

The organic logo and claim: Purchase and health stimuli?

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Master Thesis

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A study on how certified organic logos and organic claims on food packaging materials affect consumers' purchase intention and health perception

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Foreword

When I was browsing through a few master theses from students of previous years, I found that almost every single student started with a quote or a beautiful citation to introduce them and to show their personal strength, which helped them to survive and make it through a tough year. After reading all these inspiring quotes I felt like I had to find one myself as well. Yet, I am not exactly the type of person that believes in citations of others or gets inspired by them because at times that one should actually remember or think of the quote, no one actually does. At least, I don't. Therefore, I just want to thank my dear parents, Guus, Malou, my sweet friends in Amsterdam and my great new friends I have met during this intensive year at Erasmus University to express those citations, blessings and beautiful words from personal experience at moments I needed them. They really helped me through this year in which I have learned so extremely much.

This master thesis, which lies in front of you, is the result of that educational year. I have worked on this masterpiece for approximately five months in which I had a lot of ups and downs due to not understanding anything of statistics since this was my first experience with it. My supervisor, Petra Tenbült luckily helped me out when I needed it most. Therefore: thank you!

Hopefully, you are as much into organic food communication as I do. Have fun while reading it!

Inge Melsen

Abstract

Purchasing organic grown and produced food products experienced a remarkable growth, which has still not reached its peak yet in the Netherlands. This remarkable growth indicates that consumers become more stimulated to buy organic products and according to many studies organic products are perceived as healthier. According to previous research organic logos and claims are signs or tools that promote the origin of certified organic products. However, one might suggest that after the many food scandals appeared, especially during 2013, also in the organic sector that consumers experience less trust in products that are labeled organic. Moreover, previous literature has shown inconsistent findings on the impact of organic signs on food packaging material on purchase intention and health perception of both healthy and unhealthy food products. Therefore, this study has tried to find answers to the research question to what extent the European organic logo and an organic claim affect purchase intention and health perception of both healthy and unhealthy food products. To answer this question it was split into two separate parts to ensure a clear structured paper. Hypothetical assumptions were formulated hypotheses based on these inconsistent outcomes, which were tested in an experiment. The experiment was characterized by a 3 x 2 between-subjects MANOVA, in which the three represented logo conditions (no logo, organic logo, organic claim) and the two embodied product type (healthy, unhealthy). A survey questionnaire consisting of six different versions was dispersed among 196 respondents. Each respondent was asked to judge a product (healthy or unhealthy) with one of the three possible logo conditions on it (either no logo, organic logo or organic claim) to find answers on the impact of both the organic logo and the organic claim on purchase intention and health perception. The results yield a possible decreasing impact of the organic claim on a healthy product on purchase intention when comparing it to the healthy product with an organic logo. Yet, this result is not significant because the post hoc test was impossible to perform. Furthermore, there is no significant difference between the no logo condition and the organic logo condition on both product types for purchase intention. Also the three logo conditions on both product types turned out not to be significant on health perception, meaning that for health perception the logo conditions turned out to be equal.

Keywords: Organic, logo, claim, purchase intention, health perception

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1. Introduction

During the 1950s the start of the use of chemicals in agriculture stimulated a remarkable increase in the amount of food production, which was called the 'Green Revolution' (Delude & Mirvis, 2000). Currently, one could suggest that another Green Revolution is surfacing; the Green Revolution of organic food products. Forbes Magazine recently announced that the major American supermarket chain Walmart is going to introduce a whole range of organic products as an expansion of their sales for a smaller price, indicating that organic products become less of a Veblen good (Worstall, 2014). The Veblen good is named after Thorstein Veblen, an economist that defined conspicuous consumption for the first time in 1899. He expressed conspicuous consumption as "vicarious leisure" (p.45), which suggests public display of wealth in the form of expensive purchases such as luxurious products and hiring staff to manage the household to show economic power (Veblen, 1899). The Veblen good represents an opulent product or service that points out economic power. Hence, the fact that organic products transform into less of a Veblen good suggests that a decrease in price of a group of (luxury) products will also reduce the willingness of consumers to purchase the specific commodity.

Furthermore, according to Team (2014) the expansion of organic products at Walmart is a decisive step towards further development of the organic industry, indicating that organic food products start to become part of the everyday lives of every consumer rather than just the wealthy upper layer of society.

1.1 Topic and context

According to research of Van Dinther (2012), Kealey (2012) and Falguera, Aliguer and Falguera (2012) a dramatic rise in sales of organic food products is going on and will develop even further during the next few years. These researchers state that the dramatic rise in sales of organic food products is due to the many food scandals that were disclosed by the media the past few years. In 2013 the Dutch and, on an international scale, the European food industry faced several food scandals. Just to name a few examples, horsemeat was sold as beef, excrement was found in abattoirs and organic labels were put on non-organic eggs in Germany (RTL Nieuws, 2013). Trienekens and Zuurbier (2008) suggest that the increase in food scandals is due to the globalisation of the food production and demand through which an immense interconnected system is developed. Their study depicts that local grocery stores

obtain their food products, even fresh products, from all over the world. Consequently, their research states that – because it is unclear whether the producer abides by the national and international safety and animal friendly regulations or not – the consumer's perception of food safety and quality has declined firmly the last decade. This declined perception of food safety and quality seems a peculiar development when taking into account that the European food sector belongs to one of the most regulated sectors in the world (Trienekens & Zuurbier, 2008). Yet, not every single product that is sold in Europe is produced in the European Union (Bodelier, 2013), such as tropical fruit.

As already mentioned earlier in this paragraph, research of van Dinther (2012), Kealey (2012) and Falguera, Aliguer and Falguera (2012) states these food scandals stimulated consumers to make a shift from processed food to organic food consumption, because these scandals contributed to more food consciousness amongst consumers. That shift resulted in a serious organic food craze that came into being with the rise of organic food stores all across the Netherlands during the last few years (Bodelier, 2013). Rijlaarsdam (2013) acknowledges the current growing organic trend by stating that the sale of organic food products is in a constant increase in the Netherlands, especially among higher educated, young citizens. According to research of both Yiridoe, Bonti-Ankomah and Martin (2005) and Aschemann-Witzel, Maroscheck and Hamm (2013) this trend among Dutch consumers is not only caused by the experience of enhanced trust in the safety and quality of organic products compared to non-organic products, but they also experience a positive relationship between the purchase of organic food products and health perception. Investing in personal health turned out frequently to be the key motivation for many consumers to purchase organic food products (Doorn & Verhoef, 2011; Hjelmar, 2011).

However, although the image of organic food may be associated with safety, quality and personal health, also in the organic food sector food scandals appear. For example, non-organic eggs produced in Germany were sold within the boundaries of the EU with the organic logo pretending to be organic eggs (RTL Nieuws, 2013). Recently, also a fraud with 11.000 sold kilos of regular ham that were sold as biological ham by meat company Vion became apparent (Van de Wouw, 2013). These two examples depict just a grasp of a series of organic food scandals that occurred in 2013 (RTL Nieuws, 2013). Hence, after the many food scandals of the last few years one could suggest that it is questionable whether the Dutch consumer still trusts a product based on on-package communication tools such as logos and claims. Claims and especially certified logos should function as a trustful promise of a

specific production process (Padel & Foster, 2005; Zagata & Lostak, 2012). Therefore, this master thesis will conduct research on to what extent the organic logo and organic claims on food packages influence (1) consumer' purchase intention and (2) health perception of (un)healthy food products in the Netherlands. The Netherlands operates as an accurate location for this study according to research of Hoogland, De Boer and Boersema (2007). They state that the Netherlands namely serves as an accurate representation of Europe when it comes to the organic market, which makes this study easier to generalize to the European market (p. 48).

Furthermore, the implementation of two different product types, healthy and unhealthy food products, in this study was made. The decision to appose two different products was determined by the fact that organic logos and claims currently appear more frequently on both healthy and processed, less healthy products such as fried crisps and chocolate-hazelnut spread (Schuldt & Hannahan, 2013). Moreover, the choice for two different types of products was made because a study of 'T Sant (2009) depicted that there is a considerable interest in personal health and taking responsibility for it amongst consumers (65%) by making more deliberate food choices. This value for personal health is reflected in the supermarkets in the form of labels, logos and claims, which are able to influence health perception and purchase intention (Aschemann-Witzel, Maroscheck & Hamm, 2013). Consequently, research on the effect of organic logos and claims on (un)healthy food products would give thorough insights into health perception and purchase intention of food products with an organic logo and an organic claim.

1.2 Theories in conflict

The previous paragraph introduced the research topic and discussed the context for this study. In a time where food scandals appear rather frequently and where certified logos and claims should guaranty safety and quality, research on the impact of organic logos and claims on purchase intention and health perception can give insights into consumer behaviour on the supermarket floor regarding organic logos and claims and whether these logos and claims influence or change purchase behaviour and health perception.

Previous research shows many inconsistencies on the impact of organic logos and claims on purchase intention and health perception exist (see for example Baggerman & Hack, 1992; Hoogland, De Boer & Boersema, 2007; Grunert & Wills, 2007; Skibbe, 2012). According to research of Baggerman and Hack (1992) and Padel and Foster (2005) a lack of

trust in logos exists among consumers. Moreover, these studies show that uncertainty about the reliability of a food logo could form a stumbling block in purchasing organic food products and perceiving them as healthy. Both studies also depicted that a large amount of people considers food logos and claims only as advertisement or a marketing trick from the food producer. On the other hand, the study of Hoogland, De Boer and Boersema (2007) and Skibbe (2012) indicate that organic logos and claims have a positive effect on purchase intention and health perception because simple logos and claims consisting of short words that are ambiguous in meaning, can persuade consumers to buy the organic product by spreading its benefits. Therefore, a study that investigates both the relationship between organic food logos and organic claims and consumer' purchase intention and the connection between organic food logos, organic claims and health perception is required.

In order to exert this study in a structured way two different studies will be conducted in one. The first mentioned study concerns purchase intention and the second stated study regards health perception. In the theoretical framework (chapter 2), the results chapter (chapter 4) and in the final discussion chapter (chapter 5) these two parts follow right after each other and are explicitly called (1) purchase intention and (2) health perception.

1.3 Research question

After having explored that the problem that constitutes the base for this study in the paragraph above is caused by inconsistent findings in previous literature, this third paragraph of the introductory chapter formulates the research question and sub questions for this master thesis. Implicitly, the research question has come forward a few times already, since this study will investigate the impact of organic logos and claims on purchase intention and health perception due to inconsistencies in previous literature on this topic. Hence, the exact research question reads as follows:

To what extent do organic food logos and organic claims affect consumers' purchase intention and health perception of healthy and unhealthy foods?

In order to answer this research question, it needs to be broken down into several sub questions. A total amount of twelve sub questions will be enumerated below. For convenience reasons, and because this study conducts research on the impact of logo conditions on two phenomena; purchase intention and health perception, the sub questions are divided into three

sections. The first part offers a better understanding in the organic logo conditions used for this study. Subsequently, the second section dives into the impact of logo condition and product type on purchase intention and the final segment considers the effect of logo condition and product type on health perception. These three parts will be discussed extensively in the next chapter (chapter 2). During the entire study these following questions will be answered:

Logo conditions (part one)

1. What is an organic logo?
2. What is an organic claim?

Purchase intention (part two)

3. What is meant by consumer' purchase intention?
4. What is the relationship between an organic logo and consumer' purchase intention?
5. What is the connection between an organic logo and purchase intention towards (un)healthy food products?
6. What is the connection between an organic claim and purchase intention?
7. What is the connection between an organic claim and purchase intention towards (un)healthy products?

Health perception (part three)

8. What is meant by health perception?
9. What is the connection between an organic logo and health perception?
10. What is the relation between organic logos and health perception towards (un)healthy food products?
11. What is the relation between an organic claim and health perception?
12. What is the relation between an organic claim and health perception towards (un)healthy products?

As stated above, the sub questions that will be covered in the next chapter (chapter 2) explore previous research to give predictive answers to the sub-questions. Based on these predictions further investigation is required mainly because of inconsistency within academic literature. In the end of these exploratory paragraphs of chapter 2 hypotheses will be deployed based on previous research, which makes this an a priori study, indicating that planned comparisons are

made based on earlier studies (Pallant, 2010). These hypotheses form the base of the experiment that will be conducted in this study.

1.4 Social relevance

The consumption of organic food products is an upcoming trend in the Netherlands, mainly among progressive Dutch urban elites (Bodelier, 2013; Rijlaarsdam, 2013). According to the Dutch organization Milieu Defensie (2013) this also means that the amount of products with an organic claim, the organic 'EKO'-label or the European organic logo (a green leaf constituted by stars that represent the European Union), certified by the independent bio control organization Skal, is increasing in regular grocery stores. According to research of Milieu Defensie the average amount of organic products in a normal grocery store is currently around 155 products, which represents an increase of 10% in comparison to 2012. As already mentioned earlier in chapter 1.1 research of van Dinther (2012), Kealey (2012) and Falguera, Aliguer and Falguera (2012) depicts that food scandals stimulated the Dutch consumer to make a shift from processed food to organic food consumption. Research of Yiridoe, Bonti-Ankomah and Martin (2005) declares that this shift in product choice can possibly be explained by the fact that consumers perceive an organic product as safer and healthier. Furthermore, their study suggests that organic claims and certified logos, such as the European logo, could possibly enhance this perception of safe organic products.

However, according to recent research of Aarset et al., (2004) and Naspetti and Zanolli (2009) consumers do not know enough about the production processes of organic food and about what typical features are important for the consumer regarding food safety and quality. Naspetti and Zanolli (2009) also state that the definition of 'organic' is perceived differently among consumers. Their study depicts that quality signs on the packaging of organic products, which function as a plausible mark, make consumers question the quality of the product because these marks do not inform the consumer about the production places or the producer. Moreover, data from Milieu Defensie (2013) shows that almost every consumer bought at least one organic product last year. Yet, Milieu Defensie (2013) also mentions that most of these consumers do not experience the meaning of both the organic logo and claim as clear and obvious because they do not provide any additional information about the origin of the product, production conditions and if it really is an organic product. Therefore, research on the degree of influence that these organic logos and claims have on consumer' purchase intention and health perception is required.

Hence, the social relevance of this thesis lies in the fact that organic logos and organic

claims are becoming a standardized phenomenon in regular grocery stores, but that inconsistencies still seem to exist about the impact of the organic logo and claim (Naspetti & Zanoli, 2009; Milieu Defensie, 2013).

1.5 Scientific relevance

Scientific relevance for this study can be assured by the fact that a large amount of academic articles is written about nutrient facts panels on the back of a food package, its difficulty for consumers to understand these nutrient boxes (Higginson, Draper, Rayner & Kirk, 2002; Cowburn & Stockley, 2005) and health claims, which are mostly situated in the centre of the packaging material of a food product (see for example Leathwood et al., 2007), while the amount of articles written about organic front-of-pack logos is scarce (Bauer, Heinrich & Schäfer, 2013). Especially the amount of articles written about the impact of organic logos combined with organic claims on the front of the packaging material of food products is limited, while in practice both the organic logo and the organic claims seem to appear more frequently on food products. One study that does examine organic front-of-pack logos is the research of Janssen and Hamm (2012). This study only discusses consumer preference for a certain European certified organic logo instead of its impact on certain behaviour. Furthermore, most of the articles that are already written about front-of-pack logos focus only on (non-)commercial health logos, such as the commercial Dutch 'Ik Kies Bewust'-logo or the non-commercial GDA (Guideline Daily Amount) logo and do not compare the impact of a logo with a claim (Feunekes, Gortemaker, Willems, Lion & Van den Kommer, 2008; 'T Sant, 2009; Vyth et al., 2009). Additionally, Yiridoe, Bonti-Ankomah and Martin (2005) state that the key motivation for consumers to purchase organic products is the investment in personal health. Yet, nothing has been written about influence of organic front-of-pack logos and claims on food products on purchase intention combined with its impact on consumers' perception of health.

Another argument for scientific relevance is a discrepancy in literature as already mentioned in paragraph 1.2 of this chapter. There are two groups of scientists debating about the effects of front-of-pack logos and claims. One group states that these logos and claims do not have a positive effect on consumer' purchase intention and health perception of the product, because the organization behind the logo is not obvious, which could make the logo easily a marketing trick to enhance sales (Baggerman & Hack, 1992; Williams, 2005; Grunert & Wills, 2007). Yet, the other group of scholars suggests that front-of-pack logos and claims

have a positive effect on purchase intention and health perception, namely because these logos cause a decline in risk perception (Roe, Levy & Derby, 1999; Kozup, Creyer & Burton, 2003; Kelly et al., 2009). For example, the study of Roe, Levy and Derby (1999) suggest that consumer' health perception can be influenced by short claims or symbols on the food package that inform about nutrient content or health effects. Consumers are likely to stop their quest for more information about the product after being exposed to such claims, which also facilitates easier ways to consider a purchase.

Thus, what makes this thesis scientifically relevant is that there seems to be a scarce amount of published academic articles about the impact of organic logos and claims together on certain behaviour. Moreover, a gap in research about the degree in which organic logos and organic claims affect or not affect purchase intention and health perception.

1.6 Outline

This study will be structured according to a well-ordered outline. After this introductory chapter, the second chapter will discuss previous literature and provide an overview of relevant theories and research that already has been conducted in the field of front-of-pack organic logos and claims by answering the sub questions divided over three parts as was discussed in paragraph 1.3. Based on these questions hypotheses will be formulated, which will function as the common themes of this research. Then, chapter 3 will represent a detailed description and explanation of the research design and methods that will be used in this master thesis. Also validity, reliability and the operationalization of the concepts used for this study into variables will be explained further. Moreover, chapter 4 is going to reveal the results of the experiment conducted in the statistics programme SPSS and finally, chapter 5 will provide a coherent discussion of the results presented in chapter 4 by relating these results to the literature and hypotheses discussed in chapter two. Chapter 5 will also consider the limitations of this study and offer ideas for future research.

2. Theoretical framework

Referring back to the previous introductory chapter in which the inducement for this study was introduced by presenting the context, the problem and its relevance, the current chapter is going to discuss and evaluate earlier research on the topic.

Since consumers normally do not have the chance to try a product before purchasing the product healthiness cannot be measured in advance. Therefore, credible communication is required on food packaging material (Grunert, Bech-Larsen & Bredahl, 2000). This theoretical framework will provide literature on how organic logos and claims as a communication tool are able to affect consumer' purchase intention. Furthermore, the effects that organic logos and organic claims have when applied to food products on consumer' health perception will be debated.

The following two paragraphs together constitute part one as already was described in the previous chapter. Part one focuses fully on the logo conditions. These logo conditions are explained to make sure that it is clear throughout this study what is meant by concepts such as organic logo and organic claim.

2.1 Logo conditions (part one)

As already explained in paragraph 1.3 for convenience reasons this study is divided into three separate sections. This first part about logo conditions is going to assess first what is actually meant by an organic logo in this study, which is followed by what constitutes an organic, or to phrase it differently, ethical claim. Finally, this section will also argue why it is essential to add the organic claim to this research and its reasons behind it.

This section about logo conditions is necessary and serves as a clarification, which is needed since even about the definition of the concept organic alone indistinctness exists. According to Aarset et al. (2004) and Naspetti and Zanolli (2009) consumers still disagree about the definition and find it unclear what the term organic actually means. Research of Yiridoe, Bonti-Ankomah and Martin (2005) states that there are two different definitions of organic food that are circulating. The first definition only focuses on the production side of the term. This definition states that organic food is produced according to a typical production process in which only environmental friendly products are used. Pesticides can only be used in a restricted manner. Furthermore, the application of genetic engineering is not tolerated. The prohibition of genetic engineering explains why the organic production process happens on a smaller scale than factory farming (Bodelier, 2013). This first definition about the

production side of the term is mostly represented by the organic logo (Winter & Davis, 2006). Paragraph 2.1.1 will address this more extensively.

Moreover, the second definition spreads meaningless words, or claims, such as green, natural and biological without explaining what is meant by these words (Yiridoe, Bonti-Ankomah & Martin, 2005). These words predicate nothing about the producers of the organic products or the location where it is produced.

Hence, concluding from the above it can be suggested that the term organic is rather illegible. Therefore, to maintain a univocal image of the term organic throughout this study the concept is summarized by a definition deployed by Bavec and Bavec (2006). Bavec and Bavec (2006) describe organic as “a production process in which the basic principles are to protect nature, prevent harmful influences on the environment and the landscape, develop biological diversity, care for drinking water and produce high-quality food” (p. 2).

The two paragraphs below will introduce the organic logo and what is meant by the organic logo, which is followed up by discussing the organic claim and its implications.

2.1.1 What is an organic logo?

In order to gain some better understanding of organic logos, this paragraph will provide background information about the definition of an organic logo, the use of organic logos, a few examples of organic logos used in the Netherlands and what is meant with the concept when it is referred to throughout this study.

This paragraph is going to assess two different organic logos; the European organic logo (figure 2.1) and the national Dutch EKO logo (figure 2.2) because these two concern the Netherlands. According to a study of Janssen and Hamm (2012), since the European organic logo is obligatory (July 1, 2012) on organic food products in every European country, national organic logos such as the EKO logo in the Netherlands may only be present on the same food package if they can add organic value to the product on top of the European organic standards. It is most of the times unclear what this added value comprises. According to the official website of the EKO mark, the logo on products makes the additional effort of organic farmers concerning sustainability visible for consumers. However, nothing is mentioned about the extra value of this Dutch logo. Because of the competition of the European organic logo the EKO foundation is established to support the stay of this logo next to the European logo. One of the main reasons that the EKO foundation gives for maintenance of the EKO logo is that market research depicted that consumers are more familiar with the EKO label than with the European logo (EKO, 2014).

One might suggest that this familiarity causes trust because according to research of Padel and Foster (2005), which emphasizes on the reliability of a certified organic logo, state controlled certified organic logos were experienced less reliable than organic logos from independent organizations (such as EKO) because the independent logos were more transparent in conveying their standards on their nongovernmental websites.

Figure 2.1 Dutch organic 'EKO'-logo.



Figure 2.2 European organic logo.



Yet, when investigating both the website of the EKO mark and of the European organic logo, the latter seems to be more transparent based on the information provided. The EKO mark only claims itself to be a trustworthy and independent organization without giving insights in the checking process (EKO, 2014). The European logo on the other hand is controlled by the European administration and its official website reports every single detail about checking farmers before they can sell their products as organic. Their website also reports that this governmental body decides the rules that products need to meet in order to be called biological or organic. For the European organic logo the Dutch organization Skal, apportioned by the Ministry of Economic Affairs, monitors and inspects the labelling of food products with the organic logo on a national level by following the European standard in order to offer the European organic logo to Dutch farmers. This organization is officially recognized by the Dutch Council for Accreditation and takes actively part in the international association European Organic Certifiers Council. Skal states that its main objective is to provide to consumer certainty about the origin of a product. Annually, representatives visit every certified organization at least one time to inspect the organization and decide whether additional investigation is required to maintain the organic certification (Skal, 2014).

Whilst the EKO logo already exists for a longer time than the European organic logo in its current form and while the study of Padel and Foster (2005) indicates less trust in state controlled certification organizations, throughout this study the European organic logo will be used. This choice for this widespread logo is motivated by the fact that the use of the

European organic logo makes this study easier to generalize to the European market.

2.1.2 What is an organic (ethical) claim?

After having assessed the organic logo in the previous paragraph, this paragraph will focus on the organic claim. In order to gain some better understanding of organic claims, this paragraph will provide background information about the definition of an organic claim, the use of organic claims on food packaging material and what kind of claim is employed for this research.

First of all, according to the Dutch government organic claims may only be put on food packaging material if they are accompanied by a certified organic logo to validate the claim (Rijksoverheid.nl). Therefore, when we refer to the organic claim in this study a combination of the organic logo and an organic claim is meant. Moreover, organic claims belong to several categories of claims. First of all, according to studies of Schuldt, Muller and Schwarz (2011) and Naspetti and Zanolli (2011) organic claims belong to the category of *ethical* or *values-based* claims (p. 2). Besides organic, also fair trade and the term locally produced belong to these ethical claims. Another category for the organic claim is formulated as *process* claim, since organic claims imply the origin and production process (Boysen Anker, Sandøe, Kamin & Kappel, 2011).

Such process claims usually promote positive aspects or benefits of a (in general) not so healthy product because these benefits are “consistent with the intended meaning of the claim” according to research of Schuldt and Hannahan (2013, p. 76). Examples of such claims are the low-calorie or no cholesterol claims. Organic claims are almost similar to these two mentioned. The only difference is the phraseology: Claims promote the organic origin of food products such as all natural or organic (see for examples figure 2.3 and figure 2.4) (Schuldt & Hannahan, 2013, p. 76). Additionally, according to a study of Leathwood et al. (2007) claims such as organic phrases on food packages can be used by consumers to decide more easily what purchases need to be made based on perceived beneficial characteristics. Shorter claims comprising only one term turned out to be more successful in conveying the message than longer phrases according to research of Bond, Thilmany and Keeling Bond (2008).

In the Netherlands diverse types of organic claims exist, such as *biologisch* or *natuurlijk*. Figure 2.3 and figure 2.4 represent two examples of organic claims that are used on organic products in the Dutch supermarkets Deen and Albert Heijn. Throughout this research, the organic claim based on the one-termed example in figure 2.3 will be replicated

to assure that respondents are not biased when recognizing the claim of a certain supermarket (see figure 2.5).

Figure 2.3 Organic claim of Dutch supermarket Deen.



Figure 2.4 Organic claim of Dutch supermarket Albert Heijn.



Figure 2.5 Organic claim used throughout this study.



2.2 Purchase intention (part two)

After having discussed the two logo conditions, the current section, part two of the literature review, dives into the impact of logo conditions on purchase intention. This second section also introduces two different product types; healthy and unhealthy. The distinction between those two product types was made because currently organic logos and claims appear more often on both healthy and unhealthy products such as chocolate spread and crisps (Schuldt & Hannahan, 2013) at times where already 65% of the consumers is conscious about personal health ('T Sant, 2009). The paragraphs below will therefore assess earlier research on the impact of organic logos and claims on both healthy and unhealthy products on purchase intention. The following paragraph will be dedicated to what is meant by purchase intention.

2.2.1 What is meant by consumer' purchase intention?

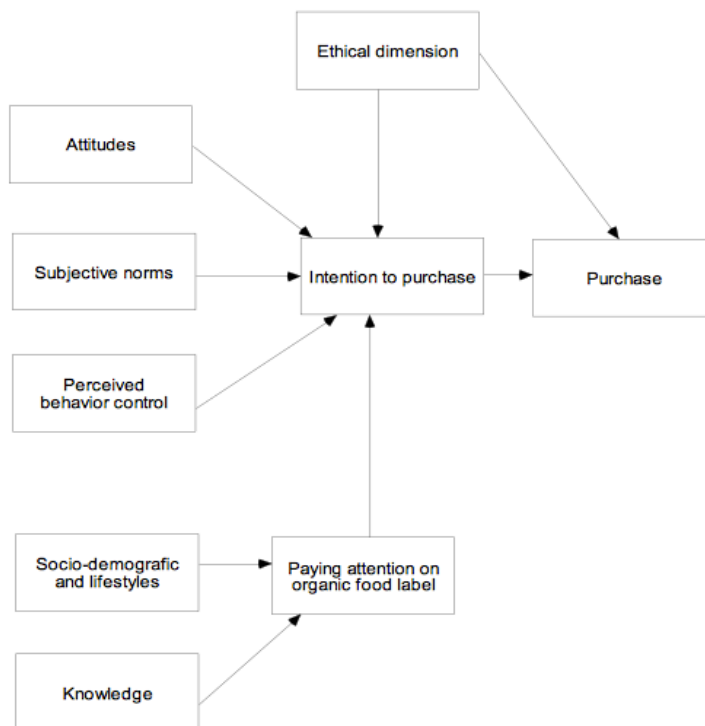
Numerous scientific articles discussed incentives that affected consumer' purchase intention. Purchase intention can be defined as the intent of an individual, after making personal considerations, to purchase a certain product (Khan, Ghauri & Majeed, 2012). According to the study of Bonti-Ankomah and Yiridoe (2006) consumers could experience skepticism and uncertainty from attributes on organic products, which could lead to an obstruction in considering an organic purchase.

In order to offer a little more depth to this research and to provide an accurate overview for why certain consumers are willing to purchase food products with an organic logo and claim and why certain consumers are not, other motivators than only an organic logo or claim needs to be taken into account. Several studies have indicated that there are many different factors that can affect purchase intention other than the presence or absence of a front-of-pack logo or claim (see for example Tarkiainen & Sundqvist, 2005; Vermeir & Verbeke, 2006; Paul & Rana, 2012). To show that this master thesis only conducts research on just a small element of the whole construct that constitutes purchase intention, a broader theory is used to gain insights in drivers of purchase intention; the theory of planned behaviour designed by Azjen (1991). The TPB is defined by Azjen (1991) is a theory that is known for one central factor: “The individual’s intention to perform a given behaviour” (p. 181). Numerous articles already discussed the theory of planned behaviour and adapted it to the context of purchase intention of organic food products to analyse the impact of different factors on purchase intention (see for example Cook, Kerr & Moore, 2002; Tarkiainen & Sundqvist, 2005; De Magistris & Gracia, 2012).

For the current study the purchase intention model based on the TPB, which is adapted by De Magistris and Gracia (2012) can give a comprehensive overview of the other factors that play a role in purchase intention of which logo condition is just one component (see figure 2.6). De Magistris and Gracia (2012) adapted this theory to the context of organic food with a specific focus on organic logos. The elements attitude, self-knowledge and subjective norms, socio-demographics and lifestyle, perceived behaviour control and ethical dimension of this model are used in the study of De Magistris and Gracia (2012) to find out what types of consumers would buy food products with or without organic an organic logo. Research of Vermeir and Verbeke (2006) confirms these determining factors for purchase intention of organic food.

After this general explanation and overview of what constitutes the concept purchase intention, the next paragraph will dive into previous studies on the relationship between the organic logo and purchase intention. Furthermore, the next paragraph will also present the first alternative hypothesis accompanied by a null-hypothesis of this study. The alternative hypothesis is based on earlier research and the null-hypothesis can be described best as “representing no difference between population parameters of interest” according to Anderson, Burnham and Thompson (2000, p. 912).

Figure 2.6 The theory of planned behaviour adapted by De Magistris and Gracia (2012).



2.2.2 What is the relationship between an organic logo and consumer' purchase intention?

The relationship between organic logos and purchase intention is a frequently discussed one. According to Rana and Paul (2012) and Schuldt and Hannahan (2013) logos are able to communicate and convey the message behind organic food such as the health benefits, quality and taste, while the study of Janssen and Hamm (2012) questions the impact of front-of-pack food logos and labels because consumers might misapprehend the message of the logo. Research of Feunekes, Gortemaker, Willems, Lion and Van den Kommer (2008), which is on the same side as Rana and Paul (2012) and Schuldt and Hannahan (2013) states that simple labels or logos on food packages without detailed information are experienced as rather easy to use for consumers, mainly because it saves time in comparison to processing the nutritional information on the back of the package. In addition, this research mentions that consumers even stop their search query for product information after exposure to a simplified front-of-pack logo. Research of Yiridoe, Bonti-Ankoma and Martin (2005) also suggests a positive relation between purchase decision and logos. Moreover, the study of Grunert and Wills (2007) acknowledges that labels are useful tools for making purchase decisions. Their study revealed that the logo supports the objective of creating a healthy diet and at the same time consumers have the freedom to choose for themselves. Also the study of Hoogland, De Boer

and Boersema (2007) shows that despite that consumers estimated the price of food products with a logo higher food products with an organic logo were considered to have more positive attributes, which enhanced the intention to purchase the specific product.

Hence, although there is one exception, almost every study assessed above indicated one single conclusion: Logos seem have a positive impact on purchase intention, meaning that according to these studies purchase intention increases when food products contain a logo. It is therefore expected that: **H1**: Organic food logos affect consumer' purchase intention in a positive manner. In this case the null-hypothesis that belongs to this alternative hypothesis is **H0**: Organic food logos do not affect consumer' purchase intention in a positive manner.

Now that the first prediction is made, the following paragraph is going to introduce previous literature on the impact of the organic logo on both healthy and unhealthy products on purchase intention.

2.2.3 What is the relation between and organic logo and purchase intention towards (un)healthy food products?

Organic logos appear more frequently on all sorts of products other than fresh fruits or vegetables (Schuldt & Hannahan, 2013). According to a study of De Magistris and Gracia (2008) consumers that try to live a healthier lifestyle are more likely to purchase products with an organic logo since such products are perceived as healthier than regular products irrespective of raw or processed products. Furthermore, this study has found that logos are perceived as search tools that enhance the product's credibility and make the decision to purchase easier. The study of Bauer, Heinrich and Schäfer (2013) confirms the fact that the organic logo or label influences purchase intention positively regardless of the type of product, since the organic logo represents quality brand performance. When the brand performance is experienced positively, positive attitudes are stimulated and a positive attitude is a condition for the objective to purchase a particular product.

Likewise, according to research of Chrysohoidis and Krystallis (2005) logos even have influence on purchase intention of products that are normally perceived as unhealthy without a logo (e.g. chocolate bars or cookies). This study also states that consumers that purchase food products with an organic logo have the feeling that they "follow a balanced and healthy lifestyle" (p. 594), even if this product is processed rather than fresh.

As the overall assumption turns out to be that the organic logo enhances purchase intention of both healthy and unhealthy products, the two alternative hypotheses for both healthy and unhealthy products read as follows: **H2a**: The organic logo affects purchase

intention of healthy food products positively and **H2b**: The organic logo affects purchase intention of unhealthy food products positively. This brings us to the following null-hypothesis: **H0**: The organic logo does not affect purchase intention of (un)healthy food products positively.

After having evaluated logo impact and the effect of product type on purchase intention, the following two paragraphs centre around the impact of the organic claim and product type on purchase intention.

2.2.4 What is the connection between organic claims and purchase intention?

The connection between organic claims and purchase intention is an indecisive one according to earlier studies. In general, claims have a positive effect on purchase intention according to the study of Kozup, Creyer and Burton (2003). Yet, this study is not specified in the relationship between organic claims and purchase intention. A study that focuses specifically on the connection between organic claims and purchase intention is the one of Bartels and Onwezen (2014). This study suggests that consumers that are able to identify themselves with organic consumers are willing to buy or have the intention to purchase organic products that contain an organic claim. Furthermore, other research that has found evidence for a positive relationship between organic claims and purchase intention is formulated by Williams (2005). Williams' study (2005) reported that the consumer experiences products with an organic claim as healthy and therefore, purchase intention is higher when compared to products without the claim. Additionally, research of Laroche, Bergeron and Barbaro-Forleo (2001) and Young et al. (2010) indicated growing motivations for purchasing products that claimed to be green. However, many other studies of for example Erskine and Collins (1997), Weightman and McDonagh (2004) and Valor (2008) have found that sustainability claims such as the organic claim seldom influences purchase intention.

Since there are contradictory findings quantity obtains a privileged position over quality of study. The amount of studies found that have shown a positive effect of organic claims overruns the amount of research that has found the opposite. Therefore, induced from these arguments and deliberations, the following hypothesis is formulated: **H3**: The organic claim will influence purchase intention in a positive manner. This leads to the next null-hypothesis: **H0**: The organic claim will not influence purchase intention in a positive manner.

The next paragraph is going to introduce previous literature on the impact of the organic claim on both healthy and unhealthy products on purchase intention.

2.2.5 What is the relationship between an organic claim and purchase intention towards (un)healthy food products?

The relationship between organic claims on both healthy and unhealthy products and purchase intention is rarely investigated in prior research. Research of Levy and Derby (1999) reported that products with claims make consumers perceive that product overall more positive. Additionally, their study asserts that consumers perceive claims as more valuable than back-of-pack nutrient facts panel. Levy and Derby (1999) did not exactly specify on the impact of organic logos, which could make one question the argument. Although organic claims are received as indirectly healthy (Schuldt & Hannahan, 2013), more recent studies state something different such as the study of Skibbe (2012), which states that consumers are more likely to buy food products with claims that are healthy (such as vegetables and fruit) rather than a product with a claim that is determined as unhealthy (chocolate for example).

Furthermore, while the study of Williams (2005) mentions that the organic claim overall stimulates purchase intention indicating that both healthy and unhealthy products profit from an organic claim and stimulate purchase intention, the more recent study of Van Doorn and Verhoef (2011) confirms the results of the study of Skibbe (2012) by indicating that there is no evidence for adopting the assumption the organic claim increases purchase intention of both healthy and unhealthy products. These researchers suggest that organic claims have an effect on perceived quality, which leads to purchase intention. Quality, then again, depends on whether the food product belongs to the group of unhealthy (vice) or healthy (virtue) products. This research of Doorn and Verhoef (2011) also suggests that for unhealthy or vice products the organic claim affects quality negatively and therefore purchase intention as well. On the other hand, healthy or virtue products with an organic claim affect perceived quality positively and in doing so, purchase intention is influenced positively too.

Since the studies that suggest different responses to healthy and unhealthy products with an organic claim are the most recent studies which are underpinned with reliable tests, this brings us to the following two hypotheses, one for the healthy product type and one for the unhealthy product type: **H4a**: An organic claim affects purchase intention of healthy food products positively and **H4b**: An organic claim influences purchase intention of unhealthy food products negatively. These hypotheses are accompanied by the null-hypotheses, which are respectively **H0**: An organic claim does not affect purchase intention of healthy food products positively and **H0**: An organic claim does not influences purchase intention of unhealthy food products negatively.

With this final paragraph of section two, it is time to move on to the third part of this literature review, which focuses on logo conditions, product types and health perception. The next few paragraphs will be structured in the same way as part two of this chapter.

2.3 Health perception (part three)

Now that part two about purchase intentions is concluded with two alternative hypotheses accompanied by two null-hypotheses, the third part will focus fully on prior literature on the impact of logo conditions and product type on health perception. The following paragraph will be dedicated to what is meant by health perception.

2.3.1 What is meant by health perception?

The term health perception indicates the subjective degree of healthiness given to a certain product according to an individual's perspective and the perception of how this product can improve personal health (T Sant, 2009). A study of Naspetti and Zanolli (2009) states that health perception is based on one general chain of consecutive ideas. This chain of consecutive ideas also counts for organic food products. This idea of bias based on a chain of consecutive ideas was formulated for the first time by Thorndike (1920) in his article "A constant error in psychological ratings" in which he measured the correlations between different traits of employees that were working at two major industrial corporations. Thorndike (1920) found that these distinctive traits showed a strong interdependence. He called this the *halo-effect* (p. 27). Thorndike (1920) explains the concept as follows: "Obviously a halo of general merit is extended to influence the rating for the special ability, or vice versa" (p. 27), indicating that one single object or person cannot be seen as composition of different qualities, but that those qualities are influenced by other qualities.

The halo-effect is reflected in the food industry of organic products according to research of Aschemann-Witzel, Maroschek and Hamm (2013). They namely state that one of the most important motives for purchasing organic food is investing in personal health. Organic products are thus loaded with a health-halo. The findings of the study of Naspetti and Zanolli (2009) confirm this health-halo by mentioning that the chain of consecutive ideas consists of the fact that consumers perceive organic food products as healthy because these products contain less or no additives. This idea is followed up by the idea that the presence of less or no additives gives the secure feeling that these products are naturally produced and that they are eating healthy and finalizes by thinking that eating healthy causes less health

problems, which makes consumers feel that they are investing in personal health by purchasing organic food products.

The next paragraph will examine the role of organic logos as part of the health-halo on health-perception and evaluate whether they exert a deal of influence on health perception or not.

2.3.2 What is the connection between an organic logo and health perception?

Although research provided evidence for the fact that products with an organic label are not healthier than conventional food products, many consumers do have the perception that it is healthier (Hoefkens et al., 2009; Abrams, Meyers & Irani, 2010). A study of Feunekes, Gortemaker, Willems, Lion and Van den Kommer (2008) reported results on the effect of food logos on the ability of consumers to comprehend the logo and how it affects the realization of a healthy food choice. From the tests conducted throughout the study of Feunekes, Gortemaker, Willems, Lion and Van den Kommer (2008) it turns out that logos have an increasing effect on health perception of the product that contains a logo. Moreover, the studies of Lee, Shimizu, Kniffin and Wansink (2013) and Hsu and Chen (2014) confirm the increased health perception of foods with an organic label. In addition, research of Black and Rayner (1992) acknowledges as well that consumers experience difficulties with deciding whether a product is healthy or not and logos simplify the information processing process. Moreover, this study also states that consumers are likely to look for only one central cue in qualifying the healthiness of the product.

Since all of these earlier studies mentioned above all seem to indicate consensus regarding a positive impact of organic logos on health perception, the following hypothesis is presumed: **H5**: Organic food logos have an increasing effect on consumer' health perception. This hypothesis must be accompanied by the null-hypothesis which reads **H0**: Organic food logos do not have an increasing effect on consumer' health perception.

Now that the relationship between the organic logo and health perception is discussed, the subsequent paragraph is going to assess logo impact on both healthy and unhealthy products on health perception according to previous academic literature. Then again, based on earlier research assumptive hypotheses will be deployed.

2.3.3. What is the connection between organic logos and health perception towards (un)healthy food products?

As already mentioned in the previous paragraph, research of Aschemann-Witzel, Maroscheck and Hamm (2012) states that consumers mention investing in personal health as a key motive for purchasing organic food. Furthermore, they suggest that being aware of eating healthy was precisely why logos and claims appeared on the processed food market as a form of communication toward the consumer. Moreover, this study of Aschemann-Witzel, Maroscheck and Hamm (2012) also mentions that it is roughly said peculiar that similar logos appear on both processed food products such as crisps and hazelnut-spread and on fresh products such as fruit and vegetables, because organic food and processed food are perceived as each other's opposite. Additionally, the study states that consumers perceive processed food as unnatural. Thus, one would expect that consumers experience processed food, even with an organic logo, as unhealthy. This study also suggests that consumers tend to accept a logo depending on the health image that the product in question has, mostly based on the ingredients.

Yet, research of Bauer, Heinrich and Schäfer (2013) suggests that organic logos do affect health perception of products in general, meaning that both processed and fresh products are influenced positively. Dutch grocery stores such as Albert Heijn sell organic chocolate-hazelnut spread and organic crisps. These products could be considered as processed food, which is quite unhealthy (Skibbe, 2012). According to research of Schuldt and Schwarz (2010) and Schuldt and Hannahan (2013) processed food with an organic logo most of the times contains the same amount of calories, sugars and fats as regular food products without an organic logo, but consumers still experience unhealthy products such as cookies with an organic logo as healthier. In addition, research of Baggerman and Hack (1992) shows that practically every consumer considers products with an organic seal as healthy.

Due to the ambiguous results of earlier reported studies, for the following hypotheses are formulated based on the findings of the majority. The bulk of researchers that suggests a positive impact of organic logos on both healthy and unhealthy products prevails. Therefore, the next two hypotheses are presumed: **H6a**: The organic logo affects the health perception of healthy products positively and **H6b**: The organic logo influences health perception of unhealthy food positively. For these two alternate hypotheses the following two null-hypotheses must be accompanied and are enumerated in the same order as the alternate

hypotheses. **H0**: The organic logo does not affect the health perception of healthy products positively and **H0**: The organic logo does not influence health perception of unhealthy food positively.

After having examined the influence of organic logos on health perception, the following two paragraphs focus on the impact of organic claims on health perception.

2.3.4 What is the connection between an organic claim and health perception?

In general, communication in the form of claims on food products should be well-defined, explanatory and most importantly, short in order to stimulate healthier food choices and improve positive thoughts about the product characteristics (Bond, Thilmany & Keeling Bond, 2008; Möser, Hoefkens, Van Camp & Verbeke, 2010). Therefore, short organic claims such as all natural and organic could function as strong communication tools (Williams, 2005). Besides being strong communication assets, according to research of Boysen Anker, Sandøe, Kamin and Kappel (2011) processing claims such as organic claims indicate the healthfulness of a product and by categorizing products with a claim, products become differentiated from others based on their wholesomeness.

As the introductory chapter already emphasized, numerous studies have found an important motivational factor for improving personal health in purchasing organic food products (see for example Tarkiainen & Sundqvist, 2005; Aertsens, Verbeke, Mondelaers & Van Huylbroeck, 2009; Naspetti & Zanolini, 2009; Abrams, Meyers & Irani, 2010; Perrini, Castaldo, Misani & Tencati, 2010; Schuldt & Schwarz, 2010; Aschemann-Witzel, Maroscheck & Hamm, 2013). Whilst, research of Bond, Thilmany and Keeling Bond (2008) and Aschemann-Witzel, Maroscheck and Hamm (2013) propose that organic food claims alone do not affect health perception considerably, indicating that certified logos need to support the claim, research of Schuldt and Schwarz (2010) advocate the exact opposite by suggesting that organic claims do play a key role in positive health perception of products. This study mentions that products with an organic claim are perceived as healthier than products without the claim, although the calorie-content is the same. This misunderstanding is caused by a presence of claims such as without pesticides and all natural and a lack of claims on calorie-content. Unwarranted inferences are created through this manner of communicating food attributes when it comes to health perception.

Ascribing positive aspects to products with an organic claim can be seen as a result of the halo-effect according to the study of Schuldt and Hannahan (2013). The halo-effect

involves the first optimistic idea or feeling that is left by an experience, which encourages consequent optimistic appraisals that might be unjust (Thorndike, 1920). This means that organic claims can make consumers draw inconsistent conclusions from claims on food packages.

Likewise, research of Schuldt and Hannahan (2013) also emphasizes that since organic claims start appearing more frequently on less wholesome food products, the halo-effect is likely to show up as well. Their study reported that claims on food products have an overall healthy connotation, which could cause consumers experience health-halos towards unhealthy products. A study of Bech-Larsen and Grunert (2003) confirms the findings of Schuldt and Hannahan (2013) by suggesting that organic food claims are able to affect health perception of both healthy and unhealthy food products.

Leading from these findings assessed above representing a positive relationship between organic logos and health perception, the next statement is hypothesized: **H7**: The organic claim will influence health perception in a positive way. The null-hypothesis that belongs to this hypothesis reads as follows: **H0**: The organic claim will not influence health perception in a positive way.

The following and final paragraph of this literature review will conclude the chapter by reviewing previous research on the impact of organic claims on health perception of healthy and unhealthy products.

2.3.5 What is the connection between an organic claim and health perception towards (un)healthy food products?

The study of McIntyre and Baid (2009) proposes that consumers related the term organic on food products to wholesomeness and characterized the product as overall healthy, but products that belong to a less healthy category, such as chocolate cookies and crisps with the term organic on the food packaging material did not lead to an increased experience of health.

On the other hand, research conducted by Krystallis and Chrysochou (2012) states that, since claims can stimulate the health-halo, industrial fabricated foods can be experienced even healthier than fresh products when the healthy message – in this case would that be an organic logo – is spread on the packaging material.

Besides these two adverse findings, a few other studies have found even other results. Since organic claims are present on healthy products and start to appear more frequently on unhealthy food products, the halo-effect invented by Thorndike (1920) and explained by the recent study of Schuldt and Hannahan (2013) will be invoked by both types of products. This

indicates that consumers overall will rate either healthy or unhealthy products with an ethical organic claim as healthier. Evidence for this is also found by research of Schuldt, Muller and Schwarz (2011). This study has found that consumers judge chocolate cookies baked with organic flour healthier with less calories than conventional cookies produced without organic flour. Furthermore, the study of Falguera, Aliguer and Falguera (2012) substantiates these findings by stating that “consumers perceive foods labelled as organic to be healthier” (p. 277), mainly because of food safety, indicating that there is no difference between healthy and unhealthy products.

Thus, with three different viewpoints it is not quite clear from previous studies to what extent organic claims affect health perception of healthy and unhealthy products. Therefore, the assumptions hereafter are based, again, on the majority of findings. This leads us to the proposed hypotheses: **H8a**: An organic claim affects health perception of healthy food products positively and **H8b**: An organic claim influences health perception of unhealthy food products positively. The null-hypothesis that belongs to these alternate hypotheses is **H0**: An organic claim does not affect health perception of (un)healthy food products positively.

Now that the theoretical framework is evaluated and assessed and now that hypotheses for the study are formulated, the subsequent chapter, chapter 3, is constituted by the methodological groundings for this research and will present step by step how the study is going to be conducted.

3. Methodology

After having considered prior research on organic logos, claims and product type on purchase intention and health perception in the previous chapter, this methodological chapter explains what methods are going to be used in this thesis and why. Moreover, the units of analysis will be mentioned, the choice of time period for this research, whether a research sample will be used or not, the amount of units of analysis that will be studied will be explained, what sorts of data will be collected, how and where the data will be collected, and finally the ways in which the data will be interpreted and analysed is explained.

3.1. Choice of methods

The choice of methods will describe what kind of research will be conducted and which research design will be exerted throughout the study. Existing literature will support these choices. The next paragraph will start with explaining the choice for a quantitative research design.

3.1.1 Quantitative research design

In order to answer the research question ‘to what extent do organic logos and organic claims affect consumers’ purchase intention and health perception?’ this master thesis will conduct quantitative research. According to Muijs (2011) a quantitative research design is characterized by the explanation of variables (phenomena) through the collection of numerical data. Subsequently, these – mostly large amounts of – data are analyzed with methods that are derived from mathematics. Furthermore, according to Gilbert (2008), the main advantage of using quantitative data is “[...] its relative precision and lack of ambiguity” (p.35). Moreover, Tewksbury (2009) states that quantitative research processes have the ability to predict phenomena and the strength of the relations between these phenomena. Additionally, when making predictions, forecasts are only something worth when they are measured exactly and exemplified with numbers. Thus, probabilities need to be calculated. Research of Muijs (2011) confirms that predictive questions can be best answered by quantitative research methods. Deduced from this information, quantitative methods are required for this inquiry because the research question for this thesis is of a predictive nature. This research namely tries to predict to what extent consumers’ purchase intention and health perception are affected by an organic logo and claim. To determine precisely to what extent there is an impact, the only way is using quantitative methods.

3.1.2 Experimental design

To test the hypotheses discussed earlier at the end of the paragraphs in chapter two, an experimental research design will be used. Research of Lipsey (1990) states that experimental designs usually are formed around treatment effectiveness, which means that this method tests whether a certain treatment or manipulation has effect on the behavior of a participant and compares this treatment to a control group of participants who do not have that manipulation tested. To answer the research question ‘to what extent do organic logos and organic claims affect consumers’ purchase intention and health perception’ an experimental design is required, because a distinction must be made between a manipulated group and a control group. One group needs to be exposed to a food communication in the form of a food package containing the organic logo of the European Union, one food package with the organic claim and one without the logo or claim. The last one functions as the control group of the experiment. To specify the research design, a survey questionnaire will be used to obtain the data. With a real-life survey questionnaire instead of an online survey questionnaire a more random selection of participants can be selected depending on the location and time of asking people to participate in front of a supermarket.

3.2 Sampling

The following three paragraphs are going to explain and discuss the target population for this study, the sampling design and the response rates that were found after recruiting participants to fill out the questionnaires.

3.2.1 Target population

According to research of Rosendo Ríos and Perez del Campo (2013) defining the target population for research is of great importance, because formulating the target audience inaccurate can result in unsuccessful research in which the results are deceptive. This study also cites that “a target population should be defined in terms of elements, sampling units, extent and time” (p. 193). These terms will be explained and connected to the current study.

First of all, the element indicates each individual or object that the researcher requires to obtain the desired data. In this master thesis every respondent represents the element.

Second, the sampling unit is constructed by the unit that possesses the element that is accessible somewhere in the sampling practice. For this master thesis the sampling unit is represented by a couple of Dutch supermarkets including Albert Heijn, Deen Supermarkten and Dirk van den Broek. In these supermarkets many elements or consumers, both men and women, from at least 18 years old will be asked to participate in this experiment. Furthermore

the participants are selected on Dutch nationality since this study focuses on the effect of organic logos and organic claims on both purchase intention and health perception in the Netherlands. This does not imply that people with another ethnic background are excluded from being approached to participate in this study because most will have a Dutch nationality. Thus, practically every consumer in and around different Dutch supermarkets has the same chance to become chosen to participate in this experiment – if they fill out the consent form. The actual sampling frame will be constructed by enumeration of all consumers that participated.

Subsequently, the third term is the extent of the target population. The extent signifies the “geographical boundaries” (p. 193). In this case, as already mentioned, the geographical boundaries are determined by the Dutch borders.

Finally, with the term time the calculated period for fieldwork is meant. The time period for fieldwork of this thesis is approximately between the one and two weeks for the approach of at least 180 subjects.

3.2.2 Random sampling design

According to Gideon (2012) a sample could be defined as “a group of subjects selected from a larger group in the hope that studying this smaller group (the sample) will reveal important information about the larger the group (the population)” (p. 53).

For this master thesis the group of selected subjects or desired sample size was determined by the independent variables (no logo vs. organic logo vs. organic claim) and the dependent variables (healthy food product vs. unhealthy food product), which together create a 3x2 design. This denotes that six experimental cells are required. For every experimental cell the conditions are different. The study of Christensen (2007) provides guidelines for the size of subjects for each condition. This study namely suggests that for every experimental cell or condition approximately between the 30 and 50 respondents are required. This means that for this master thesis a sample size of at least 180 and a maximum of 300 subjects is needed. Thus, the desired sample size consists of at least $N = 180$ subjects.

The used method to obtain this sample size is non-random convenience sampling. Although the study of Gideon (2012) states that non-random convenience sampling is regularly not a suitable method for survey research, it is appropriate for experimental research if participants of the experiment provide enough demographic data to the researcher. Moreover, the study defines non-random convenience sampling as the simple act of including

participants that are available or easy to recruit in a sample for a study. The downside is that it is not possible “to make statistical generalizations” based on this type of research (p. 66). For this master thesis non-random convenience sampling takes place in front of supermarkets, so that all types of consumers (students, adolescents, middle-aged and elderly) can be included. The fact that almost everyone is a consumer – makes non-random convenience sampling appropriate. Since consumers are asked to participate in and around supermarkets such as Albert Heijn and Deen Supermarkten, a fair representation of different ages can be created. This means that the researcher can steer the diversity of the participants in comparison to a questionnaire provided on the Internet, which can easily create a snowball-effect of friends of friends that fill out the online questionnaire (Gideon, 2012). Also, the survey questionnaire was filled in in real life instead of via Internet surveys to retain the smallest risk possible for unsystematic variation (Field, 2009).

Additionally, a reasonable representation of the Dutch population is created for this master thesis by selecting an amount of participants, both men and women that is similar to the Dutch statistical population composition determined by CBS (Centraal Bureau voor Statistiek) in a population pyramid. According to CBS the Netherlands counts a population of 16,8 million citizens in 2014, of which approximately 50 percent is male and 50 percent is female. Therefore, the sample of this master thesis should consist of roughly 90 men and 90 women. Moreover, the largest share of the population is should be represented by Dutch inhabitants in the age between 18 and 66 (CBS.nl). Hence, this part of the population is represented accurately in the sample.

3.2.3 Response

Since the sample was constituted as a selected sample, the total amount of participants that contributed successfully to this experiment was a little more than the required amount of 180. The total amount of participants is $N = 196$. With this amount the minimum level was achieved. Although this sample differed from the desired population in a way that the male-female ratio is not precisely 50/50, the realized ratio corresponds narrowly with 44,9% male respondents and 55,1% female respondents. As seen from experience by recruiting participants to fill out the questionnaire in real life, an overall larger share of females take care of grocery shopping. It was sometimes quite difficult to find males to fill out the survey questionnaire in and around supermarkets.

From the 196 respondents, three respondents did not fill out their age. This brings the sample to 193 respondents concerning the age variable. The age ranges of the respondents are

diverse. Respondents are in between the age of 18 and the age of 82 with a mean age (M_{age}) of 36,58 ($SD = 15,31$).

Furthermore, the education level variable has a response rate of 195 out of 196. The responses of these 195 respondents roughly correspond with the education of the labor force in the Netherlands as registered at the CBS (CBS.nl). For 3,1% of the participants the primary school level was their highest education level. The participants that finished VMBO as their highest level is represented by 6,6% and 9,7% of the participants completed the Havo/VWO level. The group of that followed MBO is embodied by 20,4% of the sample. The HBO level is completed by 41,8% and 17,9% finalized the WO level. The percentages for these levels according to the CBS are circa respectively; 9%; 30%; 10%; 31%; 15%; 3,7%.

Besides age and education level also income was queried. Four of the 196 participants did not fill out the final question concerning the annual gross income. This indicates that the sample for this variable consists of 192 respondents. The largest group of respondents belongs to the category of from €0 to €32500 (or one time gross modal income). This category is represented by 62,5 percent. The second largest group is represented by 22,9% and indicates an annual gross modal income between €32500 and €48750. The group with an income between €48750 and €65000 embodied 8,9% and lastly, the smallest group that denotes more than €65000 annual gross income represents 5,7% of the total sample.

3.3 Operationalization of concepts into variables

In the next few paragraphs the main variables for this master thesis will be discussed. For each of the variables the concepts on which it was based will be mentioned, but also how these variables were measured. For this master thesis the following variables are used in the experiment and will be reviewed in the same order: No logo; organic logo; organic logo and organic claim unhealthy food product; healthy food product; purchase intention; health perception and demographics.

3.3.1 No logo, organic logo and the organic claim

First of all the three independent variables no logo, organic logo and organic claim will be explained briefly. These three forms of communication assets on food packaging material are based on numerous scientific articles about food logos, labels and (health) claims that discuss these terms in relation to health perception, purchase intention, but also the understanding and inferences made based on the logo or claim in general (see for example: Grunert and Wills, 2007; Feunekes, Gortemaker, Willems, Lion & Van den Kommer, 2008; Boysen Anker, Sandøe, Kamin & Kappel, 2011; Janssen & Hamm, 2012 Schuldt & Hannahan, 2013). From

these three front-of-pack communication forms, the no logo condition serves as the control group since the impact of both the European organic logo and an organic claim needs to be tested. Therefore, the comparison needs to be made with a blank condition of the food package of both a healthy and an unhealthy food product. The three logo conditions, among which two groups comprise the manipulated groups, are tested on two different product types: A healthy and unhealthy product. Together these conditions form six experimental cells. This means that six different versions of the questionnaire will be used. Thus, to explain it clearly: The three conditions will be measured by providing participants with an image of a healthy or unhealthy food product, packaged with (1) no logo, (2) the European organic logo or (3) an organic claim. The impact of these independent variables on purchase intention and health perception is measured by asking questions related to purchase intention and health perception based on the image with one of the three conditions.

3.3.2 Pilot study for product selection: healthy and unhealthy product

As already described in the previous paragraph, for each of the six versions of the questionnaire a different image of offered to the participants (see for the six images appendix 1). Every version contains or no logo, or the European organic logo or a combination of the European organic logo with an organic claim. Next to these differences, also difference in product exists: A product that is perceived as healthy and a product, which is perceived as unhealthy. The healthy and unhealthy products are selected after conducting a pilot study among 20 participants that rated their health perception of fourteen products (see appendix 2). These fourteen products were provided by other studies. The first product is offered by the study of Schuldt and Schwarz (2010); Oreo chocolate cookies. The next eight products come from research of Tenbült, De Vries, Dreezens and Martijn (2007) about processing behavior of labeled food. These eight products are a tomato, chips, eggs, an apple, steak, ketchup, potato and beef. Furthermore, the study of Skibbe (2012) discussed four products that are “generally known as unhealthy products” (p. 12). These four products are ice cream, chocolate, pizza and French fries. Lastly, research of Tenbült, De Vries, Dreezens and Martijn (2005) postulated the final product that was used in the pilot study; fish fingers.

In this pilot study, 20 participants of which 70% was female and 30% male with a mean age of 30 ($SD = 13.7$) rated these fourteen products. From this pilot study turned out that from these fourteen products the tomato was perceived significantly as the healthiest from the list. However, after testing the survey questionnaire that was based on the packaged

tomato, criticism raised among the respondents. Five test respondents stated that they would not purchase the tomato since it was packaged. Because this was not the objective of the research, the tomato was altered into a packaged paprika since that recurs more often in Dutch supermarkets and responses towards a packaged paprika during the testing of the questionnaires were not about the fact that it is strange that one paprika is packaged. Before altering the tomato into a paprika, the pilot study was repeated with the same respondents and from this pilot study the paprika was experienced most healthy with a mean score of 6.5 on a scale of 1 to 7, where 1 represents very unhealthy and 7 very healthy, from the fourteen provided products. Crisps were perceived as the unhealthiest products of the list with a mean of 1.4 on a scale of 1 to 7. Therefore, the paprika and crisps are used in the questionnaire and represent respectively the healthy condition and the unhealthy condition.

3.3.3 Purchase intention and health perception

After having discussed the logo conditions and the product types derived from the pilot study in the previous paragraphs, now the following paragraphs will discuss on which the concepts purchase intention and health perception were based, and how these variables were measured.

The effect of the European organic logo and an organic claim purchase intention and health perception is measured in the questionnaire. Although recent research of Dawes (2008) revealed that there is not a significant difference in results between a 5-point and a 7-point Likert scale, all the questions can be answered with a 7-point Likert scale ranging from “I totally agree” to “I totally disagree”. According to Azzara (2010) the 5-point Likert scale has two disadvantages when comparing it to a 7-point Likert scale. First, a 5-point Likert scale only has a small scope with two extremes and one middle point. Therefore, this scale, in comparison to a 7-point Likert scale, “suffers from its own bounded parameters” (p.100). The second imperfection of the 5-point Likert scale is that many respondents tend to resist the filling in of extremes such as ‘always’ or ‘never’. This would influence the results. Azzara (2010) also points out that the 7-point Likert scale is able to improve variation in the end results.

The next paragraphs will discuss the exact questions that shaped the questionnaire to measure the two concepts purchase intention and health perception.

3.3.3a Purchase intention (3 items)

The first concept, purchase intention, is explained in chapter two within the theory of planned behaviour of Azjen (1991). Azjen (1991) describes the theory of planned behaviour as “the individual’s intention to perform a given behaviour”. For this master thesis research of De

Magistris and Gracia (2012) gave new insights into the theory of planned behaviour because these researchers adapted this theory to the context of organic food with a specific focus on organic logos (see paragraph 2.2.1). Purchase intention is measured in this master thesis on a three-item scale with a Cronbach’s Alpha of $\alpha = .91$, which shows as strong internal consistency (Pallant, 2010). The three questions used to measure purchase intention are given below in table 3.1. These three questions about purchase intention are based on one of the six provided images (see appendix A1).

Table 3.1 Statements used in the questionnaire to measure purchase intention.

Question	Borrowed from source	Transformed into statement
1. "Given the information on the front and back of the package, how probable is it that you would consider the purchase of the product?" (p. 474).	Burton, Garretson and Velliquette (1999)	"Look at the information on the package. Answer the statement: I would buy this product".
2. "Imagine that you are in a supermarket and that you are planning to purchase a product in the category X. How probable is it that you would buy product X depicted in figure Y" (p. 51).	Hoogland, de Boer and Boersema (2007)	"Look at the information on the package. Answer the statement: I would buy this product".
3. "How likely is it that you would consider purchasing product X, given a similar cost to other products" (p. 94).	Roe, Levy and Derby (1999)	"I would consider purchasing product X depicted in figure 1 if it was just as expensive as other products in the same category".

Furthermore, four statements are borrowed from the study of D.S. Carneiro et al. (2005) and depicted in table 3.2 below. These statements can possibly be used in the end of this study to give further explanations for certain choices of participants. This study is interested in what elements of a food package influences consumer’ buying intention. This study sums up four possible package attributes. These attributes are “price, brand, nutritional information and information on the type of product” (p. 276).

Table 3.2 Four statements from the questionnaire to, if possible, measure the elements that might drive purchase intention used in the questionnaire.

Question	Borrowed from source	Transformed into statement
1. “When you would buy a product, which characteristics got your attention? Price, brand, nutritional information or information on the type of product?” (p. 276).	D.S. Carneiro et al. (2005)	“If I consider to purchase product X, I take price into account”.
2. “When you would buy a product, which characteristics got your attention? Price, brand, nutritional information or information on the type of product?” (p. 276).	D.S. Carneiro et al. (2005)	“If I consider to purchase product X, I take the brand into account”.
3. “When you would buy a product, which characteristics got your attention? Price, brand, nutritional information or information on the type of product?” (p. 276).	D.S. Carneiro et al. (2005)	“If I consider to purchase product X, I take nutritional information into account”.
4. “When you would buy a product, which characteristics got your attention? Price, brand, nutritional information or information on the type of product?” (p. 276).	D.S. Carneiro et al. (2005)	“If I consider to purchase product X, I take information on the type of product into account”.

3.3.3b Health perception (5 items)

The concept health perception is described with the aid of the concept called halo-effect, which is described first by Thorndike in 1920 and which is explained extensively in research of Schuldt and Hannahan (2013) as the first optimistic idea or feeling that is left by an experience that encourages consequent optimistic appraisals that might be unjust.

Health perception is measured on a five-item scale, which is expressed below in table 3.3, in the same manner as purchase intention is measured: By asking participants questions about it while focusing on an image of a healthy or unhealthy product with no logo, an organic logo or an organic claim. Also for health perception the Cronbach's Alpha was measured. This time on a five-item scale with a very convincing internal consistency of $\alpha = .97$. Hence, no items had to be ignored.

Table 3.3 The five statements from the questionnaire to measure health perception.

Question	Borrowed from source	Transformed into statement
1. "How health-conscious do you consider yourself about food?" (p.67).	Bower, Saadat and Whitten (2003)	"I consider myself health-conscious".
2. "Based on the information provided, how important would product X be as part of a healthy diet?"	Roe, Levy and Derby (1999) and Kozup, Creyer and Burton (2003)	"Based on the information that figure X offers me, I consider the product in figure X part of a healthy diet."
3. "This product delivers an important contribution to my health" (p. 178).	Verhoef and Doorn (2011)	"This product delivers an important contribution to my health."
4. "If you were eating this product regularly, how would it affect your weight?"	Provencher, Polivy and Herman (2009)	"If I was eating this product regularly, this would contribute to my personal health."
5. "This product is healthful" (p. 351).	Walters and Long (2012)	"This product is beneficial for your health."

Table 3.3 shows the questions and how they are utilized in the questionnaire. Question four, borrowed from the study of Provencher, Polivy and Herman (2009) states: "If you were eating this product regularly, how would it affect your weight?" However, weight is not what has been investigated here, thus the variable weight is altered into the variable health. Furthermore, the question has to be altered so that the answer range is the same as for all the other questions. This leads to the following statement: "If I was eating this product regularly, this would contribute to my personal health." Finally, the fifth statement of this questionnaire comes from the study of Walters and Long (2012). This statement reads: "This product is healthful" (p. 351). Yet, for this questionnaire the term "healthful" is altered into beneficial for your health because by changing the term of the word measured in a study, internal validity is created (Jadoo et al. (2013).

3.3.4 Demographics

The last part of the questionnaire consists of personal questions to indicate the socio-demographic features of the participants. Socio-demographic information must be obtained according to Gideon (2012). As already articulated in paragraph 3.2.2 this researcher states

that non-random convenience sampling is only suitable for survey research when participants of the experiment provide enough demographic data to the researcher.

Secondly, socio-demographic data provides clarifying background information for certain choices that participants make. According to research of Croll, Neumark-Sztainer and Story (2001) eating behaviour depends the perception of what is considered as healthy and unhealthy food. Moreover, their research suggests that eating behaviour can be determined by lifestyle, knowledge, socio-demographics, attitude, behaviour and family background. Therefore, participants need to complete socio-demographic related questions that represent the background variables.

3.3.4a Sex

First of all, participants are asked to fill out their sex. The study of Neuhouwer, Kristal and Patterson (1999) suggests the close-ended question ‘what is your sex?’, which can be answered with either male or female.

3.3.4b Age

Furthermore, participants need to fill out their exact age. Formulating the open question ‘what is your age?’ creates the possibility to develop age categories that will be more precise than when asking participants for their age within one of the offered age ranges (Baarda, De Goede & Van Dijk, 2011).

3.3.4c Education level

The third question is borrowed from a survey-based study of Lappalainen, Kearney and Gibney (1998), which adds the question ‘what is your highest education level?’. This study suggests the answers of a primary, secondary or tertiary level. Yet, to adapt the answers to the Dutch schooling system nominal answer suggestions are borrowed from the study of Research Centrum voor Onderwijs en Arbeidsmarkt of Maastricht University (2009). The answers are (1) primary school, (2) VMBO, (3) Havo/VWO, (4) MBO, (5) HBO and (6) WO (p. 14).

3.3.4d Annual gross income

Lastly, the fourth question is formulated as “What is your annual gross income?” This question is provided by research of Choi and Pak (2005). These researchers stated that it is culturally necessary to ask European (and American) respondents for their annual gross income rather than their monthly gross income, which is generally more accepted in Asia.

Since the research for this master thesis is conducted in the Netherlands, Europe, this question has a better chance to be answered than the question about monthly gross income (Choi & Pak, 2005). The four possible answers for this question are based on the Dutch gross modal income, which represents €32500 euros annually (Rijksoverheid.nl).

3.4 Validity and reliability

Internal validity can be described as a characteristic of a study that implies “whether the causal findings deriving from an examination are relatively explicit” (Bryman & Cramer, 2005, p. 11). The study of Bryman and Cramer (2005) also mentions that one of the most important aspects of experimental research is that the study contains a control group to minimize contaminating aspects. The control group is characterized by “having the same cluster of experiences as the group which receives the first treatment” (p. 12). This is called the experimental group. For the current study, the control group is represented by the first logo condition, which entails the no logo condition. Two groups that represent different experimental groups are the organic logo condition and the organic claim condition. Internal validity is enhanced by the presence of both the control and experimental groups.

Furthermore, the study of Bryman and Cramer (2005) also suggests the requirement of a randomly assigned sample. Although a randomly assigned sample is appropriate to ensure internal validity, for this study a non-random convenience sample was applicable, as was explained in paragraph 3.2.2. Gideon (2012) namely stated that this form of sampling is appropriate for experimental research when respondents provide enough socio-demographical information. Additionally, the hypotheses that are formulated in chapter two and the questions that are deployed in paragraph 3.3.3a and 3.3.3b are grounded in previous academic literature, which increases internal validity.

3.5 Experiment

According to Field (2009) researchers that conduct experiments with controlled variables, of which two or more dependent variables embraced MANOVA (Multivariate Analysis of Variance) as their statistical method. This researcher states that MANOVA tests can be used to measure differences between groups based on the mean of those groups. Since this master thesis also conducts an experiment with different groups and two dependent variables (purchase intention and health perception), the MANOVA, which is a special form of regression analysis, will be accomplished.

According to Field (2009) two ways of collecting data exist: A within-subjects design

and a between-subjects design. The design used for this study is the between-subjects way of collecting data. The between-subjects manner indicates that for every experimental condition another group is used rather than using the same subjects for each condition. Although a between-subjects design is very time consuming, the study of Gravetter and Forzano (2012) cites that the key advantage for a between-subjects design is that a treatment effect is easier detectable – if it exists. Furthermore, this study also names the fact that a subject cannot be influenced by a learning curve, indicating that bias by seeing other conditions does not play a role. Besides, in this way the subject does not exactly know the objective of the research, which makes the responses also less biased. Therefore, this master thesis made use of a between-subjects design. This indicates that for every condition another group of subjects needs to fill out the questionnaire. Again, as research of Christensen (2007) stated, for every experimental cell or condition approximately between the 30 and 50 respondents are required. Since the experiment for this master thesis represents a 3 (no logo vs. organic logo vs. organic claim) x 2 (healthy food products vs. unhealthy food product) between-subjects MANOVA, this experiment consists of six cells. Repeating from paragraph 3.2.2 this means a minimum of 180 and a maximum of 300 participants need to fill out the survey questionnaire.

Besides calling the design of this experiment a MANOVA, another appellation for the design is a 3 x 2 factorial ANOVA because it contains more than one independent variable (Field, 2009). It is called factorial because when accomplishing ANOVA, variables are often called factors. To extend the name of the design even more, the term independent should be added to this design, because the term independent refers to an experiment with more than one independent variable that are tested among different respondents (between different groups) (Field, 2009). Therefore, the design of this experiment is called an independent 3 x 2 factorial ANOVA design formulated with different wording: A 3 x 2 between-subjects factorial ANOVA design.

However, when conducting the experiment in SPSS a MANOVA test is required due to several advantages over the ANOVA test, which will be discussed in the next chapter, the results of this experiment. The next paragraph will explain reasons and merits for using the MANOVA test further.

3.5.1 Reasons for MANOVA

Since an ANOVA analysis can only cope with one dependent variables and the experimental design of this master thesis contains two dependent variables (Pallant, 2010): Purchase intention and health perception, a MANOVA analysis is more appropriate here. In this design,

the product types (healthy and unhealthy) can be considered the within-factor.

The procedure that is utilized here is called 2 x 3 between-subjects MANOVA, because the design consists of two categorical, independent variables. The first independent variable is represented by logo condition, which consists of three different levels (no logo, organic logo, and organic logo with an organic claim). The second independent variable is product type, which is embodied by a healthy product and an unhealthy product. Besides the two independent variables there are two, as already named, continuous dependent variables that are related (purchase intention and health perception).

Furthermore, according to French et al. (2002) the key advantage of a MANOVA analysis over an ANOVA analysis is that the MANOVA analysis measures more than one dependent variable in one experiment, which enhances the chance to find out what factor is of real importance. A study of Field (2010) mentions that MANOVA also has a better chance in discovering effects because it takes correlations between the dependent variables into account as well. However, Tabachnick and Fidell (2007) make the cautionary comment that these correlations between the dependent variables cannot be too strong because this would decrease the power of the MANOVA analysis. A moderate correlation would be acceptable (Tabachnick & Fidell, 2007).

Finally, the one last advantage of MANOVA over ANOVA according to research of French et al. (2002) is that a MANOVA is able to overcome type 1 errors that would more easily occur when running several independent ANOVA analyses and that the MANOVA analysis discloses distinctions that ANOVA analyses cannot determine.

After this paragraph in which was explained why the MANOVA analysis was chosen, the next chapter offers and describes the results acquired by the conducted experiment.

4. Results

The previous chapters discussed the theory and the methodological procedure for the accomplishment of the experiment. Therefore, it is now time to find out whether the theory holds water when it is faced with empirical indications. This chapter is totally devoted to presenting the results that are acquired by running analyses in SPSS with the data set that was obtained by questionnaires filled out by 196 respondents. This chapter consists of four sections. In section 4.1 the descriptive results will be presented. This first part discusses details about the participants, including gender, age, education level and annual gross income. Besides the descriptive results, section 4.1 will also discuss the data preparation, such as preliminary results in the form of normal distribution and the reliability of scales with Cronbach's Alpha. Furthermore, section 4.2 functions as a build-up to conducting the MANOVA analysis. This paragraph will test assumptions that must be tested before a MANOVA analysis can be done (Pallant, 2010). The third section 4.3 mentions the equality of variances and the mean of every single experimental cell. Lastly, this chapter presents the results of a 3 x 2 between-subjects MANOVA by offering first the main and interaction effects for purchase intention in paragraph 4.4, followed by the main and interaction effects for health perception in paragraph 4.5. Presenting these results will reveal whether logo condition and product type have influence on purchase intention and health perception. This chapter will be closed with a conclusion.

4.1 Descriptive results

The participants for this experiment were recruited between the April 26th 2014 and May 5th 2014. In this time period a total amount of 196 respondents were conscripted to fill out one of the six versions of the questionnaire in and around the Dutch supermarkets Albert Heijn, Deen Supermarkten and Dirk van den Broek in Tilburg and in Amsterdam. For examples of the six versions of the questionnaires see appendix 1. From these 196 respondents only one respondent omitted one question concerning health perception: Three respondents did not fill out their age, one participant refused to answer the question on highest education level and four respondents did not provide their annual gross income. Thus, it can be stated that the response rates were overall very convincing.

4.1.1 Normal distribution of socio-demographics

After assessing the normality of the background variables, we can state that neither of these variables is normally distributed (see appendix 3). Normal distribution was measured via the Tests of Normality, which gives the results of the Kolmogorov-Smirnov statistic (Pallant, 2010). For the variables sex, age in years, highest education level and annual gross income this test gives a significance value of $p < .00$, which violates the assumption that this variable is normally distributed.

Table 4.1 Socio-demographics of the sample.

		Number of respondents	Percentage of respondents
Gender			
Male		88	44,9%
Female		108	55,1%
Age			
Minimum	age	18	-
Maximum	age	82	-
Mean	(μ)	36,6	-
Standard deviation (SD)		15,3	-
Education			
Primary	School	6	3,1%
VMBO		13	6,6%
Havo/VWO		19	9,7%
MBO		40	20,4%
HBO		82	41,8%
WO		35	17,9%
Income			
Between €1 and €32500		120	61,2%
Between €32500 and €48750		44	22,4%
Between €48750 and €65000		17	5,6%
More than €65000		11	2,0%

4.1.2 Data preparation

Since there were only six questionnaires of which one question was not answered, all the filled out questionnaires are included in the sample ($N = 196$). Furthermore, the questionnaires did not contain negative worded questions. Therefore, there was no need to reword any question. Moreover, these questions for the survey questionnaire were tested on internal consistency and reliability. For both purchase intention and health perception

reliability analyses were conducted. For purchase intention Cronbach's Alpha was measured of $\alpha = .91$ on a three-item scale, which shows as strong internal consistency (Pallant, 2010). Also for health perception, measured on a five-item scale, the internal consistency turned out very convincing with Cronbach's Alpha of $\alpha = .97$. Hence, for both scales no items had to be ignored.

Now that the data is arranged for analysis, the subsequent paragraph will discuss which assumptions need to be tested on violation prior to conducting the analysis.

4.2 Evaluating assumptions

Before we can proceed with the MANOVA analysis, first the data must be tested on conformity to the six assumptions "(1) sample size, (2) normality, (3) outliers, (4) linearity, (5) multicollinearity and singularity and finally (6) homogeneity of variance-covariance matrices" (French, 2002; Pallant, 2010, p. 285). According to Pallant (2010) also a seventh assumption exists: Homogeneity of regression. However, this seventh assumption should only be tested when performing a step-down analysis. A step-down analysis assumes that a study consists of at least two dependent variables that are ordered based on their importance. Since this experiment does not order the dependent variable on importance, the assumption homogeneity of regression is left out from this section.

The following sub paragraphs will discuss the assumptions in the same order as described at the beginning of this paragraph.

4.2.1 Sample size

First of all, the sample size should be adequate. According to Pallant (2010) each group must contain more cases than the total quantity of dependent variables. This means each cell must contain more than two cases, which is the case in this experiment (each cell contains a minimum of 30 cases and a maximum of 41 cases). The minimum of 30 cases per group is based on suggestions of Christensen (2007).

4.2.2 Normality

Also the normality of the distribution was tested. Since multivariate normality cannot be tested directly with SPSS, here the univariate normality was measured of the two dependent variables for every cluster of the independent variables (Pallant, 2010).

The Shapiro-Wilk statistic measures the significant normality (Pallant, 2010). The null-hypothesis for this test of normality is that the data are normally distributed. This null-hypothesis will be rejected as soon as the *p*-value, displayed by the Shapiro-Wilk statistic, is

below .05. The next two sections evaluate the normality for both the independent variables. First normality for purchase intention is assessed, followed by the normality for health perception.

4.2.2a Normality for purchase intention

For the dependent variable purchase intention, two out of three factors of logo condition (no logo and organic logo) indicate a non-normal distribution since these two factors have a significance value of $p < .00$. The organic claim condition on the other hand, seems to be normally distributed with a significance value of $p = .08$, which is a little higher than .05. Moreover, also the variable product type seems non-normal distributed since both the health product and the unhealthy product have a p -value of below .05. The healthy product has a p -value of $p < .00$ and the unhealthy product has a significance value of $p = .03$ (see appendix B2).

4.2.2b Normality for health perception

Also for health perception the univariate normality was measured per cell (see appendix 4). All three factors of the logo condition variable suggest a non-normal distribution. The Wilk-Shapiro statistic provides a significance value of $p < .00$ for all these three logo conditions. Additionally, the variable product type is also not normally distributed according to the Shapiro Wilk test for health perception. Both the healthy and unhealthy product score a p -value of $p < .00$.

Thus, we can state that the null-hypothesis can be accepted for the complete sample. Inferring from the results above the data set of this experiment overall cannot be described as normally distributed. Since the assumption here is violated, this could possibly affect the results of the MANOVA. However, the impact will not be relevant since the results of nonparametric tests will be used (see paragraph 4.2.5 about multicollinearity and singularity).

4.2.3 Outliers

Next to normality also the presence of outliers is of importance to measure before conducting a MANOVA analysis. According to Pallant (2010) MANOVA analyses react somewhat sensitive towards outliers. It is important to inspect both univariate and multivariate outliers.

4.2.3a Univariate outliers

After running the Shapiro-Wilk test for normality, also the univariate outliers emerged in the boxplots. For purchase intention only one cell displayed outliers. This cell belonged to the

version with the healthy product with the organic logo. The outliers represent the ID numbers of the cases. The cases in question are 49, 63, 42 and 50. These four cases are “1.5 box-lengths from the edge of the box” (Pallant, 2010, p. 64). However, for every case the answers still fit within the range of possible answer scores. Therefore, these outliers will remain part of the sample size.

Furthermore, for the dependent variable health perception the boxplots show a little more outliers. First of all, for the healthy product with the organic logo condition one extreme outlier was found at case 50 since it was marked with an asterisk. According to Pallant (2010) this indicates a case that scored “more than three box-lengths from the edge of the box” (p. 64). The healthy product with the organic logo condition also had one outlier at case 77. For both cases the scores were between the possible answer ranges. Moreover, the unhealthy product with no logo condition contains four outliers at the cases 113, 115, 130 and 131. Again, the scores were within the answer ranges and unfortunately, this condition only counts 31 respondents, thus only one can be deleted from the sample and the other three scores must be changed into a less extreme score. This means that the respondents will remain part of the sample and that the respondents will be included in the analysis. Yet, the score will not distort the outcome (Pallant, 2010). The last experimental cell that showed outliers was the unhealthy product with the organic logo condition. Two of the three outliers are extreme outliers at the cases 155 and 156. The third outlier is represented by case 157. The same counts for these three as for the previous described issue. The three outliers cannot be deleted from the sample because the total amount of respondents is too small (30) and the answers fall within the answer range. These outliers could have a little impact on the outcome of the MANOVA, but not too much because the little amount of outliers and because the outliers do not show numbers outside the answer range (Pallant, 2010).

4.2.3b Multivariate outliers

Multivariate outliers must be measured as well. After running a regression analysis for both purchase intention and health perception, the Mahalanobis distance was obtained. The maximum value of the Mahalanobis distance was in both situations 2.38. This score is smaller than the critical value provided by research of Pearson and Hartley (1958) of 13.82. This critical value belongs especially to a multivariate analysis with two dependent variables. Therefore, we can confidently assume that there are no considerable multivariate outliers.

4.2.4 Linearity

The concept linearity must be measured to find a “straight-line” relationship between the two dependent variables (Pallant, 2010, p. 288). The Matrix Scatter did not show evident confirmation of non-linearity. Hence, the linearity assumption is accepted (see appendix 5).

4.2.5 Multicollinearity and singularity

According to Pallant (2010) the easiest way for measuring multicollinearity and singularity is to run a correlation test. As paragraph 4.2.2 about normality already denoted, the dataset is not normally distributed. Therefore, Pallant (2010) offers a solution in the form of nonparametric tests so that the results of the MANOVA will not be influenced by this non-normal distribution. Research of Vickers (2005) confirms the fact that non-normal distributions need to be measured by nonparametric statistics.

To find out whether there is multicollinearity and singularity the results of the nonparametric correlation will be used (see appendix 6). The nonparametric correlation gives the Spearman’s correlation, which assesses according to a study of Hauke and Kossowski (2011) “how well an arbitrary monotonic function can describe the relationship between two variables, without making any assumptions about the frequency distribution of the variables” (p. 89). According to Pallant (2010) a MANOVA achieves the best results when the two dependent variables correlate moderately. For the correlation of purchase intention and health perception Spearman’s rho $r = .43$ indicated that a moderate correlation between the two dependent variables exists. To put it differently: There was a moderate, positive correlation between the two variables, $r = .43$, $N = 196$, $p < .0005$, with high levels of health perception associated with higher levels of purchase intention. This means that we can assume that there will be no multicollinearity or singularity.

4.2.6 Homogeneity of variance-covariance matrices

The output of Box’s Test of Equality of Covariance Matrices denotes whether or not the dataset “violates the assumption of homogeneity of variance-covariance matrices” (Pallant, 2010, p. 294). When the Box’ M significance value is larger than $p > .001$, the assumption is not violated. After running a multivariate analysis, the dataset showed that the Box’s M significance value is $p = .02.$, which indicates that the assumption of homogeneity of variance-covariance matrices is not violated here (see appendix 7).

Concluding, from testing these assumptions no true violation was ascertained, apart from the non-normal distribution of the dataset. These violated assumptions do not cause any large problems. The first violated assumption was the one concerning normality. To prevent the non-normal distribution from affecting the results, nonparametric test results will be used. Furthermore, the second violation comes from the outliers. However, since every outlier falls within the scope of the possible answer ranges and because there are not too many outliers, the impact would be diminutive.

The next paragraphs will assess the results from the actual MANOVA test. These results will be discussed separately for purchase intention and health perception in the same order described here.

4.3 Performing MANOVA

The MANOVA analysis elaborated upon in this paragraph elucidates whether there are differences between the six groups that were tested in this experiment on the two dependent variables purchase intention and health perception. To give a short outline of the mean scores of the different versions, table 4.2 below offers an overview. To find out whether the variances are equal or not between these scores, the next paragraph will consider the results from Levene's F-Test.

4.3.1 Levene's F-Test of Equality of Error Variances

According to the Levene's Test of Equality of Error Variances table, for both purchase intention and health perception the assumption of equality of variance cannot be violated since both p values are larger than .05. The significance value for purchase intention is $p = .56$ and the significance value for health perception is $p = .42$. This signifies that we can accept that the variances are equal. Since both purchase intention and health perception do not record significant values, equal variances can be assumed.

Now that equal variances are presumed, the following paragraphs assess the main and interaction effect for purchase intention based on the hypotheses posed in chapter 2.

Table 4.2 Means and standard deviation of all experimental cells for both dependent variables.

Dependent variable	Product type	Logo condition	Mean	
			(μ)	<i>SD</i>
Purchase intention	Healthy	No logo	4.91	1.89
		Organic logo	5.22	1.65
		Organic claim	4.26	1.45
	Unhealthy	No logo	3.52	1.66
		Organic logo	3.61	1.44
		Organic claim	4.02	1.42
Health perception	Healthy	No logo	5.44	.88
		Organic logo	5.35	1.17
		Organic claim	5.27	1.01
	Unhealthy	No logo	1.92	.85
		Organic logo	2.25	1.06
		Organic claim	1.67	.68

4.4 MANOVA: Purchase intention

Through evaluating the effect of the logo conditions on two different product types on purchase intention, a 3 (no logo, organic logo and organic logo with claim) x 2 (healthy and unhealthy product) MANOVA will be conducted. As already mentioned in the previous paragraph the Levene's F-Test for the variable purchase intention indicated that the variances are homogenous. Therefore, the assumption of equality of variances cannot be violated.

4.4.1 Main effects

The main effect of the logo condition on purchase intention turned out to be not significant ($F(2, 190) = .52, p = .60$). This means that there is no discrepancy observed between purchase intention of products with the no logo condition, the organic logo and the organic logo with an organic claim. To explain it more clearly, this indicates that neither the organic logo nor the combination of the organic logo with a claim enhances purchase intention of products when we compare it to products without a logo.

Therefore the null-hypothesis is accepted, which causes a rejection of the following two hypotheses **H1**: Organic food logos affect consumer' purchase intention in a positive manner and **H3**: The organic claim will influence purchase intention in a positive way. This means that the organic logo does not increase purchase intention when comparing it to the degree of purchase intention of a product without the organic logo nor that the organic claim

will enhance purchase intention when compared to the no logo and organic logo condition.

Although logo condition turned out to be non-significant for purchase intention, this is not the case for product type. The main effect for product type (healthy and unhealthy) is significant $F(1, 190) = 22.39, p < .00$, indicating that the product type, either a healthy or an unhealthy product, has a quite large effect on purchase intention with an effect size of $\eta^2 = .11$. Pallant (2010), who based her statement on the study of Tabachnick and Fidell (2007), states that the effect size indicates “a set of statistics that shows the relative magnitude of the differences between means. [...] The partial eta squared effect size indicates the proportion of variance of the dependent variable that is explained by the independent variable” (p. 210). Thus, since the effect of product type turned out to be significant, we can suggest that purchase intention of a product depends on the healthiness of the product.

4.4.2 Interaction effects

According to Stevens (1999), the interaction effect actually implies the impact of the combination of the independent variables on the dependent variables. In this experiment this involves a possible impact of logo condition on purchase intention that depends on whether the product belongs to the healthy or unhealthy category. Stevens (1999) also states that when an interaction effect exists, the effect of one factor is dependent on the other factor's level.

Since there is evidence for an effect of product type on purchase intention, but not of logo condition on purchase intention, now the impact of logo condition on the two types of products on purchase intention will be measured. The interaction effect indicated a relatively large significant impact ($\eta^2 = .14$) (Pallant, 2010) of logo condition on the type of product on purchase intention of $F(2, 190) = 3.61, p = .03$. Thus, this means that logo condition affects purchase intention depending on what type of product is being purchased (healthy or unhealthy).

Now that a significant effect is found, the next paragraph is going to test whether this result holds water by presenting the results of an independent-samples t-test.

4.4.3 Independent-samples t-test

Additionally, as a form of controlling the MANOVA, to measure whether there is a statistically significant difference in the mean scores for a healthy product and an unhealthy product on purchase intention an independent samples t-test is conducted. The results show that the assumption of equal variances can be accepted ($p = .31$). Furthermore, this independent samples t-test showed a significant difference in the mean scores of a healthy product ($M = 4.76, SD = 1.68$) and of an unhealthy product type ($M = 3.71, SD = 1.51, t(104)$

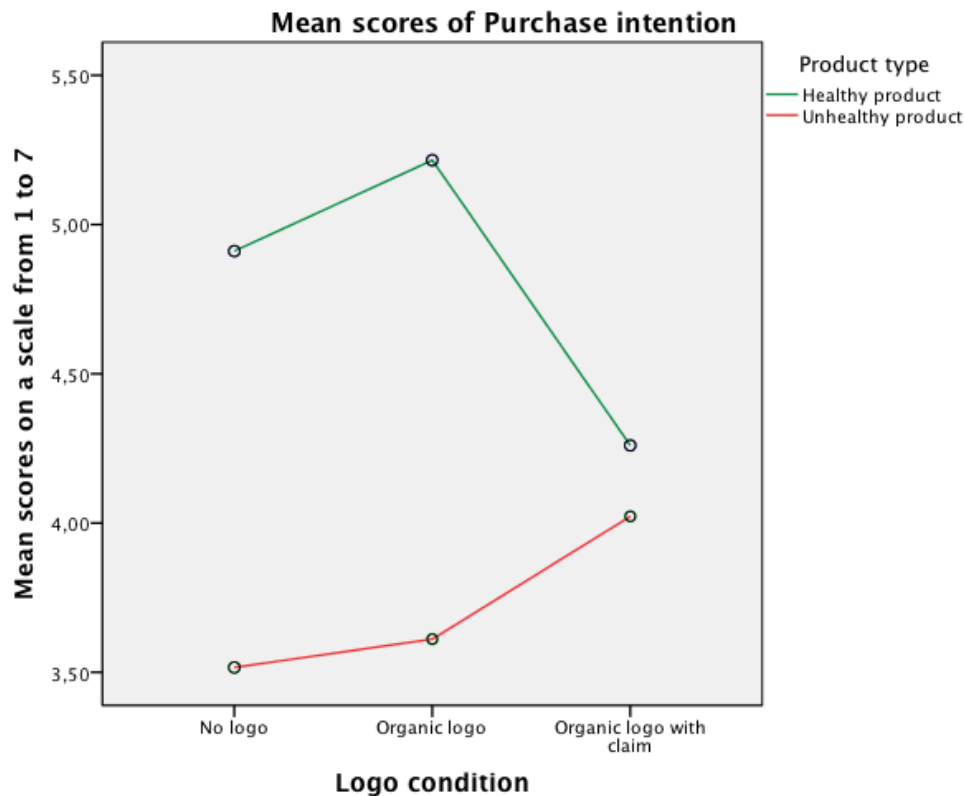
= 4.53, $p < .00$, two-tailed) on purchase intention, meaning that respondents that scored high on purchase intention of the healthy product differ significantly from respondents that scored lower on purchase intention of the unhealthy product. Therefore, we may assume that respondents were more likely to buy a healthy product than an unhealthy product.

Conventionally, to find out where the exact differences in mean scores lie, a post hoc test should be conducted to disclose the exact differences between conditions. According to Pallant (2010) the post hoc test compares each pairs of groups and reveals for each whether there is significant difference in those means. However, the research design used throughout this study represents a 3 x 2 between-subjects MANOVA, indicating that there is one independent variable consisting of only two factors. According to Leech, Barrett and Morgan (2005) and Pallant (2010) a post hoc test does not analyze any independent variable consisting of less than three factors. Therefore, the plots provided by the 3 x 2 MANOVA analysis are used to interpret where the differences in means could be found (see table 4.1). Leech, Barrett and Morgan state that it is quite easy to see from such plots which of the two scores higher. The plot, depicted in table 4.1, shows first of all that the respondents tend to have a higher intention to buy healthy products compared to unhealthy products. The line that represents the mean scores for purchase intention of healthy products is fully plotted above the line that represents the means scores for purchase intention of unhealthy products. Moreover, although it is impossible to tell the relationship is significant a remarkable difference is visible between the organic logo condition and the organic claim condition for the healthy product, table 4.1 suggests a decrease in purchase intention when an organic claim is positioned on a healthy product compared to the presence of an organic logo alone on a healthy food product. However, the μ -differences between the no logo condition and the organic logo condition for both (un)healthy products seem to small to be significant. Thus, since it is not possible to draw significant conclusions based on this graph, the following hypotheses cannot be accepted confidently based on this research: **H2a**: The organic logo affects purchase intention of healthy food products positively and **H2b**: The organic logo affects purchase intention of unhealthy food products positively. Accepting the null-hypothesis here is therefore also impossible. However, based on the graph depicted in table 4.1 and the results indicated by the interaction effect, one could carefully suggest that, based on this experiment, the organic logo does not have a significant impact on purchase intention on either healthy or unhealthy products when comparing it to products without the organic logo.

Now that the impact of the organic logo on purchase intention is discussed, it is time

for the effect of the organic claim on purchase intention on both product types. Again, it is impossible to suggest whether the hypotheses hold water or not, but careful suggestions can be provided. As the graph depicted, it might be suggested that the organic claim affects purchase intention of healthy food products negatively. This suggestion is not in line with the following hypothesis: **H4a**: An organic claim affects purchase intention of healthy food products positively. Yet, no significant conclusions can be drawn from these results. Therefore hypothesis H4a must be rejected anyways. Also the null-hypothesis cannot be accepted because of this non-significant outcome for healthy products.

Although purchase intention seems to decrease when a healthy product contains an organic claim, the opposite seems true for unhealthy products. A small increase of purchase intention seems to occur when unhealthy products contain the organic claim compared to the organic logo, but the μ -difference between both conditions does not appear to be significant. The difference in purchase intention for the unhealthy food products category has a mean score of 3.61 ($SD = 1.44$) for unhealthy products with an organic logo and a slight increase for purchase intention with a mean score of 4.02 ($SD = 1.42$) for unhealthy products with an organic claim. However, again it is impossible to draw any conclusion from such a guessing. Therefore, we might assume that the next hypothesis cannot be accepted nor rejected: **H4b**: An organic claim influences purchase intention of unhealthy food products negatively. The same counts for the null-hypothesis, which can neither be accepted nor rejected, although graph 4.1 assumes that for the unhealthy products category the null-hypothesis must be accepted, indicating that for purchase intention no significant difference was found between the three logo conditions.

Table 4.3 Impact of logo condition and product type on purchase intention.

4.4.4 A possible revealing side path

As the previous paragraph already mentioned, a post hoc test is impossible when one independent variable consists of less than three factors (Pallant, 2010). However, in order to give an indication of where the exact differences in means can be found, another dummy variable was constituted; the version variable. This version variable resembles the product type * logo condition variable by creating a fusion of the product type and logo condition. This version variable consists of six factors – which is more than enough for conducting a post hoc test – that represent the six versions of the questionnaires dispersed for this experiment. The versions are coded with the numbers one to three followed by the letter A represent the three logo conditions no logo, organic logo and organic claim on a healthy product. The other three versions four to six accompanied by the letter B represent the three logo conditions no logo, organic logo and organic claim on an unhealthy product. In order to clarify how these versions are processed in SPSS, table 4.4 gives a simple impression. When conducting a MANOVA with this variable instead of using the variables product type and logo condition, the post hoc test indicates results that correspond to the table depicted in table 4.3. First the impact of the organic logo will be evaluated. Subsequently, the effect of the organic logo with an organic claim will be discussed.

Table 4.4 Impression of how the dummy variable version is coded.

	Healthy product	Unhealthy product
No logo	1A	1B
Organic logo	2A	2B
Organic claim	3A	3B

4.4.4a Organic logo

The post hoc comparisons made for this experiment used the LSD test, which is utilized because according to Levine (2013) this test is designed for multiple comparison tests and it is a convenient manner of conducting multiple t-tests. Furthermore, according to Howell (2012) the Least Significant Difference procedure is one of the oldest techniques used for post hoc tests and has shown to be a very powerful post hoc method when comparing not too much means.

For this experiment the LSD test conveyed that for the healthy product category the organic logo condition does not significantly differ from the no logo condition (μ -difference = .30, $p = .44$). Also for the unhealthy product category no significant difference between the organic logo condition and the controlling no logo condition on purchase intention can be found (μ -difference = .10, $p = .82$). Therefore, it seems that the organic logo on both healthy and unhealthy products does not have an increasing or decreasing effect on purchase intention when comparing it to the no logo category.

4.4.4b Organic claim

The post hoc comparisons using the LSD test signifies that the only significant difference can be found between the organic logo and the organic claim condition in the healthy product category ($p = .01$) with a μ -difference of .96, indicating that for healthy products, the organic claim increases purchase intention of that product when comparing it to the organic logo alone. The significant difference between the means was also assessed while focusing specifically on the difference between the no logo condition and the organic claim condition. However, for both the healthy and the unhealthy category no significant difference in means was found.

4.4.5 Socio-demographics

After having discussed the impact of logo condition and product type on purchase intention, now the impact of socio-demographics on purchase intention was measured, starting with sex.

A one-way ANOVA test revealed no significant difference between males and females on purchase intention. Then, also age was measured with a one-way ANOVA test, which also resulted in a non-significant effect of age on purchase intention.

Furthermore, the effect of education level on purchase intention is also indicated to be not significant. However, if we set the significance level a little higher ($p < .10$), which is relatively common in social research (Rosenthal, 2011), education level would be significant because $p = .09$. Yet, then the sample size should be larger than the 196 participants of this study (Rosenthal, 2011).

Lastly, the effect of annual gross income on purchase intention was investigated, which resulted in a non-significant effect, indicating that annual gross income does not affect purchase intention. Thus, deriving from these results we can suggest that overall socio-demographics did not show significant impact on purchase intention. Research of Dimitri and Dettman (2012) already forecasted this outcome by indicating that socio-demographics do not determine organic purchases, except for education level. A higher education level is a condition for the frequency of purchasing organic food (Fotopoulos & Krystallis, 2002; Tsakiridou et al., 2008).

After having assessed the main and interaction effects for purchase intention, the following paragraphs will focus on the main and interaction effects for health perception.

4.5 MANOVA: Health perception

Next to the dependent variable purchase intention, also for the second dependent variable health perception a MANOVA is conducted to find out and elucidate the impact of logo conditions on two different product types on health perception. As already mentioned in paragraph 4.3.1 the Levene's F-Test for the variable health perception suggested that the variances are equal. Therefore, the assumption of equality of variances cannot be violated.

4.5.1 Main effects

The Tests of Between-Subjects Effects table points out the main effects for health perception. The main effect of the independent variable logo condition has no significant effect on health perception ($F(2, 190) = 1.99, p = .14$), meaning that neither one of the three conditions (no logo condition, the organic logo condition, or the organic claim) did increase health perception of products in general in comparison to each other. Thus the organic logo did not increase health perception compared to the no logo condition and the claim condition. The

same findings count for the organic claim condition, which showed no enhanced health perception compared to the no logo condition and the organic logo condition.

This brings us to a rejection of the hypotheses **H5**: Organic food logos affect consumer' health perception in an increasing manner and **H7**: The organic claim will influence health perception positively. This directly indicates that the null-hypotheses for both H5 and H7 are accepted, which means that the impact of the logo conditions can be assumed equal.

Although logo condition appeared to be not significant for health perception, product type turns out to be significant ($F(1, 190) = 601.97, p < .00$) and to have a very large effect size of $\eta^2 = .76$, indicating the "relative magnitude of the differences between means" (Pallant, 2010, p. 210). This reveals that product type, either healthy or unhealthy, has an effect on health perception. Such interference is not very surprising, since both the product types (paprika and crisps) were tested in advance on their perceived healthiness during the pilot study that is described earlier in chapter three of this master thesis.

4.5.2 Interaction effects

As already mentioned in chapter 4.4.2 for the interaction effects for purchase intention, interaction effects involve the effect of the combination of the independent variables on the dependent variable (Stevens, 1999). In this case the impact of a combination of logo condition and product type on the dependent variable health perception was measured. Since there is evidence for an effect of product type on health perception, but not of logo condition on health perception, now the impact of logo condition on the two types of products on health perception will be measured. The interaction effect indicated that there is a non-significant effect of logo condition on the type of product on health perception of $F(2, 190) = 1.26, p = .29$. This means that logo condition is not affecting health perception depending on the product type, either healthy or unhealthy, that is going to be bought.

4.5.3 Independent-samples t-test

Again, as in paragraph 4.4.3, to check the results found in the previous paragraph and to measure whether there is a statistically significant difference in the mean scores for a healthy product and an unhealthy product on health perception an independent samples t-test was conducted. The results show that the assumption of equal variances can be accepted ($p = .14$). Furthermore, this independent samples t-test showed a significant difference in the mean scores of a healthy product ($M = 5.35, SD = 1.03$) and of an unhealthy product type ($M = 1.95, SD = .90, t(194) = 24.45, p < .00$, two-tailed) on health perception, meaning that

respondents that scored high on health perception of the healthy product differ significantly from respondents that scored lower on health perception of the unhealthy product. Therefore, we may assume that respondents were more likely to perceive a healthy product as healthier than an unhealthy product, which is based on logical arguing when taking into account that the pilot study resulted in the products (1) paprika as healthiest and (2) crisps as least healthy product.

These results correspond with the results that were found earlier described in paragraph 4.5.1. However, since there is no significant interaction effect, there is no need for further analysing the results in order to find out where the exact differences lie. Therefore we may assume that the following two hypotheses can be rejected: **H6a**: The organic logo affects health perception of healthy products positively and **H6b**: The organic logo influences health perception of unhealthy food positively. This also means that the null-hypothesis must be accepted since the organic logo does not stimulate any difference in health perception when comparing it to products, both healthy and unhealthy, with no logo on the packaging material. Moreover, also the next two hypotheses must be rejected: **H8a**: An organic claim affects health perception of healthy food products positively and **H8b**: An organic claim influences health perception of unhealthy food products positively, demonstrating that for both healthy and unhealthy products no difference was found between the no logo condition and the organic claim condition, and neither for the comparison between the organic logo condition and the organic claim condition. So, the null-hypothesis must be accepted for the impact of the organic claim on the healthy and unhealthy products category on health perception.

4.5.4 Socio demographics

After having discussed the impact of logo condition and product type on health perception, now the impact of socio-demographics on health perception was measured, starting with sex. A one-way ANOVA test was used to find out whether there is a difference in health perception based on gender. The results revealed no significant difference between males and females on health perception.

Furthermore, the impact of age on health perception was investigated. The variable age has a significant effect on health perception $p = .04$, but because there are more than fifty distinguishable groups it is not possible to perform of homogeneity of variances. Therefore, it is impossible to display the F-value, because the df_2 is not given in this test. Furthermore, because of these fifty groups also post hoc tests are not given, which makes it difficult to

retrieve where the differences are situated.

Moreover, the impact of education level on health perception is also turned out to be not significant. In contrast to the impact of education level on purchase intention, which is still very close to significance, the effect of education level on health perception cannot be found significant by setting the significance level a bit higher because the p -value is too large ($F(6, 188) = 1.00, p = .43$).

Lastly, also the impact of annual gross income on health perception was calculated, which resulted in a significant effect of income on health perception ($F(3, 188) = 4.14, p = .01$). The post hoc test using the LSD test reveals that the only significant difference can be detected between an annual gross income of €0 to €32500 and an annual gross income of €32500 to €48750, indicating a decrease of health perception when respondents have an income between the €32500 and €48750 compared to an income of €0 to €32500.

Overall, deriving from these results we can suggest that age and income of the socio-demographics did show significant impact on health perception, while sex and education level did not have a significant impact. Carefully concluding from this, it seems that health perception depends more on socio-demographics than purchase intention does, but that is just a rough guess based on these outcomes.

4.6 Conclusion

This fourth chapter presented the results of the experiment, which a MANOVA was used to illuminate the effect of food logo condition and product type on purchase intention and health perception on both a healthy and an unhealthy food product. A total amount of 196 questionnaires were subjected to several tests conducted in SPSS, a statistics programme. The tables below (table 4.5 and table 4.6) give a compact overview of the results of the effects of the food logo condition and product category on purchase intention and health perception by presenting the sum of squares, mean square the F -values, significance and effect size expressed in eta squared. For more detailed information on the results, appendix 8 offers SPSS tables on the MANOVA used for this experiment based on the two independent variables product type and logo condition. Appendices 9 and 10 provide additional tables from the outcomes provided by the dummy variable version.

In general, the results revealed that product type affected both purchase intention and health perception significantly. However, those were only main effects. Furthermore, only one very interesting mean difference was found of which one could suggest it is significant

based on the table depicted in table 4.7 and on the additional, not fully “legal” post hoc tests conducted in paragraph 4.4.4. This difference was found for purchase intention between healthy products with the organic logo and healthy products with an organic claim.

The difference expressed itself in the form of a decrease in purchase intention of the healthy product category for the organic claim condition when comparing it to the organic logo condition. This chapter finally concludes by presenting the results of the hypothetical effects indicated with superscripts. First, the significant mean differences that table 4.7 for purchase intention displays are based on the interpretations made on table 4.7 and on the “illegal” post hoc test conducted with another merged dummy variable called version. Therefore, these results cannot be accepted but form a careful indication of a reasonable outcome. Table 4.8 also displays superscripts that should indicate significant difference, but these results are based on the main and interaction effects and therefore these results can be accepted. Now that the results are presented, the next chapter will discuss these results extensively, consider the limitations of this study and provide ideas for future research.

Table 4.5 Results of the 3 x 2 between-subjects MANOVA for purchase intention ($N = 196$).

	Sum of squares	<i>df</i>	Mean square	<i>F</i>	<i>p</i>	η^2
Product type	56.33	1	56.33	22.39	< .00	.11
Logo condition	2.60	2	1.30	.52	.60	.01
Product type * Logo condition	18.14	2	9.07	3.61	.03	.04
Error	478.04	190	2.52			
Total	4130.44	196				

Table 4.6 Results of the 3 x 2 between-subjects MANOVA for health perception ($N = 196$).

	Sum of squares	<i>df</i>	Mean square	<i>F</i>	<i>p</i>	η^2
Product type	561.16	1	561.16	601.97	< .00	.76
Logo condition	3.70	2	1.85	1.99	.14	.02
Product type * Logo condition	2.34	2	1.17	1.26	.29	.01
Error	177.12	190	.93			
Total	3530.66	196				

Table 4.7 Summarizing differences between means for purchase intention based on interpretation of table 4.3 and post hoc tests using the version variable.

		μ	<i>SD</i>
Healthy	No logo	4.91 ^{ab}	1.89
	Organic logo	5.22 ^a	1.65
	Organic claim	4.26 ^b	1.45
Unhealthy	No logo	3.52 ^a	1.66
	Organic logo	3.61 ^a	1.44
	Organic claim	4.02 ^a	1.42

^a: Superscripts that differ within a column differ significantly*.

* *Note*: significance is only based on using the version variable to conduct post hoc tests. Results cannot be accepted as truth.

Table 4.8 Summarizing differences between means for health perception based on interaction effects.

		μ	<i>SD</i>
Healthy	No logo	5.44 ^a	.88
	Organic logo	5.35 ^a	1.17
	Organic claim	5.27 ^a	1.01
	Organic claim	5.27 ^a	1.01
Unhealthy	No logo	1.92 ^a	.85
	Organic logo	2.25 ^a	1.06
	Organic claim	1.67 ^a	.68
	Organic claim	1.67 ^a	.68

^a: Superscripts that differ within a column differ significantly*.

* *Note*: significance is only based on the non-significant results from the interaction effect.

5. Discussion

5.1 Introduction

After having discussed the theory in chapter two that shaped the foundation of this research, the methods explained in chapter three that were used in conducting the actual experiment and the results presented in the previous chapter, this concluding chapter will discuss the results from chapter four in greater detail. Furthermore, this chapter will provide answers to the research question, which is repeated here one more time:

To what extent do organic food logos and organic claims affect consumers' purchase intention and health perception of unhealthy and healthy foods?

In order to answer this research question, the question will be split into two separate questions, a split that was performed throughout this whole study in the same way as it will be done now. The first research question reads: "To what extent do organic food logos and organic claims affect consumers' purchase intention of healthy and unhealthy foods?" Then, the second question obviously becomes: "To what extent do organic food logos and organic claims affect consumers' health perception of healthy and unhealthy foods?"

In order to maintain a clear configuration these two questions will be answered separately after each other. Furthermore, to preserve a logical structure this chapter will be divided in several paragraphs similar to the results chapter based on main effects and interaction effects. First, the effect of logo conditions on both healthy and unhealthy products on purchase intention will be discussed step by step, which will be succeeded by a comprehensive elaboration of the impact of logo conditions on both healthy and unhealthy products on health perception.

5.2 Discussion: Purchase intention

As the previous paragraph already explained the following paragraphs will discuss the main effects and interaction effects on purchase intention comprehensively.

5.2.1 Expectations and main effects of logo condition

According to previous literature, the majority of researchers stated that logo conditions in general, especially the simple logos that are carried out simple without text, and short

powerful claims enhance the intention to purchase food products (see for example Yiridoe, Bonti-Ankoma and Martin, 2005; Grunert and Wills, 2007; Hoogland, De Boer and Boersema, 2007).

Yet, the MANOVA test measured that the main effect of logo condition indicates no significant impact on purchase intention, meaning that logo condition alone does not stimulate any difference in the intention of buying food products. One possible explanation for this outcome could be that respondents did not even notice the organic logo. Reasons for this possible interference come from conversations with respondents after they filled out the survey questionnaire. After revealing the purpose of this research, respondents answered with statements such as “Oh, seriously, I did not even see that logo on the food packaging material!” However, on the other hand, respondents that did see the logo conditions commented phrases along the lines of “This is an organic product, way too expensive! I would never buy that.” Since both types of comments went by, it is impossible to draw convincing conclusions, but these types of comments give two possible explanations. Furthermore, research of Hoogland, De Boer and Boersema (2007) confirms the fact that consumers tend to experience products with an organic logo condition, whether it is the logo or the claim, as more expensive. Yet, even though price could be a stumbling block according to Hoogland, De Boer and Boersema (2007) they also suggested a positive impact of the organic logo condition on purchase intention.

5.2.2 Expectations and main effects of product type

Not only the impact of logo condition on purchase intention was measured, but also the main effect of product type was studied. From the MANOVA analysis the interference can be made that product type, referencing to healthy and unhealthy products, has significant impact on purchase intention. Yet, it is not clear which of the two product types has significant effect on purchase intention or that both product types have significant impact. Therefore, the next paragraph (5.3.3) will discuss where the significant impact is coming from by citing the outcomes from the post-hoc test.

5.2.3 Expectations and interaction effects of logo condition and product type on purchase intention

According to the expectations based on earlier research (see for example Kozup, Creyer & Burton, 2003; Williams, 2005; De Magistris & Gracia, 2008; Bauer, Heinrich & Schäfer; 2013), the interaction effect orates that the organic logo should enhance purchase intention of both healthy and unhealthy products, while the organic claim should enhance purchase

intention of only the healthy product and decrease purchase intention of an unhealthy product. For example, the study of Chryssohoidis and Krystallis (2005) shows that logos in general enhance purchase intention of food products, but that consumers also ascribe unhealthy products with more positive characteristics when a logo condition is visible on the packaging material. Unfortunately, this experimental master thesis could not provide significant results due to the fact that a post hoc test does not calculate mean differences when one independent variable consists of only two factors. Therefore, conclusions need to rely on interpretations and a post hoc test with a resembling dummy variable that consists of more than three factors. Based on these two indications, one could carefully suggest that the only remarkable mean difference was the distinction between the organic logo and organic claim on the healthy product category. This suggests that purchase intention decreases when the healthy product is labelled with an organic claim when comparing it to purchase intention of a product labelled with the organic logo. Since this was the only remarkable effect on purchase intention, we can carefully align with the distrusts in food logo conditions that research of Janssen and Hamm (2012) expressed with their research.

5.2.4 An in-between conclusion

After having discussed the main and interaction effects of logo conditions on purchase intention, we can answer the first part of the research question. To what extent do organic food logos and organic claims affect consumers' purchase intention of healthy and unhealthy foods? Well, in fact this research indicates no significant outcomes on the effect of both the organic logo and the organic claim on purchase intention of both healthy and unhealthy food products, indicating that logo conditions do not have impact on purchase intention of two product types. However, prudently indications can be given that the organic claim on a healthy product decreases purchase intention. This outcome is not in line with the expected outcome that was embodied by hypothesis **H4a**: An organic claim affects purchase intention of healthy food products positively.

5.3 Discussion: Health perception

After having discussed the outcome of the logo conditions and product types on purchase intention, this part of the discussion chapter will consider the results of the logo conditions and product types on health perception, starting with the main effects of logo conditions in the next paragraph.

5.3.1 Expectations and main effects of logo condition

Recent studies have shown that logo conditions, whether it is the organic logo or the organic claim, improve health perception of food products when compared to the control group (Hoefkens et al., 2009; Abrams, Meyers & Irani, 2010; Boysen Anker, Sandøe, Kamin & Kappel, 2011). Yet, these claims are not found by this study, since the MANOVA analysis provided indications for the fact that the main effect of logo condition is not significant on health perception. As already mentioned in paragraph 5.3.1 on purchase intention, this indicates that none of the logo conditions increases or decreases health perception compared to other logo conditions. Possible explanations are, again, that respondents revealed not to mention the logo conditions after filling out the questionnaire. However, this possibility seems not very solid at all since some other respondents asked whether they had to focus on the product itself or on the fact that the product is labelled as organic, which indicates that the organic logo or claim was noted.

5.3.2 Expectations and main effects of product type

Besides logo condition, also the influence of product type on health perception was analyzed. According to the MANOVA analysis, the main effect of product type was verified having a significant impact on health perception. This implies two possible outcomes. The first, and most likely outcome is that the healthy product is perceived as healthier than the unhealthy product. The pilot study, conducted in advance to decide which two products out of fourteen possibilities were perceived as the healthiest and unhealthiest, already made a clear distinction between a product perceived as healthy and a product perceived as unhealthy. Therefore, it is expected that the results show similar results. The second possibility, which is rather unexpected, recites that the unhealthy version is perceived as healthier than the healthy version. To find out whether there is an effect of the combination of logo condition and product type on health perception, the next paragraph (5.4.3) discusses the interaction effects on health perception.

5.3.3 Expectations and interaction effects of logo condition and product type on health perception

According to prior studies of Schuldt and Schwarz (2010) and Schuldt and Hannahan (2013) consumers experience products, both processed unhealthy food and natural healthy food with an organic logo as healthier than products without these marks. Additionally, research of

Baggerman and Hack (1992) confirms this by displaying their results that state that practically every consumers experiences products that have organic signs as healthier because they ascribe overall more positive characteristics to these products. Hence, the expectation was given that health perception increases when the organic logo is present on both healthy and unhealthy products. For organic claims the study of McIntyre and Baid (2009) states that health perception increases when healthy products contain a claim, but that it decreases on unhealthy products. Yet, this study did not show quantitative evidence for these assumptions. On the other hand, research of Schuldt, Muller and Schwarz (2011) did give reliable quantitative indications for the assumption that consumers rate unhealthy products with organic ingredients that are claimed in the form of the slogan organic on the package material as healthier and with fewer calories than regular products. This also counts for perceived healthy products. The MANOVA analysis using the LSD test was used to find an answer to this ambiguous issue. The MANOVA analysis gave a non-significant result for the effect of logo conditions on both healthy and unhealthy products on health perception, indicating that logo condition has no increasing effect of health perception of both healthy and unhealthy products. Therefore, no further analyses were needed.

5.3.4 An in-between conclusion

After having discussed the main and interaction effects of logo conditions on health perception, we can also answer the second part of the research question. To what extent do organic food logos and organic claims affect consumers' health perception of healthy and unhealthy foods? An answer to this question can be very brief: Neither the organic logo nor the organic claim does have a significant impact on health perception of both healthy and unhealthy food products when comparing it to the control group.

5.4 Conclusion

In order to answer the research question "To what extent do organic logos and organic claims affect consumers' purchase intention and health perception of healthy and unhealthy foods?" in its overall the previous paragraphs discussed the outcomes of this experiment comprehensively. Since the discussion was quite extensive this paragraph will summarize the outcomes as uncluttered as possible.

From the twelve hypotheses in this experiment only eight can be judged on significance, since four hypotheses had to be assessed by interpretations. When starting with the main effects, we can state that logo condition, referring to both the organic logo and the

organic claim, does not affect purchase intention and health perception significantly. Therefore, the following four hypotheses are repudiated:

H1: Organic food logos affect consumer' purchase intention in a positive manner.

H3: The organic claim will influence purchase intention in a positive way.

H5: Organic food logos have an increasing effect on consumer' health perception

H7: The organic claim will influence health perception in a positive way

Although logo conditions did not reveal any effects on both purchase intention and health perception, the second main effect found by this study is that product type, either healthy or unhealthy, does affect purchase intention and health perception significantly. This means that the type of product matters when buying the product and judging it on its healthiness.

Further analyses state that the interaction effect resulted in different outcomes for purchase intention and health perception. First of all, the interaction effect for purchase intention elucidated to be significant. However, it was impossible to indicate significant impact by conducting post hoc tests because product type consists of only two factors while at least three were required (Leech, Barrett & Morgan, 2005; Pallant, 2010). Interpretations of the graph that was accompanied by running the MANOVA show a remarkable decrease in purchase intention when a healthy product contains a claim compared to a healthy product that only includes an organic logo. This suggestive outcome did not meet the expectations for both purchase intention based upon previous studies on this topic. The insecurity caused by interpreting the results, leads to neither accepting nor rejecting the following two hypotheses.

H2a: The organic logo affects purchase intention of healthy food products positively

H2b: The organic logo affects purchase intention of unhealthy food products positively.

However, based on post hoc tests with the dummy variable called version one might assume to reject the next two hypotheses since no differences in means were detectable from table 4.3.

H4a: An organic claim affects purchase intention of healthy food products positively

H4b: An organic claim influences purchase intention of unhealthy food products negatively

From interpreting table 4.3 and the impractical results offered by the dummy variable called version one could assume that the next hypothesis H4a should be rejected, because both the interpretations and the results offered by the dummy variable show the opposite of a positive impact. The organic claim seems to have a negative effect on purchase intention of healthy food products. Furthermore, H4b below should be rejected as well, since no difference between the three logo conditions on unhealthy products is detectable. Yet, these results cannot be guaranteed fully by this study.

Moreover, the second interaction effect resulted in a non-significant impact of logo condition and product type on health perception. Therefore, no further post hoc tests were required. Also the null-hypothesis can be accepted for health perception, meaning that neither the organic logo nor the organic claim, whether it is on a healthy or unhealthy product, affects health perception. Indirectly, this indicates a rejection of the following four hypotheses and an acceptance of the null-hypotheses for these hypotheses below.

H6a: The organic logo affects the health perception of healthy products positively

H6b: The organic logo influences health perception of unhealthy food positively.

H8a: An organic claim affects health perception of healthy food products positively

H8b: An organic claim influences health perception of unhealthy food products positively.

Overall, these findings are not fully consistent with the theoretical findings of previous research on the impact of different organic logo conditions purchase intention and health perception of healthy and unhealthy food products, since at least eight out of twelve hypotheses were rejected with certainty. The four other hypotheses should be rejected as well based on the interpretations and results from the dummy variable called version, which means that none of the hypotheses kept itself up in this study. Lastly, the results also indicate that there is no significant difference between male and female when it comes to the purchase intention and health perception of the six different conditions. Also the education level did not show significant differences, but because the significance level was .09 this could have been a determining factor when the sample was larger (Rosenthal, 2011). Age and annual gross income did not change anything in purchase intention of the products, but these socio demographic variables did cause some significant changes in health perception. For the age variable post hoc tests were not possible, but the annual gross income showed to stimulate a

decrease in health perception when the income of one and a half times modal was reached compared to an annual gross income of €0 to €32500.

5.5 Limitations and future research

This study has a couple of limitations. These limitations concern the product types, the food package materials, by the sample used for this experiment, the experimental design and generalizability. The paragraphs below will discuss these limitations subsequently and offer suggestions for future research and how the current study could possibly be developed further. The first limitation is embodied by product types. The two products that were determined during a pilot study on the perceived healthiness of different food products were used. The results indicated that from these fourteen products the paprika was perceived healthiest and crisps were perceived as least healthy. While respondents filled out the survey questionnaire, responses came up such as “Ugh, I think paprika is gross, I would never buy a paprika” and “I totally dislike crisps so I never buy them”. Therefore questions probably need to be altered in a way that respondents need that product for a typical dish they have to make. Then, the research design also has to be changed into a within subjects design in order to find out which logo condition has preference. Another considerable constraint caused by the two product types was the fact that a MANOVA cannot run the post hoc analysis to retrieve mean differences among groups when one of the independent variables consist of fewer than three factors. Therefore, one simple suggestion for future research would be to include three product types, among which healthy, moderate healthy and unhealthy for example to make sure the post hoc test is able to analyze the (significant) mean differences between groups.

The second constraint is represented by the label manipulation of both the healthy and unhealthy products. The packaging material did not exactly render package material in reality. The layout was very simplistic with only the relevant elements displayed; the product, packaging material, brand name and logo condition. Also nutrition facts were left out because that was not the aim of this experimental research. Yet, the organic logo that was used was the existing European version and the organic claim was imitated from a Dutch supermarket, and it seems that the claim organic was perceived by respondents clearly since the impact of the organic claim was quite telling. Therefore, the packaging material seemed to give a relevant impression of a real and existing product. Nevertheless, for a replication of this research it is advisable to conduct this study in a room with at least 30 respondents to fill out the survey for every single condition while having real, manipulated products in front of them. When applying this suggestion in future research a within-subjects design will be required.

The within-subjects design would also be a possible solution for the third limitation; the between-subjects design. The between-subjects design formed a constraint because every respondent was exposed to only one experimental condition on paper in front of a supermarket, which causes a lack of comparative and similar products. Hence, simulation of a real shopping experience was hard to reach. This simulation can be considered as a limitation in every kind of experimental research that focuses on consumer behavior because of the artificiality of assignments and environment (Roe, Levy & Derby, 1999). Therefore, it is always difficult to measure whether there is a similarity between a laboratory research and real life behavior in a supermarket. However, according to research of Burke, Harlam, Kahn and Lodish (1992) justify this limitation by stating that it is impossible to expect that naturalistic studies can exactly be replicated in a laboratory setting. They also state that comparisons can be made and that these can be generalized to the natural setting. A suggestion for future research would thus be to perceive this limitation as an opportunity. A within-subjects design would possibly come closer to a simulation of the natural shopping behavior of respondents, because then the respondents have the chance to profit from their learning curve, which resembles a real life shopping experience (Gravetter and Forzano (2012). Therefore, to overcome this limitation as much as possible in future research is to perform a within-subjects design in which respondents have at least the possibility to compare products just as on the supermarket floor by positioning at least 30 respondents in the same room that resembles a supermarket with different real products to choose from rather than pictures and let them fill out every version of the questionnaire. In this experiment there were six versions, which means for future research that the amount of versions depends on the amount of logo conditions and product types.

The fourth noticeable limitation is of methodological character; the sample size. For this study the sample consisted of respondents of Dutch nationality. Therefore, one major limitation is that it is questionable whether the findings of this experiment are applicable to other countries. Additionally, the sample is not normally distributed, which causes another limitation. Although the mean age is 37 years old ($SD = 15$), which indicates that besides students also middle-aged consumers took part in this experiment, still a vast majority of respondents completed a HBO level according to the Dutch schooling system. This is not representative for the Dutch population (CBS.nl). To overcome this problem of non-normal distribution, a different statistical (nonparametric) test was used. The nonparametric test considers that the sample size was not normally distributed by giving adapted results. A future

research suggestion would be to enhance the sample size. In this study the sample size is somewhat small. It is advisable to extend and replicate this study to a larger sample size. A study could benefit from a larger sample size because according to Newman and McNeil (1998) the larger the sample size the more it resembles the population.

Now that suggestions for future research based on limitations of this study are offered the next paragraph will conclude this master thesis by proposing a few individual ideas for upcoming research.

5.5.1 Last specific suggestions for future research

Now that the limitations combined with suggestions for future research are discussed, the last recommendations for future research apart from limitations will be mentioned. For example, it could be interesting to reveal the motives that trigger consumers overall not to purchase products with an organic logo or claim and why these consumers perceive products with an organic logo or claim as healthier or less healthy. Besides focusing on motives, other personal characteristics could be examined, such as attitude based on the personal values described by Schwartz (1992) to find out what drives consumers to make certain purchases. Such research could be conducted more or less in the same manner as this study has done: Using questionnaires based on pictures or real products and ask participants to answer questions or statements about the values power and universalism based on Schwartz' values (1992). Universalism represents character traits that have the protection of human and nature welfare as objective, while power stands for dominance over other people and resources (Schwartz, 1992, p. 12).

Lastly, it would be interesting to further develop research of Davies and Wright (1994) based on the psychological effects of both the organic logo and the organic claim by applying the elaboration likelihood model of persuasion in order to find out whether one of the two has the preference or not. The elaboration likelihood model of persuasion refers to the 'general theory of attitude change' and can give an indication on how consumers process information (Petty & Cacioppo, 1986, p. 3). The two suggested forms of information processing, the central and the peripheral route, are compared to the way logos and claims can be processed. The central route indicates that persuasion occurs by exposure to reasoning and facts about the goods. The merits endure thoughtful consideration. The second type of persuasion is named the 'peripheral route', meaning that information processing takes place by unconsciousness information processing through exposure to images, colours or emotions. According to Davies and Wright (1994) these principles of the elaboration likelihood model

of persuasion can easily be applied to food logos and claims, showing that logos can be processed according to the peripheral route because they embody images and colours. Claims, on the other hand, are treated via the central route, because they represent readable facts or statements. Therefore, it would be interesting to conduct research on the persuasive impact of organic logos and claims on purchase intention and/or health perception. Such a study could focus on persuasive communication in advertisements for organic logos and claims. An experimental design could be used, which is quite similar to the design of this master thesis. For example, participants can be assigned to one out of a few conditions that represent either a newspaper article about organic logos or claims (the central route condition) and a pamphlet on organic logos and claims, which would stimulate the peripheral route. Questions can be asked about both these advertisements based on preference, persuasion and affect.

References

- Aarset, B., Beckmann, S., Bigne, E., Beveridge, M., Bjorndal, T., Bunting, J.,..., & Young, J. (2004). The European consumers' understanding and perceptions of the "organic" food regime: The case of aquaculture. *British Food Journal*, *106*(2), 93-105. doi: 10.1108/00070700410516784.
- Aertsens, J., Verbeke, W., Mondelaers, K., & Van Huylenbroeck, G. (2009). Personal determinants of organic food consumption: A review. *British Food Journal*, *111*(10), 1140-1067. doi: 10.1108/00070700910992961.
- Anderson, D., Burnham, K., & Thompson, W. (2000). Null hypothesis testing: Problems, prevalence, and an alternative. *Journal of Wildlife Management* *64*(4), 912-923. doi: 10.2307/3803199.
- Aschemann-Witzel, J., Maroscheck, N. & Hamm, U. (2013). Are organic consumers preferring or avoiding foods with nutrition and health claims? *Food Quality and Preference*, *30*, 68-76. doi: 10.1016/j.foodqual.2013.04.011.
- Azjen, I. (1991). Organizational behavior and human decision processes. *Theories of Cognitive Self-Regulation*, *50*(2), 179-211. doi: 10.1016/0749-5978(91)90020-T.
- Azzara, C. (2010). *Questionnaire design for business research: Beyond linear thinking. An interactive approach*. Mustang, Oklahoma: Tate Publishing & Enterprises, LLC.
- Baarda, B., De Goede, M., & Van Dijkum, C. (2011). *Basisboek statistiek met SPSS*. Groningen: Noordhoff Uitgevers bv.
- Bartels, J., & Onwezen, M. C. (2014). Consumers' willingness to buy products with environmental and ethical claims: The roles of social representations and social identity. *International Journal of Consumer Studies*, *38*, 82-89. doi: 10.1111/ijcs.12067.
- Bauer, H. H., Heinrich, D., & Schäfer, D. B. (2013). The effects of organic labels on global, local, and private brands More hype than substance? *Journal of Business Research*, *66*, 1035-1043. doi:10.1016/j.jbusres.2011.12.028.
- Bavec, F., & Bavec, M. (2006). *Organic production and use of alternative crops*. Boca Raton: Taylor & Francis Group.
- Bech-Larsen, T. & Grunert, K. (2003). The perceived healthiness of functional foods: A

- conjoint study of Danish, Finnish and American consumers' perception of functional foods. *Appetite*, 40(1), 9-14. doi: 10.1016/S0195-6663(02)00171-X.
- Black, A. & Rayner, M. (1992). Just read the label. Understanding nutrition information in numeric, verbal and graphic formats. Londen: HMSO.
- Blauw Research. (2010). *Groen licht voor biologische producten. V5 eindrapport. Algemene rapportage voor Ministerie van LNV*. Rotterdam: Dijk, van E., Verbiest, S., Groot, de J., & Vreugdenhil, N.
- Bodelier, R. (2013, September 21). Biologisch eten is goed fout. *Trouw: Letter & Geest*, pp. 5-8.
- Bonti-Ankomah, S., & Yiridoe, E. K. (2006). Organic and conventional food: A literature review of the economics of consumer perceptions and preferences. *Organic Agriculture Centre of Canada*, 59, 1-40. Retrieved from: <http://www.organiccentre.ca/Docs/BONTI%20&%20YIRIDOE%20April%2028%202006%20Final.pdf>.
- Bower, J. A., Saadat, M. A., & Whitten, C. (2003). Effect of liking, information and consumer characteristics on purchase intention and willingness to pay more for a fat spread with a proven health benefit. *Food Quality and Consumer Preference*, 14, 65-74. doi: 10.1016/S0950-3293(02)00019-8.
- Boyson Anker, T., Sandøe, P., Kamin, T., & Kappel, K. (2011). Health Branding Ethics. *Journal of Business Ethics*, 104, 33-45. doi: 10.1007/s10551-011-0887-9.
- Bryman, A., & Cramer, D. (2005). *Quantitative data analysis with SPSS 12 and 13: A guide for social scientists*. New York: Routledge.
- Burke, R., Harlam, B., Kahn, B., & Lodish, L. (1992). Comparing dynamic consumer choice in real and computer-simulated environments. *Journal of Consumer Research*, 19, 71-82. doi: 10.1086/209287.
- Burton, S., Garretson, J. A., & Velliquette, A. M. (1999). Implications of accurate usage of nutrition facts panel information for food product evaluations and purchase intentions. *Journal of the Academy of Marketing Science*. 27(4), 470-480. Retrieved from: http://download.springer.com/static/pdf/673/art%253A10.1177%252F009207039927006.pdf?auth66=1392995682_d86d541c8902362998e5c0d787bfce7e&ext=.pdf.
- Choi, B. & Pak, A. (2005). A catalog of biases in questionnaires. *Preventive Chronic*

- Diseases*, 2(1), 1-13. Retrieved from:
http://www.cdc.gov/pcd/issues/2005/jan/pdf/04_0050.pdf.
- Christensen, L. (2007). *Experimental methodology*. Boston: Pearson.
- Chryssohoidis, G., & Krystallis, A. (2005). Organic consumers' personal values research: Testing and validating the list of values (LOV) scale and implementing a value-based segmentation task. *Food Quality and Preference*, 16, 585-99. doi: 10.1016/j.foodqual.2005.01.003.
- Cook, A., Kerr, G., & Moore, K. (2002). Attitudes and intentions towards purchasing GM food. *Journal of Economic Psychology*, 23, 557-572. doi: 10.1016/S0167-4870(02)00117-4.
- Cowburn, G., & Stockley, L. (2005). Consumer understanding and use of nutrition labeling: A systematic review. *Public Health Nutrition*, 8, 21-28. doi: 10.1079/PHN2004666.
- Croll, J., Neumark-Sztainer, D., & Story, M. (2001). Healthy eating: What does it mean to adolescents? *Journal of Nutrition Education*, 33(4)- 193-198. doi: 10.1016/S1499-4046(06)60031-6.
- Davies, M., & Wright, L. (1994). The importance of labelling examined in food marketing. *European Journal of Marketing*, 28(2), 57-67. doi: 10.1108/03090569410055283.
- Dawes, J. (2008). Do data characteristics change according to the number of scale points used? An experiment using 5 point, 7 point and 10 point scales. *International Journal of Market Research*, 5(1, 2), 61-78. doi: 10.2501/S1470785308200250.
- De Magistris, T., & Gracia, A. (2012). Do consumers pay attention to the organic label when shopping organic food in Italy? In Reed, M. (Ed.), *Organic food and agriculture - New trends and developments in the social sciences*. 109-128. Rijeka, Croatia: InTech.
- Delude, C. & Mirvis, K. (2000). The gene revolution in food. *Your World: Biotechnology and you*, 10(1), 2-3. Retrieved from:
http://www.brown.edu/ce/adult/arise/resources/docs/yw10_1.pdf.
- Dimitri, C. & Dettmann, R. (2012). Organic food consumers: What do we really know about them? *British Food Journal*, 114(8), 1157-1183. doi: 10.1108/00070701211252101.
- Dinther van, M. (2012, March 10). China snelst groeiende producent biologisch eten. *De Volkskrant*. Retrieved from:
<http://www.volkskrant.nl/vk/nl/2844/Archief/archief/article/detail/3223248/2012/03/>

- 10/China-snelst-groeiende-producent-biologisch-eten.dhtml.
- Doom van, J. & Verhoef, P. (2011). Willingness to pay for organic products: Differences between virtue and vice foods. *International Journal of Research in Marketing*, 28, 167-180. doi:10.1016/j.ijresmar.2011.02.005.
- Dreezens, E., Martijn, C., Tenbült, P., Kok, G. & de Vries, N. (2005). Food and the relation between values and attitude characteristics. *Appetite*, 45, 40-46. doi: 10.1016/j.appet.2005.03.005.
- D. S. Carneiro de, J., Minim, V., Deliza, R., Silva, C., Carneiro, J., & Leão, F. (2005). Food Quality and Preference, 16, 275-282. doi: 10.1016/j.foodqual.2004.05.004.
- EKO-Keurmerk. (2014). Over het EKO-keurmerk. Retrieved from: <http://www.eko-keurmerk.nl/product/consument>.
- Erskine, C., & Collins, L. (1997). Eco-labelling: Success or failure? *The Environmentalist*, 17, 125–133. doi: 10.1023/A:1018552000651.
- Falguera, V., Aliguer, N., & Falguera, M. (2012). An integrated approach to current trends in food consumption: Moving toward functional and organic products? *Food Control*, 26, 274-281. doi: 10.1016/j.foodcont.2012.01.051.
- Feunekes, G. I. J., Gortemaker, I. A., Willems, A. A., Lion, R., & van den Kommer, M. (2008). Front -of-pack nutrition labeling: Testing effectiveness of different nutrition labeling formats front-of-pack in four European countries. *Appetite*, 50, 57-70.
- Field, A. (2009). *Discovering statistics using SPSS*. London: Sage Publications, Ltd.
- Fotopoulos, C. & Krystallis, A. (2002). Purchasing motives and profile of the Greek organic consumer: A countrywide survey. *British Food Journal*, 104(9), 730-765. doi: 10.1108/00070700210443110.
- French, A., Macedo, M., Poulsen, J., Waterson, T., & Yu, A. (2002). *Multivariate analysis of variance (MANOVA)*, Retrieved May 19, 2014, from <http://online.sfsu.edu/~efc/classes/biol710/manova/manova.htm>.
- Gilbert N. (2008) *Researching social life*. 3rd edition. London : Sage Publications Ltd.
- Gravetter, F. & Forzano, L. (2012). *Research methods for the behavioral sciences*. Belmont, CA: Wadsworth.

- Grunert, K., Bech-Larsen, T., & Bredahl, L. (2000). Three issues in consumer quality perception and acceptance of dairy products. *International Dairy Journal*, *10*(8), 575-584. doi: 10.1016/S0958-6946(00)00085-6.
- Grunert, K. & Wills, J. (2007). A review of European research on consumer response to nutrition information on food labels. *Public Health*, *15*, 385-399. doi: 10.1007/s10389-007-0101-9.
- Hauke, J. & Kossowski, T. (2011). Comparison of values of Pearson's and Spearman's correlation coefficients on the same sets of data. *Quaestiones Geographicae*, *30*(2), 87-93. doi: 10.2478/v10117-011-0021-1.
- Higginson, C., Kirk, R., Rayner, M., & Draper, S. (2002). How do consumers use nutrition label information? *Nutrition and Food Science*, *32*(4), 145-152. doi 10.1108/00346650210436253.
- Hjelmar, U. (2011). Consumers' purchase of organic food products. A matter of convenience and reflexive practices. *Appetite*, *56*, 336-344. doi: 10.1016/j.appet.2010.12.019.
- Hoefkens, C., Vandekinderen, I., De Meulenaer, B., Devlieghere, F., Baert, K.,..., & Van Camp, J. (2009). A literature-based comparison of nutrient and contaminant contents between organic and conventional vegetables and potatoes. *British Food Journal*, *111*(10), 1078-1097. doi: 10.1108/00070700910992934.
- Hoogland, C. T., Boer, de J., & Boersema, J. J. (2007). Food and sustainability: Do consumers recognize, understand and value on-package information on production standards. *Appetite*, *49*, 47-57. doi: 10.1016/j.appet.2006.11.009.
- Howell, D. (2012). *Statistical methods for psychology* (8th edition). Hampshire: Cengage Learning.
- Hsu, C. & Chen, M. (2014). Explaining consumer attitudes and purchase intentions toward organic food: Contributions from regulatory fit and consumer characteristics. *Food Quality and Preference*, *35*, 6-13. doi: 10.1016/j.foodqual.2014.01.005.
- Jadoo, S., Jawdat, A., Alabbasi, M., Al-Abed, A., & Maimaiti, N. (2013). Quote-expectation: Development of valid and reliable questionnaire. *World Applied Sciences Journal* *23*(1), 109-116. doi: 10.5829/idosi.wasj.2013.23.01.7489.

- Janssen, M. & Hamm, U. (2011). Consumer perception of different organic certification schemes in five European countries. *Organic Agriculture, 1*(1), 31-43. doi: 10.1007/s13165-010-0003-y.
- Janssen, M. & Hamm, U. (2012). Product labelling in the market for organic food: Consumer preferences and willingness-to-pay for different organic certification logos. *Food Quality & Preference, 25*, 9-22. doi: 10.1016/j.foodqual.2011.12.004.
- Kelly, B., Hughes, C., Chapman, K., Louie, J., Dixon, H., Crawford, J., King, L.,..., & Slevin, T. (2009). Consumer testing of the acceptability and effectiveness of front-of-pack food labeling systems for the Australian grocery market. *Health Promotion International, 24*(2), 120-129. doi:10.1093/heapro/dap012.
- Kealey, A. (2012). Unpacking the pastoral food package: Myth making in graphic design. School of Visual Arts: New York.
- Khan, I., Ghauri, T., & Kozup, J. C., Creyer, E. H., & Burton, S. (2003). Making healthful food choices: The influence of health claims and nutrition information on consumers' evaluations of packaged foodproducts and restaurant menu items. *Journal of Marketing, 67*(2), 19-34. Retrieved from:<http://www.jstor.org/discover/10.2307/30040520?uid=3738736&uid=2129&uid=2&d=70&uid=4&sid=21103310688961>.
- Krystallis, A. & Chrysochou, P. (2012). Do health claims and prior awareness influence consumers' preferences for unhealthy foods? The case of functional children's snacks. *Agribusiness, 28*(1), 86-102. doi: 10.1002/agr.20285.
- Laroche, M., Bergeron J., & Barbaro-Forleo, G. (2001). Targeting consumers who are willing to pay more for environmentally friendly products. *Journal of Consumer Marketing, 18*, 503–520. doi: 10.1108/EUM00000000006155.
- Leathwood, P. D., Richardson, D. P., Sträter, P., Todd, P. M., & van Trijp, H. C. M. (2007). Consumer understanding of nutrition and health claims: Sources of evidence. *British Journal of Nutrition, 98*, 474–484. doi: 10.1017/S000711450778697X.
- Lee W., Shimizu, M., Kniffin, K., & Wansink, B. (2013). You taste what you see: Do organic labels bias taste perceptions? *Food Quality and Preference, 29*, 33-39.
- Leech, N., Barrett, K., & Morgan, G. (2005). *SPSS for intermediate statistics. Use and interpretation* (2nd edition). New Jersey: Lawrence Erlbaum Associates, Inc.

- Levine, G. (2013). *A guide to SPSS for analysis of variance*. New Jersey: Lawrence Erlbaum Associates, Inc.
- Lipsey, M. (1990). *Design sensitivity. Statistical power for experimental research*. London: Sage Publications Ltd.
- Magistris, de T., & Gracia, A. (2008). The decision to buy organic food products in Southern Italy. *British Food Journal*, *111*(9), 929-947. doi: 10.1108/00070700810900620.
- Majeed, S. (2012). Impact of brand related attributes on purchase intention of customers. A study about the customers of Punjab, Pakistan. *Interdisciplinary Journal of Contemporary Research in Business*, *4*(3), 194-200. Retrieved from: <http://journal-archives20.webs.com/194-200.pdf>.
- McIntyre, C., & Baid, A. (2009). Indulgent snack experience attributes and healthy choice alternatives. *British Food Journal*, *111*(5), 486-497. doi: 10.1108/00070700910957311.
- Milieu Defensie. (2013, November 7). *Aanbod biologische en fairtrade producten in supermarketen opnieuw gestegen*. Retrieved from: <https://www.milieudefensie.nl/ekotellingen/nieuws/aanbod-biologische-en-fairtrade-producten-in-supermarkten-opnieuw-gestegen>.
- Möser, A., Hoefkens, C., Camp, van J., & Verbeke, W. (2010). Simplified nutrient labeling: Consumers' perceptions in Germany and Belgium. *Journal of Consumer Protection and Food Safety*, *5*, 169-180. doi: 10.1007/s00003-009-0531-0.
- Mueller Loose, S., & Remaud, H. (2013). Impact of corporate social responsibility claims on consumer food choice: A cross-cultural comparison. *British Food Journal*, *115*(1), 142-166. doi: 10.1108/00070701311289920.
- Muijs, D. (2011). *Doing quantitative research in education with SPSS*. London: Sage Publications Ltd.
- Naspetti, S., & Zanolli, R. (2009). Organic food quality and safety perception throughout Europe. *Journal of Food Products Marketing*, *15*, 249-266. doi: 10.1080/10454440902908019.
- Naspetti, S., & Zanolli, R. (2011). Communicating ethical Arguments to organic consumers: A study across five European countries. *International Journal of Food System Dynamics*

- 2(3), 253-273. Retrieved from:
<http://ageconsearch.umn.edu/bitstream/121946/2/Naspetti-ok.pdf>.
- Neuhouser, M., Kristal, A., & Patterson, R. (1999). Use of food nutrition labels is associated with lower fat intake. *Journal of the American Dietetic Association*, 99(1), 45-53. doi: 10.1016/S0002-8223(99)00013-9.
- Newman, I. & McNeil, K. (1998). *Conducting survey research in the social sciences*. Lanham, Maryland: University Press of America Inc.
- Padel, S., & Foster, C. (2005). Exploring the gap between attitudes and behavior: Understanding why consumers buy or do not buy organic food. *British Food Journal*, 107(8), 606-625. doi: 10.1108/00070700510611002.
- Pallant, J. (2010). *SPSS survival manual*. Sydney: Allen & Unwin Book Publishers Australia.
- Pastor, K. (2012, September, 2). In organic we trust. Retrieved from:
http://www.huffingtonpost.com/kip-pastor/in-organic-we-trust_b_1266097.html.
- Paul, J. & Rana, J. (2012). Consumer behavior and purchase intention for organic food. *Journal of Consumer Marketing*, 29(6), 412-422. doi: 10.1108/07363761211259223.
- Pearson, E. & Hartley, H. (1958). *Biometrika tables for statisticians*. New York: Cambridge University Press.
- Perrini, F., Castaldo, S., Mirani, N., & Tencati, A. (2010). The impact of corporate social responsibility associations on trust in organic products marketed by mainstream retailers: A study of Italian consumers. *Business Strategy and the Environment*, 19(8), 512-526. doi: 10.1002/bse.660.
- Petty, R., & Cacioppo, J. (1986). The elaboration likelihood model of persuasion. In L. Berkowitz (Ed.), *Advances in experimental social psychology*. 123-205. San Diego, CA: Academic Press.
- Provencher, V., Polivy, J., & Herman, C. (2009). Perceived healthiness of food. If it's healthy, you can eat more! *Appetite*, 52, 340-344. doi: :10.1016/j.appet.2008.11.005.
- Research Centrum voor Onderwijs en Arbeidsmarkt (ROA). (2009). *De arbeidsmarkt naar*
- Rijlaarsdam, B. (2013, September 13). Biologisch is cool. *NRC.nl*. Retrieved from:
<http://www.nrc.nl/handelsblad/van/2013/september/13/biologisch-is-cool-1293303>.
- Roe, B., Levy, A. S., & Derby, B. M. (1999). The impact of health claims on consumer search and product evaluation outcomes: Results from FDA experimental data. *Journal of*

- Public Policy & Marketing*, 18(1), 89-105. Retrieved from:
<http://www.jstor.org/discover/10.2307/30000511?uid=3738736&uid=2&uid=4&sid=110330688961>.
- Rosendo Ríos, V. & Pérez del Campo, E. (2013). *Business research methods: Theory and practice*. Madrid: Esic Editorial.
- RTL Nieuws. (2013, December 13). *2013: Het jaar van de voedselschandalen*. Retrieved from: <http://www.rtlnieuws.nl/nieuws/special/2013-het-jaar-van-de-voedselschandalen>.
- Sant 't, K. (2009). *(Non)-Commercial health logos on packaged goods: A conscious decision?* Tilburg University, Tilburg.
- Schuldt, J. P., & Hannahan, M. (2013). When good deeds leave a bad taste. Negative inferences from ethical food claims. *Appetite*, 62, 76-83. doi: 10.1016/j.appet.2012.11.004.
- Schuldt, J. P., Muller, D., & Schwarz, N. (2011). The “fair trade” effect: Health halos from social ethics claims. *Social Psychological and Personality Science*, 00(0), 10.1177/1948550611431643.
- Schuldt, J. P., & Schwarz, N. (2010). The “organic” path to obesity? Organic claims influence calorie judgments and exercise recommendations. *Judgment and Decision Making*, 5(3), 144–150. doi: 10/10509/jdm10509.
- Schwartz, S. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. In M. Zanna (Ed.), *Advances in experimental social psychology*. 1-65. Waterloo: Academic Press, Inc.
- Seidell, J.(2009). A front-of-pack nutrition logo: A quantitative and qualitative process evaluation in the Netherlands. *Journal of Health Communication: International Perspectives*, 14(7), 631-645. doi: 10.1080/10810730903204247.
- Skal Biocontrole. (2014). *About Skal*. Retrieved from: <http://www.skal.nl/about-skal/>.
- Skibbe, D. (2012). *Give me a sign: Unconsciously influencing purchase intention through front-of-pack logos*. Twente University, Enschede.
- Stevens, J. (1999). *Intermediate statistics: A modern approach (2nd ed.)*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Swoka. (1992). *Consumenten onderzoek naar biologische producten. Hoe het marktaandeel vergroot kan worden*. Den Haag: Baggerman, T. & Hack, M.

- Tabachnick, B. & Fidell, L. (2007). *Using multivariate statistics* (5th edition). Boston: Pearson Education.
- Tarkiainen, A., & Sundqvist, S. (2005). Subjective norms, attitudes and intentions of Finnish consumers in buying organic food. *British Food Journal*, 107(11), 808-822. doi: 10.1108/00070700510629760.
- Tenbült, P., Vries, de N., Dreezens, E., & Martijn, C. (2007). Categorizing genetically modified food products: Effects of labelling on information processing. *British Food Journal*, 109(4), 305-314. doi: 10.1108/00070700710736552.
- Tenbült, P., Vries, de N., Dreezens, E., & Martijn, C. (2005). Perceived naturalness and acceptance of genetically modified food. *Appetite*, 45, 47-50. doi: 10.1016/j.appet.2005.03.004.
- Tewksbury, R. (2009). Qualitative versus quantitative methods. Understanding why qualitative methods are superior for criminology and criminal justice. *Journal of Theoretical and Philosophical Criminology*, 1(1), 38-58. Retrieved from: http://jtpcrim.org/January_Articles/Qualitative_Vs_Quantitative_Richard_Tewksbury.pdf.
- Team, T. (2014, April 14). WalMart strikes a deal with wild oats to sell cheaper organic foods. *Forbes Magazine*. Retrieved from: <http://www.forbes.com/sites/greatspeculations/2014/04/14/wal-mart-strikes-a-deal-with-wild-oats-to-sell-cheaper-organic-foods/>.
- Thorndike, E. (1920). A constant error in psychological ratings. *Journal of Applied Psychology*, 4, 25-29.
- Trienekens, J., & Zuurbier, P. (2008). Quality and safety standards in the food industry, developments and challenges. *International Journal Production Economics*, 113, 107-122. doi: 10.1016/j.ijpe.2007.02.050.
- Yiridoe, E. K. , Bonti-Ankomah, S., & Martin, R. C. (2005). Comparison of consumer perceptions and preference toward organic versus conventionally produced foods: A review and update of the literature. *Renewable Agriculture and Food Systems*, 20(4), 193–205. doi: 10.1079/RAF2005113.

- Valor, C. (2008). Can consumers buy responsibly? Analysis and solutions for market failures. *Journal of Consumer Policy*, 31, 315–326. doi: 10.1007/s10603-008-9070-9.
- Veblen, T. (1899). *Theory of the Leisure Class. An Economic Study in the Evolution of Institutions*. New York: Macmillan.
- Vermeir, I., & Verbeke, W. (2006). Sustainable food consumption: Exploring the consumer “attitude – behavioural intention” gap. *Journal of Agricultural and Environmental Ethics*, 19, 169–194. doi: 10.1007/s10806-005-5485-3.
- Vickers, A. (2005). Parametric versus non-parametric statistics in the analysis of randomized trials with non-normally distributed data. *BMC Medical Research Methodology*, 5(35), 1-12. doi: 10.1186/1471-2288-5-35.
- Vyth, E. L., Steenhuis, I. H. M., Mallant, S., Mol, Z., Brug, J., Temminghoff, M., ..., & Walters, A. & Long, M. (2012). The effect of food label cues on perceptions of quality and purchase intentions among high-involvement consumers with varying levels of nutrition knowledge. *Journal of Nutrition Education and Behavior*, 44(4), 350-354. doi: 10.1016/j.jneb.2011.08.008.
- Weightman, D., & McDonagh, D. (2004). Supra-functional factors in sustainable products. In T. Bhamra & B. Hon (Eds.), *Design and Manufacture for Sustainable Development*. 91–101. New York: Wiley.
- Williams, P. (2005). Consumer understanding and use of health claims for foods, *Nutrition Reviews*, 63(7), 256-264. doi: 10.1111/j.1753-4887.2005.tb00382.x.
- Winter, C., & Davis, S. (2006). Organic foods. *Journal of Food Science*, 71(9), 117-124. doi: 10.1111/j.1750-3841.2006.00196.x.
- Wouw, van de P. (2013, December 23). *Vleesbedrijf fraudeerde bewust met 11.000 kilo biologische ham*. Retrieved from: <http://www.nrc.nl/nieuws/2013/12/23/vleesbedrijf-fraudeerde-bewust-met-11-000-kilo-biologische-ham/>.
- Worstell, T. (2014, April 10). Maybe WalMart has just killed the organic food market. *Forbes Magazine*. Retrieved from: <http://www.forbes.com/sites/timworstell/2014/04/10/maybe-walmart-has-just-killed-the-organic-food-market/>.

Young, W., Hwang, K., McDonald, S., & Oates, C. (2010). Sustainable consumption: Green consumer behaviour when purchasing products. *Sustainable Development, 18*, 20–31. doi: 10.1002/sd.394.

Zagata, L., & Lostak, M. (2012). In goodness we trust. The role of trust and institutions underpinning trust in the organic food market. *Sociologia Ruralis, 52*(4), 470-487. doi: 10.1111/j.1467-9523.2012.00574.x.

Appendices

Appendix 1: The six versions of food packaging material used in the questionnaire.



1. Healthy product type, no logo condition.



2. Healthy product type, organic logo condition.



3. Healthy product type, organic claim condition.



4. Unhealthy product type, no logo condition



5. Unhealthy product, organic logo condition.



6. Unhealthy product, organic claim condition.

Appendix 2: Pilot study for product selection (in Dutch).

Beste respondent,

Voor mijn afstudeeronderzoek zou u mij enorm helpen door deze vragenlijst in te vullen. Ik zou u vriendelijk willen verzoeken om van de onderstaande producten aan te geven hoe gezond u deze producten vindt. U kunt hierbij kiezen uit de keuzemogelijkheden van 1 tot en met 7 waarbij 1 staat voor heel erg ongezond en 7 staat voor heel erg gezond.

1. Oreo chocolade koekjes	1	2	3	4	5	6	7
2. Paprika	1	2	3	4	5	6	7
3. Chocolade	1	2	3	4	5	6	7
4. Ketchup	1	2	3	4	5	6	7
5. Pizza	1	2	3	4	5	6	7
6. Melk	1	2	3	4	5	6	7
7. Chips	1	2	3	4	5	6	7
8. Vanille ijs	1	2	3	4	5	6	7
9. Eieren	1	2	3	4	5	6	7
10. Frietjes	1	2	3	4	5	6	7
11. Aardappel	1	2	3	4	5	6	7
12. Appel	1	2	3	4	5	6	7
13. Biefstuk	1	2	3	4	5	6	7
14. Vissticks	1	2	3	4	5	6	7

Ik ben een:

Man

Vrouw

Mijn leeftijd is:

... jaar

Hartelijk bedankt voor uw medewerking!

Table 3: Testing the assumption of normality of background variables sex, age in years, education level and annual gross income.

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Sex	,367	196	,000	,633	196	,000

a. Lilliefors Significance Correction

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Age in years	,168	193	,000	,900	193	,000

a. Lilliefors Significance Correction

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Highest education level	,267	195	,000	,864	195	,000

a. Lilliefors Significance Correction

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Annual gross income	,530	196	,000	,126	196	,000

a. Lilliefors Significance Correction

Table 4: Testing the assumption of normality for purchase intention and health perception.

Logo condition		Tests of Normality					
		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Health perception	No logo	,176	61	,000	,909	61	,000
	Organic logo	,158	64	,000	,905	64	,000
	Organic logo with claim	,147	71	,001	,887	71	,000
Purchase intention	No logo	,134	61	,008	,934	61	,003
	Organic logo	,113	64	,040	,942	64	,004
	Organic logo with claim	,090	71	,200*	,969	71	,077

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Product type		Tests of Normality					
		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Health perception	Healthy product	,108	105	,004	,940	105	,000
	Unhealthy product	,146	91	,000	,864	91	,000
Purchase intention	Healthy product	,141	105	,000	,926	105	,000
	Unhealthy product	,089	91	,073	,970	91	,033

a. Lilliefors Significance Correction

Table 5: Matrix scatter for linearity.

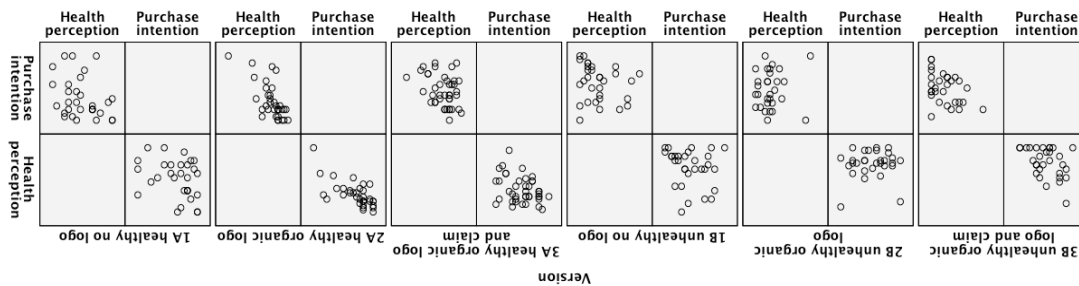


Table 6: Testing the assumption of multicollinearity and singularity by presenting the

Correlations			Health perception	Purchase intention
Spearman's rho	Health perception	Correlation Coefficient	1,000	,432**
		Sig. (2-tailed)	.	,000
		N	196	196
		Purchase intention	Correlation Coefficient	,432**
		Sig. (2-tailed)	,000	.
		N	196	196

** . Correlation is significant at the 0.01 level (2-tailed).
results of the nonparametric correlation.

Table 7: Testing the assumption of homogeneity of variance-covariance.

Box's Test of Equality of Covariance Matrices ^a	
Box's M	29,098
F	1,887
df1	15
df2	174107,174
Sig.	,020

Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.

a. Design: Intercept + Logocondition + Producttype + Logocondition * Producttype

Table 8: Main and interaction effects of logo condition and product type on purchase intention and health perception

Tests of Between-Subjects Effects							
Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	Purchase intention	75,225 ^a	5	15,045	5,980	,000	,136
	Health perception	568,342 ^b	5	113,668	121,934	,000	,762
Intercept	Purchase intention	3504,830	1	3504,830	1393,014	,000	,880
	Health perception	2581,620	1	2581,620	2769,356	,000	,936
Logocondition	Purchase intention	2,601	2	1,300	,517	,597	,005
	Health perception	3,703	2	1,852	1,986	,140	,020
Producttype	Purchase intention	56,333	1	56,333	22,390	,000	,105
	Health perception	561,159	1	561,159	601,966	,000	,760
Logocondition * Producttype	Purchase intention	18,140	2	9,070	3,605	,029	,037
	Health perception	2,344	2	1,172	1,257	,287	,013
Error	Purchase intention	478,041	190	2,516			
	Health perception	177,120	190	,932			
Total	Purchase intention	4130,444	196				
	Health perception	3530,663	196				
Corrected Total	Purchase intention	553,265	195				
	Health perception	745,462	195				

a. R Squared = ,136 (Adjusted R Squared = ,113)

b. R Squared = ,762 (Adjusted R Squared = ,756)

Table 9: The post hoc tests of the version variable might reveal significant differences between groups. These results may not be used as true in this research.

Multiple Comparisons							
LSD							
Dependent Variable	(I) Version	(J) Version	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Purchase intention	1A healthy no logo	2A healthy organic logo	-,3046	,39732	,444	-1,0883	,4792
		3A healthy organic logo and claim	,6509	,38109	,089	-,1008	1,4027
		1B unhealthy no logo	1,3950*	,40624	,001	,5937	2,1963
		2B unhealthy organic logo	1,3000*	,40955	,002	,4921	2,1079
		3B unhealthy organic logo and claim	,8889*	,40955	,031	,0810	1,6967
	2A healthy organic logo	1A healthy no logo	,3046	,39732	,444	-,4792	1,0883
		3A healthy organic logo and claim	,9555*	,36792	,010	,2298	1,6813
		1B unhealthy no logo	1,6996*	,39391	,000	,9226	2,4765
		2B unhealthy organic logo	1,6046*	,39732	,000	,8208	2,3883
		3B unhealthy organic logo and claim	1,1935*	,39732	,003	,4097	1,9772
	3A healthy organic logo and claim	1A healthy no logo	-,6509	,38109	,089	-1,4027	,1008
		2A healthy organic logo	-,9555*	,36792	,010	-1,6813	-,2298
		1B unhealthy no logo	,7440	,37753	,050	-,0007	1,4887
		2B unhealthy organic logo and claim	,6491	,38109	,090	-,1027	1,4008

	unhealthy organic logo					
	3B	,2379	,38109	,533	-,5138	,9897
	unhealthy organic logo and claim					
1B unhealthy no logo	1A healthy no logo	-1,3950*	,40624	,001	-2,1963	-,5937
	2A healthy organic logo	-1,6996*	,39391	,000	-2,4765	-,9226
	3A healthy organic logo and claim	-,7440	,37753	,050	-1,4887	,0007
	2B unhealthy organic logo	-,0950	,40624	,815	-,8963	,7063
	3B unhealthy organic logo and claim	-,5061	,40624	,214	-1,3074	,2952
2B unhealthy organic logo	1A healthy no logo	-1,3000*	,40955	,002	-2,1079	-,4921
	2A healthy organic logo	-1,6046*	,39732	,000	-2,3883	-,8208
	3A healthy organic logo and claim	-,6491	,38109	,090	-1,4008	,1027
	1B unhealthy no logo	,0950	,40624	,815	-,7063	,8963
	3B unhealthy organic logo and claim	-,4111	,40955	,317	-1,2190	,3967
3B unhealthy organic logo and claim	1A healthy no logo	-,8889*	,40955	,031	-1,6967	-,0810
	2A healthy organic logo	-1,1935*	,39732	,003	-1,9772	-,4097
	3A healthy organic logo and claim	-,2379	,38109	,533	-,9897	,5138
	1B unhealthy no logo	,5061	,40624	,214	-,2952	1,3074
	2B	,4111	,40955	,317	-,3967	1,2190

		unhealthy organic logo					
Health perception	1A healthy no logo	2A healthy organic logo	,0871	,24185	,719	-,3900	,5641
		3A healthy organic logo and claim	,1656	,23197	,476	-,2920	,6232
		1B unhealthy no logo	3,5174*	,24728	,000	3,0297	4,0052
		2B unhealthy organic logo	3,1867*	,24929	,000	2,6949	3,6784
		3B unhealthy organic logo and claim	3,7667*	,24929	,000	3,2749	4,2584
	2A healthy organic logo	1A healthy no logo	-,0871	,24185	,719	-,5641	,3900
		3A healthy organic logo and claim	,0786	,22395	,726	-,3632	,5203
		1B unhealthy no logo	3,4304*	,23977	,000	2,9574	3,9033
		2B unhealthy organic logo	3,0996*	,24185	,000	2,6226	3,5767
		3B unhealthy organic logo and claim	3,6796*	,24185	,000	3,2026	4,1567
	3A healthy organic logo and claim	1A healthy no logo	-,1656	,23197	,476	-,6232	,2920
		2A healthy organic logo	-,0786	,22395	,726	-,5203	,3632
		1B unhealthy no logo	3,3518*	,22980	,000	2,8985	3,8051
		2B unhealthy organic logo	3,0211*	,23197	,000	2,5635	3,4786
		3B unhealthy organic logo and claim	3,6011*	,23197	,000	3,1435	4,0586
	1B	1A healthy	-3,5174*	,24728	,000	-4,0052	-3,0297

 THE ORGANIC LOGO AND CLAIM: PURCHASE AND HEALTH STIMULI?

unhealthy no logo	no logo					
	2A healthy	-3,4304*	,23977	,000	-3,9033	-2,9574
	organic logo					
	3A healthy	-3,3518*	,22980	,000	-3,8051	-2,8985
2B unhealthy organic logo	organic logo and claim					
	2B	-,3308	,24728	,183	-,8185	,1570
	3B	,2492	,24728	,315	-,2385	,7370
2B unhealthy organic logo	unhealthy organic logo and claim					
	1A healthy	-3,1867*	,24929	,000	-3,6784	-2,6949
	no logo					
	2A healthy	-3,0996*	,24185	,000	-3,5767	-2,6226
	organic logo					
	3A healthy	-3,0211*	,23197	,000	-3,4786	-2,5635
3B unhealthy organic logo and claim	organic logo and claim					
	1B	,3308	,24728	,183	-,1570	,8185
	unhealthy no logo					
	3B	,5800*	,24929	,021	,0883	1,0717
3B unhealthy organic logo and claim	unhealthy organic logo and claim					
	1A healthy	-3,7667*	,24929	,000	-4,2584	-3,2749
	no logo					
	2A healthy	-3,6796*	,24185	,000	-4,1567	-3,2026
	organic logo					
	3A healthy	-3,6011*	,23197	,000	-4,0586	-3,1435
2B unhealthy organic logo	organic logo and claim					
	1B	-,2492	,24728	,315	-,7370	,2385
	unhealthy no logo					
	2B	-,5800*	,24929	,021	-1,0717	-,0883
	unhealthy organic logo					

 Based on observed means.

The error term is Mean Square(Error) = ,932.

 *. The mean difference is significant at the

Table 10: Main and interaction effects of version type on purchase intention and health perception.

Tests of Between-Subjects Effects							
Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	Purchase intention	75,225 ^a	5	15,045	5,980	,000	,136
	Health perception	568,342 ^b	5	113,668	121,934	,000	,762
Intercept	Purchase intention	3504,830	1	3504,830	1393,014	,000	,880
	Health perception	2581,620	1	2581,620	2769,356	,000	,936
Version	Purchase intention	75,225	5	15,045	5,980	,000	,136
	Health perception	568,342	5	113,668	121,934	,000	,762
Error	Purchase intention	478,041	190	2,516			
	Health perception	177,120	190	,932			
Total	Purchase intention	4130,444	196				
	Health perception	3530,663	196				
Corrected Total	Purchase intention	553,265	195				
Total	Health perception	745,462	195				

a. R Squared = ,136 (Adjusted R Squared = ,113)

b. R Squared = ,762 (Adjusted R Squared = ,756)