Consumers' intention to buy a fresh food product: the influence of brands

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	June 30, 2014

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Keywords:	Brands, Branding, Brand label, Price, Fresh food, Apple, Consumer, Purchase intentions, Taste perception

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June 30, 2014

ABSTRACT

Objective: To examine the effect of a brand on consumer's purchase intentions and perceptions of fresh food products.

Methods: 54 respondents have participated in a 2x2x2 full-factorial experiment. The experiment consists of a sensory test in which eight apples are evaluated. During the experiment participants filled out a questionnaire. The effect of apple brand, brand label and price have been examined to determine their influence on consumer's intention to buy.

Results: Respondents have a lower intention to buy apples that are positioned and marketed as a real brand. Brand labels influence consumer's intention to buy. The effect depends on the type of brand label that is used. An Elstar label positively influences intention to buy, a Kanzi label negatively. A brand label negatively influences the perception of tastiness. 'Juicy', 'sweet' and 'fresh' are major determinants of tastiness and influence consumer's intention to buy. A relation between price and taste perception is shown by mealiness, a high priced apple is perceived as less mealy. Amongst the respondents no segments could be identified, the responses are similar.

Conclusions: Elstar is a stronger brand than Kanzi, even if it is not marketed as a real brand. Elstar is more familiar to the respondents and it positively influences intention to buy. Kanzi's brand strategy should be more effective in order to compete with the familiarity of Elstar apples. Branding fresh food products should be applied in another way than using brand labels. Apples need to be juicy, sweet and fresh and these attributes should be communicated to the consumers. Brand managers should not focus too much on identifying different target segments, as differences between consumers' responses are small.

Keywords: Brands, Branding, Brand label, Price, Fresh food, Apple, Consumer, Purchase intentions, Taste perception.

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ACKNOWLEDGEMENTS

This research is part of my master thesis in the Marketing and Consumer Behaviour group of Wageningen University. It was a great opportunity to conduct this research. This study gives insight into the effect of brands on consumer's purchase intentions of fresh food products. Hopefully the results of this research will be useful for further research studies.

A number of people supported me during this research project, I would like to express my gratitude to them. First I would like to thank my first supervisor Frans Verhees for his useful feedback and help. Especially in the beginning of this research the discussions we had helped me to define the project. The feedback sessions were very helpful during the statistical analyses. Further I would like to thank my second supervisor Ivo van der Lans for his input and feedback. I would also like to thank the respondents that participated in the experiment. Their input was of great importance for the success of this research.

Furthermore, I would like to thank my fellow students, friends and family for their support and advice.

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EXECUTIVE SUMMARY

This thesis studies the influence of a brand on consumer's purchase intentions and perceptions of fresh food products. The first part of this research consists of a literature study, in which different theories about branding are explained.

Brands are developed by businesses, the brand associations and beliefs are made in consumer's minds (Van Dam and Van Trijp, 2007). A brand image is formed out of brand associations that are held in consumer's memory (Keller, 1993). Brand associations consist of attributes, benefits and attitudes (Keller, 1993), and influence consumer's choices, purchase intentions, preferences and willingness to pay (Del Rio, Vazquez, and Iglesias, 2001). In the fresh food domain a large part of the products produced is sold without branding (Van Dam and Van Trijp, 2007). It appears to be difficult to brand fresh food products. A reason for this could be the seasonality and fluctuation of quality, and the commodity status of fresh food products (Riezebos and Zimmermann, 2005; Padberg et al., 1997; SIGN, 2013; Nijssen and Van Trijp, 1998). It is unclear to what extent a brand influences consumer's choice behaviour for fresh food products. When brand managers better understand the influence of a brand on consumer's purchase decisions, more effective brand-strategies can be developed (Keller, 1993). An experiment has been conducted to increase knowledge about the influence of fresh food brands on consumers' product evaluation and purchase intentions.

A sensory test and a questionnaire are part of the experiment, in which 54 respondents have participated. Apples are used in the sensory test. The experiment reveals the influence of an apple brand, brand labels and price on taste perception and intention to buy. The programmes SPSS and Glimmix are used for the regression analysis, that estimates the relationships in the model.

Results show that brand labels influence intention to buy. The Elstar label positively influences purchase intentions, a Kanzi label negatively. Also price negatively affects purchase intentions; a higher price leads to a lower intention to buy. Another result is that consumer's taste perception significantly influences intention to buy. Consumers perceive an apple as tasty when it is juicy, sweet and fresh. Brand labels negatively influence taste perception, therefore branding should be applied in another way than using brand labels.

Kanzi's branding strategy should be more effective in order to compete with the familiarity of Elstar apples. Amongst the respondents, no segments are identified. This means that consumers probably react similar to marketing efforts and differences between consumers are too small to make different brand strategies effective.

The apples that were used in this research appeared to be similar in taste. It is expected that when more different apples would have been used, more remarkable outcomes would be present.

It is an opportunity for further research to find out why brand labels negatively affect taste perception, in order to find a solution to this problem. The image and awareness of fresh food brands might be of greater influence than a brand label, this also could be studied in further research.

1. INTRODUCTION

In the fresh food sector the number of well-known brands is low. A large part of the fresh foods produced is sold as a generic product without branding (Van Dam and Van Trijp, 2007). Reason for this could be that fresh food products are not brand sensitive, consumers are not influenced by fresh food brands as some researchers argue (Riezebos and Zimmermann, 2005). However, there are several fresh food brands established at the (international) market that are successful (Riezebos and Zimmermann, 2005).

The more difficult it is to judge the product quality beforehand, the more a brand name influences the decision making process (Riezebos and Zimmermann, 2005). Because it is difficult to judge the product quality of fresh food products before consumption, a brand influences consumer's decisions (Riezebos and Zimmermann, 2005; Kathuria and Gill, 2013). To consumers, brands are an identification of the product, serve as a search cost reducer, are a signal of quality and reduce risk (Keller et al., 2008).

Brand management aims at distinguishing products from competitors, creating a distinct place in consumer's perceptual map (Aaker, 1991). A brand strategy is successful when consumers are convinced about the differences between the brands within a product category (Kotler and Keller, 2010). Some researchers argue that fresh food products are seen as commodity products and therefore consumers do not see important differences (SIGN, 2013). However, other studies show that brands remove this commodity status, because branding provides opportunities for product differentiation and better profits (Beverland, 2001). It is shown by other fresh food brands, like Zespri, that it is possible to differentiate from competitors by branding (Beverland, 2001).

Branding helps to position a product and it provides communication with consumers (Nijssen and Van Trijp, 1998). Brand positioning focuses on the process of making and adjusting the perception of consumers about a product or brand with the use of a brand strategy (Crawford, 1985). As companies develop and name products, the beliefs about brands are made in consumers' minds (Van Dam and Van Trijp, 2007). It is typical for the fresh food sector that in some cases the brand name of a fresh food product is similar to the name of the product variety. It is for the consumers to perceive these products as a brand or more as a product variety.

Brand names fulfil a role as information cue to consumers, it facilitates recall and interference of previously learned brand associations (Warlop et al., 2005). The associations that arise from brand cues and that are held in consumer's memory, form a brand image (Keller, 1993). The brand associations influence consumer's choices, purchase intentions, preferences, willingness to pay a price premium, acceptance of brand extensions and the motivation to recommend brands to others (Del Rio et al., 2001).

The success of a branding strategy is dependent of both producers and consumers. Although the aim of a company's brand strategy is to meet consumer's needs as well as possible, it is uncertain whether the target group will react positively to this brand strategy. In consumer's food choice decisions many factors are involved; biological factors (e.g. hunger), psychological factors (e.g. personality, learning), socio-cultural factors (social status, traditions) and economic factors (price) (Bisogni et al., 2002; Grunert et al., 2012; Köster, 2009). The question is to what extent a brand influences this choice behaviour.

It is unclear why there still is a substantial amount of unsuccessfully branded or unbranded fresh food products. In current literature, there is no clear solution to this problem. The lack of insight and limited knowledge about the influence of fresh food brands on consumer's choice behaviour is a problem for producers and sellers of fresh food products. By having a better understanding of the influence of brands on consumer's purchase decisions, more effective brand-strategies can be developed, like the positioning of the product and promotional activities (Keller, 1993). The aim of this research is to increase knowledge about the influence of fresh food brands on consumers' product evaluation and purchase intentions.

In this research, the problem will be approached from a consumer perspective. Consumers' choice behaviour regarding fresh food products will be researched by measuring consumers' evaluation of the product (taste perception) and the intention to buy the fresh food product. In an experiment, participants will be exposed to eight interventions in which they taste a fresh food product and fill out a questionnaire. Fresh food products in this research include fruit and vegetables. Taste is one of the most important motivations for food choice (Sijtsema et al., 2012) and therefore included in this research. The effect of brand labels and price will be researched. Price is included to this research because it appears to be an important determinant of food choice and perceived product quality (Honkanen and Frewer, 2009; Soyez et al., 2012; Tsao et al., 2005).

The general research question is as following:

"How does a brand influence consumers' purchase intentions of fresh food products?"

Sub-questions will help answering the general research question:

- Does a brand label influence consumers' intention to buy a fresh food product?
- Does price affect consumers' intention to buy a fresh food product?
- Does a brand label influence consumers' taste perception?
- Does price influence consumers' taste perception?

The structure of this report is as follows. First a literature study will be provided, which will discuss the different theories available on branding. A conceptual model visualizes the hypothesized relationships. In Chapter 3 the methodology of the empirical research will be explained. In Chapter 4 the results of the experiment will be described. In Chapter 5 the conclusions and discussion are presented.

2. LITERATURE STUDY

In this literature study different theories about branding will be described. At the end of this literature study a conceptual model and hypotheses will be presented.

2.1 INTRODUCTION

According to the American Marketing Association a brand can be defined as 'a name, term, sign, symbol, design or a combination of them intended to identify the goods or services of one seller, or a group of sellers and to differentiate them from those of competitors' (AMA, 2014). A brand is a messenger between company and customer, and can be researched from these two perspectives. In this study, the focus is on the consumer perspective.

2.2 THE VALUE OF A BRAND

Brands are valuable for both companies as well as for consumers. The term brand equity explains the value of a brand as a set of assets like brand awareness, customer loyalty, perceived quality and brand associations (Aaker, 1991). The strength of a brand lies in consumer's minds and can be measured by the above mentioned assets (Keller et al., 2008). For consumers branding serves as a guidance in the purchase decision, it gives more confidence and it helps them to interpret and process information about the product (Fernandez-Barcala and Gonzalez-Diaz, 2006). Consumer based brand equity is a concept that is used by the development of marketing strategies and managerial decision making. It can be described as the differential effect of consumer's brand knowledge on consumer's responses towards the marketing of that brand (Keller, 1993). According to Keller (Keller, 1993), brand awareness and brand image are two important concepts that together form brand knowledge.

2.3 BRAND KNOWLEDGE

Consumer's brand knowledge influences consumer's responses to a brand (Keller, 1993). Brand knowledge can be explained as a personal meaning about a brand stored in consumer memory (Keller, 2003), including descriptive and evaluative information. Due to prior experiences people have a certain degree of knowledge which can be retrieved during pre-purchase situations. According to behavioural learning theories, learning is a result of responses to external events. Marketing stimuli like brand names, commercials and jingles are examples of stimuli that influence consumer's learning processes (Solomon et al., 2010). A brand provides information to consumers, it is sort of a memory node. A brand node will be activated when external information comes in or internal information is retrieved, and linked to other nodes in memory. The strength of the association between the activated node and all linked nodes determine the information that will be retrieved from memory, as explained in the associative network memory model (Anderson, 1996; Keller, 1993). An example of this theory is when consumers consider buying a soft drink, they may directly think of Coca Cola because this brand is strongly associated with the product category.

2.4 BRAND AWARENESS

Brands serve as guidelines in consumer's search for products. Brands are associated with facts, thoughts, feelings, perceptions, images, and experiences (Van Dam and Van Trijp, 2007). Consumers should first be aware of a brand before obtaining information and

knowledge about it. Brand awareness is related to the strength of the brand node in memory, and reflected by consumer's ability to identify the brand under different conditions (Keller, 1993). Brand recognition and brand recall performance are two aspects of brand awareness (Keller et al., 2008). When consumers are able to recognise the brand as soon as they are exposed to it, the term brand recognition is applicable. Brand recall performance means the ability to remember and recall brand names. The brand salience is hereby important, this refers to the prominence or level of activation in consumer's memory (Solomon et al., 2010; Van Dam and Van Trijp, 2007). The more salient a brand is, the more likely the brand is present in consumer's consideration set, from which a product choice will be made (Van Dam and Van Trijp, 2007).

The elaboration likelihood model (Petty and Cacioppo, 1986) suggests that under low involvement consumer's choices are based on brand awareness considerations. As grocery shopping is often seen as a low-involvement activity (Hauser et al., 2011), brand awareness is an important concept for food brands. Another reason why brand awareness is an important concept, is that brand awareness affects consumer's decisions by influencing the strength and formation of brand associations, which in turn form a brand image (Keller, 1993).

2.5 Brand image

A brand image is created by both marketers and consumers. A brand is presented to the world by many ways; its name, packaging, communication and place of distribution (Plummer, 1985). Consumers interpret the brand through many filters; experience, perceptions and people. Marketer's brand message and a brand image in consumer's minds do not always match. In this research Keller's definition of brand image will be used: 'perceptions about a brand as reflected by the brand associations held in consumer memory' (Keller, 1993). Brand associations are all brand-related feelings, thoughts, experiences, images and perceptions that are held in consumer's memory (Aaker, 1991), and are seen as fundamental to understand customer-based brand equity (Till et al., 2011). Brand associations influence consumer's choices, purchase intentions, preferences, willingness to pay a price premium, acceptance of brand extensions and the motivation to recommend brands to others (Del Rio et al., 2001). Positive brand associations create beneficial attitudes and feelings, and provides a reason to buy the brand (Till et al., 2011). Brand associations can be distinguished into attributes, benefits and attitudes. These different kind of brand associations make up a brand image (Keller, 1993).

2.5.1 Attributes

Attributes can be distinguished in product-related attributes and non-product related attributes. Product-related attributes (or intrinsic attributes) relate to a physical product or service requirements, they cannot be changed without altering the physical product/service itself. Food products have intrinsic attributes like taste, freshness and texture (Méndez et al., 2011; Oude Ophuis et al., 1995). Non-product related attributes (or extrinsic attributes) are external aspects of the product that relate to its purchase or consumption. Keller identified four main types of non-product related attributes: price information, packaging or product appearance, user imagery (type of person that uses the product) and usage imagery (situation in which product is used) (Keller, 1993). For image products, extrinsic attributes like brand name and packaging are more important than intrinsic attributes (Steenkamp, 1990).

For utilitarian goods, like ballpoints and envelopes, intrinsic attributes are more important than extrinsic attributes (Olson, 1972). For food products there are contradictory findings, some researchers argue that intrinsic attributes are more important than extrinsic attributes and other researchers argue the opposite (Méndez et al., 2011).

2.5.2 Benefits

Benefits refer to what consumers think the product will provide them. Consumers learn to associate particular consequences with certain actions, in other words consumers learn to choose for product attributes that have desirable consequences (benefits) and reduce undesirable consequences (Gutman, 1982). Three types of benefits can be identified: functional, experiential and symbolic benefits (Keller, 1993). Functional benefits are directly related to the consumed product and correspond to the product-related (intrinsic) attributes. Experiential benefits are related to how it feels to use the product and also correspond to the product-related attributes. Symbolic benefits correspond to non-product-related (extrinsic) attributes and are related to more psychological needs (Keller, 1993). Usually symbolic benefits provide an indirect advantage by consuming a product, for example self-esteem or the feeling of power (Keller, 1993; Fuchs and Diamantopoulos, 2010).

2.5.3 Attitudes

Attitudes are an overall evaluation of a brand (Del Rio et al., 2001; Keller, 1993). According to the theory of reasoned action (or theory of planned behaviour), attitudes and values are antecedents of food behaviour, they can predict and explain consumer's choices for products and services (Ajzen, 1991). Through the attitudes and beliefs that consumers hold towards products/services, purchase intentions can be predicted (Thompson et al., 1994). Although this theory of Ajzen and Fishbein has been applied to many food studies and has proven its predictive power (Thompson et al., 1994), other important components of consumer behaviour are underrepresented. As the theory of planned behaviour is focussed on rational decision making and consumer's cognitive impact on their behaviour, affective influences are neglected (Hauser et al., 2011). Both cognitive and affective factors are predictors of brand attitudes (Yoo and MacInnis, 2005).

2.6 Beliefs

Beliefs can be described as the extent to which consumers associate a product or brand with a certain attribute or consequence (Keller, 1993; Yoo and MacInnis, 2005). Because people can only receive, process and remember a limited amount of information (Miller, 1956), beliefs that are salient in mind are considered as the most prevailing determinants of people's intentions and actions (Ajzen, 1991). Prior to a purchase, consumers cannot evaluate a product on every aspect (e.g. taste). Therefore consumers rely on cues such as brand name, price and physical appearance, to form a belief about the product (Steenkamp, 1990). Beliefs can be based on descriptive, informational and inferential belief formation (Fishbein and Ajzen, 1975). Descriptive beliefs are all beliefs that result from direct observations of the characteristics of the product (Steenkamp, 1990). For example by tasting a food product, a consumer can form a descriptive belief about the performance of the brand on experience attributes (Steenkamp, 1990). Informational beliefs are beliefs based on accepted information provided by outside sources such as advertisements, magazines or friends. The probability that information is processed is influenced by source (credibility), message and involvement (Steenkamp, 1990). Inferential beliefs are beliefs about an object

that go beyond information that is explicitly given (Ford et al., 1987; Steenkamp, 1990). Inferential beliefs are based on previously learned relationships (Bruner, 1957; Steenkamp, 1990) and made up from assumptions (Bruner, 1957). For example the inferential belief "Samsung products are of high quality", can be based on a positive experience with a Samsung smartphone and made up from the assumption that other Samsung products are of high quality as well.

2.7 Brand personality and brand identification

Brand personality can be defined as 'the set of human characteristics associated with a brand' (Aaker, 1997) and it influences consumer's purchase decisions (Plummer, 1985). The creation of a brand personality works similar to the concept of a brand image. A brand personality has two faces: first, the brand personality statement, that is what marketers want consumers to think and feel, and second the brand personality profiles, what consumers actually do think and feel (Plummer, 1985). When consumers perceive, feel and value their belongingness with a brand, then there is consumer-brand identification. It appears that the more attractive the brand personality is, the higher the level of brand identification (Kim et al., 2001). Consumers' brand identification influences consumer behavioural processes: decision making, consumer loyalty, brand commitment, consumer satisfaction, possibility of repurchase, positive word of mouth and consumers' willingness to pay a price premium (Tuškej et al., 2011). A similar theory to brand-identification is the self-congruity theory. The self-congruity theory can be described as a comparison between brand values and consumers' own set of values. This means that the way someone perceive his/her self and the way how brands are perceived, influences purchase motivations (Kressmann et al., 2006). When there is value congruity between a brand image and a consumers self-identity, the brand is perceived as more attractive because it enables consumers to express their selves to a higher extent. (Tuškej et al., 2011). As value congruity influences consumer's identification process with a brand, it also influences consumer's commitment to a brand (Kressmann et al., 2006; Sirgy et al., 2008).

2.8 Labelling vs. Branding

Although a product label seems to be similar to a brand label, there is a difference between labelling and branding. A label can be explained as 'the information attached to or on a product for the purpose of naming and describing its use, its dangers, its ingredients, its manufacturer, and the like. A label is usually thought of as printed material, but labelling in the broader sense has been ruled to include spoken information and separate promotional pieces, if they serve the information purpose and are closely allied to the product' (AMA, 2014). Well-known labels in the Dutch horticulture sector are EUREP-GAP, ISO and Florimark (Riezebos and Zimmermann, 2005). Labels have an informative function; labels indentify the product and provide descriptions about objective qualities of the product like place of origin and nutritional quality (Riezebos and Zimmermann, 2005; Van Dam and Van Trijp, 2007). Because consumers cannot know the exact product characteristics of fresh food, it is difficult to judge the quality of fresh food products before consumption (Anania and Nisticò, 2004). In such cases, consumers have a need for information to make an informed choice and to reduce uncertainty (Van Dam and Van Trijp, 2007). Quality labels can help consumers by providing credible information.

A brand can legally protect unique product features (Keller et al., 2008), a label is not a protected trademark and therefore competitors can use the same label (Riezebos and Zimmermann, 2005). Brands are designed to communicate more competitive and less tangible information to consumers (Van Dam and Van Trijp, 2007). Branding requires higher investments and entrepreneurship, but it also provides valuable assets to a firm. One of the assets that provides value to a company is customer loyalty; when a brand is experienced as positive and customers are satisfied it leads to customer retention (Khalili et al., 2013). When consumers perceive a certain brand as more valuable compared to competitive brands, this might lead to a sustainable and long-term competitive advantage (Davčik and Rundquist, 2012).

2.9 Perceived quality and price

Previous studies have shown that perceived product quality is related to consumers' purchase intentions (Tsiotsou, 2006). Research that was focused on Malaysian consumers, showed that the perceived value of food products significantly affects consumers' purchase intentions (Shaharudin et al., 2010). As consumers' purchase intentions are influenced by the perceived value of the product, it is important to approach product quality from a consumer perspective. Perceived quality can be described as the consumer's judgement about a product's overall excellence or superiority (Zeithaml, 1988). The term perceived quality is used to explain that quality judgements are based on the perceptions, needs and goals of consumers (Steenkamp, 1990). Consumer's evaluation of product attributes can be used to investigate the formation of perceived quality in brand choice (Méndez et al., 2011). Price and brand name are important extrinsic attributes of product quality (Rao and Monroe, 1989; Oude Ophuis et al.,1995). When it is difficult to judge the product quality prior to a purchase, a brand name is of great influence on consumer's purchase decisions because it reduces the perceived risk (Riezebos and Zimmerman, 2005). Consumers tend to be loyal to a brand if it has satisfied them in the past, and are less motivated to try new brands especially when the food product does not guarantee the desired quality (Yeung et al., 2010).

Perceived price can be described as consumers' overall assessment of the utility of a product, based on perceptions of what is received and what is given (Zeithaml, 1988). There is a difference between perceived price and objective (actual) price. Consumers do not always remember actual prices, instead they encode prices in ways that are meaningful to them (Murthi and Rao, 2012; Zeithaml, 1988). Thereby consumer's attention, awareness, and knowledge about prices seems to be too low to have an accurate internal reference price for products (Zeithaml, 1988). Previous research shows a positive relationship between price and perceived quality; the higher the price, the higher the perceived quality (Lambert, 1972; Tsao et al., 2005). Consumers use price as a cue when other salient product attributes are unclear (Tsao et al., 2005). On the other hand, when quality cues such as brand name or store image are present, price becomes a less important quality indicator (Zeithaml, 1988). Thereby, the product category and price variation influence the use of price as a quality indicator. Some products are not perceived as less-valuable when it has a lower price. When price differences are small, consumers probably do not perceive a product as more valuable when it is only a few cents more expensive (Zeithaml, 1988).

2.10 TASTE PERCEPTION

The taste of food products is very important in food choice decisions (Sijtsema et al., 2012). Taste consists of five 'basic' tastes: sweet, sour, salty, bitter and umami (meaty/savoury kind of taste) (Sijtsema et al., 2012). Especially sweet and sour (acid) are the major taste components of fruit (Nutrition Centre, 1998) and are important in consumer preference (Harker et al., 2002). Besides these taste components, also the texture of fruit is important (Jaeger et al., 1998). The texture attributes 'hardness' and 'juiciness' of apples, are important to consumers (Harker et al., 2002). Thereby it appears that mealy apples are less preferred by consumers, mealiness is considered to be a negative quality attribute (Jaeger et al., 1998). In purchase decisions the appearance and the odour of food products appear to be the most important sensory attributes, the taste and odour are the most important attributes when the food product is consumed (Blair, 2012).

In general consumers are not able to taste differences between brands. This is shown by an experiment with beer drinkers. It appeared that brand labels and consumer's brand-associations influences product evaluations, and not the taste of the beers (Allison and Uhl, 1964). A slightly different research of Wilcox et al. (2013) showed that beer drinkers were not able to tell the difference between beers from either a can or a bottle. These results implicate that consumers perceive product differences or distinctions more due to marketing efforts rather than through perceived physical product differences (Allison and Uhl, 1964). Different brands are differentiated products in consumer's minds, and therefore important for relatively homogeneous food products (Makens, 1965).

2.11 ISSUES IN BRANDING FRESH FOOD PRODUCTS

Branding fresh food products differs from branding non-fresh food products; it appears to be more difficult to brand fresh food products (SIGN, 2013). One obvious reason for this is that a successful brand should provide a consistent product quality. The quality of fresh food products fluctuates due to external factors (Riezebos and Zimmermann, 2005). Thereby the seasonality of the production complicates the constant quality and constant delivery of horticulture fresh food products (Padberg et al., 1997). Besides, fresh food products are often seen as a commodity product (SIGN, 2013; Nijssen and Van Trijp, 1998), consumers do not see important differences. However, some researchers argue that the development of brands could remove this commodity status, because branding provides opportunities for product differentiation and better profits (Beverland, 2010). A brand strategy is successful when consumers are convinced about the differences between the brands within a product category (Kotler and Keller, 2010).

The experience character of fresh food products enhances brand sensitivity (Wertheim-Heck, 2003; Riezebos and Zimmermann, 2005). If consumers have to try (experience) the product in order to judge the product quality, a brand can be of great influence (Riezebos and Zimmerman, 2005). Besides the experience attributes, also search-attributes are applicable to fresh food products. Search attributes can be judged by consumers without experiencing the product. Experience attributes are for example taste and texture, search attributes are shape and colour. Products that mainly have search attributes are less brand sensitive, and therefore experience attributes should be added or highlighted. Brand sensitivity is also influenced by the expressive or functional character of the product, expressive products are more brand sensitive because consumers can identify with these kind of products. As fresh

food is more a functional product rather than an expressive product, a brand will not provide very much value (Riezebos and Zimmerman, 2005).

2.12 Conceptual model

It remains unclear to what extent a brand influences consumer's evaluation of, and choices for fresh food products. Taste is important in consumer's food choice decisions (Sijtsema et al., 2012). Research shows that brands can affect consumer's taste perception (Wilcox et al., 2013; Allison and Uhl, 1964), however this is not shown specifically for fresh food products. In this research the effect of a fresh food brand on consumer's taste perception and purchase intentions will be estimated, as shown in the conceptual model (see figure 1).

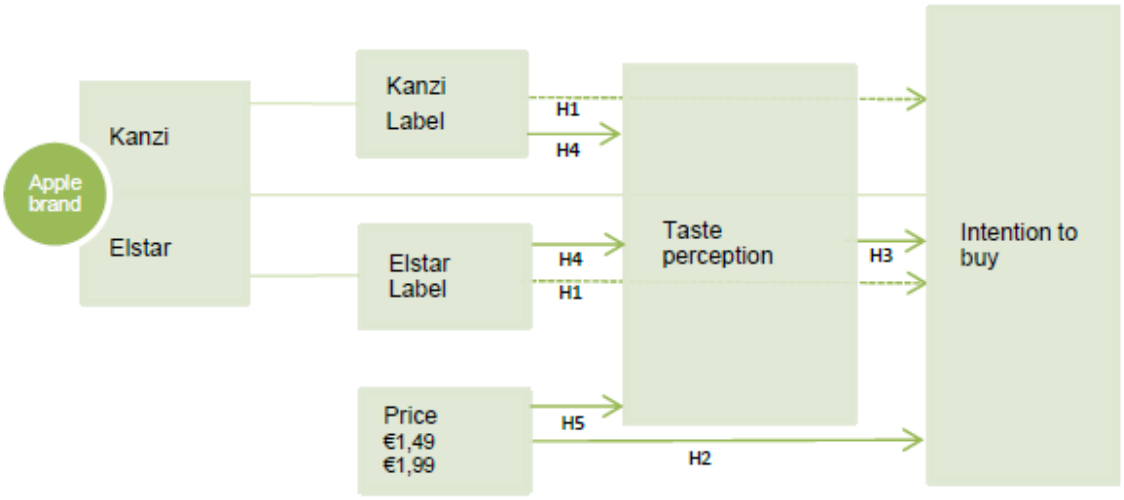


Figure 1: Conceptual model

Apples will be used as fresh food product. Two apple brands (varieties) will be included: Kanzi and Elstar. There is a distinction between so called 'club variety apples' and 'free to produce apple varieties'. The club variety (Kanzi) is established and marketed as a real brand, a free to produce apple variety (Elstar) is not managed as a brand (Robinson, 2011; Feenstra, 2010). The variety behind the legally protected brand name Kanzi is named Nicoter-Cov and it is managed by GKE NV. Mission is to create financial surpluses in the entire value chain, from grower to consumer (GKE, 2014). Kanzi is a cross breeding of Gala and Braeburn (Fruitmasters, 2014; EFC Fruit, 2014). Elstar is a free apple variety which originates from the Netherlands and available everywhere in Europe (Groenten FruitBureau, 2014). Elstar is a cross breeding from the apple varieties Golden Delicious and Ingrid Marie. The Elstar apple is the best known, most appreciated and most consumed apple variety in the Netherlands (Van den Berg and Van der Salm, 2011). While Kanzi heavily invests in marketing campaigns, Elstar is not marketed as a brand. Kanzi apples are recognizable by their brand label. Elstar labels have different designs. Besides, Elstar apples are often not labelled.

The effect of apple brand (variety) will be researched to see whether Kanzi apples are perceived and evaluated differently from Elstar apples. Brand labels and price are expected to influence taste perception and intention to buy. In literature it is shown that a brand label is valuable to consumers (Fernandez-Barcala and Gonzalez-Diaz, 2006). Next to this it raises

awareness and it distinguishes a product from other products available. Therefore it is expected that a brand label positively influences consumer's purchase intentions:

H1: A brand label increases consumer's intention to buy.

The relation between price and intention to buy is quite obvious; an increase in price leads to a decrease in consumer demand (Andreyeva et al., 2010). Therefore the relation between price and intention to buy is hypothesized as:

H2: Price negatively influences consumer's intention to buy.

As taste is one of the most important determinants of food choice decisions (Furst et al., 1996; Sijtsema et al.,2012), it is likely that consumers' purchase intentions are higher for apples that are perceived as tasty:

H3: The perception of tastiness positively influences intention to buy.

In previous studies it is shown that brand labels influence consumer's taste perception (Allison and Uhl, 1964; Cavanagh and Forestell, 2013). It is hypothesized that this is also applicable to fresh food products. When the apple contains a brand label, consumers will like the taste better:

H4: A brand label positively influences taste perception.

Because consumers associate a higher price with a higher product quality, consumers think a more expensive product is of higher quality (Tsao et al., 2005). Consumers evaluate fruit quality mainly on sensory perception (Alonso et al., 2005); the taste of food products is a determinant of perceived product quality. It is expected that a higher price positively influences taste perception:

H5: **Price positively influences taste perception.**

3. METHODOLOGY

In this chapter the research design, the procedure of the experiment, and the measurement- and analysis methods will be described.

3.1 DESIGN

Because more than one independent variable is included in this research, a full factorial experimental design is appropriate to use. In a factorial design, the effect of a number of variables can be measured (De Vaus, 2001). It is a full factorial design because all elements will be measured. Because there are three factors (apple brand, brand label, and price) with each 2 levels, it is a 2x2x2 factorial design (see figure 2).

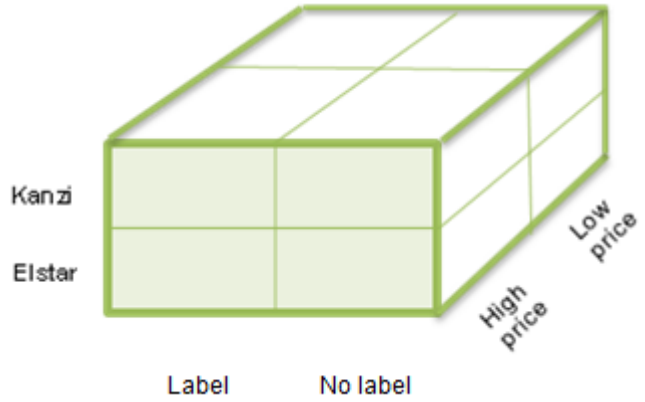


Figure 2: Full factorial experimental design

The design is a within-subject design because each participant is exposed to all test conditions. The experiment consists of eight interventions. Table 1 illustrates the combinations of the independent variables: apple brand, brand label and price.

Table 1. Groups defined in a 2x2x2 factorial design.

Group	X1. Brand	X2. Label	X3. Price
1	Kanzi	Without label	Low price
2	Kanzi	Without label	High price
3	Elstar	Without label	Low price
4	Elstar	Without label	High price
5	Kanzi	With label	Low price
6	Kanzi	With label	High price
7	Elstar	With label	Low price
8	Elstar	With label	High price

3.2 PROCEDURE

The experiment was conducted in a research room. Students were asked to participate, the target amount of participants was 50. The questionnaire was developed with the program Qualtrics and is shown in appendix I. Participants filled out the survey on the computer and the data was saved directly.

The survey is divided into different phases. The sequence of the questions will be explained in this paragraph. A pre-test is executed in order to improve the questions and setup of the survey.

3.2.1 INTRODUCTION TO SURVEY

People were asked to participate one by one. When the participant entered the research room, he/she received €2,00. It was explained to the participant that he/she had to buy their most preferred apple at the end of the experiment, this to increase the reliability of their answers. The first two questions of the survey were about the frequency of buying and consuming apples.

3.2.2 AWARENESS AND IMAGE

The questions that followed were about the familiarity of apples and whether these apples were perceived as a variety or as a brand. Other apples than Kanzi and Elstar were included in these questions, otherwise it was too obvious the experiment was about Kanzi and Elstar.

The image of apples is researched by asking what participants think of apples in general. Followed by questions about the image of four specific mentioned apple varieties (Jonagold, Junami, Kanzi, Elstar). Image has been measured by asking to what extent participants agreed upon statements like "this apple is special", or "this apple is sustainable". Also taste related associations were included in these questions. The same taste associations were used later in the experiment as well.

3.2.3 TASTE EVALUATION AND INTENTION TO BUY

Participants tasted slices from either a Kanzi or an Elstar apple, presented with or without brand label and with a high or low price. The low price is €1,49 per kilo and the high price is €1,99 per kilo. Water and crackers were provided to neutralise the taste. After tasting the apples slices (eight times), participants answered questions about taste perception, how much they like the apple (attitude) and their willingness to buy.

Because taste is important for the evaluation of a food product, it was central to the experiment. The apples were presented to the participant as following. The apple as a whole was presented on a plate. On this plate a price tag (high or low price) was attached. The apple slice (sliced from another apple) was lying in front of the apple. The apples were sliced just before the participant tasted it. First the four unlabelled apples were served. By serving the unlabelled apples as first, participants were not influenced by the brand label. When labelled apples were presented first, it could be that participants recognised the taste of other apples more easily. After the four unlabelled apples the labelled apples were served. The order within these two blocks is randomized by Qualtrics. A message explained which apple (number) the participant should ask for.

In a pre- test, four apple varieties (Pink Lady, Kanzi, Elstar, and Jonagold) were evaluated on taste and appearance. Kanzi and Pink Lady are club varieties, and Jonagold and Elstar are not (Brown and Maloney, 2009; BOIP, 2014). From the pre-test it appeared that the combination Kanzi - Elstar would be appropriate for the sensory test. The taste and appearance of these two apple varieties is different but not too different. The Pink Lady apple was recognized too easily due to the bright colour, and the taste was special.

3.2.4 Personal information

At the end of the survey, questions about the respondent's personality were asked. These personal questions were asked at the end of the survey because then it had no influence on the answers that participants gave during the experiment. It could be that participants answer differently when they revealed personal information. The personal questions are about age, gender and personal traits regarding interest in fresh food products. This personal information can be used to explain differences among the participants, for example when different segments appear to exist. Segments can be based on descriptive aspects (demographic, geographic or psychographic) but also based on behavioural characteristics like consumer's knowledge, attitudes or response to products (Kotler and Keller, 2010). This latter method is most valuable for understanding branding issues (Keller et al., 2008, Kotler, 2008, Lilien et al., 2007).

3.2.5 Confirmation purchase intention

When participants finished the survey they were going to buy an apple. Eight apples were presented, provided with the same information as during the experiment. It was not possible to present the apples in the same order as during the experiment, because during the experiment the order was randomised. When the participant had chosen an apple the last question of the survey (about which apple was chosen) was filled out by the researcher. When the experiment was finished the participant received €2,00 and the apple they chose, this to thank the participant for his/her contribution to the research.

3.3 Measurement

The main concepts that are measured in this research are taste perception and intention to buy.

3.3.1 Taste perception

In this research taste perception consists of seven taste attributes: tasty, juicy, firm, sour, mealy, sweet and fresh. The seven taste-items are rated on a 5 points Likert scale, on which 1 stands for 'totally disagree' and 5 for 'totally agree'. Participants are asked to what extent they agree upon statements like: 'this apple is tasty' or 'this apple is sweet'. With regression analysis the effect of apple brand, brand labels and price has been estimated. An additional analysis has been carried out to see which variables influence the perception of tastiness.

3.3.2 Intention to buy

Participants' willingness to buy has been measured on a scale from 0 to 100% (based on the 11-points Juster scale (East et al., 2013)). The higher the score, the higher the willingness to buy. Besides asking how much participants are willing to buy the product, their attitude towards the apple variety will be measured by asking how much they like the apple that they tasted. The attitude that consumers have towards products, determines to a certain extent

their motivation to purchase it (Thompson et al., 1994). Attitude has been measured by asking to what extent the participant likes the apple (after tasting it).

3.4 Analysis

Statistical analyses have been carried out by making use of the programmes SPSS and Glimmix. With regression analysis, unknown relationships are predicted based on the relation between dependent and independent variables. In this research regression analyses are used to help answer the research questions and to test the hypotheses. The following dummy variables are used in the analyses:

Z1:	1= Apple brand: Kanzi	0= Apple brand: Elstar
Z2:	1=Kanzi label	0= No Kanzi label
Z3:	1=Elstar label	0= No Elstar label
Z4:	1=High price	0=Low price

Taste perception and intention to buy are the dependent variables. In this research the effect of a brand label and price are estimated. In the experiment, participants evaluated the taste of the apples on seven items: tasty, juicy, firm, sour, mealy, sweet, fresh. Therefore seven different equations can be conducted. For example, the equation for tasty is as following :

$$\text{Taste}_{\text{Tasty}} = B0_1 + B1_r Z1 + B2_{Ar} Z2 + B2_{Br} Z3 + B3_r Z4 + e$$

The seven equations apply to the eight interventions (see table 1, paragraph 3.1). The following equation is applicable to apple combination 1 (Kanzi apple, without label, low price):

$$\text{Taste}_{\text{Tasty}} = B0_1 + (B1_r * 1) + (B2_{Ar} * 0) + (B2_{Br} * 0) + (B3_r * 0) + e$$

Factor analysis has been carried out to collect the seven taste attributes into less variables. It appears to be appropriate to include three factors. Component 1 has high factor loadings for tasty, juicy and fresh (see appendix II). Component 2 has a high factor loading for the variable sweet and a negative factor loading for sour. Component 3 has a negative factor loading on the variable firm and a considerable positive loading for mealy. The components are named 'Appetizing' (component 1), 'Sweet intensity' (component 2) and 'Texture' (component 3).

Results of the regression analysis with only the three components included, and the results of the regression analysis with all seven taste variables included separately, are not very different. Therefore, all seven taste attributes will be included in the regression analyses, and not the three components from the factor analysis. A check for multi-collinearity has been carried out (see appendix III). In the regression analysis for intention to buy, only the variable 'apple brand' has a VIF score higher than 2 (2,501). A check for normality has been carried out as well. According to the QQ-plots the assumption for normality is confirmed (see appendix IV).

General linear modelling (GLM) has been used to test whether the variables (apple variety, Elstar label, Kanzi label, price) have any effect on taste perception and intention to buy. A GLM test provides regression analysis for multiple dependent variables and one or more

factor variables (apple variety, brand label, price). After GLM, regression analysis are carried out for taste perception and intention to buy. Because taste consists of seven variables, seven separate regression analyses have been executed. In the regression analyses, two models are compared with the F-test. The complete model consists of all independent variables. In the reduced model Kanzi label and Elstar label are removed. The two models are compared to test whether the model significantly improves by the inclusion of the variables Elstar label and Kanzi label (in other words: are the brand labels of influence?). The unstandardized coefficients are used to see whether the relationship is positive or negative. Unstandardized coefficients are used because the (dummy) variables are not complicated to understand. The purpose is to measure whether there is any significant effect of the independent variables, there is no necessity to measure the relative influence of the independent variables.

The R-square values appear to be low. To resolve this problem additional regression analyses are carried out with the program Glimmix. Regression analysis in SPSS assumes that all observations are independent from each other. This is not correct as more observations come from one respondent, and therefore the observations are not totally independent from each other. Thereby, each respondent is different in some way. For example, each respondent has different taste preferences (Sijtsema, 2012), the time of apple consumption was different, and the one respondent could have been more hungry than the other respondent. After an iterative process, Glimmix estimates the best regression model and assigns respondents to segments. The program can estimate the relation between observations in each underlying group (Wedel, 1997), thus it does not assume that each observation is independent from each other. Glimmix provides the probabilities to which derived segments respondents belong, and the regression coefficients in each segment. The coefficients of the segments can be different, which explains that each respondent is different. The coefficients relate the expectation of observations to the explanatory (independent) variables. Based on the CAIC value of the regression models, the number of segments will be determined. The model with the lowest CAIC value should be selected (Wedel, 1997).

Glimmix regression analysis has been used to measure the effect on the perception of tastiness and on the intention to buy. Both a full model and a reduced model (brand labels excluded) are compared. This to see whether the CAIC value decreases (and thus the model becomes better) when the brand labels are not included.

Before the analyses were executed, the data has been standardized. By standardizing the data, responses become more clear. With standardization the mean score of a group is subtracted from the individual scores and divided by the standard deviation. The absolute differences between variables are cancelled out. The results from the unstandardized dataset are presented in appendix V.

4. OUTCOMES

The results of the experiment are presented in this chapter.

4.1 SAMPLE

Convenience sampling has been applied in this research. This because the respondents were asked to participate because of their convenient accessibility and proximity. 54 respondents have participated in the experiment. The majority of the respondents (68,5%) is female and the average age is 21 years old. The sample is not representative for an average Dutch person because all participants are young, there is a majority of females and all of them (except one respondent) are student of Wageningen University.

Most participants live together with housemates. Half of the respondents consume apples more than three times a week, 18,5 percent of the respondents consume one apple or less than one apple per week. More than half of the respondents, namely 51,9 percent, buy apples once a week. One third of the respondents (33,3%) buys apples less often than one time per week. This means they buy apples less often (e.g. once in the two weeks) or someone else buys apples for them.

A large majority of the respondents (77,8%) does not find a brand important. Almost half of the respondents say that they are not willing to pay a higher price for a constant quality and availability. Only 33,3 percent of the respondents state that they are willing to pay more for this advantage. Apples are generally seen as a healthy, traditional and tasty product. Apples are not seen as adventurous or special.

It appears that the respondents are most familiar with the apple varieties that are not positioned as a real brand: Elstar and Jonagold. 88,9 percent of the respondents is familiar to very familiar with apple variety Elstar. 85,2 percent of the respondents is familiar to very familiar with apple variety Jonagold. Third most familiar apple variety is Junami (40,7%). Kanzi is the least known apple variety, only 33,3 percent of the respondents is familiar with this apple variety. Junami and Kanzi apples are most perceived as a brand, Junami has an average score of 63,56 and Kanzi 64,24 (at a scale 0= perceived as a variety and 100= perceived as a brand). Elstar and Jonagold are more perceived as an apple variety (average scores 24,5 and 32,2 respectively). At the end of the experiment, the apple that was chosen most often was an Elstar apple with label and with a low price (25,9%). Second, an Elstar apple without label and a low price (18,5%) and third, a Kanzi apple with label and a low price (16,7%). A remarkable finding is that 13 percent of the respondents chose a high-priced Elstar apple with label, and only 3,7 percent of the respondents chose a high-priced Kanzi apple with label.

4.2 INTENTION TO BUY

To know which attributes are important in consumer decision making, the effects on intention to buy have been estimated. By using General Linear Modelling (GLM) it appears that a Kanzi label significantly influences intention to buy (p=0,056). Also price is significant related to intention to buy (p=0,003). Another GLM shows that several taste perceptions significant relate to intention to buy, namely: tasty (p=0,029), firm (p=0,065), sour (p=0,061), mealy (p=0,046) and fresh (p=0,049).

A regression analysis has been carried out to look closer at these relationships. The unstandardized coefficients are shown in table 2. Because of missing values, the number of observations (N) has decreased to 327.

Table 2: SPSS Regression analysis for Intention to buy

	Intention to buy	
Model*	1	2
Apple brand	**-0,158**	-0,009
Kanzi label		-0,077
Elstar label		**0,210**
Price	**-0,275**	**-0,278**
Tasty	**0,590**	**0,594**
Juicy	**0,128**	**0,125**
Firm	0,057	0,044
Sour	**-0,075**	**-0,081**
Mealy	-0,007	-0,011
Sweet	**0,115**	**0,112**
Fresh	**0,129**	**0,141**
R square	0,647	0,654
Df	317	315
F	**64,611**	**54,155**
N	327	327

*Model 1: Reduced model (brand labels excluded), Model 2: Full model

Both model 1 (F=64,611 p=0,000) and model 2 (F=54,155 p=0,000) are significant. The inclusion of the brand labels improves the model (p=0,044), this means that the brand labels significantly influence intention to buy. The estimated coefficient for Kanzi label is negative (B=-0,077), which means that a Kanzi label negatively influences intention to buy. The Elstar label positively influences intention to buy (B=0,210 p=0,019), therefore Hypothesis 1 is accepted. In Model 1, apple brand (variety) negatively relates to intention to buy (B=-0,158 p=0,031), which means that respondents have a lower intention to buy for Kanzi apples. In model 2 the regression coefficient for apple brand is also negative, but the influence on intention to buy is not significant. The perception of tastiness positively influences intention to buy (B=0,594 p=0,000), therefore Hypothesis 2 is accepted. Also juiciness (B=0,125 p=0,001), sweet intensity (B=0,112 p=0,005) and freshness (B=0,141 p=0,001) positively affect intention to buy. The perception of sourness negatively influences intention to buy (B=-0,081 p=0,040). Also price negatively influences intention to buy (B=-0,278 p=0,000), therefore hypothesis 3 is accepted.

The relation between attitude and intention to buy has been investigated as well. It appears that the 'attitude towards the apple' positively influences intention to buy (B=0,820 p=0,000). In other words; the extent to which people like the apple, positively influences their intention to buy the apple. The tastiness (B=0,625 p=0,000), juiciness (B=0,089 p=0,022), sweet intensity (B=0,135 p=0,001) and freshness (B=0,117 p=0,005) of apples positively influence respondents' attitude. Brand labels do not significantly influence attitude.

From the Glimmix analysis it appears that only one segment should be included into the model. This is based on the lowest CAIC value (see appendix VI). Because there is only one segment identified, not much difference in respondents can be found. When the variables Kanzi label and Elstar label are excluded from the model, the model appears to have a lower CAIC value (621,66 instead of 629,15). A lower CAIC value means a better model, but the

difference between the CAIC values is very small. Therefore it cannot be stated that brand labels do not influence intention to buy at all. Especially because one of the brand labels significantly influences intention to buy in the full model. In table 3 the estimated coefficients of the Glimmix regression analysis are shown. Because Glimmix cannot remove missing values automatically, these were removed from the dataset before starting the analysis. All observations of respondents with a missing value were removed, therefore the number of respondents (N) decreased to 41.

Table 3 Glimmix regression analysis for Intention to buy

	Intention to buy	
Model*	1	2
Apple brand	0,007	-0,135
Kanzi label	-0,071	
Elstar label	**0,208**	
Price	**-0,269**	**-0,266**
Tasty	**0,603**	**0,599**
Juicy	**0,130**	**0,134**
Firm	0,037	0,050
Sour	-0,040	-0,025
Mealy	-0,006	-0,002
Sweet	**0,133**	**0,136**
Fresh	**0,126**	**0,114**
Intercept	0,094	0,198
Df	28	30
R-square	0,213	0,227
N	41	41

*Model 1: Full model, Model 2: Reduced model (brand labels excluded)

The Glimmix results support the findings from the SPSS regression analysis. Tastiness (B=0,599 p=0,000), juiciness (B=0,134 p=0,001), sweet intensity (B=0,136 p=0,001) and freshness (B=0,114 p=0,007) positively influence the intention to buy. Price negatively influences intention to buy (B=-0,266 p=0,000). Model 1 shows that Elstar label positively influences intention to buy (B=0,208 p=0,026).

4.3 TASTE PERCEPTION

From GLM it appears that both apple brand (p=0,000) and a Kanzi brand label (p=0,027) significantly relate to taste perception. The Elstar label is not significantly related to taste perception, but worth mentioning (p=0,078). Seven separate regression analyses have been carried out, the unstandardized coefficients are shown in table 4. The number of respondents (N) differ per regression analysis because of missing data.

Table 4: SPSS Regression analyses for taste perception

	Tasty		Juicy		Firm		Sour		Mealy		Sweet		Fresh	
Model*	1	2	1	2	1	2	1	2	1	2	1	2	1	2
Apple brand	-0,057	-0,033	**0,238**	**0,343**	**0,712**	**0,874**	-0,327	**-0,266**	**-0,634**	**-0,791**	0,080	0,142	0,145	0,038
Kanzi label		**-0,273**		**-0,455**		-0,153		0,069		**0,337**		**-0,321**		0,077
Elstar label		-0,226		**-0,244**		0,171		0,190		0,022		-0,196		-0,137
Price	0,092	0,092	-0,113	-0,113	0,000	0,000	-0,043	-0,043	**-0,170**	**-0,170**	-0,123	-0,123	0,039	0,039
R square	0,003	0,021	0,020	0,058	0,145	0,152	0,031	0,037	0,123	0,139	0,006	0,026	0,006	0,010
Df	421	419	389	387	421	419	405	403	389	387	421	419	413	311
F	0,709	**2,279**	**3,929**	**5,942**	**35,609**	**18,809**	**6,494**	**3,859**	**27,291**	**15,658**	1,295	**2,827**	1,342	1,036
N	424	424	392	392	424	424	408	408	392	392	424	424	416	416

*Model 1: Reduced model (brand labels excluded), Model 2: Full model

The regression models for tasty (F=2,279 p=0,060), juicy (F=5,942 p=0,000), firm (F=35,609 p=0,000), sour (F=6,494 p=0,002), mealy (F=15,658 p=0,000) and sweet (F=2,827 p=0,025) appear to be significant. The addition of brand labels does improve the regression model for tasty (p=0,022), juicy (p=0,000), mealy (p=0,027) and sweet (p=0,014). This means that brand labels influence taste perception.

The Kanzi label negatively influences the perception of tastiness (B=-0,273 p=0,033), juiciness (B=-0,455 p=0,001) and sweet intensity (B=-0,321 p=0,012). The Elstar label negatively relates to the perception of juiciness (B=-0,244 p=0,062). As brand labels do not influence taste perception positively but negatively, hypothesis 4 is rejected.

Apple brand (variety) positively influences the perception of juiciness (B=0,343 p=0,009) and firmness (B=0,712 p=0,000). Thus, a Kanzi apple is perceived as more juicy and more firm compared to Elstar apples. Apple brand is negatively related to the perception of sourness (B=-0,266 p=0,040) and mealiness (B=-0,791 p=0,000), which means that a Kanzi apple is perceived as less sour and less mealy compared to Elstar apples. An opposing result shows that a Kanzi label positively relates to the perception of mealiness (B=0,337 p=0,007). This means that a Kanzi apple without label is perceived as less mealy, and a Kanzi apple with label is perceived as more mealy.

Price negatively influences the perception of mealiness (B=-0,170 p=0,055). A more expensive apple is perceived as less mealy, which actually is a better taste evaluation (Jaeger et al., 1998). However, price does not relate to the other taste variables in a positive way; therefore hypothesis 5 cannot be completely accepted.

The results of the Glimmix analysis for tastiness show that only one segment should be included into the model. This is based on the lowest CAIC values (see appendix VII). The CAIC value for the full model is 798,99, for the reduced model (brand labels excluded) 788,41. Therefore the model without brand labels is a better regression model, it implicates that brand labels do not influence the perception of tastiness. In table 5 the estimated coefficients are shown. Because Glimmix cannot remove missing values automatically, these were removed from the dataset before starting the analysis. The number of respondents (N) decreased to 41.

Table 5: Glimmix regression analysis for Tastiness

	Tasty	
Model*	1	2
Apple brand	**-0,316**	**-0,327**
Kanzi label	-0,145	
Elstar label	-0,138	
Price	0,030	0,030
Juicy	**0,131**	**0,138**
Firm	0,082	0,079
Sour	**-0,125**	**-0,126**
Mealy	**-0,209**	**-0,220**
Sweet	**0,271**	**0,276**
Fresh	**0,312**	**0,313**
Intercept	0,319	0,153
Df	29	31
R-square	0,083	0,093
N	41	41

*Model 1: Full model, Model 2: Reduced model (brand labels excluded)

Apple brand (variety) negatively influences the perception of tastiness (B-0,327 p=0,001) which means that Kanzi apples are perceived as less tasty compared to Elstar apples. Juiciness (B=0,138 p=0,007), sweetness (B=0,276 p=0,000) and freshness (B=0,313 p=0,000) positively influence the perception of tastiness. Sourness and mealiness negatively affect the perception of tastiness.

5. CONCLUSIONS

In this chapter the main conclusions are discussed. Managerial and theoretical implications will be provided, together with the limitations of this study and the suggestions for further research.

5.1 CONCLUSIONS AND DISCUSSION

This research examined the influence of a brand on consumer's purchase intentions and perceptions of a fresh food product.

The respondents are more familiar with Elstar apples than with Kanzi apples. Although Kanzi is established as a brand, participants are not more familiar with it. The respondents perceive Kanzi as a brand, and Elstar as a variety. This research shows a negative relation between apple brand (variety) and consumer's purchase intentions. It is concluded that the intention to buy is lower for apples that are positioned and marketed as a real brand.

It is not clear which apple variety is perceived as tastiest. Results from the Glimmix analysis show that a Kanzi apple is perceived as less tasty. Results from the SPSS regression analysis show that Kanzi apples are perceived as juicier, less sour and less mealy which implicates that Kanzi apples are tastier. These contradicting findings can be explained by the fact that the apples that were used in the experiment were quite similar in taste.

Brand labels significantly influence consumers' purchase intentions. The estimated regression coefficients show that Elstar brand labels positively influence intention to buy and Kanzi labels negatively. This result can be explained by the fact that Elstar apples are more familiar to the respondents than Kanzi apples. Besides, Kanzi apples are perceived as a brand. To the respondents, a brand is not important for fresh food products.

Results show that brand labels affect taste perception significantly. However, the relation between brand label and taste perception is not as hypothesized. It was expected that a brand label would make the perception of apples tastier, but consumers like the taste less when a brand label is attached. It is stated that the brand labels cause a more negative taste perception. A Kanzi label negatively influences the perception of tastiness, juiciness and sweet intensity. It positively influences the perception of mealiness, which is a negative product evaluation (Jaeger et al., 1998). An Elstar label negatively influences the perception of juiciness.

It is concluded that taste perception is important in consumer decision making, because it significantly relates to intention to buy. Tastiness, juiciness, sweetness and freshness positively influences intention to buy. An apple is perceived as tasty when it is juicy, sweet and fresh, and not mealy or sour.

Results do not show that a more expensive food product is perceived as tastier. However, a more expensive apple is perceived as less mealy. Because mealy apples are perceived as less tasty (Jaeger et al., 1998), it is stated that price does affect taste perception to a certain extent.

As hypothesized, price negatively influences purchase intentions. A higher price leads to a lower intention to buy. At the end of the experiment more respondents chose a high priced,

labelled Elstar apple than a high priced, labelled Kanzi apple. This means that the negative influence of price has less effect on well-known brands.

5.3 MANAGERIAL IMPLICATIONS

The results of this research provide more insight into consumers' choice decisions and perceptions of fresh food products. The findings are useful for marketers of fresh food products, especially the sellers of Elstar apples and the brand managers of Kanzi (GKE). Remarkable is that brand labels negatively influence taste perception. Consumers do not prefer a food product with a brand label, therefore fresh food products should be branded in another way than by brand labels.

Taste perception is an important factor in consumer decision making. In the production process of apples it is important to focus on the desired taste attributes: juicy, sweet and fresh. When apples are juicy, fresh and have a sweet taste there is a great chance consumers will like the apple. As consumers need to experience fresh food products before they can judge the taste of the product (Riezebos and Zimmerman, 2005), these preferred taste attributes should be communicated to consumers. It is important that the product delivers what it promises when communicating benefits. When brands meet consumers' expectations, consumers become loyal to a brand (Yeung et al., 2010; Kumar et al.,2013).

Fresh food brands should be well-known before they positively influence consumers' purchase intentions. Elstar is well-known due to its long existence, Kanzi is a relatively new brand. The Kanzi brand label is not successful enough to positively influence consumer's intention to buy. Although GKE already invests in marketing campaigns, it might be the case that the current brand strategy is not successful. A brand strategy is successful when consumers are convinced about the differences between brands within a product category (Kotler and Keller, 2010). Another research showed that Kanzi's brand positioning associations should be reconsidered to have a more effective brand strategy (Van der Velden, 2013).

In Glimmix regression analysis consumers are assigned to segments based on membership probabilities. It begins with the group consumers as a whole, and then the probabilities to which segments each consumer belongs are determined (Wedel, 1997). This method of segmentation is similar to the Latent class method (Lehmann and Winer, 2008), which is able to explain consumer's behaviour (Lehmann and Winer, 2008). For example respondents that always buy the same brand are grouped together and classified as 'loyal consumers'. Because the differences between the respondents in this study are small, no segments are identified. This means that consumers probably react similar to marketing efforts such as branding and advertising. Brand managers in the apple sector should not focus too much on identifying target segments, because differences between consumers are probably too small to make different brand strategies effective.

5.4 THEORETICAL IMPLICATIONS

The concept of branding has been extensively researched in previous studies. In existing literature the influence of brands on consumer behaviour has been described already, but not explicitly for fresh food brands. The effect of a fresh food brand has not been researched to a

great extent. This study contributes to the research domain by investigating the relationships between a brand, perceptions and purchase intentions of fresh food products.

5.5 LIMITATIONS

A few limitations in this study need to be explained. First, the apples used in the experiment were similar in taste. When apples with a more differential taste would have been used, probably more results could have been discovered. This limitation might have caused the low R-square values, the variance in the response variable was not explained well by the regression model for taste perception. However, for frequently purchased products, the R-square values are often low (Lehmann and Winer, 2008). A second comment should be made about the datasets that are used for the SPSS and Glimmix analysis. The results from the SPSS and the Glimmix analyses are based on different datasets. In the SPSS regression analyses only the missing values were removed. In Glimmix, all observations from a respondent with a missing value were removed. Therefore the number of respondents, and thus the degrees of freedom are different. However, the results from these two approaches do not differ very much.

5.6 FURTHER RESEARCH

Results of this research consist of quantitative data. More insight can be achieved by investigating the underlying motivations for consumer's perceptions and choices. It would be interesting to find out why brand labels negatively affect taste perception. A brand label might give another effect when it is used for other fresh food products than apples. Another experiment could be executed to find out what branding strategy positively influences taste perception and intention to buy.

The image and familiarity of an apple brand might be more important than a brand label. It seems that a relationship exists between the image of apple brands and the taste perception of it. The results of this regression analysis are shown in appendix VIII and can be used for further research.

REFERENCES

Aaker, D. (1991). Managing brand equity: Capitalizing on the value of a brand name, *Free Press*, New York.

Aaker, J. (1997). Dimensions of brand personality. *Journal of Marketing Research*, 347-356.

Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes, 50*(2), 179-211.

Allison, R. I., and Uhl, K. P. (1964). Influence of Beer Brand Identification on Taste Perception. *Journal of Marketing Research (JMR), 1*(3).

Alonso, M. A. S., Gallego, P. A. M., and Mangin, J. P. L. (2005). Testing a model of perceived food quality determinants. *Journal of International Food and Agribusiness Marketing*, *17*(1), 9-33.

AMA–American Marketing Association. (2014). *Dictionary of marketing terms*. Retrieved March 12, 2014, from https://www.ama.org/resources/Pages/Dictionary.aspx?dLetter=B

Anania, G., and Nisticò, R. (2004). Public regulation as a substitute for trust in quality food markets: what if the trust substitute cannot be fully trusted? *Journal of Institutional and Theoretical Economics JITE, 160*(4), 681-701.

Anderson, J. R. (1996). ACT: A simple theory of complex cognition. *American Psychologist, 51*(4), 355.

Andreyeva, T., Long, M. W., and Brownell, K. D. (2010). The impact of food prices on consumption: a systematic review of research on the price elasticity of demand for food. *American journal of public health*, *100*(2), 216-22.

Beverland, M. (2001). Creating value through brands: the ZESPRI kiwi fruit case. *British Food Journal, 103*(6), 383-399.

Bisogni, C. A., Connors, M., Devine, C. M., and Sobal, J. (2002). Who we are and how we eat: a qualitative study of identities in food choice. *Journal of Nutrition Education and Behavior, 34*(3), 128-139.

Blair, R. Is Organic Food more Nutritious and "Tasty"?. *Organic Production and Food Quality: A Down to Earth Analysis*, 227-241.

Bruner, J. S. (1957). Going beyond the information given. *Contemporary approaches to cognition, 1*, 119-160.

Cavanagh, K. V., and Forestell, C. A. (2013). The effect of brand names on flavor perception and consumption in restrained and unrestrained eaters. *Food Quality and Preference*, *28*(2), 505-509.

Crawford, C. M. (1985). A new positioning topology. *Journal of Product Innovation Management, 2*(4), 243-253.

Davčik, N. S., and Rundquist, J. (2012). An exploratory study of brand success: evidence from the food industry. *Journal of International Food and Agribusiness Marketing*, *24*(1), 91-109.

De Vaus, D. (2001). *Research design in social research*. Sage publications Ltd, London. 65-68.

Dechering, F.P., (2013). Meer winst met consumenten versmerken. *SIGN,* Retrieved March 1, 2014, from http://www.innovatieglastuinbouw.nl/media/registered_downloads/m/meer-winst-met-consumenten-versmerken-definitieve-versie.pdf

Del Rio, A., Vazquez, R., and Iglesias, V. (2001). The effects of brand associations on consumer response. *Journal of Consumer Marketing, 18*(5), 410-425.

East, R., Wright, M., and Vanhuele, M. (2013). *Consumer behaviour: applications in marketing*.vSage. 136.

EFC fruit. *Nicoter COV*. Retrieved February 28, 2014, from http://www.efcfruit.com/nl/producten/nicoter-cov

Feenstra, B. P., T. (2010). Toekomstgericht investeren in hardfruit. *ABN Amro*

Fernandez-Barcala, M., and Gonzalez-Diaz, M. (2006). Brand equity in the European fruit and vegetable sector: A transaction cost approach. *International Journal of Research in Marketing, 23*(1), 31-44.

Fishbein, M., and Ajzen, I. (1975). *Belief, attitude, intention and behavior: An introduction to theory and research*.

Ford, G. T., & Smith, R. A. (1987). Inferential beliefs in consumer evaluations: An assessment of alternative processing strategies. *Journal of Consumer Research*, 363-371.

Fruitmasters. *Clubrassen-Kanzi apple*. Retrieved February 28,2014, from http://www.fruitmasters.nl/kanziappel.html

Fuchs, C., and Diamantopoulos, A. (2010). Evaluating the effectiveness of brand-positioning strategies from a consumer perspective. *European Journal of Marketing, 44*(11/12), 1763-1786.

Furst, T., Connors, M., Bisogni, C. A., Sobal, J., and Falk, L. W. (1996). Food choice: a conceptual model of the process. *Appetite*, *26*(3), 247-266.

GKE Fruit. Retrieved February 28, 2014, from http://www.gkefruit.com/nl/over-gke-nv.html.

GroentenFruitbureau. Retrieved February 28, 2014, from http://www.groentenenfruit.nl/veggipedia/product/elstar-appel.html

Grunert, K. G., Shepherd, R., Traill, W., and Wold, B. (2012). Food choice, energy balance and its determinants: Views of human behaviour in economics and psychology. *Trends in Food Science and Technology, 28*(2), 132-142.

Gutman, J. (1982). A means-end chain model based on consumer categorization processes. *The Journal of Marketing*, 60-72.

Harker, F. R., Marsh, K. B., Young, H., Murray, S. H., Gunson, F. A., and Walker, S. B. (2002). Sensory interpretation of instrumental measurements 2: sweet and acid taste of apple fruit. *Postharvest Biology and Technology*, *24*(3), 241-250.

Hauser, M., Jonas, K., and Riemann, R. (2011). Measuring salient food attitudes and food-related values. An elaborated, conflicting and interdependent system. *Appetite, 57*(2), 329-338.

Honkanen, P., and Frewer, L. (2009). Russian consumers' motives for food choice. *Appetite, 52*(2), 363-371.

Jaeger, S. R., Andani, Z., Wakeling, I. N., and MacFie, H. J. (1998). Consumer preferences for fresh and aged apples: a cross-cultural comparison. *Food Quality and Preference*, *9*(5), 355-366.

Kathuria, L. M., and Gill, P. (2013). Purchase of branded commodity food products: empirical evidence from India. *British Food Journal, 115*(9), 1255-1280.

Keller, K. L. (1993). Conceptualizing, measuring, and managing customer-based brand equity. *The Journal of Marketing*, 1-22.

Keller, K. L. (2003). Brand synthesis: The multidimensionality of brand knowledge. *Journal of consumer research, 29*(4), 595-600.

Keller, K. L., Apéria, T., and Georgson, M. (2008). *Strategic brand management: a European perspective*: Pearson Education.

Khalili, S., Rahchamani, A., and Abtahi, M. (2013). Investigating the effects of brand experience, trust, perception image and satisfaction on creating customer loyalty: A case study of laptop market. *Management Science Letters*, *3*(9), 2381-2386.

Kim, C. K., Han, D., and Park, S. B. (2001). The effect of brand personality and brand identification on brand loyalty: Applying the theory of social identification. *Japanese Psychological Research, 43*(4), 195-206.

Köster, E. (2009). Diversity in the determinants of food choice: A psychological perspective. *Food quality and preference, 20*(2), 70-82.

Kotler, P. (2008) *Principles of marketing,* Harlow [etc.], Prentice Hall/Financial Times.

Kotler, P., and Keller, K. L. (2010). Understanding marketing management. *Marketing Management*.

Kressmann, F., Sirgy, M. J., Herrmann, A., Huber, F., Huber, S., and Lee, D.-J. (2006). Direct and indirect effects of self-image congruence on brand loyalty. *Journal of Business Research, 59*(9), 955-964.

Kumar, V., Pozza, I. D., and Ganesh, J. (2013). Revisiting the satisfaction–loyalty relationship: empirical generalizations and directions for future research. *Journal of Retailing*, *89*(3), 246-262.

Lambert, Z. V. (1972). Price and choice behavior. *Journal of marketing Research*, 35-40.

Lehmann, D. R., and Winer, R. S. (2008). *Analysis for marketing planning, seventh edition (international)*. Mc.Graw-Hill/Irwin, New York.

Lilien, G. L., Rangaswamy, A. and De Bruyn, A. 2007. *Principles of marketing engineering,* Victoria, B.C. [etc.], Trafford Publishing.

Makens, J. C. (1965). Effect of brand preference upon consumers perceived taste of turkey meat. *Journal of Applied Psychology, 49*(4), 261.

Méndez, J. L., Oubiña, J., and Rubio, N. (2011). The relative importance of brand-packaging, price and taste in affecting brand preferences. *British Food Journal, 113*(10), 1229-1251.

Miller, G. A. (1956). The magical number seven, plus or minus two: some limits on our capacity for processing information. *Psychological review, 63*(2), 81.

Murthi, B., and Rao, R. C. (2012). Price awareness and consumers' use of deals in brand choice. *Journal of Retailing, 88*(1), 34-46.

Nijssen, E. J., and Van Trijp, H. C. (1998). Branding fresh food products: exploratory empirical evidence from the Netherlands. *European Review of Agricultural Economics, 25*(2), 228-242.

Nutrition Centre (1998). Zo eet Nederland, resultaten van de Voedselconsumptiepeiling 1998 *The Hague, Netherlands Nutrition Centre*.

Olson, J. C. (1972). *Cue utilization in the quality perception process: a cognitive model and an empirical test* (Doctoral dissertation, Purdue University).

Ott, R.L., and Longnecker, M. (2010). *An introduction to statistical methods and data analysis,* Sixth edition. Cengage Learning (Nelson Education Ltd), Canada.

Oude Ophuis, P. A., and Van Trijp, H. (1995). Perceived quality: a market driven and consumer oriented approach. *Food quality and Preference*, *6*(3), 177-183

Padberg, D. I., Ritson, C., and Albisu, L. M. (1997). Agro-food marketing. O*xon: CAB International in Association with the International Centre for Advanced Mediterranean Agronomic Studies*

Pearson, D. (2000). Fresh fruits and vegetables: What we buy and why?. *Food Australia*, *52*(7), 306-308.

Petty, R. E., and Cacioppo, J. T. (1986). The elaboration likelihood model of persuasion, *Springer.*

Plummer, J. T. (1985). How personality makes a difference. *Journal of Advertising Research, 24*(6), 27-31.

Rao, A. R., and Monroe, K. B. (1989). The effect of price, brand name, and store name on buyers' perceptions of product quality: an integrative review. *Journal of marketing Research*, Vol.26(3), 351-357

Riezebos, H. (1994). *Brand-added value: Theory and empirical research about the value of brands to consumers*: Erasmus University Rotterdam.

Riezebos, R., and Zimmermann, K. (2005). Merken in de tuinbouwsector: positioning paper tuinbouw.

Robinson, T. (2011). Advances in apple culture worldwide. *Revista Brasileira de Fruticultura, 33*(SPE1), 37-47.

Shaharudin, M. R., Pani, J. J., Mansor, S. W., and Elias, S. J. (2010). Purchase Intention of Organic Food; Perceived Value Overview. *Canadian Social Science*,*6*(1), 70-79.

Sijtsema, S. J., Reinders, M. J., Hiller, S. R., and Guàrdia, M. D. (2012). Fruit and snack consumption related to sweet, sour and salty taste preferences.*British Food Journal*, *114*(7), 1032-1046

Sirgy, M. J., Lee, D.-J., Johar, J., and Tidwell, J. (2008). Effect of self-congruity with sponsorship on brand loyalty. *Journal of Business Research, 61*(10), 1091-1097.

Solomon, M., Bamossy, G., Askegaard, S., Hogg, M.K., (2010). *Consumer behaviour: a European perspective,* Fourth edition. Pearson Education, Harlow. 252-256.

Soyez, K., Francis, J., and Smirnova, M. (2012). How individual, product and situational determinants affect the intention to buy and organic food buying behavior: a cross-national comparison in five nations. *der markt, 51*(1), 27-35.

Spangenberg, E. R., Voss, K. E., and Crowley, A. E. (1997). Measuring the hedonic and utilitarian dimensions of attitudes: a generally applicable scale. *Advances in Consumer Research, 24*, 235-241.

Sparke, K., and Menrad, K. (2011). Food consumption style determines food product innovations' acceptance. *Journal of Consumer Marketing*, *28*(2), 125-138.

Steenkamp, J.-B. E. (1990). Conceptual model of the quality perception process. *Journal of Business Research, 21*(4), 309-333.

Thompson, K. E., Haziris, N., and Alekos, P. J. (1994). Attitudes and food choice behaviour. *British Food Journal, 96*(11), 9-13.

Till, B. D., Baack, D., and Waterman, B. (2011). Strategic brand association maps: developing brand insight. *Journal of Product and Brand Management, 20*(2), 92-100.

Tsao, H.-Y., Pitt, L. F., and Caruana, A. (2005). The formation of a "high price–high quality" inferential belief: a study among young buyers of mobile phones and note books. *Asia Pacific Journal of Marketing and Logistics, 17*(1), 50-60.

Tsiotsou, R. (2006). The role of perceived product quality and overall satisfaction on purchase intentions. *International Journal of Consumer Studies*, *30*(2), 207-217.

Tuškej, U., Golob, U., and Podnar, K. (2011). The role of consumer–brand identification in building brand relationships. *Journal of Business Research*.

Van Dam, Y., and Van Trijp, H. (2007). Branding and labelling of food products. *Understanding consumers of food products. CRC Press, Cambridge*, 153-180.

Van Trijp, H. C., and Meulenberg, M. T. (1996). Marketing and consumer behaviour with respect to foods *Food choice, acceptance and consumption* (pp. 264-292): Springer.

Van der Salm, P. and Van den Berg, W. (2011). Elstar: lekker, sappig, fris en zoet: marktonderzoek appel onder consumenten in Nederland. Productschap Tuinbouw, Markt and Innovatie, Zoetermeer.

Van der Velden, M.J. (2013). How effective are brand strategies of Apple club varieties: a consumer perspective. MSc Thesis, Wageningen University.

Warlop, L., Ratneshwar, S., and Van Osselaer, S. M. (2005). Distinctive brand cues and memory for product consumption experiences. *International Journal of Research in Marketing, 22*(1), 27-44.

Wedel, M. (1997). *GLIMMIX: A Program for Simultaneous Estimation of Latent Classes and Generalized Model Within Each Latent Class: Version 1.0: User's Manual*. IEC ProGAMMA.

Wertheim-Heck, S.C.O. (2003).Versproducten onder merknaam hebben de toekomst. LEI, Agri-Monitor, augustus 2003, 2.

Wilcox, B. R., Cordúa Y. Cruz, G., and Neal Jr, J. A. (2013). Can Consumers Taste the Difference between Canned and Bottled Beers? *Journal of Culinary Science and Technology, 11*(3), 286-297.

Yeung, R., Yee, W., and Morris, J. (2010). The effects of risk-reducing strategies on consumer perceived risk and on purchase likelihood: A modelling approach.*British Food Journal*, *112*(3), 306-322.

Yoo, C., and MacInnis, D. (2005). The brand attitude formation process of emotional and informational ads. *Journal of Business Research, 58*(10), 1397-1406.

Zeithaml, V. A. (1988). Consumer perceptions of price, quality, and value: a means-end model and synthesis of evidence. *The Journal of Marketing*, 2-22.

APPENDICES

APPENDIX I: QUESTIONNAIRE

WAGENINGEN UR
For quality of life

Allereerst bedankt dat je wilt deelnemen aan mijn onderzoek. Het onderzoek duurt ongeveer 20 minuten, het omvat het invullen van een vragenlijst en daarbij zal je enkele appels proeven. Dit zijn verschillende appels en deze verschillen ook in prijs. Bij aanvang van het onderzoek ontvang je €2,00. Met dit bedrag ga je de appel kopen die je als beste beoordeelt in dit onderzoek.

Succes!

Onderzoeksvoltooiing
0% 100%

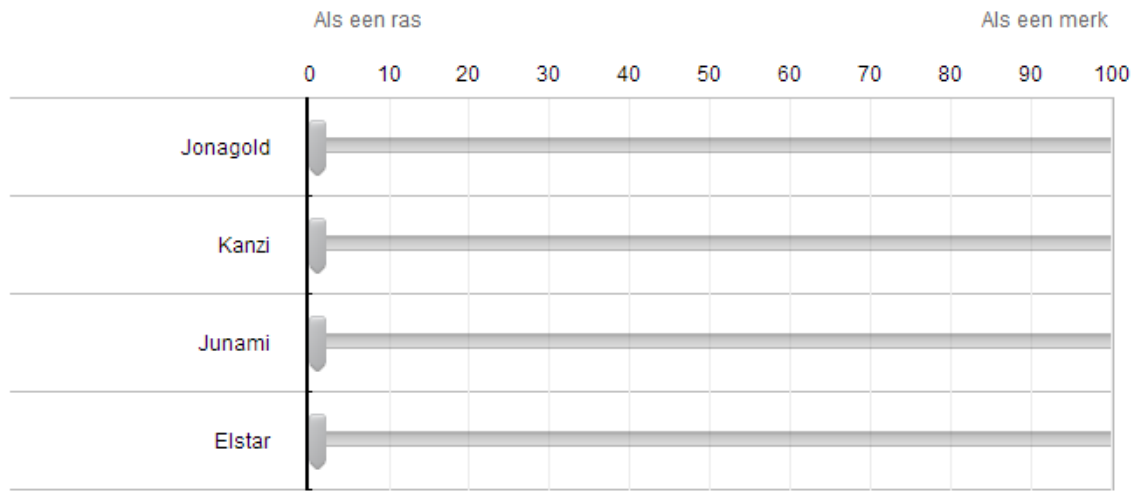
Hoe vaak per week eet u een appel?

Hoe vaak per week koopt u appels?

In hoeverre kent u de onderstaande appelsoorten?

	Zeer onbekend 1	2	3	4	Zeer bekend 5
Jonagold					
Kanzi					
Junami					
Elstar					

Hoe ziet u de volgende appels?



Wat vindt u van appels in het algemeen?

	Helemaal niet				Helemaal wel
	1	2	3	4	5
Gezond	○	○	○	○	○
Duurzaam	○	○	○	○	○
Speciaal	○	○	○	○	○
Goedkoop	○	○	○	○	○
Eerlijk	○	○	○	○	○
Duur	○	○	○	○	○
Lekker	○	○	○	○	○
Verleidelijk	○	○	○	○	○
Avontuurlijk	○	○	○	○	○
Traditioneel	○	○	○	○	○

Wat vindt u van de appel: Jonagold?

	Helemaal niet				Helemaal wel
	1	2	3	4	5
Fris	○	○	○	○	○
Gezond	○	○	○	○	○
Melig	○	○	○	○	○
Hard	○	○	○	○	○
Zuur	○	○	○	○	○
Duur	○	○	○	○	○
Zoet	○	○	○	○	○
Lekker	○	○	○	○	○
Goedkoop	○	○	○	○	○
Avontuurlijk	○	○	○	○	○
Duurzaam	○	○	○	○	○
Verleidelijk	○	○	○	○	○
Speciaal	○	○	○	○	○
Sappig	○	○	○	○	○
Traditioneel	○	○	○	○	○
Eerlijk	○	○	○	○	○

Wat vindt u van de appel: Elstar?

	Helemaal niet				Helemaal wel
	1	2	3	4	5
Goedkoop	○	○	○	○	○
Melig	○	○	○	○	○
Lekker	○	○	○	○	○
Speciaal	○	○	○	○	○
Traditioneel	○	○	○	○	○
Duur	○	○	○	○	○
Eerlijk	○	○	○	○	○
Zoet	○	○	○	○	○
Zuur	○	○	○	○	○
Sappig	○	○	○	○	○
Gezond	○	○	○	○	○
Avontuurlijk	○	○	○	○	○
Fris	○	○	○	○	○
Hard	○	○	○	○	○
Duurzaam	○	○	○	○	○
Verleidelijk	○	○	○	○	○

Wat vindt u van de appel: Kanzi?

	Helemaal niet				Helemaal wel
	1	2	3	4	5
Duur	○	○	○	○	○
Speciaal	○	○	○	○	○
Zuur	○	○	○	○	○
Fris	○	○	○	○	○
Duurzaam	○	○	○	○	○
Lekker	○	○	○	○	○
Eerlijk	○	○	○	○	○
Gezond	○	○	○	○	○
Avontuurlijk	○	○	○	○	○
Melig	○	○	○	○	○
Traditioneel	○	○	○	○	○
Zoet	○	○	○	○	○
Verleidelijk	○	○	○	○	○
Sappig	○	○	○	○	○
Hard	○	○	○	○	○
Goedkoop	○	○	○	○	○

Wat vindt u van de appel: Junami?

	Helemaal niet				Helemaal wel
	1	2	3	4	5
Sappig	○	○	○	○	○
Eerlijk	○	○	○	○	○
Traditioneel	○	○	○	○	○
Zuur	○	○	○	○	○
Goedkoop	○	○	○	○	○
Verleidelijk	○	○	○	○	○
Fris	○	○	○	○	○
Duur	○	○	○	○	○
Zoet	○	○	○	○	○
Lekker	○	○	○	○	○
Duurzaam	○	○	○	○	○
Avontuurlijk	○	○	○	○	○
Gezond	○	○	○	○	○
Melig	○	○	○	○	○
Hard	○	○	○	○	○
Speciaal	○	○	○	○	○

Vraag de begeleider om appel nummer 2 te brengen. Proef deze appel (schijf) en vul onderstaande vragen in.

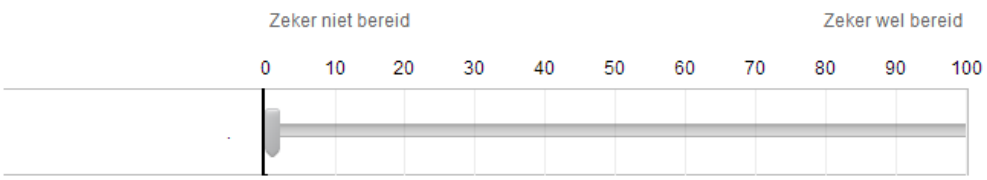
In hoeverre bent u het eens met de volgende stellingen?

	Helemaal niet mee eens				Helemaal mee eens
	1	2	3	4	5
Deze appel is melig	○	○	○	○	○
Deze appel is zuur	○	○	○	○	○
Deze appel is fris	○	○	○	○	○
Deze appel is zoet	○	○	○	○	○
Deze appel is lekker	○	○	○	○	○
Deze appel is sappig	○	○	○	○	○
Deze appel is hard	○	○	○	○	○

Wat vindt u van deze appel?

- ○ Deze appel bevalt me totaal niet
- ○ Deze appel bevalt niet
- ○ Neutraal
- ○ Deze appel bevalt me goed
- ○ Deze appel bevalt me heel goed

In hoeverre bent u bereid om op dit moment deze appel te kopen?



Vraag de begeleider om appel nummer 4 te brengen. Proef deze appel (schijf) en vul onderstaande vragen in.

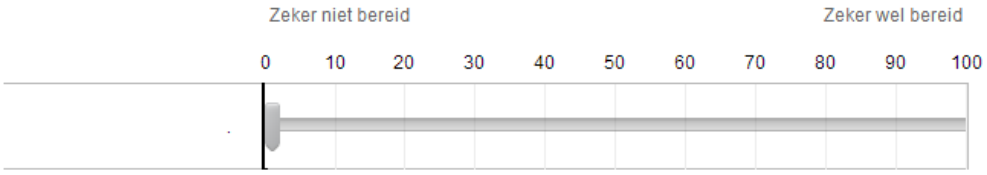
In hoeverre bent u het eens met de volgende stellingen?

	Helemaal niet mee eens				Helemaal mee eens
	1	2	3	4	5
Deze appel is melig	○	○	○	○	○
Deze appel is zuur	○	○	○	○	○
Deze appel is sappig	○	○	○	○	○
Deze appel is hard	○	○	○	○	○
Deze appel is zoet	○	○	○	○	○
Deze appel is lekker	○	○	○	○	○
Deze appel is fris	○	○	○	○	○

Wat vindt u van deze appel?

- ○ Deze appel bevalt me totaal niet
- ○ Deze appel bevalt me niet
- ○ Neutraal
- ○ Deze appel bevalt me goed
- ○ Deze appel bevalt me heel goed

In hoeverre bent u bereid om op dit moment deze appel te kopen?



Vraag de begeleider om appel nummer 1 te brengen. Proef deze appel (schijf) en vul onderstaande vragen in.

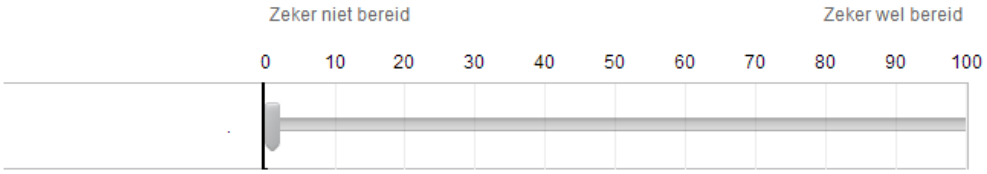
In hoeverre bent u het eens met de volgende stellingen?

	Helemaal niet mee eens				Helemaal mee eens
	1	2	3	4	5
Deze appel is zoet	○	○	○	○	○
Deze appel is zuur	○	○	○	○	○
Deze appel is lekker	○	○	○	○	○
Deze appel is melig	○	○	○	○	○
Deze appel is fris	○	○	○	○	○
Deze appel is sappig	○	○	○	○	○
Deze appel is hard	○	○	○	○	○

Wat vindt u van deze appel?

- ○ Deze appel bevalt me totaal niet
- ○ Deze appel bevalt me niet
- ○ Neutraal
- ○ Deze appel bevalt me goed
- ○ Deze appel bevalt me heel goed

In hoeverre bent u bereid om op dit moment deze appel te kopen?



Vraag de begeleider om appel nummer 3 te brengen. Proef deze appel (schijf) en vul onderstaande vragen in.

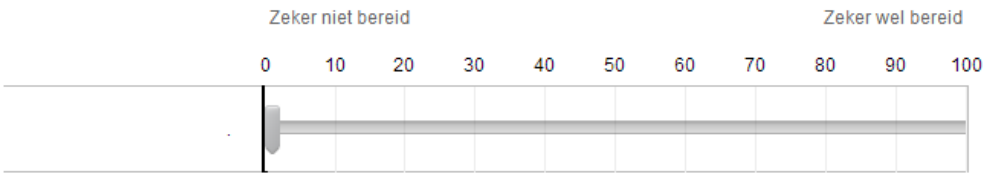
In hoeverre bent u het eens met de volgende stellingen?

	Helemaal niet mee eens				Helemaal mee eens
	1	2	3	4	5
Deze appel is melig	○	○	○	○	○
Deze appel is zuur	○	○	○	○	○
Deze appel is fris	○	○	○	○	○
Deze appel is zoet	○	○	○	○	○
Deze appel is hard	○	○	○	○	○
Deze appel is lekker	○	○	○	○	○
Deze appel is sappig	○	○	○	○	○

Wat vindt u van deze appel?

- ○ Deze appel bevalt me totaal niet
- ○ Deze appel bevalt me niet
- ○ Neutraal
- ○ Deze appel bevalt me goed
- ○ Deze appel bevalt me heel goed

In hoeverre bent u bereid om op dit moment deze appel te kopen?



Vraag de begeleider om appel nummer 5 te brengen. Proef deze appel (schijf) en vul onderstaande vragen in.

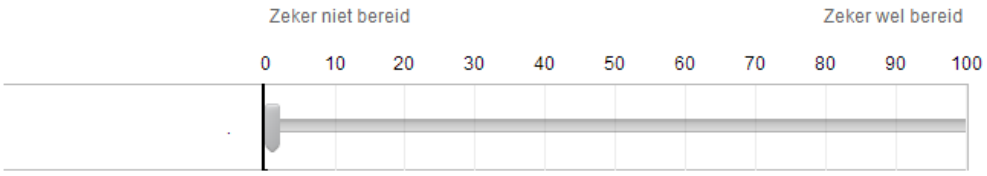
In hoeverre bent u het eens met de volgende stellingen?

	Helemaal niet mee eens				Helemaal mee eens
	1	2	3	4	5
Deze appel is sappig	○	○	○	○	○
Deze appel is lekker	○	○	○	○	○
Deze appel is melig	○	○	○	○	○
Deze appel is hard	○	○	○	○	○
Deze appel is zoet	○	○	○	○	○
Deze appel is zuur	○	○	○	○	○
Deze appel is fris	○	○	○	○	○

Wat vindt u van deze appel?

- ○ Deze appel bevalt me totaal niet
- ○ Deze appel bevalt me niet
- ○ Neutraal
- ○ Deze appel bevalt me goed
- ○ Deze appel bevalt me heel goed

In hoeverre bent u bereid om op dit moment deze appel te kopen?



Vraag de begeleider om appel nummer 7 te brengen. Proef deze appel (schijf) en vul onderstaande vragen in.

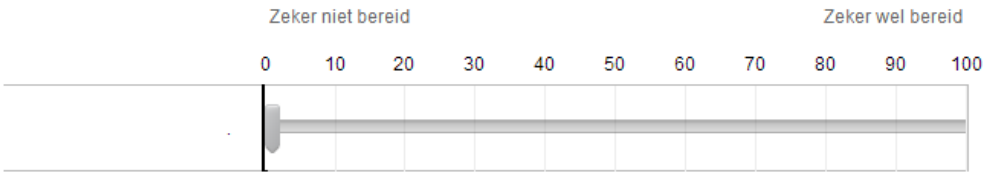
In hoeverre bent u het eens met de volgende stellingen?

	Helemaal niet mee eens				Helemaal mee eens
	1	2	3	4	5
Deze appel is fris	○	○	○	○	○
Deze appel is sappig	○	○	○	○	○
Deze appel is lekker	○	○	○	○	○
Deze appel is zoet	○	○	○	○	○
Deze appel is zuur	○	○	○	○	○
Deze appel is melig	○	○	○	○	○
Deze appel is hard	○	○	○	○	○

Wat vindt u van deze appel?

- ○ Deze appel bevalt me totaal niet
- ○ Deze appel bevalt me niet
- ○ Neutraal
- ○ Deze appel bevalt me goed
- ○ Deze appel bevalt me heel goed

In hoeverre bent u bereid om op dit moment deze appel te kopen?



Vraag de begeleider om appel nummer 6 te brengen. Proef deze appel (schijf) en vul onderstaande vragen in.

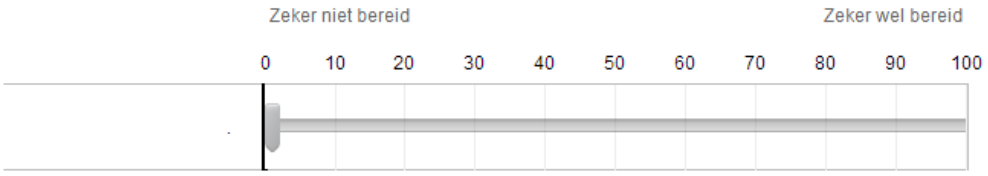
In hoeverre bent u het eens met de volgende stellingen?

	Helemaal niet mee eens				Helemaal mee eens
	1	2	3	4	5
Deze appel is sappig	○	○	○	○	○
Deze appel is fris	○	○	○	○	○
Deze appel is zuur	○	○	○	○	○
Deze appel is zoet	○	○	○	○	○
Deze appel is hard	○	○	○	○	○
Deze appel is lekker	○	○	○	○	○
Deze appel is melig	○	○	○	○	○

Wat vindt u van deze appel?

- ○ Deze appel bevalt me totaal niet
- ○ Deze appel bevalt me niet
- ○ Neutraal
- ○ Deze appel bevalt me goed
- ○ Deze appel bevalt me heel goed

In hoeverre bent u bereid om op dit moment deze appel te kopen?



Vraag de begeleider om appel nummer 8 te brengen. Proef deze appel (schijf) en vul onderstaande vragen in.

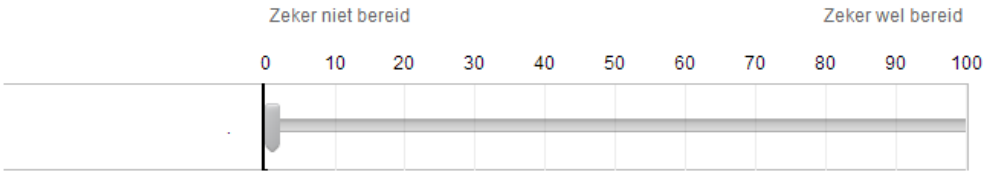
In hoeverre bent u het eens met de volgende stellingen?

	Helemaal niet mee eens				Helemaal mee eens
	1	2	3	4	5
Deze appel is zoet	○	○	○	○	○
Deze appel is melig	○	○	○	○	○
Deze appel is sappig	○	○	○	○	○
Deze appel is lekker	○	○	○	○	○
Deze appel is zuur	○	○	○	○	○
Deze appel is fris	○	○	○	○	○
Deze appel is hard	○	○	○	○	○

Wat vindt u van deze appel?

- ○ Deze appel bevalt me totaal niet
- ○ Deze appel bevalt me niet
- ○ Neutraal
- ○ Deze appel bevalt me goed
- ○ Deze appel bevalt me heel goed

In hoeverre bent u bereid om op dit moment deze appel te kopen?



Tot zover het proeven van appels. Nu volgen er nog een aantal algemene vragen.

Hieronder staan een aantal persoonlijke eigenschappen. Geef aan in hoeverre deze op u van toepassing zijn:

	Helemaal niet				Helemaal wel
	1	2	3	4	5
Ik wil graag nieuwe versproducten proberen	○	○	○	○	○
Ik probeer vaak nieuwe versmerken voordat mijn vrienden en familie dat doen	○	○	○	○	○
Ik kies altijd bewust voor een bepaald merk wanneer ik groente of fruit koop	○	○	○	○	○
Ik koop het liefst altijd hetzelfde merk groente of fruit	○	○	○	○	○
Ik vind een merk belangrijk voor groente en fruit	○	○	○	○	○
Ik ben bereid meer te betalen voor een constante kwaliteit en beschikbaarheid van een bepaalde groente of fruit	○	○	○	○	○

In hoeverre bent u het eens met onderstaande stellingen?

	Helemaal niet mee eens				Helemaal mee eens
	1	2	3	4	5
Ik ben erg geïnteresseerd in versproducten	○	○	○	○	○
Ik kan smaken van verschillende appelrassen duidelijk onderscheiden	○	○	○	○	○
Ik kan appelrassen duidelijk onderscheiden op basis van het uiterlijk	○	○	○	○	○

Wat is uw geslacht?

- Man
- Vrouw

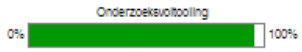
Wat is uw leeftijd?

Wat is uw woonsituatie?

- Ik woon bij mijn ouders
- Ik woon met huisgenoten
- Ik woon alleen
- Ik woon samen met mijn partner
- Ik woon samen met mijn partner en kinderen

WAGENINGEN UR
For quality of life

Dit is het einde van de vragenlijst, hartelijk bedankt voor het invullen! Loop nu naar de begeleider, dan mag je een appel uitkiezen die je wilt kopen.



Welke appel kiest de deelnemer achteraf?

- 1: Kanzi, without label, low price
- 2: Kanzi, without label, high price
- 3: Elstar, without label, low price
- 4: Elstar, without label, high price
- 5: Kanzi, with label, low price
- 6: Kanzi, with label, high price
- 7: Elstar, with label, low price
- 8: Elstar, with label, high price

APPENDIX II: FACTOR ANALYSIS

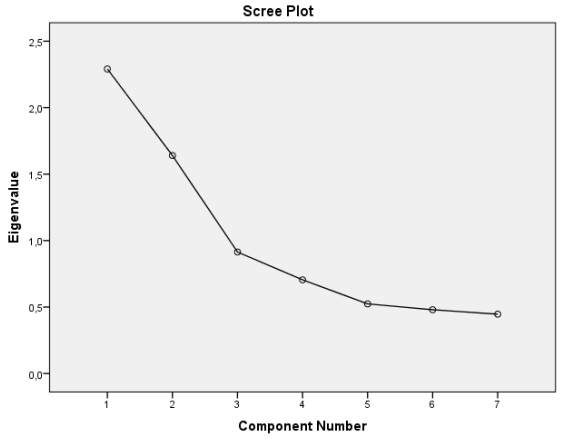
Total variance explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	2,291	32,729	32,729	2,291	32,729	32,729	2,007
2	1,640	23,429	56,158	1,640	23,429	56,158	1,548
3	,914	13,057	69,215	,914	13,057	69,215	1,713
4	,705	10,068	79,283				
5	,524	7,485	86,768				
6	,480	6,855	93,623				
7	,446	6,377	100,000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

Scree plot



Component matrix

	Component		
	1	2	3
Tasty	**0,708**	0,194	-0,146
Juicy	**0,673**	0,158	0,040
Firm	-0,113	0,007	**-0,920**
Sour	0,121	**-0,887**	0,035
Mealy	-0,190	-0,005	**0,780**
Sweet	0,352	**0,690**	0,081
Fresh	**0,797**	-0,384	-0,076

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.

APPENDIX III: CHECK FOR MULTI-COLLINEARITY

VIF scores regression: Intention to buy

	Intention to buy	
Model	**1**	**2**
Tasty	1,645	1,660
Juicy	1,242	1,252
Firm	1,533	1,559
Sour	1,386	1,394
Mealy	1,679	1,694
Sweet	1,414	1,417
Fresh	1,461	1,489
Apple brand	1,357	2,501
Kanzi label		1,575
Elstar label		1,560
Price	1,038	1,039

VIF scores regression: Attitude

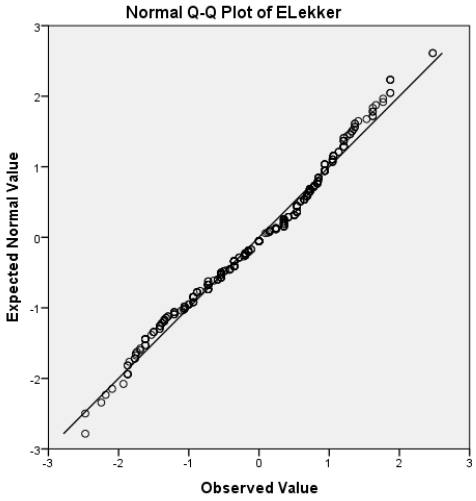
	Attitude	
Model	**1**	**2**
Tasty	1,644	1,658
Juicy	1,249	1,265
Firm	1,484	1,501
Sour	1,370	1,378
Mealy	1,627	1,643
Sweet	1,410	1,414
Fresh	1,450	1,477
Apple brand	1,355	2,484
Kanzi label		1,034
Elstar label		1,574
Price	1,033	1,560

VIF scores for regression: Taste perception

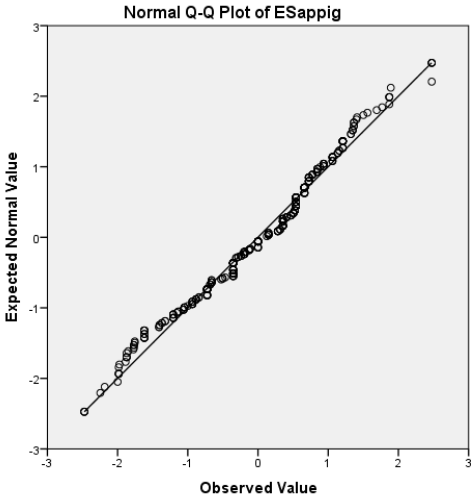
	Tasty		Juicy		Firm		Sour		Mealy		Sweet		Fresh	
Model*	1	2	1	2	1	2	1	2	1	2	1	2	1	2
Apple brand	1	2	1	2	1	2	1	2	1	2	1	2	1	2
Kanzi label		1,5		1,5		1,5		1,5		1,5		1,5		1,5
Elstar label		1,5		1,5		1,5		1,5		1,5		1,5		1,5
Price	1	1	1	1	1	1	1	1	1	1	1	1	1	1

APPENDIX IV: NORMALITY CHECK

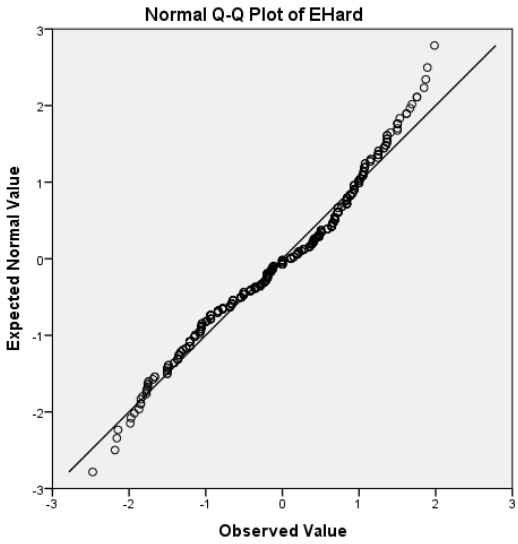
Tasty



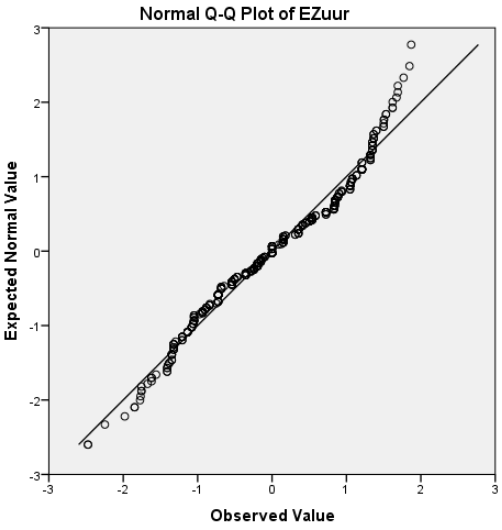
Juicy



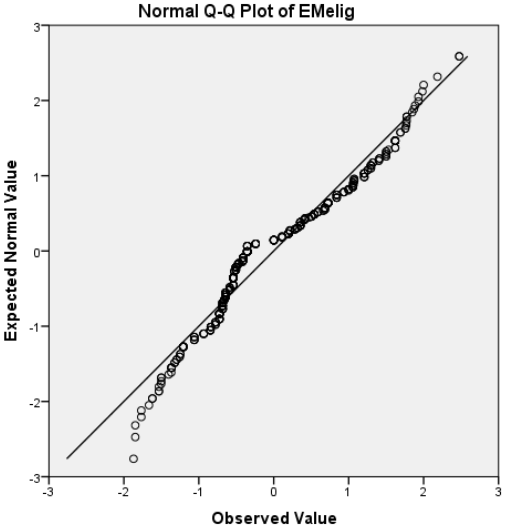
Firm



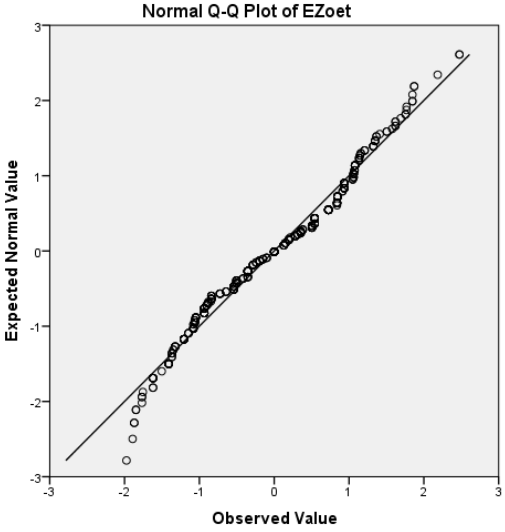
Sour



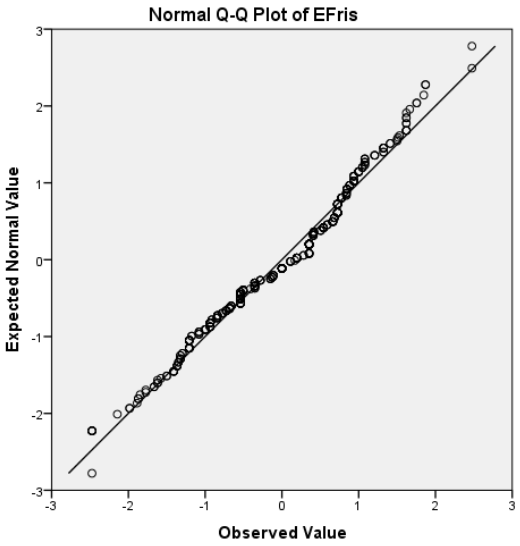
Mealy



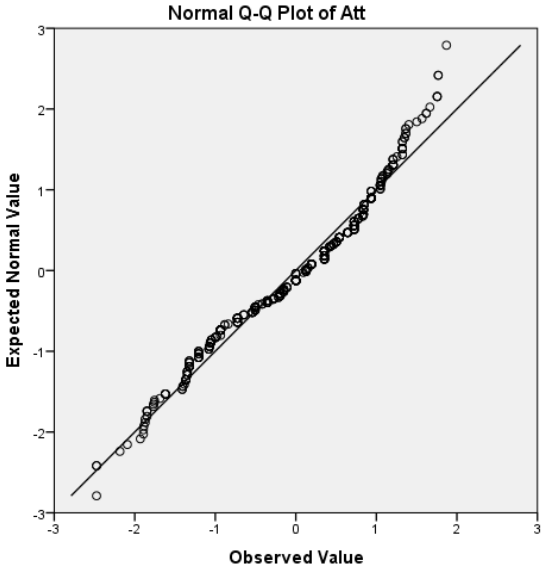
Sweet



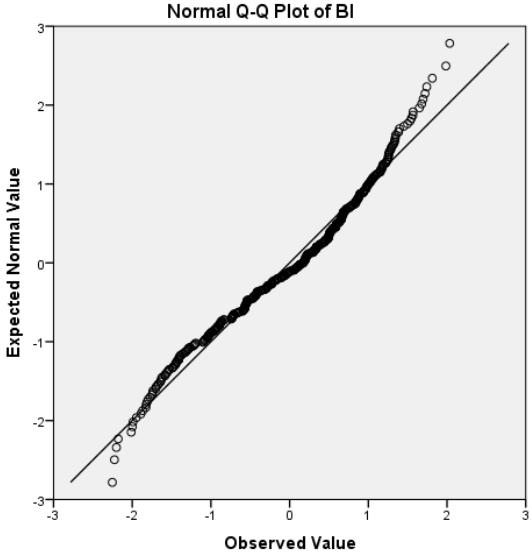
Fresh



Attitude



Buying Intention



APPENDIX V: UNSTANDARDIZED RESULTS

Intention to buy

For this regression analysis, nine observations have been removed from the dataset because of missing values (therefore N=423). Both model 1 and model 2 appear to be significant (p=0,000 and p=0,000), however there is no significant improvement of the model when the brand labels are included. This finding shows that the brand labels do not significantly influence intention to buy. Price negatively influences intention to buy (B=-4,789 p=0,000). The perception of tastiness significantly influences intention to buy, in a positive direction (B=14,964 p=0,000). The sourness of apples negatively influences intention to buy (B=-1,706 p=0,011). The freshness positively influences the intention to buy the apple (B=2,589 p=0,005).

SPSS regression analysis: Intention to buy

	Intention to buy	
Model*	1	2
Apple brand	-2,298	-0,424
Kanzi label		-0,754
Elstar label		2,935
Price	**-4,789**	**-4,793**
Tasty	**14,919**	**14,964**
Juicy	1,530	1,529
Firm	0,029	-0,069
Sour	**-1,65**	**-1,706**
Mealy	-0,519	-0,550
Sweet	0,328	0,336
Fresh	**2,526**	**2,589**
R square	0,621	0,624
Df	413	411
F	**75,223**	**62,052**
N	423	423

***** Model 1 includes: apple brand, price and all taste perceptions
Model 2 includes: apple brand, price Kanzi label, Elstar label and all taste perceptions

The relation between attitude and intention to buy has also been investigated. It appears that 'attitude towards the apple' is significantly related to intention to buy (B=18,747 p=0,000). In other words; the extent to which people like the apple, influences their intention to buy the apple positively.

Results of the Glimmix analysis show that only one segment should be included into the model. This is based on the CAIC value of 713,81, which is low compared to the CAIC values of more segments. When the brand labels are excluded from the model the CAIC is even lower (703,67), therefore the model without brand labels is better. This means that the brand labels do not influence consumer's intention to buy.

Glimmix regression analysis: Intention to buy

	Intention to buy	
Model*	1	2
Tasty	**0,072**	**0,076**
Juicy	**0,059**	0,056
Firm	0,015	0,013
Sour	-0,014	-0,018
Mealy	**0,157**	**0,161**
Sweet	**0,162**	**0,163**
Fresh	**0,027**	**0,027**
Apple brand	-0,117	-0,080
Kanzi label	-0,052	
Elstar label	-0,131	
Price	**0,173**	**0,173**
Intercept	0,267	0,203
Df	40	42
R-square	0,446	0,469
N	53	53

* Model1 includes all taste variables, apple brand, Kanzi label, Elstar label and price.
Model 2 does not include Kanzi label and Elstar label.

The perception of tastiness positively influences intention to buy (B=0,076 p=0,041), this strengthens the findings from the SPSS regression analysis. In model 1 the influence of the perception of juiciness is significant (B=0,059 p=0,040). In model 2 the influence of juiciness is not significant but worth mentioning (B=0,056 p=0,052). The perception of mealiness significantly influences intention to buy (B=0,157 p=0,000). Also the sweet intensity of the apple significantly relate to intention to buy (B=0,162 p=0,000), even as the freshness (B=0,027 p=0,000). Price positively influences intention to buy (B=0,173 p=0,001).

Taste perception

General linear modeling (GLM) has been used to check whether the variables (apple brand, brand labels and price) significantly influence taste perception. It appears that apple brand significantly affects taste (p= 0,00). The influence of a Kanzi brand label on taste perception is close to significance (p= 0,072). Brand label Elstar and price do not significantly influence taste perception. Seven separate regression analyses have been carried out to know which specific taste items are influenced.

SPSS Regression analysis: Taste perception

	Tasty		Juicy		Firm		Sour		Mealy		Sweet		Fresh	
Model*	1	2	1	2	1	2	1	2	1	2	1	2	1	2
Apple brand	-0,042	-0,019	**0,144**	**0,213**	**0,690**	**0,824**	-0,333	-0,250	**-0,537**	**-0,630**	0,079	0,130	0,167	0,111
Kanzi label		-0,231		**-0,259**		-0,130		0,028		**0,259**		-0,241		0,009
Elstar label		-0,185		-0,120		0,139		0,194		0,074		-0,139		-0,102
Price	0,051	0,051	-0,088	-0,088	0,023	0,023	-0,019	-0,019	-0,120	-0,120	-0,079	-0,079	-0,009	-0,009
R square	0,001	0,016	0,010	0,024	0,109	0,104	0,026	0,031	0,075	0,085	0,004	0,015	0,010	0,012
Df	429	427	429	427	429	427	429	427	429	427	429	427	429	427
F	0,302	1,698	2,164	**2,668**	**26,138**	**13,563**	**5,738**	**3,366**	**17,517**	**9,860**	0,774	1,604	2,145	1,270
N	432	432	432	432	432	432	432	432	432	432	432	432	432	432

* 1 = Reduced model (apple brand, price), 2 = Full model (apple brand, Kanzi label, Elstar label, price).

The addition of brand label Kanzi and brand label Elstar to the regression model, does give a significant improvement for tasty (p= 0,046) and juicy (p=0,044). The regression models juicy (F= 2,668 p=0,032), firm (F=13,563 p=0,000), sour (F=3,366 p=0,010) and mealy (F=9,860 p=0,000) appear to be significant. The regression analyses for tasty, sweet and fresh are not significant. Looking closer at the significant regression models, apple brand produces a

significant positive effect on the perception of juicy (B=0,213 p=0,062) and firm (B=0,824 p=0,000). This means that a Kanzi apple is more perceived as juicy and firm compared to Elstar apples. Apple brand produces a significant negative effect on the perception of mealiness (B=-0,630 p=0,000), thus participants think that Kanzi apples are less mealy than Elstar apples. A Kanzi brand label appears to have a significant negative effect on the perception of juicy (B=-0,259 p=0,023) and a positive effect on mealy (B=0,259 p=0,049).

According to the results from the Glimmix regression analysis, the number of segments to include into the model is two. This is based on the CAIC value of 1127,45. Compared to the other CAIC values, the CAIC value for 2 segments is low. When the variables Kanzi label and Elstar label are excluded from the model, the model appears to have a lower CAIC value (1109,04) and thus a better model compared to the full model. This means that the brand labels do not influence the perception of tastiness. The R-square values are 0,172 for the complete model and 0,158 for the reduced model. This is not very high, but it is better than the R-square values from the previous regression analyses. In segment 2, brand label Kanzi has a significant negative effect on the perception of tastiness (p=0,014).

Glimmix regression: Tastiness*

	Tasty	
	Segment 1	Segment 2
Juicy	-0,029	0,023
Firm	0,077	**-0,060**
Sour	-0,063	**-0,089**
Mealy	**0,225**	**0,087**
Sweet	**0,268**	**0,275**
Fresh	**0,010**	0,001
Apple brand	**0,052**	**0,188**
Kanzi label	-0,077	**-0,165**
Elstar label	-0,054	-0,068
Price	-0,065	0,003
Intercept	1,393	2,767
Df	28	28
R-square	0,16	0,16
N	53	53

*Only full model included

APPENDIX VI: CAIC VALUES FOR INTENTION TO BUY

(Based on standardized data)

Full model:

	Iteration									
#Segments	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	629,15	629,15	629,15	629,15	629,15	629,15	629,15	629,15	629,15	629,15
2	681,53	681,53	677,43	677,43	681,53	681,53	681,53	702,25	681,53	673,49
3	750,02	740,08	718,81	739,47	722,58	752,05	722,58	740,08	708,15	722,58
4	797,57	764,63	764,63	799,90	812,25	810,48	785,80	813,25	772,84	791,88
5	855,16	846,89	837,39	837,39	869,79	838,57	838,57	892,96	863,77	873,70
6	945,58	927,59	936,36	921,72	921,59	930,02	924,07	926,66	935,76	922,69

Reduced model:

	Iteration									
#Segments	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	621,66	621,66	621,66	621,66	621,66	621,66	621,66	621,66	621,66	621,66
2	661,03	661,03	661,03	661,03	661,03	661,03	661,03	661,03	660,40	661,03
3	713,98	694,02	705,83	713,98	713,98	723,69	713,98	705,83	713,98	705,83
4	756,69	779,18	738,48	738,48	738,48	738,48	738,22	738,48	738,48	767,45
5	828,38	814,12	806,48	806,39	814,12	818,67	806,37	829,69	825,32	806,39
6	867,09	860,83	875,42	884,02	884,91	867,93	857,47	881,55	869,86	863,93

APPENDIX VII: CAIC VALUES FOR TASTINESS

(Based on standardized data)

Full model:

	Iteration									
#Segments	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	798,99	798,99	798,99	798,99	798,99	798,99	798,99	798,99	798,99	798,99
2	848,15	852,38	849,48	848,97	845,77	849,48	845,77	845,77	856,15	857,07
3	911,79	892,92	900,45	903,38	900,45	904,68	895,07	895,07	900,42	892,37
4	946,85	945,18	967,47	966,83	956,16	961,75	956,16	951,05	966,83	955,27
5	1007,37	1008,38	1017,06	1016,22	1013,30	1027,41	1009,15	1030,39	1014,34	1036,02
6	1007,36	1083,57	1101,47	1095,07	1074,12	1070,10	1091,54	1084,09	1099,81	1080,12

Reduced model:

	Iteration									
#Segments	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	788,41	788,41	788,41	788,41	788,41	788,41	788,41	788,41	788,41	788,41
2	825,28	825,28	825,28	830,31	825,28	825,28	830,31	825,28	825,28	825,28
3	873,19	881,60	870,73	870,77	870,73	873,61	865,23	873,19	870,41	873,61
4	927,59	903,24	909,94	926,30	925,63	905,30	923,64	909,11	929,19	924,21
5	970,50	978,69	970,50	964,20	966,99	977,10	966,66	964,04	984,73	957,10
6	1010,76	1015,73	1002,18	1019,23	1012,89	1013,31	1031,46	1019,14	1018,00	1018,71

APPENDIX VIII: IMPLICATIONS FOR FURTHER RESEARCH

Two regression analysis are carried out (only based on unstandardized data) to investigate the relation between what consumers think about the taste of Elstar and Kanzi apples and how the taste is really perceived. For example, how tasty consumers think an Elstar or Kanzi apple is, does that influence the perception/evaluation of this tastiness? The independent variable 'image' means how the participants think about the taste variables.

Image Elstar – taste perception

	Tasty		Juicy		Firm		Sour		Mealy		Sweet		Fresh	
Model*	1	2	1	2	1	2	1	2	1	2	1	2	1	2
Image	**0,132**	**0,132**	0,130	0,130	0,145	0,145	**0,227**	**0,227**	0,165	0,165	**0,250**	**0,250**	**0,164**	**0,164**
Price	0,056	0,056	-0,083	-0,083	0,065	0,065	-0,009	-0,009	-0,148	-0,148	-0,083	-0,083	-0,046	-0,046
Elstar label		-0,185		-0,120		0,139		0,194		0,074		-0,139		-0,102
R-square	0,045	0,057	0,026	0,031	0,026	0,031	0,061	0,071	0,030	0,032	0,090	0,096	0,047	0,050
Df	213	212	213	212	213	212	213	212	213	212	213	212	213	212
F	**4,876**	**4,302**	2,863	2,295	2,813	2,256	**6,970**	**5,368**	3,343	2,312	**10,562**	**7,505**	**5,233**	**3,733**
N	216	216	216	216	216	216	216	216	216	216	216	216	216	216

* Model 1: Reduced model (image of taste attribute and price), Model 2: Complete model (image of taste attribute, price and brand label Elstar)

The regression models have not improved by the inclusion of the Elstar label, but several models appear to be significant; tasty (F=4,302 p=0,006), sour (F=5,368 p=0,001), sweet (F=7,505 p=0,000) and fresh (F=3,733 p=0,012). The image that consumers have in mind about the taste attributes of Elstar apples, is positively related to the perception of tastiness (B=0,132 p=0,002), sour intensity (B=0,227 p=0,000), sweet intensity (B=0,250 p=0,000) and freshness (B=0,164 p=0,002).

Image Kanzi – taste perception

	Tasty		Juicy		Firm		Sour		Mealy		Sweet		Fresh	
Model*	1	2	1	2	1	2	1	2	1	2	1	2	1	2
Image taste	**0,204**	**0,204**	0,000	0,000	0,161	0,161	-0,037	-0,037	**0,271**	**0,271**	-0,042	-0,042	-0,023	-0,023
Price	0,046	0,046	-0,09	-0,093	-0,019	-0,019	-0,028	-0,028	-0,093	-0,093	-0,074	-0,074	0,028	0,028
Kanzi label		**-0,231**		-0,259		-0,130		-0,028		**0,259**		-0,241		0,009
R-square	0,044	0,060	0,003	0,026	0,017	0,021	0,001	0,001	0,063	0,085	0,002	0,019	0,001	0,001
Df	213	212	213	212	213	212	213	212	213	212	213	212	213	212
F	**4,921**	**4,478**	0,317	1,904	1,866	1,539	0,064	0,055	**7,191**	**6,605**	0,235	1,336	0,115	0,079
N	216	216	216	216	216	216	216	216	216	216	216	216	216	216

* Model 1: Reduced model (image of taste attribute and price), Model 2: Complete model (image of taste attribute, price and brand label Kanzi)

The addition of the Kanzi label does improve the model for tasty (p=0,064), juicy (p=0,025), mealy (p=0,024) and sweet (p=0,062). The regression models for tasty (F=4,478 p=0,005) and mealy (F=6,605 p=0,000) appear to be significant. The image of the tastiness of Kanzi apples significantly (positive) relate to the perception of tastiness (B=0,204 p=0,002), but the Kanzi label negatively affects the perception of tastiness (B=-0,231 p=0,064). The image of the 'mealiness' of Kanzi apples (B=0,271 p=0,000), as well as the Kanzi label (B=0,259 p=0,024) positively influences the perception of mealiness.