyal have a negative impact on purchase intention. This implies that non-loyal consumers are more likely to be positively impacted in their purchase intention by product information compared to attitudinal loyal consumers.

It is also important to look at the goodness of fit of the model. In Table 11 below it can be seen that the residual deviance has decreased as opposed to the null deviance, which means that the model is a better fit as opposed to a model with only an intercept. The Akaike Information Criterion (AIC) of this model is 6479.30, which is lower than the AIC of the base model (6503). This means that the model of hypothesis 1 is considered to be the model with the most parsimonious fit when compared to the base model.

Table 11. Model fit indicators of the logit model for hypothesis 1

Model fit indicator	Value
Null deviance	7153.30 on 5159 degrees of freedom
Residual deviance	6431.30 on 5136 degrees of freedom
AIC	6479.30

4.3.2 Hypothesis 2

The second hypothesis stated that positive customer reviews have a greater positive impact on the purchase intention of non-loyal consumers compared to attitudinal loyal consumers. This was tested using conjoint based analysis, which resulted in a logit model, displayed in Table 12 below. The variables were pos_reviews, loyal and the interaction term of pos_reviews and loyal.

Table 12. Logit model of hypothesis 2

Variable	Estimate	P-value
Intercept	-0.32	$1.75*10^{-3}$ **
Pos_reviews	0.11	$4.04*10^{-4}$ ***
Loyal	0.19	0.13
Loyal*pos_reviews	$-6.83*10^{-2}$	$8.87*10^{-2}$.

. $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

When looking at the estimates of pos_reviews, loyal and the interaction term between pos_reviews and loyal, it becomes clear that loyalty itself is not significant on a 10% significance level and thus does not have a direct explanatory effect on the choice of the respondent. However, the interaction term between loyal and pos_reviews does have a significant effect on choice. For non-loyal consumers, only the variable pos_reviews affects choice. When pos_reviews increases with 1, the choice of a non-loyal consumer changes with $e^{0.11*0.01} = 1.11$, ceteris paribus. This means that the chance of choosing a mobile phone for a non-loyal consumer increases by 11% when positive reviews increase by 1%. For loyal consumers, also the interaction term of pos_reviews and loyal plays a role in the choice of the respondent. When pos_reviews increases with 1, the choice of a loyal consumer changes with $e^{0.11-0.0683} = 1.043$, ceteris paribus. This means that the chance of choosing a mobile phone for a non-loyal consumer increases by 4.3% when positive reviews increase by 1%.

The positive change in choice for non-loyal consumers is greater than the change in choice for loyal consumers when it comes to positive reviews. From these findings, it can be concluded that customer reviews have a greater impact on the purchase intention of non-loyal consumers compared to attitudinal loyal consumers. This confirms the second hypothesis.

It is also important to look at the goodness of fit of the model. In Table 13 below it can be seen that the residual deviance has decreased as opposed to the null deviance, which means that the model is a better fit as opposed to a model with only an intercept. The AIC of this model is 7071.50, which is higher than the AIC of the base model and the AIC of the model of hypothesis 1. This AIC is higher than the AIC f the base model and the model of hypothesis 1. This means that the model of hypothesis 1 is considered to be the model with the most parsimonious fit when compared to the other models.

Table 13. Model fit indicators of the logit model for hypothesis 2

Model fit indicator	Value
Null deviance	7153.30 on 5159 degrees of freedom
Residual deviance	7063.50 on 5156 degrees of freedom
AIC	7071.50

4.3.3 Hypothesis 3

The third hypothesis stated that multiple positive reviews in combination with a few negative reviews will have a greater positive impact on the purchase intention compared to only positive reviews. This means that the ratio of positive/negative reviews was looked at for this hypothesis. For this reason, the variable pos_reviews was made a factor with 5 levels: 0%, 25%, 50%, 75% and 100%. Hypothesis 4 was tested using conjoint based analysis. Using pos_reviews being 100% as the reference category, this resulted in the logit model displayed in Table 14 below.

Table 14. Logit model of hypothesis 3 with pos_reviews being 100% as reference category

Variable	Estimate	P-value
Intercept	0.35	$4.50*10^{-8}$ ***
Pos_reviews0	-0.86	$< 2 *10^{-16}$ ***
Pos_reviews0.25	-0.56	$2.95*10^{-11}$ ***
Pos_reviews0.50	-0.15	0.10
Pos_reviews075	-0.25	$5.02*10^{-3}$ **

. p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

Not all variables are significant on a 10% significance level, the variable pos_reviews0.50 is not significant which means that this variable does not have an explanatory effect on choice compared to pos_reviews being 100%. Therefore, this variable was not interpreted.

A mobile phone with 0% of reviews being positive leads to a change of choice with $e^{-0.86*1} = 0.42$ compared to a mobile phone with 100% of reviews being positive, ceteris paribus. This means that compared to a mobile phone with 100% of reviews being positive, a mobile phone with 0% of reviews being positive decreases choice by 58%. A mobile phone with 25% of reviews being positive leads to a change of choice with $e^{-0.56*1} = 0.57$ compared to a mobile phone with 100% of reviews being positive, ceteris paribus. This means that compared to a mobile phone with 100% of reviews being positive, a mobile phone with 25% of reviews being positive decreases choice by 43%. A mobile phone with 75% of reviews being positive leads to a change of choice with $e^{-0.25*1} = 0.78$ compared to a mobile phone with 100% of reviews being positive, ceteris paribus. This means that compared to a mobile phone with 100% of reviews being positive, a mobile phone with 75% of reviews being positive decreases choice by 22%. To get a clear overview, the results of the logit models are presented in Table 15 below.

Table 15. Change of choice compared to 100% of reviews being positive

Percentage of positive reviews	Change of choice compared to 100% positive reviews
0%	-58%
25%	-43%

75%	-22%

One has to keep in mind that these changes in choice cannot be compared to one another, they can only be compared to 100% of reviews being positive as this is the reference category of the logit model. Looking at the results, all ratio's show a decrease in choice compared to only positive reviews. This implies that displaying only positive reviews has a greater positive impact on choice than displaying a ratio of positive and negative reviews.

It is also important to look at the goodness of fit of the model. In Table 16 below it can be seen that the residual deviance has decreased as opposed to the null deviance, which means that the model is a better fit as opposed to a model with only an intercept. The AIC of this model is 7058.90, which is higher than the AIC of the other performed models. This means that still the model of hypothesis 1 is considered to be the model with the most parsimonious fit when compared to the other models.

Table 16. Model fit indicators of the logit model for hypothesis 3 with pos_reviews being 100% as the reference category

Model fit indicator	Value
Null deviance	7153.30 on 5159 degrees of freedom
Residual deviance	7048.90 on 5155 degrees of freedom
AIC	7058.9

Since these findings were not all significant, an additional analysis was done where the different levels of pos_reviews were not coded as dummies but as their actual value. Then a model with pos_reviews as linear and quadratic estimator was tested to allow for testing of the inverted U-shape more directly. If the quadratic effect would turn out to be negative and significant, this indicates an inverted U-shape. The results of this analysis are shown in Table 17 below.

Table 17. Logit model of hypothesis 3 with pos_reviews both linear and quadratic

Variable	Estimate	P-value
Intercept	-0.50	$1.66*10^{-13}$ ***
Pos_reviews	1.47	$1.76*10^{-6}$ ***
Pos_reviews^2	-0.66	$2.07*10^{-2}$ *

. $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

As can be seen from the results, the quadratic effect of positive reviews is negative and significant on a 10% significance level. This implies that there indeed exists an inverted U-shape when it comes to positive reviews. This means that there is a non-linear relationship between choice and positive reviews.

It is also important to look at the goodness of fit of the model. In Table 18 below it can be seen that the residual deviance has decreased as opposed to the null deviance, which means that the model is a better fit as opposed to a model with only an intercept. The AIC of this model is 7064.50, which is higher than the AIC of the other performed models. This means that still the model of hypothesis 1 is considered to be the model with the most parsimonious fit when compared to the other models.

Table 18. Model fit indicators of the logit model for hypothesis 3 with pos_reviews both linear and quadratic

Model fit indicator	Value
Null deviance	7153.30 on 5159 degrees of freedom
Residual deviance	7058.50 on 5157 degrees of freedom
AIC	7064.50

The expected hypothesis stated that multiple positive reviews in combination with a few negative reviews will have a greater positive impact on the purchase intention compared to only positive reviews. At first, an analysis with positive reviews as a factor was performed. The level with 50% of reviews being positive came out as not significant on a 10% significance level. The other levels all showed a decrease when compared to 100% of reviews being positive. After that, a more direct analysis was performed to test for an inverted U-shape when it comes to choice and positive reviews. This analysis showed that there does not exist a linear relationship between choice and positive reviews. This indicates that there is an inverted U-shape, which is in line with what was expected and confirms hypothesis 3.

4.3.4 Hypothesis 4

The fourth hypothesis stated that there exists a difference in the impact of product information, including reviews, on the purchase intention based on the master goal of the consumer. The consumer goal was determined based on the survey question: "The main reason for me to replace my current mobile phone would be…". This was a multiple-choice question with as options three statements, each based on a consumer goal. The statements were created based on literature and translated into suitable statements regarding the subject of the survey, which was mobile phones. The outcome of this question determined which respondent had which goal in mind and categorised the respondents into one of the three goals. This was then tested using conjoint based analysis, which resulted in a logit model, displayed in Table 19 below. The variables are all variables regarding product attributes, the consumer goal and the interaction term of all product attributes with the consumer goal.

Table 19. Logit model of hypothesis 5

Variable	Estimate	P-value
Intercept	1.73	$2.18*10^{-15}$ ***
Brandnokia	-1.34	$< 2*10^{-16}$ ***

Brandsamsung	-0.44	$5.59*10^{-6}$ ***
Brandsony	-0.59	$4.51*10^{-7}$ ***
Storage32GB	-0.85	$< 2*10^{-16}$ ***
Storage64GB	-0.74	$< 2*10^{-16}$ ***
Camera16MP	0.34	$4.76*10^{-5}$ ***
Camera8MP	0.41	$2.39*10^{-5}$ ***
Battery18hrs	-0.45	$2.48*10^{-5}$ ***
Battery24hrs	-0.24	$2.43*10^{-2}$ *
Pos_reviews	0.76	$3.97*10^{-12}$ ***
Price	$-1.32*10^{-3}$	$5.49*10^{-9}$ ***
Goalgain	$1.19*10^{-2}$	0.98
Goalnormative	1.39	$8.26*10^{-2}$.
Brandnokia*goalgain	$7.73*10^{-2}$	0.71
Brandsamsung*goalgain	$1.76*10^{-3}$	0.99
Brandsony*goalgain	0.18	0.46
Brandnokia*goalnormative	-2.61	$8.62*10^{-9}$ ***
Brandsamsung*goalnormative	-1.80	$7.78*10^{-6}$ ***
Brandsony*goalnormative	-1.73	$1.06*10^{-4}$ ***
Storage32GB*goalgain	0.31	0.13
Storage64GB*goalgain	0.15	0.36
Storage32GB*goalnormative	$8.37*10^{-2}$	0.81
Storage64GB*goalnormative	-0.78	$1.02*10^{-2}$ *
Camera16MP*goalgain	0.19	0.26
Camera8MP*goalgain	-0.25	0.21
Camera16MP*goalnormative	0.81	$1.21*10^{-2}$ *
Camera8MP*goalnormative	0.90	$1.04*10^{-2}$ *
Battery18hrs*goalgain	$-6.80*10^{-2}$	0.76
Battery24hrs*goalgain	$-4.13*10^{-2}$	0.85
Battery18hrs*goalnormative	0.32	0.38
Battery24hrs*goalnormative	0.35	0.35
Pos_reviews*goalgain	-0.23	0.31
Pos_reviews*goalnormative	-1.52	$2.32*10^{-4}$ ***
Price*goalgain	$-6.03*10^{-5}$	0.90
Price*goalnormative	$8.42*10^{-4}$	0.29

. $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Not all variables are significant on a 10% significance level, which means that these variables do not have an explanatory effect on choice. Therefore, these variables are not interpreted. Since the hypothesis states that there exists a difference in the impact of product information based on the consumer goals, only the variables regarding consumer goals will be interpreted. The consumer goal hedonic was used as the reference category.

It can be seen that there is no variable with goalgain that is significant on a 10% significance level. This means that there is no significant difference between having a gain goal and a hedonic goal on choice. Goalnormative, however, does have variables that are significant on a 10% level, meaning that there exists a difference between having a normative goal and a hedonic goal. Having a normative goal leads to a change of choice with $e^{1.39*1} = 4.01$ compared to having a hedonic goal. This means that, compared to having a hedonic goal, having a normative goal increases choice by 301%. A mobile phone with Nokia as a brand and having a normative goal leads to a change of choice with $e^{-2.61*1} = 0.07$ compared to having a hedonic goal. This means that, compared to having a hedonic goal, a mobile phone with Nokia as a brand and having a normative goal decreases choice by 93%. A mobile phone with Samsung as a brand and having a normative goal leads to a change of choice with $e^{-1.80*1} = 0.17$ compared to having a hedonic goal. This means that, compared to having a hedonic goal, a mobile phone with Samsung as a brand and having a normative goal decreases choice by 83%. A mobile phone with Sony as a brand and having a normative goal leads to a change of choice with $e^{-1.73*1} = 0.18$ compared to having a hedonic goal. This means that, compared to having a hedonic goal, a mobile phone with Sony as a brand and having a normative goal decreases choice by 82%.

When it comes to storage, the only variable that is significant on a 10% level is the interaction term of goalnormative with storage64GB. A mobile phone with 64GB storage and having a normative goal leads to a change of choice with $e^{-0.79*1} = 0.45$ compared to having a hedonic goal. This means that, compared to having a hedonic goal, a mobile phone with 64 GB storage and having a normative goal decreases choice by 55%.

There is also a significant effect of camera on choice while having a normative goal. A mobile phone with a camera with 16MP and having a normative goal leads to a change of choice with $e^{-0.81*1} = 0.44$ compared to having a hedonic goal. This means that, compared to having a hedonic goal, a mobile phone with a camera with 16MP and having a normative goal decreases choice by 56%. A mobile phone with a camera with 8MP and having a normative goal leads to a change of choice with $e^{-0.90*1} = 0.41$ compared to having a hedonic goal. This means that, compared to having a hedonic goal, a mobile phone with a camera with 8MP and having a normative goal decreases choice by 59%.

The last interaction term that is significant on a 10% significance level, is the interaction term between pos_reviews and goalnormative. A mobile phone with an increase in positive reviews of 0.01 (1%) and having a normative goal leads to a change of choice with $e^{-1.52*0.01} = 0.98$ compared to having a

hedonic goal. This means that, compared to having a hedonic goal, a mobile phone with an increase in positive reviews of 1% and having a normative goal decreases choice by 2%.

It is also important to look at the goodness of fit of the model. In Table 20 below it can be seen that the residual deviance has decreased as opposed to the null deviance, which means that the model is a better fit as opposed to a model with only an intercept. The AIC of this model is 6475.40, which is lower than the AIC of the other performed models. This means that the model of hypothesis 4 is considered to be the model with the most parsimonious fit when compared to the other models.

Table 20. Model fit indicators of the logit model for hypothesis 4

Model fit indicator	Value
Null deviance	7153.30 on 5159 degrees of freedom
Residual deviance	6403.40 on 5124 degrees of freedom
AIC	6475.40

The hypothesis stated that there exists a difference in the impact of product information, including reviews, on the purchase intention, based on the master goal of the consumer. This hypothesis was confirmed, but only holds when it comes to comparing having a hedonic goal and a normative goal and for product information regarding the brand, 64GB storage, camera and positive reviews. This could also imply that reviews regarding these product attributes could impact consumers with a normative goal.

4.3.5 Overview of tested hypotheses

In Table 21 below, an overview of all discussed hypotheses and their outcomes is given.

Table 21. Outcomes of testing the hypotheses

Hypothesis	Outcome
H1: Non-loyal consumers are more likely to be impacted in their purchase intention by product information compared to attitudinal loyal consumers	Confirmed for the brand, battery of 24 hours and positive reviews
H2: Positive customer reviews have a greater positive impact on the purchase intention of non-loyal consumers compared to attitudinal loyal consumers	Confirmed
H3: Multiple positive reviews in combination with a few negative reviews will have a greater positive impact on the purchase intention compared to only positive reviews.	Confirmed, an inverted U-shape was found
H4: There exists a difference in the impact of reviews on the purchase intention, based on the master goal of the consumer	Confirmed for consumers with a normative goal

4.4 Other findings

Besides testing the hypotheses, it is worth mentioning some other findings regarding the collected data. The survey consisted, besides the choice experiment, of some open text questions regarding the choices that they had made in the choice experiment. These questions were "Please explain in your own words what the main reason(s) was/were behind your decisions." and "What were you trying to achieve with making these decisions?". It became clear from the answers to these questions that most respondents had summed up the product attributes from the choice experiment, without a clear explanation. This could be because they had been influenced by the attributes of the choice experiment. The answers to the second question regarding what they were trying to achieve by making these decisions were also not taken very seriously as there were respondents that had answered "completing the survey", "helping you write your thesis" or even "nothing". This implies that these questions were not asked in the right way or maybe not asked at the right time in the survey. This was something that was taken into account beforehand, which is why the Amazon dataset was analysed. Out of the Amazon dataset, which uncovered topics of reviews about mobile phones, a survey question was created. This question, about which aspects had played a part in making their decisions, will be further discussed in this paragraph.

4.4.1 Important aspects

The frequencies and the corresponding percentages were analysed that represents the last question of the survey regarding what aspects have played a part in making the decisions, for which they could choose multiple aspects. This was done in three ways: with all data (Figure 8), with the data split on loyalty (Figure 9 and 10) and with the data split on consumer goals (Figure 11, 12 and 13). As mentioned before, attitudinal loyalty was measured by the attitude towards a loyal act. This was done using 5-point Likert scale questions in the first part of the survey. Whenever a respondent would score an average of three or higher on the five statements, the respondent was considered an attitudinal loyal consumer. In table 22, the frequencies of the split data can be found.

Table 22. Overview of the split data

Data based on	Dataset	N	% of total
Complete	Survey	215	100%
Loyalty	Loyal	140	65.12%
	Non-loyal	75	34.88%
Consumer goals	Gain	46	21.40%
	Hedonic	151	70.23%
	Normative	18	8.37%

In Figure 6 below, the frequencies of the chosen aspects for the whole dataset are presented.
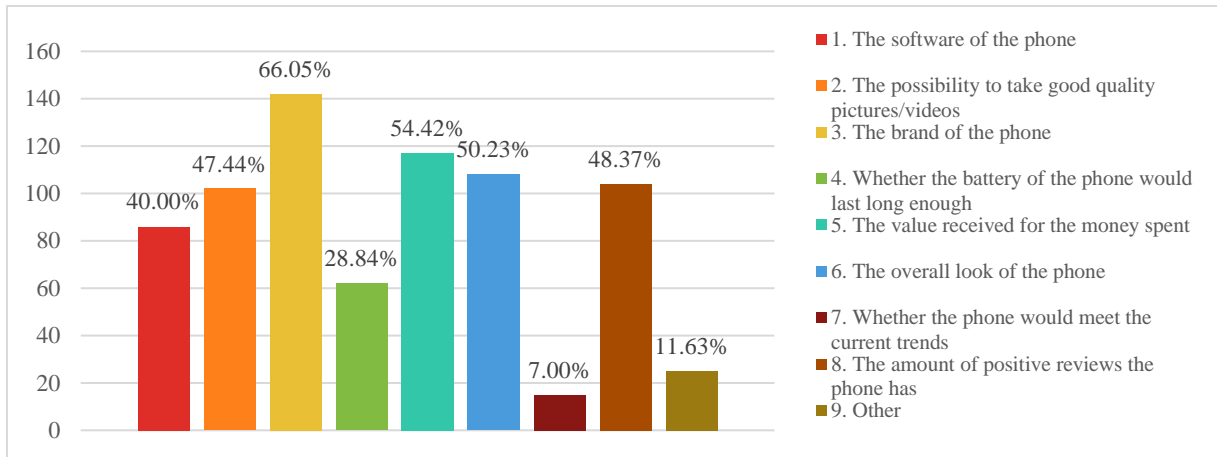
Figure 8. Counts analysis last survey question

Looking at the figure, the top five most mentioned aspects are brand (66.05%), value received for the money spent (54.42%), the overall look of the phone (50.23%), the amount of positive reviews a phone has (48.37%) and the possibility to take good quality pictures/videos (47.44%). Since these aspects were chosen the most, it is expected that these aspects have an impact on the corresponding attribute in the choice experiment. This will be further discussed in Paragraph 4.3.2.

Now the same thing will be done with the data split on loyalty.

Figure 9. Counts analysis last survey question for loyal consumers

Figure 10. Counts analyses last survey question for non-loyal consumers

Looking at Figure 7 and Figure 8, the most noteworthy difference between loyal and non-loyal consumers lie with the brand and the battery. For both the brand and batte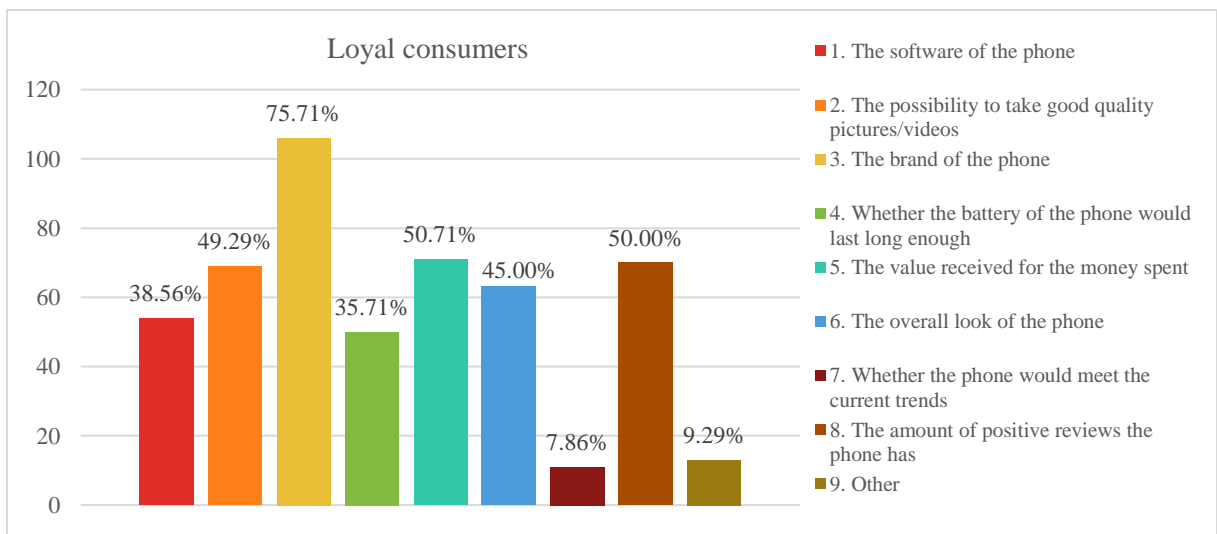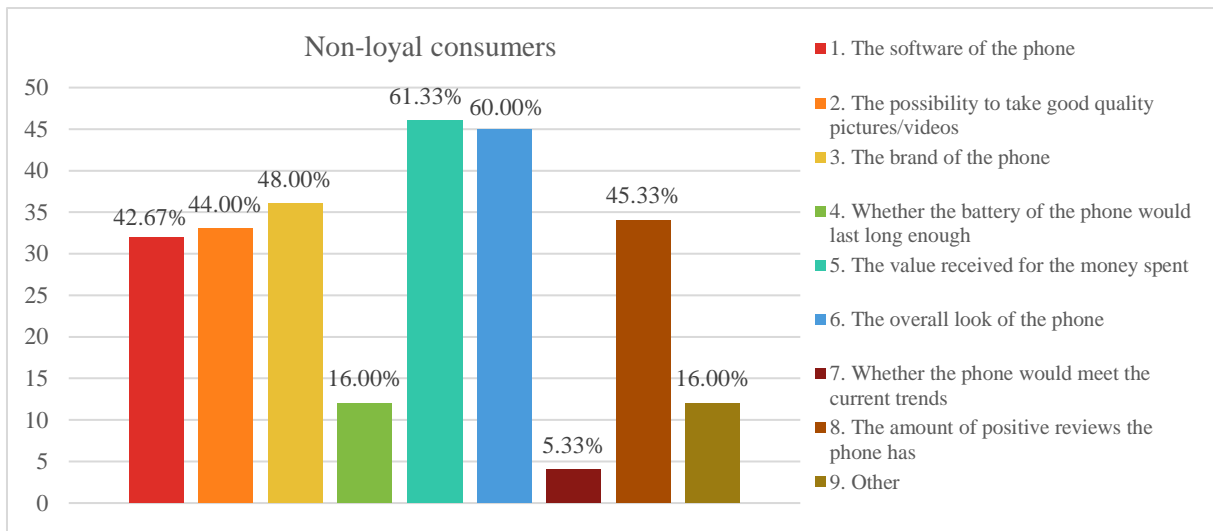ry, there are twice as many respondents that are loyal in terms of percentages. The brand seems obvious, as loyal consumers will care more about the brand compared to non-loyal consumers. Battery and looks are a little less obvious, especially since the battery has not much to do with loyalty. Reviews seem to be of the same importance for both loyal and non-loyal consumers. These findings could imply that reviews regarding battery could have more impact on loyal consumers, and reviews regarding the overall look of the phone could have more impact on non-loyal consumers, looking at the percentages. The most important aspect for loyal consumers is the brand, which was to be expected. For non-loyal consumers, the value received for the money spent and the overall look of the phone came out to be the two most important aspects. However, since two groups are compared here, loyal and non-loyal consumers, chi-squared analyses between the aspects and loyalty were needed to find out whether the differences are significant. In Table 23 below, the chi-squared analyses are presented.

Table 23. Test statistics of the Chi-Squared analysis for all aspects with loyalty

	1*	2*	3*	4*	5*	6*	7*	8*	9*
X²	8.14	12.92	400.22	221.02	53.45	106.15	11.12	9.91	49.21
Df	1	1	1	1	1	1	1	1	1
P-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

*Numbers 1-9 correspond to the numbers given to the aspects in the legend in Figures 9 and 10

As can be seen from the table, all of the tests came out significant on a 10% significance level as the p-values are all smaller than 0.10. This means that it can be said that there is indeed a difference in aspects between loyal and non-loyal consumers. Now, the same thing will be done with the data split on consumer goals. The results are presented in Figures 11, 12 and 13.
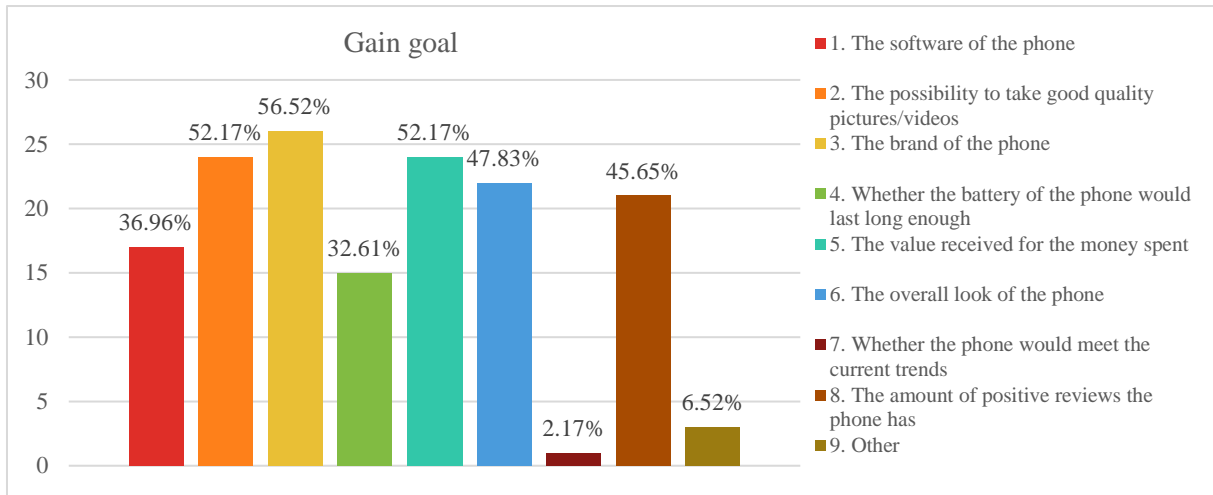
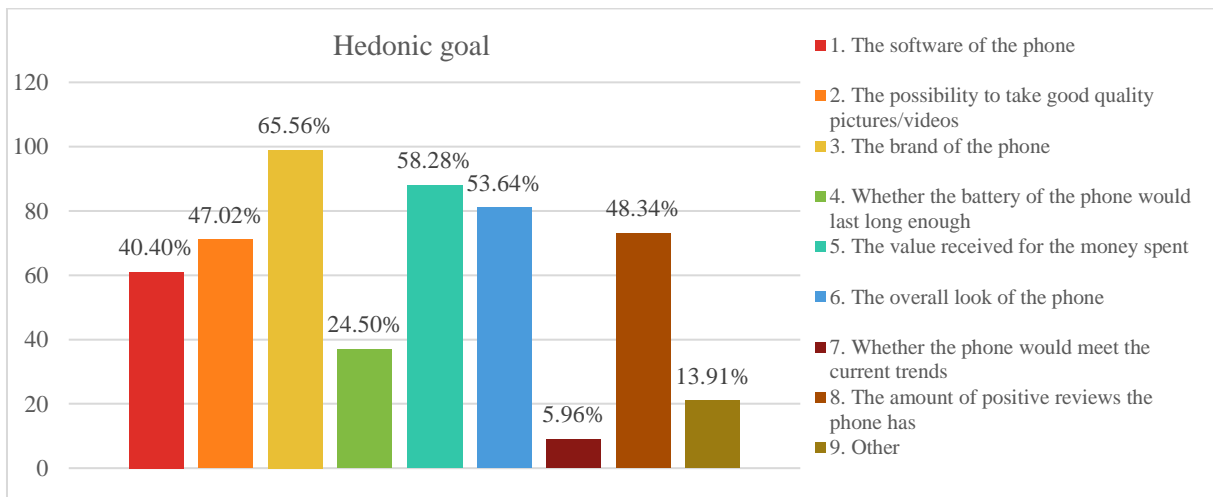*Figure 11. Counts analysis last survey question for consumers with a gain goal*

Figure 12. Counts analysis last survey question for consumers with a hedonic goal
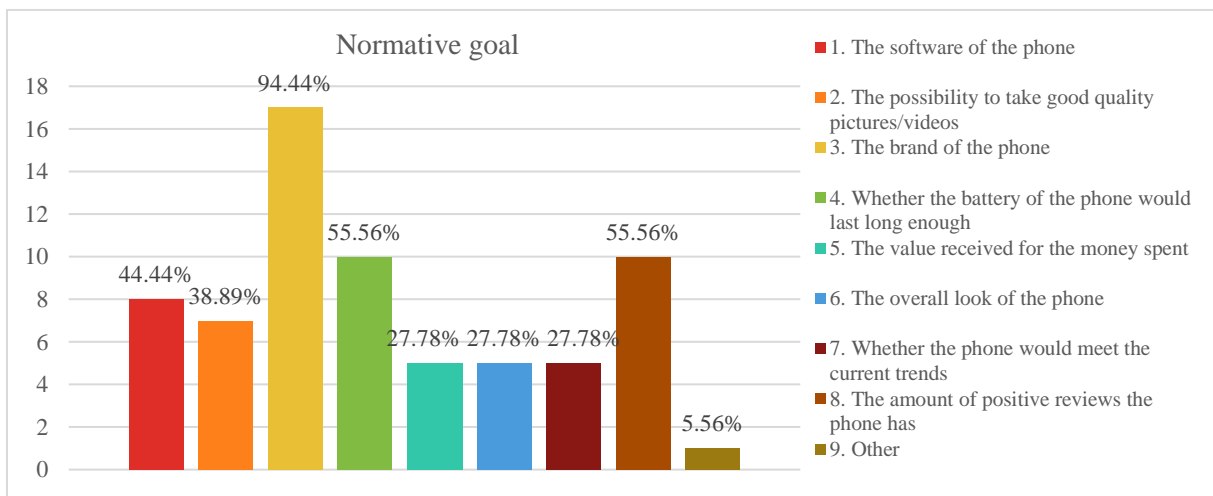

Figure 13. Counts analysis last survey question for consumers with a normative goal

Looking at the figures above, there seems to be not much of a difference between consumers with a gain goal and consumers with a hedonic goal. There are, however, some noteworthy differences between consumers with a gain or hedonic goal and consumers with a normative goal. As expected, brand was chosen much more by consumers with a normative goal compared to consumers with a gain or hedonic goal in terms of percentages. Battery and whether the phone would meet current trends are also two aspects that were chosen more by consumers with a normative goal compared to consumers with a gain or hedonic goal in terms of percentages. However, the value received for the money spent and the overall look of the phone seems to be of less importance for consumers with a normative goal compared to consumers with a gain or hedonic goal in terms of percentages. As with loyal and non-loyal consumers, reviews seem to be of the same importance for all consumer goals. However, these findings could imply that reviews regarding brand, battery and whether the phone would meet current trends could have more impact on consumers with a normative goal compared to consumers with a gain or hedonic goal, and reviews regarding the value received for the money spent and the overall look of the phone could have more impact on consumers with a gain or hedonic gaol compared to consumers with a normative goal, looking at the percentages. However, since three groups are compared here, consumers with a gain, hedonic or normative goal, a chi-squared analysis was needed to find out whether the differences are significant. In Table 24 below, the chi-squared analyses are presented. The aspects are numbered the same as in the figures above, which is in the order in which they were presented in the survey question.

Table 24. Test statistics of the Chi-Squared analysis for all aspects with loyalty

	1*	2*	3*	4*	5*	6*	7*	8*	9*
X^2	8.02	22.85	200.39	191.10	146.97	105.73	333.02	12.20	62.90
Df	2	2	2	2	2	2	2	2	2
P-value	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

*Numbers 1-9 correspond to the numbers given to the aspects in the legend in Figure 11, 12 and 13

As can be seen from the table, all of the tests came out significant on a 10% significance level as the p-values are all smaller than 0.10. This means that it can be said that there is indeed a difference in aspects between consumers with a gain goal, hedonic goal or normative goal.

4.4.2 Attributes and aspects

As seen in Figure 8 the top five most mentioned aspects are brand, the value received for the money spent, the overall look of the phone, the amount of positive reviews a phone has and the possibility to take good quality pictures/videos. Looking at the attributes of the choice experiment, these aspects correspond to brand, price, positive reviews and camera. Therefore, the interaction terms of these attributes and aspects will be tested to find out if there is an impact on choice. The aspects were all added as dummy variables. The overall look of the phone was not an attribute in the survey and thus will this aspect not be taken into account for an impact on choice. In Table 25, the resulted model is presented.

Table 25. Logit model with interaction terms between attributes and aspects

Variable	Estimate	P-value
Intercept	1.37	$8.38*10^{-6}$ ***
Brandnokia	-0.58	$1.62*10^{-5}$ ***
Brandsamsung	0.16	0.24
Brandsony	0.13	0.44
Storage32GB	-0.79	$< 2*10^{-16}$ ***
Storage64GB	-0.76	$< 2*10^{-16}$ ***
Camera16MP	0.39	$5.79*10^{-5}$ ***
Camera8MP	0.77	$1.33*10^{-11}$ ***
Battery18hrs	-0.45	$7.46*10^{-7}$ ***
Battery24hrs	-0.24	$7.34*10^{-3}$ **
Pos_reviews	0.11	0.37
Price	$-1.208*10^{-3}$	$1.74*10^{-5}$ ***
Aspect_brand	0.90	$2.71*10^{-13}$ ***
Aspect_camera	0.14	0.13
Aspect_pos_reviews	-0.56	$4.03*10^{-7}$ ***
Aspect_price	$7.75*10^{-2}$	0.77
Aspect_brand*brandnokia	-1.40	$3.45*10^{-16}$ ***
Aspect_brand*brandsamsung	-1.08	$2.15*10^{-10}$ ***
Aspect_brand*brandsony	-1.21	$7.77*10^{-10}$ ***
Aspect_camera*camera16MP	$8.73*10^{-2}$	0.53
Aspect_camera*camera8MP	-0.70	$7.70*10^{-6}$ ***
Aspect_pos_reviews*pos_reviews	1.12	$8.57*10^{-10}$ ***
Aspect_price*price	$1.21*10^{-4}$	0.74

. $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Not all variables are significant on a 10% significance level, which means that these variables do not have an explanatory effect on choice. Therefore, these variables are not interpreted. Since the goal is to find out whether there is an extra impact on choice based on the aspects that consumers have mentioned as important for their choice, only the variables regarding aspects will be interpreted.

As can be seen, the variable aspect_brand is significant on a 10% significance level. Being a consumer that considers brand to be important in their choice leads to a change of choice with $e^{0.90*1} = 2.46$ compared to being a consumer that considers brand to not be important in their choice. This means that, compared to being a consumer that considers brand to not be important in their choice, being a consumer that considers brand to be important when making their decision, increases choice by 146%. Being a consumer that considers positive reviews to be important in their choice leads to a change of choice with

$e^{-0.56*1} = 0.57$ compared to being a consumer that considers positive reviews to not be important in their choice. This means that, compared to being a consumer that considers positive reviews to not be important in their choice, being a consumer that considers positive reviews to be important when making their decision, decreases choice by 43%.

There are also a few interaction terms with aspects that are significant on a 10% significance level. A mobile phone of the brand Nokia and being a consumer that considers brand to be important leads to a change of choice with $e^{-1.40*1} = 0.27$ compared to being a consumer that considers brand to not be important in their choice, ceteris paribus. This means that compared to being a consumer that considers brand to not be important in their choice, a mobile phone of the brand Nokia and being a consumer that considers brand to be important in their choice decreases choice by 73%. A mobile phone of the brand Samsung and being a consumer that considers brand to be important leads to a change of choice with $e^{-1.08*1} = 0.34$ compared to being a consumer that considers brand to not be important in their choice, ceteris paribus. This means that compared to being a consumer that considers brand to not be important in their choice, a mobile phone of the brand Samsung and being a consumer that considers brand to be important in their choice decreases choice by 66%. A mobile phone of the brand Sony and being a consumer that considers brand to be important leads to a change of choice with $e^{-1.21*1} = 0.30$ compared to being a consumer that considers brand to not be important in their choice, ceteris paribus. This means that, compared to being a consumer that considers brand to not be important in their choice, a mobile phone of the brand Sony and being a consumer that considers brand to be important in their choice decreases choice by 70%.

When it comes to the camera of a mobile phone and being a consumer that considers having a good camera to be important in their choice, only the interaction term with a camera with 8MP seems to be significant on a 10% significance level. A mobile phone with a camera with 8MP and being a consumer that considers having a good camera to be important leads to a change of choice with $e^{-0.70*1} = 0.50$ compared to being a consumer that considers having a good camera to not be important in their choice, ceteris paribus. This means that, compared to being a consumer that considers having a good camera to not be important in their choice, a mobile phone with a camera with 8MP and being a consumer that considers having a good camera to be important in their choice decreases choice with 50%.

The last variable with an aspect that seems to be significant on a 10% significance level is positive reviews. A mobile phone with an increase in reviews of 0.01 (1%) and being a consumer that considers positive reviews to be important in their choice leads to a change of choice with $e^{1.12*0.01} = 1.01$ compared to being a consumer that considers positive reviews to not be important in their choice, ceteris paribus. This means that compared to being a consumer that considers positive reviews to not be

important in their choice, a mobile phone with an increase in positive reviews of 1% and being a consumer that considers positive reviews to be important in their choice increases choice by 1%.

It is also important to look at the goodness of fit of the model. In Table 26 below it can be seen that the residual deviance has decreased as opposed to the null deviance, which means that the model is a better fit as opposed to a model with only an intercept. The AIC of this model is 6385.50, which is lower than the AIC of all the other performed models. This means that the logit model of Table 25 is considered to be the model with the most parsimonious fit when compared to the other models.

Table 26. Model fit indicators of the logit model for the additional analysis regarding aspects

Model fit indicator	Value
Null deviance	7153.30 on 5159 degrees of freedom
Residual deviance	6339.50 on 5137 degrees of freedom
AIC	6385.50

From these additional findings, it can be concluded that consumers that find brand, camera and positive reviews important in their decision for a new mobile phone are more impacted in their choice by the corresponding product attributes. When it comes to price, however, there seems to be no significant impact on the choice of a consumer that considers price to be important.

4.5 Summary of research findings

To be able to answer the research question to find out to what extent and how online customer reviews have an influence on the purchase decision of brand loyal consumers, multiple hypotheses were constructed.

The first hypothesis stated that non-loyal consumers are more likely to be positively impacted in their purchase intention by product information compared to attitudinal loyal consumers. From the findings, it could be concluded that there is indeed an effect of being loyal on the impact of purchase intention. However, this effect only exists for the brand, a battery of 24 hours and positive reviews. It is noticeable that all significant effects regarding being loyal have a negative impact on purchase intention. This implies that non-loyal consumers are more likely to be positively impacted in their purchase intention by product information compared to attitudinal loyal consumers, meaning that the first hypothesis was confirmed.

The second hypothesis stated that positive customer reviews have a greater positive impact on the purchase intention of non-loyal consumers compared to attitudinal loyal consumers. The results have shown that the positive change in choice for non-loyal consumers is greater than the change in choice for loyal consumers when it comes to positive reviews. From these findings, it can be concluded that

customer reviews have a greater impact on the purchase intention of non-loyal consumers compared to attitudinal loyal consumers. This confirmed the second hypothesis.

The third hypothesis stated that displaying multiple positive reviews in combination with a few negative reviews will have a greater positive impact on the purchase intention compared to displaying only positive reviews. This means that the ratio is looked at for this hypothesis. All ratios showed a decrease in choice compared to displaying only positive reviews. This implies that displaying only positive reviews has a greater impact on choice than displaying a ratio of positive and negative reviews. Therefore, hypothesis 3 was rejected.

The fourth and last hypothesis stated that there exists a difference in the impact of product information, including reviews, on the purchase intention based on the master goal of the consumer. This hypothesis was confirmed, but only holds when it comes to comparing having a hedonic goal and a normative goal and for product information regarding brand, 64GB storage, camera and positive reviews. This could also imply that reviews regarding these product attributes could impact consumers with a normative goal.

Besides testing the hypotheses, it is worth mentioning some other findings regarding the collected data. The survey consisted, besides the choice experiment, of some open text questions regarding the choices that they had made in the choice experiment. These questions were "Please explain in your own words what the main reason(s) was/were behind your decisions." and "What were you trying to achieve with making these decisions?". It became clear from the answers to these questions that most respondents had summed up the product attributes from the choice experiment, without a clear explanation. This could be because they had been influenced by the attributes of the choice experiment. The answers to the second question regarding what they were trying to achieve by making these decisions were also not taken very seriously as there were respondents that had answered "completing the survey", "helping you out by making your survey" or even "nothing". This implies that these questions were not asked in the right way or maybe not asked at the right time in the survey. This was something that was taken into account beforehand, which is why the Amazon dataset was analysed. Out of the Amazon dataset, which uncovered topics of reviews about mobile phones, a survey question was created which was also analysed. From these additional findings, it can be concluded that consumers that find the brand, camera and positive reviews important in their decision for a new mobile phone are more impacted in their choice by the corresponding product attributes. When it comes to price, however, there seems to be no significant impact on the choice of a consumer that considers the price to be important.

5. General Discussion

This thesis aimed to examine the influence of online customer reviews on the purchase decision of brand loyal consumers. This thesis consisted of different chapters, each covering different parts of the research. At first, a literature study was conducted in which the main topics of the research were covered.

Hypotheses were formed and a conceptual model was created based on the literature findings to help answer the research question. After that, the analyses of the hypotheses were performed and findings were reported.

The study was conducted based on a survey taken by 215 people. In this survey, people were exposed to a choice experiment in which they had to choose between two mobile phones based on brand, storage, camera, battery, reviews and price. After the choice experiment, they were asked two open text questions and one multiple-choice regarding the aspects that had played a part in making their decisions. The multiple-choice question was created based on findings of mobile phone reviews on Amazon. This was analysed using text analysis. The choice experiment was analysed using choice-based conjoint analysis.

In this concluding paragraph, a summary of the key findings of the literature study is presented followed by a summary of the key findings of the conducted analyses. The research findings are split up into three components: the managerial implication, the theoretical implications and the method implications. Discussing the managerial implications will involve the most important findings of the research and what firms can learn or do differently based on these findings. The theory implications include the similarities and differences with the findings from the literature. And within the method implications, learning points about combining choice-based conjoint analysis with text analysis will be covered. After that, there is a reflection on this research and recommendation are provided to future researchers.

5.1 Findings literature

To be successful in the market and to attract more loyal customers, understanding the consumer decision-making process is important (Stankevich, 2016). When understanding the consumer decision-making process, customers can be effectively targeted and their wishes understood. This will result in customer satisfaction, which could result in brand loyalty (Nam, Ekinci, & Whyatt, 2011). Satisfied customers are less price sensitive, and are less likely to switch to competitors (Dimitriades, 2006). Companies that can optimize the consumer decision-making process and are therefore able to obtain brand loyalty, will assert a competitive advantage. Therefore, it can be said that customer satisfaction and brand loyalty are essential for achieving success in the long term.

Brand loyalty has been studied widely, and much research has investigated brand loyalty by using two other perspectives than active and passive loyalty, namely behavioural loyalty and attitudinal loyalty. Behaviour loyalty refers to the frequency of repeat purchase, which makes it possible to obtain a greater market share, while attitudinal loyalty refers to a psychological commitment, which could lead to higher relatives prices for a brand (Chaudhuri & Holbrook, 2001; Nam, Ekinci, & Whyatt, 2011). Research by Bennett and Rundle-Thiele (2002) has shown that attitudinal loyalty toward a brand can be used for the prediction of purchase behaviour.

Research of Danaher, Wilson, and Davis (2003) has shown that brands with a high market share sustain a greater-than-expected loyalty in the online environment compared to brands with a lower market share. This is partly because brands with a higher market share are better-known, making it important for brands to create online awareness. This also explains why some consumers are brand loyal even when there is no other difference between products of brands other than the brand name itself (Tucker, 1964). For some product categories, brand names in the online environment are more important compared to traditional shopping environments. However, research of Degeratu, Rangaswamy, and Wu (2000) has shown that this might also be dependent on the available attribute information. Price and promotions often get separated from the brand image in the consumer's mind, which could influence the consumer decision-making process in such a way that although the consumer is not likely to change their attitude toward a brand, it may have an impact on the evaluation of alternatives (Burke, Harlam, Kahn, & Lodisch, 1992). This refers mainly to attitudinal loyal people. Other people's opinions could change someone's mind and thoughts toward a brand. This is also known by companies, that make use of this information by creating word-of-mouth (WOM) through their customers because customers are perceived as the best source for advertising products to obtain more brand loyal customers (Hashmi, Khalid, Akram, Saeed, & Rizwan, 2014).

The purchase intention is being formed by selecting, organizing, interpreting and comparing information, which the consumer has collected from various shopping channels (Sheth, Mittal, & Newman, 2004). This information includes, amongst other things, the product's quality, variety, and price. Nowadays, this information can be easily accessed by reading both positive and negative reviews. Research by Wang and Yu (2017) has shown that observing and learning from the reviews of other consumers could increase the intention to purchase, and thus increase the chances of the actual purchase.

In reviewing evaluations it has been demonstrated that more weight is placed on negativity rather than positivity, which is called the negativity effect (Skowronski & Carlston, 1989). This could be because negative information is more attention-grabbing compared to positive information. However, this is also dependent on the familiarity of the brand, which also explains the difference between brand loyal and non-brand loyal customers. Non-brand loyal people are less familiar with a brand than brand loyal people, and consumers that are less familiar with a brand will be more probable to change their brand evaluation based on WOM (Sundaram & Webster, 1999).

Research of Doh and Hwang (2009) have argued that only positive eWOM messages are not required for a positive attitude of the consumer toward a product or brand. They have demonstrated that a few negative messages next to a higher share of positive messages might be beneficial regarding the credibility of the positive eWOM messages. However, a negative message itself could be harmful standing on its own. This implies that, besides the content of the eWOM, the quantity of the shown

eWOM messages per product is, just as much as the quality, an important factor in influencing the purchase intentions of a potential buyer (Cheung, Xiao, & Liu, 2014).

Using the means-end chain analysis, marketers are able to gain insight into consumers' values which makes it easier to explain which attributes they find important in objects or activities (Hoyer, Pieters, & MacInnis, Consumer Behavior, 2016). This also works the other way around. With the means-end chain analysis, researchers can uncover the values that have driven consumers into making their decisions. Often, consumers strive to satisfy several goals at the same time by having multiple means (Kopetz, 2007). Within the goal framing theory, three "master" goals have been defined; the gain goal, the hedonic goal and the normative goal. The first master goal is the *gain goal*, which could be phrased as "to guard or improve one's resources" (Barbopoulos & Johansson, 2016). Having this as goal, consumers are likely to react sensitively when it comes to price and perceived value, while emotions are not necessarily taken into account. The second master goal is the *hedonic goal*, which could be phrased as "to feel better right now" (Barbopoulos & Johansson, 2016). With a hedonic goal in mind, consumers are more sensitive to pleasure and different mood levels, with economic utility and consumers' norms being not that important (Lindenberg & Steg, 2007). This reflects in their choice of goods; consumers with a hedonic goal are less price sensitive when it comes to hedonic goods, compared to utilitarian goods (Wakefield & Inman, 2003). The third and last master goal is the *normative goal*, which could be phrased as "to act appropriately" (Barbopoulos & Johansson, 2016). Consumers with a normative goal are likely to be sensitive to the opinions of others, and the normative goal, therefore, has sub-goals that are related to social norms (Lindenberg & Steg, 2007). This goal can be linked to consuming pro-social or pro-environmental (Barbopoulos & Johansson, 2016).

5.2 Findings research

5.2.1 Managerial implications

This research aimed to find an answer to the research question "To what extent and how do online customer reviews have an influence on the purchase decision of brand loyal consumers?". From the findings above, it can be said that brand loyal consumers were less influenced by customer reviews and positive reviews have a smaller positive impact on their purchase intention compared to non-brand loyal consumers. These findings confirmed expectations. Besides, it was also found that the ratio of positive/negative reviews matters when it comes to the influence of reviews. An inverted U-shape was found, meaning that multiple positive reviews in combination with a few negative reviews have a greater positive impact on purchase intention compared to only positive reviews. Other product attributes, besides reviews, that are influenced by loyalty were brand and battery. It became clear that Apple was the most popular brand amongst loyal consumers, followed by Samsung, and this was confirmed by the negative interaction effects of loyalty with the other brands. All other brands, compared to Apple, had a stronger negative effect on choice for loyal consumers compared to non-loyal consumers.

Consumer goals were also investigated, and it became clear that the effect of reviews differed amongst consumers with a normative goal, compared to consumers with a hedonic goal. The influence of reviews for normative consumers was significantly more negative compared to hedonic consumers. There was no significant effect found between consumers with a hedonic goal and consumers with a gain goal, implying that the effect of reviews is the same for consumers with these two goals. Additionally, respondents were also asked to indicate which aspects they found important when buying a new phone. A significant difference between loyal and non-loyal consumers was found. For loyal consumers, the most important aspect was brand, followed by the value received for the money spent and the amount of positive reviews. For non-loyal consumers, the most important aspects was the value received for the money spent, the overall look of the phone and the amount of positive reviews. There was looked at the possible effect of important aspects to the corresponding product attributes. From these additional findings, it can be concluded that consumers that found the brand, camera and positive reviews important in their decision for a new mobile phone were more impacted in their choice by the corresponding product attributes. When it came to price, however, there seems to be no significant impact on the choice of a consumer that considers the price to be important.

Based on these findings, firms can learn more about brand loyal consumers and the influence of reviews and other product information. One way of implementing these results is through a recommendation system. In today's data-driven world, there is a lot of information stored about customers and firms are acting on this using machine learning techniques. Firms could use these techniques in combination with the information provided in this research and categorise their customers into loyal customers and non-loyal customers. Based on this categorization, they could display the information on top that came out of this research as significantly increasing choice. For example, for loyal consumers looking for a new mobile phone, the mobile phones of the brand Apple or Samsung are most likely to be picked and these brands should thus be included in the recommender system. For non-loyal consumers, the brand does not matter as much, but more weight is given to positive reviews. Positive reviews came out as the variable with the most significant positive impact on choice. Therefore, mobile phones with a lot of good reviews should be given a high ranking into the recommender system for non-loyal consumers.

Besides the recommender system, firms could also act on these findings by focussing on which reviews to show first to which consumer. Research of Askalidis and Malthouse (2016) demonstrated that the first five reviews being shown to the consumer are the most important. For example, for loyal consumers, the aspect of battery seemed to be more important as opposed to non-loyal consumers. Therefore, loyal consumers are more likely to be influenced by reviews about the battery of the phone and displaying a combination of multiple positive reviews with a few negative reviews (since there appeared to be an inverted U-shape) about these aspects at the top could positively influence the purchase intention. For the same reasons, non-loyal consumers are more likely to be influenced by reviews about the value received for the money spent and the overall look of the phone. Therefore,

displaying a combination of multiple positive reviews with a few negative reviews (since there appeared to be an inverted U-shape) about these aspects at the top five of all reviews for non-loyal consumers could positively influence the purchase intention.

These recommendations could also be applied to the goals of the consumers. The effect of reviews differed amongst consumers with a normative goal, compared to consumers with a hedonic goal. The influence of reviews for normative consumers was significantly more negative compared to hedonic consumers. There was no significant effect found between consumers with a hedonic goal and consumers with a gain goal, implying that the effect of reviews is the same for consumers with these two goals. Therefore, for consumers with a hedonic or gain goal, including phones with positive reviews in the recommender system will have a positive effect on the purchase intention. When it comes to consumers with a normative goal, the camera of the phone had a significant positive influence on their choice, compared to consumers with a hedonic goal. Therefore, for consumers with a normative goal, including phones with good camera quality to the recommender system will have a greater positive effect on the purchase intention as opposed to consumers with a hedonic goal.

5.2.2 Theoretical implications

In the literature study of this thesis, interesting work was found on loyalty and how goals affect choices. In this section, these findings are compared to the findings of the research.

Brand loyalty has been studied widely, and much research has investigated brand loyalty by using two perspectives, behavioural loyalty and attitudinal loyalty. Behaviour loyalty refers to the frequency of repeat purchase, which makes it possible to obtain a greater market share, while attitudinal loyalty refers to a psychological commitment, which could lead to higher relatives prices for a brand (Chaudhuri & Holbrook, 2001; Nam, Ekinci, & Whyatt, 2011). Research of Bennett and Rundle-Thiele (2002) has shown that attitudinal loyalty toward a brand can be used for the prediction of purchase behaviour. Therefore, the focus of this research was on attitudinal loyalty. Based on the statements of the survey, the respondents were classified as (attitudinal) loyal or non-loyal. Loyalty on its own did not seem to have a significant effect on the purchase intention (choice). However, loyalty did have an indirect effect through the brand of the phone, through the battery and reviews when using interaction effects. So, attitudinal loyalty can be used for the prediction of purchase behaviour, however, this is through product attributes.

Research of Danaher, Wilson, and Davis (2003) has shown that brands with a high market share sustain a greater-than-expected loyalty in the online environment compared to brands with a lower market share. This is partly because brands with a higher market share are better-known, making it important for brands to create online awareness. This also explains why some consumers are brand loyal even when there is no other difference between products of brands other than the brand name itself (Tucker, 1964). Comparing these findings to the findings of the conducted research, this was indeed the case. Of all

mobile phone brands, Apple had the most loyal consumers within this research, meaning that the market share of Apple in the conducted research was the biggest compared to the other brands. The findings of the literature were also confirmed by the interaction effects of all brands with loyalty. Here, Apple was the reference category. All interaction effects of brand and loyalty showed a significant negative influence on choice. This means that, when all product attributes are the same, and the only difference between mobile phones were brands, loyal consumers were more likely to pick Apple.

The purchase intention is being formed by selecting, organizing, interpreting and comparing information, which the consumer has collected from various shopping channels (Sheth, Mittal, & Newman, 2004). Nowadays, this information can be easily accessed by reading both positive and negative reviews. Research by Wang and Yu (2017) has shown that observing and learning from the reviews of other consumers could increase the intention to purchase, and thus increase the chances of the actual purchase. It was confirmed by the base model of this research that this was indeed the case for positive reviews. Of all product attributes, reviews had the most positive influence on purchase intention.

Research of Doh and Hwang (2009) have argued that only positive eWOM messages are not required for a positive attitude of the consumer toward a product or brand. They have demonstrated that a few negative messages next to a higher share of positive messages might be beneficial regarding the credibility of the positive eWOM messages. However, a negative message itself could be harmful standing on its own. This implies that, besides the content of the eWOM, the quantity of the shown eWOM messages per product is, just as much as the quality, an important factor in influencing the purchase intentions of a potential buyer (Cheung, Xiao, & Liu, 2014). The research findings corresponded to these literature findings. An inverted U-shape was found for reviews. This implies that there exists a non-linear relationship between positive reviews and purchase intention, which means that a combination of positive and negative reviews will have a greater impact on the purchase decision compared to only positive reviews.

Within the goal framing theory, three "master" goals have been defined; the gain goal, the hedonic goal and the normative goal. The first master goal is the *gain goal*, which could be phrased as "to guard or improve one's resources" (Barbopoulos & Johansson, 2016). Having this as a consumer goal, consumers are likely to react sensitively when it comes to price and perceived value, while emotions are not necessarily taken into account. The second master goal is the *hedonic goal*, which could be phrased as "to feel better right now" (Barbopoulos & Johansson, 2016). With a hedonic goal in mind, consumers are more sensitive to pleasure and different mood levels, with economic utility and consumers' norms being not that important (Lindenberg & Steg, 2007). This reflects in their choice of goods; consumers with a hedonic goal are less price sensitive when it comes hedonic goods, compared to utilitarian goods (Wakefield & Inman, 2003). The third and last master goal is the *normative goal*, which could be phrased

as "to act appropriately" (Barbopoulos & Johansson, 2016). Consumers with a normative goal are likely to be sensitive to the opinions of others, and the normative goal, therefore, has sub-goals that are related to social norms (Lindenberg & Steg, 2007). This goal can be linked to consuming pro-social or pro-environmental (Barbopoulos & Johansson, 2016). Out of all these consumer goals, the only consumer goal that showed a significant effect on purchase intention standing on its own was having a normative goal, compared to having a hedonic goal. When it comes to the interaction effects of the product attributes with consumer goals, having a normative goal was still the only consumer goal that showed significant effects. The purchase intention significantly decreased for the interaction of all the brands, compared to Apple, with having a normative goal, compared to having a hedonic goal. This makes sense since consumers with a normative goal are most likely to follow the trends and because Apple is one of the most popular brands at the moment. Other product attributes that showed a significant effect in the interaction with a normative goal, was storage of 64GB and the camera. Since most people nowadays want or need a phone with as much storage as possible and since having a good camera quality is in line with the current social media trends, this also made sense. Positive reviews showed a decreased significant effect with having a normative goal. This was not expected, since reviews reflect other people's opinions and since consumers with a normative goal are likely to be sensitive to other people's opinions according to Lindenberg and Steg (2007). However, it does make sense that most respondents of the survey that had chosen the normative statement, and thus were classified as having a normative goal, are brand loyal consumers, which could explain why this negative effect was found. This is because brand loyal consumers are most likely to want the latest version of their favourite mobile phone brand, which was mentioned within the statement that was "because I want to have the latest version or follow the trend".

5.2.3 Method implications

Within this research, a survey was conducted with multiple choice questions regarding their loyalty and consumer goals, with a choice experiment, with a text component and with questions based on text analysis of a pre-study and. Brand loyalty and consumer goals were identified before the choice experiment, while the reasoning behind the respondents' decisions and the important aspects of a mobile phone were asked afterwards. In this section, both the methods and the timing of the questions are analysed.

Brand loyalty is hard to identify, how do you tell if someone is brand loyal or not, without having access to previous purchases? Research by Bennett and Rundle-Thiele (2002) have demonstrated that the attitude towards the act is a good explanatory factor of attitudinal loyalty and have shown that some of the variances in purchase behaviour are explained by this. Therefore, in this research, attitudinal loyalty was measured by the attitude towards a loyal act. This was done using 5-point Likert scale questions in the first part of the survey, after the demographic questions. These questions were tested and reviewed by Bennett and Rundle-Thiele (2002), and were thus used as a measure of attitudinal loyalty. From the

findings of the research, it can be confirmed that this was indeed a good way of measuring loyalty when it comes to purchase intention.

Another aspect that was identified before the choice experiment, was the goal of the consumer. Within the goal framing theory, three "master" goals had been defined. The first master goal is the *gain goal*, which could be phrased as "to guard or improve one's resources" (Barbopoulos & Johansson, 2016). Having this as a goal, consumers are likely to react sensitively when it comes to price and perceived value, while emotions are not necessarily taken into account. This is why the first statement to the multiple-choice question was "because there is a discount or because prices are low". The second master goal is the *hedonic goal*, which could be phrased as "to feel better right now" (Barbopoulos & Johansson, 2016). With a hedonic goal in mind, consumers are more sensitive to pleasure and different mood levels, with economic utility and consumers' norms being not that important (Lindenberg & Steg, 2007). This reflects in their choice of goods; consumers with a hedonic goal are less price sensitive when it comes hedonic goods, compared to utilitarian goods (Wakefield & Inman, 2003). Since consumers with a hedonic goal care about feeling better after making purchases, this was translated into the statement "because I want a new one to fulfil my needs". The third and last master goal is the *normative goal*, which could be phrased as "to act appropriately" (Barbopoulos & Johansson, 2016). Consumers with a normative goal are likely to be sensitive to the opinions of others (Lindenberg & Steg, 2007). This goal can be linked to consuming pro-social or pro-environmental (Barbopoulos & Johansson, 2016). Since consumers with a normative goal are sensitive to social pressure and wanting to fit in, this resulted in the following statement for the multiple-choice question: "because I want to have the latest version or follow the trend". Based on what the respondents have chosen in this question, they were categorised into one of the three goals. For instance, if a respondent chose "because there is a discount or because prices are low", they were categorised as a consumer with a gain goal, etc. Not many significant differences were found between the consumer goals and the purchase intention of the respondents, even though this was expected. Also, most respondents had chosen the statement "because I want to fulfil my needs". Looking back at this statement, this statement may have been too broad since this could apply to a lot of different things. The hedonic goal is more about feeling better than fulfilling needs, it could therefore be more related to wants compared to needs. This could mean that not all respondents were correctly identified with the right consumer goals. Therefore, some things could have been missed. Therefore, some improvements could be made regarding the identification of consumer goals. This will be further discussed in section 5.3.2.

In this research, a choice-based conjoint analysis (CBC) was conducted. The reason for this is that this type of conjoint analysis is more representative of real-life decision-making compared to rating- and ranking-based conjoint analysis since participants would have to make trade-offs as they would have to make in real life, such as willingness to pay, risk, or time (Elrod, Louviere, & Davey, 1992). The outcomes of the choice based analyses showed that this was a correct way of testing purchase intention

based on the information obtained from the survey. All hypotheses could be correctly tested using this method.

The survey consisted, besides the choice experiment, of some open text questions regarding the choices that they had made in the choice experiment. These questions were "Please explain in your own words what the main reason(s) was/were behind your decisions." and "What were you trying to achieve with making these decisions?". It became clear from the answers to these questions that most respondents had summed up the product attributes from the choice experiment, without a clear explanation. This could be because they had been influenced by the attributes of the choice experiment. The answers to the second question regarding what they were trying to achieve by making these decisions were also not taken very seriously as there were respondents that had answered "completing the survey", "helping you out by making your survey" or even "nothing". This implies that these questions were not asked in the right way or maybe not asked at the right time in the survey. This will be further discussed in section 5.3.2.

Since some struggles with the answers to the open text components were taken into account beforehand, a pre-study was conducted with reviews from an Amazon dataset. After cleaning the reviews, they were analysed using Latent Dirichlet Allocation (LDA) topic modelling. The reason to go for topic modelling was to discover the abstract topics that were occurring in the reviews. It was done by classifying the text in a document to a particular topic. For this analysis, the amount of topics chosen was 20. This was to make sure that the most important topics related to use cases of mobile phones would be discovered. The reason to include these topics in a question was to clearly identify the reasoning behind the choices of the respondents. Based on the analyses of the answers to this question, it was confirmed that this was a good way of finding out more detailed what had led to the decisions of the respondents.

5.3 Discussion

As with any research, this research had several limitations, which will be discussed. Besides mentioning the limitations, recommendations will be provided for future research regarding the topics of this thesis.

5.3.1 Limitations

The first limitation of this research was the survey data. The data that was collected came mostly from direct family or friends through connections, which does not represent everyone. Most family and friends who filled out the survey own an Apple phone and would not switch from this, which was reflected in the data. This is not completely representative of every consumer and the loyal consumers could therefore be biased since it mostly consisted of loyal Apple consumers. This leads to the introduction of the second limitation, which was time. Due to the limited time of writing this thesis, there was also a limited time of collecting the data. More time could have led to more respondents and it could have also led to a broader circle of respondents, meaning that besides Apple, there could be more loyal consumers of other brands.

Another limitation of this research was the open text component of the survey. It became clear that most respondents had not taken this seriously as mentioned in the method implications. Reasons for this could be due to the length of the survey and the placement of the questions. The survey was quite long and it took approximately 10 minutes for the respondents to fill it in. More towards the end of the survey, it could be that attention of the respondent was not completely there anymore and respondents were trying to end the survey as quickly as possible.

5.3.2 Recommendations Future Research

Based on the implications and limitations of this research, recommendations could be provided for future research regarding this topic.

As mentioned within the method implications, some biases were found when it came to choosing the statements for respondents to identify their consumer goal, this method of identifying the consumer goals could be improved. It is therefore recommended to future researchers to apply the method of Bennett and Rundle-Thiele (2002) when it comes to validating the statements before using them to categorise respondents. Also, since most loyal consumers of this research were brand loyal to Apple, it would be interesting to find out whether the outcomes would have differed when the data would have consisted of brand loyal consumers from a different brand. Also, differences between brands could provide useful information. For example, brands with different market shares could have a different impact on the level of loyalty of a consumer, which is also something that could be researched. Not all loyal consumers of the conducted research likely share the same level of loyalty. It would therefore be interesting to not only look at differences between brands but also at differences between levels of loyalty.

This research has covered the market of mobile phones, which is not representative of all markets. Therefore, it is recommended to also apply this research to other markets. This could provide useful information to marketers of other markets. Something else that this research did not cover, was the overall looks of the mobile phones. However, this aspect, extracted from the Amazon dataset, was the third most mentioned aspect when it came to identifying the most important aspects when buying a new mobile phone. Therefore, the appearance of mobile phones could be included when building further on this research.

Also, the content of the reviews was not taken into account, besides the ratio of positive/negative reviews Even though it was analysed what the interaction effects were of the ratios of reviews with the product attributes, it was not clear for the respondents of the survey what the reviews were about. Some subjects could have had more of an influence than other subjects, which could have a different influence on the purchase intention of loyal consumers compared to non-loyal consumers. Therefore, a recommendation would be to include actual reviews about specific subjects in the choice experiment. This could provide

more detail about which reviews, positive or negative, have an influence on the respondents, both loyal and non-loyal.

Besides the choice experiment, open text questions regarding the choices that the respondents had made were also included in the survey. These questions were "Please explain in your own words what the main reason(s) was/were behind your decisions." and "What were you trying to achieve with making these decisions?". However, these questions were not taken very seriously by the respondents, as it included answers such as "completing the survey", "helping you write your thesis" or even "nothing". The respondents that did take the question seriously had most of the time just summed up the product attributes that they had found important during the choice experiment. The consequence of this was that the text components could not have been analysed properly and could not provide additional information regarding the reasoning behind their decisions. Asking these questions after the choice experiment could have biased the respondents into summing up attributes. Therefore, the question regarding important aspects of the phone that were extracted from the Amazon dataset provided more detailed information. This implies that these questions were not asked in the right way or maybe not asked at the right time in the survey. It is recommended to future researchers to ask open text components more at the beginning of the survey so that the attention of the respondent is still there. And it also recommended asking the questions more in detail. By doing this, the respondent will be more guided into how they should formulate their answer, instead of summing up attributes.

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Appendix

Appendix A. Survey

Dear Respondents,

My name is Richelle Booij and this survey is for my master thesis in Economics and Business Economics with a specialisation in Data Science & Marketing Analytics at the Erasmus University Rotterdam.

This survey consists of demographic questions, followed by a choice experiment where you will need to pick the option that appeals most to you. It will take approximately 10 minutes of your time. Your answers are used for research purposes only and will be kept confidential.

Among all respondents, two gift vouchers of your choice (worth €20) will be given away. If you want a chance to win this gift voucher, please leave your e-mail address at the end of the survey. This is of course not obligatory.

If you have any questions about this survey do not hesitate to contact me at: 481297rb@student.eur.nl

Thank you in advance for your participation and time.

Kind regards,

Richelle Booij

The first part of this survey consists of demographic questions. Your answers are used for research purposes only and will be kept confidential. Please answer truthfully.

What is your gender?
- o Male
- o Female
- o Non-binary/third gender
- o Prefer not to say

What is your age?

What is your highest level of education? If you are a student, please indicate the education you are currently following.
- o Elementary school (basisschool)
- o High school (middelbare school)
- o Community college (MBO)
- o Higher professional education (HBO)
- o University Bachelor (WO Bachelor)
- o University Master (WO Master)
- o Post-Master/PhD/doctorate

What is your monthly gross income? (Average is around €2800) **based on CPB 2020**
- o Below average
- o Average
- o Above average
- o Prefer not to say

The second part of this survey consists of several statements. Your answers are used for research purposes only and will be kept confidential. Please answer truthfully.

The following statements are about mobile phone brands. Please indicate whether the following statements apply to you on a scale of 1 (strongly disagree) to 5 (strongly agree):
- o I would rather stick with a brand I usually buy than try something I am not very sure of
- o I rarely take chances by buying unfamiliar brands even if it means sacrificing variety
- o I buy the same brands even if they are only average
- o I would rather wait for others to try a new brand than try it myself
- o I would rather stick to well-known brands
- o I am committed to buying my favourite brand

The next part of the survey consists of some questions about buying a new mobile phone. Your answers are used for research purposes only and will be kept confidential. Please answer truthfully.

The main reason for me to replace my current mobile phone would be
- o Because there is a discount or because prices are low
- o Because I want a new one to fulfil my needs
- o Because I want to have the latest version or follow the trend

The main reason for me to read reviews when I buy a new mobile phone would be
- o Because I want to know more about the price-quality ratio
- o Because I want to know whether the mobile phone will fulfil my needs
- o Because I want to know if this mobile phone is in line with the current trends

If you think of buying a new mobile phone, which brand would you consider first?
- o Nokia
- o Samsung
- o Sony
- o Apple
- o Other, namely…

The next part of this survey consists of a few choice questions in which two phones with their attributes are shown. Please read the attributes below truthfully.

The attributes are:
- o *Brand*, this indicates the brand of the mobile phone;
- o *Storage capacity*, this indicates the maximum storage (GB) capacity of the mobile phone;
- o *Camera*, this indicates the quality of the camera in megapixels (MP);

- *Price*, this indicates the price in euros (€);
- *Positive reviews*, this indicates the percentage of positive reviews given by previous consumers, the rest of the reviews is negative (for example, if it says "25%", then 25% of the reviews is positive and 75% of the reviews is negative)

Your answers are used for research purposes only and will be kept confidential. Please answer truthfully.

VERSION 1

Please indicate which option appeals most to you

	Option 1	Option 2
Brand	Apple	Samsung
Storage capacity	32GB	128GB
Camera	16MP	12MP
Battery	24 hrs	18 hrs
Positive reviews	50%	25%
Price	€499,99	€699,99

- Option 1
- Option 2

Please indicate which option appeals most to you

	Option 1	Option 2
Brand	Nokia	Samsung
Storage capacity	64GB	128GB
Camera	16MP	12MP
Battery	12 hrs	24 hrs
Positive reviews	75%	50%
Price	€699,99	€899,99

o Option 1
o Option 2

Please indicate which option appeals most to you

	Option 1	Option 2
Brand	Samsung	Apple
Storage capacity	64GB	32GB
Camera	12MP	16MP
Battery	24 hrs	18 hrs
Positive reviews	75%	25%
Price	€899,99	€699,99

o Option 1
o Option 2

Please indicate which option appeals most to you

	Option 1	Option 2
Brand	Sony	Apple
Storage capacity	128GB	64GB
Camera	12MP	16MP
Battery	12 hrs	24 hrs
Positive reviews	25%	0%
Price	€899,99	€699,99

o   Option 1
o   Option 2

Please indicate which option appeals most to you

	Option 1	Option 2
Brand	Apple	Samsung
Storage capacity	128GB	64GB
Camera	12MP	16MP
Battery	18 hrs	24 hrs
Positive reviews	100%	25%
Price	€499,99	€699,99

o   Option 1
o   Option 2

Please indicate which option appeals most to you

	Option 1	Option 2
Brand	Apple	Nokia
Storage capacity	128GB	64GB
Camera	8MP	12MP
Battery	24 hrs	18 hrs
Positive reviews	25%	100%
Price	€499,99	€699,99

o Option 1
o Option 2

Please indicate which option appeals most to you

	Option 1	Option 2
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o   Option 2

VERSION 2

Please indicate which option appeals most to you

	Option 1	Option 2
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Storage capacity	64GB	128GB
Camera	12MP	16MP
Battery	24 hrs	18 hrs
Positive reviews	100%	50%
Price	€499,99	€899,99

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o   Option 2

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	Option 1	Option 2
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Positive reviews	0%	25%
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Please indicate which option appeals most to you

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Battery	18 hrs	18 hrs
Positive reviews	50%	25%
Price	€699,99	€499,99

- o Option 1
- o Option 2

** END OF VERSIONS **

Please explain in your own words what the main reason(s) was/were behind your decisions.

What were you trying to achieve with making these decisions?

Which aspect(s) has/have played a part in making your decisions? (Multiple answers possible)
- o The software of the phone
- o The possibility to take good quality pictures/videos
- o The brand of the phone
- o Whether the battery of the phone would last long enough
- o The value received for the money spent
- o The overall look of the phone
- o Whether the phone would meet the current trends
- o The amount of positive reviews the phone has
- o Other, namely…

Thank you for taking part in this survey. Your answers will be used for research purposes only and will be kept confidential. If you are interested in the main outcomes of my thesis and would like to have a chance of winning a €20 gift voucher of your choice, please leave your e-mail address here.